

DEVELOPMENT OF A STRATEGIC ROADMAP FOR THE SUBSTITUTION OF SVHC AS PART OF A SUSTAINABLE ECONOMY

Report on the Belgian Plan for Chemical Alternatives
(BEP4CAL)

An initiative of the Belgian FPS of Economy and the FPS
of Public Health

Final Report

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Project Partners

Phase	Phase Description	Leading Company
0	Scoping phase	Apeiron-Team NV
1	Manufacturing and use of SVHC in Belgium	VITO
2	Development of prioritization methodology and prioritization of SVHCs	Institute for Safer Chemical Alternatives
3	Policy development	Vander Straeten Consulting
4	Socio-economic analysis	Economics for the Environment Consultancy Ltd (eftec)
	Project Coordination	Apeiron-Team NV

Authors

Project Coordination

Disclaimer

This report has been prepared in accordance with the 'Development of a strategic roadmap for the substitution of SVHC as part of a sustainable economy' proposal dated 15th March 2022 and the agreed revisions to it. We are reliant on the information available in public domains and that was collected from various stakeholders and literature sources for the purposes of this project. While we have endeavoured to provide accurate and reliable information, we are not responsible for the completeness or accuracy of any such information. This report is intended solely for the information and use of Belgian FPS of Economy and the FPS of Public Health and is not intended to be, and should not be, used by anyone other than the specified parties. The project team, therefore, assumes no responsibility to any user of this document other than Belgian FPS of Economy and the FPS of Public Health.

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About the Project

The Belgian Plan for Chemical Alternatives (BEP4CAL) project was an initiative of the Belgian Federal Public Service (FPS) of Economy and the FPS of Public Health. The BEP4CAL project built on a previous study of the Belgian authorities, "*Development of a strategic roadmap for SVHC substitution in the context of a sustainable economy*" conducted by RDC Environment and Eppa in April 2019¹ to identify policy measures that could accelerate the substitution of SVHCs.

The RDC report identified and recommended a framework for defining policy measures that could be used to promote the substitution of substances of very high concern (SVHCs). The RDC report screened a wide range of data sources and suggested mainly using EU databases such as ECHA to compile the information, complemented with datasets available for the different Belgian regions. The RDC project identified the need to distinguish between transversal, overarching policies and vertical policies directed to promote substitution for specific priority issues. For the selection of the priority issues, it was suggested to consider both the relevance of the substance for Belgium and the impact authority intervention could have. Data sources were screened on a conceptual level, however, a specific demonstration with available data and how they can be combined was missing. The BEP4CAL project is built to address the gap identified by the RDC project.

The BEP4CAL project sought to identify the most appropriate policy measures to support the substitution of SVHCs and to also identify a methodology for the authorities to prioritize substances and uses relevant for substitution. The project was designed to develop and evaluate policy options which can be taken at a Belgian level to promote the substitution of harmful substances to move towards a more sustainable economy. The measures are proposed to be part of the Belgian Plan for the substitution of SVHCs to fit into the Belgian Strategy for Sustainable Development.

The BEP4CAL project scope was widespread, involving different actors across the value chain and a high number of substances. It was, therefore, important to identify and prioritise various aspects that would support the ambition of the project. In the assessment of the proposed policy measures, the complex regulatory landscape in Belgium were also taken into consideration.

From the Belgian authorities' perspective, substitution should be long-term and would require specific actions rolled out over several years. This conclusion was based on:

- The evolution of new information regarding SVHCs (in particular the inclusion of new substances in the Candidate List (CL))

¹ RDC Environment. (2019). [Development of a strategic roadmap for the substitution of SVHC as part of a sustainable economy Study for the FPS Economy](#). April.

- The evolution of the Belgian socio-economic context
- Other actions undertaken by the European Institutions, the Member States as well as other international bodies (like the UNEP, the OECD, the SAICM) and
- Initiatives from the private sector (including partnerships like the ECRN).

To achieve its objectives, the BEP4CAL project was split into four phases:

- **Phase 1** – Manufacture and use of SVHC in Belgium
- **Phase 2** - Development and application of a prioritization approach to identify the most relevant substance/use cases for policy measures
- **Phase 3** – Development of policy measures to support substitution
- **Phase 4** - Socio-economic evaluation of the policy measures to promote the substitution of SVHCs in Belgium

The four steps were in essence sequential and built on the results of the previous phases as shown in the scheme below (Figure 1).

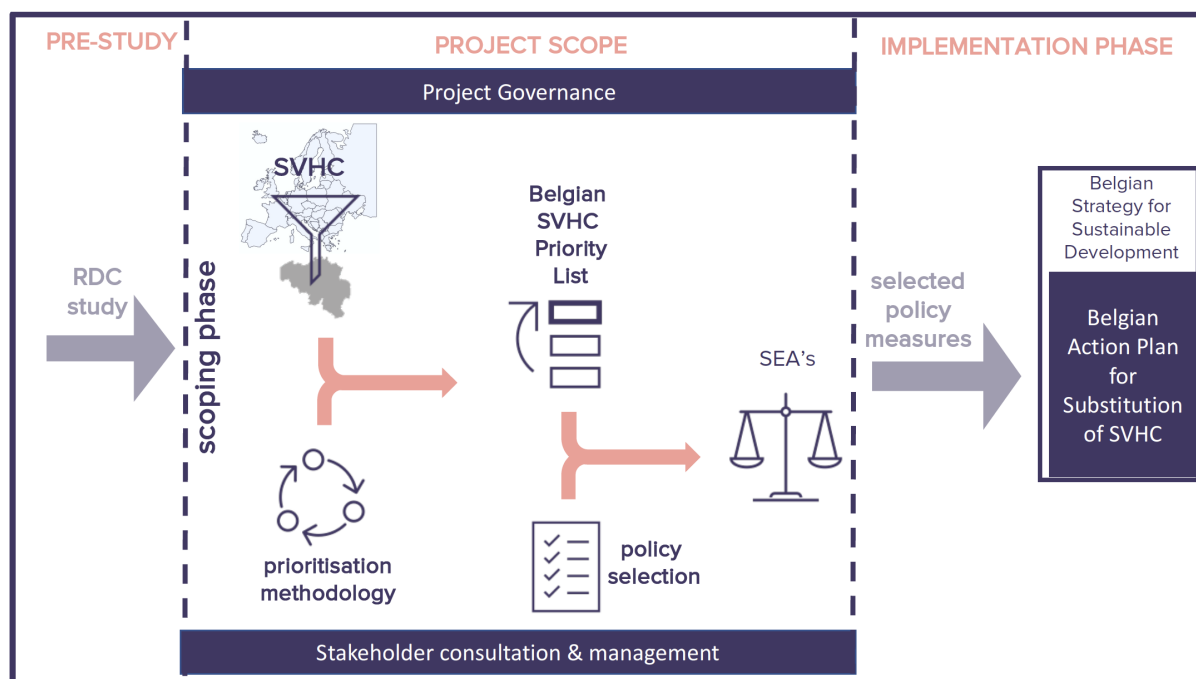


Figure 1: Overview of the project

Figure 1 shows the overall structure and the context of BEP4CAL project. At the start of the project a scope was identified during which there were discussions with the authorities to further define and clarify the scope, to identify the constraints and boundaries within which the project would be conducted.

In the first phase of the project '**Manufacture and use of SVHC in Belgium**', the main objective was to develop, document and apply a methodology to identify the manufactured and key uses of SVHC's in Belgium. This information was collected through public data sources such as ECHA, monitoring data from environmental agencies in Belgium and through industry surveys.

The second phase, '**Development and application of a prioritization approach to identify the most relevant substance/use cases for policy measures**', sought to develop a robust prioritization methodology to target substitution efforts. The prioritization methodology could be refined as needed in the future to support the use of a clear, reproducible prioritization approach that could be followed by programmatic staff in the years to come. The development of a clear prioritization approach was necessary to enhance transparency and to support confidence among stakeholders regarding the decision criteria and approach used to establish substitution priorities. The methodology to identify the prioritization criteria and the selection of the criteria themselves built on the approach documented in the RDC report and considered two key criteria namely: **the relevance to Belgium** and **potential benefit of public action**.

The third phase of the project, '**Development of policy measures to support substitution**', was aimed to develop a list of policy measures deemed efficient and proportionate to support the substitution of SVHCs identified as most relevant in the Belgian economy and that could be proposed for inclusion in the National Plan for Substitution. The recommendations in the RDC report and its general scenarios for a suite of instruments constituted the foundation for this phase of the project. The final selection of the policy measures presented in the report was done in three stages starting with a long list which was then narrowed down to an intermediate list and finally a short list of the proposed policy measures.

The last phase of the project was the '**Socio-economic evaluation of the policy measures to promote the substitution of SVHCs in Belgium**'. The main objective of this phase was to identify and assess both the positive and negative impacts associated with the policy measures identified in the third phase, as well as understanding intended outcomes and possible unintended outcomes of each policy option. This would allow the Belgian authorities to design its policies in a way that would minimise the negative aspects (e.g. risk of regrettable substitution and loss of companies/jobs in Belgium), whilst accelerating the positive aspects (e.g. reduced use of SVHCs, growth of markets using safer chemicals, increased jobs, knowledge, and increased economic production). The methodology used would also be set out in a transparent and clear manner, so that a similar analysis could be repeated for other policy options in the future.

Executive Summary

The Belgian Plan for Chemical Alternatives (BEP4CAL) project was aimed at identifying and evaluating policy measures to promote the substitution of substances of very high concern (SVHC) in Belgium (“Development of a strategic roadmap for the substitution of SVHC as part of a sustainable economy” (hereafter called ‘the roadmap’)). The measures to be proposed would be part of the Belgian Action Plan for the substitution of SVHC that would fit into the Belgian Strategy for the Sustainable Development. Potentially, they would also be presented in the framework of the European Semester as it was foreseen by the Roadmap of the EU Green Deal (“Integration of the Sustainable Development Goals in the European Semester”).

Given the wide spread of different actors and the high number of substances that were in scope of the project’s ambition, an identification of priority issues was needed. Additionally, the complex regulatory landscape and the need for acceptance of the policy measures proposed, an assessment of those measures was required. For these purposes, ‘the Roadmap’ project was identified.

To achieve the project’s objectives, the project was split into 4 distinct phases namely:

1. Manufacturing and use of SVHC in Belgium.
2. Development of a Prioritization methodology and Prioritization of SVHC
3. Development of policy measures to support substitution
4. Socio-economic evaluation of the policy measures to promote the substitution of SVHCs in Belgium

This report describes the four phases of the project including the objectives set out for each phase, the methodology adopted, the results, and the analysis of the results obtained. Challenges encountered in each phase were also described as well as recommendations on how the challenges could be addressed in future actions.

The first part of the report focused on the **manufacture and use of CL SVHCs in Belgium**. At the time of the project, there was no comprehensive overview of the use of these very harmful substances, nor was there any systematic monitoring of these substances in any environmental compartment relevant for exposure of the general public. Hence, several sources were investigated and used to provide a description of the production, import and downstream use of CL substances in Belgium. The various sources were categorised into i) public data sources and ii) data from stakeholder surveys.

The information from publicly available data sources was obtained from databases such as ECHA, SCIP and the SINList. Environmental and biomonitoring sources within Belgium were consulted to provide information on substances detected in the Belgian environment and population respectively. Trade data was also obtained from the trade inventories to indicate the flow of substances in and out of Belgium. Results obtained from analysis data from the various monitoring agencies indicated that it was a relatively small list of ‘usual suspect substances’ (based on other regulatory obligations or priority setting approaches) which are measured in both human and environmental biomonitoring and that only a small percentage (<10%) of SVHC on the candidate list are being monitored. The results are summarised in Table 1.

Table 1: Overview of the number of substances that were measured per source and the number of those substances that are on the candidate list.

Source	No. of substances (not all specifically CL substances) measured	No. of CL substances
VMM air	45	16
VMM water	/*	45
VMM water WEISS-tool	15	8
VMM drinking water quality	289	8
OVAM	Unknown**	6
SPW	398	20
EEA water	24	9
EEA air	66	9
SOILveR premiss	18	3
HBM data BE	232	24

The second part of the data collection focused on stakeholder surveys which were used to complement the monitoring data collected. Information from the stakeholder consultation helped fill some of the gaps identified from the environmental, biomonitoring and trade data. **129 responses** were received out of the **580** sent out representing only a **22%** return rate. From the 129 responses, there were **66 respondents**, classified into 4 main categories depending on their roles and how they interacted or used SVHCs, that provided details on SVHCs in their value chain: **seven manufacturers, 15 importers, 8 sellers and 36 downstream users**. In total, **89 (relevant) cases** split across the 4 different categories Taking the exclusion criteria defined in the scope into consideration, the final number of SVHCs for each category (which potentially overlap) were: **4 manufactured** in Belgium, **13 imported** and **36 in downstream uses**. However, the low response rate (**22%**) was a big limitation since a lot of CL substances and their uses was not

captured. This shortcoming and its impact were ultimately carried onto the next step of the project, prioritization.

The second phase of this project was the **development and application of a robust prioritization methodology** to target Belgium's substitution efforts. Specifically, it was important for the adopted prioritization methodology to focus on the SVHCs that would have the greatest positive impact on health and the environment in Belgium if substituted. The prioritization approach screened down the hundreds of SVHCs identified in phase 1 down to **21**, in which a pilot expert committee used a **modified Delphi approach** to identify the final targeted list. This exercise yielded two priority lists:

- i. Long list of 13 substances to be used by the Federal authorities in the "Belgium Builds Back Circular" project.
- ii. Short list of four substances relevant for Phase 4 of this project: the socio- economic analysis of the proposed policy measures.

It is important to note that due to the limited data availability (e.g., lack of data of downstream use volume, number of users, etc.), the exercise to narrow down to the top four substances did not apply the prioritization approach as was ideally envisioned at the start of the project. The list obtained should therefore be treated as the results of the pilot exercise and served to highlight key data needs required to inform substitution priorities by the authorities in the future, and not as a recommendation. Expert committee members explicitly elevated the need for more comprehensive and robust information on the downstream use of SVHCs. Use data available during this pilot modified Delphi process was very sparse and decisions about priority SVHCs were driven in large measure around those SVHCs with use information.

The four priority SVHCs that were arrived at through discussion and the use of a decision criteria developed during for the project were:

- **2-methoxyethanol (CAS No:109-86-4)**
- **Alkanes, C14-17, chloro (CAS No 85535-85-9)**
- **Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)) (ADCA) (CAS No 123-77-3) and**
- **Phenol, dodecyl-, branched (CAS No 121158-58-5).**

Scrutiny of the long list by industry stakeholders revealed some limitations to the procedure. Data on the substances embedded in risk assessments reports by authorities was less scrutinized in this project. Some of the information in these reports could have modified the choices of the expert group if these were known. For instance, the fact that alternatives are available is not per se a good indication that these alternatives are suitable for the remaining uses of a substance. A more detailed scrutiny would be required to identify the exact hurdles to substitution. This is an aspect to be considered when repeating this prioritization procedure especially when estimating the required effort for such a prioritization.

The third phase of the BEP4CAL project was the **development of policy measures to support substitution**. During the development of this project a long list of **over 40 different policy measures** (including variations within the same of measure) were considered based on the RDC Environment and EPPA pre-study “*Development of a strategic roadmap for the substitution of SVHC as part of a sustainable economy*”, public literature, Belgian legal text and the expertise of policy experts. The policy measures considered had to meet two criteria: i) they are of particular interest to Belgium (in terms of volumes, number of companies involved, political priorities, importance to users and developments potential in Belgium); ii) according to the principle of subsidiarity, action at national level would be the most appropriate and the intervention of the Belgian authorities can offer significant added value. The long list of measures was then narrowed down to an intermediate list of **17 measures** which was finally down to **10 shortlisted measures** for which a socio-economic analysis would be conducted. These shortlisted measures are presented in Table 2.

Table 2: List of ten selected policy measures

Broad category of measure	Policy scenarios
Use notification Substitution action plan SVHC fee	1. Mandatory notification of use
	2. Substitution action plan for substances prioritised as of high relevance for Belgium
	3. Non-financial support for the use notification and/or the substitution action plan
	4. A subsidy for the substitution action plan
	5. Annual fee for the use of SVHC
	6. Modular annual fee system for the use of SVHC
Awareness creation and networking	7. Awareness creation and facilitation of networking
Methodology and structure to achieve sustainable substitution	8. Development of methodology and structure to support the sustainability-focused analysis of alternatives & Training in implementation
	9. Policy Scenario 8 with a subsidy for advisory services (subsidy version 1)
	10. Policy Scenario 8 with a subsidy for advisory services (subsidy version 2)

It should be noted that some policy measures overlap, particularly measures 1 to 6 and measures 8 to 10. For example, measure 4 contains all the elements of measures 1, 2 and 3, plus a grant.

This will make it possible in Phase 4 of the project, i.e. the socio-economic study, to check, for example, whether the additional elements improve the policy as a whole, or vice versa.

During the implementation of the project, the information publicly available for the identification of the uses and emissions of SVHC included in the CL of ECHA was too limited and additional consultations and surveys were not sufficient to have a good vision of the situation in Belgium for a good prioritization of substances. More information is clearly needed. This led to the proposal of a mandatory notification of the uses of the SVHC included in the CL (first scenario of the short list). If such information is available, it would help the authorities to identify the most important pieces of information to make available to the concerned enterprises and to update latter the priority list.

The priority list will constantly be updated as new substances are added progressively and as other substances will later be included in Annex XIV, XVII or as substances reach their sunset date. The legal framework and its implementation at the EU level is also progressing and the same is valid for the RDI. This means that the best policy measures for an initial set of prioritized substance can be different from the one valid for a review list of priorities. So, it remains important to also consider the measures that will help the substitution of the non-prioritized substances. Even if the list of the priorities can be optimized, it does not mean that the efficiency of policy measures will be higher for such substances compared to others. That is why an important focus was given to policy measures having an impact on the reactivity of enterprises, considering first how the responsible diligent enterprises behave and trying to promote this behaviour by specific requirements (like a mandatory substitution action plan (PASS) as proposed under measure 2) with a support for the enterprises that do not have equivalent resources (measures 3 and 4).

To speed up the transition to safer alternatives, a fee was proposed (scenario 5). At the same time, in order to not penalize the diligent Belgian enterprises against their competitors, such fee may be suspended, as long as the said enterprise is really working on the substitution (measure 6). The communication among the supply chain through cooperation and exchanges of information (best practices) was identified during the consultation as an important element for a sustainable substitution. This aspect was at the heart of the measure 7.

Finally, as the global framework of the green economy continues to develop, enterprises have to face many challenges towards a sustainable economy. To meet the objective of replacing SVHCs by safer alternatives and for the competitiveness of the Belgian enterprises, they must be able to find holistic solutions that are well balanced between the different targets of the sustainable economy. Measures 8 to 10 were proposed having that consideration into mind.

The final phase of the project was the **socio-economic evaluation of the policy measures to promote the substitution of SVHCs in Belgium**. The socio-economic analysis was done through a **multi-criteria analysis (MCA)**. The MCA assessed the policy measures for their effectiveness in achieving substitution, financial impacts, impacts on health, environment and

sustainability, their practicability, and wider and distributional impacts. A set of performance indicators were used for the assessment of these five ‘attributes’. Each of the assessment criteria were scored based on an underlying qualitative analysis, and aggregated for each attribute which formed the basis for the ranking of the policy measures. Three policy scenarios were defined to reflect potential differences in policy goals and political priorities: Scenario 1 assumed that all attributes are equally important, Scenario 2 assumed that effectiveness is the main priority, and Scenario 3 had effectiveness as the main priority but also had an increased focus on competitiveness (which is one of the assessment criteria under wider and distributional impacts).

The evidence used included reports from phases 1-3 of the project, industry survey covering the 10 policy measures, and a literature review. Due to the low response rate to the industry survey, the analysis and conclusions relied more on information from literature review alongside economic theory. The SEA results as shown in Table 3 showed that some of the policy measures are nested, particularly Policy Measures 1 – 6 and Policy Measures 8 – 10, which means that they have overlapping elements. For example, Policy Measure 4 was found to contain all elements from Policy Measures 1, 2 and 3, with an addition of a subsidy. Where there are higher rankings for later measures (such as Policy Measure 5, which contains elements of Policy Measures 1, 2, and 3) this can be interpreted as meaning that the additional elements improve the policy as a whole.

Table 3 shows the final rank of each measure for the three policy scenarios, where 1 indicates the highest scored measure and 10 indicates the lowest. The ranking and the underlying scores are based on the implementation of each measure in isolation.

Table 3: Overall ranking of the policy measures across scenarios

	Policy Measure name	Scenario 1 ranking	Scenario 2 ranking	Scenario 3 ranking
1	Mandatory notification of use	10	10	10
2	Substitution action plan for substances prioritised as of high relevance for Belgium	9	7	7
3	Non-financial support for the use notification and/or the substitution action plan	2	3	2
4	A subsidy for the substitution action plan	1	2	1
5	Annual fee on the use of SVHCs	5	1	3
6	A modular annual fee system	8	4	4
7	Awareness creation and facilitation of networking	4	6	6

	Policy Measure name	Scenario 1 ranking	Scenario 2 ranking	Scenario 3 ranking
8	Development of methodology and structure to support the sustainability-focused analysis of alternatives	6	8	8
9	Direct support of companies involved with a subsidy for advisory services (subsidy version 1)	7	9	9
10	Direct support of companies involved with a subsidy for advisory services (subsidy version 2)	3	5	5

Table note:

- The colour coding indicates the highest (green) and the lowest (red) scores.
- The policy measures nested, where Policy measures 2, 3, 4, 5, and 6 include Policy Measure 1. Policy measures 3, 4, 5, and 6 include Policy Measure 2. Policy measures 4, 5, and 6 include Policy Measure 3. Policy measures 9 and 10 include Policy Measure 8.

Policy Measures 3 and 4 are in the top three measures for all scenarios, which indicates that they are overall good candidates for implementation in Belgium, if the trade-offs such as budgetary implications are acceptable. In Scenario 2, where effectiveness is the prioritised attribute, Policy Measure 5 would be the preferred option. Contrastingly, Policy Measures 1 and 9 are the least preferred options, particularly in the scenarios where effectiveness is weighted more heavily. It is unlikely that these Policy Measures will be beneficial if implemented in isolation.

Some of the measures are better candidates for a ‘policy package’ rather than standalone measures. Alternative policy designs and synergy effects were therefore briefly explored in Section 5.6. It was found that the overall effectiveness and positive impacts of obligation-based measures (e.g., substitution action plan and fee) could greatly improve if combined with support-based elements (e.g., non-financial support and/or networking). The obligations provide direct incentives for substitution through the added burden on affected actors, whilst the support-based measure is likely to increase the overall compliance rate and reduce the costs to companies over time. Data submitted as part of policy obligations (e.g., use notifications and substitution action plans) will also contain higher quality information if support is provided.

The **BEP4CAL** project showed the data driven approach to identify priority substances (and even more substance / use combinations) subject to substitution support policy measures in Belgium was challenging because (i) the conclusion of the priority setting is very much a function of the available data, which is at this point in time limited; (ii) the uses of SVHC in Belgium are very diverse and as such a priority list will only address a limited number of use cases. Additionally,

any form of priority list is bound to raise public concern and debate which does not contribute much to the substitution itself especially in cases of negative consequences (e.g. taxes) where such a list would be controversial. In that sense, vertical policy measures directly targeted at specific substance or substance / use cases will always be more difficult to implement and of lesser impact compared to horizontal measures targeted at a wider group of substances or substance / use cases unless the data available for the prioritization is much more accurate and extensive.

It is important to note that the conclusions of this study may change if only a few SVHCs are targeted by the policy measures, or if different combinations or designs of measures were assessed.

Samenvatting

Het Belgische Plan voor Chemische Alternatieven (BEP4CAL) project had als doel het identificeren en evalueren van beleidsmaatregelen voor de promotie van de substitutie van zeer zorgwekkende stoffen (SVHC) in België (“Development of a strategic roadmap for the substitution of SVHC as part of a sustainable economy” (hierna veermeld als ‘roadmap’)). De te bepalen beleidsmaatregelen kunnen deel uitmaken van het Belgische Actieplan voor de vervanging van SVHC welk past in de Belgische strategie voor duurzame ontwikkeling. Mogelijks zouden deze maatregelen ook gepresenteerd worden in het kader van de Europese semester zoals voorzien door de “Roadmap of the EU Green Deal” (“Integration of the Sustainable Development Goals in the European Semester”).

Gezien de spreidig van de verschillende actoren en het grote aantal stoffen in het bereik van de ambitie van het project was er een prioritering nodig. Bijkomend gezien het complexe regulatorische landschap en de nood voor de acceptatie van de voorgestelde beleidsmaatregelen, is een evaluatie van de maatregelen nodig. Hiervoor werd het Roadmap project gedefinieerd.

Teneinde de objectieven van het project te behalen, werd het project in vier verschillende fasen opgedeeld:

1. Productie en gebruik van SVHC in België
2. Opstellen en toepassing van een prioriteringsmodel voor SVHC
3. Ontwikkelen van beleidsmaatregelen
4. Socio-economischevaluatie van beleidsmaatregelen ter bevordering van de substitutie van SVHC in België

Dit rapport beschrijft de vier fases van het project met inbegrip van de objectieven van elk van de vier fases, de toegepaste methodologie, de resultaten en de analyse van deze resultaten. De geïdentificeerde uitdagingen en de aanbevelingen hoe deze aan te pakken met toekomstige acties werden voor de verschillende fases beschreven.

Het eerste deel van het rapport richtte zich op de productie en het gebruik van SVHC's, die op de kandidaatlijst voor Annex XIV staan (CL), in België. Ten tijde van het project was er geen uitgebreid overzicht van het gebruik van deze zeer zorgwekkende stoffen, noch was er een systematische monitoring van deze stoffen in een milieucompartiment dat relevant is voor de blootstelling van het grote publiek. Daarom werden verschillende bronnen onderzocht en gebruikt om een beschrijving te geven van de productie, de invoer en het gebruik van CL-stoffen in België. De verschillende bronnen werden onderverdeeld in i) openbare gegevensbronnen en ii) gegevens uit enquêtes onder belanghebbenden.

De informatie uit publiek beschikbare gegevensbronnen werd verkregen uit databanken zoals ECHA, SCIP en de SINList. Milieu- en biomonitoringsbronnen in België werden geraadpleegd om informatie te verstrekken over stoffen die werden aangetroffen in respectievelijk het Belgische milieu en de Belgische bevolking. Handelsgegevens werden ook verkregen uit de handelsinventarissen om de stroom van stoffen in en uit België weer te geven. Resultaten verkregen uit de analyse van gegevens van de verschillende controleagentschappen gaven aan dat het een relatief kleine lijst was van 'gebruikelijke verdachte stoffen' (gebaseerd op andere wettelijke verplichtingen of prioriteitsbepalende benaderingen) die gemeten worden in zowel menselijke als ecologische biomonitoring en dat slechts een klein percentage (<10%) van de SVHC op de kandidaatslijst gemonitord worden. De resultaten zijn samengevat in tabel 4.

Table 4: Overzicht van het aantal stoffen die werden gemeten per gegevensbron en het aantal ervan op de CL.

Bron	aantal gemeten stoffen (niet allemaal CL stoffen)	aantal CL stoffen
VMM luch	45	16
VMM water	/*	45
VMM water WEISS-tool	15	8
VMM drink water kwaliteit	289	8
OVAM	Onbekend**	6
SPW	398	20
EEA water	24	9
EEA lucht	66	9
SOILveR premiss	18	3
HBM data BE	232	24

Het tweede deel van de gegevensverzameling was gericht op enquêtes onder belanghebbenden, en werd gebruikt om de verzamelde monitoringgegevens aan te vullen. Informatie uit de raadpleging van belanghebbenden hielp bij het opvullen van enkele van de hiaten die uit de milieu-, biomonitoring- en handelsgegevens naar voren kwamen. Van de **580** verzonden antwoorden werden er 129 ontvangen, wat neerkomt op een retourpercentage van slechts **22%**. Van de **129 antwoorden** waren er **66 respondenten**, ingedeeld in 4 hoofdcategorieën afhankelijk van hun rol en de manier waarop ze omgaan met of gebruikmaken van SVHC's, die details verstrekten over SVHC's in hun waardeketen: **7 fabrikanten, 15 importeurs, 8 verkopers en 36 gebruikers**. In totaal **89 (relevante) gevallen** verdeeld over de 4 verschillende categorieën. Rekening houdend met de uitsluitingscriteria gedefinieerd in de scope, waren het uiteindelijke aantal SVHC's voor elke categorie (die elkaar mogelijk overlappen): **4 geproduceerd** in België,

13 geïmporteerd en 36 in toepassingen. Het lage responspercentage (**22%**) was echter een grote beperking omdat veel CL-stoffen en hun toepassingen niet werden opgenomen. Deze beperking en de impact ervan werden uiteindelijk meegenomen in de volgende stap van het project, de prioritering.

De tweede fase van dit project was de ontwikkeling en toepassing van een robuuste prioriteringsmethodologie om de Belgische inspanningen voor ondersteuning van de substitutie te focussen. Specifiek was het belangrijk dat de aangenomen prioriteringsmethodologie zich zou richten op de SVHC's waarvan de vervanging de grootste positieve impact zouden hebben op de gezondheid en het milieu in België. De prioriteitsbenadering verminderde de honderden SVHC's die in fase 1 werden geïdentificeerd tot 21, waarna een comité van experts een aangepaste Delphi-benadering gebruikte om de uiteindelijke lijst te bepalen. Deze oefening leverde twee prioriteitenlijsten op:

- i. Lange lijst van 13 stoffen die de federale overheid moet gebruiken in het project "Belgium Builds Back Circular".
- ii. Korte lijst van vier stoffen die relevant zijn voor fase 4 van dit project: de socio-economische analyse van de voorgestelde beleidsmaatregelen.

Het is belangrijk om op te merken dat vanwege de beperkte beschikbaarheid van gegevens (bijv. gebrek aan gegevens over de tonnages van de verschillende gebruiken, het aantal gebruikers, enz.), de verkregen lijst van vier stoffen niet werd verkregen door het toepassen van de ontwikkelde prioritisatie methode. De lijst moet daarom worden beschouwd als het resultaat van een piloot test en diende om de belangrijkste gegevens te identificeren die nodig zijn om de autoriteiten in de toekomst toe te laten de prioritaire stoffen te identificeren, en niet als lijst van aanbevolen stoffen. De leden van het comité van deskundigen hebben expliciet gewezen op de noodzaak van uitgebreidere en robuustere informatie over het gebruik van SVHC's. De gegevens over het gebruik van de stoffen die tijdens dit gewijzigde Delphi-proefproces beschikbaar waren, waren zeer schaars en de beslissingen over prioritaire SVHC's werden in grote mate bepaald door de SVHC's waarover gebruiksinformatie beschikbaar was.

De vier prioritaire SVHC's waartoe men via discussie en het gebruik van tijdens het project ontwikkelde beslissingscriteria kwam, waren:

- **2-methoxyethanol (CAS No:109-86-4)**
- **Alkanes, C14-17, chloro (CAS No 85535-85-9)**
- **Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)) (ADCA) (CAS No 123-77-3) and**
- **Phenol, dodecyl-, branched (CAS No 121158-58-5).**

Een evaluatie van de lange lijst van stoffen door belanghebbenden uit de industrie bracht een aantal beperkingen van de procedure aan het licht. Gegevens over de stoffen in risicobeoordelingsrapporten van autoriteiten werden in dit project minder in detail onderzocht. Sommige informatie in deze rapporten had de keuzes van de deskundigengroep kunnen

veranderen als deze bekend waren geweest. Zo is het feit dat er alternatieven beschikbaar zijn niet per se een goede indicatie dat deze alternatieven geschikt zijn voor de overige vormen van gebruik van een stof. Er zou een gedetailleerder onderzoek nodig zijn om de precieze hindernissen voor vervanging vast te stellen. Dit is een aspect waarmee rekening moet worden gehouden bij het herhalen van deze prioriteringsprocedure, vooral bij het inschatten van de vereiste inspanning voor een dergelijke prioritisatie.

De derde fase van het BEP4CAL project was de **ontwikkeling van beleidsmaatregelen om substitutie te ondersteunen**. Tijdens de ontwikkeling van dit project werd een lange lijst van meer dan **40 verschillende beleidsmaatregelen** (inclusief variaties van maatregels) overwogen op basis van de voorstudie van RDC Environment en EPPA “*Development of a strategic roadmap for the substitution of SVHC as part of a sustainable economy*”, publiek beschikbare literatuur, Belgische wetteksten en de expertise van beleidsdeskundigen. De overwogen beleidsmaatregelen moesten aan twee criteria voldoen: i) ze zijn van bijzonder belang voor België (in termen van volumes, aantal betrokken bedrijven, politieke prioriteiten, belang voor de gebruikers en ontwikkelingspotentieel in België); ii) volgens het subsidiariteitsbeginsel zou actie op nationaal niveau het meest aangewezen zijn en kan de tussenkomst van de Belgische autoriteiten een aanzienlijke toegevoegde waarde bieden. De lange lijst van maatregelen werd vervolgens ingekort tot een tussenlijst van **17 maatregelen**, die uiteindelijk werd teruggebracht tot **10 maatregelen op de shortlist** waarvoor een socio-conomische analyse zou worden uitgevoerd. Deze maatregelen zijn opgenomen in tabel 5.

Table 5: Lijst van 10 geselecteerde beleidsmaatregelen.

Categorie	Scenario
Kennisgeving, substitutie plan en SVHC bijdragen	1. Verplichte kennisgeving van gebruik
	2. Substitutie actie plan stoffen met hoge prioriteit voor België
	3. Non-finnaciële ondersteuning voor kennisgeving van gebruik en/of voor de ontwikkeling van een substitutie plan
	4. Subsidie voor een substitutie actie plan
	5. Jaarlijkse bijdrage voor het gebruik van een SVHC
	6. Modulair system voor jaarlijkse bijdrage voor het gebruik van een SVHC
Bewustmaking en netwerking	7. Bewustmaking en facilitering van netwerken
Methodologie en structuur om voor een duurzame substitutie te realiseren	8. Ontwikkeling van methodologie en structuur ter ondersteuning van de duurzaamheidsgerichte analyse van alternatieven & Training in implementatie
	9. Beleids scenario 8 met een subsidie voor ondersteuning (subsidie versie 1)

Categorie	Scenario
	10. Beleids scenario 8 met een subsidie voor ondersteuning (subsidie versie 2)

Er moet worden opgemerkt dat sommige beleidsmaatregelen elkaar overlappen, met name de maatregelen 1 tot en met 6 en 8 tot en met 10. Maatregel 4 bevat bijvoorbeeld alle elementen van de maatregelen 1, 2 en 3, plus een subsidie. Maatregel 4 bevat bijvoorbeeld alle elementen van de maatregelen 1, 2 en 3, plus een subsidie.

Dit maakt het mogelijk om in fase 4 van het project, d.w.z. de sociaaleconomische studie, bijvoorbeeld na te gaan of de extra elementen het beleid als geheel verbeteren, of vice versa.

Tijdens de uitvoering van het project was de publiek beschikbare informatie voor de identificatie van het gebruik en de emissies van SVHC opgenomen in de CL van ECHA te beperkt en waren bijkomende raadplegingen en enquêtes niet voldoende om een goed beeld te krijgen van de situatie in België voor een goede prioriteitsbepaling van stoffen. Er is duidelijk meer informatie nodig. Dit heeft geleid tot het voorstel van een verplichte kennisgeving van het gebruik van de SVHC opgenomen in de CL (eerste scenario van de korte lijst). Als dergelijke informatie beschikbaar is, zou dit de autoriteiten helpen om de belangrijkste informatie te bepalen die beschikbaar moet worden gesteld aan de betrokken bedrijven en om later de prioriteitenlijst bij te werken.

De prioriteitenlijst zal voortdurend worden bijgewerkt omdat er geleidelijk nieuwe stoffen aan worden toegevoegd en omdat andere stoffen later zullen worden opgenomen in bijlage XIV of XVII of omdat stoffen hun “sunset date” bereiken. Het wettelijke kader en de uitvoering ervan op EU-niveau evolueert ook en hetzelfde geldt voor de RDI. Dit betekent dat de meest geschikte beleidsmaatregelen voor een eerste reeks geprioriteerde stoffen kunnen verschillen van de maatregelen die gelden voor een herziene lijst van prioritaire stoffen. Het blijft dus belangrijk om ook na te denken over de maatregelen die zullen helpen bij de substitutie van niet-prioritaire stoffen. Zelfs als de prioriteitenlijst kan worden geoptimaliseerd, betekent dit niet dat de efficiëntie van beleidsmaatregelen voor dergelijke stoffen hoger zal zijn dan voor andere stoffen. Daarom is er veel aandacht besteed aan beleidsmaatregelen die van invloed zijn op het reactievermogen van bedrijven, waarbij eerst wordt gekeken naar het gedrag van verantwoordelijke, zorgvuldige bedrijven en wordt geprobeerd dit gedrag te bevorderen door middel van specifieke eisen (zoals een verplicht substitutie actieplan (PASS), zoals voorgesteld onder maatregel 2) met ondersteuning voor bedrijven die niet over voldoende middelen beschikken (maatregelen 3 en 4).

Om de overgang naar veiligere alternatieven te versnellen, werd een subsidie voorgesteld (scenario 5). Om de naar substitutie meest actieve Belgische bedrijven niet te benadelen ten opzichte van hun concurrenten, kan deze vergoeding worden opgeschort zolang het betreffende bedrijf echt werkt aan de substitutie (maatregel 6). De communicatie binnen de toeleveringsketen

door middel van samenwerking en uitwisseling van informatie (beste praktijken) werd tijdens de raadpleging geïdentificeerd als een belangrijk element voor een duurzame vervanging. Dit aspect stond centraal in maatregel 7.

Ten slotte worden bedrijven, naarmate het globale kader van de groene economie zich verder ontwikkelt, geconfronteerd met heel wat uitdagingen op weg naar een duurzame economie. Om de doelstelling te halen om SVHC's te vervangen door veiligere alternatieven en voor het concurrentievermogen van de Belgische ondernemingen, moeten ze holistische oplossingen kunnen vinden die een goed evenwicht bieden tussen de verschillende doelstellingen van de duurzame economie. Maatregelen 8 tot 10 werden voorgesteld met die overweging in het achterhoofd.

De laatste fase van het project was de socio-economische evaluatie (SEA) van de beleidsmaatregelen ter bevordering van de substitutie van SVHC's in België. De socio-economische analyse werd uitgevoerd aan de hand van een multicriteria-analyse (MCA). De MCA beoordeelde de beleidsmaatregelen op hun effectiviteit in het bereiken van vervanging, financiële effecten, effecten op gezondheid, milieu en duurzaamheid, hun uitvoerbaarheid en bredere en distributieve effecten. Voor de beoordeling van deze vijf 'eigenschappen' werd een reeks prestatie-indicatoren gebruikt. Elk van de beoordelingscriteria kreeg een score op basis van een onderliggende kwalitatieve analyse en werd geaggregeerd voor elk kenmerk, wat de basis vormde voor de rangschikking van de beleidsmaatregelen. Er werden drie beleidsscenario's gedefinieerd om mogelijke verschillen in beleidsdoelen en politieke prioriteiten te weerspiegelen: Scenario 1 ging ervan uit dat alle kenmerken even belangrijk zijn, scenario 2 ging ervan uit dat doeltreffendheid de belangrijkste prioriteit is, en scenario 3 had doeltreffendheid als belangrijkste prioriteit, maar had ook een grotere focus op concurrentievermogen (wat een van de beoordelingscriteria is onder bredere en distributieve effecten).

Het gebruikte data omvatte rapporten uit de fasen 1 tot en met 3 van het project, een enquête onder de industrie over de 10 beleidsmaatregelen en een literatuuronderzoek. Vanwege de lage respons op de enquête van de industrie, steunden de analyse en conclusies meer op informatie uit literatuuronderzoek naast economische theorie. De SEA-resultaten zoals weergegeven in Tabel 6 toonden aan dat sommige beleidsmaatregelen genest zijn, met name Beleidsmaatregelen 1 - 6 en Beleidsmaatregelen 8 - 10, wat betekent dat ze overlappende elementen hebben. Beleidsmaatregel 4 bleek bijvoorbeeld alle elementen van beleidsmaatregelen 1, 2 en 3 te bevatten, aangevuld met een subsidie. Wanneer er een hogere rangorde is voor latere maatregelen (zoals Beleidsmaatregel 5, die elementen bevat van Beleidsmaatregelen 1, 2 en 3) kan dit worden geïnterpreteerd als een verbetering van het beleid als geheel door de extra elementen.

Tabel 6 toont de uiteindelijke rangorde van elke maatregel voor de drie beleidsscenario's, waarbij 1 staat voor de hoogst gescoorde maatregel en 10 voor de laagst gescoorde. De rangorde en de onderliggende scores zijn gebaseerd op de implementatie van elke maatregel afzonderlijk.

Table 6: Overall ranking of the policy measures across scenarios

	Beleidsmaatregel	Scenario 1 ranking	Scenario 2 ranking	Scenario 3 ranking
1	Verplichte kennisgeving van gebruik	10	10	10
2	Substitutie actie plan stoffen met hoge prioriteit voor België	9	7	7
3	Non-finnaciële ondersteuning voor kennisgeving van gebruik en/of voor de ontwikkeling van een substitutie plan	2	3	2
4	Subsidie voor een substitutie actie plan	1	2	1
5	Jaarlijkse bijdrage voor het gebruik van een SVHC	5	1	3
6	Modulair system voor jaarlijkse bijdrage voor het gebruik van een SVHC	8	4	4
7	Bewustmaking en facilitering van netwerken	4	6	6
8	Ontwikkeling van methodologie en structuur ter ondersteuning van de duurzaamheidsgerichte analyse van alternatieven & Training in implementatie	6	8	8
9	Beleids scenario 8 met een subsidie voor ondersteuning (subsidie versie 1)	7	9	9
10	Beleids scenario 8 met een subsidie voor ondersteuning (subsidie versie 2)	3	5	5

Tabel notitie:

- De kleurcodering geeft de hoogste (groen) en de laagste (rood) scores aan.
- De beleidsmaatregelen zijn genest, waarbij Beleidsmaatregel 2, 3, 4, 5 en 6 Beleidsmaatregel 1 omvatten. Beleidsmaatregelen 3, 4, 5 en 6 omvatten Beleidsmaatregel 2. Beleidsmaatregelen 4, 5 en 6 omvatten Beleidsmaatregel 3. Beleidsmaatregelen 9 en 10 omvatten Beleidsmaatregel 8.

Beleidsmaatregelen 3 en 4 staan in de top drie van maatregelen voor alle scenario's, wat aangeeft dat ze over het algemeen goede kandidaten zijn voor implementatie in België, als de afwegingen zoals budgettaire implicaties aanvaardbaar zijn. In scenario 2, waar doeltreffendheid de prioritair eigenschap is, zou Beleidsmaatregel 5 de voorkeursoptie zijn. Daarentegen zijn Beleidsmaatregelen 1 en 9 de minst geprefereerde opties, in het bijzonder in de scenario's waar

effectiviteit zwaarder weegt. Het is onwaarschijnlijk dat deze beleidsmaatregelen gunstig zullen zijn als ze afzonderlijk worden uitgevoerd.

Sommige maatregelen komen beter in aanmerking voor een 'beleidspakket' dan voor op zichzelf staande maatregelen. Alternatieve beleidsontwerpen en synergie-effecten werden daarom kort onderzocht in paragraaf 5.6. Er werd vastgesteld dat de algemene doeltreffendheid en de positieve effecten van op verplichtingen gebaseerde maatregelen (bv. een substitutie actieplan en een subsidie) sterk zouden kunnen verbeteren als ze werden gecombineerd met op ondersteuning gebaseerde elementen (bv. niet-financiële ondersteuning en/of netwerking). De verplichtingen bieden directe stimulansen voor substitutie door de extra last voor de betrokken actoren, terwijl de op ondersteuning gebaseerde maatregel waarschijnlijk het algehele nalevingspercentage zal verhogen en de kosten voor de bedrijven na verloop van tijd zal verlagen. Gegevens die worden ingediend in het kader van beleidsverplichtingen (bv. kennisgevingen van het gebruik en actieplannen voor substitutie) zullen ook informatie van hogere kwaliteit bevatten als er steun wordt verleend.

Het BEP4CAL-project toonde aan dat de gegevensgestuurde aanpak om prioritaire stoffen (en nog meer combinaties van stoffen/gebruiken) te identificeren die onderworpen zijn aan beleidsmaatregelen ter ondersteuning van vervanging in België, een uitdaging was omdat (i) de conclusie van de prioriteitstelling sterk afhangt van de beschikbare gegevens, die op dit moment beperkt zijn; (ii) het gebruik van SVHC in België zeer divers is en een prioriteitenlijst dus slechts een beperkt aantal gebruikssituaties zal behandelen. Bovendien zal elke vorm van prioriteitenlijst publieke bezorgdheid en debat oproepen, wat niet veel bijdraagt tot de vervanging zelf, vooral in gevallen van negatieve gevolgen (bv. belastingen) waar een dergelijke lijst controversieel zou zijn. In die zin zullen verticale beleidsmaatregelen die rechtstreeks gericht zijn op specifieke stoffen of stoffen/gebruiksvormen altijd moeilijker uit te voeren zijn en minder effect hebben dan horizontale maatregelen die gericht zijn op een bredere groep stoffen of stoffen/gebruiksvormen, tenzij de beschikbare gegevens voor de prioriteitstelling veel nauwkeuriger en uitgebreider zijn.

Het is belangrijk om op te merken dat de conclusies van deze studie kunnen veranderen als de beleidsmaatregelen zich richten op slechts enkele SVHC's, of als verschillende combinaties of ontwerpen van maatregelen werden beoordeeld.

Synthèse

Le projet 'plan belge pour des alternatives chimiques' (BEP4CAL) vise à identifier et évaluer des mesures de gestion publiques pour promouvoir la substitution de substances très préoccupantes (SVHC) en Belgique (« Développement d'une feuille de route stratégique pour la substitution des SVHC dans le cadre d'une économie durable » ci-après appelée 'la feuille de route'). Les mesures à proposer devraient faire partie du plan d'action belge pour la substitution des SVHC qui devrait s'inscrire dans la stratégie belge de développement durable. Potentiellement, elles devraient être présentées également dans le cadre du Semestre Européen par la feuille de route du Green Deal de l'UE ('intégration des objectifs du développement durable dans le semestre européen').

Vu le grand nombre d'acteurs et de substances qui entrent dans le champ des ambitions du projet, une identification des questions prioritaires a été nécessaire. En outre, le contexte réglementaire complexe et le besoin d'avoir des mesures/instruments politiques proposées acceptables une évaluation de telles mesures a été requise. Avec ces objectifs, une feuille de route a été proposée.

Pour atteindre les objectifs du projet, celui-ci a été divisé en 4 phases distinctes, à savoir :

1. La production et l'utilisation des SVHC en Belgique ;
2. Le développement d'une méthode de priorisation et la priorisation des SVHC ;
3. Le développement de mesures/instruments politiques d'appui à la substitution ;
4. Une évaluation socio-économique des mesures/instruments politiques pour promouvoir la substitution en Belgique.

Le rapport décrit les 4 phases du projet y compris les objectifs fixés pour chaque phase, la méthodologie suivie, les résultats et analyse des résultats obtenus. Les défis rencontrés au cours de chaque phase sont également décrits ainsi que des recommandations sur la façon de faire face à ces défis pour des actions ultérieures.

La première partie du rapport met l'accent sur la production et l'utilisation en Belgique de SVHC incluses dans la liste candidate (CL). A ce stade du projet, il n'y avait pas d'aperçu complet de l'utilisation de ces substances très dangereuses, ni de passage en revue systématique de ces substances dans aucun compartiment environnemental relevant pour l'exposition de la population. C'est pourquoi différentes sources ont été consultées et utilisées pour fournir une description de la production, l'importation et l'utilisation en aval des substances de la CL en Belgique. Ces différentes sources ont été réparties en i) sources disponibles publiquement et ii) données des enquêtes auprès des parties concernées.

Les informations provenant de sources de données publiques ont été obtenues grâce à des bases de données de l'ECHA, de SCIP et de la « SINList ». Les sources de données belges environnementales et de bio monitoring ont été consultées afin de fournir de l'information sur les substances détectées respectivement dans l'environnement et la population. Des données

commerciales ont été obtenues de différents inventaires du commerce pour identifier des flux de substances entrant et sortant de Belgique. Les résultats de l'analyse des données de différentes agences de surveillance montrent qu'il n'y a qu'une petite liste de 'substances habituellement suspectes' (basée sur d'autres obligations réglementaires ou d'approche d'établissement de priorités) qui sont mesurées tant dans le bio monitoring humain qu'environnemental et qu'il n'y a qu'un faible pourcentage (> 10%) des SVHC sur la liste candidate qui ont été surveillées. Les résultants sont résumés au tableau 7.

Tableau 7: Présentation du nombre de substances qui ont été mesurées par source d'information et le nombre de celles-ci qui figurent dans la liste candidate.

Source	Nombre de substances mesurées (toutes ne sont pas spécifiquement des substances CL)	Nombre de substances CL
VMM air	45	16
VMM eau	/*	45
VMM eau (WEISS-tool)	15	8
VMM qualité de l'eau potable	289	8
OVAM	inconnu**	6
SPW	398	20
EEA eau	24	9
EEA air	66	9
SOILveR premiss	18	3
HBM données BE	232	24

La seconde partie de la collecte de données met l'accent sur les enquêtes auprès des parties prenantes qui ont été utilisées en complément aux données obtenues du monitoring. Les informations de la consultation des parties prenantes ont aidé à remplir certains trous identifiés au départ des données du bio monitoring environnemental et des données du commerce. **129 réponses** ont été reçues aux **580** questionnaires envoyés soit un taux de réponse de **22%**. De ces 129 réponses, il y a eu 66 répondants, classés en 4 catégories en fonction de leur rôle et comment ils interagissent ou utilisent les SVHC, qui ont donné des détails sur les SVHC dans leur chaîne de valeur : **7 fabricants, 15 importateurs, 8 vendeurs et 36 utilisateurs en aval**. Au total, 89 cas pertinents répartis en 4 catégories différentes. Tenant compte du critère

d'exclusion² défini pour le cadre pris en compte, le nombre final de SVHC par catégorie s'établit comme suit (avec des possibilités de chevauchement) : **4 substances produites** en Belgique, **13 importées et 36 utilisées en aval**. Toutefois, le faible pourcentage de réponse (22%) a constitué une importante limitation, vu que de nombreuses substances CL et leur utilisation n'ont pu être appréhendées. Cette faiblesse et son impact ont été transmis à l'étape suivante : la priorisation.

La seconde phase du projet a été le développement et l'application d'une méthode consistante de priorisation afin de viser les efforts de substitution de la Belgique. Spécifiquement, il était important pour la méthodologie adoptée de priorisation de se focaliser sur les SVHC qui présenteraient l'incidence positive la plus importante sur la santé et l'environnement en Belgique si elles étaient substituées. L'approche de priorisation a passé en revue les centaines de SVHC identifiées au cours de la première phase pour les ramener à **21** qui ont été soumises ensuite à un comité pilote d'experts utilisant une **approche Delphi** modifiée pour identifier la liste objective finale. Cet exercice a produit deux listes prioritaires :

- i. Une longue liste de 13 substances à utiliser par les autorités fédérales dans le projet 'Belgium Build Back Circular' ;
- ii. Une liste courte de 4 substances à prendre en compte pour la phase 4 du projet : l'analyse socio-économique des mesures/instruments politiques proposés.

Il est important de noter qu'en raison du nombre limité de données disponibles (c-à-d le manque de données sur les volumes utilisés en aval, le nombre de ces utilisateurs, etc.) l'exercice de réduction du aux 4 substances principales ne s'est pas appliquée à l'approche de priorisation comme il l'avait idéalement été envisagé au départ du projet. La liste obtenue doit dès lors être traitée comme le résultat d'un exercice pilote utile à la mise en lumière des données essentielles requises pour établir des priorités sur une base bien informée par les autorités dans le futur et non comme une recommandation. Les membres du comité d'expert ont souligné explicitement le besoin d'une information plus complète et consistante sur les utilisations en aval des SVHC. Les informations disponibles sur les utilisations au cours du processus pilote Delphi modifié étaient vraiment éparses et les décisions sur les SVHC prioritaires ont été fondées dans une large mesure sur les substances pour lesquelles davantage d'informations sur les usages étaient disponibles.

² Les substances de la liste candidate qui sont reprises soit à l'annexe XIV, soit à l'annexe XVII de REACH ne sont pas prises en compte pour la priorisation.

Les 4 SVHC prioritaires qui ont émergé de la discussion et l'utilisation d'un critère de décision durant le projet sont :

- **2-methoxyethanol (CAS No:109-86-4)**
- **Alkanes, C14-17, chloro (CAS No 85535-85-9)**
- **Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)) (ADCA) (CAS No 123-77-3) et**
- **Phenol, dodecyl-, branched (CAS No 121158-58-5).**

L'examen de la longue liste par les parties concernées de l'industrie a révélé quelques limitations à l'égard de la procédure. Les données relatives aux substances incorporées dans les rapports d'analyse de risque par les autorités ont moins été analysées dans le cadre du projet. Une part de cette information aurait pu modifier le choix du groupe d'experts si elle avait été connue. Par exemple, le fait que des alternatives sont disponibles n'est pas, par lui-même, une bonne indication que celles-ci conviennent aux utilisations subsistantes de la substance. Une enquête plus approfondie serait nécessaire pour identifier précisément les obstacles à la substitution. C'est un aspect à prendre en compte en répétant cette procédure, en particulier pour l'évaluation de l'effort nécessaire de priorisation.

La troisième phase du projet BEP4CAL était le développement de mesures/instruments de politique pour soutenir la substitution. Durant le développement de la liste longue du projet de plus de 40 mesures de gestion politique (en comprenant les variations d'une même mesure) ont été considérées basées sur la pré-étude de RDC Environnement et EPPA "*Development of a strategic roadmap for the substitution of SVHC as part of a sustainable economy*", ainsi que la littérature publique pertinente, les textes Belges et l'expertise des experts politiques. Les mesures/instruments de politique devaient répondre à deux critères : i) elles présentent un intérêt particulier pour la Belgique (en termes de volumes, nombre d'entreprises concernées, priorités politiques, importance pour les utilisateurs belges et les développements potentiels en Belgique) ii) sur base du principe de subsidiarité, les actions proposées sont plus efficaces si elles sont mises en œuvre au niveau belge et l'intervention des autorités belges peut offrir une valeur ajoutée importante. La longue liste de mesure a été réduite à une liste intermédiaire de **17 mesures** elle-même finalement réduite à une **liste courte de 10 mesures** auxquelles une analyse socio-économique a été appliquée.

La liste courte des mesures est présentée au Tableau 8.

Tableau 8: Liste des mesures/instruments politique sélectionnés

Catégorie de mesure	Scénario de gestion
Obligations et instruments légaux	1. Notification obligatoire de l'utilisation
	2. Plan d'action de substitution pour les substances priorisées comme hautement intéressantes pour la Belgique
	3. Soutien non financier pour la notification de l'utilisation et/ou le développement du plan d'action de substitution
	4. un subside au plan d'action de substitution
	5. une redevance annuelle pour l'utilisation des SVHC
	6. Un système de redevance modulaire
Mesures de facilitation du changement	7. Sensibilisation et facilitation de réseaux
Mesures de méthodologie et de support pour atteindre une substitution durable	8. Développement d'une méthodologie et d'une structure de soutien à l'analyse des alternatives sous l'angle de la durabilité ; activité de training de mise en œuvre
	9. Soutien direct aux entreprises impliquées par un subside aux services de conseil (niveau d'aide 1)
	10. Soutien direct aux entreprises impliquées par un subside aux services de conseil (niveau d'aide 2)

Il convient de noter que certaines de ses mesures se chevauchent, en particulier les scénarios 1 à 6 ainsi que les scénarios 8 à 10. Par exemple, le scénario 3 comprend les éléments des mesures 1 à 3 plus une aide financière.

Ceci doit permettre au cours de la phase 4 du projet c-à-d l'analyse socio-économique d'évaluer par exemple quels éléments additionnels améliorent la mesure initiale ou vice versa.

Durant le développement du projet, les informations disponibles publiquement pour l'identification des utilisations et des émissions des SVHC comprises dans la CL de l'ECHA était trop limitées et les consultations et enquêtes complémentaires n'ont pas suffi pour avoir une bonne vision de la situation en Belgique pour effectuer une bonne priorisation. Davantage d'information est clairement nécessaire. Ceci a conduit à prévoir une notification obligatoire de l'utilisation des SVHC comprises dans la CL (premier scénario de la liste) Si une telle information devient disponible, elle devrait aider les autorités à identifier les informations les plus utiles pour les entreprises concernées et mettre à jour la liste des substances prioritaires.

Cette liste prioritaire sera régulièrement mise à jour car de nouvelles substances sont ajoutée progressivement à la CL tandis que d'autres seront ajoutées ultérieurement à l'annexe XIV ou

XVII ou elles atteindront leur date d'expiration (sunset date). Le cadre réglementaire et sa mise en œuvre au niveau européen continue de progresser et il en va de même pour la RDI. Ceci signifie que les meilleures mesures de gestion pour l'ensemble initial de substances priorisé peuvent être différent de celles qui conviennent le mieux à une liste révisée des priorités. C'est pourquoi il reste important de prendre en compte des mesures qui aideront également la substitution de substances non-prioritaires. Même si la listes des substances prioritaires peut être optimisée cela ne veut pas dire pour autant que l'efficacité des mesures de gestion publiques sera plus élevée pour ces substances que pour d'autres. C'est pourquoi il est important de mettre l'accent sur les mesures qui ont une incidence sur la réactivité des entreprises, considérant au départ le comportement des entreprises diligentes et en incitant un tel comportement par des exigences spécifique (comme développer un plan d'action (PASS) comme proposé par la mesure 2 avec un soutien aux entreprises qui ne disposent pas de ressources équivalentes (mesures 3 et 4).

Pour accélérer la transition vers des alternatives plus sûres une redevance est proposée (scénario 5). En même temps, afin de ne pas pénaliser les entreprises belges diligentes par rapport à leurs concurrents étrangers, une telle redevance peut être suspendue tant que l'entreprise travaille réellement sur la substitution (mesure 6). La communication au sein des chaînes d'approvisionnement via la communication et les échanges d'information (meilleures pratiques) a été identifiée durant la consultation comme un élément important pour une substitution durable. Cet aspect est au cœur de la mesure 7.

Finalement, comme mentionné, le cadre général de l'économie verte continue de se développer ; les entreprises doivent dès lors faire face à de multiples défis vers une économie durable. Contribuer à l'objectif de remplacé les SVHC par des alternatives plus sûres et pour la compétitivité des entreprises belges, elles doivent être en mesure de trouver des solutions holistiques assurant un bon équilibre entre les différents objectifs de l'économie durable. Les mesures 8 à 10 ont été proposées en ayant cette considération à l'esprit.

La phase finale du projet a été **l'évaluation socio-économique des mesures/instruments politiques pour promouvoir la substitution des SVHC en Belgique**. Cette analyse socio-économique (ASE) a été effectuée selon une **analyse multicritère (MCA)**. La MCA évalue les mesures de gestion politique pour leur efficacité à atteindre la substitution, leur incidence financière, les incidences sur la santé, l'environnement et la durabilité, leur praticabilité, et les incidences plus larges de redistribution. Un ensemble d'indicateurs de performance ont été utilisés pour ces cinq 'attributs'. Chacune des critères d'évaluation a fait l'objet d'un score basé sur l'analyse qualitative sous-jacente et agrégés pour chaque attribut qui constitue la base du classement des mesures. Trois scénarios de mesures de gestion politique ont été considérés comme présentant des différences entre objectifs politiques et priorités politiques. Le premier scénario suppose que les attributs ont une même importance, le scénario 2 suppose que l'efficacité est la principale priorité et le scénario 3 a également l'efficacité comme objectif principal

mais avec une attention accrue à la compétitivité (qui est un des critères de jugement sur les aspects distributifs plus larges).

Les indices utilisés incluent les rapports des phases 1 à 3 du projet, l'enquête auprès de l'industrie couvrant les 10 mesures and un parcours de la littérature pertinente. Vu le taux de réponse réduit de l'enquête auprès de l'industrie, les analyses et conclusions se fient davantage sur l'information de la littérature à côté de la théorie économique. Les résultats de l'ASE tels que présentés au tableau 3 ont montré que certaines des mesures sont imbriqués, en particulier les mesures/instruments 1 à 6 ainsi que les mesures/instruments 8 à 10 ce qui signifie qu'ils contiennent des éléments qui se chevauchent. Par exemple, la mesure 4 contient des éléments des mesures 1 à 3 avec l'addition d'un subside. Lorsqu'il y a un classement plus élevé pour certaines mesures (comme la mesure/instrument 5 qui inclut des éléments des mesures 1 à 3) ceci peut être interprété comme signifiant que les éléments additionnels améliorent l'efficacité de la mesure dans son ensemble.

Le tableau 9 présente le classement final de chaque mesure pour les 3 scénarios politiques où 1 indique le résultat le plus élevé et 10 le résultat le plus faible. Le classement et les résultats sous-jacents sont basés sur une application de chaque mesure prise isolément.

Tableau 9: Classement global des mesures/instruments selon les scénarios

	Dénomination de la mesure/instrument	Rang Scénario 1	Rang Scénario 2	Rang Scénario 3
1	Notification obligatoire de l'utilisation	10	10	10
2	Plan d'action de substitution pour les substances priorisées comme hautement intéressantes pour la Belgique	9	7	7
3	Soutien non financier pour la notification de l'utilisation et/ou le développement du plan d'action de substitution	2	3	2
4	Un subside au plan d'action de substitution	1	2	1
5	Redevance annuelle pour l'utilisation d'une SVHC	5	1	3
6	Un système de redevance modulaire	8	4	4
7	Sensibilisation et facilitation de réseaux	4	6	6
8	Développement d'une méthodologie et d'une structure de soutien à l'analyse des alternatives sous l'angle de la durabilité	6	8	8

	Dénomination de la mesure/instrument	Rang Scenario 1	Rang Scenario 2	Rang Scenario 3
9	Soutien direct aux entreprises impliquées par un subside aux services de conseil (niveau d'aide 1)	7	9	9
10	Soutien direct aux entreprises impliquées par un subside aux services de conseil (niveau d'aide 2)	3	5	5

Note du tableau :

- Le code de couleur indique le niveau le résultat plus élevé (vert) et le plus bas (rouge)
- Les mesures imbriquées étaient les mesures 2,3, 4, 5 et 6 qui incluent la mesure 1. Les mesures 3,4,5 et 6 incluent la mesure 2. Les mesures 4,5, et 6 incluent la mesure 3. Les mesures 9 et 10 incluent la mesure 8.

Les mesures/instruments 3 et 4 sont dans le top 3 des mesures sous tous les scénarios, ce qui indique qu'elles sont globalement des bonnes candidates pour une mise en œuvre en Belgique, si des compromis tels que sur les implications budgétaires sont acceptables. Sous le scénario 2, où l'efficacité est l'attribut priorisée, la mesure/instrument 5 serait la solution préférée. Par contraste, les mesures/instruments 1 et 9 sont les options les moins préférées, en particulier dans les scénarios où l'efficacité a un poids plus important. Il est peu probable que ces mesures seront bénéfiques si elles sont mises en œuvre de façon isolée.

Certaines des mesures sont de meilleures candidates pour un 'paquet de mesures/instruments politique' plutôt qu'en tant que mesure isolée. Des alternatives de définition des mesures et les effets de synergie ont dès lors été brièvement explorés dans la section 5.6. Il a été constaté que l'efficacité globale et les incidences positives des mesures/instruments basés sur des obligations (par exemple le développement d'un plan d'action de substitution) pourrait être augmentée fortement par des mesures de soutien (par exemple le soutien non-financier et/ou le réseautage). Les obligations produisent des incitations directes à la substitution de par les contraintes ajoutées sur des acteurs concernés tandis que les mesures de soutien est probablement capable d'accroître le taux de conformité et de réduire les coûts des entreprises dans le temps. Les données transmises en application des obligations (par exemple la notification des utilisations et des plans d'action de substitution) contiendront des informations d'une meilleure qualité sur une assistance et fournie.

Le projet **BEP4CAL** a montré qu'une approche conduite par les données pour identifier les substances prioritaires (et plus encore les combinaisons substance/usage) sujette à des mesures/instruments politiques de support à la substitution en Belgique formaient un vrai défi parce que (i) la conclusion de l'établissement de priorités est très largement dépendante des données disponibles qui restent actuellement très limité, (ii) les utilisations de SVHC en Belgique sont très diverses et une liste prioritaire ne peut résoudre qu'un nombre limité de cas. De plus,

toute forme de liste prioritaire provoquera vraisemblablement des contestations dans le public et des débats qui ne contribueront pas tellement à la substitution elle-même, surtout en cas de conséquences négatives (p.ex. des taxes) pour lesquelles ces listes seraient sujet à controverse. En ce sens, les mesures verticales qui visent directement une substance spécifique ou des cas de substances/utilisation seront toujours plus difficiles à mettre en œuvre et auront un effet moindre par rapport à des mesures horizontales visant un groupe de substance ou de cas de substances/utilisation à moins que les données disponibles pour la priorisation soient bien plus fines et extensives.

Il est important de noter que les conclusions de cette étude peuvent changer si simplement quelques SVHC sont ciblées par des mesures/instruments politiques ou si différentes combinaisons ou descriptions de mesures avaient été évaluées.

Abbreviations

ARNE	Agriculture, Natural Resources and the Environment
BEP4CAL	Belgian Plan for Chemical Alternatives
CAS	Chemical Abstracts Service
CL	Candidate List
CLP	Classification, Labelling and Packaging
CONS	Consumer Uses
CN	Combined Nomenclature
CSR	Chemical Safety Report
ECICS	European Customs Inventory of Chemical Substances
EEA	European Environment Agency
EQS	Environmental Quality Standards
EU	European Union
FLEHS	Flemish Environment and Health Study
FR	Flame retardant
HBM4EU	European Human Biomonitoring Initiative
IMEC	International Maritime Employers' Council
IPCC	Intergovernmental Panel on Climate Change
LOD	Limit of Detection
LOQ	Limit of Quantification
OECD	Organization for Economic Cooperation and Development
OVAM	Openbare Vlaamse Afvalstoffenmaatschappij
PAH	Polycyclic aromatic hydrocarbons
PFAS	Per- and Polyfluorinated Substances
PFHxS	Perfluorohexane sulfonate
PFNA	Perfluorononanoic acid
PREMISS	Priorisation of emerging chemical compounds in soils
PROF	Professional Use
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
SDS	Safety Data Sheet
SPW	Service Public de Wallonie

SVHC	Substance of Very High Concern
TARIC	Tariff of the Community
VLAREM	Vlaams Reglement betreffende de Milieuvergunning
VMM	Flanders Environment Agency
WEISS	Water Emission Inventory Support System

Definitions

REACH	The Regulation ((EC) No 1907/2006) on the registration, evaluation, authorisation and restriction of chemicals (REACH) is the main EU law to protect human health and the environment from the risks that can be posed by chemicals
Authorisation	The authorisation process aims to ensure that substances of very high concern (SVHCs) on the Candidate list are progressively replaced by less dangerous substances or technologies where technically and economically feasible alternatives are available. Substances on the Authorisation Annex XIV shall not be produced or imported in(to) the EU unless specifically authorised for very specific use(s) for a remaining, limited number of years.
SVHC	A chemical substance (or part of a group of chemical substances) that has been identified to have serious effects on human health and the environment which it has been proposed that use within the European Union be subject to authorisation under the REACH Regulation.
Candidate List of SVHC	List of all SVHC, each SVHC is a potential candidate for authorisation under the REACH Regulation

PHASE ONE: MANUFACTURE AND USE OF SVHCs IN BELGIUM

Lead Authors

Natasha Wauters- VITO
Jos Bessems- VITO

Supporting Authors

Hiram Moerman -Apeiron Team
Emily Mwangi- Apeiron Team

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1 Introduction

As a result of the implementation of The Regulation ((EC) No 1907/2006) on the registration, evaluation, authorisation and restriction of chemicals (REACH), there is a lot of information available at a higher level indicating the use of Substances of Very High Concern (SVHCs) across the EU. Companies in the European Economic Area (EEA) are legally obligated under the REACH regulation to collect information on the properties and uses of substances they manufacture or import above 1 ton per year. Downstream users within the EEA and in this case, Belgium, should communicate their uses to the registrants and, in return, for hazardous substances, they will typically receive information on the safe use of the substance via a safety data sheet (SDS). Beside the data generated as a result of the REACH implementation, a lot of data is available on the use and occurrence of substances in general or for specific substances. This data can be in scientific literature or databases managed by authorities or other organisations (e.g. drinking water manufacturers).

In the RDC report, several examples were provided of how the collection of the use and conditions-of-use data was done elsewhere. However, the BEP4CAL project aimed to be more data driven. Thus, in a bid to understand which harmful substances could be considered for substitution in Belgium, the first step was to identify their manufacture and use in Belgium. The exercise to map out the uses of SVHCs in Belgium was done in two parts. The first part began with screening the publicly available data from the European Chemicals Agency (ECHA) database and other public sources. The various sources consulted were used to develop an inventory of the substances identified to be used in Belgium. In the second part of the exercise, the list was e validated through stakeholder consultation. Figure 1.1 shows the concept applied.

The approach used in this project to document the current use of SVHCs in Belgium started from the substance itself. The substance-based approach is closer to existing regulations on the use of chemicals which allows the identification of the uses and to integrate any policy measures in existing policy frameworks. A different approach could be to start from the industrial activities in Belgium (now or in the future). This approach is commonly used to identify industry sectors of strategic importance and to focus efforts on these. While the benefit of this approach, also referred to as a “systems approach”, was acknowledged, for new and developing industrial areas such as mobility, hydrogen (H₂) based industry, digitalisation, etc, this approach seemed less suitable for the legacy uses of SVHC in many different sectors and for many different uses.

In this substance-based approach, the substance considered were analysed from different angles:

- Manufacturing: The extent to which the Belgian Industry is involved in the manufacturing of the substance.

- Downstream use: The extent to which the Belgian industry depends on or is involved in the use of this substance
- General public: The extent to which the public, directly or potentially indirectly is exposed to these substances because of their presence in the environment?

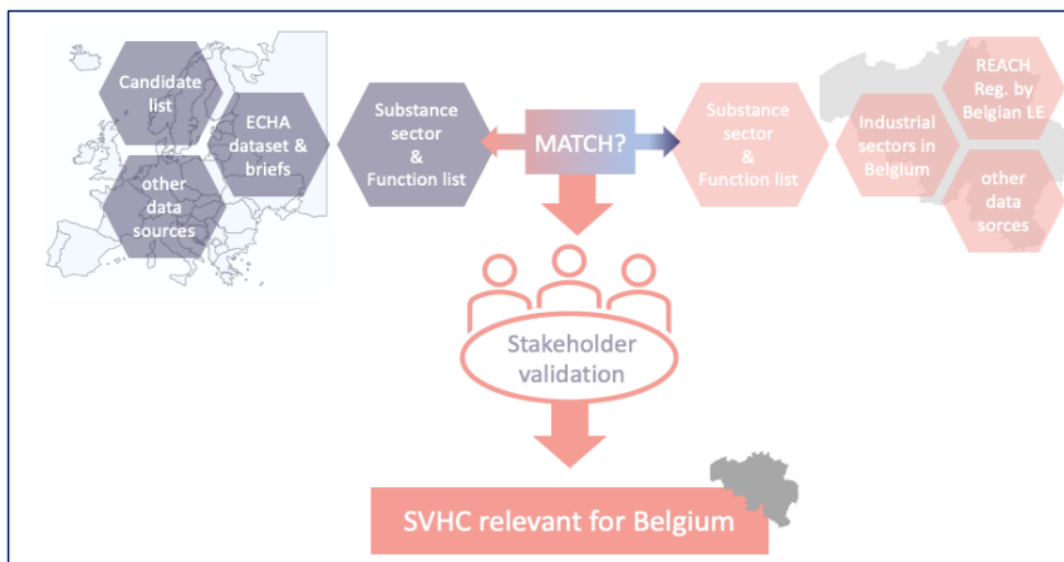


Figure 1.1: Concept for SVHC use in Belgium

1.1 Objective

The aim of the first phase of the project was to develop, document and apply a methodology to identify the manufactured and key uses of SVHC's in Belgium. This step entailed conducting a data mining process, data modelling and the development of an in-house intermediate data base for the collection and storage of the data needed to prioritize the most relevant sectors manufacturing and using SVHCs. The selection of the actual data needed was based on various relevance criteria. The developed database containing the concrete data would allow, in addition to the identification of manufacturing and use of SVHCs, the selection of filters and application of the multi-criteria assessment required for prioritization.

1.2 Structure of the report

This report is divided into the following sections:

- Chapter 2 details the methodology as well as the project design options and the substances that were in scope of the project.
- Chapter 3 describes public data sources that were consulted.
- Chapter 4 gives an overview of the information received from the stakeholder surveys that were done and the findings from the exercise.

- Chapter 5 provides the conclusions of the report.
- Chapter 6 details the challenges that were encountered in the data collection process
- Chapter 7 provides the lessons learnt and recommendations.
- Appendices A-F provides the lists of all the substances that were mentioned in chapter 3.

2 Methodology

Various data sources were consulted during the project to collect information on the manufacture and use of SVHCs in Belgium. The methodology adopted for the first phase of the project was made up of the following main steps:

- Project design options
- Definition of scope
- Identification of data sources
- Data collection from different sources
- Data analysis and evaluation

The data from the different sources was combined to create an overview of the substances per environmental compartment (air, water and soil), human biomonitoring, substances from trade statistics and feedback from industry stakeholders on which SVHCs they were involved with. For the substances from environmental monitoring, certain measured substances were used as (worst-case) indicator for related CL substances. For this, a distinction was made between substances that were measured and Candidate List (CL) substances that were detected. Substances were measured and detected, measured but not detected (either concentration was zero or the concentration was below the limit of detection/quantification (LOD/LOQ) or measured but measurements were not reported. The project team considered a substance to be found in an environmental compartment when one source reported a concentration above zero.

As will be demonstrated based on the data collected, the use of SVHCs in Belgium is very disperse: many different companies use various substances for different technical functions, for various end products in different sectors. Based on this, no single level of clustering could capture any sizable group of SVHC to be targeted for one or the other policy measure. However, it is important to note that this does not exclude the possibility to cluster SVHC uses in groups, although this grouping would be opportunistic. For some substances the technical function will be the driving force (e.g. solvent, softener etc) for others the process itself could be a basis for clustering (e.g. electroplating for Ni, Cr, B, PFAS etc) yet other substances could be clustered on the end product (e.g. PVC).

Given this context, the best approach for the project was decided to start with a substance-based approach to collect data on the use of SVHCs in Belgium.

2.1 Project Design options

The BEP4CAL project was developed based on design options which were then used to further define the scope of substances of very high concern to be covered. The design options were:

- The project was **substance based**. The analysis of the uses and the assessment of the policy measures was based on the substitution of substances. The motivation for the project's choice was that it was closer to the existing legislations which made it easier to integrate additional policy measures. It was expected that this approach would allow for the identification of policy measures which can be implemented much quicker and hence have a faster impact on substitution. This does not exclude that technology thinking (e.g. energy transition for mobility) could also yield relevant policy measures.
- The harmful substances were limited to substances included in the REACH **Candidate List** (CL). The CL defines in the first instance substances for which the option for substitution is seen as the best one to manage the risk. However, over time, the CL was also used as criterion for other purposes such as the notification of articles in the database on Substance of Concern in Articles (SCIP) which made the motivation of inclusion of a substance in the CL no longer limited to substitution as such. Nevertheless, it is a list which provides a solid legal basis for identifying substances in scope of the project.
- In the same logic, substances with an **intermediate use only**, which are not subject to the REACH authorization process were **excluded** from the scope of the project. As these substances are excluded from authorization, it can be concluded that for these substances, substitution is not seen as the most appropriate risk management measure.
- The project was **data driven**. As much as possible, choices, options and conclusions are based on data. While this provided a solid basis for the project, its validity also depended on the availability and quality of data. If data was insufficient to move forward in the project and assumptions needed to be made, this was indicated as such.
- The project aimed at **developing policies to support informed substitution and avoid regrettable substitution**. The project did not evaluate whether substitution would be the best option to achieve the fastest reduction of risk. As such, the project did not propose policy measures aimed at the reduction of risk by other means than substitution.

2.2 Scope of Substances of Very High Concern

The scope of the project thus covered substances recognized by the European Chemicals Agency (ECHA), as the most harmful to the environment and human beings through their manufacture and use. These substances comply with the criteria of Art 57 of REACH.³ However, substances complying with Art 57 of REACH also include substances for which restrictions have been defined. These substances may not be included in the CL. While in theory these substances should be included in the scope of the project (as they are SVHCs), it can however not be ignored that the European Commission has opted for specific measures for these substances which do not include an expectation of substitution for the restricted uses.

³ Article 57 of REACH Regulation (EC) No 1907/2006 defines the criteria for a substance to be considered a SVHC. These criteria therefore determine the inclusion of substances on the CL and subsequently annex XIV. Article 57 describes six criteria: (a) carcinogenicity category 1 or 2, (b) mutagenicity category 1 or 2, (c) reprotoxicity category 1 or 2, (d) persistence, bioaccumulation and toxic (PBT), (e) very persistent and very bioaccumulative (vPvB), (f) endocrine disrupting properties or PBT or vPvB properties not fulfilling (e) with equivalent concern to the other criteria for human health or environment (<https://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:136:0003:0280:en:PDF>).

If that would be the case, the substance will be included in the CL and would have been in scope of the project. In cases where the restriction does include a ban for a specific use, this ban is defined on the basis of an assessment of alternatives and supported by a socio-economic analysis of the measure. And in that sense the substitution pathway is available. In conclusion, substances included in Annex XVII of REACH and not on the Candidate List are out of scope of this project.

On the other hand, all substances in Annex XIV of REACH are also included in the CL. For these substances the regulatory fate is also clear and in a certain sense, substitution is already expected to occur. However, for these substances, no analysis of alternatives nor a socio-economic analysis has been made by the European Commission. It is the obligation of an applicant for authorisation to provide this information. For several of the use cases of these substances, applicants have demonstrated that no suitable alternatives are available yet and in that sense for these cases the substitution pathway has not been established yet. For this project, Annex XIV substances on the CL were regarded as being in scope.

There are also substances meeting the criteria of Art 57 which are not on the CL. For instance, the SIN list compiled by the NGO Chemsec includes substances with endocrine disruptive properties, which as such potentially meet the criteria of Art 57 (f) (equivalent concern) but are as such not included in the CL. Evaluation by ECHA and the Member States of substances on whether they meet criteria of Art 57 are done on a case-by-case basis and scientific evidence, volumes on the EU market (as proxy for exposure), the uses and possible alternatives are considered. This could be reason as to why Chemsec might find that a chemical fulfils a criterium of Art 57, while according to the official evaluation procedures of REACH ECHA does not include the substance in the CL. Due to the regulatory uncertainty, the additional substances on the SIN list were not considered for the project scope. To do so would have increased the complexity of the project significantly.

Although the compliance with Art 57 criteria of REACH can be based on a self or harmonized classification, the inclusion of a substance into the CL not only requires that the substance meets the criteria of Art 57 of REACH but is also identified, through a formal, legal based procedure, as a substance for which substitution could be the most appropriate risk management measure. As such a solid legal basis is constructed for the identification of policy measures for the substitution of substances.

Figure 1.2 below provides an overview of the substances covered within the scope of the BEP4CAL project.

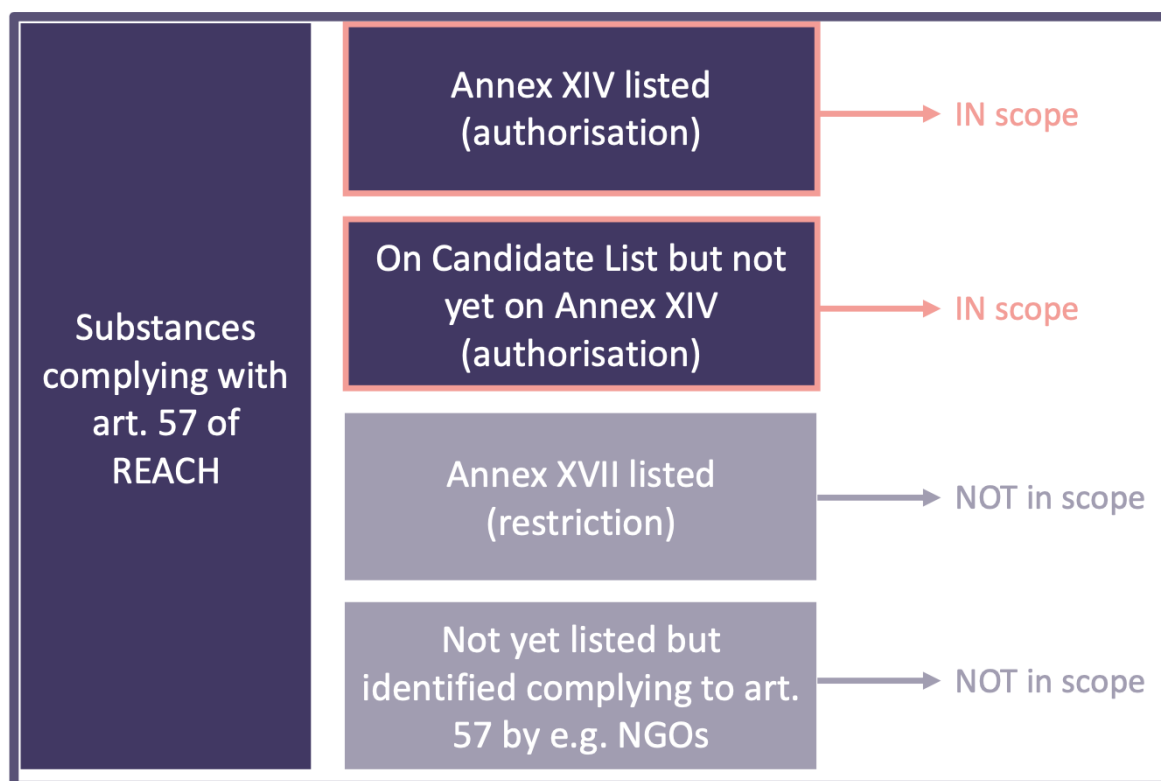


Figure 1.2: Overview of substances within scope of the BEP4CAL project

A description of the various data sources on different substance related information is provided in the next sections.

3 Public Data Sources

As noted in the introduction, the first step to identify the substances relevant for Belgium began with screening the publicly available databases containing substance information. One of the largest sources of substance registration information is the ECHA database. Environmental and biomonitoring sources within Belgium were consulted to provide information on substances detected in the Belgian environment and population respectively. Trade data was also obtained from the trade inventories to indicate the flow of substances in and out of Belgium.

Chapter 2 of this report outlines the substances within the scope of the project, the agencies contacted, the relevance of the data requested from the various sources and the results of the data collection phase after applying the exclusion and inclusion criteria. The results capture feedback on environmental monitoring, biomonitoring and trade statistics.

3.1 Information on CL substances in Public Databases

3.1.1 ECHA Registration data

The most comprehensive source in Europe on the properties and use of substances is the ECHA database. This database is fed with registration data from the registration dossiers submitted by manufacturers/importers. Registration dossiers need to be submitted for all substances with manufacture or import above one tonne a year and contains information about hazard information, an assessment of the risks associated with the use, etc. The information required in the dossiers depends on the volume of the substance and the higher the volume the more information is required, the type of use (e.g. intermediate or not) or the hazard (can defining the need of a risk assessment).

Limitations of ECHA registration data

The ECHA database contains information on uses, volumes, identity of the registrant, use conditions, regulatory status, etc. However, the publicly available data from ECHA had shortcomings. Firstly, only a part of this information is publicly available. For instance, the exposure assessment documented in the CSR only partially disseminated but is as such not publicly available. Only the generic exposure categories are available.

The information which is available on the ECHA website can only be approached substance by substance. It was not possible to use the data in this format in a project aiming to map the use of many substances. Assistance was requested from ECHA to provide some, publicly available data, in a more convenient way. At the time of Phase one, this was not provided due to resource constraints at ECHA. Some data was provided later by ECHA but did not change the data set for prioritization but showed that indeed the data available to ECHA can be extracted in a more efficient way than done in this project.

Secondly, the registration of a substance by a Belgian legal entity does not mean that the substance is manufactured or imported in Belgium. In several cases, the registration was done

by an Only Representative (OR)⁴ for a substance, which does not indicate that this substance is effectively used or handled business wise in Belgium. This information is available at ECHA and could have been used to refine the list of relevant substances for Belgium, however, it is not publicly available.

Thirdly, the imported or manufactured volumes of the registered substances registered by the Belgian registrants are likewise not available to the general public. Moreover for the manufactured substances, this information would put the relevance of the substance to Belgium in a more detailed perspective.

To overcome this, a web crawling was developed for the ECHA database to extract additional registration related data. This data was used to replace some of the less accurate data of the SINList (see Section 3.3). This method was used in absence of data which could be provided directly by ECHA.

This approach was also tested to collect use related data from the ECHA database. The data included information on the use conditions (process category (PROC) and environmental release category (ERC)), on the sectors of use, article categories and product categories. However, because of the complexity of this data, it was not possible to retrieve the publicly available data in a meaningful and reliable way from the ECHA database. Instead, for the most relevant substances, the interpretation of this information mentioned on the substance factsheets was used.

In summary, while a lot of information is available in the ECHA registration database, it was not possible to retrieve data on Belgian level providing details on uses, use conditions or use volumes. Some of this data was too complex to retrieve (support from ECHA could overcome this), some information is not publicly available (but available to the Member State Belgium) but some information is not collected (who is using which substance under which conditions at which volumes). For the latter, only additional reporting obligations could overcome this.

3.1.2 Candidate list of substances of very high concern for Authorisation

The “Candidate list of substances of very high concern for inclusion in annex XIV of REACH” is a list of substances that have been identified as an SVHC and could potentially become subject to authorisation. For a substance to be identified as an SVHC a European Member State or ECHA needs to propose the substances to be identified. When a substance is proposed, it is included on the registry of intentions before the proposal for SVHC identification is submitted. The proposal is prepared following the provisions in Annex XV of REACH. This

⁴ An Only Representative (OR) is a European based representative appointed by companies outside the EEA to take over tasks and responsibilities of importers for complying with REACH. OR have to be a natural person or legal entity established physically in the EEA and equipped with sufficient knowledge in the practical handling of the substances and information related to them. (<https://echa.europa.eu/support/getting-started/only-representative>)

proposal includes justification for the proposal and information on volumes on the EU market, uses and possible alternatives. Substances are identified as SVHCs based in the Article 57 criteria of the REACH legislation.

Once a substance is identified as an SVHC it is included in the CL. This inclusion brings immediate legal obligations for suppliers of the substances, including supplying a safety data sheet, communication on safe use, responding to consumer requests within 45 days and notifying ECHA when an article they produce contains an SVHC in quantities over one tonne per producer/importer per year and when the concentration of the SVHC in that article is above 0.1% w/w⁵.

The ECHA Candidate list, at the time it was downloaded for the project⁶, contained 445 individual entries, these entries were grouped in 224 groups. It proved difficult to work with the 445 individual entries because in several cases only a few of the substances in one group are REACH registered, which is key for communication with the supply chain.

Some information apart from substance name is already provided in the download of the candidate list: CAS No. and EC No., and the reason for inclusion. Description is ideally also provided, however for the majority of the substances on the CL it is not filled in. Reason for inclusion gives information about the inherent properties of the substance, which are also used by ECHA in their prioritization for inclusion in Annex XIV.

Additional information on CL substances was, therefore, obtained from the REACH substance factsheets. These factsheets were used to extract as much data on the substances as was possible. For instance, the disseminated registration dossiers provide basic administrative information, including all registrants' names and the registration status of substances. From this, Belgian registrants of CL substances were identified. As such 73 CL substances with a Belgian registrant were identified. It is important to note that for those substances that have both an intermediate and full registration, only the registrants for the full registration were considered in this total (Table 1.1).

Table 1.1: CL Substance data from the ECHA database

Data source	ECHA substance factsheets; Candidate List
N°. individual substance entries	445
N°. of grouped entries	224
N°. of Belgian enterprises having registered a CL substance	83

⁵ <https://echa.europa.eu/substances-of-very-high-concern-identification-explained>

⁶ The candidate list was downloaded in May of 2022 and used as such during the whole of the project. Any substances that were added after this date were not regarded in the project. When the candidate list or SVHCs on the CL are referred in this report it is the CL as it was at the time of the download. The number of individual entries and groups mentioned here can therefore differ from the number of entries the candidate list contains at the time of reading.

Data source	ECHA substance factsheets; Candidate List
N°. of Belgian registrations of CL substances	208
N°. of CL substances relevant to Belgium identified	73

Limitations of the dataset

While potentially the so-called Annex XV dossiers could contain a lot of relevant information for the project, this information is only available in full text and as such not possible to retrieve in an efficient way. Additionally, some information can be misleading. The registered volumes as known by ECHA are not per se an accurate indication of the use of the substance. First of all some of the volumes are exported and not relevant for use phase in the EEA but also the registered / imported volume does not provide any information on the volume per use.

While the key purpose of the CL is to communicate the substances which have the potential to be included in Annex XIV of REACH, and hence substances for which substitution has been identified as the most appropriate regulatory measure, because of other obligations for substances on the candidate list; the justification to include a substance in the CL is no wider than substitution only. However, for the purpose of the project, the interpretation is such that substances on the CL are substances for which substitution is a relevant risk management measure.

3.1.3 Annex XIV of REACH (Authorisation list)

Substances can be added to the candidate list when they are identified as SVHC according to Art. 57 (see section 2.2). The initial purpose of the CL was to identify these substances for which an inclusion in Annex XIV of REACH (authorisation list)⁷ is possible. Such an inclusion involves a prioritization, recommendation and finally a decision by EU-Com.

Prioritization

A substance can be recommended for inclusion in Annex XIV based on ECHA's prioritization process. This prioritization process is conducted based on a set of standard criteria (see Figure 1.3). These criteria are based on substance specific information including inherent properties, wide dispersive use and volume. SVHCs are prioritized using a score-based system. In this system, substances with inherent properties that are considered persistent, bioaccumulative and toxic (Art 57(d)) or very persistent and very bioaccumulative (Art 57(e) in conjunction with an additional inherent property, such as reproductive toxicity, receive the highest score. Similarly, SVHCs produced/imported with the highest volume receive the highest score. Wide-dispersive use is based on considering the dominant use scenario the substance: industrial

⁷ The authorisation process aims to ensure that substances of very high concern (SVHCs) are progressively replaced by less dangerous substances or technologies where technically and economically feasible alternatives are available. (<https://echa.europa.eu/substances-of-very-high-concern-identification-explained>)

use (IND), professional use (PROF) and consumer use (CONS) where consumer use is scored the highest (Figure 1.3). These three scores are added up to a final score. This score is combined with further relevant considerations such as grouping with other substances or other elements to come to the conclusion to either recommend inclusion on Annex XIV or not.

Inherent property	Category	Score
57(a) <i>or/and</i> 57(b) <i>or/and</i> 57(c) <i>or/and</i> 57(f) ^{4,5}	low	1
57(f) (ED)	medium	7
57(d) <i>or</i> (e)	high	13
57(d) <i>and</i> (at least) one other SVHC property	high	15
<i>or</i> 57(e) <i>and</i> (at least) one other SVHC property	high	15
Tonnage	Category	Score
<i>no volume</i>	zero	0
<10 t/y	very low	3
10 to <100 t/y	low	6
100 to <1,000 t/y	medium	9
1,000 to <10,000 t/y	high	12
≥ 10,000 t/y	very high	15
Use type	Category	Score
<i>no use</i>	zero	0
IND	low	5
PROF	medium	10
CONS	high	15

Figure 1.3: Prioritization for authorisation scoring system. Source: ECHA

While the outcome of the prioritization process was not relevant to map the uses of CL substances in Belgium, the data used was relevant and the result of the prioritization process was relevant in the prioritization within this project.

For that purpose, the data and results of the ECHA prioritization process was included in the substance dataset of this project. In the absence of use specific data for Belgium, the use related information used in the ECHA prioritization process was taken as relevant for Belgium. For instance, if ECHA had identified the use of the substance as “wide dispersive”, this conclusion was also retained for the use in Belgium.

3.1.4 Limitations of the prioritization dataset

Unfortunately, the prioritization process has not been completed for all CL substances. Where possible, the dataset was manually completed using information of the disseminated registration dossiers. As such, a full data set was obtained which could be used in Phase 2 of the project. Based on the ECHA scoring system (Figure 1.3), the project team calculated prioritization scores for the CL substances that had not gone through the prioritization process.

Obviously, this process could be more efficient by using directly available data in the ECHA databases.

REACH Annex XIV

It is important to note that when an SVHC is included in Annex XIV, it is not removed from the CL. Once an SVHC is included on Annex XIV it will receive a sunset date from which the placing on the market and use of the SVHC is prohibited unless an authorisation is granted. This entails that for specific uses (for which authorisation was requested), the SVHC can be used after the sunset date. The duration of an authorisation is determined on a case-by-case basis because various factors including but not limited to substitution research and implementation period.

The ECHA website provides an up-to-date overview of the substances for which an applicant located in Belgium has obtained an authorisation and a list of notifications of the use of a substance which is on Annex XIV and for which an authorisation has been granted (Art 66-notifications). The individual names/addresses of companies that have applied and been granted an authorisation for an Annex XIV substance⁸ are available on the ECHA website. The names of the companies having notified the use of Annex XIV substance are in most cases claimed confidential. In Belgium, there are seven substances used that are on Annex XIV notified by 60 different companies as shown in Table 1.2.

Table 1.2: Annex XIV substances authorised and used in Belgium (sources ECHA list status end 2022)

Data source	For Belgium
No. of enterprises with an authorisation granted	7
No. of authorisations granted (uses)	13
No. of substances on Annex XIV for which and authorisation is granted	8
No. of enterprises with an active art 66 (DU) notification	(confidential)
No. of active art 66 notifications	60
No. of SVHC for with an active art 66 notification in place	7

Because the only function this data set has within the project is to exclude certain substances, the available data was deemed sufficient.

3.2 SCIP database

Whereas the ECHA registration database provides information on the substances, it does not provide any information on the presence of CL substances in articles. However, articles can

⁸ https://echa.europa.eu/documents/10162/17229/authorisation_decisions_status.xlsx/61e0f1bf-64cb-53a5-7749-b62cb410566a?t=1631607274344&download=true

be a major pathway for exposure and emissions and the use in articles can also indicate the socio-economic relevance of a substance.

For this purpose, legislation was implemented which involves a mandatory notification of putting on the EU market articles containing substances on the CL in a concentration above 0,1%. Although the database does not provide country specific information, for this project, based on the open European market, it was assumed that the use of CL in articles, as notified in the SCIP database would be relevant for Belgium.

3.2.1 Limitations of the SCIP database

The SCIP database contains a huge number of notifications done over time. However, the database does not allow a structured query of the number of notifications per article type. Such a query is relevant to understand better the potential of exposure in the use phase of a substance. However, the SCIP database was in the first instance designed on the interface between waste legislation and product legislation, specifically to support the safe handling of the article at the end of their useful life.

ECHA, who had published earlier detailed studies on the content of the SCIP database, was requested to support the project on this matter and specific queries were proposed. However, this was not possible due to resource constraints of ECHA to support the project. This could by itself already indicate that a query of the SCIP data base is, even for ECHA, not a trivial exercise. To allow progression of the project, the SCIP database was manually queried on the number of factsheets submitted for a subset of the CL substances. A query for the full CL was not done as this was not relevant in the prioritization strategy.

3.3 SIN List

The SIN List is a substance list published by the International Chemical Secretariat (ChemSec), a Swedish NGO. The SIN List is not managed by ECHA, but it contains data from the ECHA databases. The SIN List contains substances for which ChemSec considers substitution is required. The list is based on the ECHA data and as such does not contain new data, but the data is presented in a very convenient way.

3.3.1 Limitations of the SIN List

Sample testing of the list showed that the data on the list is not always accurate. This could be due to changes in registration data but also because of the complexity of the registration process, substance identity and entries on various regulatory lists which are difficult to capture in a simple Excel format. In the absence of the availability of a similar structured overview of these substances, the SIN List was used initially to complement the data from ECHA (e.g. names of registrants). However, in a later stage of the project, the data was retrieved from the ECHA website by the project team and as such the SIN List was not part of the final dataset.

3.4 Belgian Poison Centre

Whereas the ECHA registration database provides information on substances and the SCIP database on articles, the national poison centres have information on harmful substances in formulations on the Belgian market.

The Belgian Poison centre is notified of formulations put on the Belgian market which are harmful (on the basis of EC 1272/2008, the Classification, Labelling and Packaging (CLP) regulation⁹). Chemical composition and all necessary information needed by the Belgian Poison Centre in order to execute their tasks needs to be transferred. This is a legal obligation implemented in Article 2 of the Royal Decree of 21 April 2016, which was published in the Belgian Official Gazette ('Beglisch Staatsblad') on 9 May 2016.

Following information was requested by the project team from the Belgian Poison centre:

- CL substances notified as a constituent of a formulation
- The number of notifications for each of the CL substances
- The number of notifications for professional use for each of the notified CL substances
- For each of the notified CL substances, the number of type H (household), I (Industrial) and P (paint) notifications

3.4.1 Limitations of the Poison centre dataset

The Belgian Poison Centre was contacted but was not able to provide the data requested citing confidentiality reasons. Hence, this data could not be used in the project. However, within the context of a prioritization process run by the authorities, it can be assumed that some sort of access to this data could be possible. In fact, only the identity of the substance and the concentration in the formulation would be relevant for the mapping of the use of CL substances in Belgium. For the prioritization of the CL substances, information on volume would be required. This information is however not present in the poison centre database.

3.5 Trade statistics

The [European Customs Inventory of Chemical Substances](#) (ECICS) allows for certain substances to find the correspondence between the EC numbers, the CAS or CUS numbers and the corresponding codes of the Combined Nomenclature (and with some other nomenclatures). The European Combined Nomenclature¹⁰ (CN) even in its form of the integrated Tariff of the Community ([TARIC](#)) with its TARIC codes (not the Belgian Use version ([TARBEL](#))) does not presently allow to separately identify the SVHCs.

⁹ The purpose of the CLP regulation is ensuring a high level of protection of health and the environment as well as the free movement of substance, mixtures and articles. It aims to determine the hazard classifications of substances based on their properties. Relevant data such as toxicological data will be used to determine whether a substance meets the CLP criteria, which will determine the hazard classification (<https://echa.europa.eu/regulations/clp/understanding-clp>).

¹⁰ This nomenclature has around 10,000 different entries.

Out of a group of 284 substances with an EC number in the CL, the corresponding CN code was identified for **225** substances on the ECICS database.

Using the same database but starting with the CN codes identified above, it was possible, for a majority of them, to identify all the substances of the EC inventory falling under the CN codes. Frequently, more than 25 substances are included under a single CN code.

For only **17** substances, there was a correspondence of one CN code for only one EC code. Of the latter, 11 substances were registered in Belgium (out of **68** substances identified with their CN code).

For **nine** substances out of the 68 substances registered in Belgium, there was no import in Belgium or less than one ton in 2021 and for eight for what concerns the exports. For the other substances, the trade may concern other substances falling under the same CN-code, so no conclusion was possible.

Table 1.3: Substance data from trade statistics

Data source	ECICS + COMEXT database
No. of substances registered in Belgium	68
No. of substances registered with import data	1

3.5.1 Limitations of the trade statistics data

The data available in trade databases was very limited and at best only provided a first idea of the trade. The situation could be improved if the EU decide to introduce specific codes ('TARIC codes') for the identification of the SVHC, what is, up to now, not on the agenda.

3.6 Permits

Environmental permits in Belgium are responsibility of the respective regions where the installation is located.

In **Flanders**, The European Regulation Industrial Emissions (RIE) (Directive 2010/75/EU) regulates emissions from industry to the environment. Industrial installations are subject to the rules on integrated pollution prevention and control (IPPC) ('geïntegreerde preventie en bestrijding van verontreiniging' (GPBV)). On the [geopunt.be](https://www.geopunt.be/)¹¹ website, all IPPC-installations in Flanders are visualized on a map of Flanders. For each installation, some general information and permit decisions are available.

¹¹ <https://www.geopunt.be/>

When companies need to perform activities falling under class one (activities with the highest risk) and/or two (a slightly lower risk activity) as defined by VLAREM II¹², they need to apply for a permit.

The 'Departement Omgeving' (DOMG, department of the environment) provided a list of all REACH registered substances that have an active permit in Belgium. This list was cross-checked based on CAS numbers which were provided in the data, with the candidate list. This resulted in a list of CL substances with active permits in Flanders. Forty-seven CL substances have an active permit in Flanders (See [Appendix A](#)).

For **Wallonia**, similar authorities responsible were contacted but no response was received.

Table 1.4: CL substance information from permits

Region	Flanders	Brussels	Wallonia
Agency	DOMG	No response	No response
No. of CL substances with active permits	47	-	-

3.6.1 Limitations of the permits data

The dataset underlying the [geopunt.be](#) map is not available on [geopunt.be](#) and it was thus not feasible to check every single document available on the registry. The DOMG of the Flemish government, the owner of the data behind [geopunt.be](#), informed the project team that this dataset was not available in a structured manner. Instead, they provided a list of all companies in Flanders that use substances that are registered under REACH (not only CL substances) and have an active permit.

Another observation was that in the permit application, the companies have to report on their use of REACH registered substances. This information is not verified by the permit agencies, so it is possible that companies do not report the use of REACH registered substances. Additionally, a company that already has a permit is not obliged to actively report it when they start using REACH registered substances. For this project, the active list of permits provided by DOMG was used.

¹² VLAREM ("Vlaams Reglement betreffende de Milieuvergunning") II is part 2 of the decree of the general regulations of the environmental policy ("Decreet algemene bepalingen milieubeleid" (DABM)). VLAREM II is the royal decree that determines the general and sectoral regulations regarding environmental hygiene. The purpose of VLAREM II is to prevent and limit pollution and safety risks caused by potential dangerous industrial installations. <https://navigator.emis.vito.be/detail?wold=263>

3.7 Environmental monitoring

The respective agencies and organisations responsible for monitoring chemical substances in environmental compartments (air, water and soil) in the Belgian regions of Flanders, Wallonia and Brussels were contacted for information on the presence of CL substances in the environment. A list of the organisations and agencies that were contacted and an overview of the process of data collection are presented below.

Data at the **Belgian** level was extracted from a database managed by the European Environmental Agency (EEA) for air and water and from the Prioritisation of emerging chemical compounds in soils (PREMISS) project which was an initiative of the Soil and Land research funding Platform for Europe (SOILveR).

In **Flanders**, the Flanders Environment Agency is the Flemish agency ('Vlaamse milieumaatschappij, VMM) and the Public waste agency of Flanders ('Openbare afvalstoffenmaatschappij voor het Vlaamse Gewest', OVAM) are the agencies that are responsible for the management of air, water and soil respectively. One of the responsibilities of VMM is monitoring pollutants in air and water in Flanders. OVAM is responsible for the sustainable management of waste and materials, with a focus on soil.

The scientific institute of public service ('Institut scientifique de service public', ISSeP) is the sentinel of the environmental quality in **Wallonia**. They monitor all environmental compartments as one of their activities. Data for air quality are available on the website www.wallonair.be. The Public Service of Wallonia ('Service public de Wallonie', SPW) is responsible for implementing policy within various fields in Wallonia such as agriculture, natural resources and the environment (ARNE).

Environment Brussels is the 'Environment and Energy agency' of the **Brussels region** in Belgium. Among their responsibilities is the monitoring of air, water and soil quality.

All these agencies were contacted for potential monitoring data of CL substances. It is important to note that it was made clear that information on the exact location of the measurement was not needed, in case of confidentiality issues (e.g., in case the measurement was done at a specific emission point of a company).

3.7.1 Air

Belgium reports air quality information to the EEA, which is entered in an air quality database¹³. Air quality measurements are available for download on the website. The substances had to be matched via name, since CAS or EC numbers were not included.

The data for Belgium reported to the EEA air quality database showed that of all the substances measured in 2021, **19** were CL substances.

¹³ Air quality annual statistics (measurement based) <https://www.eea.europa.eu/data-and-maps/data/agereporting-9>

For the **Flanders region**, a list of all air pollutants that were monitored every year between 2012 and 2021 was provided by VMM air. The project team decided to only consider those substances most recently measured (e.g. in 2021). Annual measurement data is available on the website of VMM¹⁴. This data was manually cross-checked with the CL and the data of the CL substances was manually extracted.

Some measured substances did not seem to be substances that are actively produced as such. They might be legacy chemicals (not on the market anymore), general anthropogenic substances being side products of anthropogenic activity (such as environmental metabolites (breakdown products), etc. For this project, this possibility was not further scrutinized.

The data provided by VMM and the annual measurement data available online were in Dutch and CAS or EC numbers were not used. Matching the VMM air data with the CL and extracting the data from the website was done manually.

The data for air monitoring showed that in 2021, **18** of the substances measured were CL substances.

For the **Brussels region**, Environment Brussels was contacted for data on monitoring of CL substances in air. They initially responded about more information on what the project required however no further response was provided.

For the **Wallonia region**, ISSeP monitors air quality (PM₁₀, PM_{2.5}, ozone, ...) but had no measurement data on CL substances in air.

Data from all sources were combined to make an overview of the CL substances that were measured in air in Belgium (See [Appendix B](#)).

3.7.2 Water

Water monitoring data for **Belgium** was obtained from the EEA which has data on occurrence of chemicals in European waters and is available in the WISE (freshwater information system for Europe) database¹⁵. This database provides information on surface water bodies (number and size, water body category, ecological status or potential, chemical status, significant pressures and impacts, and exemptions) and about groundwater bodies (number and size, quantitative status, chemical status, significant pressures and impacts, and exemptions). The information is presented by country, river basin district (RBD) and river basin district sub-unit (where applicable). Chemical status is defined as 'either good', which entails that no priority substances exceeded the environmental quality standards (EQS); or 'failing', which means that the priority substances exceeded the EQS. CAS numbers were provided with the data but needed to be manually matched with CL as the data was available online.

¹⁴ <https://www.vmm.be/data/evaluatie-luchtkwaliteit>

¹⁵ <https://water.europa.eu/freshwater/data-maps-and-tools/water-framework-directive-surface-water-data-products/surface-water-chemical-status>

Nine substances of all substances that are included in the WISE database are CL substances. The data showed that for only **two** of those, the analysed water bodies didn't exceed EQS. Meaning that for **seven** of the CL substances included in the WISE database exceedance of EQS was observed. The total percentage of water bodies that exceeded the EQS ranged from 1% for lead and its compounds to 59% for the total of benzo(g,h,i)perylene + indeno(1,2,3-cd)pyrene.

Water monitoring data for the **Flanders region** was provided by VMM water. VMM water transferred all available monitoring data in water and sediment for CL substances based on their CAS numbers between 2017-2022. For each individual measurement either the actual concentration was given, or it was indicated that the measurement was below the limit of quantification (LOQ).

VMM also models emissions to surface water and this is available through the Water Emission Inventory Support System (WEISS geotool)¹⁶. Gross emission in the WEISS geotool is the modelled emissions from every source to the surface water that are emitted at the source. Net emission is the part of the gross emission that actually reaches the surface water. The data included in this project was emission data available for CL substances emitted from industry and other companies, diffuse soil erosion, diffuse atmospheric deposition, households, (corrosion) of infrastructure, agriculture, tourism and recreation (diffuse motor and coating recreational boating) and transport. In the data used, the sewage treatment plant was considered a separate source of emission to surface water. For this particular source, if available, measurements were used to calculate emissions (instead of modelling). Since the data was available via an online tool, the measurements of each SVHC for which data was available was manually extracted. This was done on name, since no other identifiers such as CAS number are included in the tool.

VMM also has data on the quality of drinking water publicly available. All water suppliers, public and private, are obligated to test the water and ensure good quality. Suppliers are obligated to report the quality data to VMM and this data is validated by a government licensed laboratory. The data was organized by supply area and the maximum and median concentrations per measured substance were provided. For each concentration, it was indicated in which percentage interval of the norm value the concentration fell. Matching these substances was done manually based on substance name since CAS numbers were not used and substance names were in Dutch.

The data from the department of VMM responsible for water monitoring showed that in 2021, **45** of the substances measured were CL substances.

Both the WEISS geotool and the drinking water quality data showed that **nine** of the reported substances were CL substances.

¹⁶ <https://weissgeoloket.marvin.vito.be/route>

Environment Brussels was also contacted for data on monitoring of CL substances in water in **Brussels**. They initially responded about more information on what the project required however no further response was provided.

For **Wallonia**, SPW ARNE manages the Aquaphyc network, which monitors rivers, since certain industrial installations are allowed to dispose of industrial wastewater in rivers. We however did not receive any response to our inquire. [Appendix C](#) gives an overview of the CL substances that were measured in water in Belgium. A total of **178** CL substances were measured of which **172** were also detected.

3.7.3 Soil

Soil data for **Belgium** was obtained from data obtained from SOILveR which initiated a project called the PREMISS in 2020. Project PREMISS¹⁷ ran from 2020 until 2021 and was aimed at creating a robust and flexible prioritization prototype for contaminants of emerging concern (CECs) particularly in soil and subsurface media. As part of the PREMISS project, an inventory of the existing data on sources and emissions of CECs (predefined substance groups by the project) was made. The data for Belgium was extracted from the final project report, which was done manually since the data was spread throughout the final report of the project and CAS numbers were not provided.

The inventory of CECs established in the PREMISS project included **three** CL substances.

In **Flanders**, OVAM is the responsible agency for measuring pollutants in soils. Measurements are done in soils that are suspected to be contaminated, usually because of an activity that took place on the soil (e.g., industrial activities). OVAM then determines whether remediation of the soil is necessary. OVAM was contacted for available monitoring data of CL substances in Flanders. OVAM informed the project team that they did not have monitoring data available, but only measurements of specific pollutants in soils with a risk. Additionally, OVAM conducts measurements after remediation to determine whether remediation was successful. Data of all measurements (before and after remediation) is stored together but the measurements after remediation are not labelled as such which means that these measurements are indistinguishable from the rest. This made the data less relevant within the scope of the project and too difficult to interpret to be usable.

Although being a minor activity of OVAM, they have determined background concentrations for a limited set of substances by measuring the concentrations in soils that were not considered suspect for any contamination. However, these measurements are not centrally available but scattered in various reports. These reports were searched for data on CL substances. In addition, these reports were in Dutch and CAS numbers were not used. These hurdles made it time consuming to collect the required data.

¹⁷ <https://www.soilver.eu/news/project-premiss-priorisation-of-emerging-chemical-compounds-in-soils/>

Six substances for which background concentrations were determined by OVAM are included on the candidate list.

For **Brussels**, Environment Brussels was contacted for data on monitoring of CL substances in soil. They initially responded about more information on what the project required however no further response was provided.

For **Wallonia**, SPW ARNE provided a database of substances that have been investigated in soil and/or groundwater by at least one study. This database is an active file that is updated regularly. At the time of accessing the database for the project (PNN database – v5 – December 2020)¹⁸, there were 385 entries included. Unfortunately, the database does not include measurement data. The database, therefore, only gives an indication on what was investigated but not if it was present in soil/groundwater and at what concentration.

The PNN database from SPW ARNE included data on **20** CL substances.

[Appendix D](#) gives an overview of the CL substances that were measured in soil in Belgium. A total of **167** CL substances were measured of which **127** were also detected. 22 and 18 CL substances were not detected and not reported, respectively.

3.7.4 Summary of CL substances measured in the Belgian environment

Substances captured by environmental monitoring agencies provided an indication of either their manufacture or use in Belgium.

Table 1.5 gives an overview of the number of CL substances that were measured and either detected, not detected or not reported for each environmental compartment and the corresponding sources. The substance groups that appear in every environmental compartment are the metals (lead, cadmium and chromium compounds) and PFAS (PFHxS and PFNA). Polycyclic aromatic hydrocarbons (PAH) and phthalates are also quite dominantly present in the environment, respectively in water, air and soil.

Table 1.5: Overview of the number of CL substances that were measured and detected/not detected in Belgium.

Environmental compartment	Total number of CL substances measured	CL substances measured & detected	CL substances measured & not detected	CL substances measurements not reported	Source
Water	178	172	6	0	VMM, EEA
Air	83	83	0	0	VMM, EEA
Soil	167	127	22	18	OVAM, SPW, SOILveR Premiss

¹⁸ <https://sol.environnement.wallonie.be/home/documents/le-coin-des-specialistes-experts-laboratoires/polluants-non-normes-pnn.html>

Limitations of the environmental monitoring data

It is important to point out that for the environmental monitoring data, measurements of certain substances were used as (worst-case) indicator for other substances. Certain substances that are monitored might not be on the CL as such but can be a proxy for another substance on the candidate list. For example, metabolites are a measure to determine the concentration of the parent compound but are not on the CL themselves.

Another example is that for some substances, as was the case for most heavy metals, the substances are measured as a total measurement. The measurement does not distinguish between oxidation state (e.g. this is important for hexavalent chromium, which is much more toxic than trivalent chromium), salts, etc. To overcome this, the project team decided to use those measurements where there was no 1-to-1 match between the measured substance and the corresponding SVHC, as a proxy for related CL substances. This is also the reason why the number of SVHC reported for each source did not match the number of substances in the Appendices. The number given for each source is the exact number of 1-to-1 matches between monitored substance and SVHC, without counting the substances for which a measurement was used as a proxy. However, the tables and total number given for each compartment do capture those proxies.

3.8 Human biomonitoring

For human biomonitoring (HBM) data, the data from the Belgian cohorts that participated in the human biomonitoring for Europe (HBM4EU) program was used. This was a program involving 30 countries to coordinate and advance human biomonitoring research in Europe. The further aim was to map exposure of the European population to chemicals and the possible health effects. The results of HBM4EU were used to inform policy making. Five Belgian cohorts participated in the HBM4EU project. CAS numbers were not used in the cohorts as substance identifiers, therefore, the substances had to be matched with the CL using their names.

The same method of using the measurements as indicators for related CL substances as applied for the environmental monitoring was applied here.

3.8.1 Belgium

The DEMOCOPHES study was a European study, with the participation of 17 European countries, including Belgium, that ran from 2010 until 2012¹⁹. Every country recruited 120 mother-child pairs. The aim was to test the feasibility of a human biomonitoring study across Europe.

The data from the different cohorts was combined to make one variable that indicated the presence of CL substances in humans. Similar to the environmental monitoring data, measurements were used as (worst-case) indicators for substances on the candidate list. A distinction between being measured and being found was made. Substances were measured and found, measured but not found (either concentration was zero or the concentration was below the LOD/LOQ) or measured but measurements were not reported. To determine this, a percentage of samples below LOD or LOQ was used. This indicated the percentage of samples that had a concentration above LOD or LOQ (i.e. above zero). A substance was considered to be found in humans when a cohort reported a percentage of less than 95 -100 below LOD or LOQ.

Six substances of the set of substances measured in the Belgian samples included in DEMOCOPHES were candidate list substances²⁰.

3.8.2 Flanders

FLEHS campaigns

The Flemish Centre of Expertise on Environment and Health (FLEHS) has realised four cycles of a human biomonitoring program on environmental health surveillance. FLEHS I ran from 2002-2006, FLEHS II from 2007-2011, FLEHS III from 2012-2015 and FLEHS IV ran from 2016-2020. The studies ran in Flanders and the participants were recruited from Flemish regions with different characteristics to establish a diverse and representative cohort for the general public. Participants from all age groups: newborns (Nb), adolescents (Ado) and adults

¹⁹ <https://www.umweltbundesamt.de/en/topics/health/assessing-environmentally-related-health-risks/human-biomonitoring-in-europe/project-democophes#democophes>

²⁰ https://www.health.belgium.be/sites/default/files/uploads/fields/fpshealth_theme_file/19100876/democophes_NL.pdf

were included. In this way the results were used as reference for the general public in Flanders and were therefore used to compare results from other human biomonitoring studies. The second cycle slightly diverged from the study design of the other three cycles, because it aimed to investigate hotspot regions that had abnormal exposures to chemicals (e.g. Hoboken, Genk-Zuid, Menen, etc.).

22 of the set of substances measured over all the FLEHS campaigns were found to be CL substances. Several substances were measured in more than one campaign, the total captured in this report is therefore not equal to the sum of the total number of CL substances measured in each FLEHS campaign²¹ as shown in Table 1.66.

3xG

The 3xG cohort is a longitudinal human biomonitoring study conducted in three municipalities: Mol, Dessel and Retie in Flanders. The study was set up in the context of the historical heavy metal pollution in the region and the presence of the nuclear industry. The cohort was made up of 300 children recruited during pregnancy and will be followed-up until they are 18-year-old. Measurements were done on samples from the mothers and children when they were born (2011-2015) and when the children were seven years old (2019-2021). The most recent measurement data was used in this project.

Fourteen of the set of substances that were measured in the 3xG study are CL substances²².

3.8.3 Brussels

Data on human biomonitoring data in Brussel was not available.

3.8.4 Wallonia

Data of human biomonitoring efforts done in Wallonia is only available in published manuscripts and data of phase one of a large-scale biomonitoring study that is currently in progress is available in a report published in the ISSeP website. Some data is available from five papers from the group of C. Pirard on small-scale studies mainly carried out in Liege (University of Liege).

A number of CL substances as such, metabolites (biomarkers) of CL substances and total metal values for potential metal-containing CL substances were found in HBM samples: cadmium total, lead total, the bisphenols (Bisphenol A (BPA), Bisphenol S (BPS), Bisphenol F (BPF), Bisphenol P (BPP), Bisphenol Z (BPZ)), parabens (methyl-, ethyl-, propyl-, butylparaben), phthalates (biomarkers: mono-ethyl phthalate, mono-butyl phthalate, mono-benzyl phthalate, probable metabolites of di(2-ethylhexyl) phthalate (DEHP) and metabolites

²¹ <https://www.milieu-en-gezondheid.be/en>

²² <https://studie3xg.be/nl>

of the phthalate substitute Di(isononyl) cyclohexane-1,2-dicarboxylate (DINCH). In total nine CL substances

3.8.5 Summary of CL substances in human biomonitoring

Table 1.6 gives an overview of the number of substances that were measured and either detected, not detected or not reported in each Belgian cohort. [Appendix E](#) gives an overview of the SVHC on the candidate list that were considered to be present in Belgian people based on measurement data from the cohorts. Similar with the measurements in the environment metals, PFAS, PAH and phthalates were measured.

Table 1.6: Overview of the number of substances of the candidate list that were measured and detected/not detected in Belgian people.

Cohort	Total number of CL substances measured	CL substances measured & detected	CL substances measured & not detected	CL substances measurement not reported
FLEHS 1	2	2	0	0
FLEHS 2	11	11	0	0
FLEHS 3	20	20	0	0
FLEHS 4	17	17	0	0
3xG	14	14	0	0
DEMOCOPHES	6	6	0	0

4 Information From Stakeholders

4.1 Introduction

To complement and validate the information on CL substances used in Belgium through environmental and biomonitoring data, stakeholder surveys were conducted as the next step. The surveys were targeted at various stakeholders such as industry associations, NGOs, manufacturers, importers, downstream users, sellers/ manufacturers of alternatives to SVHCs and authorities. This part of the project was done in several steps:

Interviews with associations: In a first instance, interviews were conducted with a selected number of trade associations. Six stakeholders were interviewed on their view on priority setting for substances on substitution. These interviews indicated the added value of a more extensive survey on the industry view on prioritization.

Prioritization Expectations Survey: In a second step, industry stakeholders, representatives from the authorities and NGOs were invited to share their thoughts on the priorities for the substitution support via a survey. The following organizations or industry associations were contacted:

- Chemsec
- EEB – European Environmental Bureau
- ETUC – European Trade Union Federation
- Greenpeace
- Zero waste Europe
- BBLV – Bond Beter Leefmilieu
- Natuurpunt
- Gezinsbond
- Clientearth
- Sirris
- Natagora
- DETIC
- Essenscia
- BACD – Belgian Association of Chemical Distributors
- Embuild
- InDUfed
- Fedustria
- Agoria
- Centexbel
- VBO

Industry survey on SVHC in Belgium: The third step entailed a more extensive data collection exercise on the use and manufacturing of SVHC in Belgium which was done by

means of an industry survey. The individual companies were approached through various industry associations. The associations were also involved in the development of the survey during individual take-in interviews and a workshop where the various associations were present. The associations also supported the distribution of the survey to their member companies.

The following associations were contacted and were introduced to the project during a meeting:

- Essenscia
- Agoria
- Fedustria
- CENTEXBEL
- VBO
- Sirris (tech centre from Agoria)
- Eurometaux

One-pagers were provided on the project which could be used for further internal communication on the project to their members.

4.2 Prioritization Criteria Survey

The survey to the industrial associations and NGOs on prioritization requested respondents to gauge the most relevant prioritization criteria when selecting substances for substitution. The six criteria provided were:

1. Highest volume/amount of SVHCs which are used or produced by Belgium industries
2. Greatest number of stakeholders affected in Belgium
3. Specific applications and or end use functions being served by the SVHC (e.g., flame retardants, adhesives, preservatives)
4. Use conditions that result in exposure to Belgium consumers/general public, workers or the environment
5. Group of chemicals that create concerns
6. Presence of specific hazard properties that are of great concern e.g. carcinogens, mutagens, reproductive toxicants, very persistent or very bioaccumulative substances.

17 out of 20 associations and organizations responded indicating an 85% response rate. Out of the 17, only 12 responded to questions on the prioritization criteria of which 83% (10 out of 12) of the respondents agreed that all the six criteria are either important, fairly important and very important. In only one instance did a respondent note that a criterion was not important. This was in the criterion on presence of specific hazard properties that are of great concern. The criterion *'use conditions that result in exposure to Belgium consumers/general public, workers or the environment'* was selected as the most important across the 6 categories by 5 out of the 12 respondents. The other categories that received an equally higher ranking were the *'highest volume of SVHCs used in Belgium'*, *'the greatest number of stakeholders affected in Belgium'*, *'specific applications and / or end use functions performed by the SVHCs'* and the *'presence of specific hazards'* by 4 out of 12 respondents in each case.

The respondents also provided additional criteria that they thought should be considered in prioritization:

- Existence of market leaders or important research centres in Belgium (e.g. International Maritime Employers' Council (IMEC)) who could drive substitution in a sector.
- Trends in use (quantities going up or down) i.e. SVHCs for which the "natural" trend of the market is to progressively decline might be less a priority than the ones for which the trend rises.
- How much regulation already exists on the group should also be considered.
- The list of substances meeting SVHC properties should be expanded as the CL may include many "dead" chemicals or substances that may be of less priority to Belgium (causing less human and/or environmental impacts).
- When possible, to adopt a grouping approach to avoid regrettable substitution (e.g. bisphenols or PFAS)
- Availability of alternatives. If there are functional alternatives to an SVHC, there is no reason not to substitute.

Among the hazard properties, carcinogenicity was selected as the hazard property of great concern among reprotoxicity, mutagenicity, endocrine disruptors, persistent, bioaccumulative and toxic (PBT) persistent very bioaccumulative (vPvB), and sensitizing substances. When asked about the use conditions that would lead to prioritization of a substance for substitution, substances with uses leading mainly to exposure of consumers was ranked as the most important selection criterion.

When asked if they agreed that use conditions should be a criterium used to prioritize chemicals for substitution, seven (58%) agreed while five (42%) disagreed. The respondents were also asked to rank the top five substance groups that should be prioritized for substitution. The ranking system was from 1 to 5 with 1 being the substance group with the highest priority. There were five responses for this question and Figure 1.4 gives a graphic representation of the responses.

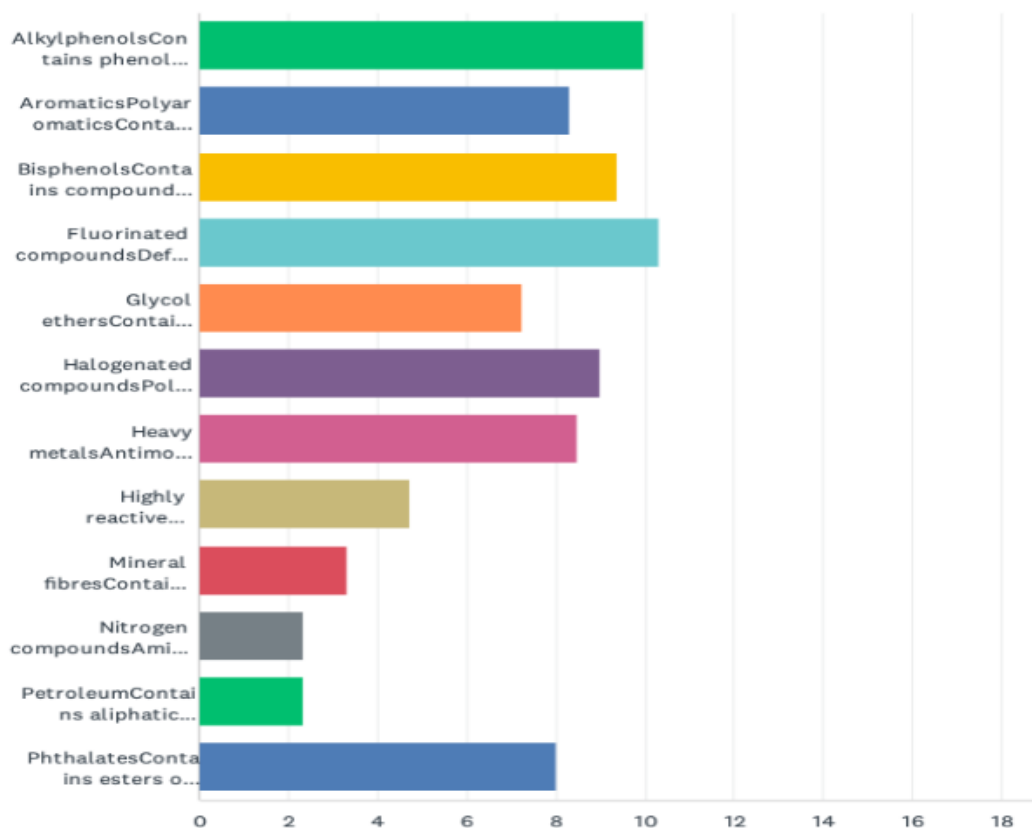


Figure 1.4: Substance groups ranking for prioritization from survey

The survey also asked the respondents to share their expectations regarding the substitution of SVHCs. In the first part, they were asked what SVHCs would have the biggest benefit to Belgium society and why. The responses obtained from the five respondents who answered were as follows:

- Respondent said they did not have a clear map of use in Belgium but suggested that a useful criterion could be what is covered/not covered by the EU, then the use of worst properties and quantities and quantity trends. Respondents suggested that the use by consumer and professional groups should be targeted first, but substitution must also be worked on for industrial use. In addition, banned substances for use in Belgium should not be considered for production for export.
- Another consideration should be substances being used and released to the environment in higher quantities. All substances meeting SVHC should be substituted, and prioritisation should be made on the basis of which substances are manufactured or in use in Belgium. The respondent noted that they did not prioritise groups in the previous question as they didn't have information on the substances manufactured and used in Belgium. Filtering ECHA's registration database could provide a first approximation. Also comparing production, import and export data could help, however a conclusion of this report should be that better information on the substances manufactured and used in Belgium is needed to support the substitution of SVHC.

- Carcinogens with workers and consumers exposure should have priority because these cancers are avoidable and have a very high societal cost for Belgium
- PFAS is an important group, as levels in humans and the environment are so close to the limit values.
- One respondent said it would be very difficult, since not many SVHCs are used

The feedback from this survey was taken into consideration in developing the prioritization criteria.

4.3 Industry survey on SVHCs in Belgium

In collaboration with industry associations, a survey was designed and circulated to collect data on the uses, manufacturing and substitution of SVHCs in Belgium. The preparation was done with stakeholders during an online workshop. The project was also presented to members of Essenscia during one of the regular sessions of the Essenscia “Commissie product beleid”.

The survey was sent out to about 580 individual companies through various industry associations. The companies were selected by the associations as the companies possibly involved with the use or manufacturing of SVHCs. The survey audience was classified into 4 main categories namely: manufacturers, importers, downstream users, and sellers of SVHCs. For each of the 4 categories, the respondents had an opportunity to list up to a maximum of three CL substances that they are involved with. **129** responses were received and provided information on the use, manufacturing, import and sale of about **39** substances. The number of responses varied for all respondents across the 4 categories because while some respondents interacted with only 1 SVHC, others interacted with multiple SVHCs. This explains the difference in the number of use cases for instance in the downstream user category.

The questions in the survey can be grouped in following sections:

- General orientation
- Manufacturing role
- Importer role
- Downstream user role
- Seller role
- Past Substitution
- Ongoing substitution

4.3.1 Survey Results

129 responses were received out of the 580 sent out representing only a 22% return rate. From the 129 responses, there were 66 respondents, classified into 4 main categories depending on their roles and how they interacted or use SVHCs, that provided details on SVHCs in their value chain: 7 manufacturers, 15 importers, 8 sellers and 36 downstream users. In total, 89 (relevant) use cases split across the 4 different categories as shown in Table 1.7 were described.

Table 1.7: Reported SVHC cases from survey categories

Role	No of respondents	No of use cases	No of cases Not Annex XIV	No of Substances Not on Annex XIV
Manufacturing	7	9	6	6
Importer	15	20	17	13

Role	No of respondents	No of use cases	No of cases Not Annex XIV	No of Substances Not on Annex XIV
Downstream user	36	48	36	22
Sellers	8	12	12	10
Total	66	89	70	31

It is also important to note that some of the respondents fall into two or three of these categories i.e., a manufacturer could also be an importer and downstream user at the same time. For each of these categories, the respondents could provide information for up to 3 SVHCs.

In Belgium, there are 83 enterprises that manufacture, import or are only representative (OR) for an SVHC and have registered one or more SVHCs. The 83 companies have 208 registrations for 73 different SVHC. There were 30 (of which 22 have provided details on substances) respondents who said they are either manufacturers or importers. The survey feedback only covered 36% of enterprises in Belgium which had a registration obligation for an SVHC. The 22 manufacturers and importers from the survey provided details for 29 use cases for 19 different substances, which only represented 26% of the substances with a registration obligation and 14% of the cases with a registration obligation.

In total, there are in 57 (Status 30/6/2022) DU notifications in Belgium for 7 substances which are used under an Authorisation. One of these substances is Chromium trioxide. In the survey, this substance was mentioned a total of 11 times while for this substance 32 DU notifications were made. This means that for this substance the survey captured 34% of the use cases. For Sodium dichromate, 1 out of 4 (25%) was captured. For the 5 other substances reported as used under authorization, no use was reported in the survey.

From this, it can be concluded that the survey captured:

- Less than 50% of the companies involved in the use of SVHC (based on 36% of the companies with a registration obligation were reported in the survey)
- Less than 50% of the substances involved in the use of SVHC (based on only 26% of the substances with a registration obligation were reported in the survey)
- Less than 50% of the use cases of SVHC (based on the 25-34% of the use cases captured for substances under authorization)

Despite the active support and engagement of the various industry associations, large parts of industry remained reluctant to participate to the survey.

4.3.2 Summary of survey

The list of all substances reported to be manufactured, imported or used in Belgium from the survey are summarised in below (Table 1.8). In total, 31 CL substances were reported. The information obtained on the SVHCs from the survey played a critical role when defining the prioritization criteria and methodology.

Table 1.8: CL Substances reported in Belgium from stakeholder survey.

No.	Substance name	CAS No	Reported by
1	1,4 Dioxane	123-91-1	I
2	1-Methyl-2-pyrrolidone (NMP)	872-50-4	I/DU
3	2,2'-Methylenebis(4-methyl-6-tert-butylphenol)	119-47-1	I
4	2-ethoxyethanol	110-80-5	I
6	2-methoxyethanol	109-86-4	M
7	2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	71868-10-5	I/DU
8	4-(1,1,3,3-tetramethylbutyl)phenol ethoxylated	2315-61-9	DU
9	Alkanes, C14-17, chloro	85535-85-9	DU
10	Bisphenol A / 4,4'-isopropylidenediphenol	80-05-7	M/DU
11	Boric acid	10043-35-3	I/DU
12	Cobalt(II) dinitrate	10141-05-6	DU
13	Crystal violet dye	548-62-9	DU
14	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)) (ADCA)	123-77-3	DU
15	Diboron trioxide	1303-86-2	M/I
16	Disodium octaborate	12008-41-2	DU
17	Dodecamethylcyclotetrasiloxane	540-97-6	DU
18	Ethylenediamine	107-15-3	DU
19	Glutaraldehyde	111-30-8	I
20	Lead	7439-92-1	DU
21	Marlotherm (Terphenyl, hydrogenated)	61788-32-7	I
22	Methyloxirane (Propylene oxide)	75-56-9	M/I/DU
23	N,N-dimethylacetamide (DMAC)	127-19-5	DU
24	N-N-Dimethylformamide	68-12-2	I/DU
25	Octamethylcyclotetrasiloxane/Silicon	556-67-2	I
26	Pentadecafluorooctanoic acid (PFOA)	335-67-1	DU

No.	Substance name	CAS No	Reported by
27	Perfluorobutane sulfonic acid (PFBS) and its salts	375-73-5	I/DU
28	Phenol, tetrapropenyl derivatives	74499-35-7	DU
29	S-(tricyclo(5.2.1.0 ^{2,6})deca-3-en-8(or 9)-yl O-(isopropyl or isobutyl or 2-ethylhexyl) O-(isopropyl or isobutyl	255881-94-8	DU
30	Stannane, dioctyl-, bis(coco acyloxy) derivs.	91648-39-4	DU
31	Tris(nonylphenyl) phosphite	26523-78-4	DU

Note: I: Importer; M: Manufacturer; DU: downstream user

5 Conclusions on the Current Use of SVHCs in Belgium

Several sources were investigated and used to provide a description of the production, import and downstream use of CL substances in Belgium. At the point of the project, there was no comprehensive overview of the use of these very harmful substances in Belgium, nor was there any systematic monitoring of these substances in any environmental compartment relevant for exposure to the general public nor in humans.

The data (Table 1.9) showed that most of the same substances are measured in both human and environmental biomonitoring and that only a small percentage (<10%) of SVHC on the CL are being monitored.

Table 1.9: Overview of the number of substances that were measured per source and the number of those substances that are on the candidate list.

Source	No. substances (not all specifically CL substances) measured	No. of CL substances
VMM air	45	16
VMM water	*	45
VMM water WEISS-tool	15	8
VMM drinking water quality	289	8
OVAM	Unknown**	6
SPW	398	20
EEA water	24	9
EEA air	66	9
SOILveR premiss	18	3
HBM data BE	232	24

Note: Important to note is that the “No. of CL substances” is the number of CL substances that were actually measured.

**VMM water only provided data on CL substances.*

***The data is too scattered in different reports to give a total number of substances measured.*

Information from the stakeholder consultation helped fill some of the gaps identified from the environmental, biomonitoring and trade data. However, the low response rate (22%) was a big limitation since a lot of CL substances and their uses was not captured. This shortcoming was ultimately carried onto the next step of the project, prioritization and its impact is explained in the prioritization report.

The basic information which could indicate the socio-economic relevance of these substances would be the volume. However, this information is either not reported (articles and formulations), confidential (substance and formulations) or not specific enough (import data).

A sector-based approach would be possible but would require the input of experts with relevant knowledge of the Belgian situation for each sector. It could also be very inaccurate to rely on general information on the use of an SVHC in a sector, as in many cases these substances have been substituted in the past, something which is rarely reported or generally known.

6 Challenges

This part of the project attempted to map the current manufacture and use of substances of very high concern in Belgium. For this purpose, publicly available data sources were consulted and a targeted survey was conducted. While the ultimate goal of this part of the project was to identify the use of the SVHC, the exercise by itself was informative to understand the limits of data collection on this subject. As will be elaborated in the prioritization report, these limits strongly influenced the results of the prioritization.

Clearly there is a lot of data available in the scientific literature and in regulatory reports on various SVHC substances. On an individual basis, a comprehensive analysis of the uses of substances could be made by means of these data sources although information on volumes per use still remains very difficult to obtain. However, such an approach is not feasible for a larger group of substances such as the 224 substances on the candidate list in scope of this project. For this purpose, database sources are required for which automatic data searches can be performed to extract the required information.

Although most of the data is in some way publicly available, in most cases, only the metadata is available, but the data itself is not readily accessible (e.g., downloadable via an online database or webviewer in batch-mode). Owners of the data were contacted, but responses were not always received. Communication with the database hosts made it clear that in some cases the data is not stored in a main database but is scattered (as was the case for data from OVAM and the PREMISS project).

Additionally, in many cases the data was only available in Dutch or French which makes working in an international context difficult (as was the case for data from OVAM, VMM air and SPW ARNE). In most cases, identification of the substances that were monitored was not possible through CAS or EC numbers (as was the case for VMM air, EEA air, WEISS tool, OVAM, project PREMISS and human biomonitoring data). This made it difficult and time consuming to match the data with the CL substances. Especially since many substances with multiple and common names that are used for substances in Belgium are often not the name by which the substance is identified on the CL.

In many datasets, 'group measurements' exist (e.g., for 'total cadmium' or 'total lead') and if a particular speciation was measured it was often not indicated as was usually the case for heavy metals. For the total measurements, it was thus difficult to determine whether it was indicative for the corresponding CL substance. Furthermore, it was not indicated what the trigger for the measurement was, which could have been helpful for the current project. Additionally, in some datasets certain organic substances did not exactly match the CL substances but could be used as an indicator for CL substances. For instance, vinyl chloride is a degradation product of trichloroethylene, and while the former is not on the CL, the latter is.

The limited response rate from the stakeholder survey undermined the data collection. Despite having 129 respondents, only 66 of these provided details on the SVHCs they used in their processes or operations. A big number of uses of these substances was therefore not captured. This ultimately impeded the subsequent step which heavily relied on data availability and its quality.

7 Lessons Learned & Recommendations

The database at European level contains very relevant information on the use of SVHCs. Although much of this information has been disseminated and is available in a data structure suitable for an investigation such as this project, there was still information that was not easily accessible. This could be attributed to the format e.g. information captured in the chemical safety report, lack of data such as use specific volumes or simply because at EU level, the differentiation on national level is not always available e.g. the relevant uses per country. Within the project's framework for data collection, it was probably not proportional to collect and store more detailed information for all substances. However, in the context of the development of efficient and effective regulation, it could be argued that additional data collection of substances meeting the criteria of Art 57 of REACH could be justified.

In this part of the project where it was aimed to describe the use of SVHC in Belgium, data on relevant uses, volumes, workers exposure, exposure to the environment, exposure of the general population was largely missing. Collecting this information would not only be beneficial to the development of substitution support policy but would also be relevant in the development of other regulatory instruments such as targeted restrictions and by the avoiding more course '*wide and generic*' restriction of substances.

The implementation of additional specific data collection would be most efficiently organised at an EU level where data from all stakeholders would be centralized and could be used for benchmarking. However, similar to the nano particle register, it could be conceived that a national mandatory obligation to notify the use, manufacturing or import of SVHC could also increase the transparency on the use of SVHCs and create the awareness with entire supply chains.

During the data collection it was found that the CL is not a common tool to define the scope of monitoring programs. As a result, information on several substances was missing in various monitoring campaigns. It could be of added value if national or regional monitoring campaigns are related to the CL substances motivating why certain substances are or are not included in the campaign. For instance, a direct reference of the substances to the CL by means of using the correct CAS and EC number would provide additional transparency.

Appendices

Appendix A: Overview of CL substances with an active permit

CAS	EC No.	Chemical group	Substance name	Registration status	Permits
25154-52-3	246-672-0	Alkylphenols	Nonylphenol		1
68412-54-4	500-209-1	Alkylphenols	Nonylphenol, branched, ethoxylated	FULL	1
9016-45-9	500-024-6	Alkylphenols	Nonylphenol, ethoxylated	FULL	1
9016-45-9		Alkylphenols	Nonylphenol, ethoxylated (10-EO)	FULL	1
9016-45-9		Alkylphenols	Nonylphenol, ethoxylated (15-EO)	FULL	1
9016-45-9		Alkylphenols	Nonylphenol, ethoxylated (6,5-EO)	FULL	1
9016-45-9		Alkylphenols	Nonylphenol, ethoxylated (8-EO)	FULL	1
84852-15-3	284-325-5	Alkylphenols	Phenol, 4-nonyl-, branched	FULL	1
80-05-7	201-245-8	Bisphenol	4,4'-isopropylidenediphenol	FULL	1
1163-19-5	214-604-9	Halogenated FRs	Bis(pentabromophenyl) ether (decabromodiphenyl ether) (DecaBDE)	FULL	1
106-94-5	203-445-0	Halogenated organic	1-bromopropane (n-propyl bromide)	FULL	1
56-35-9	200-268-0	Metals	Bis(tributyltin) oxide (TBTO)	INTERMEDIATE	1
10043-35-3	233-139-2	Metals	Boric acid	FULL	1
		Metals	Boric acid		1
11113-50-1	234-343-4	Metals	Boric acid, crude natural	INTERMEDIATE	1
7440-43-9	231-152-8	Metals	Cadmium	FULL	1

CAS	EC No.	Chemical group	Substance name	Registration status	Permits
10108-64-2	233-296-7	Metals	Cadmium chloride	FULL	1
1306-19-0	215-146-2	Metals	Cadmium oxide	FULL	1
1333-82-0	215-607-8	Metals	Chromium trioxide	FULL	1
7646-79-9	231-589-4	Metals	Cobalt dichloride	FULL	1
71-48-7	200-755-8	Metals	Cobalt (II) diacetate	FULL	1
1327-53-3	215-481-4	Metals	Diarsenic trioxide	FULL	1
1303-86-2	215-125-8	Metals	Diboron trioxide	FULL	1
7439-92-1	231-100-4	Metals	Lead	FULL	1
7784-40-9	232-064-2	Metals	Lead hydrogen arsenate		1
1314-41-6	215-235-6	Metals	Orange lead (lead tetroxide)	FULL	1
7778-50-9	231-906-6	Metals	Potassium dichromate	FULL	1
15606-95-8	427-700-2	Metals	Triethyl arsenate	NONS	1
12141-20-7	235-252-2	Metals	Trilead dioxide phosphonate	FULL	1
110-71-4	203-794-9	Organic	1, 2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME)	FULL	1
110-49-6	203-772-9	Organic	2-methoxyethyl acetate		1
79-06-1	201-173-7	Organic	Acrylamide	FULL	1
77-78-1	201-058-1	Organic	Dimethyl sulphate	INTERMEDIATE	1
75-12-7	200-842-0	Organic	Formamide	FULL	1
25550-51-0	247-094-1	Organic	Hexahydromethylphthalic anhydride	FULL	1
127-19-5	204-826-4	Organic	N,N-dimethylacetamide	FULL	1

CAS	EC No.	Chemical group	Substance name	Registration status	Permits
74499-35-7		Organic	Phenol, (tetrapropenyl) derivatives		1
77-09-8	201-004-7	Organic	Phenolphthalein	FULL	1
548-62-9	208-953-6	Organic colourant	[4-[4,4'-bis(dimethylamino) benzhydrylidene]cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride (C.I. Basic Violet 3)	FULL	1
85-68-7	201-622-7	Phthalates	Benzyl butyl phthalate (BBP)	FULL	1
117-81-7	204-211-0	Phthalates	Bis (2-ethylhexyl)phthalate (DEHP)	FULL	1
84-74-2	201-557-4	Phthalates	Dibutyl phthalate (DBP)	FULL	1
872-50-4	212-828-1	Reagent	1-Methyl-2-pyrrolidone (NMP)	FULL	1
75-56-9	200-879-2	Reagent	Methyloxirane (Propylene oxide)	FULL	1
68-12-2	200-679-5	Reagent	N,N-dimethylformamide	FULL	1
556-67-2	209-136-7	Siloxane	Octamethylcyclotetrasiloxane	FULL	1
109-86-4	203-713-7	Solvent	2-methoxyethanol	FULL	1

Appendix B: Overview of CL substances measured in air

CAS No.	EC No.	Chemical group	Substance name	Registration status	Presence air	Source	Year
7778-39-4	231-901-9	Metals	Arsenic acid	FULL	1	VMM air; EEA air	2021
7440-43-9	231-152-8	Metals	Cadmium	FULL	1	VMM air; EEA air	2021
513-78-0	208-168-9	Metals	Cadmium carbonate	FULL	1		
10108-64-2	233-296-7	Metals	Cadmium chloride	FULL	1		
7790-79-6	232-222-0	Metals	Cadmium fluoride		1		
21041-95-2	244-168-5	Metals	Cadmium hydroxide	FULL	1		
10325-94-7	233-710-6	Metals	Cadmium nitrate	FULL	1		
1306-19-0	215-146-2	Metals	Cadmium oxide	FULL	1		
10124-36-4, 31119-53-6	233-331-6	Metals	Cadmium sulphate	INTERMEDIATE	1		
1306-23-6	215-147-8	Metals	Cadmium sulphide	FULL	1		
7738-94-5	231-801-5	Metals	Chromic acid		1	VMM air	2021
1333-82-0	215-607-8	Metals	Chromium trioxide	FULL	1		
7439-92-1	231-100-4	Metals	Lead	FULL	1	VMM air; EEA air	2021
13814-96-5	237-486-0	Metals	Lead bis(tetrafluoroborate)	FULL	1		
7758-97-6	231-846-0	Metals	Lead chromate		1		
12656-85-8	235-759-9	Metals	Lead chromate molybdate sulphate red (C.I. Pigment Red 104)	FULL	1		

CAS No.	EC No.	Chemical group	Substance name	Registration status	Presence air	Source	Year
20837-86-9	244-073-9	Metals	Lead cyanamidate	FULL	1		
301-04-2	206-104-4	Metals	Lead di(acetate)	FULL	1		
13424-46-9	236-542-1	Metals	Lead diazide, Lead azide	FULL	1		
10099-74-8	233-245-9	Metals	Lead dinitrate	FULL	1		
6477-64-1	229-335-2	Metals	Lead dipicrate		1		
7784-40-9	232-064-2	Metals	Lead hydrogen arsenate		1		
1317-36-8	215-267-0	Metals	Lead monoxide (lead oxide)	FULL	1		
12036-76-9	234-853-7	Metals	Lead oxide sulfate	FULL	1		
15245-44-0	239-290-0	Metals	Lead styphnate	FULL	1		
1344-37-2	215-693-7	Metals	Lead sulfochromate yellow (C.I. Pigment Yellow 34)	FULL	1		
12060-00-3	235-038-9	Metals	Lead titanium trioxide	FULL	1		
12626-81-2	235-727-4	Metals	Lead titanium zirconium oxide	FULL	1		
17570-76-2	401-750-5	Metals	Lead(II) bis(methanesulfonate)	NONS	1		
79-01-6	201-167-4	Organochloride	Trichloroethylene	FULL	1	VMM air	2021
120-12-7	204-371-1	PAH	Anthracene	INTERMEDIATE	1	VMM air; EEA air	2021
56-55-3	200-280-6	PAH	Benz[a]anthracene		1	VMM air; EEA air	2021
50-32-8	200-028-5	PAH	Benzo[def]chrysene (Benzo[a]pyrene)		1	VMM air; EEA air	2021

CAS No.	EC No.	Chemical group	Substance name	Registration status	Presence air	Source	Year
191-24-2	205-883-8	PAH	Benzo[ghi]perylene		1	VMM air; EEA air	2021
207-08-9	205-916-6	PAH	Benzo[k]fluoranthene		1	VMM air; EEA air	2021
218-01-9	205-923-4	PAH	Chrysene		1	VMM air; EEA air	2021
206-44-0	205-912-4	PAH	Fluoranthene		1	VMM air; EEA air	2021
85-01-8	201-581-5	PAH	Phenanthrene	INTERMEDIATE	1	VMM air; EEA air	2021
129-00-0	204-927-3	PAH	Pyrene	INTERMEDIATE	1	VMM air; EEA air	2021
335-67-1	206-397-9	PFAS	Pentadecafluorooctanoic acid (PFOA)		1	VMM air	2021
		PFAS	Perfluorohexane-1-sulphonic acid and its salts*		1	VMM air	2021
		PFAS	Perfluorononan-1-oic-acid and its sodium and ammonium salts*		1	VMM air	2021
107-06-2	203-458-1	Solvent	1,2-dichloroethane	FULL	1	VMM air; EEA air	2021

Note: The substances that are indicated with an asterisk are parent compounds of substance groups on the candidate list. The member substances of these groups are not shown here for clarity reasons, but they are considered as present in water as well. 1 = measured + detected, 0 = measured + not detected. Column 'Year' gives the year the measurement was done.*

Appendix C: Overview of CL substances measured in water

CAS No.	EC No.	Chemical group	Substance name	Registration status	Presence Water	Source	Year
		Alkylphenols	4-Nonylphenol, branched and linear, ethoxylated*		1	VMM water	2021
		Alkylphenols	4-Nonylphenol, branched and linear*		1	VMM water	2021
		Alkylphenols	4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated		1	VMM water	2021
140-66-9	205-426-2	Alkylphenols	4-(1,1,3,3-tetramethylbutyl)phenol	FULL	1	VMM water	2021
80-05-7	201-245-8	Bisphenols	4,4'-isopropylidenediphenol	FULL	1	VMM water	2021
85535-84-8	287-476-5	Chlorinated paraffins	Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	FULL	0	EEA water	2018
1163-19-5	214-604-9	Halogenated FRs	Bis(pentabromophenyl) ether (decabromodiphenyl ether) (DecaBDE)	FULL	1	VMM water	2021
115-96-8	204-118-5	Halogenated FRs	Tris(2-chloroethyl) phosphate	FULL	1	VMM water	2021
134237-50-6		Halogenated FRs	alpha-hexabromocyclododecane		0	VMM water	2021
134237-51-7		Halogenated FRs	beta-hexabromocyclododecane		0	VMM water	2021
134237-52-8		Halogenated FRs	gamma-hexabromocyclododecane		1	VMM water	2021
25637-99-4	247-148-4	Halogenated FRs	Hexabromocyclododecane	FULL	0	VMM water	2021

CAS No.	EC No.	Chemical group	Substance name	Registration status	Presence Water	Source	Year
7439-92-1	231-100-4	Metals	Lead	FULL	1	VMM water; WEISS-tool; VMM drink water quality; EEA water	2021; 2020; 2020; 2018
301-04-2	206-104-4	Metals	Lead di(acetate)	FULL	1		
12626-81-2	235-727-4	Metals	Lead titanium zirconium oxide	FULL	1		
12060-00-3	235-038-9	Metals	Lead titanium trioxide	FULL	1		
12036-76-9	234-853-7	Metals	Lead oxide sulfate	FULL	1		
1317-36-8	215-267-0	Metals	Lead monoxide (lead oxide)	FULL	1		
10099-74-8	233-245-9	Metals	Lead dinitrate	FULL	1		
20837-86-9	244-073-9	Metals	Lead cyanamidate	FULL	1		
13814-96-5	237-486-0	Metals	Lead bis(tetrafluoroborate)	FULL	1		
17570-76-2	401-750-5	Metals	Lead(II) bis(methanesulfonate)	NONS	1		
15245-44-0	239-290-0	Metals	Lead styphnate	FULL	1		
6477-64-1	229-335-2	Metals	Lead dipicrate		1		
13424-46-9	236-542-1	Metals	Lead diazide, Lead azide	FULL	1		
1344-37-2	215-693-7	Metals	Lead sulfochromate yellow (C.I. Pigment Yellow 34)	FULL	1		
12656-85-8	235-759-9	Metals	Lead chromate molybdate sulphate red (C.I. Pigment Red 104)	FULL	1		
7758-97-6	231-846-0	Metals	Lead chromate		1		
7784-40-9	232-064-2	Metals	Lead hydrogen arsenate		1		
7440-43-9	231-152-8	Metals	Cadmium	FULL	1		

CAS No.	EC No.	Chemical group	Substance name	Registration status	Presence Water	Source	Year
10325-94-7	233-710-6	Metals	Cadmium nitrate	FULL	1	VMM water; WEISS-tool; VMM drink water quality; EEA water	2021; 2020; 2020; 2018
21041-95-2	244-168-5	Metals	Cadmium hydroxide	FULL	1		
513-78-0	208-168-9	Metals	Cadmium carbonate	FULL	1		
10124-36-4, 31119-53-6	233-331-6	Metals	Cadmium sulphate	INTERMEDIATE	1		
7790-79-6	232-222-0	Metals	Cadmium fluoride		1		
10108-64-2	233-296-7	Metals	Cadmium chloride	FULL	1		
1306-23-6	215-147-8	Metals	Cadmium sulphide	FULL	1		
1306-19-0	215-146-2	Metals	Cadmium oxide	FULL	1		
7778-39-4	231-901-9	Metals	Arsenic acid	FULL	1	WEISS-tool; VMM drink water quality	2020
1333-82-0	215-607-8	Metals	Chromium trioxide	FULL	1	WEISS-tool; VMM drink water quality	2020
7738-94-5	231-801-5	Metals	Chromic acid		1		
129-00-0	204-927-3	PAH	Pyrene	INTERMEDIATE	1	VMM water	2021
85-01-8	201-581-5	PAH	Phenanthrene	INTERMEDIATE	1	VMM water, VMM drink water quality	2021; 2020
206-44-0	205-912-4	PAH	Fluoranthene		1	VMM water; WEISS-tool; EEA water	2021; 2020; 2018
207-08-9	205-916-6	PAH	Benzo[k]fluoranthene		1	VMM water; WEISS-tool; EEA water	2021; 2020; 2018
191-24-2	205-883-8	PAH	Benzo[ghi]perylene		1	VMM water; WEISS-tool; EEA water	2021; 2020; 2018

CAS No.	EC No.	Chemical group	Substance name	Registration status	Presence Water	Source	Year
218-01-9	205-923-4	PAH	Chrysene		1	VMM water	2021
56-55-3	200-280-6	PAH	Benz[a]anthracene		1	VMM water	2021
50-32-8	200-028-5	PAH	Benzo[def]chrysene (Benzo[a]pyrene)		1	VMM water; WEISS-tool; VMM drink water quality; EEA water	2021; 2020; 2020; 2018
120-12-7	204-371-1	PAH	Anthracene	INTERMEDIATE	1	VMM water; EEA water	2021; 2018
		PFAS	Perfluorobutane sulfonic acid (PFBS) and its salts*		1	VMM water	2021
		PFAS	2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionic acid, its salts and its acyl halides*		1	VMM water	2021
		PFAS	Perfluorohexane-1-sulphonic acid and its salts*		1	VMM water	2021
335-76-2	206-400-3	PFAS	Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts*		1	VMM water	2021
		PFAS	Perfluorononan-1-oic-acid and its sodium and ammonium salts*		1	VMM water	2021
335-67-1	206-397-9	PFAS	Pentadecafluorooctanoic acid (PFOA)		1	VMM water	2021
307-55-1	206-203-2	PFAS	Tricosafuorododecanoic acid		1	VMM water	2021
72629-94-8	276-745-2	PFAS	Pentacosafuorotridecanoic acid		1	VMM water	2021
376-06-7	206-803-4	PFAS	Heptacosafuorotetradecanoic acid		1	VMM water	2021
2058-94-8	218-165-4	PFAS	Henicosafuoroundecanoic acid		1	VMM water	2021

CAS No.	EC No.	Chemical group	Substance name	Registration status	Presence Water	Source	Year
84-61-7	201-545-9	Phthalates	Dicyclohexyl phthalate	FULL	1	VMM water	2021
131-18-0	205-017-9	Phthalates	Dipentyl phthalate (DPP)		1	VMM water	2021
84-69-5	201-553-2	Phthalates	Diisobutyl phthalate	FULL	1	VMM water	2021
84-74-2	201-557-4	Phthalates	Dibutyl phthalate (DBP)	FULL	1	VMM water	2021
117-81-7	204-211-0	Phthalates	Bis (2-ethylhexyl)phthalate (DEHP)	FULL	1	VMM water; EEA water	2021; 2018
85-68-7	201-622-7	Phthalates	Benzyl butyl phthalate (BBP)	FULL	1	VMM water	2021
107-06-2	203-458-1	Solvent	1,2-dichloroethane	FULL	1	VMM water; VMM drink water quality	2021; 2020
96-18-4	202-486-1	Solvent	1,2,3-trichloropropane	FULL	0	VMM water	2021
79-01-6	201-167-4	Solvent	Trichloroethylene	FULL	0	VMM water	2021

Note: The substances that are indicated with an asterisk are parent compounds of substance groups on the candidate list. The member substances of these groups are not shown here for clarity reasons, but they are considered as present in water as well. 1 = measured + detected, 0 = measured + not detected. Column 'Year' gives the year the measurement was done or in case of EEA water when the data was published. When multiple years are given, they are in the same order as the source.*

Appendix D: Overview of CL substances measured in soil in Belgium

CAS No.	EC No.	Chemical group	Substance name	Registration status	Presence soil	Source	Year
		Alkylphenols	4-Nonylphenol, branched and linear*		1	SOILvER premiss	2021
		Alkylphenols	4-Nonylphenol, branched and linear, ethoxylated*		1		
80-05-7	201-245-8	Bisphenol	4,4'-isopropylidenediphenol	FULL	nr	OVAM; SPW	2021; 2020
7778-39-4	231-901-9	Metals	Arsenic acid	FULL	1	OVAM	2005
56-35-9	200-268-0	Metals	Bis(tributyltin) oxide (TBTO)	INTERMEDIATE	nr	SPW	2021
7440-43-9	231-152-8	Metals	Cadmium	FULL	1	OVAM	2006
513-78-0	208-168-9	Metals	Cadmium carbonate	FULL	1		
10108-64-2	233-296-7	Metals	Cadmium chloride	FULL	1		
7790-79-6	232-222-0	Metals	Cadmium fluoride		1		
21041-95-2	244-168-5	Metals	Cadmium hydroxide	FULL	1		
10325-94-7	233-710-6	Metals	Cadmium nitrate	FULL	1		
1306-19-0	215-146-2	Metals	Cadmium oxide	FULL	1		
10124-36-4, 31119-53-6	233-331-6	Metals	Cadmium sulphate	INTERMEDIATE	1		
1306-23-6	215-147-8	Metals	Cadmium sulphide	FULL	1		
7738-94-5	231-801-5	Metals	Chromic acid		1	OVAM	2006
1333-82-0	215-607-8	Metals	Chromium trioxide	FULL	1		

CAS No.	EC No.	Chemical group	Substance name	Registration status	Presence soil	Source	Year
7646-79-9	231-589-4	Metals	Cobalt dichloride	FULL	1	OVAM	2006
513-79-1	208-169-4	Metals	Cobalt(II) carbonate	FULL	1		
71-48-7	200-755-8	Metals	Cobalt(II) diacetate	FULL	1		
10141-05-6	233-402-1	Metals	Cobalt(II) dinitrate	FULL	1		
10124-43-3	233-334-2	Metals	Cobalt(II) sulphate	FULL	1		
7439-92-1	231-100-4	Metals	Lead	FULL	1	OVAM	2006
13814-96-5	237-486-0	Metals	Lead bis(tetrafluoroborate)	FULL	1		
7758-97-6	231-846-0	Metals	Lead chromate		1		
12656-85-8	235-759-9	Metals	Lead chromate molybdate sulphate red (C.I. Pigment Red 104)	FULL	1		
20837-86-9	244-073-9	Metals	Lead cyanamidate	FULL	1		
301-04-2	206-104-4	Metals	Lead di(acetate)	FULL	1		
13424-46-9	236-542-1	Metals	Lead diazide, Lead azide	FULL	1		
10099-74-8	233-245-9	Metals	Lead dinitrate	FULL	1		
6477-64-1	229-335-2	Metals	Lead dipicrate		1		
7784-40-9	232-064-2	Metals	Lead hydrogen arsenate		1		
1317-36-8	215-267-0	Metals	Lead monoxide (lead oxide)	FULL	1		
12036-76-9	234-853-7	Metals	Lead oxide sulfate	FULL	1		
15245-44-0	239-290-0	Metals	Lead styphnate	FULL	1		

CAS No.	EC No.	Chemical group	Substance name	Registration status	Presence soil	Source	Year
1344-37-2	215-693-7	Metals	Lead sulfochromate yellow (C.I. Pigment Yellow 34)	FULL	1		
12060-00-3	235-038-9	Metals	Lead titanium trioxide	FULL	1		
12626-81-2	235-727-4	Metals	Lead titanium zirconium oxide	FULL	1		
17570-76-2	401-750-5	Metals	Lead(II) bis(methanesulfonate)	NONS	1		
335-76-2	206-400-3	PFAS	Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts*		0	OVAM	2021
335-67-1	206-397-9	PFAS	Pentadecafluorooctanoic acid (PFOA)		1	OVAM; SOILvER premiss; SPW	2021; 2020
		PFAS	Perfluorobutane sulfonic acid (PFBS) and its salts*		0	OVAM	2021
		PFAS	Perfluorohexane-1-sulphonic acid and its salts*		1	OVAM; SOILvER premiss;	2021
		PFAS	Perfluorononan-1-oic-acid and its sodium and ammonium salts*		0	OVAM	2021
85-68-7	201-622-7	Phthalates	Benzyl butyl phthalate (BBP)	FULL	nr	SPW	2020
117-81-7	204-211-0	Phthalates	Bis (2-ethylhexyl)phthalate (DEHP)	FULL	nr	SPW	2020
84-74-2	201-557-4	Phthalates	Dibutyl phthalate (DBP)	FULL	nr	SPW	2020
84-69-5	201-553-2	Phthalates	Diisobutyl phthalate	FULL	nr	SPW	2020
131-18-0	205-017-9	Phthalates	Dipentyl phthalate (DPP)		nr	SPW	2020

CAS No.	EC No.	Chemical group	Substance name	Registration status	Presence soil	Source	Year
110-71-4	203-794-9	Reagent	1, 2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME)	FULL	nr	SPW	2020
123-91-1	204-661-8	Reagent	1,4-dioxane	FULL	nr	SPW	2020
872-50-4	212-828-1	Reagent	1-Methyl-2-pyrrolidone (NMP)	FULL	nr	SPW	2020
121-14-2	204-450-0	Reagent	2,4-dinitrotoluene		nr	SPW	2020
75-56-9	200-879-2	Reagent	Methyloxirane (Propylene oxide)	FULL	nr	SPW	2020
68-12-2	200-679-5	Reagent	N,N-dimethylformamide	FULL	nr	SPW	2020
96-18-4	202-486-1	Solvent	1,2,3-trichloropropane	FULL	nr	SPW	2020
111-15-9	203-839-2	Solvent	2-ethoxyethyl acetate		nr	SPW	2020
109-86-4	203-713-7	Solvent	2-methoxyethanol	FULL	nr	SPW	2020
98-54-4	202-679-0	Solvent	4-tert-butylphenol	FULL	nr	SPW	2020
95-53-4	202-429-0	Solvent	o-toluidine	FULL	nr	SPW	2020

Note: The substances that are indicated with an asterisk are parent compounds of substance groups on the candidate list. The member substances of these groups are not shown here for clarity reasons, but they are considered as present in water as well. 1 = measured + detected, 0 = measured + not detected, nr = measured + not reported. Column 'Year' gives the year the measurement was done or in case of SPW when the data was published. When multiple years are given, they are in the same order as the source.*

Appendix E: Overview of CL substances measured in the Belgian population

CAS No.	EC No.	Chemical group	Substance name	Registration status	Presence humans	Study	Year
80-05-7	201-245-8	Bisphenol	4,4'-isopropylidenediphenol	FULL	1	DEMOCOPHES-BE; 3xG; FLEHS2Ado; FLEHS3Adult; FLEHS4Ado	2010-2012; 2019-2021; 2007-2011; 2012-2015; 2016-2020
1163-19-5	214-604-9	Halogenated FRs	Bis(pentabromophenyl) ether (decabromodiphenyl ether) (DecaBDE)	FULL	1	FLEHS2 (HotspotGenkZ, HotspotM, Ado, Nb)	2007-2011
25637-99-4	247-148-4	Halogenated FRs	Hexabromocyclododecane	FULL	1	FLEHS2 (HotspotGenkZ, HotspotM, Ado, Nb)	2007-2011
115-96-8	204-118-5	Halogenated FRs	Tris(2-chloroethyl) phosphate	FULL	1	FLEHS4Ado	2016-2020
7778-39-4	231-901-9	Metals	Arsenic acid	FULL	1	3xG; FLEHS2 (HotspotGenkZ, HotspotM, Ado, Adult, Nb); FLEHS3 (HotspotGenkZ, Ado, Adult, Nb); FLEHS4Ado	2019-2021; 2007-2011; 2012-2015; 2016-2020
7440-43-9	231-152-8	Metals	Cadmium	FULL	1	3xG; DEMOCOPHES-BE; FLEHS1 (Ado, Adult, Nb); FLEHS2 (HotspotGenkZ, HotspotM, Ado, Adult, Nb); FLEHS3 (HotspotGKZ, Ado, Adult, Nb); FLEHS4Ado	2019-2021; 2010-2012; 2002-2006; 2007-2011; 2012-2015; 2016-2020
513-78-0	208-168-9	Metals	Cadmium carbonate	FULL	1		
10108-64-2	233-296-7	Metals	Cadmium chloride	FULL	1		
7790-79-6	232-222-0	Metals	Cadmium fluoride		1		
21041-95-2	244-168-5	Metals	Cadmium hydroxide	FULL	1		
10325-94-7	233-710-6	Metals	Cadmium nitrate	FULL	1		

CAS No.	EC No.	Chemical group	Substance name	Registration status	Presence humans	Study	Year
1306-19-0	215-146-2	Metals	Cadmium oxide	FULL	1		
10124-36-4, 31119-53-6	233-331-6	Metals	Cadmium sulphate	INTERMEDIATE	1		
1306-23-6	215-147-8	Metals	Cadmium sulphide	FULL	1		
7738-94-5	231-801-5	Metals	Chromic acid		1	3xG; FLEHS2 (HotspotGenkZ, HotspotM, Ado); FLEHS3 (Ado, Adult)	2019-2021; 2007-2011; 2012-2015
1333-82-0	215-607-8	Metals	Chromium trioxide	FULL	1		
7439-92-1	231-100-4	Metals	Lead	FULL	1	3xG; FLEHS1 (Ado, Adult, Nb); FLEHS2 (HotspotGenkZ, HotspotM, Ado, Nb); FLEHS3 (HotspotGKZ, Ado, Nb); FLEHS4Ado	2019-2021; 2002-2006; 2007-2011; 2012-2015; 2016-2020
13814-96-5	237-486-0	Metals	Lead bis(tetrafluoroborate)	FULL	1		
7758-97-6	231-846-0	Metals	Lead chromate		1		
12656-85-8	235-759-9	Metals	Lead chromate molybdate sulphate red (C.I. Pigment Red 104)	FULL	1		
20837-86-9	244-073-9	Metals	Lead cyanamidate	FULL	1		
301-04-2	206-104-4	Metals	Lead di(acetate)	FULL	1		
13424-46-9	236-542-1	Metals	Lead diazide, Lead azide	FULL	1		
10099-74-8	233-245-9	Metals	Lead dinitrate	FULL	1		
6477-64-1	229-335-2	Metals	Lead dipicrate		1		
7784-40-9	232-064-2	Metals	Lead hydrogen arsenate		1		
1317-36-8	215-267-0	Metals	Lead monoxide (lead oxide)	FULL	1		
12036-76-9	234-853-7	Metals	Lead oxide sulfate	FULL	1		

CAS No.	EC No.	Chemical group	Substance name	Registration status	Presence humans	Study	Year
15245-44-0	239-290-0	Metals	Lead styphnate	FULL	1		
1344-37-2	215-693-7	Metals	Lead sulfochromate yellow (C.I. Pigment Yellow 34)	FULL	1		
12060-00-3	235-038-9	Metals	Lead titanium trioxide	FULL	1		
12626-81-2	235-727-4	Metals	Lead titanium zirconium oxide	FULL	1		
17570-76-2	401-750-5	Metals	Lead(II) bis(methanesulfonate)	NONS	1		
81-15-2	201-329-4	Organic substance	5-tert-butyl-2,4,6-trinitro-m-xylene (Musk xylene)		1	FLEHS2RefAdo, 3xG	2019-2021
56-55-3	200-280-6	PAH	Benz[a]anthracene		1	FLEHS3Ado	2012-2015
50-32-8	200-028-5	PAH	Benzo[def]chrysene (Benzo[a]pyrene)		1	FLEHS3Ado	2012-2015
191-24-2	205-883-8	PAH	Benzo[ghi]perylene		1	FLEHS3Ado	2012-2015
207-08-9	205-916-6	PAH	Benzo[k]fluoranthene		1	FLEHS3Ado	2012-2015
218-01-9	205-923-4	PAH	Chrysene		1	FLEHS3Ado	2012-2015
206-44-0	205-912-4	PAH	Fluoranthene		1	FLEHS3Ado	2012-2015
85-01-8	201-581-5	PAH	Phenanthrene	INTERMEDIATE	1	FLEHS4Ado	2012-2015
129-00-0	204-927-3	PAH	Pyrene	INTERMEDIATE	1	FLEHS3Ado	2012-2015
2058-94-8	218-165-4	PFAS	Henicosfluoroundecanoic acid		1	FLEHS4Ado	2016-2020

CAS No.	EC No.	Chemical group	Substance name	Registration status	Presence humans	Study	Year
335-76-2	206-400-3	PFAS	Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts*		1	FLEHS4Ado	2016-2020
335-67-1	206-397-9	PFAS	Pentadecafluorooctanoic acid (PFOA)		1	3xG; FLEHS2 (HotspotM, Adult, Nb); FLEHS3 (Adult, Nb); FLEHS4Ado	2019-2021; 2007-2011; 2012-2015; 2016-2020
		PFAS	Perfluorobutane sulfonic acid (PFBS) and its salts*		1	3xG; FLEHS3 (Adult, Nb); FLEHS4Ado	2019-2021; 2012-2015; 2016-2020
		PFAS	Perfluorohexane-1-sulphonic acid and its salts*		1	3xG; FLEHS3 (Adult, Nb); FLEHS4Ado	2019-2021; 2012-2015; 2016-2020
		PFAS	Perfluorononan-1-oic-acid and its sodium and ammonium salts*		1	3xG; FLEHS3 (Adult, Nb); FLEHS4Ado	2019-2021; 2012-2015; 2016-2020
307-55-1	206-203-2	PFAS	Tricosafafluorododecanoic acid		1	FLEHS4Ado	2016-2020
85-68-7	201-622-7	Phthalates	Benzyl butyl phthalate (BBP)	FULL	1	3xG; DEMOCOPHES-BE; FLEHS2 (Ado, Adult); FLEHS3Ado; FLEHS4Ado	2019-2021; 2010-2012; 2007-2011; 2012-2015; 2016-2020
117-81-7	204-211-0	Phthalates	Bis (2-ethylhexyl)phthalate (DEHP)	FULL	1	3xG; DEMOCOPHES-BE; FLEHS2 (Ado, Adult); FLEHS3Ado; FLEHS4Ado	2019-2021; 2010-2012; 2007-2011;

CAS No.	EC No.	Chemical group	Substance name	Registration status	Presence humans	Study	Year
							2012-2015; 2016-2020
84-74-2	201-557-4	Phthalates	Dibutyl phthalate (DBP)	FULL	1	3xG; DEMOCOPHES-BE; FLEHS2 (Ado, Adult); FLEHS3Ado; FLEHS4Ado	2019-2021; 2010-2012; 2007-2011; 2012-2015; 2016-2020
84-69-5	201-553-2	Phthalates	Diisobutyl phthalate	FULL	1	3xG; DEMOCOPHES-BE; FLEHS3Ado; FLEHS4Ado	2019-2021; 2010-2012; 2012-2015; 2016-2020

Note: The substances that are indicated with an asterisk are parent compounds of substance groups on the candidate list. The member substances of these groups are not shown here for clarity reasons, but they are considered as present in water as well. 1 = measured + detected, 0 = measured + not detected. Column 'Year' gives the duration of the study (sampling did not happen continuously over the duration but rather during a shorter time period during the duration) or in case of 3xG the sampling year. When multiple years are given, they are in the same order as the source.*

Appendix F: Results of industry survey

Manufacturers

The information collected for this category included:

- Substance identity
- Manufactured volume annually
- Availability of workers exposure data
- Availability of water/air emission data
- Annual release to water/ air

There were 12 respondents in the manufacturing category, of which only 7 provided details on the identity of the SVHC manufactured and provided details on the company involved. 2 responses by 1 respondent were excluded since the substance CAS numbers used by the respondent are not valid hence the substances could not be identified. Some respondents mentioned the manufacturing of more than one SVHC, while one response was considered invalid. The full list of substances reported in the survey with substance data are as shown in Table 1.10 .

Table 1.10: List of substances reported in manufacturing category

Substance name	CAS No	No. of reports from survey	In Annex XIV	Registration Status
2-Methoxyethanol	109-86-4	1	No	Full
Anthracene oil	90640-80-5	1	Yes	Full
Anthracene oil/ Anthracene paste	90640-81-6	1	No	Intermediate
Bisphenol A	80-05-7	1	No	Full
Chromium trioxide	1333-82-0	2	Yes	Full
Coal tar	65996-93-2	1	Yes	Full
Diboron trioxide	1303-86-2	1	No	Full
Propylene oxide	75-56-9	1	No	Full

As such, a total of nine responses for eight different SVHCs which were identified to be manufactured in Belgium was provided. Three of the SVHCs are already on Annex XIV and one has intermediate registration status only. These were excluded from the final list in Table 1.11 below. The final list captured four of the 73 SVHCs registered in Belgium.

From the 12 manufacturers of SVHC that responded, Bisphenol A had the highest annual manufactured volume of 200 kilotonnes among the reported substances. While Bisphenol A has a full registration, it is expected most of the BPA production is used to manufacture a polymer. This is a use of BPA to manufacture another substance (a polymer) but does in contrast to similar substances, require a full registration.

Propylene oxide has a full registration but is also used for a large part as an intermediate or monomer.

Table 1.11: Final list of SVHCs manufactured in Belgium

Substance name	CAS No	Quantities manufactured (tpa)	Typical annual emitted volume to water (kg/yr)	Typical annual emitted volume to air (kg/yr)
2-Methoxyethanol	109-86-4	1200		fugitive emissions: 382
Bisphenol A	80-05-7	200,000	1,55 (covers BPA- and polycarbonate production)	0.013
Diboron trioxide	1303-86-2	1-10		
Propylene oxide	75-56-9	>10,000		

Note: The quantities and emissions indicated are as reported by individual respondents

Importers

The following information was collected for this category:

- Substance identity
- Imported volume annually

There were 18 respondents (14%) who said they import SVHC into Belgium. 2 of these respondents had indicated they do not import SVHCs but still went ahead and provided importation information on the SVHCs and were thus included in the total number of 18. 3 respondents indicated they were importers but provided no further information. In one case the respondent mentioned a substance which is not on the CL. These cases were not taken further into account.

5 respondents reported importing more than 3 substances. It is also important to note that there were also 9 respondents who answered: "I do not know" (7%), to the question if the imported substances were SVHC, indicating they were not aware whether the substances they imported were SVHCs or not.

In total, 14 respondents provided information on the identity of one or more substance they import. In total, information on 18 substances were provided of which 13 were not on Annex XIV. One respondent, a manufacturer of fine chemicals, reported they import 100 SVHC but due to the survey design, they could provide information on only 3 of their most important SVHCs.

The full list of substances reported is shown in Table 1.12.

Table 1.12: Full list of substances reported to be imported from the survey

Substance name	CAS No	No. reports from survey	Annex XIV	Registration Status
1,4 Dioxane	123-91-1	1	No	Full
2,2'-Methylenebis(4-methyl-6-tert-butylphenol)	119-47-1	1	No	Full
2-ethoxyethanol	110-80-5	1	No	Full
2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	71868-10-5	1	No	Full
Barium diboron tetraoxide*	13701-59-2	1	No	Full
Boric acid	10043-35-3	1	No	Full
Boron oxide	1303-86-2	1	No	Full
Bromopropane	1	1	Yes	Full
Carbon Black*	1333-86-4	1	No	Full
Chromium trioxide	1333-82-0	1	Yes	Full
Coal tar	65996-93-2	1	Yes	Full
Glutaraldehyde	111-30-8	1	No	Full
Marlotherm (Terphenyl, hydrogenated)	61788-32-7	1	No	
N-Methyl-2-pyrrolidone (NMP)	872-50-4	3	No	Full
N-N-Dimethylformamide	68-12-2	2	No	Full
Octamethylcyclotetrasiloxane/Silicon	556-67-2	1	No	Full
Perfluorobutane sulfonic acid (PFBS) and its salts	375-73-5	2	No	Full
Propylene oxide	75-56-9	1	No	Full

*The substance is not on the candidate list and was subsequently excluded.

Excluding the substances on Annex XIV and those not on the CL, the final list of 12 SVHCs are as shown in Table 1.13.

Table 1.13: Final list of SVHC imported into Belgium SVHCs

Substance name	CAS No	Quantities imported (tpa)	Annex XIV	Registration Status
1-Methyl-2-pyrrolidone (NMP)	872-50-4	<1	No	Full
1-Methyl-2-pyrrolidone (NMP)	872-50-4	1-10	No	Full
1,4 Dioxane	123-91-1	< 1	No	Full
2-ethoxyethanol	110-80-5	1-10	No	Full
2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	71868-10-5	1-10	No	Full
2,2'-Methylenebis(4-methyl-6-tert-butylphenol)	119-47-1	0.04	No	Full

Substance name	CAS No	Quantities imported (tpa)	Annex XIV	Registration Status
Boric acid	10043-35-3	10-100	No	Full
Boron oxide	1303-86-2	1-10	No	Full
Glutaraldehyde	111-30-8	10-100	No	Full
Marlotherm (Terphenyl, hydrogenated)	61788-32-7	1-10	No	Full
1-Methyl-2-pyrrolidone (NMP)	872-50-4	<1	No	Full
N-N-Dimethylformamide	68-12-2	0.1	No	Full
N-N-Dimethylformamide	68-12-2	60	No	Full
Octamethylcyclotetrasiloxane/Silicon	556-67-2	1-10	No	Full
Perfluorobutane sulfonic acid (PFBS) and its salts	375-73-5	< 1	No	Full
Propylene oxide	75-56-9	25000	No	Full

Downstream users

The following information was collected for this category:

- Number of SVHC used
- Substance identity
- SME status of the company
- Use volume
- Technical function
- How used (as such, mixture, to formulate, to manufacture article)
- Brief process description
- Criticality of the use
- Presence in the end product
- Awareness of alternatives
- Type of end product made with the SVHC
- Use of the end product
- Sector of use of the end product
- Value of the business involving the SVHC
- Part of business in Belgium
- Outlook for the next 5 years
- Availability of workers exposure data
- Availability of water/air emission data
- Annual emitted to water/air

The survey results indicated that the downstream users are the largest group among the 4 categories that interact with SVHCs. There were 48 respondents for this category. In total they reported to use an SVHC in 83 cases. Of these 48 respondents, 34 provided details on the identity of at least one SVHC and they reported on 48 (43%) of the cases. 11% of the respondents did not know if they were using SVHC.

From the 48 cases, details of 28 different SVHC were reported. One reported substance does not meet the SVHC criteria and is hence not on the CL and was eliminated from the list. Of the 28 SVHCs, 22 are not included in Annex XIV and of the 48 use cases 43 are related to non-Annex XIV substances. Few (five) of the 48 reported use cases were intermediate uses but their reported volume was the highest. Excluding substances on Annex XIV and for intermediate use cases, 39 SVHCs use cases of the 48 reported use cases were taken into consideration.

Several other SVHC were mentioned to be used but no further details were provided for these use cases and these were omitted from the final list.

Table 1.14 below shows the results from the downstream users.

Table 1.14: SVHC used by Downstream Users – all responses

No.	Substance Name	CAS No	Annex XIV	Use Volume (tpa)	Intermediate use (SCC and non-SCC)
1	1-Methyl-2-pyrrolidone (NMP)	872-50-4	No	10-100	
2	2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	71868-10-5	No	0,4	
3	2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	71868-10-5	No	< 1	
4	2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	71868-10-5	No	1- 10	
5	4-(1,1,3,3-tetramethylbutyl)phenol ethoxylated	2315-61-9	No	< 1	
6	Alkanes, C14-17, chloro	85535-85-9	No	< 1	
7	Alkanes, C14-17, chloro	85535-85-9	No	717kg	
8	Alkanes, C14-17, chloro	85535-85-9	No	10-100	
9	Bisphenol A / 4,4'-isopropylidenediphenol	80-05-7	No	175000	Yes
10	Bisphenol A / 4,4'-isopropylidenediphenol	80-05-7	No	< 1	
11	Boric acid	10043-35-3	No	< 1	
12	Boric acid	10043-35-3	No	10-100	
13	Boric acid	10043-35-3	No	<1	
14	Chromium trioxide	1333-82-0	Yes	100-1000	Yes
15	Chromium trioxide	1333-82-0	Yes	10	
16	Chromium trioxide	1333-82-0	Yes	5	
17	Chromium trioxide	1333-82-0	Yes	3,5	

No.	Substance Name	CAS No	Annex XIV	Use Volume (tpa)	Intermediate use (SCC and non-SCC)
18	Chromium trioxide	1333-82-0	Yes	0.1	
19	Chromium trioxide	1333-82-0	Yes	10	
20	Chromium trioxide	1333-82-0	Yes	4	
21	Cobalt(II) dinitrate	10141-05-6	No	10-100	Yes
22	crystal violet dye	548-62-9	No	< 1	
23	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)) (ADCA)	123-77-3	No	412	
24	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)) (ADCA)	123-77-3	No	10-100	
25	Disodium octaborate	12008-41-2	Yes	1- 10	
26	Dodecamethylcyclohexasiloxane	540-97-6	No	< 1	
27	Ethylenediamine	107-15-3	No	100-1000	Yes
28	Ethylenediamine	107-15-3	No	<1	
29	Glutaraldehyde	111-30-8	No	1- 10	
30	Glutaraldehyde	111-30-8	No	5	
31	Glutaraldehyde	111-30-8	No	10-100	
32	Lead	7439-92-1	No	< 1	
33	Lead	7439-92-1	No	< 1	
34	Lead	7439-92-1	No	< 1	

No.	Substance Name	CAS No	Annex XIV	Use Volume (tpa)	Intermediate use (SCC and non-SCC)
35	Methyloxirane (Propylene oxide)	75-56-9	No	25000	Yes
36	Methyloxirane (Propylene oxide)	75-56-9	No	10-100	
37	N,N-dimethylacetamide (DMAC)	127-19-5	No	150	
38	N,N-dimethylformamide	68-12-2	No	73	
39	Pentadecafluorooctanoic acid (PFOA)	335-67-1	No	< 1	
40	Perfluorobutane sulfonic acid (PFBS) and its salts	375-73-5	No	< 1	
41	Phenol, tetrapropenyl derivatives	74499-35-7	No	10-100	
42	Potassium chromate	7789-00-6	Yes	< 1	
43	Propionitrile	107-12-0	No	< 1	
44	Reaction product of 1,3,4-thiadiazolidine-2,5-dithione, formaldehyde and phenol, heptyl derivs.	1471311-26-8	Yes	< 1	
45	S-(tricyclo(5.2.1.0 ^{2,6})deca-3-en-8(or 9)-yl O-(isopropyl or isobutyl or 2-ethylhexyl) O-(isopropyl or isobutyl	255881-94-8	No	< 1	
46	Sodium dichromate	10588-01-9	Yes	14	
47	Stannane, dioctyl-, bis(coco acyloxy) derivs.	91648-39-4	No	< 1	
48	Tris(nonylphenyl) phosphite	26523-78-4	No	0.001	

In 23 use cases the technical function of the SVHC was as shown in Table 1.15. In some use cases more than one technical function was selected for one substance.

Table 1.15: Technical function of the SVHC (DU)

Technical function	No. of reports
Coating material	8
Used as intermediate substance to manufacture another substance under strictly controlled conditions	5
Solvent	5
Catalyst	4
Used as intermediate substance to manufacture another substance	3
Surfactant	3
Flame retardant	3
Lubricant	2
Pigment	1
Heat transfer agent	0

However, in 25 use cases, several other technical functions were reported. In total, almost 30 different technical functions were reported for the 48 use cases indicating a very high variation in technical function that SVHCs can have.

The users of the SVHC were asked to report on the nature of the users of the products made with the SVHCs. Multiple replies were possible. In the majority of the cases (38; 64%) the direct users of the substances made are industrial users, in 14 (24%) cases professional users and in 9 cases (15%) consumers.

The sectors in which the substances made with the SVHC are used are as follows:

Table 1.16: Sector of use of the substances made with the SVHC

Sector	Nr reported	%
Construction	17	16
Automotive	14	13
Chemicals (including petrochemicals and biocides)	13	13
Electronics and telecommunication	10	10
Aerospace & defense	8	8
Medical & Pharmaceutical	8	8
Food & Feed	7	7
Textiles	7	7
Electricity and power generation	5	5
Marine sector	4	4
Oil & Gas	4	4
water supply & water management (including wastewater)	4	4
Metallurgy	2	2

Sector	Nr reported	%
Mining and quarrying	1	1
Total	104	

Beside the list above, additional sectors such as agricultural, quality control, wood and furniture were reported. In several use cases, the products made with the SVHC were relevant for various sectors.

Table 1.17: Dependency of the DU on the SVHC

Dependency	Nr of cases	%
Intrinsic part of the product	19	28
Fully dependent, intrinsic part of the process	17	25
Allow us to make a better product	13	19
Required to meet the customer demands for most customers	10	15
Required to meet the customer demands for some customers	4	6
Increases production efficiency, e.g., reduced electricity use.	3	4
Allows us to make a cheaper process	2	3
Total (multiple entries were possible)	68	

In 25 (52%) of the use cases, the company has substance specific exposure data available for the workers. Only in 12 (25%) of the use cases, the company has substance specific emission data to water available. In the cases where emissions to water were reported, these values were small (all $\leq$ 1kg per year). In about the same number of cases (14; 29%) substance specific data of emissions to air are available; The reported were in all but one case <1 kg per year.

The final list of substances used in Belgium, according to the survey, are shown in Table 1.18 below.

Table 1.18: Final list of SVHCs used in Belgium as reported in the survey

No.	Name	CAS No	Annex XIV	No of reports from survey
1	1-Methyl-2-pyrrolidone (NMP)	872-50-4	N	1
2	2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	71868-10-5	N	3
3	4-(1,1,3,3-tetramethylbutyl)phenol ethoxylated	2315-61-9	N	1
4	Alkanes, C14-17, chloro	85535-85-9	N	3
5	Bisphenol A / 4,4'-isopropylidenediphenol	80-05-7	N	2
6	Boric acid	10043-35-3	N	3
7	Cobalt(II) dinitrate	10141-05-6	N	1
8	crystal violet dye	548-62-9	N	1
9	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)) (ADCA)	123-77-3	N	2
10	Disodium octaborate	12008-41-2	N	1
11	Dodecamethylcyclohexasiloxane	540-97-6	N	1
12	Ethylenediamine	107-15-3	N	2
13	Glutaraldehyde	111-30-8	N	3
14	Lead	7439-92-1	N	3
15	Methyloxirane (Propylene oxide)	75-56-9	N	1
16	N,N-dimethylacetamide (DMAC)	127-19-5	N	1
17	N,N-dimethylformamide	68-12-2	N	1

No.	Name	CAS No	Annex XIV	No of reports from survey
18	Pentadecafluorooctanoic acid (PFOA)	335-67-1	N	1
19	Perfluorobutane sulfonic acid (PFBS) and its salts	375-73-5	N	1
20	Phenol, tetrapropenyl derivates	74499-35-7	N	1
22	S-(tricyclo(5.2.1.0 ^{2,6})deca-3-en-8(or 9)-yl O-(isopropyl or isobutyl or 2-ethylhexyl) O-(isopropyl or isobutyl	255881-94-8	N	1
23	Stannane, dioctyl-, bis(coco acyloxy) derivs.	91648-39-4	N	1
24	Tris(nonylphenyl) phosphite	26523-78-4	N	1
Total				36

Sellers

From the survey, 10 respondents reported they sell one or more SVHCs. Two of the respondents did not give any further information on the substances they sell or to the sectors they sell to and were thus excluded. In total, details on 13 use cases were provided by 8 sellers of SVHCs. In one use case, the mentioned substance is not on the candidate list yet and was not taken into account; 12 use cases were retained.

The respondents who were sellers of the SVHC were asked to report on the nature of the customers of the products made with the SVHC's. Multiple replies were possible. In the majority of the cases (10; 83%) the direct users of the substances made are industrial users, in six (50%) cases professional users and in one case (8%) consumers.

In seven use cases the technical function of the SVHC was indicated as intermediate (five), solvent (three), lubricant (two) and flame retardant (one). In some use cases more than one technical function was selected. The SVHCs listed were noted by respondents to be used in various sectors as shown below:

Table 1.19: Sector of use in which the SVHC is sold

Sector	No. Reported
Aerospace & defence	1
Automotive	2
Chemicals (including petrochemicals and biocides)	4
Construction	1
Electricity and power generation	1
Electronics and telecommunication	0
Food & Feed	1
Marine sector	1
Medical & Pharmaceutical	5
Metallurgy	0
Mining and quarrying	0
Oil & Gas	1
Textiles	0
Water supply & water management (including wastewater)	0
Total	17

Few other sectors were mentioned (agricultural, R&D, Display). In two cases the seller did not know the sector of use.

Table 1.20: SVHC sold by sellers in Belgium (excluding those in Annex XIV and with intermediate registration)

Substance	CAS No	Function	Sector
1-Methyl-2-pyrrolidone (NMP)	872-50-4	Solvent	Medical & Pharmaceutical
1,4-dioxane	123-91-1	Intermediate substance to manufacture another substance Solvent	Research institution (e.g. universities) Medical & Pharmaceutical Chemicals (including petrochemicals and biocides)
2-ethoxyethanol	110-80-5	Unaware (Only distributes)	To other smaller distributors
2-methoxyethanol	109-86-4	Used as intermediate substance to manufacture another substance	Doesn't know the sectors their customers sell to
2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	71868-10-5	UV Photoinitiator UV printing inks	Sign & Display printing
4-(4,4-dimethylpentan-2-yl)phenol	911371-07-8	Not provided	
4,4'-isopropylidenediphenol	80-05-7	Used as intermediate substance to manufacture another substance	Chemicals (including petrochemicals and biocides)
Boric acid	10043-35-3	Physical crosslinker	Aerospace & defense Construction Medical & Pharmaceutical Oil & Gas
Glutaral	111-30-8	Gelatine Hardener	Medical & Pharmaceutical
N,N-dimethylformamide	68-12-2	intermediate substance to manufacture another substance Solvent	Medical & Pharmaceutical Research and analysis
Phenol, (tetrapropenyl) derivatives	74499-35-7	Lubricant	Automotive Marine sector Electricity and power generation
S-(tricyclo(5.2.1.0'2,6)deca-3-en-8(or 9)-yl O-(isopropyl or isobutyl or 2-ethylhexyl) O-(isopropyl or isobutyl or 2-ethylhexyl) phosphorodithioate	255881-94-8	Lubricant	Automotive

Past substitution of Candidate List substances

The respondents were also asked to give information on past substitution of SVHC or cases where the use of an SVHC was discontinued by halting production.

There were 100 responses for this question and the responses are as shown in Table 1.21. 26% of the respondents to this question indicate that they have substituted a SVHC in the past. 1 respondent noted they did not substitute but relocated the process outside of the EU altogether and 1 respondent stopped the use of the SVHC altogether.

Table 1.21: Past substitution of SVHC

Response	No.
Yes, with a substance without SVHC properties	20
Yes, with a Candidate list substance not yet on Annex XIV	2
Yes, with a substance with SVHC properties but at that point in time not on the Candidate list	3
No	50
Not aware	23
The process was relocated to outside of the EU	1
Didn't substitute but stopped the use entirely	1

From the 25 respondents that indicated they have substituted an SVHC in the last 10 years, the survey showed that 24 of them are downstream users as shown in Table 1.22 while one did not indicate where they lie in the supply chain.

Table 1.22: Substitution of SVHC

Response	No.	Role in supply chain
Yes, with a substance without SVHC properties	20	19 are downstream users; 1 did not indicate where they lie in the supply chain
Yes, with a Candidate list substance not yet on Annex XIV	2	2 are downstream users
Yes, with a substance with SVHC properties but at that point in time not on the Candidate list	3	3 are downstream users

A look at the survey results for the three different categories of respondents who said they had carried out SVHC substitution was further analysed.

The most important drivers for substitution from the survey were as shown below. Some respondents marked more than one driver as shown in the subsequent tables.

Table 1.23: Drivers for substitution

Drivers of substitution	No. of responses
Regulatory need	13
HSE consideration	10
Strategic decision	4
Internal policy	1

Out of the 25 respondents that indicated they had substituted SVHC in the last seven years:

- 1 11 said it took them <2 years to make the substitution.
- 2 9 said it took 2-5 years to make the substitution.
- 3 2 said it took 5-10 years to make the substitution.

There were 2 respondents who said they has carried out substitution with a candidate list substance that is not yet on Annex XIV.

Table 1.24: Substitution with a candidate list substance not yet on Annex XIV

Substance name	CAS No	Driver for substitution	Duration
Decabromodiphenyl oxide	1163-19-5	Market pressure HSE consideration Regulatory need	2-5 years
N-Methyl-2-pyrrolidone (NMP)	872-50-4	Regulatory need	< 2years

There were three respondents who said they had substituted with another SVHC which was at that point in time not yet on the CL.

Table 1.25: Substitution with substance with SVHC but at that point in time it was not on the candidate list

Substance name	CAS No	Driver for substitution	Duration
Boric acid	10043-35-3	HSE consideration	< 2years
MDA	101-77-9	No more available	< 2years
Polyethylene glycol nonylphenyl ether	9016-45-9	HSE consideration, Regulatory need	2-5 years

There were 20 respondents under the category “Substitution with a substance without SVHC properties”. Five respondents did not indicate the substance they had substituted nor the drivers for their substitution and are thus excluded from Table 1.26.

Table 1.26: SVHCs substituted with substances without SVHC properties

Substance name	CAS No	Driver for substitution	Duration
2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone	119313-12-1	HSE consideration	2-5 years
4-nonylphenol, branched, ethoxylated	127087-87-0	Regulatory need	2-5 years

Substance name	CAS No	Driver for substitution	Duration
nitrilotriacetic acid	139-13-9	Strategic decision	< 2years
reaction product of 1,3,4-thiadiazolidine-2,5-dithione, formaldehyde and phenol heptylderiv	1471311-26-8	Regulatory need	5 - 10 years
Heptadecafluorooctanesulfonic acid	1763-23-1	Regulatory need	2-5 years
2-(2H-Benzotriazol-2-yl)-4,6-ditertpentylphenol	25973-55-1	Strategic decision	< 2years
formaldéhyde	50-00-0	HSE consideration Regulatory need Internal Policy	< 2years
Dodecamethylcyclhexasiloxaan	540-97-6	Market pressure Strategic decision HSE consideration Regulatory need	2-5 years
DMF	68-12-2	Regulatory need	< 2years
2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	71868-10-5	Market pressure Strategic decision HSE consideration	< 2years
Lead	7439-92-1	Regulatory need	< 2years
Lead chromate	7758-97-6	HSE consideration Regulatory need	< 2years
Phenol, 4-nonyl-, branched	84852-15-3	Regulatory need	< 2years
N-methylpyrrolidon	872-50-4	HSE consideration	2-5 years
Nonylphenol-polyethyleneglycol ether	9016-45-9	HSE consideration Regulatory need	2-5 years

Ongoing substitution activities

There were 97 responses when respondents were asked if they are currently developing any alternatives for the use of a candidate list substance.

Table 1.27: Survey respondents currently developing alternatives for the use of a candidate list substance

Response	No of responses	%
Yes	14	14
No	62	64
I cannot answer this question	21	22
Total	97	100

Note:

- 50 of the respondents who said “No” had also answered “No” when asked if they had done any substitution activities in the last 10 years.

- For the 14 respondents who answered “Yes”, there were 11 substances mentioned for which the respondents are currently searching for alternatives. The 14 respondents who answered “Yes” were all downstream users but two were also importers of the substances.
- Four respondents indicated that the substance they currently use is under Annex XVII (Restriction). Two of them did not indicate the substance details.

Table 1.28 shows the substances for which the respondents said they are currently looking for alternatives and whether they are on the list for authorized and notified uses for SVHC for which downstream uses have been notified in Belgium. There are 63 authorised and notified uses for SVHC for which downstream uses have been notified in Belgium.

Table 1.28: SVHC subject to substitution efforts

Substance	CAS No	Beyond sunset date Y/N	No of respondents from survey	No of notifications for substance in Belgium
2-Methyl-4'-(methylthio)-2-morpholinopropiophenone	71868-10-5	No	1	
Azobisformamide	123-77-3	No	1	
Boric acid	10043-35-3	No	1	
Chloroalkanes C14-17	85535-85-9	No	1	
Chromium trioxide	1333-82-0	Y	3	34
Diocetyl tin dilaurate	3648-18-8	No	1	
PFAS		No	1	
Phenol, tetrapropenyl derivates	74499-35-7	No	1	
Sodium dichromate	10588-01-9	Y	1	5
Tris(nonylphenyl) phosphite	26523-78-4	No	1	

For the above substances in Table 1.28 for which the downstream users are currently looking for alternatives, the technical functions and the sectors in which the substances are used were also obtained from the survey and are as shown in

Table 1.29.

Table 1.29: Technical functions and sectors substances for which alternatives are being developed

Substance	CAS No	Technical function of Substance	Sector(s) used	Expected duration to market alternative
PFAS		Lubricant		It is market ready
Boric acid	10043-35-3	Physical cross-linker	Aerospace & defense Medical & Pharmaceutical Oil & Gas Construction	I cannot answer this question
Sodium dichromate	10588-01-9	Coating material	Food and Feed	2-5 years
Azobisformamide	123-77-3	Blowing agent	Automotive	I do not know
Chromium trioxide	1333-82-0	Catalyst	Plastics	I cannot answer
Chromium trioxide	1333-82-0	Coating material	Food and Feed	5-10 years
Chromium trioxide	1333-82-0	Coating material	Textiles machinery	I cannot answer
Tris(nonylphenyl) phosphite	26523-78-4	Antioxidant	Automotive Aerospace & defense	< 2 years
Dioctyltin dilaurate	3648-18-8	Catalyst	Construction	5-10 years
Perfluorobutane sulfonic acid (PFBS) and its salts	375-73-5	Additive in photoresist	Electronics and telecommunications	I do not know
2-Methyl-4'-(methylthio)-2-morpholinopropiophe none	71868-10-5	Catalyst	Electronics and telecommunication	< 2 years
Phenol, tetrapropenyl derivates	74499-35-7	Precursor of an additive remaining in the final mix as contaminant	Automotive Marine sector Marine sector	< 2 years

Substance	CAS No	Technical function of Substance	Sector(s) used	Expected duration to market alternative
Chloroalkanes C14-17	85535-85-9	Plasticiser	Chemicals (including petrochemicals and biocides) Construction	< 2 years
1-Methyl-2-pyrrolidone (NMP)	872-50-4	Solvent	Electronics and telecommunications	I cannot answer

Respondents were also asked about what they think would shorten the time to develop alternatives for SVHCs and 6 indicated they did not know, 4 respondents mentioned more financial resources, 4 said availability of technology and 2 said the time cannot be shortened. For the 2 respondents that answered that the development time cannot be shortened, one said they already have an alternative that is market ready while the other had indicated they would only take less than two years to make the alternative market ready. For the respondents who answered “Do not know” in they further elaborated they could not estimate how long it would take to develop alternatives because:

- The timeline to identify a suitable alternative is unknown
- It might take several years to qualify the identified alternative for high volume manufacturing
- It is not guaranteed that the alternatives will work.

Another respondent answered 5-10 years noting that the pressure for a substitution isn't equal over the entire globe and some of the developments are global driven hence the long time to develop an alternative.

PHASE TWO: DEVELOPMENT OF A PRIORITIZATION METHODOLOGY AND PRIORITIZATION OF SVHC IN BELGIUM

Lead Authors

Molly Jacobs – Sustainable Chemistry Catalyst, University of Massachusetts Lowell
Monika Roy – Sustainable Chemistry Catalyst, University of Massachusetts Lowell

Supporting Authors

Natasha Wauters – VITO
Jos Bessems – VITO
Hiram Moerman – Apeiron Team
Emily Mwangi – Apeiron Team

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1 Introduction

The prioritization of harmful chemical substances and their applications is key to effectively focusing substitution efforts. However, not all substances of very high concern (SVHCs) can be the target of government resources to support substitution at one point in time as there are simply not enough resources because substitution is a process that requires evaluating and supporting adoption of a range of options for specific functional and application needs. The development of a clear prioritization approach is, therefore, necessary to enhance transparency and to support confidence among stakeholders regarding the decision criteria and approach used to establish substitution priorities.

Prioritization approaches are useful when resource limitations constrain the ability to focus substitution efforts on the full suite of SVHCs. Phase 2 of this project was the development of a robust prioritization methodology to target Belgium's substitution efforts that could be followed by programmatic staff in the years to come (Figure 2.1). Specifically, it was important for this methodology to focus on the most concerning SVHCs that would have the greatest positive impact on health and the environment in Belgium if substituted. While regulatory leverage is an important consideration Belgian authorities have to drive substitution efforts for specific SVHCs, this factor was not explicitly taken into account in the creation of the methodology's algorithm. Rather, policy leverage is considered during the last stage of the prioritization process during the Delphi discussion, as well as in the Phase 3 and 4 of this project for policy option considerations and social economic analyses, respectively.

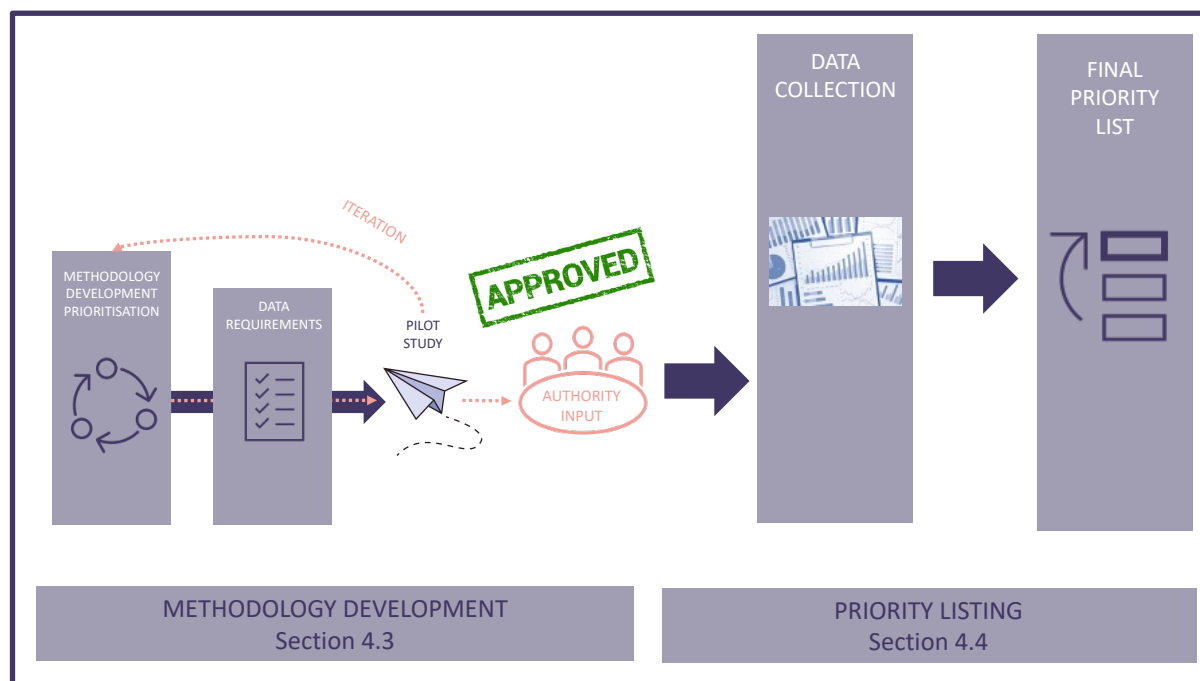


Figure 2.1: A general overview of the prioritization approach.

1.1 Objectives

The objectives of this phase were thus defined as follows:

- To develop an objective, refined and transparent prioritization approach based on the experience of substitution programs in other countries and a vetting of mainly national data sources to identify pragmatic criteria that can be used.
- To develop a detailed protocol for a prioritization process to support substitution programs informed by a pilot study and refined with stakeholder input.
- A discussion with authorities on the prioritization scheme and an initial list of prioritized substances for 2 purposes: (1) a “long list” of 10 substances to be used by the Federal authorities in the “Belgium Builds Back” project and (2) a “shortlist” of 4 substances to be used by the BEP4CAL project in the socio-economic phase of the study.

2 Methodology

Any prioritization method to support substitution has to be embedded in a specific regulatory, societal and political context. For instance, any prioritization of CL substances for targeted substitution support needs to take into account the regulatory position of the substances for use in specific applications within existing legislations such as REACH.

Moving forward a substitution prioritization method could be based on three pillars within this context as shown in Figure 2.2.

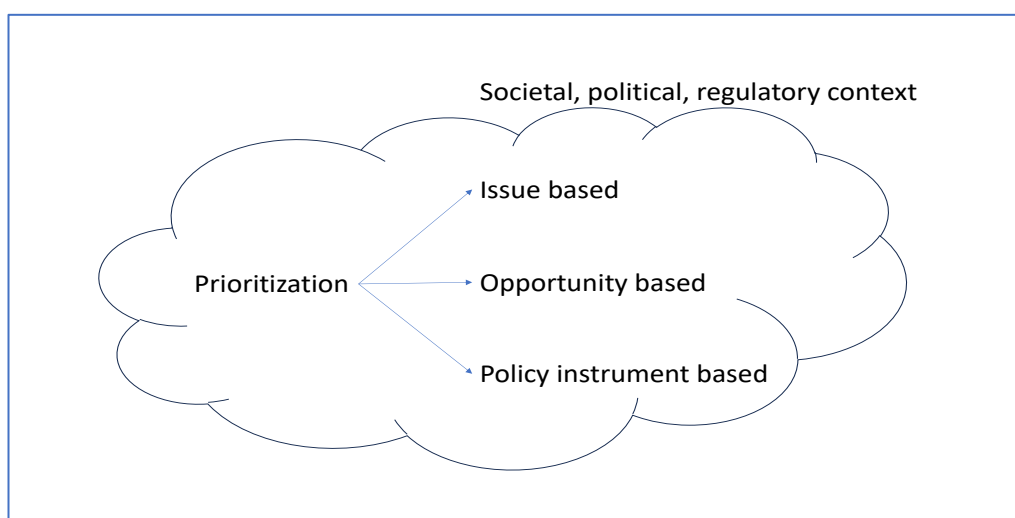


Figure 2.2: Pillars of prioritization method

- **Issue based pillar:** prioritization needs to reflect the “issue” of the inherent hazard and exposure potential of substances.
- **Opportunity based pillar:** prioritization needs to reflect the opportunity for alternative solutions to SVHCs.
- **Policy instrument-based pillar:** prioritization needs to reflect and be responsive to the policy instruments available and their specific provisions to drive and support substitution.

The premise of this project was to identify uses of CL-substances where substitution would be of greatest benefit to the Belgian public and its environment.

The data requirements for such a prioritization approach can be structured as shown in Figure 2.3 and Figure 2.4. In function of the available data, the prioritization scoring formula was different with the scoring involving only “issues and concerns” and did not reflect any priority based on “opportunities”.

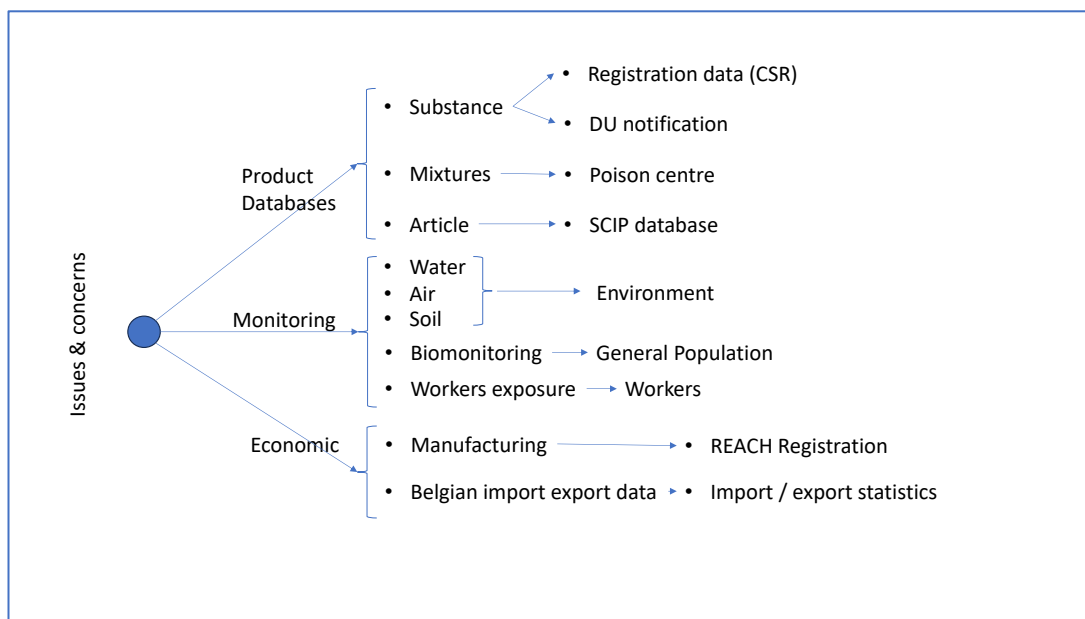


Figure 2.3: Data for issues and concerns on the use of CL substances

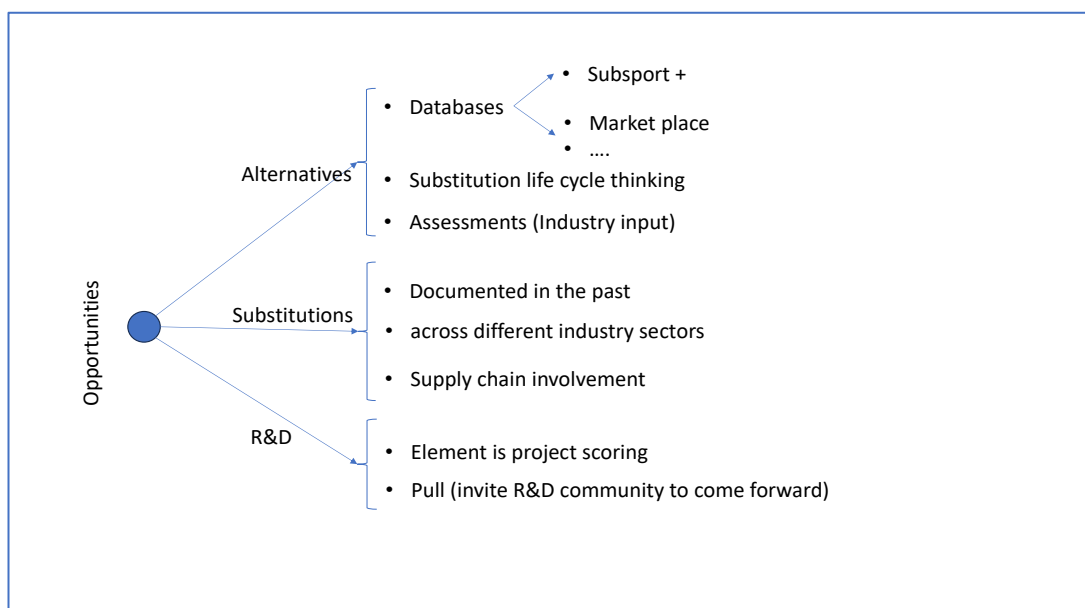


Figure 2.4: Data on opportunities on the use of CL substances

In this project, the prioritization of SVHCs for substitution in specific use contexts was based within the REACH regulatory framework. Thus, the prioritization criteria explicitly took into account the existing REACH legislations and associated interpretation of the role of substitution. Although the project focused on SVHCs that have the potential for future regulatory actions by the European Commission, this project used a non-regulatory policy objective of “substitution support” as the purpose for and target of the prioritization approach. As such, it is critical to note that depending on the policy and/or programmatic objectives driving the prioritization effort, the expected result may be different than the outcomes of this

project. Or more in general, the prioritization of substances for substitution will always be in relation to a context.

Development of prioritization approach for the BEP4CAL project included the following methodological elements:

- **Insights on prioritization strategies informed by interviews with 6 substitution programs.** Interviews with substitution programs were used to reveal practical insights regarding data, criteria and processes that were considered critical for identifying substitution priorities.
- **Stakeholder surveys.** The project surveyed (a) “Prioritization Criteria Survey” to understand perspectives on prioritization criteria options with various Belgian and international stakeholders and (b) “Industry survey on SVHC in Belgium” to collect and understand SVHC use and substitution information.
- **Prioritization principles.** Principles were used to help ground and guide the prioritization process
- **The 3-step prioritization approach.** The approach used vetted national data sources.
- **Pilot prioritization results and lessons learned.** Preliminary results from piloting the prioritization approach were offered in addition to lessons learned from the process.

It is important to note that the development of the methodology was iterative. The prioritization methodology evolved throughout the course of the project based on understanding limitations associated with desired criteria and their underlying data. Future efforts should adapt this project’s approach as data availability and data utility to support substitution prioritization efforts continue to evolve.

2.1 Insights about prioritization strategies informed by 6 substitution programs

The purpose of this part of the project was to vet the utility of the prioritization approach outlined in the RDC Pre-Study, “Belgian roadmap for substitution of SVHCs”, based on the actual experience of substitution programs. Six interviews were conducted in the summer of 2022 with representatives of the following organisations:

- [Massachusetts Toxics Use Reduction Institute](#)
- [California Safer Consumer Products Program](#)
- [US Environmental Protection Agency’s Safer Choice Program](#)
- [Swedish Centre for Chemical Substitution](#)
- Estee Lauder, specifically related to their “[Green Score](#)” approach
- Apple, specifically related to their [protocol for prioritising chemicals of concern](#)

The six organisations were selected because of their direct experience with establishing priorities that support chemical substitution-oriented programmes. Although the [Safe Chemicals Innovation Agenda](#), developed for the Dutch Ministry of Infrastructure and Water

Management, was originally included as one of the interviewees, email exchanges with the organisers of that effort revealed that no direct work on substitution or prioritisation for substitution had resulted from the establishment of the agenda and thus no interview was conducted. Several key insights regarding the setting of priorities for substitution were revealed, including:

- Data collection efforts for prioritization should be iterative and evolving.
- Be cautious about the amount of complexity that is invoked in the prioritization scheme given data and staff capacity limitations to reproduce such approaches in the future.
- Consider the use of SVHCs in consumer products as an important prioritization criterion, as several substitution programs have determined that such products are the dominant source of exposure to chemicals of concern.
- Focus on factors to support achieving the greatest impact for Belgium, including considerations of staff capacity and resources available to the substitution program and connecting priorities with the policy objectives and actions.
- Expert judgment is important for informing decisions about priorities; data alone are unlikely to reveal priorities.

The lessons learned were used as a first step in the design of a prioritization approach. For the full summary of lessons learned, please see [Appendix A](#).

2.2 Stakeholder Surveys

As described in Phase 1 (See Section 4), two surveys were developed and sent out to: (1) to understand perspectives on prioritization expectations (Prioritization Criteria Survey) and (2) Belgium industrial facilities to gather SVHC use information and knowledge of alternatives and experience with substitution (Industry Survey on SVHC in Belgium).

Details on the industry trade organization are provided and described in Phase 1. For the purposes of input on the prioritizations of SVHCs for substitution, survey respondents revealed that exposure to Belgian consumers, the general public, workers or the environment were the most important prioritization factor, while the use of substance groups was selected as the least relevant prioritization factor. When considering specific hazard properties, the survey respondents selected (a) carcinogenicity, (b) substances that are persistent, bioaccumulative and toxic (PBTs), and (c) substances that are very persistent and very bioaccumulative (vPvB) as the most concerning. These perspectives were integrated into the prioritization approach.

Also provided in Phase 1 (see [Appendix F](#)), are details regarding the results from industry survey respondents. Of the companies that responded, roughly 50% used SVHCs, with 66 providing information on 39 substances. Many of these substances were not relevant to the scope of this project or were already on REACH's Annex XIV authorization list. However, 8 SVHCs were identified by survey respondents as being manufactured in Belgium. There was however some ambiguity in this "manufacturing" data given that some facilities were indeed manufacturers but could also be importing the SVHC and also using it in production processes (i.e., a downstream user). Forty-eight industry respondents (13 of whom were SMEs) reported using 28 SVHCs for 83 functional uses/applications. Twelve SVHCs were reported as being

sold in Belgium. Regarding knowledge of alternatives, roughly one third of industry respondents indicated that alternatives were available for the SVHCs they were using. Among the 25 respondents that indicated they have substituted an SVHC in the last ten years, nearly all (N=24) were defined as being downstream users. When asked about ongoing substitution activities, 14 of 97 respondents of the question (all downstream users but two also importers) answered “Yes” and eleven substances were mentioned for which the respondents are currently searching for alternatives.

Results from this industry survey required the prioritization approach to de-emphasize “use” data at the time because of its limited availability. Results were also used in the final prioritization step as experts used the survey data specific on functional uses and availability of alternatives to elevate the final short-list of prioritized SVHCs.

2.3 Principles for prioritization

Informed by the lessons learned from the interviews with current substitution programs, the stakeholder surveys, and the vetting of existing data sources, the project team developed a set of principles to guide the prioritization protocol:

- **Transparency.** It should be clear and explicit why specific SVHCs were selected.
- **Evidence-based.** SVHCs should be justified by the science and available data that meet FAIR criteria, *Findable, Accessible, Interoperable, and Reusable*.
- **Policy relevant.** The SVHCs selected should align with substitution policy objectives and options
- **Impact-driven.** The SVHCs targeted should result in the largest impact possible, recognizing capacity limitations
- **Protecting those most vulnerable.** The SVHCs selected should address disproportionate burdens among vulnerable, sensitive populations

These principles underly the prioritization approach and were used to guide the methods development. They were especially critical in Step 3 of the prioritization process (see below), to help experts narrow and decide on a short-list of prioritized SVHCs.

2.4 3-Step Prioritization approach

The prioritization method, data collection and actual prioritization were an iterative process where ambitions of a clear prioritization scheme needed to be adjusted to the actual availability of data. Overall, the method included a 3-step approach:

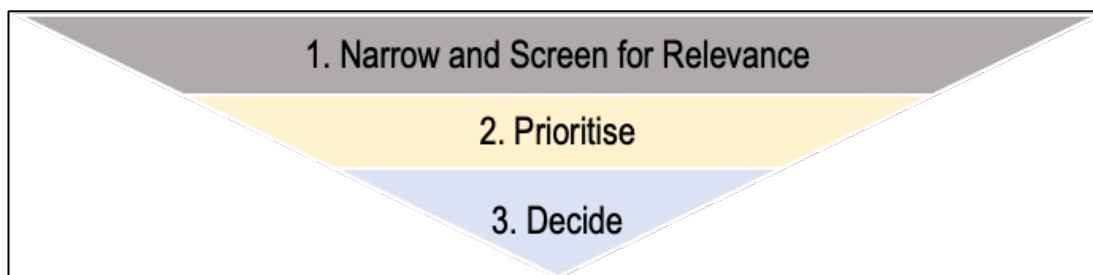


Figure 2.5: A 3-step process for prioritization

Step 1 – Narrow and Screen for Relevance. The first step of the prioritization process was to narrow the list of SVHCs to those that are relevant to a Belgium substitution program. Step 1A focused on narrowing, or screening out SVHCs where substitution activities were not needed/considered of benefit. Step 1 B screened SVHCs for their relevance to Belgium. Only those substances manufactured, used, or released in Belgium were included.

The list of criteria and supporting data sources for Step 1A and 1B are listed and described below (Table 2.1 and Table 2.2). Specific challenges as they relate to the use of specific criteria were noted. Although the FAIR criteria was used to support the method development, especially for Step 1B, lack of routinely collected downstream use data will limit the reusability (R) of the data in future prioritization efforts, unless surveys are repeated to support prioritization efforts.

Step 1A – Narrow. The Candidate List for Authorisation includes SVHCs that are on the Authorisation List (Annex XIV of REACH). Those SVHCs on Annex XIV of REACH were excluded from this project because in that stage of the regulatory process, there is already a clear view on the substitution and additional support was considered less effective. In addition, between the time the prioritization exercise is done and the expected date of implementation of a Belgian National plan of substitution of SVHC, some (or several) substances in Annex XIV will reach their sunset date. The project also excluded SVHCs that only have an intermediate use registration as these uses are not subject to inclusion in Annex XIV of REACH. In addition, SVHCs that had no current registration were excluded given that such substances are no longer being used in the EU. For substances not subject to Annex XIV of REACH, the project honoured that regulatory authorities have already determined that other management measures may be more appropriate than substitution to manage the risk and thus were also excluded.

Table 2.1: Step 1A Screen-out SVHCs that should not be considered for substitution efforts – Criteria and data sources

Criteria	Inclusion or Exclusion	Data source(s)
Substance on the Annex XIV authorization list (i.e., has a sunset date)	Exclusion	Annex XIV
Substances has only been registered for intermediate uses	Exclusion	ECHA REACH registered substance factsheets

Substance not registered	Exclusion	ECHA REACH registered substance factsheets
Substance excluded in ECHA's authorization process	Exclusion	Annex XIV prioritization/reports

Step 1B – Relevance to Belgium. During this step, SVHCs were screened for their relevance to Belgium. Only those SVHCs with demonstration that they were being manufactured, used or released in Belgium were included. For this step, the project adopted several of the criteria used in the RDC pre-study for this project²³ but based on having vetted the utility of specific data sources.

Table 2.2: Step 1B Screen SVHCs for their relevance to Belgium – Criteria and data sources

Criteria	Inclusion or Exclusion	Data source	Relevance
SVHC Produced or imported by Belgian manufacturers	Inclusion/ exclusion	ECHA REACH registered substance factsheets	If produced/imported in Belgium -> include if not produced/imported in Belgium -> exclude
SVHC used or sold by Belgian industries (downstream users)	Inclusion/ exclusion	Project industry survey Discussions with industry stakeholders	If used by downstream Belgium industries -> include if not used by downstream Belgium industries -> exclude
SVHC imported in Belgium	Inclusion/ exclusion	ECSIS COMEXT	If imported in Belgium -> include If not imported in Belgium -> exclude
SVHC with a permit for use in Belgium	Inclusion/ exclusion	Department of the living environment of the Flemish Government	If an active permit -> include If no active permit -> exclude
SVHC is found in the Belgian environment (water, air, soil)	Inclusion/ exclusion	VMM, air department (2021) VMM, water department (2017-2021) VMM, water WEISS-tool (2020) VMM, drink water quality (2020) OVAM (soil) (2006-2021) SPW (soil) (<2017-2020) EEA, (2020-2021) EEA, air (2021) SOILveR PREMISS project (soil, groundwater) (2018-2021)	If found in Belgium's water, air or soil -> include if not found in Belgium's water, air or soil in Belgium -> exclude
SVHC is found in the Belgian population	Inclusion/	DEMOCOPHES (2010-2012) FLEHS 1 (2002-2006)	If found in Belgian population -> include

²³ RDC Environment. (2019). [Development of a strategic roadmap for the substitution of SVHC as part of a sustainable economy Study for the FPS Economy](#). April.

Criteria	Inclusion or Exclusion	Data source	Relevance
	exclusion	FLEHS 2 (2007-2011) FLEHS 3 (2012-2015) FLEHS 4 (2016-2020) 3xG (2019-2021)	If not found in Belgian population -> exclude

Step 2 – Prioritize. This second step used both criteria and a scoring system to prioritize ~10 SVHCs that warranted expert consideration in Step 3, where decisions were made regarding which SVHCs to target for substitution support efforts. Scores were derived associated with 7 criteria as noted in Table 2.3. The scoring system leveraged 3 criteria used by ECHA to prioritize for authorization,²⁴ including volume used, inherent hazard, and wide-dispersive use. Whereas ECHA did not ascribe a score for a given SVHC, the Project Team extrapolated such scores. This approach stayed consistent with the RDC pre-study while adding specificity regarding the data sources that can be used during this step. The scoring system did not differentiate professional uses from industrial uses in this scoring system, unlike the approach used by ECHA as the implications for substitution strategies are similar for any downstream use scenario.

An additional algorithm was employed to differentiate SVHCs based on their relevance to (a) **industry** and (b) **consumers/public** to better support setting priorities for substitution given that the two scenarios have different overall implications regarding stakeholders impacted. The detailed scoring system used to differentiate the two primary use scenarios is outlined in [Appendix B](#) which used additional criteria to better differentiate between the two scenarios. The industrial uses score was calculated from 10 different criteria and the consumer uses score was calculated from 6 criteria.

Table 2.3: Step 2 Priority SVHCs Criteria and data sources

Criteria	Inclusion or Exclusion	Relevance	Data source
Used or sold by Belgium industries	Inclusion	Industrial	Industry survey data ECHA REACH registered substance factsheets Regulatory permit data
Derived volume used	Inclusion	Industrial	Industry survey data ECHA REACH registered substance factsheets [production volume used as a surrogate] SIN List [production volume used as a surrogate]
Derived Inherent hazard	Inclusion	Industrial Consumer/ Public	Candidate List Reason for Inclusion

²⁴ European Chemicals Agency. (2014). Prioritisation of substances of very high [concern \(SVHCs\) for inclusion in the Authorisation List \(Annex XIV\): Prioritisation Approach](#). 19 February.

Criteria	Inclusion or Exclusion	Relevance	Data source
Derived Wide Dispersive Use	Inclusion	Consumer/ Public	ECHA Authorization Prioritization
Number of SCIP fact sheets	Inclusion	Consumer/ Public	SCIP database
SVHC is an end-use product	Inclusion	Consumer/ Public	Industry survey data
Found in biomonitoring data for the Belgian population	Inclusion	Consumer/ Public	FLEHS I-IV (2002-2020) 3xG (2011-2021) DEMOCOPHES (2010-2012)

Step 3 – Decide. The third and last step – “Decide”, used an expert committee to take the SVHCs prioritized from Step 2 and discuss the merits of each based on additional factors to narrow further. The output of this step were two lists: long list and a short list.

The long list (about 10 substances) was developed to be used in the BBBC project as a part of the criteria to obtain government support in the development of alternatives. For the selection of the substances in the long list, it was taken into account to what extent, according to the expert committee, these substances could be supported by a Belgian Federal initiative.

The short list of 4 substances was on the one hand an example of a short list of substances which would be the focus of Belgium substitution programs but more importantly, it was the list of substances to be taken into consideration for the SEA evaluation of the proposed policy measures. For this list, it was the idea of identifying ~2 to 3 SVHCs relevant to consumers and ~2 to 3 SVHCs relevant to industry. The final decision on the ~4 SVHCs prioritized for substitution made by the expert committee made use of a modified Delphi method, which used expert deliberation, knowledge and judgement.

Based on interviews with current substitution programs, there was alignment on the need to not work on more than 5 substances at a given time due to resource constraints. Most programs repeat the prioritization process every 5-years.

Table 2.4 outlines key elements for the modified Delphi approach using an expert committee meeting to decide the final SVHCs to focus on in a substitution support program. For this project, the main policy objective offered that guided the committee’s review was SVHCs that could be *the focus of a substitution support program*. Decision criteria used related to this policy objective. However, expert committee’s consideration about specific priorities may be different if the policy objective is also different. For example, if there were objectives guiding action on endocrine disrupting chemicals, the choice of priorities may have been different. Or, if there were objectives related to priority needs for R&D on alternatives, the resulting priorities would be different. It is therefore critical that a modified Delphi method be organized and focused on the desired policy objectives.

Table 2.4: Step 3: Decide – Modified Delphi Approach Process

Process Component	Description
Establish Expert Committee	Envisioned as a committee of 10-15 experts. No one expert will have direct experience associated with all SVHCs under review but should have direct professional knowledge of at least a few of the substances or the class/group of substances to which the SVHC belongs. It is more important for the committee to have a willingness to conduct their own reviews and research, including conversations with colleagues, in advance of the meeting. During the meeting, an openness to learn about supportive information and data underlying a proposed priority recommendation is critical.
Develop SVHC summary documents	Providing background information on the SVHCs under review in advance of an expert meeting is critical. There is a balance between too much information, such that a committee is unlikely to read through everything, and too little, such that the committee is not given enough information to inform their opinion about priorities. Key data elements that were critical for the project's expert committee's review included: • hazard traits • downstream use information specific to Belgium firms • exposure potential, in particular the number of SCIP factsheets for a given SVHC • information on alternatives
Decision Criteria	Criteria: Whether the SVHC is primarily for non-intermediate uses Whether known uses have a high potential for exposure to the public Whether the SVHC is carcinogenic, an endocrine disruptor (ED), a PBT, or a vPvB substance Whether alternatives for specific uses exist Whether the use of the substance is of particular economic relevance for Belgium based on: (a) A high number or volume of use; (b) used in strategic sectors; (c) required for the creation of high added-valued (d) indication that a Belgian company or research institution is involved in the development/deployment of an alternative for the given SVHC Ensure that the final list of priority SVHCs met the 5 Prioritisation Principles including: (1) Transparency; (2) Evidence-based; (3) Policy Relevant (4) Impact Driven; (5) Protecting those most vulnerable
Establish proposal of ~4-5 priorities to orient expert discussion	Using a proposal of priority SVHCs can provide an initial starting point for the modified Delphi method whereby committee deliberation and iteration supports consensus building regarding the final set of priorities. Use of a proposal also supports efficiency in the process as detailed discussions on each SVHC would be very time consuming.

3 Results

All data for the first two steps of the prioritization process was collected in a single Excel database and included the 445 individual substances from the Candidate List. The inclusion/exclusion criteria were operationalised, and scores calculated for Step 2, including industrial and consumer/public relevance. Steps 1 and 2 of the prioritization approach identified two times 6 (Industry / consumer relevance) SVHCs, outlined in Table 2.5. Some SVHCs scored highly for both industry relevance and consumer relevance hence the list (Table 2.5) contains 11 individual substances.

Table 2.5: Top Scoring 11 SVHCs Resulting from Steps 1 and 2 of the Prioritisation Process

Relevance	CAS	Group/ Class	Substance name	Industry- Relevant Score	Consumer- Relevant Score
Industry	75-56-9	Alkene	Methyloxirane (Propylene oxide)	61	1
Industry	127-19-5	Acetamide	N,N-dimethylacetamide	76	1
Industry	109-86-4	Glycol ether	2-methoxyethanol	61	0
Industry	10043-35-3	Borates	Boric acid	91	3
Industry	111-30-5	Dialdehyde	Glutaraldehyde	46	3
Industry	71868-10-5	Synthetic cathinone	2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	49	2
Industry Consumer	61788-32-7	Aromatic	Terphenyl, hydrogenated	49	13
Industry Consumer	540-97-6	Cyclic siloxane	Dodecamethylcyclohexasiloxane (D6)	60	45
Consumer	121158-58-5	Alkylphenol	Phenol, dodecyl-, branched	55	7
Consumer	98-54-4	Alkylphenol	4-tert-butylphenol	13	7
Consumer	84-61-7	Phthalate	Dicyclohexyl phthalate (DCHP)	31	7

The scoring process for Step 2 was designed to use the most informative data to support prioritization efforts. Throughout the information gathering phases of this project, the project team identified significant data gaps, especially regarding a lack of SVHC downstream use information; there is both a lack of data collection infrastructure in the EU relevant to understanding downstream SVHC uses (who is using it, how much is being used, and what is it being used for) and a lack of public availability to use information sources that could be

informative. Although the resulting scores from Step 2 of the process were useful and reflect the data currently available, there was concern that the project may miss SVHCs that could have the greatest impact for Belgium if knowledge about downstream uses was lacking, which was the situation for several of the top scoring 11 SVHCs. For example, downstream use information is limited to data collected from an industry survey implemented for this project; there is no comprehensive source of use volume information other than registration data which only captures production and importation volumes. In addition, environmental monitoring and biomonitoring data are selective – no program comprehensively monitors for all SVHCs. As a consequence, the project team decided to include for consideration an additional 10 top scoring SVHCs where there were additional insights on downstream uses from the industry survey. These additional 10 SVHCs are shown in Table 2.6.

Table 2.6: The additional 10 top scoring SVHCs considered by the pilot expert committee

Relevance	CAS	Group/ Class	Substance name	Industry- Relevant Score	Consumer- Relevant Score
Industry	255881-94-8	Other	S-(tricyclo(5.2.1.0 ² .6)deca-3-en-8(or 9)-yl O-(isopropyl or isobutyl or 2-ethylhexyl) O-(isopropyl or isobutyl or 2-ethylhexyl) phosphorodithioate	37	0
Industry	3648-18-8	Tin compounds	Diocetyl tin dilaurate	28	1
Industry	375-73-5	PFAS	1,1,2,2,3,3,4,4,4-nonafluorobutane-1-sulphonic acid	7	3
Industry	107-15-3	Amines	Ethylenediamine	46	3
Industry	12008-41-2	Borates	Disodium octaborate	25	0
Industry	123-77-3	Azo compounds	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)) (ADCA)	46	1
Industry	548-62-9	Aromatic amines	[4-[4,4'-bis(dimethylamino) benzhydrylidene]cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride (C.I. Basic Violet 3)	10	0
Industry	10141-05-6	Cobalt compounds	Cobalt(II) dinitrate	28	1

Relevance	CAS	Group/ Class	Substance name	Industry- Relevant Score	Consumer- Relevant Score
Industry Consumer	85535-85-9	chlorinated paraffins/ halogenated compounds	Alkanes, C14-17, chloro	60	45
Industry Consumer		Other	tris(4-nonylphenyl, branched) phosphite	31	14

In total, 21 SVHCs were considered by the project's expert committee to pilot the modified Delphi approach to identify the final targeted list of SVHCs. This list was then shortened based on the expert panel's professional insights and experience as they discussed the merits of a given SVHC against another. The first list discussed was Table 2.5 and based on the feedback, certain substances were eliminated which led to the consideration of additional substances from Table 2.6. These additional 10 substances were included for consideration based on their high scores for industry and consumer relevance.

This exercise yielded two priority lists:

- iii. Long list of 13 substances to be used by the Federal authorities in the "Belgium Builds Back Circular" project. (Table 2.7). The rationale behind the selection of the long list is provided in [Appendix D](#).
- iv. Short list of four substances relevant for Phase 4 of this project: the socio-economic analysis of the proposed policy measures (Table 2.7).

Table 2.7: Selected substances for Belgium Build Back program

CAS	Group/ Class	Substance name	Industry- Relevant Score	Consumer- Relevant Score
127-19-5	Acetamide	N,N-dimethylacetamide	76	1
121158-58-5	Alkylphenol	Phenol, dodecyl-, branched	55	7
98-54-4	Alkylphenol	4-tert-butylphenol	13	7
61788-32-7	Aromatic	Terphenyl, hydrogenated	49	13
123-77-3	Azo compounds	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)) (ADCA)	46	1
10043-35-3	Borates	Boric acid	91	3
85535-85-9	chlorinated paraffins/	Alkanes, C14-17, chloro	60	45

CAS	Group/ Class	Substance name	Industry- Relevant Score	Consumer- Relevant Score
	halogenated compounds			
540-97-6	Cyclic siloxane	Dodecamethylcyclohexasiloxane (D6)	60	45
109-86-4	Glycol ether	2-methoxyethanol	61	0
	Other	tris(4-nonylphenyl, branched) phosphite	31	14

Scrutiny of the long list by industry stakeholders revealed some limitations to the procedure. Data on the substances embedded in risk assessments reports by authorities was less scrutinized in this project. Some of the information in these reports could have modified the choices of the expert group if these were known. For instance, the fact that alternatives are available is not per se a good indication that these alternatives are suitable for the remaining uses of a substance. A more detailed scrutiny would be required to identify the exact hurdles to substitution. This is an aspect to be taken into account when repeating this prioritization procedure especially when estimating the required effort for such a prioritization.

Summary of the Prioritisation Approach

The expert committee meeting used decision criteria outlined in Table 2.4 and arrived at the following four priority SVHCs for the “short list”:

- 2-methoxyethanol, CAS # 109-86-4
- Alkanes, C14-17, chloro, CAS # 85535-85-9
- Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)) (ADCA), CAS # 123-77-3
- Phenol, dodecyl-, branched, CAS # 121158-58-5

The rationale for each is provided below in Table 2.8. The four prioritized SVHCs in this “short list” represent different chemical groups/classes. Two SVHCs are reprotoxic, (2-methoxyethanol and phenol, dodecyl-, branched, the latter of which is also an endocrine disruptor); one is a PBT/vPvB (alkanes, C14-15, chloro), and one is a respiratory sensitizer (Diazene-1,2-dicarboxamide (C,C'-azodi(formamide))). All SVHCs prioritized scored high for the relevance to Belgium industrial users. Alkanes, C14-15, chloro also is highly relevant to potential impacts on consumers/the broader public.

Key Limitations

It is important to note that due to the limited data availability (e.g., lack of data of downstream use volume, number of users, etc.), the exercise to narrow down to the top four substances did not apply the prioritization approach as was ideally envisioned at the start of the project. The list obtained should therefore be treated as the results of the pilot exercise and served to highlight key data needs required to inform substitution priorities by the authorities in the future, and not as a recommendation.

Expert committee members explicitly elevated the need for more comprehensive and robust information on the downstream use of SVHCs. Use data available during this pilot modified Delphi process was very sparse and decisions about priority SVHCs were driven in large measure around those SVHCs with use information.

Table 2.8: The Top 4 Prioritised SVHCs and Summary of Rationale

	2-methoxyethanol, CAS # 109-86-4	Alkanes, C14-17, chloro, CAS # 85535-85-9	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)), CAS # 123-77-3	Phenol, dodecyl-, branched, CAS # 121158-58-5
Group/Class	Glycol ether	Medium-chained chlorinated paraffins	Azo compounds	Alkylphenol
Relevance Scores	Industry= 61 Consumer = 0	Industry = 60 Consumer = 45	Industry = 46 Consumer/public = 1	Industry = 55 Consumer = 7
Hazard Trait	Reprotoxicant; toxic to bone marrow; reports of encephalopathy in workers	PBT and vPvB	Respiratory sensitizer and may cause allergy or asthma symptoms or breathing difficulties if inhaled	Endocrine disruptor; reprotoxicant. Causes severe skin burns and eye damage and is very toxic to aquatic life, with long lasting effects
Available Belgium volume information	6,398 tonnes imported	Unknown, but 10,000-100,000 tons/year imported to the EU	Unavailable	17,908 tonnes imported
Belgium users	yes			yes
Uses	Solvent in a range of applications. Primarily used for intermediate uses but in Belgium, it is used (confirmed via survey) as a solvent and is used in a paint product manufactured by Akzo Nobel (confirmed via SDS)	Survey respondents reported using it as a flame retardant and plasticizer; uses that are a key focus of substitution activities globally. It is also used in strategic sectors such as in construction and in electronics.	Widely known as “yoga mat chemical”; “shoe rubber chemical.” Used as a blowing agent; foaming agent; bleaching agent for grains and dough conditioner for bread. Confirmed survey respondent uses in Belgium.	Is used for the manufacture of chemicals, rubber products and plastic products, and lubricants. It is specifically used in Belgium (confirmed through targeted outreach) as paint industry surfactants and stabilizers.

	2-methoxyethanol, CAS # 109-86-4	Alkanes, C14-17, chloro, CAS # 85535-85-9	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)), CAS # 123-77-3	Phenol, dodecyl-, branched, CAS # 121158-58-5
Exposure potential	Concern for both professionals and consumers/the public via uses of paints and varnishes because it is readily absorbed by the skin. The SCIP database noted 1,568 entries.	There is concern for exposure especially based on the use of Alkanes C14-17, chloro in flame retardants. The SCIP database notes 387,650 entries for this SVHC.	Can be found in a variety of formulated products that might impact both workers and consumers, such as in foodware. The SCIP database notes 404,392 entries for this SVHC.	Release to the environment could occur in the manufacturing of other substances for thermoplastic manufacture. The SCIP database notes 1,385 entries for this SVHC.
Alternatives	Common substitutes identified include: PGME, EGBE, ethylene glycol monopropyl ether (EGPE) and their acetates (PGMEA, EGBEA, EGPEA).	Existing information suggests the availability of alternatives for specific uses, with substitution ongoing.	The Belgian company Solvay produces an alternative chemical blowing agent for thermoplastics. There are approved alternatives for food additives.	There were no identified alternatives from the literature reviewed.
Primary reason for establishing a priority	The diversity of its uses in products; was amongst the highest scoring SVHCs, and it is a reprotoxicant.	PBT and wide dispersive uses. Scored high for both industry and consumer relevancy. If restriction proposal is approved, would incentivize Belgian firms to seek out substitution.	Respiratory sensitizer and a successful alternative produced by a Belgian company exists. SMEs are dominant users of ADCA which will require more specialized substitution services.	It is an ED, which is of substitution interest to Belgium.
Notes about upcoming restrictions	Was selected for Annex XIV but was stalled in the process pending restriction.	There is an upcoming restriction with some derogations	It was selected for Annex XIV but was stalled in the process.	Many alkylphenols have already been restricted or are in the process.

4 Challenges

Step 1 Challenges. The first step of the prioritization process was to narrow the list of SVHCs to those that are relevant to a Belgium substitution program. Several data challenges were encountered.

Key to establishing priorities for substitution is how a given SVHC is used, including: (a) how much, (b) by whom, and (c) for what purpose/application/function. Although REACH registration data can be queried to reveal this information for manufacturers and importers of SVHCs in Belgium, no such data is available for downstream users. Of importance is the lack of routinely collected data on use related volumes for downstream users of SVHCs. As a consequence, the project utilized survey data collected by industry respondents for this project.

In addition, there was currently no useful routinely collected data source on the use of SVHCs in consumer products used in Belgium. The project team reviewed the merits of the SCIP database. SCIP data is an important data resource on SVHCs in products/articles. A significant limitation in the data, however, is that it lacked country-specific identifiers—data cannot be queried for submissions by Belgium companies. Additionally, the possibilities to query the SCIP database are limited especially in case of a large number of substances needs to be investigated. If changes in SCIP data collection methods occur in the future, and if an upgrade of the query possibilities would be available, the database will be an important resource to support substitution prioritization efforts in Belgium, however, it is currently not supportive of this time.

Step 2 challenges. This second step used both criteria and a scoring system to prioritize ~10 SVHCs that warranted expert consideration in Step 3, where decisions were made regarding which SVHCs to target for substitution support efforts. This step encountered several challenges as outlined below.

- SVHC categorization: For some SVHCs, there were substance ID limitations whereby the broadness of several chemical groups made it difficult to discern specific information about a given SVHC to support prioritization.
- Data availability: Similar to Step 1, there was a significant lack of downstream use data, making it difficult to ascertain information about the number of Belgian industry users, and volumes used. As a consequence, the project relied primarily on survey data for these criteria. However, with a 22% survey response rate, much remains unknown about which companies in Belgium are using SVHCs in production processes and for product manufacturing.
- Incomplete ECHA prioritization scores: The ECHA scores had to be derived for many of the SVHCs as ECHA had not published scores for all CL substances.
- Lack of Belgium-specific data: There is no country-specific information for the SCIP database. Also, the SCIP database only indicates a possibility for exposure to SVHCs via the number of factsheets that exist, which we used as an indication of the likelihood that

the SVHC has penetrated the Belgium market. A more detailed analysis of the SCIP data would be required for a better interpretation of the complexity of uses of articles containing SVHCs.

- Sparse environmental and biomonitoring: Not all SVHCs are subject to targeted analyte lists for environmental monitoring (e.g., drinking water monitoring) or human biomonitoring efforts. Therefore, no detection of an SVHC in environmental or human biomonitoring programs does not indicate that an SVHC does not pose a risk. For instance, the project adopted “detected in human biomonitoring studies for the Belgium population” as reviews of existing substitution programs revealed this metric as a key prioritisation criterium. However, not all SVHCs are subject to human biomonitoring efforts. As such the current prioritization approach gives more weight to SVHCs that are subject to biomonitoring efforts than those that are not.

Step 3 challenges. The data limitations above underscored the importance of the Step 3 modified Delphi method of using expert consideration and judgment rather than just a reliance on a scoring system. However, expert consideration and judgement is also only as good as the data from which decisions are based. Committee members involved in the modified Delphi process elevated the need for more comprehensive and robust information on the downstream use of SVHCs. Use data available during this process was very sparse and decisions about priority SVHCs were driven in large measure around those SVHCs with use information.

Although the modified-Delphi approach considered the availability of existing alternatives for specific uses of the SVHCs considered, the prioritization approach does not explicitly opportunity based. Capacities to develop alternatives, in particular by Belgian enterprises and research institutions were not available and hence not used in the evaluation.

5 Lessons Learned & Recommendations

Prioritization used is risk based not solutions based. The current prioritization approach is, because of data availability, in essence risk- based given that both the inherent hazard of the substance as well as use/exposure information inform the priorities. The method was less or not informed on the opportunities of substitutions.

Based on the challenges encountered, a summary of the associated needs going forward to improve the process are outlined below:

- **Limited availability of SVHC use data.** The expert committee for the pilot prioritization effort stated that their decisions regarding which SVHC to prioritize was driven by substances with downstream use data. Moving forward, it will be necessary to re-administer an industry survey to collect SVHC use information unless mandates for reporting such information are established.
- **Limited ability to use SCIP data.** The project used the number of entries for a given SVHC in the SCIP database as a surrogate for exposure potential to such substances in Belgium. More detailed analyses of the SCIP data are needed for a more robust interpretation of users and uses of the SVHCs in articles to better target where substitution is needed that will have the greatest impact on Belgian consumers.
- **Clarity about policy objectives.** The development of a prioritization approach preceded the development (and adoption) of policy options to advance substitution of SVHCs. The main policy objective offered that guided the committee's review was SVHCs that could be the focus of a substitution support program. Decision criteria were used that related back to this policy objective. Specific priorities may have been different if the policy objectives were also different. For example, if there were objectives guiding action on endocrine disrupting chemicals, the choice of priorities would have been different. Or, if there were objectives related to priority needs for R&D on alternatives, the resulting priorities would have been different. It is therefore critical that a modified Delphi method (Step 3 of the prioritization approach) be organized and focused on the desired policy objectives.
- **Expert judgement informed by data is critical.** Data alone are unlikely to reveal priorities. Despite efforts to comprehensively evaluate and include data to objectively identify priorities for substitution, expert consideration and judgement needs to be a part of the process. Even when categorization and scoring approaches were used, the project revealed the need for expert discussions and deliberations to collectively evaluate the data and to allow for additional considerations not included in the scoring process to support decisions about substitution priorities. In this step, the assessment of full text background information has proven to be indispensable and sufficient capacity has to be assigned to such a task. Because the effort required, this can only be done for a limited list of substances.

Given data limitations and constraints, the results of this prioritization approach are derived more from the issue-based pillar. However, from this list of priorities, the substances of highest

economic relevance either from the use of the current substance or from the point of view of the alternative could be selected. For instance, uses for which alternatives have been or are being developed in Belgium – opportunity-based pillar --could be prioritized. Where required, the list could be further narrowed down to support specific policy measures. For instance, policy measures with a significant financial commitment could be reserved for a sub class of CL substances, while more horizontal policy measures could address several uses in parallel and would less required further prioritization. Moving forward information related to all three pillars should guide substitution prioritization efforts.

The availability of opportunity related data would not only affect the Step 3 of the prioritization process but would also affect the prioritization scoring and hence the prioritization scoring formula will be different if also “opportunities” related information would be available.

Resulting from these observations, it is clear that choosing which substances or substance-use combinations are the most relevant to substitute is complex and requires a lot of information. The required information often has a very confidential nature and intervening in a competitive market by an authority requires care and understanding of this market. In essence the challenge of the prioritization is on the one hand having access to sufficient information, but on the other hand not to get lost in specifics.

Moving forward, there could be a place for a hub or observatory overviewing this data and providing support to policy making on the basis of an analysis of this data. This would be in the first instance in the context of a “zero emission” goal but could be extended to more complex sustainability goals.

By centralizing issue and opportunity related data, this observatory could guide the various agencies in the selection of the data to be collected, could act as an early warning system for emerging issues with the use of substances and could play a role in knowledge sharing on best practices to handle very hazardous substances. The latter could be done on the basis of the collected dataset on exposure and emissions. Acting on this information, can reduce risk to society of the use of very hazardous substance well before substitution is possible.

Nevertheless, the ultimate goal of the observatory would be to inform authorities on substances or substance use combinations relevant for substitution support.

Appendix A: Learnings from interviews with institutions on prioritization

A. Data collection needs: Interviewees were asked their perspectives regarding data needs outlined in the pre-study, including identifying SVHCs produced by Belgian manufacturers, used by Belgian downstream users, and/or found in the Belgian environment, and further characterising these data by chemical group, final function, and chemical function [see diagram in Annex B]. Reflections included:

- *In practice, data collection efforts for prioritisation should be iterative and evolving.* Data availability is dynamic and likely will not be available at one point in time for all elements of interest. Interviewees use a standardised format to characterise data of interest, but generally the picture evolves over time. The process is one of discernment, learning, sifting and sorting, and filling data gaps over time.
- *Be cautious about the amount of complexity that is invoked in the prioritisation scheme.* Several interviewees warned against invoking too many data elements and too much complexity to identify priorities. One interviewee commented that every chemical has multiple functions, uses in a variety of sectors, and a discrete and unique set of alternatives with their own toxicological profile and variations in effectiveness. Although feasibility is important, there is a need to avoid being overwhelmed by data and characterisation of the problem. Other interviewees recommended the use of screening to simplify data collection efforts, i.e., use “Yes”/ “No” schemes rather than forcing specific data to be collected and assessed on each factor of interest.
- *Factors such as chemical function/final function are useful for characterising information on SVHCs.* For a given functional class connected to a specific product category or manufacturing sector, more SVHCs in that class could signal a greater need for alternatives.
- *Make sure that issues of waste/end-of-life are included in the characterisation of “found in the Belgian environment”.* It is important to consider waste disposal of SVHCs in Belgium, including potential wastes imported into Belgium, in this category.

B. Prioritisation factors: Interviewees were asked their perspective on the primary prioritisation factors outlined in the pre-study, including: (a) significant volumes used/produced in Belgium; (b) significant number of stakeholders affected in Belgium; (c) likely exposure to Belgium consumers/employees/communities, and (d) uses that are in “low” to “medium” technology [see diagram in Annex B]. Reflections included:

- Interviewees had mixed responses on setting priorities based on quantitative factors that establish “the highest,” the “greatest,” or the “worst” SVHC for a given factor. Although some interviewees thought that quantitative prioritisation factors were useful if data were available (e.g., are data robust enough to provide comprehensive insights on volume used?), others cautioned against a dependency on such factors. Other factors such as capacity (see below) are important to consider in conjunction with those SVHCs considered “highest”/ “greatest”/“worst”. Interviewees stressed the importance of considering the use of SVHCs in consumer products as an important consideration/criterion. Belgium is not considered by many to be a significant chemical/product manufacturer in the EU, and thus, consumer products are an important route by which SVHCs are impacting Belgium consumers/employees/stakeholders. Interviewees noted that Belgium could support substitution efforts if it restricts the chemicals allowed for sale in the Belgium market. Programme/policy models such as the California Safer Consumer Products Programme may be of interest if SVHCs in consumer products seems to be a critical “vector” for the distribution of and exposure to such chemicals.

C. Factors considered missing: A range of additional considerations to support prioritisation were identified by interviewees. These included ensuring a focus on factors that will support Belgium having the greatest impact, which will require considering staff/resource capacities, setting priorities based on environmental justice impacts, characterising data by SVHC use in specific industry sectors, and considering market-drivers. Although all interviewees agreed that priorities should be set based on hazard criteria, the majority did not think that further prioritisation was needed given the SVHC classification. These themes are further explored below.

- Interviewees repeatedly stated the importance of using factors to support achieving the greatest impact for Belgium. Further reflections included:
 - It is important to consider staff capacity and resources available to the substitution programme as a factor for prioritisation.* One interviewee described that because they have strong expertise on halogenated solvents and their alternatives, these chemicals of concern and their use scenarios are prioritised by the programme in order to have the greatest impact.
 - Capacity is related to the number of priorities that can be addressed at any one time.* Although many programmes described very long lists of potential priorities, most tackle 3-5 at a time. Working on more than 10 was not considered practical.
 - Capacity is linked to whether other EU actors, countries, and/or industries have prioritised actions on a given SVHC.* It is important to clarify Belgium’s role in advancing substitution efforts compared to the role and actions taken by the Commission. If products impacting Belgium society are made elsewhere in the EU,

some sort of cooperation/agreements with such Member States would be needed. Interviewees noted that it is difficult to be the “lone wolf” on a given substitution priority and that impact may be lessened if Belgium is the only country to pursue action on a given SVHC. Thus, it is important to leverage collaboration and cooperation with other jurisdictions and/or companies relevant to substitution-actions on a given SVHC.

- *Interviewees were quick to connect priorities with the policy objectives and actions.* Ultimately, having meaningful impact is tied to the type of actions taken, not necessarily that a given substance is the priority. SVHC priorities and the policy actions and related objectives should not be disaggregated from each other.
- *Environmental justice is used by some programmes as a prioritisation factor.* Impacts on low-income, immigrant, and racial/cultural minority communities are of concern to many of the programmes interviewed. As such, a criterium such as “volume used in environmental justice communities” is used to support prioritisation efforts.
- *Industrial sector is an important screening factor by some interviewees.* Examining data by both function and sector allows for organisations to group SVHCs to see where there would be greater impact (i.e., understanding how 1 chemical used in 10 sectors or 10 chemicals used in 1 sector provides insights on both impact and capacity needs).
- *It is important to consider market-based drivers.* Interviewees noted that there is a connection between “public concern” and scientific data demonstrating harm and that it is important to consider public perception/market-drivers for improved public health/environmental health protections as the two are connected and elevate what the public considers a priority.
- *Hazard properties should not be a prioritisation factor.* The majority of interviewees did not believe that further prioritisation within SVHCs was warranted unless there is a perspective among stakeholders that hazard properties comprising an SVHC classification are not of equal concern. All interviewees noted that they do consider hazard properties as they prioritise substitution efforts. However, most interviewees were from US programmes and/or corporations and are establishing priorities based on hazard characteristics consistent with an SVHC designation. Some interviewees specifically stated that it would be unnecessary to further prioritise based on hazard characteristics as all SVHCs have been categorised as being of “very high concern.”

D. How decisions about priorities are made: Interviewees reflected on how decisions are made about priorities. Considerations discussed including the use of expert judgement, use of weighting/scoring techniques, transparency, and stakeholder engagement.

- *Expert judgment is important for informing decisions about priorities.* Interviewees noted that data alone are unlikely to reveal priorities. Even though scoring approaches are used by some interviewees, all elevated the need for internal discussions/deliberations and the use of expert judgment to evaluate the data and make decisions about priorities. Some interviewees mentioned the value of forming an expert committee and using the Delphi method to support discussion and decision-making.
- Weighted score approaches to support decision-making could be useful for narrowing or minimising the number of factors to consider in making decisions. Interviewees cautioned that such tools should be considered “decision-support” tools as they are not meant to identify the priority, but rather, to guide additional discussions/deliberations to support decision-making.
- *Transparency is important.* In general, prioritisation decisions are value-judgements regardless of whether they are based on empirical data and so the process should be transparent so that stakeholders understand the justifications regarding how decisions are made.
- The use of stakeholders to support prioritisation is important, but there are different approaches regarding where this should occur. Some interviewees argued that input from stakeholders should occur very early in the prioritisation process and others recommended engaging stakeholders during all steps of the prioritisation process. Many interviewees noted that targeted one-on-one engagement is more useful than an official public process as long as there is transparency and stakeholders can engage at any time in the prioritisation/policy process.

E. Additional reflections by interviewees:

Select priorities that can test the function of the policy objectives/policy actions. Multiple interviewees mentioned the importance of setting priorities that can serve to test specific policy objectives and associated policy provisions. There may be specific substitution challenges that policy provisions aim to address. Priorities in the first years of the programme could test the function of these provisions and ability to address specific objectives.

Appendix B: Algorithm used for Prioritization Step 2

INCLUSION CRITERIA and SCORING for RELEVANCE TO BELGIUM INDUSTRIES:

$$\text{Score (max 105)} = [A * (\text{MAX}(B, C, D) + E + F + G + H) + I + A] * J$$

- **A = ECHA Derived Volume Used Score**
 - Data source: [ECHA REACH registered substance factsheets](#)
 - Scoring method: 0 t-y = 0; 0-10 t-y = 6; 100-1000 t-y = 9; <1000 t-y = 15
- **B = Manufactured in Belgium**
 - Data source: [ECHA REACH registered substance factsheets](#); survey data
 - Scoring method: SVHC is manufactured, imported, or used in Belgium = 1; None of the three options = 0
- **C = Imported into Belgium**
 - Data source: [ECHA REACH registered substance factsheets](#); survey data
 - Scoring method: SVHC is manufactured, imported, or used in Belgium = 1; None of the three options = 0
- **D = Used in Belgium**
 - Data source: [ECHA REACH registered substance factsheets](#); survey data
 - Scoring method: SVHC is manufactured, imported, or used in Belgium = 1; None of the three options = 0
- **E = Sold in Belgium**
 - Data source: [ECHA REACH registered substance factsheets](#); survey data
 - Scoring method: SVHC is sold in Belgium = 1; SVHC is not sold in Belgium = 0
- **F = Permitted in Belgium**
 - Data source: Departement Omgeving' (DOMG, department of the living environment
 - Scoring method: SVHC is permitted for release = 1; No existing permits in Belgium for the SVHC = 0
- **G = Registered in Belgium**
 - Data source: [ECHA REACH registered substance factsheets](#)
 - Scoring method: SVHC is registered = 1; SVHC is not registered = 0
- **H = Comment exists from Belgium enterprise**
 - Data source: <https://echa.europa.eu/registry-of-svhc-intentions>
sent on Thursday, 29 June 2023 16:53
 - Scoring method: Existing comment = 1; No comment = 0
- **I = ECHA Derived Inherent Hazard Score**

- Data source: [ECHA REACH registered substance factsheets](#)
- Scoring method: 57(a, b, c, f) = 1; 57(f) = 7; 57 (d, e) = 13; 57 (d or e) + other SVHC = 15
- **J = Relevance for Belgium**
- Data source: See note below table
- Scoring method: Relevant = 1; Not relevant = 0

INCLUSION CRITERIA and SCORING for RELEVANCE TO CONSUMER USE:

Score (max 75) = [(IF(A>10000,1,0)+IF(B=15,1,0)+C+2*IF(D=1,1,0))*E]*F

- **A = Number of SCIP Factsheets**
- Data sources: SCIP database
- Scoring method: If SCIP entries >10,000 = 1
- **B = ECHA Wide Dispersive Use Score**
- Data sources: [ECHA REACH registered substance factsheets](#)
- Scoring method: If ECHA scoring = 15 (consumer use) then = 1
- **C = SVHC Presence in the End Product**
- Data sources: Survey data
- Scoring method: If yes, then = 1
- **D = SVHC Presence in Humans**
- Data sources: HBM4EU biomonitoring data; Case reports in the literature
- Scoring method: Detected = 1; Not detected = 0
- **E = ECHA Derived Inherent Hazard Score**
- Data sources: [ECHA REACH registered substance factsheets](#)
- Scoring method: 57(a, b, c, f) = 1; 57(f) = 7; 57 (d, e) = 13; 57 (d or e) + other SVHC = 15
- **F = Relevance for Belgium**
- Data source: See note below table
- Scoring method: Relevant = 1; Not relevant = 0

Cut-off criteria: relevant for Belgium

The “Relevance for Belgium” criteria was created as a cut-off criterion, so that if SVHCs are deemed not relevant, they receive a 0 score overall. Relevance is determined via many of the criteria described above, where at least one criterion needs to be met and where no exclusion criteria are met. The equation is:

Score (0 or 1) = IF[OR(A=1,B=1,C=1,D=1,E=1,F=1,G=1,H=1,I=1,J=1),1,0]*K

Where:

- A = Registered in BE

- B = Present in water
- C = Present in air
- D = Present in soil
- E = Present in humans
- F = Permitted in Belgium
- G = Manufactured in Belgium
- H = Imported to Belgium
- I = Used in Belgium
- J = Sold in Belgium
- K = Exclusion criteria

Appendix C: Data sources vetted for prioritization strategy

Data Source (Source and Data Year)	Attribute of SVHC for Use in Prioritisation Approach	Benefits	Challenges	Region	Used in Prioritisation Approach
ECHA Registration	Use volume	Captures SVHC manufacturers in Belgium	Does not address use volumes by downstream industries		
ECHA REACH registered substance factsheets (05/2022)	Belgian registrants, registration status, inherent properties, tonnage band	Captures SVHC manufacturers in Belgium	Registration information had to be extracted from factsheets for every substance; is not available for download or in a central database.	/	☒
Sin list	Use volume		Does not address use volumes by downstream industries; not specific to Belgium.	/	☒
SCIP database Substances of Concern In articles as such or in complex objects (Products)	Use in consumer products	Key source of information on SVHCs in articles/consumer products	No data element in the database that identifies Belgium-specific information use information.	/	☐
VMM, air department (2021)	Found in Belgian environment	Presence in air, proxy for exposure	No CAS/EC no., heavy metal measurements are total measurements. Received all monitoring data (not SVHC specific), data in Dutch. Had to manually match this data with CL data. Actual measurements had to be manually extracted from the VMM website.	Flanders	☒
VMM, water department (2017-2021)	Found in Belgian environment	Presence in water, proxy for exposure. Only CL-SVHC specific data was provided based on CAS no. Measurements provided.	Heavy metal measurements are total measurements.	Flanders	☒

Data Source (Source and Data Year)	Attribute of SVHC for Use in Prioritisation Approach	Benefits	Challenges	Region	Used in Prioritisation Approach
VMM, water WEISS-tool (2020)	Found in Belgian environment	Presence in water, proxy for exposure. Measurements provided.	No CAS/EC no., heavy metal measurements are total measurements, data in Dutch. Online tool, data had to be manually extracted, since data is not downloadable.	Flanders	☒
VMM, drink water quality (2020)	Found in Belgian environment	Presence in water, proxy for exposure. Measurements provided.	No CAS/EC no., heavy metal measurements are total measurements, data in Dutch.	Flanders	☒
OVAM (soil) (2006-2021)	Found in Belgian environment	Presence in soil, proxy for exposure. Measurements provided.	Data is scattered in various reports, all in Dutch, heavy metal measurements are total measurements.	Flanders	☒
SPW (soil) (<2017-2020)	Found in Belgian environment	Presence in soil, proxy for exposure. CAS no. provided. Data available in a downloadable database.	Most of the information is in French, actual measurements nor reported.	Wallonia	☒
EEA, (2020-2021)	Found in Belgian environment	Presence in water, proxy for exposure. CAS no. provided. Data available in a web viewer and data selected is downloadable.	No measurements reported (percentage of waterbodies in which the substances were detected is used).	Belgium wide	☒
EEA, air (2021)	Found in Belgian environment	Presence in air, proxy for exposure. Data is downloadable. Measurements provided.	CAS/EC no. not provided.	Belgium wide	☒
SOILveR premiss project (soil, groundwater) (2018-2021)	Found in Belgian environment	Presence in soil and groundwater, proxy for exposure.	Data scattered in the final report of the project. Only substances in the substance groups that the project prioritized were included.	Belgium wide	☒
FLEHS I-IV (2002-2020)	Found in Belgian HBM studies	Exposure to humans. Percentage below LOD or LOQ was provided as a	No CAS/EC no. Received data on all measured substances in the cohorts.	Flanders	☒

Data Source (Source and Data Year)	Attribute of SVHC for Use in Prioritisation Approach	Benefits	Challenges	Region	Used in Prioritisation Approach
		metric to determine detection of the substance.	We had to manually match the data with CL.		
3xG (2011-2021)	Found in Belgium HBM studies	Exposure to humans. Percentage below LOD or LOQ was provided as a metric to determine detection of the substance.	No CAS/EC no. Received data on all measured substances in the cohorts. We had to manually match the data with CL.	Flanders (Mol, Dessel and Retie)	☒
DEMOCOPHES (2010-2012)	Found in Belgium HBM studies	Exposure to humans. Percentage below LOD or LOQ was provided as a metric to determine detection of the substance.	No CAS/EC no. Received data on all measured substances in the cohorts. We had to manually match the data with CL.	Belgium wide	☒
Permits	Use of SVHC at industrial installations	Used by Belgian industries, proxy for emissions and exposure. CAS No. provided.	Data was provided for all substances with a limitation under REACH (included more than CL SVHC).	Flanders	☒
Import data	Use of SVHC in Belgium	Direct quantitative evidence of relevance	Statistics not on individual substance	Belgium wide	☒

Appendix D: Rationale behind the selection of the “Long-list” of 10 substances

CAS No.	EC No.	Substance name	Exclusion	Relevant for Belgium	Priority for Belgium-Industry	Priority for Belgium-consumers	Focus	Comment
123-77-3	204-650-8	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)) (ADCA)	1	1	46	1	Industry	Top 4 choice: Selected because of the availability of alternatives provided by Belgian Company Rep sensitizer
121158-58-5	310-154-3	Phenol, dodecyl-, branched	1	1	55	7	Industry	Top 4 choice: Part of the Phenols group ED
			1	1	55	7	Consumer	
85535-85-9	287-477-0	Alkanes, C14-17, chloro	1	1	60	45	Industry	Top 4 choice: upcoming restriction and POP classification (still +/- 2 years with some derogations) vPvB
			1	1	60	45	Consumer	
109-86-4	203-713-7	2-methoxyethanol	1	1	61	0	Industry	Top 4 choice: together with 2-methoxymethanol. Industrial use, Selected for Annex XIV but stuck in the process Reprotoxic
540-97-6	208-762-8	Dodecamethylcyclohexasiloxane	1	1	60	45	Industry	Recommended for Annex XIV; restriction pending, final opinions available
			1	1	60	45	Consumer	

CAS No.	EC No.	Substance name	Exclusion	Relevant for Belgium	Priority for Belgium-Industry	Priority for Belgium-consumers	Focus	Comment
75-56-9	200-879-2	Methyloxirane (Propylene oxide)	1	1	61	1	Industry	Large majority of the uses are intermediate uses = => not retained
61788-32-7	262-967-7	Terphenyl, hydrogenated	1	1	49	13	Consumer	All sales of this product in Belgium are for closed system heat transfer purposes ==> not retained
127-19-5	204-826-4	N,N-dimethylacetamide	1	1	76	1	Industry	Pending restriction, RAC/SEAC opinion making to be started Reprotoxic
98-54-4	202-679-0	4-tert-butylphenol	1	1	13	7	Consumer	Is part of the phenol group as defined by ECHA https://echa.europa.eu/documents/10162/b2b8f68d-b11a-f4e5-742c-56998dcd07d0
84-61-7	201-545-9	Dicyclohexyl phthalate	1	1	31	7	Consumer	prioritized for Annex XIV ED, R, SS
10043-35-3	233-139-2	Boric acid	1	1	91	3	Industry	Priority substance but not selected for substitution SEA calculations in this project. Other substances seemed more suitable

CAS No.	EC No.	Substance name	Exclusion	Relevant for Belgium	Priority for Belgium-Industry	Priority for Belgium-consumers	Focus	Comment
	701-028-2	tris(4-nonylphenyl, branched) phosphite	1	1	31	14	Consumer	Is not covered by the nonyl phenol restriction although breakdown products could be similar and have the same concern.
111-30-5	203-856-5	Glutaraldehyde	1	1	46	3	Industry	Mian use is sterilant/disinfectant in medical settings; approved for use as a preservative; Alternatives identifies and indication that a Belgian company/research institution is involved in the development of an alternative ==> not retained



Socio-economic analysis of measures to promote substitution of SVHCs in Belgium

Final report

FOD Economie

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10F Printing House Yard
Hackney Road,
London E2 7PR

 [REDACTED] 5383
 [REDACTED]@eftec.co.uk
 eftec.co.uk

This document has been prepared for FOD Economie by:

Economics for the Environment Consultancy Ltd (eftec)
10F Printing House Yard
Hackney Road, London
E2 7PR
www.eftec.co.uk

Study team:

Thea Marcelia Sletten (eftec)
Zachary Leather (eftec)
Allegra Naldini (eftec)
Oliver Pilkington (eftec)
Victoria Reeser (eftec)
Su Gulmus (eftec)
Anushka Shah (eftec)
Richard Dubourg (The Economics Interface Limited)

Reviewers:

Richard Dubourg (The Economics Interface Limited)
Thea Marcelia Sletten (eftec)
Karli Jeffery (eftec)

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Document evolution

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Executive summary

This report is part of the Belgian Plan For Chemical Alternatives (BEP4CAL) research project for the Belgian Authorities on approaches to promoting the substitution of Substances of Very High Concern (SVHCs). The socioeconomic impacts of ten policy measures that have been designed in earlier stages of the project (Apeiron, 2023a, 2023b, 2023c) are analysed through a multi-criteria analysis. These policy measures are assumed to target all SVHCs that have been put on ECHA's Candidate List (CL) for Authorisation but are not yet on the REACH Annex XIV (authorisation list) or in Annex XVII (Restrictions).

The socioeconomic assessment (SEA) uses a multi-criteria analysis (MCA) approach to assess specific attributes of the measures:

- 1) Effectiveness in achieving substitution of SVHCs;
- 2) Financial impacts;
- 3) Impacts on health, the environment and sustainability;
- 4) Practicability; and
- 5) Wider and distributional impacts.

A set of performance indicators are used for the assessment of these five 'attributes'. Each of the assessment criteria are scored based on an underlying qualitative analysis and are aggregated by attribute, which forms the basis for the ranking of the policy measures. Three policy scenarios are defined to reflect potential differences in policy goals and political priorities:

- Scenario 1 assumes that all attributes are equally important,
- Scenario 2 assumes that effectiveness attribute is the main priority, and
- Scenario 3 prioritises effectiveness but also increases the weighting of competitiveness relative to the other scenarios (which is one of the assessment criteria under wider and distributional impacts).

The evidence used includes reports from earlier work packages of this project, an industry survey covering the 10 policy measures and a literature review. Due to the low industry survey response rate, the analysis and conclusions relies primarily on information from the literature review and economic theory.

The names of the ten policy measures and their rankings across the three scenarios are presented in **ES Table 1**. Some of the policy measures are nested, particularly Policy Measures 1-6 and Policy Measures 8-10, which means that they have overlapping elements. For example,

Policy Measure 4 contains all elements from Policy Measures 1, 2 and 3, with an addition of a subsidy. Where the ranking is higher for nested measures (such as Policy Measure 5, which contains all elements of Policy Measures 1, 2, and 3) this indicates that the additional elements improve the policy as a whole.

ES Table 1 shows the final rank of each measure for the three policy scenarios, where 1 indicates the highest scored measure and 10 indicates the lowest. The ranking and the underlying scores are based on the implementation of each measure in isolation.

ES Table 1: Overall ranking of measures across scenarios

Policy Measure no.	Broad category of measure	Policy measure name	Scenario 1 ranking	Scenario 2 ranking	Scenario 3 ranking
1	Use notification Substitution action plan, SVHCs fee	Mandatory notification of use	10	10	10
2		Substitution action plan	9	7	7
3		Non-financial support for the use notification and/or the substitution action plan	2	3	2
4		Subsidy for the substitution action plan	1	2	1
5		Annual fee on the use of SVHCs	5	1	3
6		Modular annual fee system for the use of SVHCs	8	4	4
7	Awareness creation and networking	Awareness creation and facilitation of networking	4	6	6
8	Methodology and structure to achieve sustainable substitution	Development of methodology and structure to support the sustainability-focused analysis of alternatives	6	8	8
9		Direct support of companies involved with a subsidy for advisory services (version 1)	7	9	9
10		Direct support of companies involved with a subsidy for advisory services (version 2).	3	5	5

Table note:

- The colour coding indicates the highest (green) and the lowest (red) scores.
- The policy measures nested, where Policy measures 2, 3, 4, 5, and 6 include Policy Measure 1. Policy measures 3, 4, 5, and 6 include Policy Measure 2. Policy measures 4, 5, and 6 include Policy Measure 3. Policy measures 9 and 10 include Policy Measure 8.

Policy Measures 3 and 4 are in the top three measures for all scenarios, which indicates that they are overall good candidates for implementation in Belgium, if the trade-offs such as budgetary implications are acceptable. In Scenario 2, where effectiveness is the prioritised attribute, Policy Measure 5 would be the preferred option. Contrastingly, Policy Measures 1 and 9 are the least preferred options, particularly in the scenarios where effectiveness is weighted more heavily. It is unlikely that these Policy Measures will be beneficial if implemented in isolation.

Some of the measures are better candidates for a ‘policy package’ rather than standalone measures. Alternative policy designs and synergy effects were therefore briefly explored in Section 5.6. It was found that the overall effectiveness and positive impacts of obligation-based measures (e.g., substitution action plan and fee) could greatly improve if combined with support-based elements (e.g., non-financial support and/or networking). The obligations provide direct incentives for substitution through the added burden on affected actors, whilst the support-based measure is likely to increase the overall compliance rate and reduce the costs to companies over time. Data submitted as part of policy obligations (e.g., use notifications and substitution action plans) will also contain higher quality information if support is provided.

Most downstream users in Belgium are likely to be smaller companies with limited experience and available funds to comply with regulatory requirements. It is therefore believed that non-financial support will be highly beneficial and necessary to maximise the substitution potential of the measures.

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Glossary

Term	Definition
ADCA	Diazeno-1, 2-dicarboxamide
AoA	Analysis of Alternatives
BBBC	Belgium Builds Back Circular
CAD	Chemicals Agent Directive
CBA	Cost-Benefit Analysis
CEA	Cost-effectiveness Analysis
CL	Candidate List
CLP	Classification, Labelling, and Packaging
CMR	Carcinogenic, Mutagenic, or Toxic for Reproduction Substances
CMRD	Carcinogens, Mutagens or Reprotoxic Substances Directive
DU	Downstream User
EC	European Commission
ECHA	European Chemicals Agency
EIT	European Institute of Innovation & Technology
ERC	Environmental release categories
EPA	U.S. Environmental Protection Agency
EU	European Union
FOD	Federal Public Service
FTE	Full Time Equivalent
GPP	Green Public Procurements
IMJV	Integrated Environmental Report
MCA	Multi-criteria analysis
M&E	Monitoring and Evaluation
NACE	Nomenclature of Economic Activities
OBSH	4,4-oxybis benzene sulfonyl hydrazide
OECD	Organisation for Economic Cooperation and Development
OEL	Occupational Exposure Limit
OR	Only Representative
OSHA	Occupational Safety and Health Administration
OTA	Office of Technical Assistance (for Toxics Use Reduction)
PBT	Persistent, bioaccumulative, and toxic
PERC	Tetrachloroethylene
PFAS	Per- and polyfluoroalkyl substances

PM	Policy Measure
PPE	Personal Protective Equipment
PROC	Process categories
PVC	Polyvinyl chloride
R&D	Research and Development
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RMM	Risk Management Measures
RMOA	Regulatory management option analysis
RPE	Respiratory Protective Equipment
SAICM	Strategic Approach to International Chemicals Management
SAGA	Suitable Alternatives Generally Available
SCIP	Database for information on Substances of Concern
SEA	Socio-economic Analysis
SIEF	Substance Information Exchange Forum
SME	Small and medium-sized enterprises
SRIP	Strategic Research and Innovation Plan
SSbD	Safe and Sustainable-by-Design
SVHC	Substance of Very High Concern
TCE	Trichloroethylene
TUR	Toxics Use Reduction
TURA	Massachusetts Toxics Use Reduction Act
TURI	Toxic Use Reduction Institute
UNEP	United Nations Environment Programme
vPvB	very Persistent and very Bioaccumulative
WP	Work Package

1. Introduction

1.1 Background

The project is part of the Belgium Plan for Chemical Alternatives (BEP4CAL) project to enable Belgium to transition to a more sustainable economy. It builds on the 2019 RDC Environment report 'Development of a strategic roadmap for the substitution of SVHCs as part of a sustainable economy', hereafter referred to as the RDC project (RDC Environment, 2019). The current project is being conducted in accordance with Belgium's implementation of the European Union (EU) Chemicals Strategy for Sustainability (European Commission, 2020) and the Belgian recovery and resilience plan submitted to the European Commission (EC).

As home to a large chemical industry, one of the largest in the EU and a major source of national jobs, encouraging a more sustainable chemicals sector will be an important enabler for Belgium to achieve a more sustainable economy. Eight of the world's top 10 chemical companies operate production sites in Flanders, and Belgium's chemicals industry contributes over 65,000 direct and 150,000 indirect national jobs (Flanders Investment & Trade, 2021). On a per capita basis, Belgium is the world leader in sales of chemicals and plastics, with an annual turnover of €74 billion (The European Chemical Industry Council (Cefic), 2023). Reducing the use of substances of very high concern (SVHCs) will be a crucial part of any strategy aiming to achieve a sustainable chemicals sector.

The authorisation process under the European Chemicals Agency (ECHA)'s Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) regulation identifies SVHCs across the EU and aims to phase out chemicals thought to be particularly hazardous to human health and the environment. This project focuses on national measures that would encourage substitution away from SVHCs in Belgium and aims to serve as a scientific basis upon which a national plan towards promoting substitution towards more sustainable solutions could be drafted. The measures proposed by this project will be part of a potential Belgian Action Plan for the Substitution of SVHCs and may also be presented in the European Semester, the EU's yearly socio-economic policy coordination exercise. They may also help alignment with strategies like the Chemicals Strategy for Sustainability and the Circular Economy Action Plan.

The project is divided into four work packages, which focus on:

1. the manufacturing and use of SVHCs in Belgium,
2. the development of a prioritisation methodology and the prioritisation of SVHCs,
3. policy measures development, and
4. a socio-economic analysis.

This report forms Work Package four, which assesses the socio-economic impacts of the prioritised policy measures using a multi-criteria analysis (MCA) approach.

1.2 Objective and scope

The project aims to support Belgium's switch to a more sustainable economy by identifying and

evaluating policy measures concerning the substitution of SVHCs. The geographical scope of the project is Belgium, and the temporal scope for all analysis is 20 years.

The objective of this work package is to present a socio-economic analysis of potentially suitable measures for promoting substitution away from SVHCs to more sustainable alternatives in Belgium. Whether substitution is a worthwhile activity in itself (the benefits outweigh the costs of substitution) is therefore not assessed within this analysis. Instead, the focus is on identifying the most appropriate approach to increase substitution while accounting for a broader spectrum of impacts. The policy measures were identified in Work Package 3 of the project, and priority SVHCs for substitution in Belgium were identified in Work Package 2. Although the analysis in Chapter 4 is not substance-specific, the case study presented in Chapter 6 is specific to ADCA, which is one of the prioritised substances identified in Work Package 2.

The policy measures identified as potentially suitable to promote substitution are:

1. Mandatory notification of use
2. Substitution action plan
3. Non-financial support for the use notification and/or the substitution action plan
4. Subsidy for the substitution action plan
5. Annual fee on the use of SVHCs
6. Modular annual fee system
7. Awareness creation and facilitation of networking
8. Development of methodology and structure to support the sustainability-focused analysis of alternatives
9. Direct support of companies involved with a subsidy for advisory services (version 1)
10. Direct support of companies involved with a subsidy for advisory services (version 2).

The analysis will cover substances on the European Chemicals Agency (ECHA)'s Candidate List of SVHC's for Authorisation (hereafter referred to as the 'Candidate List' (CL)) which have not yet been subject to authorisation. There are 235 substances on the CL, of which 107 have not yet been put on the Authorisation list in Annex XIV or the Restriction list in Annex XVII (ECHA, 2023d). Where DUs (DUs) of SVHCs are referred to across the report, it can be assumed that this only refers to DUs of these 107 substances not on the Authorisation or Restriction lists.

The analysis will assist the Belgian authorities' decision-making process, allowing them to make more informed decisions on which policy measures to pursue and design policies in ways that minimise negative impacts (such as regrettable substitution or loss of national jobs) and accelerate positive impacts (such as reduced use of SVHCs and growth of markets using safer and more sustainable chemicals).

1.3 Structure of the report

The following list explains the structure of the report, with a brief description of the purpose of each chapter:

- **Chapter 2** provides an overview of the analytical approach, including a description of the attributes used in the multi-criteria analysis and the scoring system employed within this analysis
- **Chapter 3** summarises the baseline scenario. The chapter includes information on Substances of Very High Concern, existing and future policies affecting substitution and barriers and drivers of substitution.
- **Chapter 4** presents the multi-criteria analysis of Policy Measures 1 to 10. The chapter explains the scope and assumptions used in the analysis, describes the actors involved and their potential behavioural responses to these policy measures and evaluates each policy measure based on selected attributes.
- **Chapter 5** compares the strengths of the policy measures.
- **Chapter 6** presents a case study on the use of ADCA in construction. The chapter assesses the cost effectiveness of the policy measures in relation to the ADCA case study.
- **Chapter 7** discusses uncertainties and limitations in the analysis.
- **Chapter 8** summarises the results for each of the 10 measures and lays out recommendations for future work.

2. Methodology

2.1 Multi-criteria analysis

A multi-criteria analysis (MCA) approach has been used as the basis for this socioeconomic analysis (SEA), which bears similarities to a risk management option analysis. Available guidance material within the chemicals policy context is utilised, including REACH SEA guidance, Eurometaux industry RMOA guidance¹, and SEAC's recently adopted guidance on qualitative analysis². ECHA's Guidance on Socio-Economic Analysis – Restrictions³ describes the MCA approach as follows:

“MCA describes any structured approach used to determine overall preferences among alternative options, where the options have several types of impacts and/or accomplish several objectives.

In MCA, desirable objectives are specified, and corresponding attributes or indicators are identified. The actual measurement of indicators is often based on the quantitative analysis (through scoring, ranking, and weighting) of a wide range of qualitative and quantitative impact categories and criteria. This need not be done in monetary terms. Different environmental and social indicators may be developed side by side with economic costs and benefits and MCA provides techniques for comparing and ranking different outcomes, even though a variety of indicators are used. Explicit recognition is given to the fact that a variety of both monetary and non-monetary objectives may influence policy decisions.

The key features of multi criteria analyses are the identification of criteria to provide a means of measuring the degree to which the various objectives are met, and the relative weighting of the objectives which directly incorporates their value judgements in the assessment of options. This contrasts to economic analysis (particularly the efficiency-based approaches of CBA and CEA) which is aimed at providing an objective measure of the net value (or social worth) of a proposed option.”

Quantitative and qualitative information from the literature review, the stakeholder surveys and stakeholder interviews are used to underpin the scoring and ranking. Scores for individual assessment criterion are derived by matching the weight of evidence found to descriptions of the score for each assessment criterion. The total score and ranking are then derived using different weights (e.g., (i) equal weights, (ii) higher weight on effect and/or (iii) higher weight on competitiveness). The weighting system is a way to illustrate different priorities, e.g., if budgetary considerations are a priority, a higher weight can be given to costs borne by authorities. The benefit of this approach is that it provides tangible information on the relative ranking of the measures as well as clearly highlighting the trade-offs associated with each measure.

An MCA cannot in itself be used to conclude on proportionality of a specific measure. We therefore use a combination of information found in the literature and the stakeholder survey to derive rudimentary cost estimates. The cost estimates are used to inform the MCA as well as being

¹ https://www.reach-metals.eu/uploads/pdf/RMOa/I-RMOA_V5_January%25202021.pdf

² https://echa.europa.eu/documents/10162/17087/evaluation_qualitative_assessments_seac_en.pdf/40903c2b-341e-b52c-0968-72f105e28faa?t=1681969785805

³ https://www.echa.europa.eu/documents/10162/2324906/sea_restrictions_en.pdf/2d7c8e06-b5dd-40fc-b646-3467b5082a9d

standalone results, giving a broader evidence base for the decision-making process.

2.2 Attributes used for the multi-criteria analysis

The measures assessed are presented in **Table 2.1**.

Table 2.1: Measures assessed in the MCA

Broad category of measure	Policy scenarios
Use notification Substitution action plan SVHCs fee	1. Mandatory notification of use
	2. Substitution action plan
	3. Non-financial support for the use notification and/or the substitution action plan
	4. Subsidy for the substitution action plan
	5. Annual fee on the use of SVHCs
	6. Modular annual fee system on the use of SVHCs
Awareness creation and networking	7. Awareness creation and facilitation of networking
Methodology and structure to achieve sustainable substitution	8. Development of methodology and structure to support the sustainability-focused analysis of alternatives
	9. Policy Scenario 8 with a subsidy for advisory services (version 1)
	10. Policy Scenario 8 with a subsidy for advisory services (version 2)

Each of the measures assessed in the MCA is compared against the baseline in which no Belgian-specific measures to incentivise substitution are implemented.

As a starting point for the MCA, a set of **attributes** representing policy objectives (or political priorities) is defined. These are the dimensions over which the measures are assessed. Based on the attributes defined in Eurometaux i-RMOA guidance, the following attributes have been defined for this assessment:

- Effectiveness
- Financial impacts
- Health, environment, and sustainability
- Practicability
- Wider and distributional impacts

For each of the attributes, a set of **assessment criteria** has been defined, which functions as performance indicators for the attributes. The short form of these criteria is set out in **Table 2.2** whilst the full explanations are presented below the table.

Table 2.2: Preliminary attributes and assessment criteria

Attributes	Assessment criteria
Effectiveness	Substitution efforts
	Substitution success rate
	Improving future regulations
Financial impacts	Financial impacts on authorities
	Financial impacts on companies
	Financial impacts on consumers
Health, environment, and sustainability	Regrettable substitution
	Use and emissions of SVHCs
	Other impacts on human health and the environment
	Sustainability
Practicability	Intelligibility
	Implementability
	Monitorability and enforcement
Wider and distributional impacts	Impacts on competitiveness
	Concerns for SMEs
	Fairness of cost distribution
	Impacts on the job market

2.2.1 Effectiveness

The effectiveness of a policy measure in triggering substitution of SVHCs is a key attribute for measuring a policy measure's success. For this attribute, a set of three assessment criteria⁴ have been defined based on the guidance from the European Commission's Better Regulation Toolbox⁵ and Eurometaux Guidelines for an Industry Risk Management Options Analysis⁶.

The assessment criteria used for this attribute are:

- **Substitution efforts** – Is the measure likely to increase/decrease private substitution efforts? Changes can include the financial resources dedicated to substituting an SVHC, such as additional investments into R&D, testing, validation etc. The criterion also considers increases in the use of

⁴ The assessment criteria should be viewed as performance indicators for the attributes.

⁵ The Better Regulation Toolbox is available here: https://commission.europa.eu/law/law-making-process/planning-and-proposing-law/better-regulation/better-regulation-guidelines-and-toolbox/better-regulation-toolbox_en

⁶ Eurometaux (2017) Guidelines for an Industry Risk Management Options Analysis. Available here: https://www.reach-metals.eu/uploads/121/rmoa-guide_version_3-18_may_2017.pdf

other resources e.g., the number of employees dedicated to finding an alternative and the amount of time spent by existing employees on finding a substitute.

- **Substitution success rate** – Is the measure likely to increase/decrease the substitution effort success rate? The substitution success rate refers to the extent that substitution efforts lead to actual implementation of an alternative. A measure may reduce the technical barriers associated with substitution, for example, through information packages, substitution action plans and other non-financial support.
- **Improving future regulations** – Is the measure likely to provide information for the authorities that can be used to implement more effective policies to promote substitution in the foreseeable future? For example, information on the volumes used and emitted, information on substitution action plans and information on successful substitution efforts could facilitate better regulations.

2.2.2 *Financial impacts*

This attribute encompasses the financial impacts of the different policy measures. It considers the financial costs and benefits (e.g., cost savings or increased income) to authorities, companies, and consumers.

Financial impacts on authorities includes administrative costs and financial support that authorities would bear dependent on the policy measure. For example, implementing new IT systems, helpdesk staff, monitoring and enforcement.

Financial impacts on companies may include additional data gathering, administrative costs and resources spent on engaging in networking. Cost savings may also occur, for example, if a measure leads to fewer failed substitution attempts (e.g., due to improved knowledge about alternatives) compared to what would be expected without the policy measure.

Considering the shortlisted policy measures, direct **financial impacts on consumers** are likely low (if any). But there might be indirect impacts to consumers, for example, due to companies transferring increased costs to their customers by increasing the prices of goods and services. Note that if it is believed that companies will transfer costs to consumers, these costs will only be counted for the consumers (otherwise the same costs would be counted twice).

It should be noted that fees and subsidies are distributional in nature, meaning that a subsidy is a cost to the authorities and income to companies of the same value; conversely, fees paid by companies represent income to the authorities of the same value⁷. At an attribute level where all the assessment criteria are considered collectively, these impacts will therefore be cancelled out.

2.2.3 *Health, environment, and sustainability*

A successful policy measure will positively affect human health, environmental and sustainability impacts and avoid regrettable substitution. It is designed to align with the Safe and Sustainable-by-

⁷ Deadweight loss (i.e., market inefficiencies that can arise from introducing a fee or a subsidy) will not be considered in this assessment.

Design (SSbD) framework⁸ and alongside guidance from the European Commission's Better Regulation Toolbox⁵. The SSbD framework defines evaluation procedures for chemicals with the purpose of identifying negative impacts on human health and the environment. It was developed by the EC as part of the EU's wider commitment to sustainable development. Key terms for this attribute align with the definitions presented in the SSbD framework:

- *Sustainability*: 'ability of a chemical/material to deliver its function without exceeding environmental and ecological boundaries in its entire life cycle, while providing welfare, socio-economic benefits and reducing externalities'.
- *Safety*: 'absence of unacceptable risk (in line with REACH art 68 (EU, 2006)) for humans and the environment, preferably ensured by avoiding chemicals and materials with intrinsic hazard properties.

This attribute takes a holistic view on whether a policy measure will lead to an overall improvement in human health and the environment beyond the improvements triggered by the substitution itself. For example, changes in exposure to an SVHC or other serious health concerns (e.g., safety of workers and consumers), impacts on the climate (e.g., energy consumption and emissions), impact on the natural environment (e.g., biodiversity) and on the circular economy (e.g., on recycling and resource consumption).

Based on the 'safety and sustainability assessment' outlined in the SSbD framework and the Better Regulation Toolbox, the following criteria are used:

- **Regrettable substitution** – Does the policy measure avoid regrettable substitution by encouraging substitution that identifies safety and sustainability as a requisite of the process? This report takes a broader perspective on regrettable substitution, where substituting one SVHC with another SVHC is not the only way a substitution will be regrettable. It takes time and adequate information and data collection to formally identify a substance as an SVHC. Some Bisphenols like Bisphenol A are classified as SVHCs, but it is suspected that other bisphenols also have toxicological properties, to the extent that Germany intends to submit a proposal for a restriction on all Bisphenols with endocrine disrupting properties (APLF, 2023; ECHA, 2023e). A substitution of a Bisphenol that is an SVHC with a Bisphenol that is not an SVHC could therefore be considered regrettable substitution due to the latter's impact on human health and the environment⁹.
- **Use and emissions of SVHCs** – Can the policy option reduce the use of SVHCs and/or emissions irrespective of substitution? A policy measure may incentivise more efficient production processes or implementation of emission reduction measures. Another possibility is that companies cease production in Belgium, either through relocation or closures.

⁸ The SSbD framework is available here: <https://op.europa.eu/en/publication-detail/-/publication/eb0a62f3-031b-11ed-acce-01aa75ed71a1/language-en>

⁹ Another example of a substitution that would be regrettable despite not being a substitution of one SVHC by another is shown by the case of Perfluoroalkyl and Polyfluoroalkyl substances (PFAS). Perfluorooctanoic Acid (PFOA) and Perfluorooctyl Sulfonate (PFOS) are classified as SVHCs, but other PFAS are also suspected to have harmful impacts on human health and the environment, despite their (current) lack of SVHC status. This is also recognised through the ongoing restriction process on PFAS.

- **Other impacts on human health and the environment** – Will the policy measure induce other positive or negative impacts on human health and the environment? For example, does the measure improve working conditions (e.g., avoids the need for PPE or RPE and/or results in workers having use more/less RMMs to ensure safe use) or avoid pollution of the environment (e.g., reduced air or water pollution and preservation of biodiversity)?
- **Sustainability** – Will the measure have a positive/negative impact on sustainability? Substitution should be sustainability focused (e.g., target resource efficiencies, provide other socio-economic benefits, and/or reduce externalities), in line with the SSbD framework.

2.2.4 *Practicability*

A successful policy option must be practical and feasible to implement, both for the authorities and industry. This process-oriented attribute therefore compares the balance between output and input and considers the practicability of a policy measure according to the intelligibility and the authorities' ability to enforce and monitor a measure. Practicability of a policy option is one of the four attributes outlined in Eurometaux Guidelines⁶, which have been used to further define the assessment criteria included in this attribute:

- **Intelligibility** – Can the measure be easily communicated to and understood by all parties involved? This attribute considers whether the actions to be undertaken are clear and whether the implications in terms of obligations and responsibilities have been communicated effectively.
- **Implementability**– Will the measure induce practical challenges for companies and authorities in terms of implementation and management? Implementability will be affected by the availability of suitable technology, resources and expertise needed. Another factor is the market and societal acceptance of the measure, for example, a tax/fee is often more challenging to implement than a subsidy due to a lower acceptance for additional burdens.
- **Monitorability and enforceability** – Is the measure monitorable? That is, whether a measure has clear milestones or benchmarks against which a company's actions can be compared, A measure is enforceable if authorities have the capacity and resources to both monitor compliance and act on non-compliance. This criterion also assesses whether progress towards substitution of SVHCs can be measured.

2.2.5 *Wider and distributional impacts*

This attribute covers aspects such as competitiveness, impacts on SMEs, cost distribution and impacts on the Belgian job market.

- **Impacts on competitiveness** – How would a policy measure impact competitiveness of Belgian industry? The concern relates to both a desire to improve competitiveness of Belgium industry and avoiding the loss of Belgian industry due to lack of competitiveness.
- **Concerns for SMEs** – How will the measure impact SMEs? For example, will costs induced be prohibitive or affordable to SMEs.
- **Fairness of cost distribution** – Would the distribution of the costs of a policy measure be

deemed 'fair'? 'Fair cost distribution' refers to the alignment of the policy with the polluter pays principle and its ability to avoid a disproportionate burden on a few actors.

- **Impacts on the job market** – How would a policy measure impact the job market? That is, would a measure be expected to improve or decrease the number of available jobs in Belgium?

2.3 Attributes not assessed

The objective of this study is to identify measures that can increase the substitution of SVHCs in Belgium. Early in the project it was agreed with FOD Economie and FOD Volksgezondheid that the socio-economic analyses would not assess whether substitution in itself is a worthwhile activity, i.e., results in a net benefit or net cost to society. This means that the costs and benefits of the substitution itself of SVHCs are not assessed in the MCA. Even if the costs and benefits were assessed, the net benefits of a 'unit of substitution' are expected to be the same across all policy measures and would therefore not affect the ranking of the measures.

In Work Package 3, the policy measures to be included in the SEA were selected based on a screening of a long list of measures. Measures that were not found to be regulatory consistent were excluded from further assessment as part of this screening. Regulatory consistency has therefore not been included as an attribute for the MCA.

2.4 Scoring system for the multi-criteria analysis

In addition to the attributes and assessment criteria, the design of the scoring system needs to be carefully considered. eftec has successfully applied MCA approaches in other project and has built upon this experience to design a bespoke scoring system for this assessment. A general principle is that the approach needs to be as transparent as possible, and it should be reproducible. The latter refers to the ease at which a reviewer can reproduce the results and also alter some of the scores to produce a new ranking based on relevant new information.

The scoring system developed consists of two key components, which will be described in the following sections:

- 1) Impact scoring of assessment criteria
- 2) Weighting and aggregation of assessment criteria and attributes

2.4.1 *Impact scoring of assessment criteria*

Each of the assessment criterion is given a score between 1 and 5, where the lowest (worst) score is 1 and the highest (best) score is 5. The interpretation of these scores (e.g., whether a specific score represent a positive, negative, or neutral impact) will differ between the assessment criteria. The reason for this is twofold (i) some criteria can indicate negative impacts, whilst other cannot, and (ii) if most of the measures will lead to benefits/costs, more nuance is needed to separate the criteria on the benefit/cost side. Specific assumptions made for the assessment of impacts are set out in Section 4.2.

The scoring interpretation for each assessment criterion is set out in **Table 2.3**. The colour coding indicates whether the score represent a positive (green), negative (red) or a negligible/neutral effect (no colour). The colour coding is used to distinguish between positive or negative effects and should not be interpreted as judgements on the acceptability or magnitude of impacts.

Table 2.3: Score interpretation

Attribute	Assessment criteria	Score interpretation				
	Score	1	2	3	4	5
Effectiveness	Substitution efforts	Negligible effect on substitution efforts	Limited positive effect on substitution	Some positive effects on substitution efforts	Significant positive effect on substitution efforts	High positive effect on substitution efforts
	Substitution success rate	Negligible effect on substitution success rate	Limited positive effect on substitution success rate	Some positive effects on substitution success rate	Significant positive effect on substitution success rate	High positive effect on substitution success rate
	Improving future regulations	Negligible effect on future regulations	Limited positive effect on future regulations	Some positive effects on future regulations	Significant positive effect on future regulations	High positive effect on future regulations
Financial impacts	Financial impacts to the authorities	High costs to authorities	Acceptable costs to authorities	Low costs to authorities	Negligible financial impacts on authorities	Net financial benefits to authorities
	Financial impacts to companies	High costs to companies	Acceptable costs to companies	Low costs to companies	Negligible financial impacts on companies	Net financial benefits to companies
	Financial impacts to consumers	High costs to consumers	Acceptable costs to consumers	Low costs to consumers	Negligible financial impacts on consumers	Net financial benefits to consumers
Health, environment, and sustainability	Regrettable substitution	Negligible effect on regrettable substitution	Limited reduction in regrettable substitution	Some reduction in regrettable substitution	Significant reduction in regrettable substitution	High reduction in regrettable substitution
	Use and emissions of the SVHC	Negligible effect on the use and emissions of the SVHC	Limited reduction in use and emissions of the SVHC	Some reduction in use and emissions of the SVHC	Significant reduction in use and emissions of the SVHC	High reduction in use and emissions of the SVHC

	Other impacts on human health and the environment	Negligible effect on human health and the environment	Limited other positive impacts on human health and the environment	Some other positive impacts on human health and the environment	Significant other positive impacts on human health and the environment	High other positive impacts on human health and the environment
	Sustainability	Negligible effect on sustainability	Limited increase in sustainability	Some increase in sustainability	Significant increase in sustainability	High increase in sustainability
Practicability	Intelligibility	Very challenging to communicate and understand	Challenging to communicate and understand	Somewhat challenging to communicate and understand	Neither challenging nor easy to communicate	Easy to communicate and understand
	Implementability	Very challenging to implement	Challenging to implement	Somewhat challenging to implement	Neither challenging nor easy to implement	Easy to implement
	Monitorability and enforcement	Very challenging to monitor and enforce	Challenging to monitor and enforce	Somewhat challenging to monitor and enforce	Neither challenging nor easy to monitor and enforce	Easy to monitor and enforce
Wider and distributional impacts	Impacts on competitiveness	Significant negative impacts on competitiveness	Some negative impacts on competitiveness	Limited negative impacts on competitiveness	Negligible impacts on competitiveness	Positive impacts on competitiveness
	Concerns for SMEs	Significant concern for SMEs	Some concern for SMEs	Limited concern for SMEs	No concern for SMEs	Beneficial for SMEs
	Fairness of cost distribution	Highly unfair cost distribution	Somewhat unfair cost distribution	Acceptable fairness in cost distribution	Mostly fair cost distribution	Fair cost distribution
	Impacts on the job market	Some reduction in the number of jobs	Limited reduction in the number of jobs	Negligible impacts on the job market	Limited increase in the number of jobs	Some increase in the number of jobs

A challenging part of the scoring approach is that there are multiple pathways through which an assessment criterion can achieve a good or a bad score. For example, a measure may be considered effective in incentivising increased substitution efforts (which would indicate a good score), but if the measure has a very low uptake, the effect for society may not be significant. The final score should consider the effects at the societal level, which means that the strength of the incentives at a company level, as well as the number and sizes of the companies that are reacting to the measures. These considerations are highlighted both in the qualitative assessment, as well as in the conclusions and associated scoring.

2.4.2 Weighting of attributes and assessment criteria

Assigning weights to the attributes and assessment criteria constitute a value judgement of their relative importance. As explained above, the attributes are considered to be overall policy goals or political priorities, whilst the assessment criteria are indicators of a measure's performance in contributing towards these goals. Giving an attribute higher weight therefore means that the specific policy goal is considered more important. If an assessment criterion is given higher weight (counts more towards the total score of the attribute), it should be interpreted as being a better performance indicator than the other assessment criteria. Assessment criteria can therefore only be compared to other assessment criteria within the same attribute and should not be compared across attributes.

The analysis includes three different weighting systems, represented by scenarios with difference policy goals. The scenarios have been agreed with the FOD Economie and FOD Volksgezondheid. Under all the scenarios, the maximum score a policy measure can obtain is 100%.

Scenario 1: Under this scenario all policy goals (i.e., the five attributes) are considered equally important, and therefore weighted the same. Since the maximum score a policy measure can achieve is 100%, it means that each of the attributes have a maximum score 20% each. The assessment criteria associated with a specific attribute are all given the same weights, i.e., they are all considered equal performance indicators for the policy goal.

Scenario 2: *Effectiveness* is the main policy goal under this scenario. This is reflected by giving *Effectiveness* a maximum score of 50%, whilst the remaining four attributes have a maximum score of 12.5% each. The assessment criteria associated with a specific attribute are all given the same weights.

Scenario 3: Under Scenario 3 *Effectiveness* remains the main policy goal, but *Wider and distributional impacts* are also considered a priority. Competitiveness is considered the most important performance indicator for *Wider and distributional impacts* under this scenario. To reflect this priority structure, *Effectiveness* has a maximum score of 40%, and *Wider and distributional impacts* has a maximum of 20%. The remaining attributes can score at most 13.3% each. The assessment criteria associated with a specific attribute are all given the same weights, except for competitiveness which is weighted 3 times higher than the other assessment criteria under *Wider and distributional impacts*.

Table 2.4 presents a detailed breakdown of the weighting systems applied for each scenario.

Table 2.4: Scenario weighting systems

Attribute	Assessment criteria	Scenario 1		Scenario 2		Scenario 3	
		<i>Max score attribute</i>	<i>Maximum score assessment criteria</i>	<i>Max score attribute</i>	<i>Maximum score assessment criteria</i>	<i>Max score attribute</i>	<i>Maximum score assessment criteria</i>
Effectiveness	Substitution efforts	20%	6.7%	50%	16.7%	40%	13.3%
	Substitution success rate		6.7%		16.7%		13.3%
	Improving future regulations		6.7%		16.7%		13.3%
Financial impacts	Financial impacts on authorities	20%	5.0%	12.5%	3.1%	13.3%	3.3%
	Financial impacts on companies		5.0%		3.1%		3.3%
	Financial impacts on consumers		5.0%		3.1%		3.3%
Health, environment, and sustainability	Regrettable substitution	20%	5.0%	12.5%	3.1%	13.3%	3.3%
	Use and emissions of the SVHC		6.7%		4.2%		4.4%
	Other impacts on human health and the environment		6.7%		4.2%		4.4%
	Sustainability		6.7%		4.2%		4.4%
Practicability	Intelligibility	20%	6.7%	12.5%	4.2%	13.3%	4.4%
	Implementability		6.7%		4.2%		4.4%
	Monitorability and enforcement		6.7%		4.2%		4.4%
Wider and distributional impacts	Impacts on competitiveness	20%	5.0%	12.5%	3.1%	20%	10.0%
	Concerns for SMEs		5.0%		3.1%		3.3%
	Fairness of cost distribution		5.0%		3.1%		3.3%
	Impacts on the job market		5.0%		3.1%		3.3%

3. Baseline scenario

3.1 Introduction

The baseline scenario contains information on the prioritisation of SVHCs, Belgian market information, existing and future policies / initiatives that affect substitution, and information on the barriers and drivers of substitution. The information presented in this chapter is a summary, and more detailed information is present in Work Packages 1, 2 and 3 and stakeholder consultations conducted by Apeiron and eftec (Apeiron, 2023a, 2023c, 2023b).

As the measures and their impacts are not assessed at a substance level, the baseline does not present substance-specific information – more information on the substances that have been identified and prioritised as SVHCs are included in Work Package 2 with the exception of ADCA, which is presented as a case study in Chapter 6.

3.2 Substances of Very High Concern

3.2.1 *What is an SVHC?*

A Substance of Very High Concern (SVHC) is a chemical substance (or part of a group of chemical substances) that has been identified to have serious effects on human health and the environment which it has been proposed that use within the European Union be subject to authorisation under the REACH Regulation (Apeiron, 2023a).

Article 57 of the REACH Regulation defines the criteria for a substance to be considered an SVHC. These criteria therefore determine the inclusion of substances on the Candidate List (CL) and subsequently Annex XIV (Authorisation List). The criteria listed in Article 57 are:

- (a) carcinogenicity category 1 or 2,
- (b) mutagenicity category 1 or 2,
- (c) reprotoxicity category 1 or 2,
- (d) persistence, bioaccumulative and toxic (PBT),
- (e) very persistent and very bioaccumulative (vPvB),
- (f) with equivalent concern to the other criteria for human health or environment, such as having endocrine disruptor properties, or persistent, bioaccumulative and toxic properties, or very persistent and very bioaccumulative properties which do not fulfil criteria outlined in (d) or (e).

Work Package 1 (WP1) – Manufacture and Use of SVHCs in Belgium Apeiron (2023c) details how SVHCs were prioritised based on which substances could be considered for substitution in Belgium. These substances were screened, for example, substances were only included in the scope if they were on the REACH CL and

were not (solely) substances with an intermediate use¹⁰ (Apeiron, 2023a). Additionally, as noted in Section 1.3 of Work Package 1 (Apeiron, 2023a), substances which had been identified as SVHCs under Article 57 of REACH but were also subject to REACH Restrictions (i.e., included in Annex XVII) or Authorisation (Annex XIV) were excluded.

The premise of WP1 was to identify uses of substances on the CL where substitution would be of greatest benefit to the Belgium public and its environment. Further details of the methodology and outcomes are found in Apeiron (2023c).

3.2.2 REACH Authorisation process for SVHCs

At the European Union level, the process of authorisation of SVHCs is designed to progressively replace these substances with safer alternatives, provided such alternatives are technically and economically feasible (Apeiron, 2023a). Once a substance is identified as an SVHC it is added to the CL for Authorisation which currently consists of 107 substances, with a further 59 already on the Authorisation list and an estimated further 69 affected by restrictions in Annex XVII. The SVHCs on the CL are prioritised for inclusion in Annex XIV using a score-based system (Apeiron, 2023a). When an SVHC is included in Annex XIV it receives a sunset date from which the placing on the market and use of the SVHC is prohibited unless an authorisation is granted.

Based on the current Annex XIV, the transition from the CL to Annex XIV takes an average of 3.5 years (43 months), followed by over 3 years (40 months) from inclusion in Annex XIV to the sunset date. Thus, it takes a total of 7 years (83 months) to take a substance from listing on the CL to its sunset date. For some substances, this could be as long as 13 years. Companies substituting due to the Authorisation process are likely to do so significantly quicker than they would without the Authorisation process.

The aim of Belgium level initiatives targeting CL substances should therefore be to identify policy measures which can shorten this time frame for Belgian companies by addressing Belgium's specific needs and challenges effectively and proportionally.

3.2.3 Belgian SVHC market

The number of companies in the manufacturing industry in Belgium has remained fairly steady during the decade between 2010 and 2020. In 2020, Statista (2023) shows that there are 39,630 companies in the manufacturing industry in Belgium. Although it is uncertain what portion of these companies is made up of the chemicals manufacturers, the National Bank of Belgium (2023b) stated that the average net operating (profit) margin for chemicals manufacturers in Belgium was 10.39% in 2019. This was considerably higher than the average across all manufacturing industries, which showed 3.59% average net operating (profit) margin for the same year.

In Belgium – as well as in the EU – 99.8% of companies are small or medium enterprises (SMEs) and in the EU, around a third of the manufacturing sector value added originates in SMEs (European Commission, 2019a; Eurostat, 2022). The average number of people employed per company in Belgium is 4.7 people

¹⁰ Substances which only have intermediate uses are not within the scope of REACH Authorisation (i.e., inclusion in Annex XIV) and thus, are out of the scope.

whilst the average across SMEs is 3.2 people. If micro companies are excluded, the average size is 56 people per company in Belgium (European Commission, 2019; Eurostat, 2022). It is therefore considered likely that a substantial portion of downstream users (DUs) of SVHCs in Belgium are SMEs.

Even through the majority of companies in Belgium are small or micro, the majority of substances registered in REACH are from large companies. In 2008, 969 companies in Belgium registered 3,917 substances in REACH (ECHA, 2023a). Of these companies, the majority (n=808) were large companies, whilst 16.62% (n=161) were SMEs.

Moreover, the majority of companies that registered substances in REACH in Belgium were from companies based outside of the EEA who appointed European-based representatives. In 2018, most companies (n=521) were the Only Representative (OR) of a non-EU manufacturer, registering 1,703 substances, the next largest roles in the supply chain were importers (321 companies) registering 1,637 substances and then manufacturers (212 companies) registering 1,235 substances. Additionally, 110 companies registered 477 substances as a manufacturer and importer (ECHA, 2023a).

In the WP1 report, Apeiron (2023c) noted that Belgium-specific data on relevant uses, volumes, workers exposure, exposure to the environment, and exposure of the general population was largely missing. In WP2, Apeiron (2023d) found that there was currently no useful routinely collected data source on the use of SVHCs in consumer products used in Belgium. This notwithstanding, based on the data collected for this project, it was demonstrated that the use of SVHCs in Belgium is very dispersed, covering a varied number of sectors, companies, technical functions, and end products (Apeiron, 2023b).

The stakeholder consultation carried out for WP1 (Apeiron, 2023b) was sent to approximately 580 companies (through various industry associations¹¹). A total of 129 responses from 66 companies were received and presented information about the type of users (manufacturer, importer, DU, or seller) of approximately 39 substances. The greater number of responses compared to the number of companies reflects that a company could represent more than one type of user (for example, they could be an importer and a DU).

Table 3.1 shows a breakdown of the 66 companies by type of user and the number of SVHC that are not reported in Annex XIV that they use. WP1 noted that some of the respondents fall into two or three of these categories; for example, a manufacturer could also be an importer and DU. For each of these categories, the respondents could provide information for up to three SVHCs.

Table 3.1: Reported number of respondents and SVHC substances from survey categories presented in WP1

Type of user	No. of respondents	No. of substances not in Annex XIV
Manufacturing	7	6
Importer	15	13
Downstream user (DU)	36	22

¹¹ The companies were selected by the associations as the companies possibly involved with the use or manufacturing of the substances.

Sellers	8	10

Source: Apeiron (2023c)

The stakeholder consultation conducted as part of WP1 presented that in Belgium, there are 83 companies that manufacture, import or are only representative (OR) for a SVHC, and have registered one or more SVHCs. The 83 companies have 208 registrations for 73 different SVHCs. There were 30 respondents who identified as manufacturers or importers, of which, 22 provided details on substances.

The survey responses represent 36% of companies in Belgium which had a registration obligation for an SVHCs. The 22 manufacturers and importers from the survey¹² provided details for 19 different substances, which represents only 26% of the substances with a registration obligation. The survey results also indicated that the DUs are the largest group across the four types of user that interact with SVHCs, with 36 respondents for the DU category (Apeiron, 2023b).

According to WP2, eight SVHCs were manufactured in Belgium by survey respondents. Forty-eight industry respondents (13 of whom were SMEs) reported using 28 SVHCs for 83 functional uses/applications. Additionally, 12 SVHCs were sold in Belgium. Regarding knowledge of alternatives, roughly one third of industry respondents indicated that alternatives were available for the SVHCs they were using. Among the 25 respondents that indicated they have substituted an SVHC in the last ten years, nearly all (n=24) were defined as being DUs (Apeiron, 2023c).

3.3 Existing and future policies affecting substitution

This section explores the existing and future policies at the EU and Belgium level that may have an impact on the substitution of the prioritised CL substances. This analysis serves to determine the additionality of the policy measures that are considered in this study.

3.3.1 European initiatives

Numerous European-level initiatives are also in place, complemented by similar efforts from international institutions such as the OECD, UNEP, and SAICM, all dedicated to achieving a more sustainable chemicals industry. Some of these are directly aimed at promoting the substitution of SVHCs, such as provisions within REACH. These initiatives encompass diverse objectives, including backing research, development, and innovation, offering financial aid, and addressing skill gaps to empower the workforce.

- EU chemicals regulations: Within the EU, approximately 40 chemicals regulations are in place. These regulations include Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Classification, Labelling and Packaging (CLP) Regulation, Chemical Agents Directive (CAD) and Carcinogens, Mutagens or Reprotoxic Substances Directive (CMRD). REACH, which came into effect in 2007, stands as the central pillar of EU chemicals regulations, dedicated to safeguarding human health and the environment from the potential risks posed by chemicals. In the long term, REACH aims to replace the most hazardous substances with alternatives. Additionally, REACH aims to

¹² More specifically, 7 manufacturers and 15 importers.

enhance innovation and the competitiveness of the EU chemicals industry.

- Chemical Strategy for Sustainability Towards a Toxic-Free Environment: this is a part of the EU's zero pollution ambition (ECHA, 2020c). The strategy aims to better protect citizens and the environment from harmful chemicals, and boost innovation by promoting the use of safer and more sustainable chemicals (ECHA, 2020c).
- Safe and Sustainable by Design (SSbD) – European Commission: In December 2022 the European Commission established the “safe and sustainable by design” voluntary framework. The primary objective of SSbD is to accelerate the widespread market uptake of new chemical products and technologies (European Commission, 2022b). SSbD encompasses a range of measures currently under development and there is active engagement with the framework at the EU level, particularly in the creation of sector-specific guidance. However, the practical implementation of this guidance necessitates action at the Belgian national level. As the SSbD approach continues to evolve in the future, it is expected to play an important role in the substitution of SVHCs.
- Horizon Europe – European Union: Horizon Europe is a funding programme that aims to strengthen the EU's scientific and technological basis. This initiative is a broad program designed to support Research, Development, and Innovation at the EU level. Its central focus is to address key policy priorities, particularly the green and digital transitions. While Horizon Europe primarily pursues a market-oriented approach and seeks broader innovative solutions, it may indirectly contribute to SVHC substitution by fostering research and innovation in sustainable technologies and materials, thus aligning with overarching sustainability objectives.
- Strategic Research and Innovation Plan (SRIP) for Safe and Sustainable Chemicals and Materials – European Commission: SRIP is a guidance document that identifies research and innovation areas crucial for boosting the transition to chemicals and materials that are safe and sustainable across their entire lifecycle (European Commission, 2022c).
- Transition Pathway of the Chemical Industry – European Commission: Transition Pathway of the Chemical Industry is a policy document that highlights the role of education and skills in achieving green and digital transition in the chemical industry (European Commission, 2022c). It identifies a comprehensive set of actions necessary to navigate this transition successfully (European Commission, 2023b). The document underscores the need to provide SMEs with tailored support and services, including training and access to financing, to help them navigate regulatory changes and embrace sustainable practices. Moreover, the Transition Pathway recognizes the vulnerability of SMEs in retaining skilled employees after vocational education and advocates for skills partnerships to address the specific needs of the chemical industry.
- Communication on making sustainable products the norm: In March 2022, as part of its comprehensive package of measures, the European Commission introduced the Communication on making sustainable products the norm. One of the key outcomes of this communication is the establishment of the Digital Product Passport. The introduction of digital product passports creates a framework to prevent wasteful disposal of unsold consumer goods and contributes to tracking harmful substances across material and product lifecycles. This aligns with the commitments outlined in the Chemicals Strategy for Sustainability and contributes to the overarching EU goal of achieving zero pollution. Moreover, the digital product passports offer the potential to empower

consumers with more informed choices, enhance transparency for public interest organisations, and support national authorities in their critical enforcement and surveillance efforts.

- Proposal for a regulation establishing a framework for setting ecodesign requirements for sustainable products: The draft regulation establishes a framework for ecodesign requirements for sustainable products complements the communication on normalising sustainable products development and use. The eco-design regulation for sustainable products lays the groundwork for implementing eco-design requirements for some product categories, aiming to improve their circularity, energy efficiency and overall environmental sustainability (European Commission, 2022a).
- Ecolabel Regulation – European Union: The Ecolabel Regulation operates on a voluntary basis and awards the EU Ecolabel to products and services that have lower environmental impact (European Commission, 2010). The Ecolabel Regulation prohibits the awarding of the EU Ecolabel to products containing substances or mixtures meeting criteria for classification as toxic, hazardous to the environment, carcinogenic, mutagenic, or toxic for reproduction (CMR), in accordance with the CLP Regulation. This prohibition extends to products containing substances referenced in Article 57 of the REACH regulation (European Union, 2017).
- EU taxonomy for sustainable activities – European Union: EU taxonomy for sustainable activities is a market transparency tool that helps direct investments to the economic activities most needed for the transition, in line with the European Green Deal objectives (European Commission, 2023a). Under the green taxonomy, any activities leading to the manufacture, presence in final product or output or placing on the market of any SVHCs cannot be considered green, unless it is documented that no suitable alternative substances or technologies are available on the market and that they are used under controlled conditions (European Commission, 2023).
- Next Generation EU - European Union: Next Generation EU is a temporary recovery instrument designed to support the economic recovery from the coronavirus pandemic while fostering a greener, more digital, and more resilient future (European Commission, 2021). The temporary recovery instrument spans the years 2021 to 2024. Over the period 2021-2024. Projects funded under Next Generation EU must adhere to the “Do No Significant Harm” principle which is closely linked to the SSbD approach.
- Development of databases on alternatives – OECD and European Commission: several OECD countries such as France, Germany, the Netherlands, and the USA have invested in means to ensure that information on chemical alternatives is made available and can reach all the stakeholders involved. This implies centralised processing of information with data that are up to date, easily accessible and relevant to companies using substances that should be substituted.
- Green public procurements (GPP) – European Union: GPP operates on a voluntary basis, empowering companies to align their practices with sustainability goals. GPP’s scope extends beyond safety considerations, encompassing a wide range of sustainability criteria. Although GPP does not directly accelerate the substitution, it indirectly encourages substitution by promoting the use of products where substitution has already occurred through public procurement. Moreover, it serves as a catalyst for innovation, motivating industries to create eco-friendly offerings.

- Support to the development of platforms within a supply chain - European Institute of Innovation & Technology (EIT): When suitable and sustainable alternatives are not yet available, but there exists a scientific foundation for their development, it becomes advantageous to establish collaborative platforms. These platforms bring together various stakeholders within the same value chain who share concerns regarding the use of SVHCs. The European Institute of Technology, specifically through its Innovation communities, was established with this objective in mind.
- Substance Information Exchange Forum (SIEF) – REACH: SIEFs are coalitions formed by companies seeking to register the same substance. Their purpose is to streamline data exchange among participating companies, preventing the repetition of studies and harmonizing classification and labelling (ECHA, 2009b).

3.3.2 *Belgian initiatives*

There are several initiatives at the Belgian level that aim to accelerate the country's transition to a greener and circular economy and adaptation to a more sustainable chemical industry.

Belgium Builds Back Circular (BBBC): The BBBC framework, launched in 2022, is an integral component of the Belgian National Recover Resilience Plan. Its primary objective is to facilitate the transition towards a circular economy. Within the BBBC framework, public calls for proposals related to the prioritised substances, a step that can be repeated as new substances are prioritised, were introduced on March 15th and October 13th. The scope of the BBBC substitution is wide and in addition to the PFAS and endocrine disruptors it covers 13 pre-selected substances for prioritisation. This initiative serves as a complementary policy measure tailored to address Belgium's unique requirements for SVHC substitution. While it is too early to assess the full impact of BBBC due to its recent launch, its approach to technical requirements appears promising and could potentially serve as an additional tool to complement the existing regional, federal, European, and international initiatives aimed at promoting sustainability and circularity.

3.3.3 *Private initiatives*

In addition to national and international efforts, the private sector is also actively engaged in initiatives aimed at fostering sustainability within the chemicals industry.

- Insurance – Credento: Credento specialises in crafting an insurance system tailored for companies involved in high-risk research and development. Credento aims to mitigate potential risks associated with high-risk research and development.
- SusChem: SusChem stands as the European Technology Platform for Sustainable Chemistry, actively driving innovation in this domain.
- VinylPlus is a voluntary sustainability programme within the European PVC industry that is committed to fostering a more environmentally friendly and socially responsible approach to vinyl production and use. One of its key objectives is to support the substitution of hazardous chemicals in PVC production processes and products by promoting research and innovation and encouraging the development and adoption of safer alternatives to hazardous chemicals. By actively engaging with stakeholders and advocating for responsible chemical management, VinylPlus plays an

important role in advancing the sustainability and safety of vinyl materials.

3.4 Barriers and drivers of substitution

This section explores the barriers that impede the transition from harmful chemicals to safer alternatives and the drivers that motivate and facilitate this transition. The information provided here is based on Work Package 3 report (Apeiron, 2023d) and the results of the industry survey (VITO, 2023b).

3.4.1 *Barriers of substitution*

Some of the common barriers to substitution include (Apeiron, 2023d):

- **Lack of technically or economically feasible alternatives:** In some cases, viable substitutes may not be readily available, or they might still be in the developmental stages. Moreover, generic alternatives might not be technically or economically feasible for specific applications. Uncertainties surrounding the alternative's toxicological profile can further complicate the substitution process. Additionally, identified alternatives can be too costly to implement.
- **Risks of unsuccessful substitution efforts:** The risks of unsuccessful substitution efforts can impede research and innovation efforts. This risk becomes greater when the alternatives are less established, increasing the probability of unsuccessful efforts, and when substitution requires significant capital and operating expenditure, which is particularly like to be the case for SMEs.
- **Lack of expertise:** Companies may not have the in-house expertise to carry out necessary research and development. Despite many training programs offered by colleges and training centres, comprehensive training that coordinates qualifications required for effective and sustainable substitution of chemicals is limited. In absence of this training, individual companies may encounter difficulties in locating qualified experts at an affordable price.
- **International property and competition issues:** Limited protection of intellectual property rights can hinder cooperation on substitution approaches, while competition regulations can sometimes obstruct information exchange and collaboration. Enhanced legislation concerning intellectual property rights and competition is essential for research cooperation, including sharing results and benefits.
- **Availability of Identified alternatives:** Even when alternatives are identified, they may not be available in sufficient amounts. This may be caused by limited production capacity, constrained supply chains, or geographical constraints. This presents a challenge for industries seeking to transition away from SVHCs to these alternatives.
- **Supply chain communication with suppliers:** Communication channels with potential alternative suppliers may be insufficient. Without robust mechanisms for dialogue and information exchange, industries may face hurdles in identifying and securing alternatives, further complicating the phasing out of SVHCs.
- **Unknown testing for technical feasibility:** Companies may lack the knowledge and expertise required to evaluate whether identified alternatives can effectively replace SVHCs.
- **Lack of funding:** Adequate funding is important for research and development activities associated

with substitution. Insufficient funds can reduce progress in this regard.

- **Regulatory barriers:** Regulatory requirements may complicate the transition to alternative chemicals. Compliance with stringent regulations, navigating approval processes and ensuring that the alternative meets safety and environmental standards, which may vary by region or industry, can often be time and resource intensive. These regulatory hurdles can slow down or complicate the substitution of SVHCs.
- **Customer requirements:** The reluctance of customers to accept alternative products or materials can be a significant barrier to substitution. Customer demand often dictates product choices, and reluctance to accept alternatives may limit market acceptance and limit substitution efforts.

According to the industry survey responses, the most significant barrier to substitution is the technical infeasibility of identified alternatives. Conversely, lack of funding, customer requirements, lack of expertise, and regulatory barriers were identified as relatively less significant obstacles to substitution.

3.4.2 Drivers of Substitution

Some of the common drivers of substitution are as follows (VITO, 2023b):

- **Substance is an SVHC:** When a substance is identified as an SVHC it can trigger a strong incentive for companies to seek safer and more sustainable alternatives. Additionally, a drive for substitution arises when a substance is included in the CL. Inclusion in the CL suggests that the substance may potentially become subject to authorisation or restriction due to its hazardous properties. This listing may prompt companies to proactively seek safer alternatives.
- **Anticipated regulatory requirements such as emission regulations, occupational exposure limits and labelling requirements:** The anticipation of emissions or exposure regulations such as Occupational Exposure Limits (OELs) or emission permits can serve as a significant driver for substitution efforts. When companies foresee tighter regulations on emissions/ workplace exposure they may be motivated to explore alternative substances that comply with these anticipated restrictions. Moreover, anticipated taxes, fees, or regulations related to substance use or emissions can drive organisations to explore alternatives. Lastly, information requirements, such as reporting on use and emissions, can encourage companies to consider alternative substances or materials.
- **Competitive advantage:** The drive to gain competitive advantage can propel businesses to prioritise and invest in substituting SVHCs.
- **Public image:** A positive public image is of paramount importance for businesses. Substituting harmful chemicals can bolster a company's reputation and brand image.
- **Customer requirements:** Responding to customer demands for environmentally friendly and safe products or materials is a compelling driver for substitution. As consumers increasingly prioritise sustainability and safety, businesses that take these requirements into account can gain a competitive advantage which motivates companies to substitute SVHCs.
- **Financial and non-financial support:** Support in various forms, including funding and non-financial assistance, can alleviate the burdens associated with substitution efforts for companies. This support can incentivise companies to invest in research and development for substitution.

- **Cheaper and/or technically better alternatives:** The pursuit of cost-effective and technically superior alternatives is a significant driver motivating companies to substitute SVHCs.

According to the industry survey responses, several factors emerge as primary drivers for substitution efforts. These include the substance's status as an SVHC, anticipated regulatory restrictions, customer requirements, the pursuit of competitive advantage and anticipated information, and labelling requirements. Conversely, factors such as anticipated fee for use and emissions, anticipated emission regulation and non-financial and financial support were identified as relatively less significant drivers of substitution.

4. Assessment of Policy Measures

4.1 Introduction

This chapter provides descriptions of the analysed policy measures, details the scope and assumptions used in the analysis, describes the triggers, incentives, potential responses of the actors. This is followed by the MCA of each policy measure. There is a subsection for each of the five analysed attributes.

In this report, ten Policy Measures are analysed. This list of ten prioritised measures was derived from a longlist of measures of more than 30 measures discussed in Work Package 3 of this project (Apeiron, 2023c). The measures analysed have been defined in as much detail as possible, to ensure that they could be explained and understood by survey respondents and subsequently analysed without ambiguity. However, in practice, there are many ways to design and implement these measures. The analysis revealed potential weaknesses in some of the measures, but the measures and the analysis have not been retrospectively changed to correct for this. Instead, issues have been highlighted and potential improvements and alterations to the measures are briefly discussed within the analysis and the recommendations. To ensure consistency, the scoring is only linked to the policy measures as defined below.

Policy Measure 1 – Mandatory notification of use

This measure aims to address the limited visibility the downstream uses of SVHCs in Belgium that exists in 2023 by imposing the obligation for companies to provide a use notification. In this measure, DUs of CL substances will be obligated to notify the authorities of their use of CL substances using a template provided by the relevant authorities. The template will include:

- Company details
- Information on suppliers of the CL substances
- Use descriptions (in terms of PROC & ERCs with reference to the exposure scenario in the registration dossier)
- Volumes used
- Relevant markets and share of products sold in Belgium, EEA, and globally (or similar information indicating the relevance of the economic activity relying on the use of the SVHC)

Moreover, the notifying companies will be required to update their use notification information annually.

Policy Measure 2 – Substitution action plan

Policy Measure 2 builds upon Policy Measure 1. In addition to the use notification, companies will be required to submit a substitution action plan for substances prioritised by the Belgium authorities (which includes the substances within the survey). In addition to measures listed under Policy Measure 1, key elements of this measure include:

- DUs submit a substitution action plan in accordance with a template prepared by the authorities, which may request information about:

- o A company's intention to phase out the CL substance
- o Historic and current substitution activities
- o Substitution timeline if substitution is deemed feasible
- o Justification if substitution is not deemed feasible; which possibly involves an analysis of alternatives
- The DUs will be required to update their substitution action plan information on a regular basis (for example, every two years).

Policy Measure 3 – Non-financial support for the use notification and/or the substitution action plan

As DU companies may be unable to correctly notify their use(s) and prepare a substitution action plan, this policy measure introduces non-financial support for DUs to implement the options described in Policy Measures 1 and 2. The key additional elements of this measure include:

- Support for the use notification will be in the form of:
 - o Developing a framework for the inventory of substances as a basis for the notification of SVHC
 - o Developing a framework for the reporting of exposure and emissions of SVHC
 - o Support from the helpdesk
 - o Training sessions for industry
- Support with the preparation of a substitution action plan will include:
 - o Suggestion for a framework to prioritise substances for substitution
 - o A template for the plan and an accompanying guidance document
 - o List of possible resources (possibly including experts who have made themselves known by an invitation of the authorities with proven qualifications and specialisation).

Policy Measure 4 – Subsidy for substitution action plan

This policy measure provides financial support to DUs of prioritised SVHCs in Belgium in their development of a substitution action plan, in addition to the non-financial support in Policy Measure 3. This measure provides an incentive to the companies, especially SMEs, to report correct information to the authorities and prepare an effective substitution action plan. The key additional element will include:

- Financial support is foreseen for the users of SVHC (prioritised by Belgium) and subjected to mandatory substitution action plans:
 - o A subsidy for the preparation of the substitution action plan: €125 per hour with a maximum of 160 hours (€20,000) per substance.
- The level of support could be differentiated according to the size of the company (micro, SME, large).

Policy Measure 5 – Annual fee on the use of SVHCs

This policy measure builds on Policy Measure 3 but proposes the introduction of a fee that will be imposed on all DUs using CL substances in Belgium with the aim of incentivising substitution. It is envisioned that this will create a more level playing field for less hazardous chemicals. The key additional elements of this

measure are:

- Annual fee is introduced for users of CL substances in Belgium, such as:
 - Volume < 1 tonne: 10% of the substance sales value with maximum of €15,000 per year
 - Volume 1 to 100 tonnes: 7.5% of the substance sales value with maximum of €50,000 per year
 - Volume > 100 tonnes: 5% of the substance sales value with maximum of €90,000 year
- This annual fee could be differentiated for company sizes reflecting their capacity to innovate, by the type of use or use conditions.

Policy Measure 6 – Modular annual fee system for the use of SVHCs

This policy measure builds on Policy Measure 5 and introduces a rewards mechanism for companies that submit a compliant substitution action plan in a timely manner. The key additional elements are:

- Templates and guidelines will be developed for the substitution action plans.
- Companies that declare at the use notification stage that they will submit a substitution action plan within one year will receive temporary dispensation of the fee proposed in Policy Measure 5.
- The annual fee will be replaced by a more modest fee based on volumes¹³ to avoid imposing a disadvantage on these companies compared to those that do not commit to a substitution pathway.

Table 4.1 summarises the differences between Policy Measures 1-6 described above.

Table 4.1: Comparison of notification of use policy measures

	Policy Measure 1	Policy Measure 2	Policy Measure 3	Policy Measure 4	Policy Measure 5	Policy Measure 6
Mandatory notification	●	●	●	●	●	●
Substitution action plan		●	●	●	●	●
Non-financial support			●	●	●	●
Subsidies for substitution action plan				●		
Annual fee on use of SVHCs					●	●
Modular fee on use of SVHCs						●

¹³ This was originally expected to be based on exposure/ emissions, but this may introduce unanticipated complexity as exposure and emissions are not part of the information requirement under Policy Measure 1 (Apeiron, 2023d). Therefore, the modest fee is assumed to be linked to volumes instead.

Policy Measure 7 – Awareness creation and facilitation of networking

This policy measure is different from the previous policy measures and proposes to address the limited awareness among companies using CL substances in Belgium and how the policy processes related to SVHCs at EU level may affect them. This lack of awareness constitutes a significant impediment to a timely and sustainable substitution. This measure includes:

- Development of an online information hub by Belgian authorities to disseminate information on:
 - Legal requirements of REACH
 - Information on the substances in the CL
 - Importance of pro-active action toward substitution for both substances in the CL
 - Potential/known alternatives.
- A helpdesk available for companies/stakeholders Authorities to actively engage with existing networks such as Company Europe Network, Euro Chambers, and scientific networks.
- The authorities also utilise other communications routes such as newsletter, leaflets, brochures, and workshops.

Policy Measure 8 – Development of methodology and structure to support sustainability focused alternatives analysis

This measure involves the creation of a permanent structure to support the substitution of SVHCs in the context of sustainability rather than simply a hazard context. This policy measure is designed to proactively ensure that the substitution action plans submitted are aligned with the guidelines for the anticipated implementation of the European assessment framework for 'safe and sustainable by design' (SSbD) chemicals and materials framework. The measure also provides a methodological and logistic support to help companies carry out sustainability-focussed Analysis of Alternatives (AoA).

These methodologies are expected to become the benchmark for a proof of sustainability performance for companies involved in the substitution of SVHCs and are not a mandatory requirement. The policy includes:

- Development of a generic approach to support sustainability substitutions of SVHC. The methodology builds and makes use of EU/OECD sustainability approaches.
- Development of sector-specific adaptations to the generic methodology, including guidance.
- Communication of the methodology through various channels
- Training of industry stakeholders and other relevant professionals for the implementation of the methodologies developed.

Policy Measure 9 – Direct support of companies involved with a subsidy for advisory services (version 1)

This policy builds on Policy Measure 8. It is recognised that a 'safe and sustainable by design' (SSbD) assessment would involve significant effort even for the larger companies even more so in the absence of a practical and efficient framework in place and proposes a subsidy for advisory services. In addition to

Policy Measure 8, this policy includes:

- A subsidy for advisory services covering 25% of the service costs with a maximum of €25,000 per company where the need for external support has been established, e.g., in cases such as:
 - Companies with unique uses that cannot be discussed in broader networks
 - High complexity cases in terms of technologies, circularity, climate, and criticality of uses where companies on their own lack resources to identify the most adequate sustainability pathway.

Policy Measure 10 – Direct support of companies involved with a subsidy for advisory services (version 2)

This policy is a variation of Policy Measure 9 and proposes a variation of the Policy Measure 9 subsidy for advisory services. In addition to Policy Measure 8, this policy includes:

- A subsidy for advisory services covering 50% of the service costs with a maximum of €50,000 per company where the need for external support has been established, e.g., in cases such as companies seeking or developing alternatives; using a SSbD assessment to assess possible alternatives.

Policy Measures 8 – 10 are grouped together as their core policy element is '*sustainable methodology and structure to support substitution*'.

Table 4.2 summarises this measure grouping by key policy measures included in Policy Measures 8-10. More information on the policy measures can be found in WP3.

Table 4.2: Comparison of notification of use policy measures

	Policy Measure 8	Policy Measure 9	Policy Measure 10
Method and structure	●	●	●
Subsidy of 25%		●	
Subsidy of 50%			●

The purpose of Policy Measures 8-10 is to ensure that substitution action plans are aligned with the EU SSbD assessment framework guidelines for chemicals and to incentivise the use of this framework. The framework was developed by the EC as part of the EU's wider commitment to sustainable development (Caldeira et al., 2022). The measures PM8 – 10 are also designed to provide methodological support to the search for alternatives as outlined by companies in their substitution action plan. These methodologies will not be mandatory but are expected to become the benchmark for a proof of sustainability performance for companies involved in the substitution of SVHCs.

A key benefit of PM8 to 10 for the Belgian authorities is the creation of a common approach at Belgian level (coordinated with work completed in other Member States) and the bridging of policy gaps between chemicals management and the broader sustainability agenda at the Belgian level.

The key benefits for companies from this measure are twofold. Firstly, companies will benefit from an approach on which a consensus has been reached and is widely used. Secondly, the use of the benchmark

methodology would prove beneficial in circumstances such as sustainability reporting, due diligence and sustainability scoring by financial institutions.

The purpose of the subsidy measures is to incentivise the use of the methodology where its implementation is likely to be particularly resource intensive. The two subsidy measures differ only by proportion of service cost covered (25% versus 50%). Reasons for high complexity transitions requiring resource intensive SSbD assessments can include technological, environmental, and critical use factors.

4.2 Scope and assumptions used in the analysis

For the purposes of the analysis, various assumptions are made. The key assumptions are listed below.

- Due to data constraints, it has not been possible to assess the measures targeting specific substances. For the purpose of this assessment, it is therefore assumed that the measures target all Candidate List (CL) substances, excluding substances on the Authorisation list (ANNEX XIV of REACH). Hazardous substances that have not (yet) been identified as SVHCs are not included in the scope of the measures. The benefit of this approach is that the results will be more broadly applicable, but if the policy measures are intended to target specific substances or markets, the impacts may differ between substances. Work Package 3 of this project suggests that at least some of the measures in this analysis could be more suitable if restricted to a smaller selection of substances (Apeiron, 2023d). Positive impacts of the measures, such as effectiveness and sustainability, are likely to increase when including all SVHCs. However so will the negative impacts, as more companies will face the costs and practicability challenges of the measure. There may be other negative impacts of applying the measures to only a small number of substances, such as higher risk of regrettable substitution if companies can avoid the obligations by switching to SVHCs that are out of scope. Additional stakeholder consultations, with a higher response rate, would be needed to carry out an analysis of more targeted measures.
- The magnitude of impacts associated with most of the assessment criteria will be linked to the Belgian SVHCs value chain, including the number of companies affected and the sizes of these. Differences in impacts between large and small companies will be highlighted throughout, but to ensure that the conclusions and scoring are consistent and coherent, these will be based on a 'typical' Belgian company. More information about the manufacturing sector in Belgium can be found in Section 3.2.3. For the purposes of scoring, it is assumed that a typical DU is a small or medium sized company, whereas a typical manufacturer or importer is a large company.
- Some criteria will also (or only) be linked to other actors (such as costs to the authorities, enforcement, cost to consumers, health impacts etc.), and these are assessed from the perspective of the respective actors. However, the aggregation of impacts across all the affected actors', should provide an indication of the overall impacts on Belgian society.
- Some of the measures are likely to generate revenue for authorities, and the authorities will have to decide on how to use this revenue. Revenue may simply contribute to general funds, to be distributed by relevant financial authorities, or it may be earmarked for use on particular projects, for example, those relevant to the substitution of SVHCs. Where more than one of the analysed

measures are implemented simultaneously, authorities may earmark revenue from one of the measures to fund another, or to tailor support specific actors (e.g., SMEs). However, this is not assessed in more detail as there are challenges to implementing substantial earmarking of funds. For example, these measures may have different regional scopes, some regional and some federal, that make interaction of funding challenging. Further, the use of revenues may be subject to 'higher rank' rules that complicate decisions to earmark funds.

- A key aspect affecting the majority of the assessment criteria is to what extent actors will be aware of new obligations affecting them and whether they will (fully) comply with these. In this MCA, these aspects will be considered separately under the *Practicability* attribute but will also *affect financial* impacts and *effectiveness*. The latter two, however, will be opposing effects, in the sense that achieving a higher compliance will lead to higher costs, and costs can be reduced if a lower effectiveness is accepted. In the MCA scoring, it is assumed that the authorities have a desire to increase the effectiveness of the measure as much as possible, which means that cost to authorities (for communication, monitoring, and enforcement) are assumed to be high to ensure the highest potential of efficiency that can be achieved with the measure.
- For the purposes of this assessment, it is assumed that none of the information submitted to the authorities through reporting obligations (e.g., use notifications in Policy Measure 1) will be publicly disclosed. If the authorities were to choose that the information would be publicly disclosed, this would create stronger incentives for substitution.
- In some instances, the assessment may comment on how a different design of a measure (e.g., fewer, or more obligations) might affect the impacts. These are intended as observations only, i.e., they will not affect the scores and conclusions, which are solely based on the descriptions in Section 4.1. Some of the measure descriptions are not complete descriptions of measure implementation and there are choices facing authorities in implementing them. Where particularly relevant these choices are highlighted though they cannot be analysed in detail.
- For Policy Measure 6, it is assumed that the modest fee which replaces the annual fee for those companies that choose to submit a substitution action plan is significantly smaller in magnitude than the annual fee described under Policy Measure 5.
- For Policy Measure 7, it is assumed that suppliers of actual and potential alternatives do engage with the network, but companies which have already substituted do not. It is further assumed that information related to individual network members will not be disseminated publicly. Participation in the network is assumed to be voluntary and at participants' own expense.

4.3 Actors, triggers, and behavioural responses

This section describes the actors and their potential behavioural responses to the policy measure. The actors whose behavioural responses are considered are as follows:

- **Substance suppliers** include both manufacturers and importers of SVHCs in Belgium.
- **Downstream users** include companies that use SVHCs as inputs into other manufacturing processes in Belgium. Substance suppliers may also be DUs if some SVHCs are inputs in the

manufacture of other SVHCs.

- **Recyclers** include Belgian companies that recycle products containing SVHCs. Note that these are not considered to be DUs within this assessment.
- **Customers** include individuals that purchase or use products that either contain or are made using SVHCs. For the purpose of this report, customers are assumed to cover the entire Belgian population and businesses to business sales.
- **Authorities** refers to all national and governmental bodies Belgium.
- **Third-party actors** include any non-governmental actors that are not directly involved in the Belgian SVHC market. Examples may include non-governmental organisations (NGOs) such as charities, think tanks or trade associations.

Different elements of a measure may create incentives for behavioural changes, and therefore these elements act as 'triggers' for certain behaviours. The aim of all policy measures is to trigger behaviours that ultimately lead to increased substitution of SVHCs. The following section sets out the triggers and incentives created for each of the affected actors.

The main examples of incentives include:

- **Direct economic incentives**, which typically take the form of payment for desired behavioural responses or fines and fees for non-desired behaviour. These are typically designed to correct the market failure of externalities, which the costs or benefits of certain actions are not internalised to the companies taking them.
- **Forced behavioural response**, which mandate certain behaviours. These might include a ban on some substances, forcing companies to respond by ceasing use of the substance. This trigger might lead to indirect economic incentives to take other actions, such as researching substitutes.
- **Information incentives**, which make information available that can be used by actors to improve decision-making. Some information incentives aim to resolve market failures caused by asymmetric information between actors. Others aim to make information available that actors do not have an economic incentive to collect, thereby reducing the costs of any actions that require that information. New information may also be used by companies to improve outcomes even without any economic incentive to do so. For example, improving availability of information on the harms of substances may cause companies to substitute more frequently even without economic incentive, as they build greater awareness of the moral imperative to do so.
- **Indirect economic incentives**, which are economic incentives faced by actors that result from another trigger or an actor's behavioural response. These can be caused by any of the above three trigger types but are not themselves direct results of the policy. For example, if a company raises prices to accommodate a fee, then the company's customers face an indirect economic incentive to decrease their demand for the product. Companies facing a substance ban have an economic incentive to invest in substitutes. Consumer preference for 'greener' products creates indirect economic incentives for companies to improve their 'green profile', for example through substitution and subsequent marketing efforts.

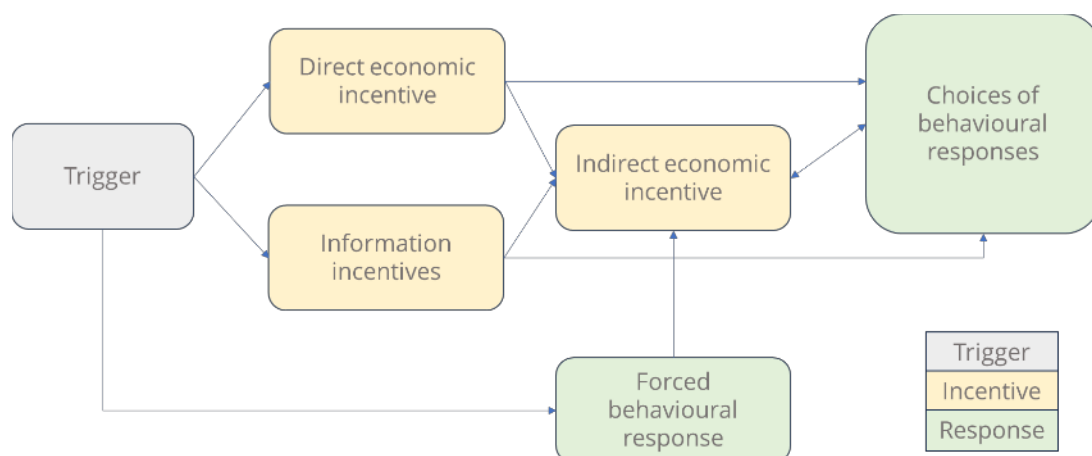


Figure 4.1: Triggers, incentives, and responses

Policy Measures 1 – 6 cover several of the abovementioned incentive structures. For example, Policy Measure 4 includes examples of all four types. A subsidy is introduced which acts as a direct economic incentive, and companies are forced to invest in information collection towards the mandatory substitution action plan. This forced action also functions as an information incentive, as companies must collect information to comply with the obligation. This information creates an indirect economic incentive to take advantage of new information through further spend on substitution. This example illustrates that commonly the main types of triggers are simultaneously relevant, and there are often feedback loops between elements of the measure and the actors affected.

In the following subsections, triggers, incentives, and potential responses of affected actors are presented. More information on the effectiveness of these triggers, expected responses and the magnitude of any resulting impacts can be found in Sections 4.4 to 4.8. In the cases where the same element of a measure is repeated (e.g., use notifications), these are only assessed the first time they occur and later cross-referenced.

The main actors affected differently by each measure are DUs, authorities, and third-party actors. The responses of each are addressed in the subsections below. Substance and technology suppliers, unless also being DUs, will not be directly affected by the policy measures. However, the suppliers will be affected by any changes in demand of the SVHCs or technology they supply. If the policies lead to a significant number of DUs deciding to substitute away from SVHCs, suppliers of these substances and associated technologies may respond to these changes by, for example, increasing the manufacture and import of alternatives. Given the time taken to substitute in cases of most relevance to the network, these are likely to be longer term effects. Substance and technology suppliers that benefit from increased substitution because they manufacture or import alternatives may choose to engage in networks such as described in Policy Measure 7.

Customers are not affected directly by the measures. However, if the policy measure causes higher prices through companies passing on any costs of compliance, consumers may be affected. Higher prices will typically lead to lower demand for the products made using SVHCs, and the extent of demand shift will depend on the elasticity of demand and the size of the price rise. This is more likely for policy measures placing a larger financial burden on companies.

Recyclers are not expected to be directly affected by any of the measures. They may, however, be affected if the market for SVHC-free materials increase and the demand for SVHC-containing materials falls. In the short-term, this may lead to challenges for the recyclers, as they rely on sufficient availability of SVHC-free waste streams. However, over time this is likely to balance out.

4.3.1 *Policy Measure 1 – Mandatory notification of use*

The triggers and incentives described below relate to the design of the policy measure as set out in Section 4.1. If any additional information requirements or obligations were to be added, this would typically strengthen all of the impacts, both effects on substitution and negative aspects such as costs. Policy Measure 1 has two triggers to which affected actors will respond:

- The obligation on DUs to gather and collate sufficient information to comply with the use notification requirements.
- Access to new and/or improved information on uses and markets for SVHCs in Belgium, both for companies gathering the data and for authorities receiving the data. Information will not be made available more widely than authorities.

Downstream users

Policy Measure 1 applies an obligation to DUs to gather and collate sufficient information to comply with the use notification requirements, which creates direct economic incentives to substitute through the policy burden, i.e., the resources needed to gather collate and report the data. This burden will be relatively larger for smaller companies, as they are less likely to have complete substance inventories already and they will have less available funds (lower profits) that can be allocated to regulatory activities.

Suppliers of SVHCs are required, under REACH, to supply safety data sheets to users of those substances (European Commission, 2006). Thus, DUs should have knowledge that they are using an SVHC and have at least some information about the substance. DUs also have some obligations related to the safety data sheet, such as to inform suppliers of uses not covered by the safety data sheet, or to implement any measures specified as conditions of use (European Commission, 2006). However, there may be some cases where DUs are not aware of these obligations or do not fully understand the information provided to them. In these cases, Policy Measure 1 might itself function as an information incentive for companies unaware that they are using an SVHC, who would likely try to avoid using harmful substances if they can easily switch to less harmful substances. This could be due to the increased business risk associated with potential future regulations and a desire to have a 'greener' profile. In the case where suitable alternatives are readily available for specific applications, companies may choose to substitute.

As well as awareness of the obligation, which functions as an information incentive, companies that comply with the obligation may have an incentive to use the information collected. Doing an audit of SVHC use through the production process would also help them to understand better where the potential for exposure and accidents are. As a consequence, DUs may decide to take additional voluntary actions (e.g., implement on-site RMMs to reduce emissions or change waste management practises). Such measures will involve additional costs (in some cases significant) and are thus more likely to occur in larger companies.

In the cases where companies find the resource required to comply with the reporting requirements to be

prohibitive, they may choose to cease production using SVHCs in Belgium. This may occur through closures or relocations of production outside of Belgium.

Authorities

The notification obligation will give the Belgian authorities access to new and/or improved information on the Belgian market for SVHCs, which is currently limited. This will allow them to develop and implement more targeted and proportionate policy measures for reducing use and emissions of SVHCs in the future. The value of future regulation is considered outside of direct scope of the policy so is not considered under (for example), the effectiveness of the policy at improving substitution, or the financial impacts on authorities. This is only addressed under the assessment criterion 'improving future regulations'.

Third-party actors

Third party actors are not affected directly by the obligation to produce information, and they would not have access to information in the notifications of use. Thus, no responses are expected.

4.3.2 Policy Measure 2 – Substitution action plan

The triggers and incentives described below relate to the design of Policy Measure 2, as set out in Section 4.1. Moreover, only the elements that differ from Policy Measures 1 are assessed below.

In addition to the triggers covered above under Policy Measure 1, there are two key triggers within Policy Measure 2 where affected actors will respond:

- The obligation on DUs to gather and collate sufficient information to comply with the substitution action plan requirements.
- Access to new and/or improved information on substitution SVHCs, both for companies gathering the data and for authorities receiving the data. Information will not be made available more widely than authorities.

Similar to Policy Measure 1, it is not expected that information generated by the substitution action plans would be shared more widely than with authorities.

The behavioural responses will depend on the content of the substitution action plan. The content of a substitution action plan is not precisely defined at this stage, but may include intentions to phase out the substance, past and current substitution activities, timelines for substitution, and some justification of action or inaction. Submission of a compliant substitution action plan does not entail a commitment to substitution, and companies may submit substitution action plans that indicate they are not planning any substitution activities. This obligation is expected to be significantly smaller in magnitude than the substitution action plan required by a REACH authorisation application.

Downstream users

The incentives experienced by DUs will be similar to that of Policy Measure 1, but they are expected to be stronger given the addition of the requirement to develop a substitution action plan. This is both due to the increased burden of gathering information, which strengthens the incentive to avoid the use of SVHCs, and the type of data gathered which can be used by the DU for further substitution efforts.

The substitution action plan will require explanation of the company's plans and expected approach to substitution. Although a comprehensive analysis of alternatives is not expected, it is expected that companies will have to carry out some research into potential alternatives. It is therefore more likely that suitable alternatives can be discovered as a result of this data gathering process compared to the use notification obligation alone. The annual updates of their notifications will also necessitate continuous consideration of alternatives, and thereby increase the likelihood of developing a suitable alternative in the future.

Where companies comply, they face choices on how to respond to the information generated by a substitution action plan, and how to use that information to set timelines or plans for substitution. As the costs of the substitution action plan occur regardless of whether substitution occurs, the obligation reduces the marginal cost of substituting by reducing the initial information barrier. This provides another small incentive for companies to substitute after they have complied with the regulation.

Authorities

Authorities are affected by the increased availability of information on the Belgian market for SVHCs, which is currently limited. With the new information collected, the authorities may choose to develop and implement more targeted policy measures for reducing use and emissions of SVHCs. In this sense the measure can be thought of as an enabler for further action. This measure will impose a stronger incentive for authorities than Policy Measure 1, as authorities will have access not just to information about the market, but also detailed information about the availability of alternatives for CL substances. This could be used to judge which substances could be targeted and what action should be taken to control the associated risks.

Third-party actors

Third party actors are not affected directly by the obligation to produce information for the substitution action plan, and they would not have access to information therein.

4.3.3 Policy Measure 3 – Non-financial support for the use notification and/or the substitution action plan

In addition to the triggers covered above under Policy Measures 1 and 2, there are two additional triggers within Policy Measure 3 to which affected actors will respond:

- Support to DUs for use notification including development of frameworks by authorities for substance inventories, support from a help desk, and hosting industry training sessions.
- Support to DUs for substitution action plans including frameworks to prioritise substances for substitution, templates for plans and accompanying guidance and a list of helpful resources. This guidance is expected to be more extensive than the guidance written under Policy Measure 2.

Downstream users

The non-financial support triggers may improve the information generated by the use notifications and substitution action plan. Better substitution action plans and more accurate information about SVHC uses are likely to create more effective incentives to undertake substitution.

However, the non-financial support also reduces the costs of compliance with the use notifications and substitution action plan obligations. This reduction of the financial burden on companies using SVHCs in turn weakens the financial incentive for companies to avoid the obligation by substituting SVHCs (or relocating).

Authorities

Authorities will be more financially impacted by this measure, as they bear the cost of providing non-financial support to DUs. If the effect of non-financial support is to increase the quality of information generated under Policy Measure 1 and 2, the responses and incentives of authorities to new information, such as improving future regulation, may be more likely or strengthened.

Third-party actors

Third-party actors are not expected to be affected any differently by this policy from Policy Measure 2.

4.3.4 Policy Measure 4 – Subsidy for the substitution action plan

In addition to the triggers covered above under Policy Measures 1, 2 and 3, there is one key trigger to which actors may respond:

- Support to DUs in the form of a subsidy for the preparation of a substitution action plan amounting to €125 per hour, with a maximum of 160 hours (or roughly four weeks of time totalling €20,000) per substance. This is differentiated according to the size of the company.

Substance suppliers

Substance suppliers are not expected to be affected any differently by this policy from Policy Measure 2. Where this measure strengthens the substitution incentive on DUs, impacts on suppliers may be increased.

Downstream users

Compared to Policy Measure 3, the triggers in this measure reduce the costs of compliance with the use notifications and substitution action plan obligations. This reduction in the financial burden of the measure weakens the financial incentive for companies to avoid that burden by substituting SVHCs or relocating. However, it also encourages companies to spend more resources on their substitution action plans, which will generate more accurate information about the current status on substitution efforts, availability of alternatives and barriers to substitution. This will increase the likelihood of companies utilising the information for substitution purposes or otherwise, as compared to Policy Measure 3.

Where companies would spend less than €20,000 without financial support there is an incentive to increase the amount spent on the substitution action plan, as this extra expenditure has no marginal cost for companies under Policy Measure 4. Where companies would spend more than €20,000 without the policy, there is no financial incentive to increase expenditure on the substitution action plans as any costs beyond €20,000 would have to be paid by the companies. Although not explicit in the current design of the measure, it is expected that the size differentiation will be in favour of smaller companies with less available funds.

Authorities

Authorities will be more financially impacted by this measure through the provision of the subsidy, including the cost of transfers to DUs and the administrative costs of implementation. If non-financial support increases the compliance rate and the quality of information generated by the substitution action plans, the responses and incentives discussed under Policy Measure 3, such as to improve future regulations, may become more likely or strengthened.

Third-party actors

Third-party actors are not expected to be affected any differently by this policy from Policy Measure 3.

4.3.5 Policy Measure 5 – Annual fee for the use of SVHCs

In addition to the triggers covered above under Policy Measures 1, 2 and 3, there are three additional triggers to which actors may respond:

- Fee for the use of SVHCs that is proportional to the substance sales value, that is, the fee is set as a percent of the *substance price x quantity of the substance used*.
- A maximum cap for the fee, which is linked to use volume ranges as the share, where the cap is increasing with higher use volumes.
- The size of the share of the substance sales value to be paid is linked to the same volume ranges, with lower volume substances subject to a higher percentage.

Downstream users

An annual fee for the use of SVHCs strengthens the direct economic incentive for companies to cease use of the SVHC, either through substitution, ceasing production, or relocation. The measure may act both as an additional economic incentive to take advantage of information collected through the use notifications and substitution action plans, and as an economic incentive to avoid the obligations completely.

A key aspect of this measure is that it has three economic incentives directly linked to the volume of the SVHCs used. Some of these may lead to unintended consequences, and alternative designs could be more beneficial to pursue. This is briefly discussed below.

First is the link between the fee and the substance sales value, which is the price of the substance times the quantities used. This structure means that a high-volume user of a specific SVHC will pay more than a low-volume user (up to the cap amount) of the same SVHC. This incentivises reduction in use of the SVHC (regardless of substitution).

Secondly, there is a maximum cap on the fee per year, where the high-volume users (>100 tonnes/year) may pay up to €90,000, mid-range users (1-100 tonnes/year) may pay up to €50,000, whilst low-volume users can pay a maximum amount of €15,000. This provides incentives for reduction in use, but mainly for companies that are close to the bottom of a volume band.

The third economic incentive, linked to use, is the percentage of the substance sales value to be paid. This percentage declines with higher use volumes, and thus provides incentives to increase the use of the SVHC, for companies that are at the upper end of a volume band.

The fee system also favours companies that are using low-value substances, in the sense that the fees will be lower for substances with lower prices.

The interactions between these incentives are not straightforward to identify, so examples have been provided in **Table 2.1**. As expected, the perverse incentives (i.e., to increase use of the SVHC) will only occur in the cases where volumes used are close to one of the outer ranges of the volume band. For example, companies using in the range of 67-99 tonnes can reduce their fee by increasing their use volume. Cases where fees could be decreased by increasing volumes are highlighted in red in the table. It can also be observed that the economic incentives induced for companies within the low volume bracket (<1 tonne), will likely be negligible.

Table 4.3: Examples of fees based on volumes and price of substance

Volume used (tonnes/year)		Price (€/tonne)		
		15,000	5,000	500
	Share paid	Fee to be paid by companies (€/year)		
0.5	10%	750	250	25
0.75	10%	1,125	375	37.5
1	7.5%	1,125	375	37.5
50	7.5%	50,000	18,750	1,875
70	7.5%	50,000	26,250	2,625
99	7.5%	50,000	37,125	3,712
100	5%	75,000	25,000	2,500
500	5%	90,000	90,000	12,500

Table note: ADCA is frequently quoted at a price between \$2,000 - \$6,000 (roughly €1,900 – €5,600, as per 14/09/2023) (Procurement Resource, 2023).

Note that these perverse incentives can easily be prevented, for example, by not reducing the share paid as the volume increases. The strength of the economic incentives to substitute can also be fine-tuned by adjusting the share paid; The higher the share, the stronger the incentives to substitute. It is also worth considering if the link to the substance price is warranted, as it is not apparent why higher value substances should be more 'penalised' than lower value ones.

Authorities

Authorities may be positively impacted financially by this measure if the collected revenue is higher than the cost of administrating the fee and other elements of Policy Measure 5.

Other impacts on authorities are expected to be the same as under Policy Measure 3.

Third-party actors

Third-party actors are not expected to be affected any differently by this policy from Policy Measure 3.

4.3.6 Policy Measure 6 – Modular annual fee for the use of SVHCs

This measure includes the same fee structure as under Policy Measure 5, alongside a voluntary substitution action plan that can give companies a reduction in the fee. In addition to the triggers covered above under Policy Measures 1,2,3 and 5, there are two changes to the triggers to which actors may respond:

- The substitution action plan is now optional, and the fee described above can be avoided through submission of the optional substitution action plan.
- Companies submitting the substitution action plan will be subject to a lower ('modest') fee linked to their continued use volumes of SVHCs.

The precise level of this modest fee is not stipulated, but it is intended to ensure that the measure still incurs an incentive both to substitute and to submit the substitution action plan. This can be challenging to achieve in practice. If the modest fee is set too close to the fee under Policy Measure 5, companies will not have an incentive to submit the substitution action plan. On the other hand, if the modest fee is too low, the financial incentives to substitute will be lost. Calibrating the fee level to ensure that PM6 creates both an incentive to substitute and an incentive to submit the substitution action plan is thus a key implementation challenge.

Downstream users

As for Policy Measure 5, the fee element of this measure for the use of SVHCs strengthens the incentive of companies to cease use of the SVHC, either through substitution, ceasing production, or relocation.

The modular aspect of the fee applies incentives for submission of the substitution action plan. Companies chose between paying the fee and submitting the substitution action plan. To ensure continued incentives for substitution after companies have submitted a substitution action plan, a modest fee will replace the fee implanted under Policy Measure 5 for these companies. The final choice of the companies is thus whether to pay a fee, linked to expenditure on SVHCs, or submit a substitution action plan and pay a modest fee linked to their continued use volumes. The details of this modest fee are not available, but it is assumed to be unrelated to the price of the SVHC.

Overall, the incentive for companies to substitute is weaker than Policy Measure 5, but stronger than Policy Measure 3, as the modest fee will still provide incentives to reduce the use of SVHCs in the case where companies choose to submit the substitution action plan.

Authorities

Similar to Policy Measure 5, the authorities will be less financially impacted by this measure as there will be associated revenue, which could lead to a net income if the revenue is higher than the administration costs. The costs of managing both the fee system and the fee system will be higher, and the total revenue lower, so net income will be lower than for Policy Measure 5.

Other impacts on authorities are expected to be the same as Policy Measure 5.

Third-party actors

Third-party actors are not expected to be affected any differently by this policy than measure 1 and 2.

4.3.7 Policy Measure 7 – Awareness creation and facilitation of networking

Different elements of a measure may create incentives for behavioural changes, and therefore act as ‘triggers’ for certain behaviours. The aim of each policy measures is to trigger behaviours that ultimately lead to increased substitution of SVHCs. There are two key triggers within Policy Measure 7 which might affect how actors engage in substitution activity:

- The provision and exchange of information and advice to and between stakeholders (particularly companies using SVHCs) on substitution opportunities, lessons learned, further sources of information etc;
- The facilitation of contacts between individuals and organisations which might further enable information exchange outside of direct network events.

In the short run, the provision of information will be limited to existing information. Hence, any changes in behaviour will be predicated on the idea that actors were previously uninformed on a particular issue of relevance to them and only became aware of this information as a result of this measure. However, this information exchange and associated networking might also serve to identify the existence of information gaps, which one or more actors might be able to fill. In the longer run, therefore, the substitution network might help to generate new information, as well as facilitate the exchange of existing information.

For the purposes of the analysis in the rest of this chapter, it is assumed that suppliers of actual and potential alternatives do engage with the network, but companies which have already substituted do not. It will be further assumed that information related to individual network members will not be disseminated

Downstream users

As previously stated, participation in the substitution network is assumed to be voluntary, so any costs incurred by DUs in the course of participation will also be incurred voluntarily. DUs are presumably the most important target group of a substitution network, since they ultimately make substitution decisions. DUs could benefit from participation in a substitution network in the following ways:

- Greater awareness of the regulatory drivers to substitute SVHCs
- Improved knowledge of available alternative substances and technologies
- Better understanding of opportunities to receive assistance with substitution
- Identification of possible collaborators, advisors, suppliers, and other helpful contacts
- Opportunity to communicate requirements, discuss problems etc

Different types of DU will benefit in different ways from a substitution network. The most important factor driving benefits for DUs must, of course, be participation, since a company will hardly benefit from the network if they are not a participant (although they might benefit indirectly if they receive information from the network passed onto them by another party). However, companies that are less informed about the need to substitute are less likely to be motivated to find the information they need to help them substitute. It could thus be argued that those most in need of participation and most likely to benefit are those least likely to participate.

On the contrary, the more informed a company is about the need to substitute, the more likely it is that they are motivated to find the information they need to help them substitute, and the less they need a substitution network. If only 'uninformed' companies participate, the network is dependent on suppliers, trade associations and authorities for its information, and these might not be the best sources of relevant substitution knowledge. This suggests either a mix of DUs need to participate, or that the network focuses on relatively 'low level' substitution information, to encourage companies onto the road to substitution but not much further. The question about how to motivate participation by 'uninformed' DUs still remains.

One additional benefit of the network might be an increased recognition of the need to treat SVHCs appropriately and minimise their use and emissions from it. Thus, a substitution network might also affect the quantity of use by DUs as well as the decision by DUs to stop using SVHCs completely (through substitution). It might be expected that companies informed about substitution are also more likely to be aware of the need for appropriate use conditions so, in this dimension also, 'uninformed' companies might be those who could benefit most.

Finally, although this measure is being assessed independently of other measures considered in this report, there is the potential that its value could be affected (and increased) by some of those other measures. For instance, the requirements for reporting (use notifications and substitution action plans) in Policy Measures 1-6 could increase the need for substitution-related information on behalf of DUs. Thus, a network designed to provide and generate that information would clearly have synergistic benefits which would add value to those measures. Similarly, it would be easier to increase network membership if DUs had obligations to report and act on the sort of information the network provides.

Note it has been assumed that DUs who have already substituted away from the SVHC in question will not be members of the network. Although this would seem to mean the network will not benefit from useful information on successful substitution, there is reason to believe the costs of their absence might be limited, for two reasons. First, if companies have substituted by adopting alternative substances and technologies which are generally available and applicable, then suppliers of those alternatives should be able to provide appropriate information about them, backed up by advice from relevant trade associations to provide sector-specific context. Second, if companies have substituted by developing their own, bespoke substitution solutions, then this is more likely to reflect the particulars of their own business, product etc, and its more general applicability, and hence value, could be limited.

Authorities

The substitution network would be proposed by the authorities, and it is assumed they would be impacted directly in terms of setting it up and operating it. It could benefit authorities by increasing the availability of information about the Belgian market for SVHCs and their alternatives, which is currently limited. This information could be used to target specific groups, industries, and sectors where it is felt additional measures and resources are required to foster substitution. The network would also provide authorities with an opportunity to address stakeholders directly. As already mentioned above, there is a question over how much a substitution network would add over and above existing activities which authorities, industry and other stakeholders engage in. If network participants are the same as those who are already engaged, the value-added might be minimal. Participation in the network is assumed to be voluntary and at participants' own expense.

Third-party actors

Three types of third-party actor might be considered relevant to a substitution network: trade associations, consumer groups, and NGOs.

Trade associations would be expected to operate as extensions of DUs and substance/technology suppliers. They could input information into discussions, disseminate information obtained from the network to their members (and hence a wider audience), and facilitate contacts between companies and other groups.

Consumer groups could be interested in the network, especially if it is focussed on a SVHC which has relevance to consumers, consumer products and so on. Customer groups could input information on technical requirements, product standards and consumer preferences which could be useful in steering the direction of substitution. Consumer groups could use access to the network and information obtained from it, to educate and inform their members. They could also seek to lobby companies directly to substitute (faster) and indirectly by applying reputational pressure through the media and so on. As already mentioned, concerns over this might discourage companies from participating in the network, which could be seen as a reason to limit consumer groups' membership and/or the dissemination of information obtained from it.

It is assumed that NGOs are more interested in public health and environmental aspects of SVHC use, while consumer groups are concerned with promoting the interests of those they represent. Like trade associations, NGOs could also contribute and disseminate information, and facilitate relationships, especially as they can have particular knowledge of alternatives. However, they also undertake lobbying activities and companies might be wary of their involvement. Actively excluding them from the network, however, could generate its own negative publicity. As with consumer groups, consideration might need to be given to the advantages and disadvantages of NGO participation.

4.3.8 Policy Measure 8 – Development of methodology and structure to support the sustainability-focused analysis of alternatives

There are two key triggers within Policy Measure 8 to which affected actors will respond.

- The development of a permanent structure and methodology that can be applied by DUs to support the sustainable substitution of SVHCs. This includes several sector specific adaptations, where the methodology is applied to particular areas.
- Communication and training relating to the methodology developed. This might include workshops, guidance, recorded trainings, or other materials subject to the choices of policy designers.

The methodology developed by this measure is designed to be used for actual implementation of substitution. As such, it is designed to support a significantly more intensive process than the substitution action plan required under Policy Measure 2, which only involves indication of plans to substitute and may be completed by companies without intentions to substitute.

Downstream users

Downstream users would be directly impacted by Policy Measure 8 as they would have access to the

substitution methodology and would also directly receive any communication and training relating to this methodology's implementation.

This measure does not act to provide direct incentives for companies to substitute. Rather, it aims to improve the way in which companies approach the identification, assessment, and implementation of alternatives. This should ultimately lead to 'better' substitution, in line with the EU SSbD framework. The sector-specific adaptations means that the measure will reach a broader range of industries and companies.

It is important to keep in mind that companies completing the substitution methodology provided under this measure will be engaging in a more resource intensive exercise than the substitution action plan discussed under Policy Measure 2, as it will include a detailed analysis of substitution options as well as plan for further actions. Furthermore, a sustainability-approach to substitution will be more resource-intensive than not taking this approach.

The uptake of this measure will therefore be mainly driven by companies that are not only willing to invest in substitution, but willing to invest more to ensure that the substitution is sustainable. The measure therefore primarily targets companies that are already considering or in the process of substituting. If paired with other measures that drive increased willingness to substitute, this measure may provide more significant incentives. The available methodology, materials and training will reduce the resources needed to choose a sustainability-focused approach to the substitution process, that is, it 'lowers the price of the more sustainable option', but not the cost of substitution itself. Indirect effects of the measure that result from any networking of substituting companies are covered under Policy Measure 7.

Authorities

Authorities are financially impacted by this measure as they must develop the methodology and deliver any training and communication. The measure is not expected to directly generate information for use by authorities, as there is no requirement in the policy for DUs to share their use of the framework with authorities. Where communication with DUs using the framework is direct and two-way, this may provide opportunities for authorities to collect information on the challenges facing companies wishing to substitute and use this for improvement of the methodology and any wider policies targeting substitution.

Third-party actors

Third party actors, including industry associations, investors, and NGOs, would have access to the methodology generated by the measure. This methodology would contribute to existing conversations about the best approaches to substitution and provide frameworks to hold companies to account for the quality and sustainability of their substitution activities.

This is most likely to happen through reputational pressure applied by NGOs focusing on substitution, or investors attempting to judge the sustainable quality of their borrowers. These responses may provide incentives for companies to substitute, and to use the framework when substituting.

4.3.9 Policy Measure 9 – Direct support of companies involved with a subsidy for advisory services (version 1)

In addition to the triggers discussed in Policy Measure 8, this measure has one additional trigger:

- A subsidy of 25% for advisory services relating to implementation of the sustainability-focussed assessment of alternatives. This would allow 25% of service costs from a SSbD assessment to be covered by authorities. This would only be used in situations where companies have an established need for external support, such as unique or high complexity cases.

Downstream users

In Policy Measures 9 – 10, DUs are provided with financial support to make use of the methodologies for sustainability-focussed analyses of alternatives, and thus incentivising its use by reducing costs faced by those receiving a subsidy. These act as a direct economic incentive to use a sustainability-focussed approach to substitution, though it is worth noting that this is not directly incentivising substitution. The subsidy primarily targets companies that are considering or in the process of substituting, where it will reduce its cost of using a sustainability-focussed approach to the substitution process.

Authorities

The introduction of a subsidy increases the costs for authorities. This occurs through two channels: firstly, the provision of the subsidy itself, and secondly the costs of processing subsidy applications.

Third-party actors

Third-party actors are not expected to be impacted differently from Policy Measure 8. They are largely impacted by the public availability of the methodology and structure, and a subsidy available to DUs is deemed unlikely to change their responses.

4.3.10 Policy Measure 10 – Direct support of companies involved with a subsidy for advisory services (version 2)

The triggers are the same as Policy Measure 9, except that the subsidy amount is increased to 50%. This will increase the magnitude of most impacts arising from the subsidy's introduction. The structure of the responses for each actor are identical so no further detail is provided.

4.4 Effectiveness

4.4.1 Policy Measure 1 – Mandatory notification of use

Substitution efforts

A mandatory use notification could increase companies' substitution efforts of SVHCs for the following reasons:

- **Regulatory burden.** Collecting and reporting information for the use notification will require internal resources, e.g., dedicated staff time. Mandatory use notification could drive substitution efforts by encouraging companies to avoid this regulatory burden of collecting and summarising the required information.

- **Internal pressure.** Mandatory information disclosure policies require companies to reveal information that induces company employees (e.g., company directors concerned about information leaks and reputational risks) and could therefore prompt a company to change their behaviour (Doshi et al., 2013). The information collected is not disclosed publicly, therefore pressure is likely to stem from within a company from employees with access to the information.

Previous studies have found that the introduction of mandatory disclosure has successfully led to behaviour change amongst companies, which suggests that a mandatory use notification could lead to increased substitution efforts by creating pressure within company from employees. For example, US state laws requiring mandatory disclosure of chemicals injected underground by oil and gas companies resulted in a 68-84% decrease in the use of toxic and regulated substances (Fetter, 2022a). However, the study does not specify whether this decrease in use is solely based on substitution of the chemicals, or whether it also relates to reduction in the use of toxic chemicals (e.g., through process efficiencies). It should also be noted that the US required information to be publicly available, which increases the number of stakeholder groups with access to this information and therefore increases the pressure on a company to substitute. For example, this information would be available to consumers, which would pressure a company to substitute to avoid losing customers and market share.

Another study measuring the effectiveness of the Occupational Safety and Health Administration (OSHA) workplace hazardous disclosure standard found that 30% of surveyed employers adopted safer chemicals following disclosure (Weil et al., 2006). This standard would have disclosed information to employees who would have put pressure on companies to substitute away from a hazardous substance, given concerns over harmful exposure. This could have made future hiring more difficult for the company, thereby creating additional pressure to substitute. Both policies included elements of public disclosure which are not present in Policy Measure 1. Policy Measure 1 is therefore likely to be less effective in driving substitution efforts than is shown in these studies.

The information to be submitted in the use assessment under Policy Measure 1 is information that should be readily available within most companies. However, if this policy measure was adapted to require companies to report their emissions in the use notification, this could increase pressure from employees within the company which could increase substitution efforts. Reporting emissions could create concern amongst employees over their own exposure and the exposure of their community (through the environment) to hazardous chemicals. Pressure may also increase towards company directors and senior management where emission information made available to the wider public increases a company's reputational risk.

This policy measure could increase substitution efforts by revealing new information to companies through the data collection process, which allows companies to identify the barriers and opportunities to substitution solutions. The data collection requirement is likely to be most effective for SMEs, constituting 99.8% of Belgian companies (European Commission, 2019), who are less likely to have previously compiled this information, particularly related to environmental and worker exposure scenarios, based on the environmental release categories (ERC) and process categories (PROC) respectively. Collecting information on the activities and processes relevant to a substance according to a process category for worker-related activities highlights the processes that have a direct impact on exposure and hence the risk management

measures needed (ECHA, 2009a). Having access to this type of information could therefore drive substitution efforts. Many large companies will already be collecting the type of information mandated by this policy measure, which means that this information is less likely to spur substitution efforts within these companies. It should also be highlighted that the information reported through the use notification will not be completely new information as any company using a hazardous substance registered under REACH is provided a SDS by their substance supplier. The SDS includes information on the substance, hazard identification, and exposure controls. If the use notification also required companies to report their emissions, the revelation of new information would increase substitution efforts as companies build an understanding of the wider impact of their processes.

Although the information gathered is not necessarily unknown, collecting and reporting this information will still be a novel process for DUs, especially SMEs. This could spur increased substitution efforts by increasing the regulatory burden on companies, which they may want to avoid. The industry survey found that 50% of respondents deem this policy measure to be an administrative burden and another 25% of respondents cite a lack of staff resources as a concern with complying with this measure (VITO, 2023b)¹⁴.

If companies also had to report their emissions as part of the use notification this would increase the regulatory burden and could therefore increase substitution efforts among companies seeking to avoid the regulatory burden. Companies not currently measuring their emissions would need to implement monitoring processes to comply with this policy measure requirement.

The amount and the type of information required in this policy measure is the same across companies of different sizes but is likely to be a greater burden on SMEs. SMEs are likely to have fewer resources, in terms of staff time and expertise, to dedicate to complying with this policy measure. It is also less likely that SMEs are already collecting the information required by the use notification, whilst large companies may already have processes in place which collect this information. SMEs are therefore more likely to be driven to avoid the regulatory burden of reporting by substituting the targeted substances.

It is acknowledged that the burden of complying with this policy measure is likely to be smaller than the burden of substituting the substance itself and the costs of compliance are unlikely to be large (see Section 4.4.11 for more details), which limits the size of this incentive. However, in cases where an alternative substance is known to the company and where the substance is technically and economically feasible for the relevant application, the regulatory burden could nudge a company to increase substitution efforts.

The effectiveness of this policy measure in driving substitution efforts is also likely to change over time. The policy measure could drive substitution efforts when it is initially introduced as companies are driven to avoid the administrative burden of reporting and may be encouraged by the uncovering of new information. However, over time companies will become accustomed to the notification of use, which reduces the strength of the incentive to dedicate resources to substitution. This is evidenced in the industry survey which found that, on average, a company would increase their annual spending on substitution activities over the initial 5 years by ~€3,200 but would only increase their spending by ~€1,400 for the succeeding 6 to 10 years (VITO, 2023b)¹⁵. This highlights the diminishing efforts made to substitute

¹⁴ Share based on 8 respondents to the relevant question in the industry survey (n = 8).

¹⁵ Spend based on 7 respondents to the relevant question in the industry survey (n = 7).

substances over time as companies become accustomed to the policy process and as their efforts to find a substitute do not generate successful results.

In an industry survey only 14% (one of seven) of respondents stated that the company would initiate or increase substitution efforts with the introduction of a mandatory use notification, whilst 43% (three of seven) stated that no action would be taken in response to the implementation of this policy measure (i.e., business as usual) (VITO, 2023b)¹⁶. In addition, 71% of respondents stated that they would not increase spend on substitution efforts in response to this policy measure. These responses do not align with evidence detailed above. The reasons for this divergence could include (1) the limited number of responses received to the industry survey, (2) the over-representation of large companies in the industry survey as they have the resources to respond to these questionnaires, and (3) the bias in industry against additional regulatory measures (O'Rourke & Lee, 2004).

Substitution success rate

A mandatory use notification is unlikely to change the success rate of SVHC substitution as it does not reduce the barriers associated with substitution, such as providing information on alternative substances or substitution strategies. A study on the conditions under which mandatory disclosure is likely to lead to behavioural changes amongst companies (e.g., lead to substitution of SVHCs) found that mandatory disclosure is most likely to drive change when there is a link to other relevant information (e.g., technical information on substitution) (Leong & Hazelton, 2019).

Although this policy measure might make companies more alert to the need to substitute and could therefore increase substitution efforts, as detailed above, the measure does not assist companies with the financial or non-financial resources that would increase the success rate of substitution. This is confirmed in the industry survey, where 56% of respondents stated that notifying the use of a substance either does not affect substitution barriers or increases substitution barriers (VITO, 2023b)¹⁷. One respondent stated that the policy measure does not add any value (i.e., does not increase the substitution rate of SVHCs) since the use of a substance in consumer products already has to be notified in SCIP, and hence the notification of an SVHC to the Belgian Authority is not likely to drive substitution. In fact, 44% of respondents stated that the policy measure has no or negligible benefits (VITO, 2023b). It is stated that the policy measure will only create more complications, both in terms of the legislative requirements and time requirements, without driving change.

However, the remaining 44% of survey respondents stated that notifying the use of a substance reduces all or some barriers to substitution, which suggests that there is a split in opinion on the success rate of this policy measure in reducing the barriers to substitution (VITO, 2023b). One of the ways that the notification of use could reduce substitution barriers is by improving supply chain communication, which 22% of respondents agreed was a benefit of this policy measure. The industry survey also revealed that the implementation of this measure could, in a best-case scenario, reduce the volume of SVHCs by 43% on average over the initial 5 years of implementation and 42% on average over the succeeding 6 to 10 years (VITO, 2023b). It should be noted that these averages disguise the division in the survey responses; 50% of

¹⁶ Shares are based on 7 respondents to the relevant question in the industry survey (n = 7).

¹⁷ Shares are based on 9 respondents to the relevant question in the industry survey (n = 9).

the survey respondents stated that this policy measure would not reduce the volume used (i.e., 0% reduction in volume) and the remaining 50% of respondents stated that this policy measure would reduce the amount of SVHCs used by more than 60%. This division in responses reflects the type of substance used by respondents. As would be expected, companies using substances that are more difficult to substitute (i.e., that do not have viable alternatives) state that the volume substituted due to this policy measure will be zero.

Improving future regulations

Policy Measure 1 could have benefits through creating information that can be used to develop better future regulations. As the information collected is largely on the patterns of usage and purpose of SVHCs, this is expected to be most useful for better prioritisation of SVHCs to be targeted by new regulations on DUs.

It is notable that no new information on substances and their hazards, their alternatives, the level of exposure, or emissions is likely to be generated by the policy. This limits its usefulness in development of future regulations as reducing emissions and exposures through substitution with alternatives are generally the practical outcomes that regulations in this area seek. However, if the use notification is adapted to require companies to report their emissions, this could provide the authorities with information that would allow them to better design future regulations incentivising substitution and minimising emissions.

However, the measure may develop information that supports prioritisation of SVHCs for regulations to focus on, by showing which substances are most widely used in the Belgian context, their relevant uses, and the economic importance of those uses. This information can also be used to benchmark the performance of companies using SVHCs, allowing the authorities to identify and target outliers. These outliers could be specific companies within a sector that use a higher volume of SVHCs per product sold than other companies in the sector, or they could be entire sectors that use a higher volume of SVHCs than other sectors. This policy measure therefore reduces information gaps and provides a basis on which the Belgian Authority can develop more targeted actions.

There is evidence that information gaps are an active barrier to improving chemicals regulations, despite progress made by REACH. For example, one paper from 2023 assessed the adequacy of REACH for collecting the information required for adequate regulations of reprotoxic substances and found there were some information gaps (Eliesen et al., 2023). In the industry survey, limited information on alternatives was named as a barrier to further substitution by over 70%¹⁸ of responding companies (VITO, 2023b). This suggests that better information could be used by governments to support companies' substitution efforts.

However, these examples focus on information about substances and their alternatives, rather than market information collected by Policy Measure 1. Concrete evidence that availability of information collected by Policy Measure 1 is a driver to improved regulation was not found.

It should also be highlighted that providing information to the authorities to improve future regulations is

¹⁸ Shares are based on 8 respondents to the relevant question in the industry survey (n = 11).

likely less effective in the short term than directly increasing substitution efforts and successful substitution. Even if this policy measure provides the authorities with valuable information that can be used to improve future regulations, this pathway will take longer as the authorities need to (1) wait for information to be submitted, (2) develop targeted policy measures, and (3) implement the policy measures. This is much less effective than directly increasing substitution efforts and the likelihood of successful substitution.

4.4.2 Policy Measure 2 – Substitution action plan

Substitution efforts

The mandatory development of a substitution action plan, in addition to a mandatory use notification, is likely to increase substitution efforts by (1) increasing transparency on potential alternatives, creating pressure within a company and pressure from the authorities to substitute away from SVHCs and (2) reducing the knowledge gap on alternatives.

The increased transparency this policy measure brings to the substitution process can exert pressure on companies as companies will be obliged to consider their historic and current substitution activities as well as their intention to phase out (i.e., substitute) SVHCs. If a company has invested very little effort in substituting SVHCs, reporting this lack of activity could put pressure on a company and encourage more effort to be made in seeking substitutes.

Policy Measure 2 can also increase substitution efforts by functioning as a valuable resource and reducing the knowledge gap on alternatives. For instance, one of the respondents to the industry survey highlighted that a substitution action plan could be useful for companies that have not gained enough experience with this process (VITO, 2023b).

A study on the Massachusetts Toxics Use Reduction Act (TURA), which requires companies to plan for process improvements, suggests that mandatory planning has been critical to TURA's success in motivating companies to find innovative ways to prevent pollution (O'Rourke & Lee, 2004). The study claims that the mandatory planning requirements have helped companies overcome the first barrier to behaviour change, which is realising the need to change. It also helps companies recognise that they can change their production processes (O'Rourke & Lee, 2004). The study found that the percentage of companies 'very involved' in tracking the volume of chemicals used increased from 48% of companies before TURA to 90% companies after the implementation of TURA (O'Rourke & Lee, 2004).

It is unlikely that the policy measure will have clear requirements on the level of detail and the resource requirements for developing the substitution action plan. If minimum requirements are not set, there is a risk that the substitution action plan is treated as a 'tick-box' exercise, which would make the policy measure much less effective in increasing substitution efforts. The study on the effectiveness of TURA found that companies broadly opposed mandatory planning requirements and perceived it as 'a compliance effort' with little benefit or use (O'Rourke & Lee, 2004). According to this study only 10% of companies saw the TURA planning requirements as positive (O'Rourke & Lee, 2004). This is reflected in the industry survey in which respondents stated that mandatory development of a substitution action plan would be an administrative burden without any additional benefits given that R&D is already being undertaken to find and validate alternative substances (VITO, 2023b). Although companies might continue to perceive the

development of a substitution action plan as an administrative burden, if this policy measure was developed in a way which required companies to demonstrate that research and resources had been dedicated to developing a substitution action plan, this would reduce the risk that the substitution action plan is treated as a 'tick-box' exercise and would increase substitution efforts, by making such efforts mandatory.

Although this policy measure might increase substitution efforts as companies develop substitution action plans and reflect on their substitution activities, the effectiveness of the policy measure is limited as companies cannot be forced to implement their plans. For example, TURA operates under a regulatory paradigm that might be described as "command-and-innovate" rather than "command-and-control". In this approach, regulators do not prescribe specific technological solutions to problems but instead place their trust in companies to identify technical solutions by systematically examining their processes. However, the study about the effectiveness of TURA found that companies can, and often do, decide against implementing their plans, especially if implementation has a negative financial impact. It is also worth noting that industry has often demonstrated hesitancy in adopting even the most straightforward and economically efficient pollution prevention measures without external pressure (O'Rourke & Lee, 2004). A manager in Greiner's study (1994) admitted that there is sometimes a resistance that necessitates a proactive push toward toxics use reduction, with companies acknowledging the need to be prompted to take action.

Substitution success rate

The mandatory development of a substitution action plan by companies using SVHCs should increase the success rate of substitution by encouraging companies to consider how they would go about substitution. The process could help companies uncover viable alternatives (i.e., economically and technically feasible alternatives). One of the policy measures Thorpe and Rossi see as critical to successful substitution is the generation of substitution action plans (Thorpe & Rossi, 2007).

A limitation of this policy measure is that even if a company implements a substitution action plan, the substitution itself may still not be successful. The TURA study found that 67% of companies who implemented projects proposed in their plans had reduced their use of toxic chemicals over a 10-year period (O'Rourke & Lee, 2004). Whilst this is a reasonably large reduction in the use of toxic substances, it highlights that not all substitution efforts will be successful.

The industry survey showed that 57% (4 of 7) of respondents claimed that this policy measure reduces all, most, or some barriers, with the remaining 43% of respondents claiming that it does not affect the barriers to substitution (VITO, 2023b). A small majority of companies therefore do perceive benefits with developing a substitution action plan. However, given the limited number of responses to the industry survey it is difficult to extrapolate any results to the wider Belgian market.

The industry survey revealed that the implementation of this policy measure could, in a best-case scenario, reduce the volume of SVHCs by 40% on average over the initial 5 years of implementation and 48% on average over the succeeding 6 to 10 years (VITO, 2023b). This increase over time can be attributed to the time required to implement the plans that have been developed. Similar to Policy Measure 1, it should be noted that these averages disguise the division in the survey responses; 50% of the survey respondents

stated that this policy measure would not reduce the volume used (i.e., 0% reduction in volume) and the remaining 50% of respondents stated that this policy measure would reduce the amount of SVHCs used by more than 60% in the first 5 years and more than 90% in succeeding 6 to 10 years. Similar to Policy Measure 1, this division in responses reflects the type of substance used by respondents. As would be expected, companies using substances that are more difficult to substitute (i.e., where the companies are not currently aware of any viable alternatives) state that the volume substituted due to this policy measure will be zero. Nonetheless, it is expected that the development of a substitution action plan would reduce some of the technical barriers associated with substitution and therefore increase the success rate of substitution.

A limitation of this policy measure in increasing the success rate of substitution is that it does not set minimum requirements for the quality of the substitution action plans submitted and it does not mandate the implementation of these substitution action plans. As previously mentioned, if companies submit substitution action plans as part of a 'tick-box' exercise without dedicating resources to the development of the plan, companies are unlikely to uncover feasible alternatives and develop implementable strategies, which ultimately reduces the likelihood that substances will be successfully substituted. In addition, these companies are not required to implement the plans that they develop, which also reduces the number of companies that are likely to implement these plans. The study on the effectiveness of TURA found that it is not enough to write a plan. Companies must make real commitments of time, staff, and money to implement reductions or substitutions in the use of toxic substances (O'Rourke & Lee, 2004). If this policy measure was developed in a way which required companies to demonstrate that research and resources had been dedicated to developing a substitution action plan, this would likely increase the successful substitution of SVHCs as companies would be more likely to discover a viable alternative, which would consequently encourage substitution as companies are incentivised to avoid the regulatory burden of reporting information each year.

Improving future regulations

Similar to Policy Measure 1, this policy measure is likely to improve future regulations by filling information gaps within the Belgian Authority and therefore allowing the development of more targeted policy measures to reduce SVHCs. The authorities will have access to information on potential avenues for substitution across companies, sectors, and substances, which will allow them to compare and benchmark the substitution action plans that are submitted. For example, if 50% of the companies using ADCA, an SVHC on the CL, in the construction sector have found suitable alternatives which they may implement, then it is likely that these alternatives may be viable for at least some of the remaining companies that did not find suitable alternatives in the sector. This type of information will provide authorities with a benchmark that they can use to develop more targeted command and control regulations (e.g., restrictions, bans, etc.) or incentive policies (e.g., subsidies, training, knowledge sharing, etc.). This might include, for example, a targeted restriction either within Belgium or proposed at an EU level.

This policy measure would also provide authorities with a better understanding of the substitution barriers associated with certain sectors and substances. This type of information can be used to modify or develop policies that reduce the challenges faced by companies and therefore perpetuate greater compliance and substitution. These could include targeted financial (i.e., subsidies) and technical (e.g., training, information sharing, etc.) support.

Over time, the authorities will also be able to track the types of companies that are no longer submitting substitution action plans (i.e., those that have substituted) and those that continue to submit substitution action plans (e.g., due to a lack of suitable alternatives in their sector). This type of information will also allow the authorities to develop more targeted regulations.

As has been discussed, the effectiveness of this policy measure in improving future regulations is dependent on the quality of the substitution action plans that are submitted by companies. If companies provide well-developed plans, including strong justifications as to why substitution is or is not feasible and the alternatives that have been investigated, the authorities will be able to use this information to develop targeted regulations that can assist companies substitute away from SVHCs.

4.4.3 Policy Measure 3 – Non-financial support for the use notification and/or the substitution action plan

Substitution efforts

This policy measure is likely to increase substitution efforts both comparatively to the status quo (i.e., no policy measures to drive substitution) and to Policy Measures 1 and 2. This measure has the benefits associated with Policy Measures 1 and 2 (see Sections 4.4.1 and 4.4.2), as well as overcoming some of the limitations in those measures.

One of the limitations associated with these measures is that companies may not have the resources or expertise to collect and report the information required by the use notification and the substitution action plan. The training, guidelines and access to expertise provided by this policy measure allows companies to better understand how to collect data on, for example, exposure scenarios, and how to develop a substitution action plan. This guidance improves their substitution efforts by improving the outputs of their reporting and increasing their ability to uncover information on innovative ways to substitute. The study on the effectiveness of TURA found that providing training and information sharing helped companies recognise that they could change their production processes (O'Rourke & Lee, 2004), which ultimately increases the amount of effort dedicated to achieving substitution. Providing these resources would be of more value if companies are obligated to report their emissions through the use notification. Many companies would not have monitoring in place, particularly SMEs, and would require guidance on implementing such monitoring and reporting emissions.

Providing additional assistance and guidance also encourages innovation amongst companies using targeted substances. The study on the effectiveness of TURA found that forcing companies to better understand their processes and helping them identify options for pollution prevention through training, case studies of leading companies and publications encouraged companies to find ways to reduce their emissions (O'Rourke & Lee, 2004). Promoting innovation amongst companies required to comply could therefore increase substitution efforts.

This policy measure is likely to be most effective amongst SMEs, who are more likely to lack the resources and expertise needed to comply with the use notification and substitution action plan requirements. The additional non-financial support could increase substitution efforts by giving companies the resources they need to effectively design substitution action plans by providing strategy ideas which would have been

difficult to devise independently. The support also decreases the likelihood that companies treat compliance with the policy as a 'tick-box' exercise, which was one of the limitations of Policy Measure 2 (see Section 4.5.2).

The industry survey found that only 11% of survey respondents believe the support will be sufficient to avoid significant negative impacts on company operations, whilst 44% believe the support will be helpful but there will nonetheless be some negative impacts on company operations and 22% believe the support is insufficient and expect significant negative impact on operations (VITO, 2023b)¹⁹. Although this policy measure aims to reduce the negative impacts on companies, negative impacts are expected to be limited given the time and resource requirements. From these responses, 55% of respondents believe that the support is at least helpful and reduces some of the negative impacts. The negative impacts on companies need to be compared to the health, environment and sustainability benefits generated (see Section 4.6.3) to better understand whether these impacts and benefits are balanced. A further 22% of respondents stated that they would not make use of the support provided by this policy measure (VITO, 2023b). This is likely due to the over-representation of large companies in the industry survey who are less likely to need the support provided by this policy measure.

Substitution success rate

The substitution success rate is likely to increase with the implementation of Policy Measure 3. The provision of training and guidance on data collection and the development of a substitution of plan reduces some of the technical barriers associated with substitution. Assistance with the development of the substitution action plan is particularly important in increasing the volume of SVHCs substituted and the number of companies substituting away from SVHCs. A well-developed substitution action plan increases the likelihood that a company will implement the plan, and therefore actually substitute. For example, the EPA's 33/50 program sought to reduce the release of 17 priority chemicals by 33% by 1992 and 50% by 1995, measured against a 1988 baseline (EPA, 1999). The program provided technical assistance to companies to help them identify and adopt innovative waste minimisation practices through nationally held workshops and computer bulletin boards. The goals of the program were achieved a year early, highlighting the effectiveness of information sharing and guidance. Even though voluntary participation likely influenced the success of the program (i.e., only companies who were already interested in reducing their waste participated in the program), this study presents evidence that providing technical assistance and sharing information with companies helps drive behaviour change. This suggests that Policy Measure 3 could similarly increase the success rate of substitution.

Under the Massachusetts Toxics Use Reduction Act (TURA) of 1989, 550+ companies assessed toxics use reduction options (i.e., akin to a substitution action plan) with technical help supplied by university and government experts (Thorpe & Rossi, 2007). The toxics use reduction strategies included material substitution and product reformulation, which reduced the use of toxic chemicals by 40% over 10 years (Thorpe & Rossi, 2007). This example highlights the effectiveness of knowledge sharing and expert support in successfully driving substitution.

TURA mandated the Massachusetts government to establish six public institutions to support the goals of

¹⁹ Shares are based on 9 respondents to the relevant question in the industry survey (n = 9)

Toxics Use Reduction, two of which are the Office of Technical Assistance (OTA) and the Toxic Use Reduction Institute (TURI). These institutional branches provide tools to industry to learn how to reduce their own toxics and information on specific technical options for certain industries, thereby helping build the internal capacity of companies through training, educational materials, and seminars. OTA also provides free on-site visits and engineering assistance to identify and implement toxics use reduction opportunities. An econometric analysis found a significant correlation between visits from OTA and reductions on toxics use and byproduct (Reibstein, 2008). After on-site visits, companies reduced their use of toxic chemicals by 9.4% (Reibstein, 2008). This reflects the effectiveness of non-financial support (e.g., technical assistance, knowledge sharing, etc.) in successfully driving a reduction in toxic chemicals use (i.e., substitution). It should be highlighted that Policy Measure 3 does not provide the same level of support that OTA provides to reduce or substitute away from toxic chemicals. Nonetheless, it highlights the effectiveness of non-financial support in successfully driving substitution.

As a result of the implementation of this measure, industry survey respondents estimated that they may be able to substitute 38% of the use volume of CL substances over the next 5 years, and 48% over the succeeding 6 to 10 years (VITO, 2023b)²⁰. These reductions in volume align with the reductions made after the implementation of other policies such as the EPA's 33/50 program and TURA, detailed above.

These examples give evidence that providing non-financial support to companies, particularly advisory support on substitution action plans, increase the likelihood of successful substitution. The support is likely to be the most helpful for small and micro companies (i.e., companies with fewer than 50 employees) that are more likely to lack the resources and expertise required to comply with the use notification and substitution action plan requirements. These organisations account for 98.9% of Belgian companies (European Commission, 2019). Even though individual small or micro companies are likely to use smaller volumes of SVHCs, when aggregated, providing non-financial support to these companies to develop effective substitution action plans that are more likely to be successfully implemented could have a large impact in reducing the use of SVHCs in Belgium through increased substitution.

Improving future regulations

Policy Measure 3 is likely to provide information to authorities that can be used to implement more effective policies promoting substitution in the foreseeable future. There are two reasons for this; (1) the authorities play a more active role in the information gathering and substitution action plan development of companies which allows authorities to gain valuable information throughout the process and (2) the quality of information received by the authorities in the use notification and the substitution action plans are likely to be of a higher quality.

The more active role taken by authorities in this policy measure gives them a better understanding of the challenges and opportunities faced by companies using SVHCs, especially through communication channels such as the helpdesk. This type of information can be used to modify or develop policies which reduce the challenges faced by companies and therefore perpetuate greater compliance and substitution. The active role of the authorities in supporting companies in their data collection and reporting process also provides the authorities with an insight into the technologies that can be used in substitution and the

²⁰ Shares based on 4 respondents to the relevant question in the industry survey (n = 4).

available alternatives. This type of technical information can give the authorities a broad view of the substitution methods available to companies and can improve the technical support provided to them in the future. For example, OTA and TURI, institutions which supported the goals of TURA, found that providing non-financial support to companies with pollution prevention positioned the state as “information and knowledge network-broker” (Lanou, 1998). These state agencies act as facilitators of experimentation and learning about processes (O'Rourke & Lee, 2004).

The second way in which this policy measure can improve future regulations is through the higher quality information that is likely to be reported to the authorities by companies. The support provided to companies in complying with the use notification and in developing their substitution action plans is likely to result in fewer ‘tick-box’ submissions and a greater number of more accurate submissions. These more accurate submissions to the authorities will enable the authorities to devise future policies that are better targeted. If this policy measure also required companies to provide information on their emissions, the additional guidance provided to companies would increase the quality of information provided to authorities. This would allow the authorities to better identify companies and sectors with higher emissions, and better target policies to increase substitution in these industries.

4.4.4 *Policy Measure 4 – Subsidy for the substitution action plan*

Substitution efforts

In addition to the benefits and limitations associated with Policy Measures 1 and 2 (see Sections 4.5.1 and 4.5.2), this policy measure, and the financial support it provides, has its own benefits and limitations in driving substitution efforts. This policy measure could increase substitution efforts by (1) increasing the compliance rate and (2) improving the quality of the information reported. One study suggests that the provision of economic incentives is critical to the successful implementation of the substitution principle, namely the drive to substitute hazardous chemicals with less hazardous alternatives (Thorpe & Rossi, 2007).

This policy measure incentivises compliance with the reporting requirements of the use notification and substitution action plan. Companies using the targeted SVHCs are more likely to make themselves known to the authorities if there is a financial benefit to complying. The subsidy funds research into alternative substances or technologies, which could provide further cost reduction to companies. For example, a company could use the subsidy to develop a substitution action plan and find that there is an alternative substance that they can use in their process which also costs less. A study on the effectiveness of TURA found that while some companies may be motivated to prevent pollution out of a concern for the environment and for people, saving money seems to be the driving factor (O'Rourke & Lee, 2004). The subsidies increase compliance by creating a ‘no-lose’ scenario. Companies do not lose time and staff resources, which are in themselves financial resources, to comply with these regulations and they also increase the possibility of finding cost-effective substitutes.

Although a subsidy may increase the number of companies developing substitution action plans, this could reduce the availability of external expertise, such as consultancy services, given the increase in demand for these services. As a comparison, between 2012 and 2022 there has been a maximum of 77 applications for authorisation to ECHA (ECHA, 2022b) for approximately 59 unique substances listed on the Annex XIV Authorisation List. As detailed in Section 3.3.2, the number of companies using SVHCs in Belgium is likely

to be much larger.

Subsidising the development of a substitution action plan increases substitution efforts by allowing companies to dedicate time and resources into substitution R&D. An OECD report on the approaches available for substituting chemicals found that market-based instruments, such as subsidies, can incentivise substitution by generating revenue that can be used for research and innovation in alternatives (OECD, 2023a). This type of financial support would be particularly beneficial for SMEs who may be less able to dedicate resources to developing implementable substitution action plans without being compensated. The subsidy would allow these SMEs to hire external advisors or to dedicate internal resources. The industry survey found that 50% of respondents agreed that reduced costs of substitution efforts was the predominant benefit of this policy measure (VITO, 2023b)²¹.

The industry survey also found that 50% of respondents would find the support helpful but expect some negative impacts on company operations (VITO, 2023b)²². As has been stated previously, any policy measure which creates compliance burdens on companies will be perceived to have some negative impacts, but if the policy measure is effective in changing behaviours, it is also expected to have social and environmental benefits which could outweigh the negative impacts (i.e., costs) on companies. Another 25% of respondents stated that the support is insufficient and is expected to create significant negative impacts on company operations and the remaining 25% stated that they would not make use of the support. Some of these responses can be attributed to the over-representation of large companies in the industry survey who would benefit less from the financial support, given that they already have the resources to comply with the reporting requirements. In addition, this policy measure provides the same financial assistance to companies of all sizes (i.e., the cap on the subsidy is the same) and will therefore provide less of a benefit to larger companies who could require greater resources to developing a substitution action plan.

Although companies might feel less inclined to report inaccurate or incomplete information when being subsidised to report such information, this policy measure does not mandate any quality requirements on the information provided and does not mandate the implementation of a substitution action plan. This could therefore create 'perverse incentives' (incentives that result in negative consequences) for companies to report inaccurate substitution action plans without any intention to implement the plan, whilst nonetheless receiving subsidies. A study on the governance approach of REACH suggested that REACH creates perverse incentives for industry, where 'producers have an incentive to underestimate risk to avoid outside intervention into self-regulation' (Hey et al., 2006). According to the study, it is therefore essential to implement a range of mechanisms, such as compliance checks and peer review, to ensure companies provide 'honest and forthcoming' information (Scott, 2009). Under REACH, compliance checks are completed by ECHA on a selection of registrants, and the peer review is accomplished through joint registrations, which could promote industry accountability in the provision of information (Scott, 2009). Policy Measure 4 subsidises companies to report information without having either of these mechanisms in place, which could further perpetuate inaccurate reporting and continued payments.

²¹ Shares based on 4 respondents to the relevant question in the industry survey (n = 4).

²² Shares based on 8 respondents to the relevant question in the industry survey (n = 8).

Substitution success rate

This policy measure could increase the substitution success rate by removing some of the financial barriers associated with developing effective substitution action plans. The subsidies would allow companies to invest resources into R&D which would increase the likelihood of finding feasible alternatives. According to the industry survey, the implementation of this measure could, in a best-case scenario, drive a 48% reduction in the volume CL substances used by companies through substitution over the next decade, which is a large reduction in the volume of CL substances used (VITO, 2023b)²³. It should be highlighted that the majority of survey respondents are large companies (i.e., not SMEs), who are less likely to be supported by this policy measure as they have a greater resourcing capacity to fulfil the requirements without financial support. It is expected that the reduction in CL volumes by SMEs could be greater than 48%, as the financial support will have a much bigger impact on SMEs.

One of the limitations associated with this policy measure is that whilst the development of substitution action plan is subsidised and therefore likely to be of a higher quality given the additional resources available, the measure does not mandate the implementation of the plan. This somewhat limits the rate that CL substances are substituted.

The second limitation of the measure is that it does not provide technical support to companies through information sharing. The information to which companies have access to is therefore siloed and does not promote best practice across sectors using CL substances, which could lead to companies submitting less effective substitution action plans, ultimately hindering the success rate of substitution. However, contrary to this, the industry survey found that the majority (i.e., 60%) of respondents believe that this policy measure reduces some or most barriers (VITO, 2023b)²⁴.

Improving future regulations

This policy measure is likely to improve future regulations promoting substitution by increasing the amount of information received by authorities and improving the quality of the information received. As has been discussed above, subsidising companies to submit the necessary information will encourage companies to comply and should also encourage companies to submit more accurate information. Higher quality information will improve the authorities' ability to develop more targeted regulations which utilise information on new technologies and alternatives, whilst also addressing information gaps.

However, unlike Policy Measure 3, the authorities in this policy measure do not act as a 'knowledge broker' but simply subsidise the development of knowledge within companies, which they then receive through submissions of the use notification and substitution action plan. This process loses some of the learning that is gained in opening communication channels between the authorities and companies.

The other limitation of this policy measure is that the subsidy does not guarantee the quality of the information that is reported to the authorities. Whilst it can be assumed that the quality of the information should increase given that companies are dedicating resources into data collection and research on substitution, this policy measure does not guarantee the quality of submissions. If the authorities do receive inaccurate information this can reduce the efficacy of the regulations that are developed.

²³ Share based on 2 respondents to the relevant question in the industry survey (n = 2).

²⁴ Share based on 5 respondents to the relevant question in the industry survey (n = 5).

4.4.5 Policy Measure 5 – Annual fee for the use of SVHCs

Substitution efforts

Fees and taxes are financial instruments which are often proposed for driving behaviour change across a range of sectors, including the chemicals industry. The mechanism by which these fees and taxes are supposed to work is reasonably simple insofar as a fee or tax is placed on an activity or product and affected actors (e.g., companies) may change their behaviour to avoid the fee or tax. These incentive structures can be designed in different ways which can impact the effectiveness of the incentive. Not all taxes are intended to change behaviour (e.g., income or value added tax), but in this context, the aim of the fee is to induce behavioural changes of companies.

This policy measure is likely to increase substitution efforts as companies become more financially motivated to find a substitute. These fees are particularly effective in cases where substitution costs and the fees are on a par. This is typically the case (1) among companies with available alternatives and low substitution costs, for example amongst companies with a known drop-in alternative, or (2) where the fees are so high that substitution is still cost-effective.

Depending on its size, a fee may drive substitution beyond that of ‘softer’ measures, as it effectively increases the cost of continuing to use an SVHC which becomes close to the cost of substituting. A study on the effectiveness of TURA found that industry consistently fails to implement even the ‘low hanging fruit of economically efficient pollution prevention options’ (O’Rourke & Lee, 2004). The fee nudges companies with economically feasible solutions (i.e., substitutes) to act. Other studies have also found that even a small fee per volume of substance used may incentivise the phase out of hazardous substances by the share of companies Slunge & Alpizar, 2019n costs (Slunge & Alpizar, 2019; Slunge & Sterner, 2001).

A study on the substitution of TCE found that the most common reason for substituting TCE stated by the surveyed companies was to avoid having to apply for authorisation or renew the application for authorisation, suggesting that the cost of applying for a renewed authorisation must have been higher than the cost of substituting TCE (Slunge et al., 2022). The base fee for an application for a new or renewed authorisation under REACH is approximately €54,100, although this varies depending on the number of substances and uses covered by an authorisation (Slunge et al., 2022), whilst the overall costs including dossier development has been estimated at €230,000 (see Section 4.5.2 for more details on a comparison of the financial costs to companies) (Nikos Maroulis; Pierre de Kettenis; Kastalie Bougas; Julien Ravet; Alasdair Reid; Julia Rzepecka, 2016; UK chemicals stakeholder forum, 2015). The cost of substituting TCE therefore had to be close to or less than the cost of applying for an authorisation under REACH for companies to substitute. Although there are added benefits to substitution as opposed to applying for authorisation, removing the risk of not being granted an authorisation, removing the need to apply for another authorisation in the future, and improving a company’s public image, all of which could contribute to a willingness to spend more on substitution.

A study on the economics of toxic chemicals found that risk-based taxation, which would assign a relatively higher tax rate to chemicals that pose a greater risk to humans and the environment, is an effective market signal for driving substitution of hazardous chemicals (Coria, 2018). The fee system proposed under Policy Measure 5 will be linked to volumes used, which is one of the indicators of relative differences in risks, given

that higher volumes tend to lead to greater exposure and emissions²⁵. Similar policies including risk-based taxes have been applied to pesticides in Europe, where differentiated pesticide taxes have led to the use of less risky pesticides and non-chemical plant protection strategies (Böcker & Finger, 2016). It should be noted that this study considered risk-based taxes to be most appropriate for chemicals not deemed very hazardous, whilst for very hazardous chemicals, command, and control regulations (e.g., bans) were considered most appropriate. Nonetheless, this example does highlight the effectiveness of fees in driving substitution efforts.

Substitution of hazardous chemicals in Denmark is also promoted by means of economic instruments, such as environmental taxes levied on pesticides, chlorinated solvents, CFCs, nickel-cadmium batteries, soft PVC, and phthalates (Oosterhuis, 2006). There is some evidence for the effectiveness of these taxes (Oosterhuis, 2006). According to a Danish cable producer, which has replaced PVC-containing phthalates with halogen-free polymers in part of its products, the taxes on PVC and phthalates have helped to lessen the price difference (Oosterhuis, 2006). This reiterates what has been demonstrated in the other examples, which is that a fee or tax on the use of a hazardous chemical can make substitution a more cost-effective option.

Based on these examples, for Policy Measure 5 to be effective, the fee must be high enough that it is comparable to the cost of substitution, but it cannot be so high that companies decide to cease production or to move production outside of Belgium. This policy measure fines companies 5-10% of the substance sales value, depending on the tonnage bracket that a company falls into (i.e., the volume of CL substances used by a company). As can be seen in Section 4.5.5, the measure generally induces a higher fee for higher use volumes, albeit some exemptions occur (See Section 4.3.5). Although smaller companies will on average use smaller volumes of the SVHCs, it is still likely that the fee will be larger compared to their overall revenue and profits. More significant or frequent behavioural changes is therefore likely to occur for smaller companies than larger ones. This policy measure is therefore likely to spur greater behavioural changes amongst small companies than large companies. However, if there is no apparent suitable alternative available, the fee becomes an additional financial burden on companies without affecting their behaviour (i.e., without driving substitution). This financial burden is likely to fall most heavily on SMEs with no viable alternative and limited resources to research potential alternatives.

Although previous examples of similar policies have shown that fees can be effective tools in driving substitution efforts, this policy measure does not come without limitations and risks. One of the limitations of this policy measure, and others like it, is that it does not protect companies against regrettable substitution (Sackmann et al., 2018), which is further discussed in Section 4.6.5.

Another risk associated with this policy measure is the possibility of 'leakage' (Coria, 2018). If the fees are too high and if there are large asymmetries in the stringency of chemical regulation (i.e., regulations are more lenient in other countries), then companies may avoid paying the fee and avoid substitution by moving production outside of Belgium. This would reduce the amount of SVHCs used in Belgium but could also impact Belgian industry and the economy. This sentiment was reiterated by respondents to the industry survey who stated that this policy measure would give Belgian companies a cost handicap

compared to other European producers (VITO, 2023b).

Substitution success rate

This policy measure is likely to increase the substitution success rate by giving companies a financial stake in the success of substitution. Unlike Policy Measures 1 to 4, this policy measure gives companies a reason to develop useful substitution action plans that are likely to succeed, and it encourages these companies to implement these substitution action plans, since the fee is avoided if the substance is not used, or the volume of substance is reduced. The fee can also be avoided by moving production outside of Belgium, which is one of the risks discussed above. However, moving production will have significant costs which are likely to be far greater than both substitution and paying the fee for most companies.

Massachusetts Toxics Use Reduction Act (TURA) is similar to this policy measure insofar as it requires facilities using large amounts of toxic chemicals to report their chemical use, conduct toxics use reduction planning every two years, and pay a fee (OECD, 2023b). An evaluation of the programme during 1990-2010 showed that companies have reduced their use of toxic chemicals such as TCE by 96%, PERC by 96%, formaldehyde by 91%, and cadmium and cadmium compounds by 94%, among others (Tickner et al., 2015; TURI, 2013). It should be noted that the reduction in the use of toxic chemicals cannot be solely attributed to the implementation of a fee as TURA, similar to Policy Measure 5, includes elements of data collection and reporting which provide their own incentives in reducing and substituting substances. Nonetheless, the large reduction in toxic chemicals achieved by TURA suggests that this policy measure could lead to the successful substitution of SVHCs in Belgium.

Denmark also increased the substitution rate of hazardous substances by introducing environmental taxes. This tax on chlorinated solvents contributed to a decrease in the use of these substances by 60% (Oosterhuis, 2006).

Although previous examples have demonstrated that the implementation of a fee can lead to high levels of successful substitution, the measure does not necessarily reduce the technical barriers associated with substitution. For companies using substances which do not have viable alternatives, the introduction of a fee does not assist them in finding a technically feasible alternative but simply penalises them for not finding such an alternative.

Another limitation of this policy measure is that the way in which the fee is structured according to tonnage brackets can create a perverse incentive to increase the substance volume used to decrease the fee paid, rather than increase the likelihood of substitution. A company whose SVHC use volume is at the upper end of each fee bracket is incentivised to increase their volume to enter into the fee bracket above to decrease the fee paid. This is discussed in detail in Section 4.5.5.

However, the perverse incentive to increase SVHC use to reduce the cost would be removed if the fee structure was adjusted to fine companies proportionally according to the volume of SVHC used, which would ultimately make this policy measure more effective in driving substitution.

Improving future regulations

The fee introduced in this policy measure would not directly improve future regulations beyond the

improvement discussed in Policy Measures 1-3. The fee does not provide the authorities with any additional information that can be used to better design future regulations to further drive substitution of SVHCs.

Some studies find that earmarking is a useful tool to further incentivise substitution by providing actors with information, advice or by financing research and innovation on safer chemicals (OECD, 2023b). For example, the fees paid by companies under TURA supports the work of the TURA implementing agencies, which are used to provide a wide variety of services, including training, grant programmes, and technical assistance programmes (OECD, 2023b).

Reinvesting the revenue from fees and taxes into furthering the ambitions of a policy also reduces opposition towards a tax or fee (Söderholm & Christiernsson, 2008). A study by Söderholm & Christiernsson (2008) found that the experience of European countries in fertiliser taxation indicates that some earmarking of tax and fee revenues can often be effective in increasing the perceived legitimacy of the tax or fee policy (Söderholm & Christiernsson, 2008). (Söderholm & Christiernsson, 2008)

As discussed in Section 4.2, there are challenges associated with earmarking funds for use in particular projects or specific streams. The use of revenues may be subject to 'higher rank' rules that complicate decisions to earmark funds. Therefore, the possibility of earmarking the funds generated from the fee in this policy measure is not taken into account in the scoring of this assessment criteria for this policy measure (see Section 4.2).

4.4.6 Policy Measure 6 – Modular annual fee for the use of SVHCs

Substitution efforts

This measure could increase substitution efforts by (1) providing methodological support through guidelines to companies for developing the substitution action plan, (2) incentivising timely submission of a substitution action plan by reducing the fee and (3) imposing a higher fee on those that do not submit a substitution action plan. However, this policy measure could also limit substitution efforts given that (1) the substitution action plan is optional, (2) the fee is reduced for timely submission of the substitution action plan but makes no requirements on the quality of the substitution action plan and (3) this measure does not protect against 'regrettable substitution'.

For this policy measure to be effective the fee being avoided must be larger than the sum of the financial resources invested into developing the substitution action plan and the modest fee charged to those that submit the substitution action plan. If the fee being avoided is not large enough, and the cost of developing a substitution action plan is large, then companies will not submit a substitution action plan, and will instead pay the fee. Similarly, for the modest fee to be effective in increasing substitution efforts it must be lower than the fee imposed on companies that do not submit a plan and high enough to incentivise substitution. This modest fee is likely to only be effective in increasing substitution efforts amongst companies for whom substitution is easy and inexpensive since the modest fee is unlikely to be of an equal cost to substitution itself.

The other way in which the fee can be avoided is through substitution. The industry survey found that 38% of respondents would avoid the fee through other actions such as transitioning to alternatives or relocating production (VITO, 2023b)²⁶. As discussed in Policy Measure 5, fees have been shown to create a strong incentive in driving substitution efforts. However, these economic instruments can also lead to undesirable

consequences such as 'leakage'. The ratio between the survey respondents that would transition to an alternative as opposed to relocate production is not known, but the survey nonetheless suggests that this policy measure would drive more than a third of companies to reduce the use SVHCs, either through substitution or relocation.

The industry survey found that this policy measure would increase spending on substitution efforts by approximately €18,300 per company over the first 5 years, which amounts to approximately €3,660 per year (VITO, 2023b)²⁶. This spend is less than the €15,000 fee cap per year for companies in the lowest tonnage band, which suggests that increased spending on substitution efforts could be driven by the cost-effectiveness of increasing substitution efforts (i.e., either through the timely submission of a plan or through a reduction in the use volume of a substance) rather than pay the fee. The fee being charged is high enough that avoiding it either through the submission of a plan or through a reduction in volumes is cost-effective for companies.

Companies will typically behave according to the most cost-efficient option and the most cost-efficient option under this policy measure is the submission of an inadequately developed substitution action plan to reduce the fee. This could hinder substitution efforts as companies could develop plans that do not provide viable alternatives or implementable solutions. The incentive to reduce the fee could create a perverse incentive and increase the risk of companies treating the development of a substitution action plan as a 'tick-box' exercise. This risk is somewhat mitigated by the provision of a template which therefore provides a minimum requirement of the information reported, but it does not include a provision on the accuracy of that information. The provision of guidelines also somewhat mitigates the risk of low quality of information reported.

As discussed in Policy Measure 5, applying a fee on the use volume of a substance could lead to 'regrettable substitution' as companies seek to avoid the fees at the lowest cost, which can often lead to the use of substances with similar chemical and hazardous properties to the substance being substituted. See Section 4.5.5 for further details on this risk.

The industry survey also found that 25% of respondents would not submit a substitution action plan but would pay the fee (VITO, 2023b)²⁶. This could be (1) due to a lack of available alternatives which makes the development of a substitution action plan futile, or (2) a protest response against further regulations. This type of response could hinder substitution efforts across Belgium, although it would provide continued revenue to the authorities.

Substitution success rate

Similar to Policy Measure 5, this policy measure is likely to increase the success rate of substitution by giving companies a financial stake in the success of their substitution. Rather than paying a fee to continue to use a substance, companies with a viable alternative will be nudged towards substitution to avoid the fee for the continued use of a substance and the modest fee applied for timely submission of a substitution action plan. The use of fees and taxes in policies and regulations have led to significant reductions in the use of toxic chemicals, including a 60% reduction of pesticides in Denmark (Oosterhuis, 2006), a 96% reduction of

²⁶ Spend based on 3 respondents to the relevant question in the industry survey (n = 3).

TCE and PERC, 91% of formaldehyde and 94% of cadmium and cadmium compounds under the TURA programme (Tickner et al., 2015; TURI, 2013). According to the industry survey, this policy measure could, in a best-case scenario, reduce the volume of CL substances used by 40%²⁷ in the first 5 years and 48%²⁸ in the succeeding 6 to 10 years (VITO, 2023b). Although these reductions in volume are not as significant as those achieved by other policies, they nonetheless demonstrate a notable reduction.

Companies may choose to substitute because (1) they assume further regulations (e.g., restrictions, bans, etc.) will force them to substitute eventually anyway, (2) they had been planning to substitute but needed a financial incentive to do so, or (3) the ongoing costs of complying with the reporting requirements over time may add up to the upfront costs of substituting a substance if the substitution is easy. As noted above, the industry survey found that 38% of respondents would avoid the fee through other actions such as transitioning to alternatives or relocating production (VITO, 2023b)²⁶.

The rate of successful substitutions might be dampened under this policy measure by the submission of 'tick-box' substitution action plans which relieves companies from paying the higher fee, whilst also not encouraging substitution. This could therefore weaken the rate of successful substitutions comparatively to Policy Measure 5, in which companies could not avoid the fee unless a substance is substituted.

Improving future regulations

This policy measure could improve future regulations, comparatively to the status quo, by providing the authorities with valuable information provided in substitution action plans. However, this policy measure could be less effective in improving future regulations than Policy Measure 5 if the modest fee is not low enough to incentivise companies to submit a substitution action plan to avoid the larger fee. The Authorities would then receive fewer substitution action plans and would therefore fail to benefit from the information provided by these companies in developing future regulations. It is nonetheless expected that the fee reduction will incentivise most companies to submit substitution action plans.

As has been discussed in Policy Measure 5, the potential earmarking of funds for substitution-focussed programmes has not been considered in the scoring of this assessment criteria as there is uncertainty on the feasibility of such earmarking.

4.4.7 Policy Measure 7 – Awareness creation and facilitation of networking

Substitution efforts

As already described, this measure envisages a helpdesk which can provide advice and assistance on substitution issues to firms, an online information hub, a series of events for companies and other relevant stakeholders to discuss substitution issues and make contacts, as well as associated publicity, information pamphlets and so on. Participation in the proposed substitution network would be voluntary, so the measure would not provide any increased incentive to substitute compared with what already exists, or with some other measures considered in this study. Therefore, its effectiveness in increasing substitution rests on being able to help companies who want to substitute but face barriers and significant knowledge gaps about the substitution process, or by informing companies who are unaware how substitution might

²⁷ Share based on 3 respondents to the relevant question in the industry survey (n = 3).

²⁸ Share based on 2 respondents to the relevant question in the industry survey (n = 2).

be beneficial for them.

A reasonable assumption is that DUs of SVHCs who are unaware of the potential value of substitution – including the benefit of avoiding the need to obtain authorisation to continue using a SVHC once it has been listed in Annex XIV – are most likely to be SMEs. SMEs are more likely to lack the human and financial resources to ensure that they are fully informed on the longer-run strategic interests of their business. This could particularly be the case in ‘traditional’ industries where technological change is slow or non-existent and companies use a SVHC ‘because they always have’. Plating with chromium trioxide might be an example of such a sector, populated by a large number of small companies essentially using the same processes and techniques, often specialised in terms of their local market, or a niche application, or offering high quality, bespoke plating ‘by hand’ – companies such as these might not even be aware that chromium trioxide is a SVHC, despite having been on the CL since 2010 and subject to authorisation since 2017. However, large companies might also be unaware of their SVHC use, perhaps because they are so large that bureaucracy hinders information flow into and within the company. Although not SVHC-related, the 2023 public consultation on the proposed restriction of perfluoroalkyl and polyfluoroalkyl substances (PFASs) has demonstrated how many companies have needed to undertake in-depth audits of their own business to identify just how many of their uses include PFASs, with some finding potentially thousands.

The value of new (to the receiver) information on substitution will depend on the level of engagement in the network of companies with substitution experience. This includes both suppliers of potential alternatives as well as previous users of SVHCs who have already substituted. The involvement of this latter group in particular is difficult to incentivise, however, because they are likely to see their substitution as a source of competitive advantage which they do not wish to share. Even potential suppliers might have limited incentive if the alternative does not currently exist and would take significant investment to develop. However, without the engagement of these two groups, the network could end up being, at best, a way of directing companies to general and standard information which might be of assistance when they think about substitution, but which a company might be expected to find themselves if they are motivated enough. At worst, it might be little more than a forum for companies to discuss between themselves just how difficult substitution actually is, without being able to offer ideas or information to find solutions to those problems.

As already explained, one of the difficulties faced by a substitution network would be reaching companies who are unaware of the future need and value of substituting SVHCs. If they are unaware of that, they are likely to be unaware of any network too. However, companies who are aware of the need and value of substituting are also less likely to need an information network for help (although this does not mean that such a network could not be useful for them in increasing the probability of substitution success (see next section). Thus, to increase the substitution effort, a network might need to find a way of identifying those companies who do not currently spend much effort on substitution. One potential way would be to work through suppliers of SVHCs to advertise to their customers the (future) need to substitute SVHCs and the existence of the network. SVHC suppliers are fewer in number and more easily identified (e.g., through manufacturers, importers, and distributors).

Of course, being able to inform SVHC users of the existence of a substitution network does not guarantee they will become a member or access its services. Thus, authorities and other motivated parties should

endeavour to make membership appear as relevant and beneficial as possible. This might involve focussing on the cost-saving aspects of substitution and good use practices. If the primary audience for this aspect of the substitution network is smaller companies in more traditional sectors, this could limit the increase in substitution activity which the policy could generate, simply because smaller companies themselves are limited in terms of how much they can afford to do. Nevertheless, if substitution is relatively simple and cheap, impacts could be large.

Where alternatives are not readily available or require adaptation, the overall increase in substitution activity could be significant if a large number of companies can be contacted and influenced. This could be sufficient to signal an increased demand for alternatives and encourage further technological progress to develop them. In the shorter term, reductions in SVHC use through improved practices could be expected.

However, one of the limitations of this policy measure in driving substitution efforts is that if, by engaging with the network, companies advertise the fact that they are SVHC users and this information is made public (by whichever means), this could lead to negative advertising and public pressure to increase substitution activity. This effect could be limited to uses of SVHCs which are higher volume or more consumer relevant. However, companies might regard such pressure as negative, and even the perception that it could occur might lead some companies not to engage with the network. This will partly depend on how the events are established and communicated. Nonetheless, this risk to companies could mean that they do not take part in this voluntary measure and therefore do not increase substitution efforts through the implementation of this measure. Finally, it should be noted that companies can be expected to spend a level of resources on substitution, which reflects their expectation of the potential benefits they might receive from it. One aspect of this calculation is the probability that substitution activity will be successful. If the success rate can be increased, one can expect companies to increase their activity until successful substitution is achieved. This is considered in the next section.

Substitution success rate

It was previously suggested that companies who are informed about the need and potential benefits are already likely to be spending a level of resources (personnel and financial) on substitution which reflects their assessment of the expected benefits to their business. Increasing the substitution success rate should lead to both an increase in actual substitution as well as an increase in substitution effort.

Apart from a lack of resources, companies might find difficulty substituting for a number of reasons (as described in Section 3.4.1), including:

- 1) No alternatives might be available for the company's particular technology/process;
- 2) Alternatives might not provide adequate levels of performance;
- 3) The alternative technology is too costly for them to be able to afford or finance.

Regarding 1), many companies use SVHCs in highly specialised technologies which they have developed themselves over a period of time. They are the experts in this technology, and in many respects, finding alternatives is down to their own knowledge and R&D. Many will already have links with, for instance, the academic community or other relevant scientists, because of the process they followed in developing their original technology in the first place. It might therefore be argued that the sort of substitution network

envisaged in this proposal is likely to be too general to be of use to a company in this position. Nevertheless, additional access to experts and academics in other organisation might still provide useful input which would not otherwise be obtained.

In addition, the information exchange between companies (as well as other organisations) is constrained by rules covering anti-trust activities and may be limited to the sharing of non-confidential information, at least within the more immediate confines of the network. Most exchange is therefore likely to relate to more general information, which might reduce its usefulness. To mitigate the risk of negative public pressure, network members might insist on network activities and information being retained within the network and not disseminated more widely, further reducing its potential value. These limitations to the knowledge network reduce the likelihood that companies with no known alternative will be able to successfully substitute based on the information gained from the network.

It might be expected that information exchange will be most valuable in cases of substitution which are more difficult – if substitution is relatively easy, information would presumably be more readily available. This might mean the impact of the network will be relatively low in the beginning because it takes time for problems to be solved, and the substitution process itself is more complex. However, it presumably would also make it harder for the network to have a significant effect on substitution, since the substitution problem is unlikely to be one of information access alone.

In other cases, use of existing technology might be fairly widespread, but alternatives are not readily available or do not perform to a sufficient standard to be acceptable to the market (e.g., 2) in the list above. In usual cases, this will simply lead to technology suppliers working with DUs to find improvements and solutions over time. This is a natural part of the competitive process, with companies vying for improved quality, leading to larger market share and higher profits.

A difficulty comes with substances and associated processes for which there is no or only limited incentive to substitute, at least in the shorter term. As described elsewhere, identifying a substance as a SVHC by placing it on the CL only signals that it is expected to be subject to authorisation at some point in the future, but provides no direct incentive to substitute as such. Thus, substitution will only occur to avoid these future costs (which might be considered a distant issue), or because the alternative is actually better or cheaper than the SVHC. However, where technologies are well established and technical change is slow (or even non-existent), the challenge might simply be to find an alternative which works as well as the incumbent, rather than actually better. And if changing to the alternative requires changing the process, and hence capital investment and so on, there might be very little incentive to substitute at all.

This could be said to be the case with chrome-plating in the sanitary sector, where processes using Cr3 (and other substances) are available, However, despite being subject to authorisation for several years, adoption of these alternatives has been slow, because they have been found to result in products considered insufficiently durable for professional or high-end customers. However, without more widespread adoption, the technology will not get the chance to be developed and improved *in situ* and might never achieve an acceptable standard. This might be especially the case given that most chrome-platers are SMEs who do not have the resources to set up separate production lines for testing new coating technologies. (It is, of course, possible that some alternatives might be fundamentally limited with weaknesses which can

never be overcome.)

Although the substitution network being discussed here would not apply to Cr6 (as it assumed only non-Annex XIV SVHCs would be covered), this case might illustrate how the network might help in similar situations. A forum in which companies – both DUs and suppliers – can discuss problems and ways in which testing capacity and activity can be increased through coordination and burden-sharing would serve to signal at a sector or industry level the (potential) demand for alternatives.

Finally (and related to the last point), a substitution network might be able to advertise opportunities for grants and other funding to assist companies who have limited resources to finance it themselves. It might also serve to highlight the need for additional support or for different types of support. This is most likely to benefit SMEs in more traditional industries with mature technologies. These companies are also more likely to be limited in the amount of time and resources they can spend on gathering information on substitution (and might even be unaware of the drive to do so). In these cases, a network might be reasonably effective in simply connecting under-resourced SMEs with information about alternative, cost-effective technologies, which could lead to an increase in substitution.

Improving future regulations

A substitution network (and associated activities) would enable future regulations to be improved by providing authorities with a close-up understanding from companies of the issues and barriers they face to successful substitution. This feedback could lead directly to new policy proposals to address identified problems. They could also influence how future proposals are framed and constructed, in terms of factors such as information provision and technological coordination. The extent that the policy is able to do this is, of course, dependent on the level of stakeholder engagement and the quality of information it can generate.

4.4.8 Policy Measure 8 – Development of methodology and structure to support the sustainability-focused analysis of alternatives

Substitution efforts

This policy measure creates a permanent structure to support the sustainable substitution of SVHCs, providing DUs of SVHCs with guidance, sector specific adaptations to the methodology, and training. There is no obligation for companies to make use of these resources.

Substitution efforts may increase for this policy measure compared to the status quo, where companies are not provided with support and resources to sustainably substitute SVHCs. However, the increase in substitution efforts associated with this policy measure is likely to be significantly less than for Policy Measures 1 to 6, which include some degree of incentives for substitution such as mandatory reporting. This policy measure is instead likely to increase the amount of effort dedicated to substitution amongst a smaller number of companies. Namely, some companies are likely to invest a higher share of resources to substitution than without the policy measure. The type of company that is likely to voluntarily use the resources provided by this policy measure is already likely to be committed to substitute their SVHCs with more sustainable alternatives, which means that there is a self-selection bias as the companies that choose to partake are committed and willing to dedicate significant resources to the substitution process. This

would likely be very few companies and typically exclude most SMEs. The uptake of this measure is therefore expected to be low.

This policy measure could increase substitution efforts because companies want to remain competitive and this drives them to (1) seek information available in this policy measure to ensure that they do not have information gaps compared to their competitors and (2) substitute to a substance that provides them with a technological or reputational competitive advantage.

The resources provided by this policy measure provide companies with a bank of information. For example, guidelines for the anticipated implementation of the European assessment framework for 'safe and sustainable by design' (SSbD) chemicals and materials framework provides companies with useful information about a framework that will be increasingly adopted by European companies. One of the drawbacks of the SSbD is that it is time consuming to increase the necessary knowledge, skills, and collaboration in the value chain to implement the framework (Ministry of Infrastructure and Water Management of the Netherlands, 2022). The guidelines provided through this policy measure reduces this burden by providing companies with information that is applicable to their sector and substances (i.e., SVHCs). Keeping abreast of new policies, frameworks, and other developments in industry is critical for a company to remain competitive. The desire to remain informed could therefore drive companies to partake in the voluntary programme, thereby driving substitution efforts.

In addition to remaining informed, companies would be driven to substitute SVHCs if it provides them with a technological or reputational advantage against competitors and increases their market value. The policy measure provides resources that could help companies uncover the application of sustainable substances in their sector, providing them with a competitive advantage as a leader in their sector. A study on the comparative market value of companies based on their behaviour found that innovative activity, measured in terms of R&D expenditure or patents, has a strong positive association with market value (i.e., market leading companies), whereas the innovative efforts of laggard companies were valued significantly less (Coad, 2011).

Moreover, sustainable substitutes can improve a company's reputation and therefore their market value as industrial buyers and consumers focus on safe and sustainable products. A study that demonstrated the effectiveness of the EPA's voluntary pollution prevention program argued that a strong incentive for program participation came from the benefits that would accrue from public recognition (Khanna & Damon, 1999).

However, market forces may limit competitive advantage for safer products where customers have limited visibility of a products existence or the substances contained in a product (Thorpe & Rossi, 2007). For example, consumers are unlikely to be aware of the use of phenol, dodecyl, which is an SVHC, in engine oils. Therefore, consumers are likely to continue purchasing engine oil containing this SVHC and the engine oil formulators are not incentivised to substitute through consumer pressure. This would limit the potential reputational benefits of substituting to a sustainable alternative.

Substitution success rate

This policy measure may increase the substitution success rate across the companies that voluntarily use

the available resources but is less likely to increase the substitution success rate across all companies using SVHCs, since the majority of companies will not use the resources provided through this policy measure. It increases the amount SVHCs substituted due to a (1) a self-selection process where companies are more committed to substitution and (2) a reduction in the methodological barriers associated with substitution.

However, even among the companies that volunteer to use the resources provided by this policy measure, increases in the substitution success rate may be limited as it is challenging to identify and implement a sustainable alternative than identifying and implementing any (including non-sustainable) alternatives. This measure is more likely to increase the sustainability of substitution, rather than increasing the likelihood of the substitution success rate for all companies.

As the policy is voluntary, those that partake are more committed to finding and successfully implementing a substitute. This increases the likelihood of a successful substitution with sustainable alternatives amongst participating companies. The EPA's 33/50 program, which aimed to reduce the release of 17 priority substances by 33% by 1992 and 50% by 1995 compared to a 1988 baseline was also voluntary (EPA, 1999). The program provided technical assistance to help companies identify and adopt innovative pollution prevention approaches to reduce their environmental releases, rather than traditional end-of-the-pipe treatment and disposal methods for chemicals in waste (EPA, 1999). Thirty-four states met or exceeded the 33/50 Program's goal of a 50% reduction in releases of the targeted chemicals by 1995 (EPA, 1999). This suggests that the successful substitution of SVHCs for companies that do participate could significantly reduce the total volume of targeted SVHCs used in Belgium. However, the successful substitution of SVHCs from the implementation of this measure is tempered by (1) the fact that a minority of Belgian companies are likely to participate and (2) the type of non-financial support provided by this measure does not ensure that an alternative is identified.

On the first point, the companies partaking in the voluntary program offered by this policy measure are likely to be companies already seeking to substitute SVHCs, which is a minority of companies. This policy measure assists these 'willing' companies with information about sustainable substitution, increasing the sustainability of the process for a minority of Belgian companies already undertaking substitution. EPA devoted considerable outreach effort for the 33/50 Program, resulting in 13% of all eligible companies partaking in the program, representing 60% of the targeted chemical releases (EPA, 1999). The participation rate achieved in the EPA 33/50 Program is likely to be much higher than the participation rate that could be achieved by this policy measure. Therefore, this policy measure will increase the successful substitution towards sustainable alternatives but is unlikely to increase the successful substitution of SVHCs more broadly. In a worst-case scenario, one could even see a reduction in the substitution success rate.

On the second point, the type of information and support provided by this policy measure focuses on improving a company's understanding of the SSbD framework, which could effectively reduce methodological barriers to sustainable substitution. However, it is less effective in reducing the technical barriers associated with finding an alternative, given that the focus is on sustainable alternatives as opposed to alternatives more broadly. The EPA 33/50 Program provided more technical support with technical details of specific pollution reduction projects and techniques (Zatz & Harbour, 1999). It could therefore be assumed that the implementation of this policy measure is unlikely to achieve the level of successful substitution achieved by the EPA 33/50 Program.

Improving future regulations

This policy measure is not expected to improve future regulations as it is not designed to directly generate information for use by authorities, since there is no requirement for DUs to share their use of the framework with authorities.

This policy measure includes communication of the methodology through various channels, which suggests that the authorities would deliver resources, such as webinars, to inform companies about the framework. If the communication channels used by the authorities were bi-directional, through channels such as helpdesks, then this policy measure could provide the authorities with information on some of the challenges faced by companies in sustainable substitution, which could lead to the development of more targeted regulations which provide better support.

However, similar to the previous policy measures, the effectiveness of this policy is likely to be limited in the short run, as it will only provide information to the authorities over time to improve future regulations. Timeframes are influenced by the authorities need to (1) wait for information to be submitted, (2) develop targeted policy measures, and (3) implement the policy measures. This will take more time than increasing substitution efforts and the likelihood of successful substitution for companies directly. The voluntary nature of the policy measure and the focus on sustainable alternatives adds to the overall time before effects of the measures can be observed. Considering the average time for a proposed SVHC to be added to Annex XIV of 7 years (see Section 3.2.2), this measure may not contribute to shorten the substitution timeframe in Belgium.

4.4.9 Policy Measure 9 – Direct support of companies involved with a subsidy for advisory services (version 1)

Substitution efforts

The financial resources provided by Policy Measure 9 could increase substitution efforts by encouraging a greater number of companies to participate and use the resources available (i.e., an increase in quantity).

The financial resources provided by this policy measure could increase substitution efforts by increasing the number of companies participating in the voluntary measure. However, this measure is likely to increase the substitution efforts towards sustainable alternatives amongst companies that are already investing resources into substitution. This measure is unlikely to encourage new investment from companies that are not currently seeking to substitute. Although this policy measure subsidises 25% of service costs from a SSbD assessment, companies would need to invest the remaining 75% of the total cost, and if companies are currently not investing in substitution, they are unlikely to begin investing if they are required to cover such a large proportion of the costs. In addition, the subsidy for the service cost would be provided only to companies with unique uses that cannot be discussed in broader networks and high complexity cases. This limits the number of companies that have access to the subsidy, in addition to the limitation that this measure would nonetheless require companies to invest the majority of the associated service costs.

The risk associated with this policy measure is that it does not actually increase substitution efforts but rather subsidises companies already seeking to substitute. This does not result in an overall increase in

substitution efforts, but rather reduces the financial burden of the companies already researching substitution. The incremental increase in substitution efforts in Belgium will therefore likely be negligible.

Even if this policy measure provided subsidies to most companies as opposed to focussing on those companies with complex cases, the subsidy provided is unlikely to increase substitution efforts as companies would still need to invest a significant proportion of the costs associated with substitution. Therefore, the policy measure is not likely to increase the substitution of companies not already undertaking efforts to substitute, even if the subsidy was available to companies with non-complex cases.

Substitution success rate

This policy measure has the same benefits and limitations to increasing the success rate of substitution identified in Policy Measure 8. However, among companies already seeking to substitute, the subsidy for 25% of the service costs from a SSbD assessment from external advisors could reduce some of the methodological barriers associated with sustainable substitution. This external advice could improve the quality of the information collected in complex cases, increasing the likelihood of successfully substituting to a sustainable alternative.

The subsidy provided by this policy measure is directed to the service costs from a SSbD assessment for companies with unique or high complexity use. Ring-fencing the subsidy in this way reduces the risk of perverse incentives, such as companies accessing funds without a clear delineation of the way in which the funds are used. This measure gives direction to the way in which funds are used to improve the quality of the efforts being made and increases the likelihood of substitution being sustainable. According to one study, the successful implementation of the substitution principle²⁹ must ensure that financial instruments support the move to green chemistry and do not entrench production of hazardous chemicals with subsidies and tax breaks (Thorpe & Rossi, 2007). This policy measure is therefore expected to redirect substitution efforts to focus on sustainable alternatives rather than all potential alternatives.

Although the process of developing SSbD assessment with expert advisors could increase the likelihood of finding a sustainable alternative, this policy measure is likely to benefit companies already seeking to substitute, and it will increase the likelihood of these companies successfully substituting SVHCs with a sustainable alternative but is not likely to increase the overall level of substitution. This policy measure is unlikely to increase successful substitution amongst companies that are not seeking to substitute and amongst companies for which there are no viable alternatives. This is reiterated in the industry survey in which one respondent stated that although sustainability is increasingly important this does not change the fact that even an equivalent alternative cannot be found for certain substances.

The industry survey found that the implementation of this measure could lead to the substitution of 50% of the volumes currently used over the first 5 years of the measure, and a reduction of 63% over the subsequent 6 to 10 years (VITO, 2023b). Compared to Policy Measure 8 this is an increase of 2% in the first 5 years and an increase of 16% in the subsequent 6 to 10 years. This suggests that the subsidy provided by this policy measure could increase the level of successful substitution. However, it should be noted that these estimates are based on a limited number of responses to the survey and therefore should be

²⁹ The substitution principle aims to replace hazardous chemicals with less hazardous substitutes (Hansson et al., 2011)

interpreted with caution.

Improving future regulations

This policy measure is not expected to improve future regulations in line with Policy Measure 8 (see Section 4.4.8). The additional subsidy provided by this policy measure does not provide information which would improve future regulations.

4.4.10 Policy Measure 10 – Direct support of companies involved with a subsidy for advisory services (version 2)

Substitution efforts

The subsidies provided by Policy Measure 10 are, similar to Policy Measure 9, expected to increase substitution efforts towards sustainable alternatives amongst companies already seeking to substitute, but are not expected to increase substitution efforts amongst companies that are not already investing in substitution.

However, the higher subsidy could encourage some companies with additional financial resources to take advantage of the grant being provided by the authorities. In this policy measure the authorities will match the investment made by a company in an SSbD assessment of possible alternatives, which could encourage some companies not currently investing in substitution to capitalise on the attractive financial support provided by authorities. This will be a minority of companies and will likely be amongst companies that foresee a potential repayment through higher revenues from more sustainable products. It will therefore mostly benefit companies with products which are subject to greater public awareness and are “closer” to consumers.

Given that these subsidies are provided to companies with unique and highly complex uses, it may be difficult for companies to foresee how these substitution efforts towards a more sustainable substance will result in successfully finding an alternative. This could reduce the incentive for companies to invest in substitution activities, even if 50% of the SSbD assessment services are covered. As mentioned in Policy Measure 9, the subsidy also only covers the development of SSbD assessment and does not include the costs associated with testing and formulating an alternative for a specific application. These testing costs are likely to be substantial for a company that is not already interested in substitution and is therefore unlikely to encourage companies not currently investing in substitution to begin investing. Even if the subsidy provided by this policy measure was available to most companies, rather than only those companies with complex uses, the companies eligible for the subsidy are nonetheless likely to be those already investing in substitution. Increasing the number of companies to whom the subsidy is available could slightly increase substitution efforts but is unlikely to noticeably increase substitution efforts comparatively to a business as usual (i.e., status quo) scenario.

Substitution success rate

Similar to Policy Measures 8 and 9, this policy measure is unlikely to increase the substitution success rate of SVHCs in Belgium, but it could reduce the methodological barriers associated with sustainable substitution for the minority of companies already seeking to substitute.

The industry survey found that the implementation of this measure could lead to the same level of

substitution as a share of the volumes used to Policy Measure 9, which suggests that the additional subsidies do not increase the successful substitution of CL substances. However, as noted above, these estimates are based on a very limited number of responses to the survey and therefore should be interpreted with caution.

Improving future regulations

This policy measure is not expected to improve future regulations in line with Policy Measure 8 (see Section 4.4.8). The additional subsidy provided by this policy measure does not provide information which would improve future regulations.

4.4.11 *Summary of assessment of effectiveness*

Table 4.4 provides a summary of assessment of effectiveness of Policy Measures 1 to 10. The table outlines how each policy measure performs according to specific assessment criteria and explains the reasoning behind the given score. A more detailed comparison of the policy measures is included in Chapter 5.

Table 4.4: Summary assessment of effectiveness of Policy Measures 1-10

Policy measure	Assessment type	Assessment Criteria		
		Substitution effort	Substitution success rate	Improving future regulations
Policy Measure 1	Score	1 – Negligible effect	1 – Negligible effect	2 – Limited positive effect
	Justification	The mandatory use notification is likely to initially boost substitution efforts due to factors like internal pressure, access to new information, and the desire to avoid regulatory burdens, especially for SMEs. However, its effectiveness may diminish over time as companies become accustomed to reporting, reducing their incentive to pursue substitutions.	Policy Measure 1 is unlikely to significantly improve the success rate of SVHC substitution efforts because it does not address key barriers to substitution such as providing information on alternative substances or substitution strategies. While it may raise awareness about the need for substitution, its effectiveness in reducing barriers remains limited.	Policy Measure 1 is likely to provide information for prioritising SVHCs in DU regulations and benchmarking company performance. However, it falls short in generating critical data related to substance hazards, alternatives, exposure levels, and emissions, which are essential for developing effective regulations that encourage substitution.
Policy Measure 2	Score	2 – Limited positive effect	2 – Limited positive effect	3 – Some positive effects

Policy measure	Assessment type	Assessment Criteria		
		Substitution effort	Substitution success rate	Improving future regulations
	Justification	Private substitution efforts are likely to increase to some extent by requiring companies to develop a substitution action plan. However, its effectiveness may be limited due to unclear requirements and opposition from companies that use the substitution action plan as a 'tick-box' exercise.	The impact on the success rate of substitution efforts is likely to be mixed. The development of a substitution action plan could lead companies to uncover alternatives that could be successfully implemented. The administrative burden, although not large, could nudge companies with known alternatives to substitute. However, this measure does not reduce the technical barriers associated with finding a viable alternative, and it also does not mandate or incentivise the implementation of a substitute, which limits the level of successful substitution.	Future regulations are likely to improve based on the information provided to authorities through the use notification and substitution action plans. This will allow authorities to compare performance across sectors and substances and to develop a benchmark, which can allow for the development of more targeted regulations.
	Score	3 – Some positive effects	3 – Some positive effects	4 – Significant positive effects
Policy Measure 3	Justification	Substitution efforts are likely to increase based on the additional non-financial support provided to companies. The information provided to companies will allow them to devise better substitution action plans. This will be most effective for SMEs. However, it does not reduce the risk of companies submitting plans with the minimum information requirements.	Successful substitution is likely to increase based on the development of better substitution action plans that can be implemented. However, given that implementation is not mandated, companies still may choose to not substitute.	Future regulations will improve as the authorities act as a 'knowledge network-broker', giving them additional access to the opportunities and challenges faced by companies. This level of information will allow them to develop targeted regulations to further increase substitution.
	Score	3 – Some positive effects	3 – Some positive effects	4 – Significant positive effects

Socio-economic analysis of measures to promote substitution of SVHCs in Belgium

Policy measure	Assessment type	Assessment Criteria		
		Substitution effort	Substitution success rate	Improving future regulations
Policy Measure 4	Justification	Substitution efforts are likely to increase as companies are subsidised to develop substitution action plans, allowing them to invest greater resources into these plans. However, the subsidies do not reduce the risk that the substitution action plans submitted include the minimum information required.	Successful substitution is likely to increase as greater resources are dedicated to developing better substitution action plans which are therefore more likely to succeed. However, companies are not required to implement their plans, which means that companies may not take on the cost of substituting, which reduces the success rate as SVHCs continue to be used.	The quality of information authorities receive is likely to improve, as companies invest more resources into developing a substitution action plan. This could improve future regulations.
Policy Measure 5	Score	4 – Significant positive effects	3 – Some positive effects	4 – Significant positive effects
	Justification	Substitution efforts will increase as companies seek to avoid the fee on SVHCs by substituting, and therefore investing in finding an alternative.	Companies with known alternatives will be nudged to substitute. Companies without a known alternative will invest greater resources into finding an alternative which they will be encouraged to implement to avoid the fee.	Future regulations will improve as authorities use the information provided by companies to better design and target future policies.
	Score	3 – Some positive effects	3 – Some positive effects	4 – Significant positive effects

Policy measure	Assessment type	Assessment Criteria		
		Substitution effort	Substitution success rate	Improving future regulations
Policy Measure 6	Justification	Substitution efforts could increase as companies are encouraged to submit a substitution action plan or to find (and implement) a substitute to avoid the fee. There is a risk that companies submit a substitution action plan with the minimum information required and are still able to avoid the fee, which could dampen substitution efforts.	The volume of substitutes successfully implemented will increase as companies with alternatives seek to avoid being fined, and to avoid the administrative burden of submitting a substitution action plan. However, companies without known alternatives can continue using SVHCs and submitting a substitution action plan without being fined, which could decrease successful substitution.	Future regulations will improve as the authorities receive information on substitution through substitution action plans. It is assumed that the fee reduction will incentivise most companies to submit a substitution action plan.
	Score	2 – Limited positive effect	2 – Limited positive effect	2 – Limited positive effect
Policy Measure 7	Justification	Substitution efforts should increase, especially if the network is successful in engaging with companies who are less aware of the value and future need for substitution. However, the measure does not itself provide an increase in substitution resources or an incentive to increase them.	Substitution success could increase if the network enables companies to improve contacts with technical experts to solve substitution difficulties. It could also help to discuss coordinated efforts to improve the performance of alternatives. However, many companies are already engaged in such activities and the network would need to identify how it could add value to these.	The network should provide authorities with feedback on substitution problems encountered by firms, which should help them to improve existing measures and better design future ones.
	Score	1 – Negligible effect	1 – Negligible effect	2 – Limited positive effect

Policy measure	Assessment type	Assessment Criteria		
		Substitution effort	Substitution success rate	Improving future regulations
Policy Measure 8	Justification	Overall substitution efforts are unlikely to increase as this measure is voluntary. The measure could increase efforts to make substitution sustainable amongst companies already interested in substitution and those that want to gain a competitive advantage.	The overall success rate of substitution is unlikely to increase as the measure focuses on sustainable substitution, for which there are likely to be fewer alternatives. The low level of participation in the measure will also mean that the volume of SVHCs successfully substituted is unlikely to increase compared to the status quo (i.e., no measure). The overall low uptake means that the effects at the societal level will be negligible.	This policy measure is not expected to improve future regulations as it is not designed to directly generate information for use by authorities, since there is no requirement for DUs to share their use of the framework with authorities.
Policy Measure 9	Score	1 – Negligible effect	1 – Negligible effect	2 – Limited positive effect
	Justification	Overall substitution efforts are unlikely to increase, even with the subsidy. Companies that are not interested in substitution or are not already investing in substitution efforts are unlikely to increase substitution efforts with this subsidy on sustainable substitution.	Unlikely to make substitution any more successful than it would have been without this measure since companies partaking in this measure are those that would have substituted anyway. Even amongst the companies that would have substituted anyway, this measure is unlikely to increase the success of substitution to a sustainable alternative as these alternatives are likely more expensive and would require greater investment from the companies, even when accounting for the subsidy.	This policy measure is not expected to improve future regulations as it is not designed to directly generate information for use by authorities, since there is no requirement for DUs to share their use of the framework with authorities.
	Score	2 – Limited positive effect	1 – Negligible effect	3 – Some positive effects

Policy measure	Assessment type	Assessment Criteria		
		Substitution effort	Substitution success rate	Improving future regulations
Policy Measure 10	Justification	Overall substitution efforts are unlikely to increase for the same reasons detailed in Policy Measure 9. Some companies may be tempted to take advantage of the higher subsidy, and therefore there may be a slight increase in substitution efforts.	Unlikely to make substitution any more successful than it would have been without this measure for the same reasons detailed in Policy Measure 9.	This policy measure is not expected to improve future regulations as it is not designed to directly generate information for use by authorities, since there is no requirement for DUs to share their use of the framework with authorities.

4.5 Financial impacts

4.5.1 Policy Measure 1 - Mandatory notification of use

This section explores the financial impacts of the policy measure on the main potentially affected groups: authorities, companies, and consumers.

Financial impacts on authorities

The costs to authorities of this measure originate from three sources (VITO, 2023a):

- 1) the costs of developing templates and guidance for use notifications
- 2) the costs of developing and maintaining a portal for online use notifications
- 3) the costs of enforcing the use notification obligation

The costs are all undiscounted estimates. Operational costs are assumed to occur annually and capital costs occur once. The first ten years of costs are considered.

The following figures estimating these costs are based on the costs of similar platforms such as the Nanoregistry platform (FPS Public Health, 2023), the VMM platform (Flanders Environment Agency, 2023a) and the IMJV platform (Government of Flanders, 2023). The Nanoregistry platform, which is a platform for producers of nanomaterials to register themselves and the substances they produce, is expected to be most relevantly similar and its costs are quoted below. Nanoregistry handles 2,200 registrations across 210 companies (VITO, 2023a). Where costs are dependent on the number of companies in scope of the policy, actual costs of this measure are expected to be greater or smaller depending on how the number of companies compares to Nanoregistry.

There are several capital costs of the measure. The costs of developing templates and guidance for use notification is expected by the Belgian authorities to be undertaken by consultants, at a capital cost of between €50,000 and €100,000 (VITO, 2023a). The authorities also suggest that this will be associated with time taken to host roadshow meetings (by which is meant open meetings with affected actors) and undertake industry engagement to distribute templates and guidance, which would not be expected to continue throughout the policy lifetime. This is expected to cost an additional €50,000 in the first year of the policy (VITO, 2023a). This cost is likely to depend on the number of companies in scope of the policy and will increase if the number of companies is larger than expected. The capital costs of developing the IT infrastructure required to accommodate use notifications were estimated by VITO with input from the Belgian authorities to be in the region of €100,000 to €200,000. This totals between €300,000 and €400,000 of capital expenditure in the first year.

Concerns regarding enforcement of this measure are outlined in more detail in Section 4.7.1, which argues that it will be difficult to identify the affected companies and enforce their compliance. If these concerns are correct, the estimated cost of €50,000 to communicate the obligation to affected companies may be a significant underestimate and costs may extend well beyond the first year depending on the authorities' success in mitigating these concerns.

There are also several operational costs of the measure. It is estimated that annual consultant IT maintenance would be required at a cost of around €40,000 annually, and there would be staff costs

associated with the running of the portal. There would need to be staff members for the duration of the policy, dedicated to assisting with IT maintenance (VITO, 2023a). Enforcement of the use notification obligation will also create the need for follow ups with registrants, and completeness checks of registrations. This is estimated to require between 0.5 and 1.5 FTE staff members for this purpose, at an estimated cost of between €50,000 and €150,000 annually (VITO, 2023a). These costs are likely to be dependent on the number of companies that are in scope of this measure and will increase if the number of companies is larger than expected. This totals around €100,000 to €200,000 annually.

Over 10 years, and without discounting, capital and operational expenditure amounts to a total financial commitment of between €1.3 million and €2.4 million. The actual costs for Policy Measure 1 will vary depending on whether the actual number of companies and notifications is higher or lower than those handled by Nanoregistry, and the level of scrutiny applied to submitted use notifications to check their sufficiency.

The number of companies using SVHCs in Belgium could be much larger than this figure of 210 companies under Nanoregistry. See Section 3.2.3 for a summary of available information on the size of the Belgian market. This illustration suggests that the €1.3 million to €2.4 million range found above may be considered a lower bound of the financial cost to authorities, particularly if the obligation is applied to all SVHCs and if enforcement is considerable.

It is likely that the costs are more than €1 million over 10 years, but less than €10 million, in undiscounted terms. The lower bound of this estimate is particularly likely if the number of companies in scope or the barriers to enforcement and compliance are relatively lower. The order of magnitude of costs could be closer to the higher end of this range if the number of companies is large and if detailed scrutiny is needed for the notifications of use. It is considered unlikely that the total cost is outside of this range, given the information provided by the authorities for similar policies.

Financial impacts on companies

The main costs of compliance for companies under this measure are as follows:

- 1) collection of information for use notification. This would include an inventory of CL substance if a company does not already have one. Information collection would need to incur annually where there are updates.
- 2) the development of the dossier required to submit this information. The cost of this would be incurred annually.

These costs to companies will vary depending on the size of the company.

The three companies that provided cost estimates in their survey response reported that the costs of initial use notification, subsequent updates of use notification, and an inventory list of substances would all be less than €10,000 in capital expenditure, and less than €10,000 annually in operational expenditure (VITO, 2023b), the lowest available non-zero option. This is, however, a very small sample size and only one of the respondents was an SME. Wider qualitative information from the industry survey suggested that the measure would be seen as burdensome. Six of eight responding companies noted administrative burden or lack of staff resources as concerns related to the measure, and four companies stated that it would be both burdensome and negatively impact operations (VITO, 2023b).

Other evidence which can be drawn up on includes the average annual cost of registration under REACH. REACH registration also requires notification of information about substances but applies to substance suppliers rather than DUs. It should be noted that the information requirements under Policy Measure 1 are much lower than for REACH registrations. The notifications only require information about uses, volumes and markets, whilst a REACH registration includes elements such as chemical safety reports and other scientific information that demand more significant resources to gather. Policy Measure 1 requires information about the company's current use of the SVHC and the markets that they operate in, which is unlikely to induce new research.

An ECHA report on the impacts of the REACH registration deadline found that the average cost per substance registration was €43,699 for companies with production tonnages of 1-10, and €100,929 for those producing 10-100 tonnes (European Commission & wood., 2021), while the average cost across all registrations is estimated by the European Commission to be €54,000. (Compliance and Sustainability Ltd, 2023). When making updates to registrations after the initial cost, companies most frequently incurred costs in the range of €1,000 and €10,000 (European Commission & wood., 2021). Demonstrating the difficulty of comparison, Cefic reports that the cost of registration ranges between €50,000 and €2,000,000 per substance (cefic, 2019), reflecting the complexity and variation of information requirements under REACH registration. Compliance and Sustainability Ltd, a consultancy supporting REACH compliance, estimated the cost of information requirements alone was within a similar wide range of <€10,000 and €2 million, largely dependent on the tonnage band. This variation is unlikely to be replicated by Policy Measure 1, as it does not vary information requirements by tonnage band.

These reported costs can be considered an upper limit to the likely costs of compliance for DUs, as the information requirements are very different. Furthermore, REACH registration mainly affects large companies. ECHA statistics show that over 80% of companies with substance registrations in Belgium are large companies, with less than 5% being micro companies (ECHA, 2023a). Thus, a typical company in Belgium preparing dossiers for compliance with REACH will likely have revenue of at least tens of millions of euros³⁰.

Given this pattern and the cost magnitudes presented above, it is unsurprising that research on the aggregate impacts of REACH finds that its introduction is unlikely to have negatively impacted competitiveness of EU chemical industry or the overall size of the chemicals industry (German Environment Agency, 2021). This result, that the financial impacts to affected businesses of the registration component of REACH are not large enough to be substantially disruptive (German Environment Agency, 2021), may depend on REACH registration's minimal effects towards small or micro businesses that are typically not covered by legislation focusing on manufacturers and importers of substances. Imposing a comparable requirement on DUs, a sector likely have higher proportions of smaller businesses (see Section 3.2.3) could have very different results.

None of the evidence quoted thus far is likely to represent the costs facing smaller DUs from this policy. In Belgium 98.9% of companies in Belgium are small or micro companies with fewer than 50 employees, and it is expected that DUs in the manufacturing sector are more similar to this aggregate pattern than they are

³⁰ Note that the base wages alone for 250 employees at the Belgian average annual salary, the cutoff for large company classification, would total over €12 million. See Eurostat for source of wages
https://ec.europa.eu/eurostat/databrowser/view/NAMA_10_FTE_custom_4232263/default/table?lang=en

to the European chemical suppliers (European Commission, 2019).

Thus, it is likely that this measure could present financial difficulties for some smaller companies if they are not offered sufficient guidance and support. Challenges to the practicality of the measure on this basis are explored further in Section 4.7.1.

Increasing the stringency of information requirements, such as by adding measurements of substance emissions as a reporting criterion, will add to the cost to companies of complying with the measure. Companies will have to carry out monitoring, which is typically a costly activity, and will be especially challenging for SMEs. In the industry survey, only one of seven responding companies was able to provide estimates of any production, waste, or use emissions, suggesting that in most cases this criterion would require implementation of new monitoring.

Overall, the costs of compliance with this measure are likely to be manageable for most larger companies. However, the financial costs could be potentially significant for smaller companies, particularly those with low knowledge of chemical regulation. This is not just because similar costs present a larger portion of revenues, but there are additional costs likely to be faced by smaller companies with less sophisticated information management and compliance systems.

Financial impacts on consumers

Customers are not expected to be directly impacted by the policy measure. As outlined in Section 4.3 the main impacts on consumers would derive from companies increasing prices to cover some of the costs. The extent that cost transfers will occur will depend on the specific markets. For example, if there is competition from non-Belgian companies (who do not incur use notification costs), Belgian companies would not be able to increase their prices without losing market share.

Moreover, substitution resulting from the measure may impact product quality. This may have financial implications if consumers need to switch to higher cost options or require more frequent purchases due to reduced durability. However, it is believed that such reduction in product quality would be minimal, as companies will not substitute if the alternatives are inferior (again, competition from non-Belgian companies may be prohibitive, even for small changes in quality).

4.5.2 Policy Measure 2 – Substitution action plan

This section explores the financial impacts of the policy measure on the main potentially affected groups: authorities, companies, and consumers.

Financial impacts on authorities

The costs of the use notification element of this policy are covered in Section 4.5.1. The additional costs of Policy Measure 2 compared to Policy Measure for authorities are:

- 1) Costs of developing templates and guidance for the substitution action plan
- 2) Increased costs of implementing and managing a more complex reporting system (online portal) to cope with the submissions of substitution action plans as well as the notifications of use.
- 3) Monitoring and enforcement, in particular evaluation of substitution action plans.

The costs are all undiscounted estimates. Operational costs are assumed to occur annually and capital costs occur once. The first ten years of costs are considered.

The capital costs associated with developing the substitution action plan template have been estimated through interviews with Belgian authorities at around €150,000. This is based upon typical consultant costs in Belgium (€436 per day) and estimations of the days required to fulfil this project (VITO, 2023a). The costs may vary depending on the level of detail the substitution action plan contains, the extent of any consultation with DUs on the template, and the extent of guidance involved. However, it is unlikely that the development of a template becomes a significantly greater cost than this. Ensuring that the guidance is easy to understand and developing a simple template that is tractable with DUs could reduce the costs and need for enforcement or support to complying companies by minimising divergence from the requested information and format.

The costs of the second element are less certain and should be related to the analysis of Policy Measure 1 in Section 4.5.1. Since mandatory use notification and substitution action plans are implemented together, there are likely to be efficiency gains from sharing the same portal, approach to enforcement and in-scope companies compared to using separate systems. The additional costs associated with implementation and running of the system is therefore expected to be limited.

However, the costs of monitoring and enforcing the substitution action plans could be larger than enforcing the use notification.

Firstly, the information required to put together a substitution action plan is greater than a use notification. As such, there is more expertise needed for authorities to scrutinise the plans as compared to the use notifications. It is also more likely that companies will submit incomplete information (or not submit at all), which will put further pressure on the authorities. The financial impacts of ensuring compliance could be a major portion of the costs for authorities, as discussed in Section 4.5.1, and the compliance challenges could be major, as discussed in Section 4.7.2. This cost will also depend on the number of DUs of SVHCs in Belgium. See Section 3.2.3 for a summary of available information on the size of the Belgian market.

Secondly, the difficulties faced by companies to understand what is required for a substitution action plan is likely to be larger than for use notifications (See Section 4.7.2 for further discussion on intelligibility). This may also increase the costs required for communicating the obligation to the market.

Overall, the financial impacts on authorities are likely to be similar to Policy Measure 1, with a risk that costs are higher if the market size is large, if substantial resources are committed to scrutinising the plans and if companies face significant challenges in understanding the obligation.

Financial impacts on companies

The additional cost facing companies from introduction of this measure is the production of a substitution action plan for phasing out their use of SVHCs. This would include notification of intentions to phase out the substance, details of current and past substitution activities, and an associated timeline. It may also require justification if substitution is not deemed feasible. The justification may potentially include an analysis of alternatives, which can be a significant undertaking.

In response to the industry survey, three companies were able to provide cost estimates for developing a

substitution action plan (VITO, 2023b). All three stated that operational expenditure would be less than €10,000 annually, while for capital expenditure two stated expenditure would be less than €10,000 and one estimated costs of €10,000 to €50,000. None said there would be no additional costs. This is a very small sample size and only one of the three responding companies was an SME.

Wider qualitative information from the industry survey suggested that the measure could be seen as burdensome. Concerns on the measure raised included administrative burden, limited knowledge, and lack of staff resources, with all six respondents stating they had concerns about the measure (VITO, 2023b). Four of seven respondents stated that the substitution action plan requirement will be burdensome and negatively impact their operations (VITO, 2023b).

Even though this data is not expected to be representative for the overall market, it may illustrate potential costs and challenges for DUs. It should be highlighted that the costs will largely depend on the level of detail required to comply with the substitution action plan obligation. The more stringent criteria the greater the financial impacts on companies will be. Conversely, more stringent criteria may increase the effectiveness of the measure, explored more in Section 4.4.2.

In a case where the substitution action plan must contain detailed justification for inaction, there are some similar requirements under the REACH authorisation process. In application for authorisations under REACH, companies applying for an authorisation must produce an analysis of alternatives and are required to develop a substitution action plan if an alternative exist for the uses applied for. The requirements on this are detailed and laid out in extensive ECHA guidance (ECHA, 2021), which includes a detailed analysis of alternatives (AoA), including the availability and feasibility of alternatives across all uses covered by the application.

Breakdowns of authorisation application costs, including the costs associated with AoAs, were not found. One analysis suggested an average total cost to applicants of €230,000 per authorisation application, including fees. (Nikos Maroulis; Pierre de Kettenis; Kastalie Bougas; Julien Ravet; Alasdair Reid; Julia Rzepecka, 2016; UK chemicals stakeholder forum, 2015). There are, however, other resource intensive elements of a REACH authorisation application included in this cost, particularly the chemical safety report. The costs of a substitution action plan under Policy Measure 2 is expected to be significantly lower than the cost of an application for authorisation under REACH.

The envisaged reporting standard for the substitution action plan is significantly less stringent than those currently in place for an authorisation application, particularly for the justification element of the substitution action plan, and thereby it is significantly less costly. If the standards, particularly for justification of action or inaction, are set very low or not strictly specified, compliance with the measure could be trivial for some or most companies, requiring them to state their intentions and reasons without the need to validate those claims with substantial evidence. This would significantly reduce the financial impacts of the measure, albeit with reduced effectiveness. This is explored in more detail in Section 4.4.2.

Overall, the standards set for the justification element of a compliant substitution action plan is the crucial decision for the implementing authorities that determines the policy's main financial impacts on companies. The final impact could range from limited if standards are minimal, to substantial if standards are more similar to ECHA guidance for authorisation, which requires thorough evidence on the options for substitution and their implications. The true financial impact is subject to final policy design but is expected

to be relatively small.

The burden for any given standard will differ significantly by company size. The reasons to think smaller companies may face larger challenges set out in Section 4.5.1 also apply here. For larger companies, costs of the expected magnitude may represent a small portion of annual revenue and will rarely cause a significant burden that significantly disrupts operations, while for smaller companies they could represent a substantial portion of, or even exceed, annual profit.

Financial impacts on consumers

Customers are not expected to be directly impacted by the policy measure. As outlined in Section 4.3.2, the main impacts on consumers would derive from companies increasing prices to cover some of the costs. The extent that cost transfers will occur will depend on the specific markets. For example, if there is competition from non-Belgian companies (who do not incur use notification or substitution action plan costs), Belgian companies would not be able to increase their prices without losing market shares.

Where substitution does occur as a result of the measure, impacts on product quality may occur. This may have financial implications if consumers need to switch to higher cost options or require more frequent purchases due to reduced durability. However, it is believed that such reduction in product quality would be minimal, as companies will not substitute if the alternatives are inferior (again, competition from non-Belgian companies may be prohibitive, even for small changes in quality).

4.5.3 Policy Measure 3 – Non-financial support for the use notification and/or the substitution action plan

This section explores the financial impacts of the policy measure on the main potentially affected groups: authorities, companies, and consumers.

Financial impacts on authorities

The costs of the use notification and substitution action plan elements of this policy are covered in Section 4.5.1 and 4.6.2. The additional costs of Policy Measure 3 compared to Policy Measure 2 for authorities are:

- 1) The costs of providing a help desk and training sessions
- 2) The costs of providing other non-financial resources. This mainly includes development of more detailed templates, frameworks, and guidance for completing the use notifications and substitution action plans.

The costs are all undiscounted estimates. Operational costs are assumed to occur annually and capital costs occur once. The first ten years of costs are considered.

The costs of the first element have been estimated through interviews with Belgian authorities at around €100,000 initially to establish the necessary IT infrastructure, and €200,000 annually thereafter. Over the course of 10 years this amounts to €3.0 million without discounting. These costs were based on help desks for similar notification platforms such as Nanoregistry and IMJV. The costs of this element will heavily depend on the number of companies using the platform, as underlying these costs is the assumption that between 1 and 2.5 FTE staff members are dedicated to first line support. If more companies demand support than expected, this may be insufficient, and the number of employees needed to service the help desk and training is likely to proportionally increase. As discussed above, the Nanoregistry platform services

only 210 companies (FPS Public Health, 2023), and the true number of companies in scope of Policy Measure 3 could be significantly larger than this. Thus, this estimate of €3.0 million may be a significant underestimate.

The costs of the second element, producing additional templates and guidance, were not analysed by the Belgian authorities but should be related to elements of the costs of Policy Measures 1 and 2 in Section 4.5.1 and 4.5.2. Both of these policies covered the costs of developing templates, at a capital cost of between €50,000 and €150,000.

Under Policy Measure 3, there are five elements of guidance described in Section 4.1 that may be developed: a framework for inventories of substances, a framework for the reporting of exposure and emissions, a framework to prioritise substances for substitution, a template for the plan and accompanying guidance documents, and lists of possible resources that can be used. The total cost will depend on the scope of these projects, but this cost range is likely representative for each of the element. If all five elements of the templates, frameworks and guidance are completed, this amounts to a total estimated capital cost of €500,000. Note that high quality implementation of the templates and guidance component of this measure could reduce the costs of the help desk and of enforcement, if it lowers the challenges faced by companies and reduces the error rate amongst complying companies.

Overall, the costs to authorities of this measure are larger than Policy Measure 1 and 2 given the additional elements. The costs are likely to be greater than €3 million and less than €10 million over 10 years. There is some risk that the cost of help desk provision is larger than expected, depending on the number of companies that are in scope of the policy, and the number that face challenges complying with the measure. More detail on the potential challenges faced by companies complying with the use notification and substitution action plan elements of Policy Measure 3 can be found in Section 4.7.3.

Financial impacts on companies

There are no additional costs to companies of facing this measure, as using non-financial resources provided under the measure is optional. It is expected that companies only make use of these resources where they reduce the costs of complying with the use notification and substitution action plan obligations. Therefore, the main aim of this section is to evaluate the extent to which costs to companies of this measure are lower than under Policy Measure 2.

As outlined in Section 4.5.2, it may be that this measure leads to further costs from companies in taking forward substitution effort. Where this goes beyond the regulatory requirement to produce a substitution action plan it is not counted here as a direct result of the measure. More information about the impacts on substitution effort can be found in Section 4.4.3.

As there are no additional financial impacts, the costs of the extra elements of this measure were not assessed by the industry survey (VITO, 2023b). Wider qualitative information from the industry survey suggested that responding companies thought the measure would not prevent the financial impacts discussed under Policy Measure 1 and 2. Six of nine responses stated that there would still be negative impacts on operations after use of support. Five of nine stated they would find the information helpful, while two stated they would not use it and two stated it would be insufficient. Concerns on the measure raised were the same as under Policy Measure 2 and included administrative burden, limited knowledge, and lack of staff resources (VITO, 2023b), except one of seven responses stated that they have no concerns

related to the measure (compared to none for Policy Measure 2).

DUs will only use the financial resources if they are deemed beneficial overall. That is, companies will only use the resources if they expect that they decrease the costs of complying with Policy Measure 1 or 2 by a greater amount than the cost of understanding and using the resources. Only two out of nine respondents stated that they would not use the support provided, which suggests that the remaining seven respondents, a majority, expect that the non-financial resources will be beneficial. However, it appears that these overall cost reductions could be relatively minor, as the respondents had the same concerns over the measure, and most said that Policy Measure 2 would still have negative impacts on operations.

This is an expected result, as this measure does not cover the staff costs of compliance with Policy Measure 2, which would still be covered by companies, rather provides resources likely to improve the quality of compliance. This effect is non-financial and is discussed in more detail in Section 4.4.3. If more reporting criteria were added to Policy Measure 1, such as emission reporting, the need for non-financial resources would likely be greater. The non-financial support would be particularly important for companies that are unfamiliar with emission monitoring and associated reporting.

As the measure is mainly targeted at companies which lack the knowledge to fulfil the obligations under Policy Measure 2, it is expected to benefit smaller companies more than larger companies, as such companies are likely to have less of the relevant knowledge. The various challenges to compliance faced by smaller companies are explored in more detail in Section 4.8.2 and 4.8.3.

Overall, the financial impacts of this measure are lower than Policy Measure 1 and 2, but it is unclear the extent to which the non-financial resources will decrease the costs of complying with the obligations covered under Policy Measure 1 and 2, or whether the costs will remain similar as companies use resources to improve the quality of compliance.

Financial impacts on consumers

Customers are not expected to be directly impacted by the policy measure. As outlined in Section 4.5.2, the main impacts on consumers would derive from companies increasing prices to cover some of the costs. The extent to which such cost transfers will occur will depend on the specific markets. For example, if there is competition from non-Belgian companies (who do not incur any obligations), Belgian companies would not be able to increase their prices without losing market shares.

Where substitution does occur as a result of the measure, impacts on product quality may occur. This may have financial implications if consumers need to switch to higher cost options or require more frequent purchases due to reduced durability. However, it is believed that such reduction in product quality would be minimal, as companies will not substitute if the alternatives are inferior (again, competition from non-Belgian companies may be prohibitive, even for small changes in quality).

4.5.4 Policy Measure 4 – Subsidy for the substitution action plan

This section explores the financial impacts of the policy measure on the main potentially affected groups: authorities, companies, and consumers.

Financial impacts on authorities

The costs of the use notification and substitution action plan elements of this policy are covered in Section 4.5.1 and 4.5.2. The additional impacts of Policy Measure 4 compared to Policy Measure 2 for authorities are:

- 1) Cost of the subsidy for advisory services relating to substitution action plans
- 2) Cost of processing applications for the subsidy and enforcing proper use of the subsidy

The costs are all undiscounted estimates. Operational costs are assumed to occur annually and capital costs occur once. The first ten years of costs are considered.

The total cost of each subsidy is up to €20,000. The total cost of providing the subsidy will depend on the average amount paid per subsidy, and the total number of subsidies provided.

The €20,000 subsidy is the maximum amount, and smaller subsidies could be provided where less than this is required to fulfil the obligations. The costs to companies of compliance with the notification of use and substitution action plan obligations are explored in more detail in Section 4.5.1 and 4.5.2. The analysis there suggests that there will likely be many companies spending less than €20,000, particularly smaller companies, and particularly if the standards for a substitution action plan are more limited. This could limit the cost to authorities of the subsidy if proper scrutiny of subsidy applications is used to regulate subsidy amounts. The measure does not currently provide incentives for companies to request and spend less than the full available amount, which may increase the average subsidy size. Implementing strong scrutiny of subsidy applications could help to reduce the average size of the subsidies.

The total number of subsidies will depend partly on the number of companies in scope of the policy, and partly on the stringency of eligibility criteria for the measure. It is currently assumed that there will be no eligibility criteria beyond use of an in scope SVHC. Given the limited information available on the size of the market, it is difficult to estimate the number of applicants and the overall cost is very sensitive to this figure. If the average subsidy provided is €10,000, the subsidy will cost €1 million for every hundred companies that apply for the subsidy. It is not expected that companies are able to request multiple subsidies over the years, so this would not necessarily be annual spend, and would likely be concentrated in the first years of the policy's implementation. If the market is large, or weak incentives to control spending leads to larger subsidies provided, this could result in a large and unpredictable cost to authorities.

The cost of processing applications was calculated through interviews with the Belgian authorities based on similar implemented policies. In the first year a cost of €100,000 would be incurred for IT infrastructure. This estimate uses the same evidence as discussed in Section for the capital cost of IT infrastructure underpinning use notifications. If the infrastructure overlapped between these two elements of Policy Measure 4, the IT infrastructure costs may be reduced. Further to this, it is assumed that three to four FTE staff members would be required to scrutinise subsidy applications, do follow ups and completeness checks, and provide final approval. This is based on an assumption that there are 700-800 applications annually and would cost an estimated €350,000 annually. This cost is likely to depend on the number of companies in scope of the policy and will increase if the number of companies is larger than expected. Over a ten-year period, this results in an undiscounted cost of €3.6 million (VITO, 2023a) for the administrative costs of Policy Measure 4.

Overall, the additional costs of Policy Measure 4 compared to Policy Measure 2 depends heavily on the size of the market and the eligibility criteria for the subsidy. If the market is large and the eligibility criteria is not stringent, the total cost of the policy could be very large (for example, 5,000 users of SVHCs in Belgium could request up to €100 million). However, if the reverse is true, the costs could be relatively modest, particularly as companies cannot repeatedly request subsidies.

Financial impacts on companies

The only additional cost associated with this measure is the cost to companies applying for a subsidy of up to €20,000 to pay for compliance with obligations covered under Policy Measures 1 and 2. This cost was not quantified in the industry survey.

As companies are assumed to only make an application if the subsidy requested exceeds the application costs, it can be assumed there are no additional costs compared to Policy Measure 2 for companies successful in applying for a subsidy. Under the subsidy, companies can only claim costs of compliance with the obligations covered under Policy Measure 2. Thus, the subsidy cannot exceed the costs of compliance and the overall impact of Policy Measure 4 cannot be net financial gain. The main aim of this section is thus to evaluate the extent to which costs to companies of Policy Measure 2 are covered for companies receiving the subsidy.

For companies whose application for the subsidy are rejected, the financial impact of this measure could be greater than Policy Measure 2, as the cost of preparing the application is additional to the cost of compliance. However, as set out in Section 4.2 all companies who are in scope of Policy Measure 2 are considered to be eligible for this subsidy, so unless the implementing authorities impose further criteria there is little possibility of companies facing both application costs and costs of compliance with Policy Measure 2.

In the industry survey companies were not asked to quantify the impacts of the subsidy. Wider qualitative information from the industry survey suggested that the measure would not prevent the financial impacts discussed under Policy Measures 1 and 2. Six of eight responses stated that there would still be some or significant negative impacts on operations after use of support. This included all three responses from SMEs (VITO, 2023b). Four of eight, only half, stated they would find the subsidy helpful, while two stated that they would not use it and two stated that it would be insufficient to address the costs of preparing a substitution action plan. Concerns raised were the same as for Policy Measure 2 and included administrative burden, limited knowledge, and lack of staff resources, except one of four responses stated that they have no concerns related to the measure (compared to none for Policy Measure 2) (VITO, 2023b).

This pattern of responses is very similar to the industry response to Policy Measure 3. For more information see Section 4.5.3. This is surprising, as unlike Policy Measure 3 this measure can actively cover staff costs of fulfilling the obligations and may in some cases reduce the cost to companies of the substitution action plan to zero, not a possibility under Policy Measure 3. There could be several explanations for this:

- The costs of compliance with Policy Measure 2 are expected to be well in excess of €20,000, making the subsidy insignificant. This is possible if the standards for compliance with the substitution action plan requirement are set at a higher level. However, it is unlikely as most survey respondents stated that the capital cost of Policy Measure 2 would be less than €10,000 (VITO, 2023b). More information on the costs of compliance with Policy Measure 2 as discussed in Section 4.5.1 and 4.5.2.

- The costs of subsidy applications are expected to be high. This is discussed in more detail below.
- The actual amount of the subsidy is expected to be significantly less than €20,000. As this is the figure that survey respondents were asked to provide responses to, this is considered unlikely.
- The limited sample size of the survey means these results are not widely applicable, or survey respondents did not provide accurate responses.

The cost of subsidy applications is largely a choice for authorities. As set out in Section 4.3.4, it is assumed that all companies in scope of the policy are eligible for a subsidy. The costs of application could be limited if the authorities, for example, repurpose the use notification as itself a subsidy application. The only additional information required is the total subsidy amount needed, which will be related to actual expenditure by companies. This could be represented in the form of timesheets or invoices for any consultancy services at relatively limited cost.

As discussed above, under this subsidy framework companies have little incentive to control costs below €20,000. Authorities may wish to reduce the subsidy amounts by imposing more administrative scrutiny to subsidy receivers. In this case, the costs to companies may increase through two channels: firstly, subsidy applications may become more expensive as further information is requested for the purposes of scrutiny, and secondly companies may receive smaller subsidies.

There may be differences in how impactful this measure is on smaller companies compared to larger companies. The main determinant of measure impact is the extent to which the €20,000 subsidy can cover costs incurred under Policy Measure 2. There are reasons smaller companies may face lower or higher costs of compliance, but in general a similarly sized subsidy will have a larger impact on smaller companies as it represents a higher proportion of annual revenue. See more information in Section 4.8.2 for more information on particular concerns for SMEs regarding completion of the substitution action plan. If measurements of substance emissions were added to Policy Measure 1 as a reporting criterion, the need for non-financial resources would likely be greater. Companies would have to carry out monitoring, which is typically costly and would be especially challenging for SMEs.

Overall, the subsidy will certainly reduce the financial impacts of Policy Measure 4 as compared to Policy Measure 2. Survey data suggests that the addition of the subsidy is unlikely to completely mitigate the burden of the use notification and substitution action plan, but given the costs provided by survey respondents for Policy Measure 2 there are reasons to think that in at least some cases it will. SMEs may particularly benefit from this measure as the subsidy represents a larger proportion of their overall revenue. Application costs are expected to be limited, with low risk of an additional cost burden borne by rejected subsidy applicants. This conclusion could change if eligibility criteria or administrative efforts to control subsidy size are added to the measure.

Financial impacts on consumers

Consumers are not expected to be directly impacted by the policy measure. As outlined in Section 4.3.4, the main impacts on consumers would derive from companies increasing prices to cover some of the costs. The extent to which such cost transfers will occur will depend on the specific markets. For example, if there is competition from non-Belgian companies (who do not incur use notification or substitution action plan costs), Belgian companies would not be able to increase their prices without losing market shares.

Where substitution does occur as a result of the measure, impacts on product quality may occur. This may have financial implications if consumers need to switch to higher cost options or require more frequent purchases due to reduced durability. However, it is believed that such reduction in product quality would be minimal, as companies will not substitute if the alternatives are inferior (again, competition from non-Belgian companies may be prohibitive, even for small changes in quality).

4.5.5 Policy Measure 5 – Annual fee for the use of SVHCs

This section explores the financial impacts of the policy measure on the main potentially affected groups: authorities, companies, and consumers.

Financial impacts on authorities

The costs of the use notification and substitution action plan elements of this policy are covered in Section 4.5.1 and 4.5.2. The additional impacts of Policy Measure 5 compared to Policy Measure 2 for authorities are:

- 1) The revenue from implementing an annual fee
- 2) The administrative costs of running the annual fee system

The costs are all undiscounted estimates. Operational costs are assumed to occur annually and capital costs occur once. The first ten years of costs are considered.

The annual fee is dependent on tonnage used of the substance, with a maximum of €15,000 for users of less than a tonne, €50,000 for usage of less than 100 tonnes, and €90,000 for usage of greater than 100 tonnes. The fee actually received by authorities could be less than this as it will also be capped at a proportion of the company's expenditure on SVHC. This proportion would be 10% for the lowest tonnage band, 7.5% for the middle band, and 5% for the highest tonnage band, meaning that companies would need associated expenditure on SVHCs of €150,000, €666,000, or €1,800,000 to pay the max fee for the respective tonnage bands. Examples of fees faced by companies with different usage and substances prices are presented in Section 4.3.5.

Similar to Policy Measure 4, the main determinant of the financial impact of this measure is the size of the market and the number of companies that pay the fee. If the number of companies using SVHCs is large, the revenue from this measure could also be very large. More information on the potential number of in scope DUs in Belgium can be found in Section 3.2.3.

The administrative costs of running the annual fee system were estimated based on interviews with the Belgian authorities and through comparison with similar implemented policies. In the first year a cost of €100,000 would be incurred for IT infrastructure. This estimate uses the same evidence as discussed in Section 4.5.1 for the capital cost of IT infrastructure underpinning use notifications. If the infrastructure is shared across the elements of Policy Measure 5, the IT infrastructure costs may be lower. Further to this, it is assumed that 1.5 to 3.5 FTE staff members would be required to enforce and administrate the annual fee, at an estimated central cost of €250,000 annually. This includes costs of reminders to fee payers and in some cases bailiffs for non-compliers (VITO, 2023a). The calculations are based on the costs of a similar fee under the VMM portal (Flanders Environment Agency, 2023) and assume 1,000 notifications occur annually, and that there is two hours of admin associated with each. If the number of companies notifying use was different, the staff costs of administration would be expected to be larger or smaller roughly

proportionally to that difference.

Over a ten-year period, this results in an undiscounted cost of €2.6 million (VITO, 2023a) for the administrative costs of Policy Measure 5. If the assumption of 1,000 notifications is carried forward, and the average annual fee is conservatively assumed to be €15,000, this would be significantly outweighed by revenue of €150 million over 10 years. Revenue would generally be expected to decline over time if the fee successfully motivates companies to substitute.

Overall, it is considered unlikely that the financial impacts of the additional components of Policy Measure 5 are negative, as the costs of administering the fee should be outweighed by the revenue from the fee. The revenue from the fee could also cover the costs of other elements of Policy Measure 5, the costs of which are explored in Section 4.5.1, 4.5.2, and 4.5.3. However, the overall size of revenue will depend on the typical fee per company and the overall number of notifications, neither of which is known.

Financial impacts on companies

The additional cost facing companies from Policy Measure 5 is the annual fee. The annual fee is dependent on tonnage usage of the substance, with a maximum of €15,000 for users of less than a tonne, €50,000 for usage of less than 100 tonnes, and €90,000 for usage of greater than 100 tonnes. The fee received by authorities could be less than this as it will also be capped at a proportion of the company's expenditure on SVHC. This proportion would be 10% for the lowest tonnage band, 7.5% for the middle band, and 5% for the highest tonnage band, meaning that companies would need associated expenditure on SVHCs of €150,000, €666,000, or €1,800,000 to pay the max fee for the respective tonnage bands. Depending on the price of the substance, it may not be possible for the maximum fee to be reached. Examples of fees faced by companies with different usage and substances prices are presented in **Table 4.5** below.

Table 4.5: Examples of fees based on volumes and price of substance

Volume used (tonnes/year)	Share paid	Price (€/tonne)		
		15,000	5,000	500
		Fee to be paid by companies (€/year)		
0.5	10%	750	250	25
0.75	10%	1,125	375	37.5
1	7.5%	1,125	375	37.5
50	7.5%	50,000	18,750	1,875
70	7.5%	50,000	26,250	2,625
99	7.5%	50,000	37,125	3,712
100	5%	75,000	25,000	2,500
500	5%	90,000	90,000	12,500

Table note: ADCA is frequently quoted at a price between \$2,000 - \$6,000 (roughly €1,900 – €5,600, as per 14/09/2023) (Procurement Resource, 2023).

In the industry survey, companies were not asked for their costs of complying with the measure as this is

determined by the fee amounts, however they provided wider qualitative information on the measure. All eight responses stated that there would be at least some negative impacts on operations, with five of these stating that the fee is too high and will have significant negative impacts on operations. Two of four responses stated that costs of complying were a concern of the measure, and one stated they would move operations out of Belgium if the measure was implemented. Although this is based on a limited sample size, this suggests the fee could pose a significant challenge for at least some companies (VITO, 2023b).

Without detailed market information on typical prices and volumes of SVHC usage that is not currently available, it is difficult to determine the typical fee. Examples are illustrated in **Table 4.5** above. The fee is dependent on volume usage and the price of the substance.

Fees for companies that are low volume users of high price substances will typically be relatively higher than high volume users of low-price substances, as the share of substance expenditure owed in fees is higher for lower tonnage bands (10%) than the highest tonnage band (5%). For example, consider two companies which both spend €50,000 on SVHCs. A company using 5 tonnes of a substance costing €10,000 per tonne will pay €5,000, while a company using 50 tonnes of a substance costing €1,000 will pay only €3,750. As a result, producers of higher price substances will in general pay higher fees.

As the fee is linked to expenditure on the substance, rather than volumes, companies will typically be more impacted by the fee if the substance represents a greater proportion of their operational costs. A company for whom an SVHC represents 10% of operational costs could be paying up to 1% of operational costs in fees. A company for whom the SVHC represents 50% of operational costs could be paying up to 5% of their operational costs in fees. Given that the average profit margin in the manufacturing sector in Belgium is 3.6%, the fees incurred by companies that have operational costs largely dependent on SVHCs could be significant relative to profit.

The same maximum fee of either 15,000, 50,000, or 90,000 applies to all companies irrespective of company size. Larger companies will typically be less impacted by these fees as they will in general comprise a smaller share of profits. Smaller companies, which are more likely to have smaller profit levels, could be paying a significantly larger share of their profits in fees.

It can be concluded that the measure is more likely to lead to significant financial impacts on smaller companies using higher price substances for whom the cost of SVHCs is a large share of their operating costs. As the fee is capped at relatively modest levels, larger companies (high-volume users) will more frequently pay the maximum fee compared to SMEs. This will increase the likelihood that large companies pay a smaller proportion of their profits than SMEs, and thus the fee will be less burdensome than for SMEs. Smaller companies, particularly micro companies that have limited available funds, will struggle with complying with this measure. According to national statistics, the average net operating margin³¹ of companies across all branches of industry (excluding financial and insurance sectors) was 3.59% in 2019 (National Bank of Belgium, 2023).

This implies that the available funds in the manufacturing sector will be limited for many companies, and the fee could become prohibitive. For example, a company using 10 tonnes per year of an SVHC priced at

³¹ Net operating margin is the net operating income divided by revenues. Net operating income is a company's revenue less all necessary operating expenses, including interest, cost of goods sold, operating expenses and taxes. [What is Net Profit Margin? Formula for Calculation and Examples \(investopedia.com\)](https://www.investopedia.com/terms/n/net-profit-margin-formula.asp)

€15,000 would face a fee of €11,250. Assuming the 'typical' profit margin of 3.59% for a Belgian manufacturer (National Bank of Belgium, 2023), the company would have to have a turnover of over €300,000 to be able to pay the fee without ending up with negative profits. At this turnover, the company would have no remaining funds to reinvest into the company, including investments into development of alternatives. A much larger company with a similar profit margin, e.g., with a turnover of €50 million and €1.8 million in profits will be less affected even if they pay the maximum fee (€90,000), as this fee only represents 5% of their profits.

The fee design also causes perverse incentives for some companies to increase their substance usage. Companies that are close to a volume band boundary may be able to decrease their fee but slightly increasing their volume usage. In a higher volume band, they would owe a smaller proportion of their expenditure on SVHCs in fees. This effect is shown in **Table 4.5**.

The fee structure could be redesigned to mitigate some of these issues. For example, perverse incentives could be removed by ensuring that the share of expenditure paid is not dependent on overall volumes. Ensuring that the fee as a percentage of substance sales is not lower for higher volume users compared to low volume users will eliminate the option for companies near to the volume band boundaries to reduce their fee by increasing usage. This change would also remove some of the disparity between the measure's impact on large and smaller companies, as larger companies that are typically higher volume users will not pay a lower share of their expenditure on SVHCs than lower volume users.

Furthermore, the fee is currently linked to substance prices. If this link were removed, and the fee was only based on volumes, this would ensure that high fees are reserved for high volume users and ensure that companies using lower volumes of higher price (but not necessarily more harmful) substances are not adversely impacted by the fee design. This change would also reduce the risk that very small fees are paid by companies using large volumes of cheap but harmful substances.

The largest financial impacts occur in cases where the fee substantially affects profitability, and the affected businesses are highly trade exposed. Such companies are less likely to be able to compensate for the fee with higher prices, necessitating avoidance of the fee through substitution or relocation/closure. This is explored in more detail in Section 4.8.5 Overall, the financial impacts of the measure may be substantial for some companies, and the design of the policy suggests that the largest financial impacts will accrue to smaller companies. Though the fee will usually be bigger in absolute terms for larger companies, it is likely to be less affordable for smaller companies. The financial impact will be most substantial in industries with low profit margins, high price substances, and costly substitution options.

Financial impacts on consumers

Consumers are not expected to be directly impacted by the policy measure. As outlined in Section 4.3.5, the main impacts on consumers would derive from companies increasing prices to cover some of the costs. The extent that cost transfers occur will depend on the specific markets. For example, if there is competition from non-Belgian companies (who do not incur use notification, substitution action plan or fee related costs), Belgian companies would not be able to increase their prices without losing market shares.

Where substitution does occur because of the measure, impacts on product quality may occur. This may have financial implications if consumers need to switch to higher cost options or require more frequent purchases due to reduced durability. However, it is believed that such reduction in product quality would

be minimal, as companies will not substitute if the alternatives are inferior (again, competition from non-Belgian companies may be prohibitive, even for small changes in quality).

4.5.6 *Policy Measure 6 – Modular annual fee for the use of SVHCs*

This section explores the financial impacts of the policy measure on the main potentially affected groups: authorities, companies, and consumers.

Financial impacts on authorities

The costs of the use notification and substitution action plan elements of this policy are covered in Section 4.6.1 and 4.6.2. The impacts on authorities of the fee element of Policy Measure 6 is partially covered in Section 4.5.5, and this section only address the impact of the modular element of the fee. These impacts are:

- 1) The modular element will generally decrease revenue from the fee, as discounts are available;
- 2) The administrative costs of running a modular system will be higher as determining eligibility for discounts is an additional financial burden.

Companies may avoid their fee under Policy Measure 6 by submitting a substitution action plan within 1 year to avoid paying the fee.

The costs are all undiscounted estimates. Operational costs are assumed to occur annually and capital costs occur once. The first ten years of costs are considered.

This is designed to incentivise compliance with the substitution action plan obligation covered under Policy Measure 2, that is optional under this measure. Given the amount of the fee and the expected costs to companies of compliance with the substitution action plan obligation, explored in more detail in Section 4.5.2, the proportion of companies seeking to delay the fee obligation could be substantial. This is likely to significantly reduce the revenue associated with the fee.

The authorities would also benefit from the modest fee linked to volumes, which would be applied to companies submitting a substitution action plan. The revenue associated with this fee element is unknown as the levels of the fee are not defined, but it is expected to be more modest than the annual fee applying to companies failing to submit a fee, reflecting the incentive provided to companies to comply with the substitution action plan element of Policy Measure 6.

The administrative costs of running a modular system are expected to be higher than under Policy Measure 5 as determining eligibility for the discounts discussed above will be an additional financial burden. From interviews with Belgian authorities, the admin hours required per application is expected to be three times as much compared to the annual fee, resulting in an estimated cost of €700,000 annually (VITO, 2023a). This cost is likely to depend on the number of companies in scope of the policy and will increase if the number of companies is larger than expected. This reflects the need not just to receive the use notification and request the relevant fee, but also to determine whether the fee is owed, and scrutinise claims that the fee is not applicable. This might include analysing substitution action plans to check their sufficiency, and also analysing submitted information on volumes to determine the modest fee. More discussion on the challenges enforcing this measure is available in Section 4.7.6.

Overall, given that this is a revenue generating measure it is unlikely that it significantly negatively impacts authorities' finances. However, it will generate less revenue and presents greater administrative difficulties than Policy Measure 5.

Financial impacts on companies

Policy Measure 6 provides companies the choice of submitting a substitution action plan in line with the obligation covered under Policy Measure 2, or paying the annual fee covered under Policy 5. Those who choose to submit a substitution action plan will face a modest fee linked to volumes, but this is expected to be significantly smaller than for companies choosing to not submit a substitution action plan. As such, the financial impacts of Policy Measure 6 on companies cannot exceed the financial impact of Policy Measure 5 and will only exceed Policy Measure 2 by the amount of the modest fee. The financial impact of Policy Measure 6 on companies will thus increase with the level of the modest fee. This section includes discussion of the dynamics of a company's choices. Further details on the costs of the substitution action plan or annual fee can be found in Section 4.5.2 and 4.5.5.

Policy Measure 5 was found to potentially impose a substantial cost, particularly for smaller companies. The costs of the substitution action plan covered under Policy Measure 2 were found to be more uncertain and will be strongly related to the stringency of standards set by implementing authorities on a compliant substitution action plan. The level of the modest fee is also highly uncertain but is assumed to be low compared to the fee set out under Policy Measure 5. Where companies are particularly affected by either the annual fee or the substitution action plan, the ability to choose which is incurred will provide companies with the security of an alternative. Therefore, it should be expected that fewer companies are severely impacted than by Policy Measure 2 or 5.

The industry survey provided information about this measure. Regarding the fee component, three of eight stated that they will submit a substitution action plan to avoid the fee, while two of eight stated they would pay the fee. The remainder would avoid the fee through substitution or relocation. Both companies that stated they would pay the fee were large companies, while two of three that stated they would avoid the fee through submitting a substitution action plan were SMEs (VITO, 2023b). This is in line with the argument in Section 4.5.5 that the fee would be particularly impactful for smaller companies.

The provision of choice may have important implications for companies that find the timing of the obligations covered under Policy Measure 6 challenging. As the fee is annual, companies may choose to delay production of a substitution action plan to reduce the costs of producing a substitution action plan within tight timelines. This may be efficient overall if the savings from delay exceed the costs of short-term payment of the fee.

Overall, Policy Measure 6 has a generally lower financial impact on companies than both Policy Measure 2 and Policy Measure 5, as companies can choose which cost, they would prefer to incur. Depending on the level of the modest fee, the measure could become more financial impactful than Policy Measure 2 as companies must both submit the substitution action plan and pay a fee. As the fee is particularly impactful for smaller companies, it is expected that large companies are more likely to pay the fee, while smaller companies are more likely to opt for submission of the substitution action plan. Actual behaviour will depend on the design and level of the fee system, as well as the requirements of substitution action plan.

Financial impacts on consumers

Consumers are not expected to be directly impacted by the policy measure. As outlined in Section 4.3.6, the main impacts on consumers would derive from companies increasing prices to cover some of the costs. The extent to which such cost transfers will occur will depend on the specific markets. For example, if there is competition from non-Belgian companies (who do not incur substitution action plan or fee related costs), Belgian companies would not be able to increase their prices without losing market shares.

Where substitution does occur as a result of the measure, impacts on product quality may occur. This may have financial implications if consumers need to switch to higher cost options or require more frequent purchases due to reduced durability. However, it is believed that such reduction in product quality would be minimal, as companies will not substitute if the alternatives are inferior (again, competition from non-Belgian companies may be prohibitive, even for small changes in quality).

4.5.7 Policy Measure 7 – Awareness creation and facilitation of networking

Financial impacts on authorities

The costs to authorities of this measure reflect three types of activity (VITO, 2023a):

- 1) the provision of a help desk to provide information and guidance to network participants
- 2) the running of network events for the sharing of information
- 3) the publication of an information pamphlet to publicise network events and the information they generate

The costs are all undiscounted estimates. Operational costs are assumed to occur annually and capital costs occur once. The first ten years of costs are considered.

VITO (2023) has estimated that a help desk would cost around €100,000 in capital costs to set up, based on the costs of establishing the Belgian biocides platform ([Biocide.be](https://biocide.be), 2021). The annual costs of running the platform, involving front-desk support and IT back-up, were estimated at between €100,000 and €300,000 (average €200,000) per year, depending on how much staffing resource was deemed to be required. This was based on the costs of the Nanoregistry and IMJV loket helpdesks ([Vlaanderen](https://vlaanderen.be), 2023). Currently, 210 companies use the Nanoregistry service and up to 17,000 companies use the IMJV loket helpdesk. Costs might be reduced if they could be shared with one of these existing services (e.g., IMJV loket) or, indeed, with the helpdesk envisaged under Policy Measure 3. The costs of staffing the help desk are likely to depend on the number of companies in scope of the policy and will increase if the number of companies is larger than expected.

VITO (2023) estimated the costs of running network events in terms of cost items such as venue hire, catering, merchandising and so on, calculating figures of between €2,000 and €30,000 per event, depending on number of attendees, type of event and other factors. The time (opportunity) cost of authority staff preparing for and attending events was not included in these estimates. Cost would also be affected by whether events were held in-person or online. Costs of information pamphlets, posters and other advertising were estimated by VITO (2023) to be comparatively modest (a few thousand euro per year). The overall costs would depend on the overall size of the market and the number of events needed to engage the in-scope companies.

If authorities decide to engage in additional networking activities with network participants, following up conversations or making introductions, for example, there would be staff (opportunity) costs associated with these activities, although, being elective, they would presumably only be incurred if they were considered to be justified by the expected benefits.

Financial impacts on companies

The direct costs to companies and third parties of the substitution network are the practical and opportunity costs of participating, including staff time, travel, accommodation and so on. There would also be costs if these actors wanted to follow up discussions and contacts outside of network events and activities. In the industry survey, companies estimated that additional capital and operational costs from participating in networking would be either less than €10,000 or incur no additional costs (n=3) (VITO, 2023b). As already mentioned, participation would be voluntary, so it can be assumed that these costs would only be incurred if they were expected to be justified by the resulting benefits. However, larger companies and organisations are more likely to be able to afford attendance and have staff dedicated to activities related to the network. For smaller companies, the time (and other) costs are a much bigger proportion of company revenues. They are also more likely to have to divert staff away from more central commercial activities to enable them to participate. This means that smaller companies are less likely to participate than larger ones, even though it was suggested above that SMEs might be a principal target for the network. This could be especially true if they do not see obvious and immediate benefits of participating – which could be the case for DUs of a SVHC which is not obviously a priority target for a ban (authorisation). Consideration might then be given by authorities to subsidising participation to ensure the target audience can afford to attend.

Financial impacts on consumers

Customers and consumers are not expected to be directly impacted by the policy measure. Costs to companies of the network are expected to be modest, so no indirect impact on prices would be expected either. If the network was to improve the use of SVHCs, reduce the volume of SVHCs used and foster additional or quicker substitution, there could be changes to products and prices, but the direction of these changes (positive or negative for customers/consumers) is ambiguous. If substitution activity is voluntary (as is the case with SVHCs which are not yet subject to authorisation), it might be expected that companies will only undertake it as a cost-saving or quality-improving measure. However, if they increase substitution activity now in anticipation of a future ban, costs could rise (but perhaps not as much as they might otherwise have done).

4.5.8 Policy Measure 8 – Development of methodology and structure to support the sustainability-focused analysis of alternatives

This section explores the financial impacts of the policy measure on the main potentially affected groups: authorities, companies, and consumers.

Financial impacts on authorities

The main costs to authorities of this measure are:

- 1) The cost of consultants to develop the sustainability methodology and produce sector specific adaptations.

2) The costs of communication and training of companies relating to the measure.

The costs are all undiscounted estimates. Operational costs are assumed to occur annually, and capital costs occur once. The first ten years of costs are considered.

The costs of developing the sustainability methodology were estimated through interviews with the Belgian authorities to be around €300,000. This includes the direct cost of consultants to produce the generic approach, methodology for applying it, sector specific adaptations, and guidance material (VITO, 2023a).

For the costs of communication and training, it was assumed that training materials are developed that do not require face to face training. This limits the overall cost, as consultancy services are assumed to develop training which is made available to companies requiring it. The total cost of this approach was estimated through interviews with the Belgian authorities to be in the region of €100,000 to €200,000 in a single year. In total, this represents a cost of consultancy services of between €400,000 and €500,000 (VITO, 2023a). As this form of the policy is not highly dependent on market size, the risk of significantly higher costs is fairly limited.

A key feature of this assumed approach to implementing the measure is that the cost is not dependent on the number of companies that use the methodology, as development of training is a fixed cost and does not require individual follow up. However, this measure could be implemented with face-to-face training and substantial individual communication with companies. Implementing this approach could be complex and cost intensive if the number of companies in scope is large and diverse, as it would require additional staff costs for the authorities to deliver training and respond to the issues experienced by individual companies. The costs of this are likely to be similar to the costs of a help desk, which is included in Policy Measure 3. The costs of a help desk are discussed in more detail in Section 4.5.3.

Overall, the costs of this measure are focused on the development of materials that are made available to companies and as such are not significant, being in the order of magnitude of €1 million with low likelihood of significantly greater costs. Provision of significant face to face training could risk higher costs if the number of companies wanting support is high.

Financial impacts on companies

This measure makes a methodology for substitution, with accompany guidance, templates, and sector specific adaptations, publicly available for DUs of SVHCs. There are no direct financial implications of the measure, as there is no obligation attached to the measure to make use of the methodology. Thus, the financial impacts on companies will be zero for any company that wishes to avoid use of the methodology or substituting in general. Companies may yet be impacted by this measure if they are already planning substitution, are driven to do so by other means or respond to the greater availability of information and training because of this measure. Those using the methodology are expected to engage in a significantly more resource intensive process than what is required for the substitution action plan under Policy Measure 2. It is assumed that they only do so if it is economically beneficial, as the measure is fully voluntary.

Regardless, the potential costs of applying the methodology were explored in the industry survey. Several costs to companies may result from this measure:

1) Companies may opt into participating in development of sector specific adaptations of the

methodology.

- 2) Companies may implement the methodology with or without support or training
- 3) Companies may attend trainings on how to implement the methodology.

Three companies were able to provide estimates for the costs of each of these elements. The estimated capital cost of implementing the methodology without any support or training was reported by all companies to be between €10,000 and €50,000, with additional operational costs of up to €50,000 annually. For estimates of the costs of the methodology with training and support the responding companies lowered their estimations of costs, with two extra responses saying the capital and operational costs would be less than €10,000 rather than €10,000 to €50,000 (VITO, 2023b). Though this is a very small sample size, it is encouraging that companies stated that the training would have an impact on the costs of implementing the methodology.

The estimated capital cost of participating in development of sector specific adaptations ranged up to €50,000, with operational costs of up to €50,000. The estimated capital cost of attending trainings was reported to be less than €10,000, with operational costs of up to €10,000 annually depending on follow up (VITO, 2023b). This estimated financial cost of participation may mean that the authorities have difficulties incentivising companies to participate in this element of the measure if it is done on a voluntary basis only. This is explored in more detail in Section 4.4.8.

If implementation of this measure causes substitution that is more sustainable this could also support companies financially in the long run. Evidence suggests that the adoption of green chemistry and a more sustainable chemicals sector generally leads to cost savings through a reduction in waste disposal fee and improved employee health and safety premiums (Veleva & Cue, 2019). An analysis of the Massachusetts Toxics Use Reduction Act, which required companies to assess toxics use reduction options with technical help supplied by university and government experts, found that companies were able to achieve \$14 million of cost savings through more efficient and safer processes (Thorpe & Rossi, 2007). This methodology could have particular focus on raising awareness of these opportunities and substituting in the optimal way to take most advantage of them.

Overall, this measure does not impose any direct financial costs on companies, but a cost will occur for companies deciding to use the methodologies and trainings. Where companies take forward substitution that otherwise would not, overall additional expenditure incurred could be substantial.

Financial impacts on consumers

Consumers are not expected to be directly impacted by the policy measure. As outlined in Section 4.3, the main impacts on consumers would derive from companies increasing prices to cover some of the costs of substitution using the methodology. The extent to which such cost transfers will occur will depend on the specific markets.

Where substitution does occur as a result of the measure, impacts on product quality may occur. This may have financial implications if consumers need to switch to higher cost options or require more frequent purchases due to reduced durability. However, it is believed that such reduction in product quality would be minimal, as companies will not substitute if the alternatives are inferior.

4.5.9 Policy Measure 9 – Direct support of companies involved with a subsidy for advisory services (version 1)

This section explores the financial impacts of the policy measure on the main potentially affected groups: authorities, companies, and consumers.

Financial impacts on authorities

The main costs to authorities of this measure are:

- 1) The costs of providing the subsidy to eligible companies
- 2) The costs of processing subsidy applications.

The costs are all undiscounted estimates. Operational costs are assumed to occur annually and capital costs occur once. The first ten years of costs are considered.

The second cost is very similar to the costs of processing subsidy applications discussed for Policy Measure 4. See Section 4.5.4 for more information on the costs of processing subsidy applications and relevant considerations. Companies using SVHCs are less likely to be eligible for a subsidy under Policy Measure 9 than Policy Measure 4, as it is supposed to be reserved for unique and high complexity cases. This is likely to have two opposing impacts on the costs of processing subsidy applications. Firstly, there should be fewer applications than a subsidy that is more universal, reducing the costs of the subsidy to authorities as companies are deterred by higher probabilities of a failed application. Secondly, since the criteria is more stringent there will be more administrative time required to process each application. It is not clear which effect will dominate.

The costs of actually providing the subsidy will depend mainly on the stringency of eligibility criteria, and the overall number of companies using in scope SVHCs. If the eligibility criteria are relaxed so more companies are in scope, the cost of this scrutiny may be lower. As market information is not available, it is impossible to tell exactly how much provision of the subsidy will cost. Costs of subsidy provision are explored in more detail in Section 4.5.4. The overall risk to the authorities' finances is expected to be lower than for Policy Measure 4 as this measure is expected to apply to fewer companies.

Another major difference between this measure and Policy Measure 4 is that the subsidy is partial, meaning that companies must make larger financial commitments to implementing the measure to receive the subsidy. As such, this measure cannot reduce the marginal cost of additional effort to zero. This may reduce the impact of the measure, but it will also help to control the subsidy amounts to ensure that companies do not claim more than necessary. As such, it is expected that many or most companies will claim less than the maximum fee of €25,000.

There are at least two implementation choices facing authorities that will impact the costs of the measure. These include the information required to prove eligibility and stringency of the eligibility criteria.

- More intensive application processes requiring detailed information to prove eligibility should deter weak applications, at the cost of imposing bureaucracy costs on companies that may impact the effectiveness of the measure. The reverse could significantly increase administrative costs to authorities of processing weak applications.

- More stringent eligibility criteria will reduce the number of companies to whom the subsidy is paid and will deter weak applications. This will come at the cost of decreasing the effectiveness of the measure, by reducing the number of companies that can benefit, and potentially increasing the administrative costs of processing applications.

Overall, the financial impacts on authorities of this measure are likely to be significant, mainly due to the costs of providing a subsidy. Quantifying these costs is not possible without more information on the relevant market size and the stringency of eligibility criteria for the subsidy.

Financial impacts on companies

The additional element in this measure compared to Policy Measure 8 is a partial subsidy available to companies to cover advisory services to support implementation of the methodology described above. This measure is only available to companies with unique uses that cannot be discussed in broader networks, or high complexity cases. The subsidy can only be used to cover the costs of external advisory services and is not to be used to cover costs arising from internal staffing costs.

This measure only impacts companies which apply for subsidy support. Unsuccessful applicants will incur costs of preparing their application, while successful applicants will receive net positive benefits, assuming that the cost of application will never exceed the subsidy sought. The costs of the application will depend on the choices of the implementing authorities when requesting information to validate eligibility. More information on application costs can be found in Section 4.5.4 regarding the application costs for subsidies covered under Policy Measure 4. The subsidies in Policy Measure 9 are likely to require more engagement by companies and thus have higher application costs, as the eligibility criteria is more stringent than under Policy Measure 4. It is expected that financial benefits would be greater and spread more widely if the eligibility criteria were less stringent. The stringency of the eligibility criteria could be reduced by dropping any requirement that applicants show they are in unique or high complexity circumstances.

A subsidy for advisory services reduces the portion of external costs (up to a maximum of €100,000) that successful applicants are responsible for from 100% to 75%, reducing their financial responsibilities and increasing the positive financial impact of the measure. Note that the marginal cost of advisory services is still 75%, so this measure does entail a significant financial commitment to substitution from companies that is not required or otherwise incentivised by the measure. Though it will financially support companies that choose to pursue this financial commitment, this measure cannot have an overall positive financial impact on companies, as 75% of the costs of advisory services must be covered by companies.

Overall, the measure does not impose mandatory costs on companies. Companies choosing to substitute using the methodology will receive a discount through the subsidy, but this does not mean that they are positively financial impacted by a decision to substitute.

Financial impacts on customers

Customers are not expected to be directly impacted by the policy measure. As outlined in Section 4.3, the main impacts on customers would derive from companies increasing prices to cover some of the costs of substitution using the methodology. The extent to which such cost transfers will occur will depend on the specific markets.

Where substitution does occur as a result of the measure, impacts on product quality may occur. This may

have financial implications if consumers need to switch to higher cost options or require more frequent purchases due to reduced durability. However, it is believed that such reduction in product quality would be minimal, as companies will not substitute if the alternatives are inferior.

4.5.10 Policy Measure 10 – Direct support of companies involved with a subsidy for advisory services (version 2)

This section explores the financial impacts of the policy measure on the main potentially affected groups: authorities, companies, and consumers.

Financial impacts on authorities

The financial impacts on authorities of Policy Measure 10 are the same in structure as Policy Measure 9. Refer to Section 4.5.9 for more details.

The only difference between the policies is that the subsidy is larger, at 50% or a maximum of €50,000 per company. Without any change in the number of companies provided with the subsidy, this will double the cost of providing the subsidy, leaving the costs of processing applications the same. Doubling the size of the incentive has two other effects.

Firstly, it provides a greater incentive for companies to apply for the subsidy. This will increase the number of applications, many of which would likely be weaker applications, but some of which will be eligible companies who declined to apply for the lower subsidy. This will both increase the costs of processing applications, and the cost of providing subsidies. This could be controlled by commensurately increasing the stringency of the eligibility criteria, or the detail of information required to apply.

Secondly, the increased subsidy provides weaker incentives for companies to control their spending, as the marginal cost of additional substitution effort is lower under Policy Measure 10 compared to Policy Measure 9. The 25% subsidy under Policy Measure 9 means that the marginal cost to companies of additional substitution effort is 75% of the cost of the effort, and this proportion falls to 50% under Policy Measure 10 as authorities cover more of the costs. Companies will thus be more willing to increase the size of overall substitution efforts, as the marginal costs of doing so are lower. Thus, it would be expected that the average size of the subsidy provided would more than double compared to Policy Measure 9.

Thus, the costs of Policy Measure 10 to authorities are likely to be more than twice as great as Policy Measure 9. More detailed quantification is not possible without information on market size and the stringency of eligibility criteria.

Financial impacts on companies

The financial implications for Policy Measure 10 are similar to Policy Measure 9, except that the subsidy is twice as large. See Section 4.5.9 for more details.

The increase in the size of the subsidy from 25% to 50% reduces the portion of external advisory costs (up to €100,000) that successful applicants are responsible for from 75% to 50%, reducing their financial responsibilities and increasing the positive financial impact of the measure. As noted above, though it will financially support companies this measure cannot have an overall positive financial impact on companies as the subsidy is for advisory services that must be partially paid for by companies themselves, and any

expenditure on advisory services is voluntarily undertaken.

This is likely to lead to a broader range of companies choosing to apply, as the incentives to seek the subsidy are stronger. This may increase the unsuccessful application rate if eligibility criteria are held the same, as more cases with uncertain eligibility choose to bear application costs for an uncertain outcome. If applicants also increase the resources spent on applications given the larger financial incentive, or implementing authorities decide to increase the administrative demands of application, the financial impact on all applicants may increase.

Overall, the impacts of the subsidy element of Policy Measure 10 will be around twice as great on companies claiming the subsidy. It may also change the numbers of companies benefitting if more respond to the large financial incentive.

Financial impacts on consumers

Customers are not expected to be directly impacted by the policy measure. As outlined in Section 4.3, the main impacts on customers would derive from companies increasing prices to cover some of the costs of substitution using the methodology. The extent that cost transfers will occur will depend on the specific markets.

Where substitution does occur as a result of the measure, impacts on product quality may occur. This may have financial implications if consumers need to switch to higher cost options or require more frequent purchases due to reduced durability. However, it is believed that such reduction in product quality would be minimal, as companies will not substitute if the alternatives are inferior.

4.5.11 *Summary of assessment of financial impacts*

Table 4.6 provides a summary of assessment of financial impacts of Policy Measures 1 to 10. The table outlines how each policy measure performs according to specific assessment criteria and explains the reasoning behind the given score. A more detailed comparison of the policy measures is included in Chapter 5.

Table 4.6: Summary assessment of financial impacts of Policy Measures 1-10

Policy measure	Assessment type	Assessment Criteria		
		Financial impacts on authorities	Financial impacts on companies	Financial impacts on consumers
Policy Measure 1	Score	3 - Low	3 - Low	4 - Negligible
	Justification	The central estimates suggest that the order of magnitude of costs for authorities is likely to be €1 million over 10 years. This estimate is particularly likely if the number of companies in scope or the barriers to enforcement and compliance are relatively lower. The order of magnitude of costs could be higher if the number of companies is large and detailed scrutiny is needed for the registrations.	Overall, it is judged that the costs of compliance with this measure are likely to be manageable for most larger companies. However, the financial costs could be potentially significant for smaller companies, particularly those with low knowledge of chemical regulation. This is not just because similar costs present a larger portion of revenues, but there are additional costs likely to be faced by smaller companies with less sophisticated information management and compliance systems.	Consumers are not expected to be directly impacted by the policy measure. Impacts on consumers from increased prices may result from financial impacts on companies.
Policy Measure 2	Score	3 - Low	2 - Acceptable	4 - Negligible
	Justification	Overall, the financial impacts on authorities are likely to be similar to Policy Measure 1, with a risk that costs are higher if the market size is large, if substantial resources are committed to scrutinising the plans, and if companies face significant challenges in understanding the obligation.	Overall, the standards set for the justification element of a compliant substitution action plan is the crucial decision for the implementing authorities that determines the policy's main financial impacts on companies. The final impact could range from limited if standards are minimal, to substantial if standards are more similar to ECHA guidance for authorisation. The true impact will likely be somewhere in the middle and is subject to final policy design. The burden for any given standard will differ significantly by company	Consumers are not expected to be directly impacted by the policy measure. Impacts on consumers from increased prices may result from financial impacts on companies.

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			size. The reasons to think smaller companies may face larger challenges	
	Score	2 - Acceptable	2 - Acceptable	4 – Negligible
Policy Measure 3	Justification	Overall, the costs to authorities of this measure are larger than Policy Measure 1 and 2 given the additional elements. The order of magnitude of additional costs is in the range of €1 million to €10 million over 10 years. There is some risk that the cost of help desk provision is larger than expected, depending on the number of companies that are in scope of the policy, and the number that face challenges complying with the measure.	Overall, the financial impacts of this measure are lower than Policy Measure 1 and 2, but it is unclear the extent to which the non-financial resources will decrease the costs of complying with the obligations covered under Policy Measure 1 and 2, or whether the costs will remain similar as companies use resources to improve the quality of compliance.	Consumers are not expected to be directly impacted by the policy measure. Impacts on consumers from increased prices may result from financial impacts on companies.
	Score	1 - High	3 - Low	4 – Negligible
Policy Measure 4	Justification	Overall, the additional costs of Policy Measure 4 compared to Policy Measure 2 depends heavily on the size of the market and the eligibility criteria for the subsidy. If the market is large and the eligibility criteria is not stringent, the overall costs of the policy could be very large (for example, 5,000 users of SVHCs in Belgium could request up to €100 million). However, if the reverse is true, the costs could be relatively modest, particularly as companies cannot repeatedly request subsidies.	Overall, the subsidy will certainly reduce the financial impacts of Policy Measure 4 as compared to Policy Measure 2. Survey data suggests that the addition of the subsidy is unlikely to completely mitigate the burden of the use notification and substitution action plan, but given the costs provided by survey respondents for Policy Measure 2 there are reasons to think that in at least some cases it will. SMEs may particularly benefit from this measure as the subsidy represents a larger proportion of their overall revenue. Application costs are expected to be limited, with low risk of an additional cost burden borne by rejected subsidy applicants. This conclusion could change if eligibility criteria	Consumers are not expected to be directly impacted by the policy measure. Impacts on consumers from increased prices may result from financial impacts on companies.

			or administrative efforts to control subsidy size are added to the measure.	
	Score	5 – Financially net beneficial	1 - High	3 - Low
Policy Measure 5	Justification	Overall, it is considered unlikely that the financial impacts of the additional components of Policy Measure 5 are negative, as the costs of administrating the fee should be significantly outweighed by the revenue from the fee. The revenue from the fee could also cover the costs of other elements of Policy Measure 5.	Overall, the financial impacts could frequently be large, and the design of the policy suggests that the largest financial impacts will accrue to smaller companies. The fee may be significant for larger companies but the larger is the company, the smaller the proportion of overall revenue represented by the fee. The financial impact could be most substantial in industries with low profit margins, trade exposure, and costly substitution options.	Consumers are not expected to be directly impacted by the policy measure. Impacts on consumers from increased prices may result from financial impacts on companies, which are potentially significant under this measure.
	Score	4 – Negligible	2 - Acceptable	4 – Negligible
Policy Measure 6	Justification	Overall, given that this is a revenue generating measure it is unlikely that it significantly negatively impacts authorities' finances. However, it will generate less revenue and presents greater administrative difficulties than Policy Measure 5.	Overall, Policy Measure 6 has a strictly lower financial impact than either Policy Measure 2 or Policy Measure 5, as companies can choose the cost that they would prefer to incur. This result may change if authorities choose to balance the trade-off between revenue and incentives by implementing a fee reduction for complying companies instead. As the fee is particularly impactful for smaller companies, it is expected that large companies are more likely to pay the fee, while smaller companies are more likely to opt for submission of the substitution action plan. Actual behaviour will depend on the design of the fee and substitution action plan.	Consumers are not expected to be directly impacted by the policy measure. Impacts on consumers from increased prices may result from financial impacts on companies.

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Policy Measure 7	Score	3 - Low	3 - Low	4 – Negligible
	Justification	Setting up the online information hub and helpdesk have been estimated at around €100,000, with annual costs of staffing etc around €200,000. Network events could cost from €2,000 to €30,000 each. Opportunity costs of staff time attending events are not included in these figures.	Participation in the network would be voluntary, so any costs would only be incurred if companies considered participation worthwhile. Costs would be relatively higher for SMEs compared to large companies, which might discourage their involvement.	Consumers are not expected to be directly impacted by the policy measure.
Policy Measure 8	Score	3 - Low	4 – Negligible	4 – Negligible
	Justification	Overall, the costs of this measure are focused on the development of materials that are made available to companies and as such are not significant, being in the order of magnitude of €1 million with low likelihood of significantly greater costs. Provision of significant face to face training could risk higher costs if the number of companies wanting support is high.	Overall, this measure does not impose any direct financial costs on companies, but a cost will occur for companies deciding to use the methodologies and trainings. Where companies take forward substitution that otherwise would not, overall additional expenditure incurred could be substantial.	Consumers are not expected to be directly impacted by the policy measure.
Policy Measure 9	Score	3 - Low	4 – Negligible	4 – Negligible
	Justification	Overall, the financial impacts on authorities of this measure are likely to be significant, mainly due to the costs of providing a subsidy. Quantifying these costs is not possible without more information on the relevant market size and the stringency of eligibility criteria for the subsidy.	Overall, the measure does not impose mandatory costs on companies. Companies choosing to substitute using the methodology will receive a discount through the subsidy, but this does not mean that they are positively financial impacted by a decision to substitute.	Consumers are not expected to be directly impacted by the policy measure.

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Policy Measure 10	Score	2 - Acceptable	4 – Negligible	4 – Negligible
	Justification	The costs of Policy Measure 10 to authorities may be more than twice as great as Policy Measure 9. More detailed quantification is not possible without information on market size and the stringency of eligibility criteria.	Overall, the impacts of the subsidy element of Policy Measure 10 will be around twice as great on companies claiming the subsidy. It may also change the numbers of companies benefitting if more respond to the large financial incentive.	Consumers are not expected to be directly impacted by the policy measure.

4.6 Health, environment, and sustainability

This section assesses the impact of each policy measure on human health, the environment, and sustainability. Each policy measure is assessed on four criteria: regrettable substitution, use and emissions of SVHCs, other impacts on human health and the environment, and sustainability. It is assumed that the implementation of each policy measure would apply to all CL substances that are not listed in Annex XIV or Annex XVII. This assumption particularly makes a difference when considering the impact of each measure on regrettable substitution. For example, the likelihood of regrettable substitution will be reduced if all SVHCs are covered by the same legislations, as companies could not 'avoid' obligations by switching to a different SVHC. Overall, it is believed that the measures assessed will have lower performance for this attribute if only a few SVHCs are targeted.

4.6.1 Policy Measure 1 - Mandatory notification of use

A mandatory use notification has the potential to induce positive impacts on human health and the environment. This section assesses a mandatory use notification's expected impacts on regrettable substitution, and other expected impacts on health, the environment, and sustainability.

Regrettable substitution

If the mandatory use notification applies to all CL substances (rather than a prioritised subset), a mandatory use notification is likely to work as a safeguard against substitution of one SVHC by another substance of equal concern (here interpreted as another SVHC). This is because the reporting requirements will not be avoided by replacement of the substance with another SVHC (assuming that all SVHCs are subject to the use notification). DUs should know if the substances they are currently using are SVHCs because of the safety data sheets provided to them by suppliers, as required under REACH. However, not all companies are currently complying with REACH (see 4.7.1), and smaller companies especially may have less knowledge and understanding of their regulatory requirements. Whether companies know that the replacement substance they are considering employing as a substitute is also an SVHC is a more difficult question, requiring 1) this information to be accessible to the company and 2) this information to be known in the first place. Assuming that conditions 1 and 2 are met, it is likely that regrettable substitution of one SVHC by another will be avoided under a mandatory use notification.

However, a use notification does not require companies to assess the safety and sustainability of their chosen substitute. Without this assessment or other specific actions to prevent regrettable substitution, it is not clear whether a substitution to avoid a use notification will always be beneficial for human health and the environment (Drohmann & Hernández, 2020). Even if a substitute is not (yet) identified as an SVHC, it could still be a cause for concern when it comes to safety and sustainability.

Use and emissions of SVHCs

Gaining a better understanding of potential hazards and risks of the substances used through the preparation of the use notification may lead to companies implementing voluntary risk management measures such as making changes to their production processes and waste management practises. However, this depends on the depth and quality of the information collected. Policy Measure 1 only requires limited information to be gathered and there is no support from the regulators to help companies produce and submit robust data. The measure is therefore expected to have a negligible impact on the use

and emissions of SVHCs.

If the use notification includes mandatory reporting of emissions, this would require companies to implement sufficient monitoring. This could give information on potential high-emission activities which may incentivise companies to put in place additional measures. Hence, including this additional reporting requirement could improve the measure's ability to reduce the use and emissions of SVHC, beyond what is achieved through substitution.

Other impacts on human health and the environment

As a result of a mandatory use notification, companies might voluntarily constrain their practices in ways that will benefit human health and the environment beyond the benefits associated with lowered exposure to SVHCs (Fetter, 2022a). However, the extent to which such disclosure has a significant impact on promoting accountability and social and environmental change is up for debate (Leong & Hazelton, 2019). Other impacts on human health and the environment (i.e., impacts not related to a reduction in the use and emissions of SVHCs) are thus not expected to be significant for this measure.

Sustainability

A use notification will fill information gaps around SVHC uses, volumes and storage, which contributes towards enabling the assessment of human health and safety aspects during the production and final application phases and the life cycle assessment. Benneer and Olmstead state that mandatory disclosure can influence behaviour through (i) market forces, (ii) political forces and (iii) internal decision-making (Benneer and Olmstead in Fetter, 2022a). The effectiveness of the first two rely on good access to information disclosed by the downstream users, which is not expected under this policy, which provides this information only to the Belgian authorities.

Depending on the internal decisions taken by companies, a mandatory use notification on SVHCs may make steps towards achieving the Safe and Sustainable by Design (SSbD) criteria, which considers safety aspects first, followed by environmental and socio-economic aspects (European Commission, 2022b). For example, as part of the EPA's 33/50 Program³², companies were given press attention on their efforts to protect the environment, and the program resulted in a 50% reduction of 17 priority chemicals (Khanna & Damon, 1999) (though this was done through voluntary means rather than prompted by mandatory disclosure).

However, there are no provisions within this measure that specifically require or guide companies to apply sustainability principles while developing alternative materials or products. The information companies will collect will often not be additional information for companies and is not the kind of information expected to make a substantial contribution to sustainability assessments. Leong and Hazelton argue that mandatory disclosure alone is not sufficient to move society towards sustainability because social changes will only be driven if users of such information receive information relevant to their goals and are able to translate it into political action (Leong & Hazelton, 2019). Further, corporate-level reporting may not be the most effective means for achieving this, as many users prioritise issue-specific data (Leong & Hazelton, 2019). A mandatory use notification is therefore not expected to lead to significant changes in terms of applications of such principles at a company level. It is believed that this information is more likely to be

³² The 33/50 Program targeted 17 priority chemicals and set as its goal a 33% reduction in releases and transfers of these chemicals by 1992 and a 50% reduction by 1995, measured against a 1988 baseline. Its primary purpose was to demonstrate whether voluntary partnerships could augment the Agency's traditional command-and control approach.

utilised by the authorities who can develop more sustainability-focused policies.

4.6.2 Policy Measure 2 – Substitution action plan

Regrettable substitution

As with a mandatory use notification (see Section 4.6.1), Policy Measure 2 safeguards against regrettable substitution by another SVHC but it does not guarantee that the substance used as a substitute will avoid negative environmental and human health impacts.

Theoretically, the addition of the substitution action plan would increase companies' awareness of any potential adverse effects of the alternatives assessed, which may lead to more companies avoiding hazardous alternatives. However, the strength of what companies put into their substitution action plan is questionable. Without guidance on how to create the plan and monitor and mitigate risks, there is no guarantee that Policy Measure 2 will be any more effective at preventing regrettable substitution than a mandatory use notification alone, as covered under Policy Measure 1. Policy Measure 2's effectiveness at preventing regrettable substitution will depend on the level of detail required by the substitution action plan. For example, mandatory requirements to provide details and a risk-based analysis of alternatives would be likely to increase Policy Measure 2's chances at preventing regrettable substitution, if these were to be included in the policy design.

Use and emissions of SVHCs

A substitution action plan in addition to a mandatory use notification requires companies to scrutinise their practices with regards to SVHCs in ways in which Policy Measure 1 does not. The 'underlying rationale' of the Massachusetts Toxics Use Reduction Act is that companies will 'calculate the costs of using and disposing of these toxic chemicals, identify reduction opportunities on their own and be motivated to implement opportunities because of their financial, environmental and health and safety benefits' (O'Rourke & Lee, 2004). However, the quality of information included in the substitution action plan under Policy Measure 2 is expected to be poor, as many DUs will be small companies without experience in the collection and submission of such information, and there is no support in provided in the process. Policy Measure 2 is not expected to have a significant impact on the use and emissions of the SVHC.

Other impacts on human health and the environment

Like Policy Measure 1, Policy Measure 2 is not expected to have significant impacts on human health and the environment outside of reductions in the use and emissions of SVHCs. There may be some indirect impacts through companies being motivated to make changes in other areas but there is nothing inherent in a substitution action plan for SVHCs that would necessitate this.

Sustainability

This policy measure may make some steps towards achieving the Safe and Sustainable by Design (SSbD) criteria but does not guarantee they will be applied when considering substitutes, as there is no requirement that the safety or sustainability of the alternative substance is to be assessed in a substitution action plan.

4.6.3 Policy Measure 3 – Non-financial support for the use notification and/or the substitution action plan

Regrettable substitution

Non-financial support for the substitution action plan and mandatory use notification may help to reduce the likelihood of regrettable substitution through filling information gaps and taking into consideration that companies may lack resources and information about substituting SVHCs. As discussed for Policy Measure 1 and Policy Measure 2, a mandatory use notification and substitution action plan are likely to safeguard against substitution with another SVHC (on the assumption that the policy measures apply to all SVHCs, not just a subset) but not necessarily against substitution of another substance with negative impacts on human health and the environment.

Due to the support provided for the use notification and substitution action plan development, the quality of information collected is likely to be higher than the quality of information collected without this support. For this reason, Policy Measure 3 has a lower risk of regrettable substitution than Policy Measure 1 and Policy Measure 2. The extent to which non-financial support reduces the likelihood of regrettable substitution depends on the type of support offered. For example, training sessions and a guidance document for a substitution action plan will only protect against the risk of regrettable substitution where it encourages companies to consider the impacts of the substitutes they are selecting. If the training and resources only focus on substituting rather than the substitute, they will fail to protect against regrettable substitution any more than a mandatory use notification and substitution action plan do (see Sections 4.6.1 and 4.6.2).

Use and emissions of SVHCs

Non-financial support may ease the administrative burden described in Section 4.6.1 and 4.6.2 by providing resources that make it less burdensome for companies to file a use notification or submit a substitution action plan and to complete these at a high standard. Non-financial support could lead to a reduction in the use and emissions of SVHCs through the filling of information gaps.

Preparing a use notification may lead to companies implementing voluntary risk management measures, depending on the depth and quality of the information collected (see Section 4.6.1). If the use notification required reporting of emissions data, non-financial support could increase the likeliness of companies utilising the resulting information to reduce their use and emissions of the SVHCs. For example, companies that are unfamiliar with monitoring or implementation of risk management measures would benefit from additional guidance for these activities.

As described in Section 4.6.2, O'Rourke and Lee cite the underlying rationale of TURA as being that once companies are given the opportunity to identify and understand how to reduce their harmful substance use, they themselves will be motivated to implement reductions. Some types of non-financial support, such as providing information on costs of using SVHCs or training on how to calculate them, may motivate companies to reduce their use of SVHCs even if they do not substitute them. However, there is not a strong incentive to do so, and if companies make these changes, it would be because they do so voluntarily.

Other impacts on human health and the environment

Policy Measure 3 is unlikely to have major additional impacts on human health and the environment above those discussed for Policy Measures 1 and 2, as the non-financial support is targeted specifically at the use

notification and substitution action plan. There may be impacts through companies voluntarily constraining their practices or through making changes in other areas of their businesses, but there is nothing in Policy Measure 3 that guarantees other impacts on human health and the environment.

Sustainability

Through advancing companies' ability to accurately submit a use notification and provide a substitution action plan, Policy Measure 3 may fill information gaps that go some way towards assessing human health and safety aspects and achieving the SSbD criteria. Depending on the type of non-financial support offered, training could go some way to support this. But, like Policy Measure 1 and Policy Measure 2, there are no provisions in Policy Measure 3 that require companies to apply sustainability principles when considering substitutes to SVHCs.

4.6.4 Policy Measure 4 – Subsidy for the substitution action plan

Regrettable substitution

Support for the use notification and substitution action plan, including financial support via a subsidy, is likely to reduce the likelihood of regrettable substitution through filling information gaps and taking into consideration that companies may lack resources and information about substituting SVHCs. The subsidy may allow companies to spend time appropriately researching alternatives at lower cost to the company. This relies on several assumptions, including, 1) companies will use the subsidy to spend time researching the sustainability and safety of alternative, and 2) companies have access to information they need. The first assumption matters because despite the incentive of a subsidy, it is not guaranteed that companies will spend the resources looking into the human health and environmental impacts of a substitute to an SVHC. There is nothing within the requirements for a use notification or a sustainability action plan that mean the environmental aspects of substitute substances must be investigated. Thus, if companies choose to conduct this research, it will be of their own volition, though the subsidy and support may make them more likely to conduct it. The second assumption – that companies, having researched, will find the information they need to avoid regrettable substitutions – is also not guaranteed. Financial support is thus not significantly more likely to decrease the risk of regrettable substitution beyond the risk mitigated by non-financial support (covered in Section 4.6.3).

Use and emissions of SVHCs

Further financial support, in addition to non-financial support (covered under Policy Measure 3 in Section 4.6.3), may incentivise companies to reduce the use of SVHCs and emissions of SVHCs, regardless of whether they do this through substitution. With the incentive of a subsidy, the cost of producing a substitution action plan or collecting the information needed to submit a use notification is lower, meaning companies may be more willing to go ahead with these processes than they would be without a subsidy. But, following through with a reduction in the use or emissions of the SVHC would be voluntary. The effect of financial support on reducing the use of SVHCs and emissions irrespective of substitution is unlikely to be much greater than the effect of non-financial support.

Similar to the non-financial support, the financial support would be even more pertinent if the reporting requirements for the use notification were to include emissions.

Other impacts on human health and the environment

Policy Measure 4 is unlikely to bring with it major additional impacts on human health and the environment

above those discussed in Sections 4.6.1, 4.6.2 and 4.6.3. The financial support is targeted specifically at the use notification and substitution action plan. As is the case for non-financial support (see Section 4.6.3), it may be the case that companies voluntarily constrain their practices through research they are able to complete because of the subsidy and they as a result make changes in other parts of their businesses that have an impact on human health and the environment, but nothing in this policy measure necessitates that this will be the case.

Sustainability

Like non-financial support for the use notification and substitution action plan, discussed in Section 4.6.3, financial support may support the filling of information gaps that go some way towards allowing the assessment of human health and safety aspects and achieving the SSbD criteria. This may happen through the subsidy allowing such research to be taken at a lower cost to the company than it would be without the subsidy. However, this would be at the discretion of each company, as Policy Measure 4 does not require companies to apply sustainability principles when considering substitutes to SVHCs.

4.6.5 Policy Measure 5 – Annual fee for the use of SVHCs

Regrettable substitution

An annual fee imposed on companies using SVHCs would act as a safeguard against regrettable substitution of one SVHC by another SVHC for companies intending to avoid a fee. This is likely to be the case as the fee will not be avoided by replacing one SVHC with another. This involves the assumption that the company knows whether the replacement substance is an SVHC or not (for more discussion on this, see Section 4.6.1).

An annual fee does not necessarily protect against all regrettable substitution: to avoid a fee on SVHCs, a company may substitute with another substance, which though not an SVHC, could still have harmful impacts on human health and the environment. An annual fee does not require companies to assess the safety and sustainability of a substitute and without this assessment or other specific actions to prevent regrettable substitution to be undertaken, regrettable substitution may still occur.

Use and emissions of SVHCs

An annual fee may incentivise a reduction in the use and emissions of SVHCs, regardless of whether this is through substitution. This is because if the annual fee is set at a particular level of use or level of emissions, companies may be incentivised to avoid being subject to the fee or to be subject to a lower fee by forgoing use of the substance, reducing their use, or substituting.

The magnitude of the incentive will depend on the fee and its structure. For this policy measure, the proposed fee is dependent on volume produced but also has a cap. The fee is 10% share of the substance sales value for production under 1 tonne, with a maximum of €15,000. This maximum increases to €90,000 for volumes over 100 tonnes, but the substance sales value share decreases to 5%. This does create some but not significant perverse incentives for companies whose fee is governed by the share of substance sales and are close to the boundaries (particularly at the 90-100 tonne volume bracket): by increasing their volume of production of the SVHC, they may fall into the next volume bracket and be subject to fee that is a lower percentage of the substance sales value. For companies whose fee is determined by the maximum cap, likely to be larger companies, there are incentives to reduce use and emissions of SVHCs to drop to a lower volume bracket as that has an associated lower maximum fee, but no incentives to decrease use and

emissions of SVHCs where this will not drop them into a lower volume bracket.

The costs incurred to companies using SVHCs through an annual fee brings with it the risk that companies will relocate to avoid the fee or will cease production. Albeit not a desirable outcome, it would lead to a reduction in the use and emissions of SVHCs in Belgium.

If the fee were to be redesigned to avoid perverse incentives to increase the volume of production of SVHCs, it could have a greater effect on reducing the use and emissions of SVHCs. If the fee levels were to increase, the policy measure would be even more effective at decreasing the use and emissions of SVHCs.

Other impacts on human health and the environment

No significant other direct impacts on human health and the environment are expected to occur on the implementation of this policy measure.

Sustainability

An annual fee does not require or guide companies to apply sustainability principles when developing alternative materials or products they might choose to switch to in response to the fee being introduced. It is possible that the cost of a fee could reduce further research into sustainable alternatives as companies may not have the resources to engage in the types of assessments suggested by the SSbD criteria, especially if the fee is high and places significant financial strain on the company.

4.6.6 Policy Measure 6 – Modular annual fee for the use of SVHCs

Regrettable substitution

A modular annual fee system is likely to act as a safeguard against regrettable substitution of one SVHC with another for companies intending to avoid the fee, as the fee is to apply to all SVHCs. This assumes that the company knows whether the replacement substance is an SVHC (for more discussion on this, see Section 4.6.1).

However, the modular annual fee system, like the annual fee covered in Section 4.6.5, does not necessarily protect against all regrettable substitution. To avoid being subject to the modular annual fee system, companies could substitute with a substance that though not a (known) SVHC, may still have negative effects on human health and the environment. The policy measure does not require companies to assess the safety and sustainability of a substitute and without this assessment or other specific actions to prevent regrettable substitution to be undertaken, regrettable substitution may still occur.

Additionally, the modular annual fee system provides less protection against the risk of regrettable substitution than the annual fee system covered in Policy Measure 5 (see Section 4.6.5). This is because on the modular system, companies can choose to forfeit making a substitution action plan and instead be subject to the fee. If they subsequently choose to substitute, they do not necessarily have a well-developed substitution action plan to increase their awareness of any potential adverse effects of alternatives they may have assessed within the plan.

Use and emissions of SVHCs

A modular annual fee system may incentivise a reduction in the use and emissions of SVHCs, regardless of whether this is through substitution. As with Policy Measure 5 (Section 4.6.5), the fee will create an incentive

for companies to reduce their use or emissions of SVHCs to avoid being subject to a high fee. This is because some firms may relocate or cease production to avoid being subject to the fee, which would lead to a reduction in the use and emissions of SVHCs in Belgium.

Under this policy measure, companies are rewarded for submitting a substitution action plan within one year. In cases where companies do submit a substitution action plan, in the process of creating the plan, they may voluntarily undertake risk management measures and other actions even if they do not go ahead with the substitution. The potential decrease in the use and emissions of SVHCs is expected to be comparable to that of Policy Measure 5.

Other impacts on human health and the environment

There are no significant other direct impacts on human health and the environment are expected to occur upon the implementation of this policy measure.

Sustainability

The impact on sustainability of the modular annual fee system is expected to be similar to the impact of an annual fee, discussed in Section 4.6.5. Although this policy measure incentivises the building of a substitution action plan, it does not require that the SSbD criteria are applied when considering substitutes. There is no requirement that the safety or sustainability of the alternative substance is to be assessed in the substitution action plan.

4.6.7 Policy Measure 7 – Awareness creation and facilitation of networking

Regrettable substitution

A substitution network would clearly not dictate the type of substitutions that companies undertake, but the intention would be to inform companies about substitution opportunities, and this would presumably include consideration of aspects like regrettable substitution. This could include an alternative substance that is already classified as a SVHC or could be in the future (or an alternative technology that uses such substances), but also other aspects affecting 'regretability', including safety, sustainability or climate change impacts. Thus, if a substitution network were to be effective in increasing substitution activity, it can be assumed that this would also include reducing the likelihood of regrettable substitution. Companies that are likely to benefit most from this impact are those who are relatively less informed, assumed here to be SMEs in more traditional markets.

Use and emissions of SVHCs

As with regrettable substitution, there is the potential for the use and emissions of SVHCs to be reduced by a substitution network, to the extent that the network increases substitution activity and informs DUs of the importance of good practice. Given the focus of the network on substitution primarily, this latter aspect will tend to be limited to improvement practices which reduce costs for the company involved. This would happen directly if the use of a substance could be cut, but there might be indirect benefits for a company if improved workplace practices reduced worker absence.

Other impacts on human health and the environment

If companies act on information obtained through network activities, they might voluntarily constrain their practices in ways that will benefit human health and the environment beyond the benefits associated with lowered exposure to SVHCs (Fetter, 2022). These will tend to be 'second order' in magnitude compared with

the more immediate impacts associated with increased substitution.

Sustainability

There are no provisions within this measure which specifically guide companies in applying sustainability principles when developing alternative materials or products, but this could be part of the information discussed in the forum. This could include discussion of the value of more holistic sustainability assessment for companies, rather than a more limited focus on substitution alone. The effect can be assumed to be relatively marginal, but any effect is likely to be beneficial towards sustainability goals, rather than negative.

4.6.8 Policy Measure 8 – Development of methodology and structure to support the sustainability-focused analysis of alternatives

Regrettable substitution

Policy Measure 8, through its focus on ensuring that substitution action plans are in line with the SSbD criteria, runs a lower risk of regrettable substitution for the companies utilising the methodologies and guidance. The SSbD criteria take safety and sustainability into account. Unlike Policy Measures 1-6, explicit in this policy measure is the requirement to look at the sustainability of alternatives. The policy measure will include the development of a generic approach to support sustainable substitutions of SVHCs. This minimises the risk of regrettable substitution through support and guidance to assess the sustainability of alternatives, leading to 'better' substitution.

However, the uptake of Policy Measure 8 is expected to be very low, as explained in Section 4.4.8. For companies who do implement it, they will do well, and the risk of regrettable substitution is expected to be minimal. The policy measure will have a large effect but on a small number of actors. Looking at most companies and at the overall population, mitigation of the risk of regrettable substitution will be limited.

Use and emissions of SVHCs

The training and guidance provided through this policy measure may lead to companies creating substitution action plans, avoiding regrettable alternatives, and reducing the use and emissions of SVHCs. Regardless of substitution, the policy measure could also lead to a reduction in the use and emissions of SVHCs through companies' better understanding of the risks and hazards associated with SVHCs. Companies may voluntarily implement risk management measures such as making changes in production processes and waste management practices.

Though the measure has the potential to facilitate better understanding and companies may voluntarily reduce their use and emissions of SVHCs, the uptake of this measure is expected to be very low. It should be noted that Policy Measure 8 has the potential to have large impact, especially if the methodology is made mandatory, such as if it were to be combined with a mandatory substitution action plan.

Other impacts on human health and the environment

It is not likely that there will be significant other impacts on human health and the environment. Potential indirect impacts could arise from third party actors who would have access to the methodology created by the measure, which could in turn provide frameworks through which companies could be held accountable, encouraging further positive impacts on human health and the environment. Consumer pressures, industry pressures, and pressures from NGOs and investors, among others, could prompt large benefits when it comes to human health and the environment.

Sustainability

The SSbD criteria and adherence to that framework is central to Policy Measure 8. The methodologies, although not mandatory, will support companies in the development of their substitution action plans and are expected to become a benchmark for a proof of sustainability performance for companies involved in the substitution of SVHCs. Through proactively ensuring compatibility with the SSbD criteria through training, communication of the methodology, and the methodology and guidance itself, this policy measure is likely to have a positive impact on sustainability.

4.6.9 Policy Measure 9 – Direct support of companies involved with a subsidy for advisory services (version 1)

Regrettable substitution

Policy Measure 9 builds on Policy Measure 8 by proposing a subsidy for advisory services where companies establish a need for external advisory services. As with Policy Measure 8 (see 4.6.8), this policy measure is expected to reduce the risk of regrettable substitution through methodology, training and guidance that enables and encourages companies to investigate sustainable alternatives to SVHCs. The focus on the SSbD criteria ensures the assessment of the safety and sustainability of substances considered as alternatives, minimising the risk of regrettable substitution.

The subsidy element further provides incentives to seek advisory services and perform a comprehensive sustainability and safety assessment where companies would benefit from external support. Without the subsidy, the entire cost of seeking these services would fall onto the company that sought them. The subsidy partially removes the barrier. The ability to seek external advice where needed is even more promising for managing the risk of regrettable substitution. Discussion of regrettable substitution in earlier policy measures assumes that companies know which substances are SVHCs and which substances are not, allowing them to safeguard against the risk of substitution of one SVHC with another. This assumption may not always hold true, despite suppliers providing DUs with safety data sheets (see Section 4.3.1). Policy Measure 9 also addresses the risk of regrettable substitution in this sense.

However, the uptake of Policy Measure 9 is expected to be very low. Companies are required to put in 75% of the costs as the subsidy covers 25%. The measure targets companies already in, or already considering, a substitution process. Policy Measure 10 with its higher subsidy level is expected to further mitigate the risk of regrettable substitution (see Section 4.6.10).

Use and emissions of SVHCs

The subsidy for advisory services enables a greater number of companies to access external help to assess the sustainability of alternatives and develop an action plan that they can implement to reduce the use and emissions of SVHCs. The training and communication involved in this policy measure increases the awareness of risks and hazards of using SVHCs for companies involved in developing the action plans, enabling them to impose RMMs and other actions to reduce the use and emissions of SVHCs regardless of whether they substitute the substance. However, as with Policy Measure 8, uptake of the measure is expected to be very low, resulting in a limited impact in the use and emissions of SVHCs at the level of the subsidy proposed by Policy Measure 9.

If the support offered by Policy Measure 9 could be extended to a greater number of companies, the policy measure could have an even greater effect on the reduction of the use and emissions of SVHCs.

Other impacts on human health and the environment

It is not likely that there will be significant other impacts on human health and the environment. As with Policy Measure 8 (Section 4.6.8), third party actors will have access to the methodology created and the methodology is hoped to provide frameworks by which companies could be held accountable. External pressures could prompt companies to act in ways that are beneficial to human health and the environment. However, the direct impact of the policy measure will be limited.

Sustainability

Sustainability is central to Policy Measure 9, which develops an approach to support sustainable substitutions to align with the SSbD criteria and supports companies seeking advisory services by offering a subsidy. As well as impacts on sustainability discussed in Section 4.6.8, the subsidy is likely to allow further improvements to be made with the help of experts.

4.6.10 Policy Measure 10 – Direct support of companies involved with a subsidy for advisory services (version 2)

Regrettable substitution

Policy Measure 10 offers a higher subsidy than Policy Measure 9 but operates within the same context as it involves the development of a methodology that will support the sustainable substitution of SVHCs. For the same reasons as those outlined in Sections 4.6.8 and 4.6.9, supporting companies with their analysis of alternatives and the training and communication will help minimise the risk of regrettable substitution.

The subsidy offered by Policy Measure 10 covers 50% of service costs, whereas Policy Measure 9 covers 25%, with the maximum cap also increasing from €25,000 per company to €50,000 per company. This increased financial support is likely to incentivise a greater number of companies to seek out advisory services and lower the risk of regrettable substitution. While the uptake of Policy Measure 9 is expected to be very low, uptake of Policy Measure 10 is expected to be slightly higher (but still low), thus increasing avoidance of the risk of regrettable substitution.

Use and emissions of SVHCs

As with Policy Measure 8 and Policy Measure 9, the training and guidance provided through this policy measure could encourage companies to reduce the use and emissions of SVHCs, both through substitution and through a better understanding of risks and hazards associated with SVHCs that might encourage them to make changes.

As with Policy Measure 9, extending the scope of implementation of Policy Measure 10 such that support is offered to a greater number of companies may further reduce the use and emissions of SVHCs.

Other impacts on human health and the environment

It is not likely that there will be significant other impacts on human health and the environment. As with Policy Measure 8 and Policy Measure 9, the influence of third-party actors with access to the methodology and other external pressures could prompt companies to act in other ways that are beneficial to human health and the environment, but the direct impact of the policy measure is expected to be limited.

Sustainability

Sustainability remains at the core of policy measures 8, 9 and 10. The higher subsidy offered as part of

Policy Measure 10 offers the chance for a greater number of companies to invest in advisory services that will help them seek and develop sustainable alternatives in line with the SSbD criteria. Uptake of the measure is expected to be low, but higher than that of Policy Measure 9, engaging a greater number of companies and having the potential to make a positive and tangible impact on sustainability.

4.6.11 Summary of assessment of health, environment, and sustainability

Table 4.7 summarises the assessment on health, environment, and sustainability of each of the 10 policy measures as well as presenting a score for each assessment criteria.

Table 4.7: Summary assessment of health, environment, and sustainability

Policy measure	Assessment type	Assessment Criteria			
		Regrettable substitution	Use and emissions of SVHCs	Other impacts on human health and the environment	Sustainability
Policy Measure 1	Score	3 – Some reduction	1 – Negligible effect	1 – Negligible effect	1 – Negligible effect
	Justification	The policy measure avoids regrettable substitution with SVHCs but does not encourage avoidance of other hazardous substances (e.g., that are likely to become SVHCs)	The filling of information gaps around SVHCs and could prompt companies to take actions to reduce the use of SVHCs and their emissions (such as through implementing RMMs), but the quality of information collected is expected to be poor.	No significant other impacts.	There are no provisions within the policy measure that guide or require companies to look into the sustainability of alternatives.
Policy Measure 2	Score	3 – Some reduction	1 – Negligible effect	1 – Negligible effect	1 – Negligible effect 1
	Justification	The policy measure avoids regrettable substitution with SVHCs but does not encourage avoidance of other hazardous substances (e.g., that are likely to become SVHCs)	The filling of information gaps around SVHCs and creation of a substitution action plan could prompt companies to take actions to reduce the use of SVHCs and their emissions, but the quality of information is expected to be poor.	No significant other impacts.	There are no provisions within the policy measure that guide or require companies to look into the sustainability of alternatives.
Policy Measure 3	Score	4 – Significant reduction	2 – Limited reduction	1 – Negligible effect	1 – Negligible effect
	Justification	The policy measure avoids regrettable substitution with SVHCs but does not encourage avoidance of other hazardous substances (e.g., that are likely to become SVHCs) The	Non-financial support enabling the filling of information gaps around SVHCs, and creation of a substitution action plan, could prompt companies to take actions to reduce the use of	No significant other impacts.	There are no provisions within the policy measure that guide or require companies to look into the sustainability of

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		non-financial support fills information gaps and allows higher quality information to be collected.	SVHCs and their emissions, but this would be voluntary.		alternatives, but training could go some way to support this.
	Score	4 – Significant reduction	2 – Limited reduction	1 – Negligible effect	1 – Negligible effect
Policy Measure 4	Justification	The policy measure avoids regrettable substitution with SVHCs but does not encourage avoidance of other hazardous substances (e.g., that are likely to become SVHCs). The financial support fills information gaps and allows higher quality information to be collected.	Financial support enabling the filling of information gaps around SVHCs, and creation of a substitution action plan could prompt companies to take actions to reduce the use of SVHCs and their emissions, but this would be voluntary.	No significant other impacts.	There are no provisions within the policy measure that guide or require companies to look into the sustainability of alternatives.
	Score	4 – Significant reduction	3 – Some reduction	1 – Negligible effect	1 – Negligible effect
Policy Measure 5	Justification	The policy measure avoids regrettable substitution with SVHCs but does not encourage avoidance of other hazardous substances (e.g., that are likely to become SVHCs) The fee acts as a safeguard against regrettable substitution for companies intending to avoid a fee.	An annual fee may incentivise a reduction in the use and emissions of SVHCs and could also cause companies to relocate or cease production.	No significant other impacts.	There are no provisions within the policy measure that guide or require companies to look into the sustainability of alternatives.
	Score	3 – Some reduction	3 – Some reduction	1 – Negligible effect	1 – Negligible effect
Policy Measure 6	Justification	The policy measure avoids regrettable substitution with SVHCs but does not encourage avoidance of other hazardous substances (e.g., that are likely to become SVHCs).	A modular annual fee system may incentivise a reduction in the use and emissions of SVHCs and could also cause companies to relocate or cease production.	No significant other impacts.	There are no provisions within the policy measure that guide or require companies to look into the sustainability of alternatives.
	Score	2 – Limited reduction	2 – Limited reduction	1 – Negligible effect	2 – Limited increase

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Policy Measure 7	Justification	The substitution network could be used to provide information on regrettable substitution and how to identify and avoid it, which could be expected to have some positive benefit. However, this depends on what the actual costs of regrettable substitution are.	Advertising and discussing good practice and risk management at the network could lead to companies adopting better housekeeping measures which would reduce their costs and SVHC use/emissions.	Some positive impacts could be expected but are likely to be minor.	The network could involve discussion of sustainability issues, but this is not central to the substitution brief.
Policy Measure 8	Score	3 – Some reduction	3 – Some reduction	1 – Negligible effect	3 – Some increase
	Justification	This policy measure avoids regrettable substitution through a focus on assessing the sustainability of alternative substances, but uptake of the measure is expected to be very low.	This policy measure may reduce the use of SVHCs and emissions through bettering companies' understanding of the risks and hazards associated with SVHCs, but uptake of the measure is expected to be very low.	No significant direct impacts.	This policy measure encourages companies to investigate the sustainability of alternatives, which is expected to have a positive impact on sustainability.
Policy Measure 9	Score	3 – Some reduction	3 – Some reduction	1 – Negligible effect	3 – Some increase
	Justification	This policy measure avoids regrettable substitution through a focus on assessing the sustainability of alternative substances and offering a subsidy for advisory services, but uptake of the measure is expected to be very low.	This policy measure may reduce the use of SVHCs and emissions through bettering companies' understanding of the risks and hazards associated with SVHCs, but uptake of the measure is expected to be very low.	No significant direct impacts.	Through a subsidy covering 25% of service costs, this policy measure encourages companies to investigate the sustainability of alternatives with expert help, which is expected to have a positive impact on sustainability.
Policy Measure 10	Score	4 – Significant reduction	3 – Some reduction	1 – Negligible effect	4 – Significant increase
	Justification	This policy measure avoids regrettable substitution through a focus on assessing the sustainability of alternative substances and offering a subsidy for advisory services.	This policy measure may reduce the use of SVHCs and emissions through bettering companies' understanding of the risks and hazards associated with SVHCs.	No significant direct impacts.	Through a subsidy covering 50% of service costs, the policy measure encourages companies to investigate the sustainability of

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alternatives with expert help, which is expected to have a positive impact on sustainability.

4.7 Practicability

This section analyses the policy measures in terms of their practicability. A description of this attribute is presented in Section 2.2.4. This section is structured by assessment criteria per policy measure.

4.7.1 Policy Measure 1 - Mandatory notification of use

Intelligibility

Companies are required to notify the authorities on their use of SVHCs using a template provided by the authorities. The template would be designed to be in line with other ongoing regulatory initiatives, such as the Industrial Emissions Directive, to make the process familiar to Belgian companies. Comparable indicators and clear linkages to other relevant data (such as REACH registration data) are two key features of mandatory disclosure that is most likely to be successful to drive change (Leong & Hazelton, 2019).

Most of the information required by the notification process is that which a company would be able to research using ECHA guidance if they did not have the information at hand already (which would likely be the case for DUs that are also manufacturers/importers and use substances on the authorisation list). That is, company details, description of use, suppliers, and volumes used. The final requirement, information on markets (e.g., share of products sold in Belgium, EEA and globally), may be more difficult to understand, depending on instructions given within the notification process. At minimum, companies would possess safety data sheets, which assures that they would have familiarity with the required information.

When asked about concerns in the industry survey for this policy measure, no companies (0%, n=8) replied that they had 'Limited knowledge/expertise to comply' and 2 companies (25%, n=8) replied that they had no concerns. The remaining responses were concerns unrelated to intelligibility. That is, administrative and staff capacities.

The scale of requirements for the notification process can also impact the intelligibility of the measure. That is, if more information is required, the less intelligible the measure is likely to be. For example, if companies were required to report emissions, which most companies have not measured previously (VITO, 2023b), the intelligibility of the measure would significantly reduce. The analysis only considers what is included in the substitution action plan as described in Section 4.1.

Implementability

The implementation of Policy Measure 1 requires the authorities to establish an online register and employ support staff to monitor new and recurrent use notifications. REACH-IT, through which the REACH Registrations are submitted and managed, and the Nanoregister³³ (Health Food chain safety and Environment, 2023) are relevant examples of online registers, although REACH-IT is more complex than what will be needed for Policy Measure 1. Unlike REACH and Nanoregister, which use a joint registration approach (multiple companies input information into one substance registration), the SVHC notification process is per company. This system requires the authorities to sift through many companies' SVHC usage to collate information on any one SVHC (Coria, 2018).

³³ The Nanoregister is an online-registration system, which is a mandatory registry for Belgian companies that import or produce nanomaterials and has been running since 2016

If the authorities build upon known formats from REACH and the Nanoregister, it is expected to be feasible to develop a register in a format that is familiar to companies. This will ease the implementation from the perspective of the authorities as well as the user's use of the system.

The authorities are also responsible for developing the notification template, to allow for efficient data handling as well as guidance materials. This may require time and other resources but is unlikely to be a significant technical challenge (VITO, 2023).

Companies would need available resources including suitable expertise to complete the notification process annually. In the industry survey, 6 companies (75%, n=8) responded that their main concern for Policy Measure 1 was the administrative burden or insufficient staff resources (25%, n=8). If emissions were an added requirement to the notification process, the resource intensity can be expected to increase. In either case, Belgian companies have consistently complied with the Nanoregister (475 registrations were submitted by 98 registrants) since 2016 (Health Food chain safety and Environment, 2023) and almost 1,000 Belgian companies have registered with REACH (ECHA, 2023a). It is likely that companies will be able to comply with the SVHC notification process. Given that the information required under the policy is of relatively low complexity, it is also not expected that there will be challenges to acquire the expertise needed to comply.

There is a risk of lack of acceptance or protests that could limit the implementation of the policy. In a similar policy, US companies initially opposed the Massachusetts Toxics Use Reduction Act, which implemented mandatory disclosure, and reacted by avoiding compliance (O'Rourke & Lee, 2004). This type of initial reaction is commonplace for US companies as they are sceptical of government 'looking around' at their chemical usage (O'Rourke & Lee, 2004). How wide-spread and lasting protests would be by Belgian companies, and how much it will hamper the implementation, will depend on how burdensome companies find the notifications. Poor monitorability and enforcement (see below) could increase these problems by increasing the costs of non-compliance.

Monitorability and enforcement

Where companies comply and submit notifications of use, the measure is monitorable as notifications of use submitted to authorities can be checked against the requirements. The costs of this have been built into the costs discussed in Section 4.5.1.

However, it may be difficult to monitor the compliance of companies if they are not aware that they must submit any dossier. Experience from EU REACH shows that templates, guidance documents and functioning IT systems may not guarantee compliance. Non-compliance is an issue under EU REACH (Coria, 2018; European Commission, 2018). A large-scale project assessing 3,800 Registration dossiers found that compliance rates for substances above 100 tonnes/year were in the range 31%-44% (ECHA, 2023e). Currently, ECHA carries out "random or concerned based (targeted)" compliance checks, where 4% of low-volume (1-10 tonnes/year) dossiers and 27%-28% of high-volume (100+ tonnes/year) dossiers are assessed (ECHA, 2023e).

The REACH Registration covers a large number of substances (22,000+), which will not be the case for Policy Measure 1 as there are currently only 233 identified SVHCs (ECHA, 2023a). However, there are also a much higher number of DUs than suppliers of substances, so the total number of dossiers to assess may still be significant. Additionally, the motivation of the measure is that the authorities do not have good information

on the number of companies that use these SVHCs in Belgium. This could make monitoring challenging as companies choosing not to submit dossiers cannot be identified as the authorities do not know which companies do or could use SVHCs.

Challenges with enforcement will also be linked to what actions will be taken if companies do not comply. If the 'no data, no market' principle is to be enforced, this could involve revoking market access at a product level if compliance is not met. However, this will likely be the last resort, as softer measures (e.g., allowing for updates of the notification), are likely to be implemented first.

Other approaches to reducing non-compliance may be superior. For example, after reviewing the 2016 results from the Nanoregister, it was believed that not all companies understood the requirements as the number of registrants was lower than expected. In response, a stakeholder workshop was held, and, in 2017, the number of registrants increased by about 50% (Pavlicek et al., 2021). Since 2018, the number of registrants has been consistent, implying that the authorities have not needed to make significant effort in enforcing registrations since the stakeholder engagement.

As the purpose of establishing a notification process is to inform the authorities on the use of SVHCs in Belgium, monitoring and evaluation (M&E) is a key as part of the notification process development. Aspects of Policy Measure 1 that aid the monitoring process include notification through an online platform, consistent information provided across companies and regular/yearly submissions. The notification process will also be designed with other similar processes in mind, which is believed to improve the quality of notification (i.e., consistency and fullness of responses) (Leong & Hazelton, 2019).

Overall, Policy Measure 1 is likely to face some monitoring and enforceability issues, given the large number of companies potentially involved and the lack of existing information about companies that should be complying.

4.7.2 *Policy Measure 2 – Substitution action plan*

Intelligibility

In addition to the use notification, companies are required to supply a substitution action plan (to substitute away from SVHC they are using) via a template created by the authorities. The template can be designed in line with the SSbD framework to make the template consistent with other European initiatives and potentially more familiar to companies (Leong & Hazelton, 2019).

A company's familiarity with substitution processes would impact their familiarity with a substitution action plan and their approach to developing a substitution action plan. For example, companies who have started a substitution action plan within the last 3 years are often aware of possible alternatives (ECHA, 2020b), and will thus find it easier to develop a substitution action plan. Companies that have not previously evaluated or substituted harmful chemical use and that are not aware of any potential candidate alternatives, may not have a full understanding of the substitution action plan requirements (Khanna & Damon, 1999), e.g., in terms of information required and the processes that need to be put in place to gather this information. This can be especially true for companies with niche uses, because industry information may not be readily available and is also likely to be the case for smaller companies.

A substitution action plan is not a new concept. For example, it is required under the REACH Authorisation

process, where companies applying for an authorisation are required to submit a substitution action plan whenever a suitable alternative exist for the company or in general (SAGA)³⁴ (ECHA, 2020a). The concept of a substitution action plan should therefore be known to some companies – most likely larger companies that have dedicated regulatory experts or companies that are already subject to regulatory reporting requirements. Smaller companies are less likely to be familiar with other processes in which substitution action plans are used (such as REACH). At minimum, companies would possess safety data sheets, which assures that they would have familiarity with the required information.

In the industry survey, one respondent replied that their main concern was 'limited knowledge/lack of expertise to comply', which was not expressed by any stakeholders for Policy Measure 1. Furthermore, no respondents replied that they had no concerns related to Policy Measure 2, whilst two respondents said that they had no concerns related to Policy Measure 1. This could imply that for some companies, the addition of a substitution action plan adds greater complexity for compliance, which is described in more detail below.

Overall, the addition of a substitution action plan is likely to cause greater complexities relating to intelligibility as some companies may not be familiar with the information required while others may already have that information available. Considering the high share of small companies in Belgium, the general understanding of a substitution action plan may currently be low, and communication of requirements can pose a challenge to the authorities.

Implementability

In addition to the establishing the notification process as part of Policy Measure 1, the implementation of Policy Measure 2 requires the authorities to publish a template by which companies can submit a substitution action plan. This template can be based on the SSbD framework, which will aid the authorities in drafting the template. Additionally, the authorities can take inspiration from other similar programmes such as SUBSPORT, which provides tools for companies and authorities for evaluating, reducing, or substituting hazardous chemicals (European Cluster Collaboration, 2023).

VITO (2023) estimated that the substitution action plan template will take additional time than to establish the notification alone, but some work may be shared by establishing the notification and substitution action plan obligations together. It will also require investment in establishing evaluation and enforcement plans, which will require more resources than the notification process alone and will be more costly over time as notification and submission of the substitution action plan is annual. Although the process of publishing both a notification and substitution action plan template will require some additional time and resources than for Policy Measure 1, the additional resources required are not expected to substantially change the implementability of this policy measure given the more extensive resources already required for Policy Measure 1.

Companies would need additional resources including suitable expertise to complete the notification process with an additional substitution action plan. Companies that have evaluated or substituted harmful chemical use would likely be familiar with a substitution action plan or process and may have used resources like SUBSPORT to inform their processes, whereas companies who have not previously evaluated

³⁴ SAGA (or no-SAGA) is a reference point to estimate producer surplus losses, which for a SAGA case is 3 years of profit loss versus 5 years of profit loss for no-SAGA. SAGA stands for suitable alternatives generally available.

or substituted harmful chemical use are unlikely to be familiar with the substitution action plan requirements and may need additional support to submit a plan (Khanna & Damon, 1999). Smaller companies are likely to fall within the latter category.

Additionally, the extent of requirements to complete the substitution action plan impacts the implementability of the measure for companies. Similar to intelligibility, the greater the amount and type of requirements will increase the difficulty of compliance for companies for this measure.

In the industry survey, companies' main concerns relating to implementability were similar to Policy Measure 1. That is, four companies responded that they were concerned for administrative burden (66%, n=6) and one responded that the company's main concern was lack of staff resources (16%, n=6). Fewer responses were received for this measure than for Policy Measure 1 (6 responses compared to 8).

Similar to Policy Measure 1, lack of acceptance of the measure could reduce the implementability of Policy Measure 2. The addition of a substitution action plan may increase the possibility of protests, such as non-compliance, due to the added burden of the substitution action plan (O'Rourke & Lee, 2004). The extent of this will depend on how burdensome companies find the notifications and substitution action plan. Where the cost to substitute is high for companies, they are unlikely to treat the process of planning a substitution action plan seriously if they are not required by regulation to substitute (ECHA, 2020c). As demonstrated by the Nanoregister (ECHA, 2023a), Belgian companies are likely to submit the required documents, although the content may not be of the desired quality (e.g., the full template may not have been filled in or the level of detail may be poor).

Monitorability and enforcement

Where companies comply and submit notifications of use and substitution action plans, the measure is monitorable as applications submitted to authorities can be checked against the requirements. However, as the authorities do not have good information on the number of companies that use SVHCs in Belgium, enforcement would be challenging. This will also make monitoring difficult, as the target and thereby the progress to target would not be measurable. Similar to action taken to improve registrant numbers for Nanoregister (Pavlicek et al., 2021), the authorities could host stakeholder workshops to lessen the burden of enforcement.

The addition of a substitution action plan is unlikely to make the enforcement and monitoring process significantly more difficult, than for Policy Measure 1. Although, the difficulties may increase if companies become less willing to accept the obligation with an additional substitution action plan requirement. Companies would use the same online portal as the notification process and fill out a template set by the authorities on a regular basis, such as yearly. Additionally, a substitution action plan template that is similar to other frameworks (e.g., the SSbD framework) should aid the quality of submissions. For example, consistency with other European frameworks may improve companies' submissions due to familiarity (Leong & Hazelton, 2019).

Overall, Policy Measure 2 is likely to face similar monitoring and enforceability issues to Policy Measure 1, but the difficulties may increase if companies become less willing to fulfil the notification process with an additional substitution action plan requirement.

4.7.3 Policy Measure 3 – Non-financial support for the use notification and/or the substitution action plan

Intelligibility

A key purpose of the non-financial support is to aid companies with fulfilling the substitution action plan obligation by giving them materials that would improve their understanding of the process. Support would include online tutorials, helpdesk support, training sessions, templates for the development of a substitution action plan, list of possible resources, expert advice, and a R&D Hub. This additional support would especially benefit small companies in fulfilling the notification and substitution action plan obligations as they are less likely than large companies to have familiarity (see discussion in Section 4.7.1).

The materials could be designed particularly for companies that are unfamiliar with similar processes. By targeting companies that require additional support, Policy Measure 3 may help avoid the intelligibility issues discussed for Policy Measures 2. In this way, Policy Measure 3 is more intelligible than Policy Measure 1. If emissions are included in the notification process, the non-financial support would be more helpful to companies as many companies would struggle to comply without additional support. Policy Measure 1 has lower reporting requirements (i.e., the information requested is more accessible to most companies) and is therefore equally intelligible to this policy measure.

As in Policy Measure 2, one respondent to the industry survey replied that their main concern about Policy Measure 3 was 'limited knowledge/lack of expertise to comply' (n=7). Counter to this, one respondent chose 'Improved knowledge of the substance and its uses' as their main benefit from Policy Measure 3 (n=7), whereas no respondents chose this benefit for Policy Measure 2, which suggests that this policy measure will increase intelligibility for some companies.

Implementability

In addition to elements contained in Policy Measures 1 and 2, Policy Measure 3 requires additional non-financial support to be developed and managed. For example, searching for, contacting, and supporting industry professionals to be advisors will require a significant time commitment. Similarly, an informational hub will require IT and personnel resources to establish and monitor (VITO, 2023). These costs are discussed in Section 4.5.3. Swedish authorities provide similar non-financial support for Sweden's PRIO database, which provides companies with information on the intrinsic health properties and environmental properties of substances (Thorpe & Rossi, 2007). This example could be used as a reference for Belgium authorities to implement a similar non-financial support model.

Companies can utilise non-financial support to guide them through the process. Public support has been used by other countries to improve companies' knowledge about regulation. For example, in Sweden, the PRIO database allows companies to assess their chemical use, examine the opportunity for risk reduction through substitution, and anticipate future legislation (Thorpe & Rossi, 2007). Access to a helpdesk and a framework to prioritise substances for substitution would help Belgian companies fill-out the substitution action plan. As mentioned, the additional support would be especially beneficial for companies who are unfamiliar with mandatory notification (Khanna & Damon, 1999).

Like in the previous policy measures, initial lack of acceptance could reduce the implementation of the policy measure. Public support does not necessarily improve the initial appreciation of regulations for companies. For example, American companies were initially distrusting of public support provided through

TURA (O'Rourke & Lee, 2004). Rather, motivation for substitution action planning is often determined by costs that would be incurred by companies (ECHA, 2020b). Policy Measure 3 may increase initial acceptance of the substitution action plan obligation if the non-financial support improves substitution action planning (Leong & Hazelton's, 2019).

Overall, introducing non-financial support for the substitution action plan will increase the efforts needed to implement, but will also reduce the challenges faced by companies in the development of the substitution action plans and reduce the likelihood of non-acceptance. Therefore, the implementability of this policy measure is likely to be similar to previous measures.

Monitorability and enforcement

The design of the notification process and substitution action plan remain unchanged under this policy measure. The non-financial support will require additional monitoring, especially of the helpdesk and training sessions, which would likely occur annually. The authorities may also want to monitor the use of the frameworks and guidance via online activity and/or account creation.

Policy Measure 3 may improve the process of monitoring and enforcing the mandatory use notification and substitution action plan, as the non-financial support will make it easier for companies to comply (as discussed above). Through engagement with companies that are making use of the non-financial support, the authorities will gain a better understanding of the SVHC market and its actors. This will make it easier to enforce and monitor these measures as compared to Policy Measures 1 and 2.

4.7.4 Policy Measure 4 – Subsidy for the substitution action plan

Intelligibility

The primary purpose of Policy Measure 4 is to provide financial support to companies' development of a substitution action plan. Unlike the non-financial support provided in Policy Measure 3, financial support does not directly make the notification process more intelligible. Rather, the financial support can be used to finance additional support to compliance. The intelligibility of this measure is the same as Policy Measure 2, whose intelligibility is dependent on the guidance provided by the authorities.

In the industry survey, no respondents (n=4) indicated that the measure reduced regulatory uncertainty, which is less than for Policy Measure 3 and is the same result as for Policy Measure 2.

Implementability

Implementing financial support using payments for time spent on the substitution process will be an added complexity for the authorities. This measure requires that the authorities establish a payment system, monitor time spent on the substitution process by companies and make reimbursement payments to companies after the substitution action plan has been submitted. VITO (2023) estimates that the staff time for this process is a tenth to a fifth (3 – 4 FTE versus 40 – 80 FTE) of the time required to implement non-financial support. The Ecology Premium+ plan is an initiative that provides financial compensation for Belgian companies to realise ecology investments in the Flemish Region (VLAIO, 2023) which may provide the Belgian authorities with insights into the setup of a similar payment system. As discussed in Section 4.5.4, financial support may have a significant cost for the authorities, which could negatively impact the implementation of mandatory notification. Policy Measure 4 is likely to be easier to implement for the authorities than Policy Measure 3, and more difficult than Policy Measure 2.

For companies, the financial support can be used to improve the implementability of the substitution action plan process as they can utilise the funds to compensate increased administrative and personnel resource burdens. Financial support has increased participation in public substitution programs as it creates incentive for compliance (OECD, 2023a). The support would also decrease the likelihood of initial non-compliance as companies will be attracted to the financial subsidy and less adverse to increased regulation if it is compensated (ECHA, 2020c). However, the support does not decrease the potential of initial non-compliance due to lack of understanding by companies of their applicability to the regulation.

The extent that the subsidy encourages cooperation is dependent on the scale of burden compared to the financial relief, which can be different depending on the size and experience of the company with substitution. For example, companies may be less encouraged to comply if the cost to comply is higher than the subsidy (which is capped at €20,000 per substance) compared to a company where the costs would be lower on a per hour basis than the subsidy. If emissions are included in the notification process, the financial support would be more helpful to companies as compliance would require more resources for most companies.

Although this policy measure could increase the complexity of implementation for the authorities compared to Policy Measures 1 and 2, it is likely to make implementation of the regulation easier for companies. This measure is therefore likely to have a similar level of implementability to previous measures given the balance of consideration between the authorities and companies.

Monitorability and enforcement

Financial support increases the complexity of monitoring mandatory notification as the authorities will be tasked with creating and fulfilling a payments scheme with all companies that submit a substitution action plan (discussed above).

Financial support improves enforcement of companies complying with mandatory notification and the substitution action plan in so far as it encourages cooperation from companies (discussed above). The design of the notification process and substitution action plan remain unchanged within this policy. The authorities would still need to be concerned with companies that do not comply, as it is difficult to know which companies should comply. This burden would be reduced if more companies are encouraged to comply due to financial support.

The authorities would need to enforce a fair payments system, in which companies can only apply for the subsidy in direct relation to how many hours they have spent on the substitution process. Some companies may report spending more hours than they needed to complete the substitution action plan to gain the maximum subsidy.

4.7.5 Policy Measure 5 – Annual fee for the use of SVHCs

Intelligibility

An annual fee would not improve the intelligibility of the notification and substitution action plan process for companies compared to the non-financial support. The level of intelligibility remains dependant on the structure and information provided by the authorities.

The authorities will need to communicate the fee to users of SVHCs, considering use volumes and

substance prices. This is an added complexity compared to Policy Measure 3.

In the industry survey, no respondents (n=5) indicated that this policy measure would improve their knowledge of SVHCs and uses, which is less than was given for Policy Measures 3 and 4 (n=7 and 4, respectively).

Implementability

Implementation of fees on chemical usage is a complex policy process. It requires additional approval and would go through additional review (with the likelihood of renditions at different points in the process) in addition to establishing Policy Measure 2 (Söderholm & Christiernsson, 2008). This can be made more complex by the existence of lobbying groups for the industries it would affect (Söderholm & Christiernsson, 2008). Similar to a fee system, taxation on chemical usage has been implemented in other European countries, such as the Norwegian tax on perfluoroalkyl and trichloroethylene (Slunge & Sterner, 2001). The Belgian authorities could take learnings from the Norwegian experience. Depending on political buy-in and industry representation (i.e., lobbying power), Policy Measure 5 could be difficult to implement.

For companies, a SVHC usage fee would not necessarily encourage acceptance of notification and the substitution action plan obligations, but it is unlikely to increase explicit noncompliance so long as the process is mandatory. It is also unlikely to impact noncompliance due to companies not understanding their obligation. This is because the addition of a fee does not improve the intelligibility of the process outside what is already supplied by the authorities (e.g., non-financial support) and is not explicitly designed to increase implementation, e.g., through using the funds to finance more supporting materials and incentives.

Overall, Policy Measure 5 will be more difficult for the authorities to implement compared to the prior policy measures.

Monitorability and enforcement

A fee is likely to increase the complexity of monitoring for the authorities compared to Policy Measure 3 as the authorities will need to establish and monitor a mechanism to ensure the payments are made. VITO (2023) estimates that the administrative burden is relatively low for the authorities to monitor the fee system, as the high estimate for resourcing requirements is lower than the low estimate for Policy Measure 4 (3.5 FTE compared to 4 FTE).

Enforcement is dependent on two key factors: 1) the ability of the authorities to locate and communicate to the relevant companies, and 2) the cooperation of companies with this process. As discussed above, ensuring that all applicable companies comply and pay according to the correct volumes band will likely be a difficult task. Companies may also protest against the fee. In Norway, companies reacted to the tax on perfluoroalkyl and trichloroethylene unenthusiastically but still complied with the tax. Assuming this will be a similar case in Belgium, enforcement difficulties may ease over time as companies are identified and comply.

Overall, although the initial monitoring and enforcement efforts will be difficult initially, over time these difficulties will likely ease. The monitoring and enforcement process for this measure is believed to be a similar difficulty level as Policy Measure 2.

4.7.6 Policy Measure 6 – Modular annual fee for the use of SVHCs

Intelligibility

Similar to Policy Measure 5, the fee does not directly impact the intelligibility of the notification and substitution action plan process as it cannot be assumed that the fee will be used to improve the intelligibility of the process through publicly funded support.

However, the modular fee will likely be less intelligible than the fixed fee as the fee is dependent on receipt of the sustainable action plan within a year of notification and is based on emissions. The process may be complicated if, for example, a substitution action plan is not submitted properly near the end of the timeframe and has to be resubmitted. Many companies, especially SMEs, are not familiar with their emissions. Further, emissions levels would need to be categorised in line with a fee system.

The optional substitution action plan is likely to have the same impacts on intelligibility as a mandatory plan (see discussion in Section 4.7.2). For authorities, they could still base the design on the SSbD framework and other similar substitution frameworks, which would help the development process. A substitution action plan that is more familiar to other European initiatives can be more readily understood by companies. Further, a company's familiarity with substitution would impact their understanding of the optional substitution action plan the same as a mandatory plan (ECHA, 2020c). In the industry survey, no respondent indicated that this measure would improve their knowledge of SVHCs and uses, which is the same as in Policy Measures 2 and 5.

Overall, it is likely this measure is less intelligible than all previous Policy Measures.

Implementability

The modular fee in Policy Measure 6 is likely to have similar or higher levels of complexity of implementation for the authorities than in Policy Measure 5. Establishing a fee on chemical usage is a lengthy process for either a modular or fixed fee system (Söderholm & Christiernsson, 2008). After approval, the authorities will need to establish a payment system as well as a monitoring system that considers a variety of fees dependent on volumes, size of company, and submission of a substitution action plan. As the modular fee is dependent on more variables than the fixed fee, establishing a payment system will likely be more difficult.

The optional substitution action plan is likely to have the same impacts on implementation for authorities as a mandatory plan. That is, the authorities are required to develop a template for the plan, which they can base on the SSbD framework, aiding the drafting process. They can also take inspiration from other similar programmes such as SUBSPORT (European Cluster Collaboration, 2023), which offers information on substitution.

The optional substitution action plan is likely to have the same impacts for company compliance as the mandatory plan, but only for those that choose to submit it. Companies who choose to complete the plan will need additional resources (extent depending on familiarity). Companies who choose not to submit the plan are only obligated to fulfil the notification process and would therefore have less of a negative impact on compliance compared to Policy Measures 2-5.

Like in Policy Measure 2, the optional substitution action plan is unlikely to impact the possibility of

purposeful noncompliance as discussed in Policy Measure 1 (O'Rourke & Lee, 2004). Companies must still be aware of their obligations to submit the mandatory notification process even if they do not submit the substitution action plan. It may impact implementability if companies perceive the substitution action plan as burdensome, regardless of it being optional, though this risk is probably nominal (ECHA, 2020c). As demonstrated by the Nanoregister (ECHA, 2023e), Belgian companies are likely to comply even if their applications are not completely filled out.

Monitorability and enforcement

The modular fee system will likely be more difficult to monitor compared to the fixed fee system as there are more variables to consider (see above). Volumes, in particular, will be difficult to monitor as many small companies are not aware of their use volumes. Additionally, the authorities must check whether a company has completed the substitution action plan or not.

Similar to the fixed fee system, the authorities must create and monitor a payment system. VITO (2023) estimates that the administrative resources required to monitor the modular fee system are significantly higher than in the fixed fee system (3.5 FTE versus 10.5 FTE, higher estimates).

The optional substitution action plan will have similar monitoring obligations as the mandatory plan. That is, where companies submit the plan, the measure is monitorable as applications submitted to authorities can be checked against the templates and guidance. The authorities can also monitor uptake of the plan via the mandatory notification process and fee obligations.

As the Substitution action plan is optional, there is no obligation for the authorities to enforce compliance. Authorities will still be required to enforce compliance with the mandatory notification process. Therefore, the challenges to enforcement in this policy measure are the same as in Policy Measure 1, assuming companies do not feel extra burden with the addition of an optional substitution action plan as discussed above.

Overall, the modular fee system is likely to increase the difficulty of monitoring and enforcement due to greater complexities when compared to the fixed fee system, but the optional substitution action plan makes the monitoring and enforcement of that aspect significantly easier.

4.7.7 *Policy Measure 7 – Awareness creation and facilitation of networking*

Intelligibility

There are many information-sharing networks in existence, and it is likely that all potential members of the proposed substitution network are already involved in one or another. Codes of conduct and similar guidelines describing the treatment of confidential information can be supplied to participants as required. The provision and exchange of useful information on substitution is the key objective of the network, so intelligibility is an integral part of making the network a success. The biggest issue, which could be regarded as an aspect of intelligibility, could be identifying potential participants that are most likely to benefit from membership, particularly if these are considered to be SMEs who are naturally more difficult to communicate with. Trade associations, sector groups, larger companies, suppliers, and customers could play a role here. Authorities might also need to access existing company databases (e.g., relating to NACE codes) to identify potential participants.

Implementability

As already stated, many information-sharing networks already exist, including those set up by Belgian authorities, so, subject to available resources, a proposal to set up another network focussed on substitution would clearly be implementable. Whether it operates effectively in practice depends on participation by a sufficient number of relevant stakeholders to make useful information exchange possible. This means involving stakeholders who can afford to attend, have useful information to share, and/or can benefit from receiving such information. It was assumed in Section 4.2 that companies that had already substituted the SVHC in question would be unlikely to participate in the network due to a lack of incentive (and, indeed, a desire to protect their competitive position). Potential suppliers of alternatives would have an incentive to participate, however, because of the scope for gaining a share of the market for the new substance or technology. Authorities, large companies, and sector organisations would be expected to participate in the network. The greater uncertainty regards DUs who are SMEs. As discussed, these are the companies who are most likely to need help in identifying and accessing substitution possibilities, because their relative lack of resources makes them more likely to be uninformed in this regard. However, for similar reasons, they are also harder to identify and incentivise to join networks such as the one considered here.

Monitorability and enforcement

Participation in the substitution network is assumed to be voluntary, so enforceability is not a relevant assessment criterion. It will be possible to monitor direct use of the network, in terms of attendance at events, calls to the helpdesk and website hits and other contacts. However, informal contact outside of these direct mechanisms, including follow-ups between interested parties will be less measurable. Feedback surveys and similar could be useful in this regard. These could also be used to assess whether companies feel the network has been helpful in increasing the substitution activities and success. Because of the complex relationship between substitution outcomes and the factors affecting those outcomes, more formal evaluation of the impact of the network on substitution is not likely to be possible.

4.7.8 Policy Measure 8 – Development of methodology and structure to support the sustainability-focused analysis of alternatives

Intelligibility

The authorities will use the SSbD framework and other relevant European guidance to draft guidance on sustainable substitution from SVHCs in Belgium. The development of sustainability-focused substitution materials is likely to be a complicated process and will require additional stakeholder consultation. Industry-specific guidance and training will be more difficult to draft than the general framework, as some industries may have specific niches that significantly impact what a sustainable substitution structure would need to consider. The authorities may be able to contact industry associations and utilise publicly available industry best practice materials, such as the OECD Chemical Programme, which publishes learnings about hazard and exposure assessments, risk management, and so on, including for specific industries (OECD, 2023c). If there is a feedback structure, the intelligibility of the structure could improve over time as more companies and industry specialists provide feedback. Nonetheless, the complexity of the subject-matter, namely methodologies and frameworks for identifying sustainable alternatives, will make it more challenging for authorities to communicate with companies on the resources provided by this measure.

Policy Measure 8 is likely to support companies' understanding of how to develop a sustainable substitution action plan and AoA as the guidance is designed considering specific industry needs and offers training to industry stakeholders. However, companies' understanding of the resources provided by this policy measure will be dependent on the robustness of the guidance. The measure is likely to increase sustainable substitution awareness for companies who do not have experience with sustainable substitution. Additionally, the sustainable substitution guidance is designed in line with other European initiatives, specifically the SSbD framework, which may increase the intelligibility of the structure to companies who are familiar with other European initiatives. However, this measure does not increase the intelligibility of substitution more broadly amongst companies. For companies already seeking to substitute, and with some understanding of the substitution process, the resources provided could improve their understanding of sustainable substitution and how to use a sustainability framework to make their existing substitution efforts more sustainable. For companies that are not currently seeking to substitute, or for companies who are not interested in sustainable substitution, this policy measure does not increase the intelligibility of substitution.

Implementability

As the sustainable substitution guidance structure is not a mandatory regulatory requirement, implementation of the structure is likely to be easier than for Policy Measure 1-6, which have mandatory elements. No parliamentary approval would be needed, which is often a longer process than through internal departmental approval. The authorities are familiar with establishing an online platform, which is discussed in more detail under Policy Measure 1 (Section 4.7.1), and creating an online platform is a relatively easy endeavour (see Section 4.5.1 for costs).

As discussed above, this measure requires the authorities to draft a guidance for sustainable substitution (including risk assessment) and AoA, which they can use other relevant guidance as inspiration, specifically the SSbD framework. They will also need to draft material that is industry specific, including training materials. This will require the authorities to understand industry nuances and identify industry professionals who are able to provide training, which will likely be a more time-consuming endeavour than has been required in terms of guidance materials for the previous policy measures.

The sustainable substitution structure is significantly less burdensome on companies than mandatory notification and substitution action plan processes and may even lessen substitution and innovation related burdens for some companies. As the guidance is optional, companies are not required to invest in completing the process, nor would they be required to do so on a yearly basis as is the case for Policy Measures 1- 6. The burden to utilise the structure is dependent on a company's willingness to spend the time and resources to learn and implement it. Some companies would utilise the guidance more thoroughly than others, and some companies may choose not to use the guidance though aware of its availability (Khanna & Damon, 1999). Companies may even be relieved of substitution and innovation related burdens if the guidance helps them through that process, e.g., through training or identifying relevant research.

Overall, the implementation of this measure is likely to be more challenging for companies than previous measures, but for fewer companies given the voluntary nature of the measure. For the authorities, implementation of this measure will be easier than other policy measures given that it will not have to attain parliamentary approval but will also be more challenging to implement given the level of expertise

required to develop the necessary resources. The process of developing guidance will be more resource and time consumptive than for the non-financial guidance in Policy Measure 3.

Monitorability and enforcement

Though the structure is not a regulatory requirement (i.e., companies are not required by law to utilise the guidance in their procedures), the authorities may need to monitor use, at minimum, for regulatory reporting requirements within the Belgian government. They will also want to monitor use of the structure to consider improvements as companies and industry specialists may provide feedback.

As an online structure, the authorities will be able to monitor its usage through activity, through accounts (if requested), and/or webinar attendance. The latter two options would provide the authorities with more precise information about the online users, depending on what information is required to create an account or register for a webinar (e.g., company name, industry type, etc).

The structure will not be able to aid the authorities in learning how many companies are using SVHCs and their volumes for companies that do not utilise the structure and do not register with regulatory registrations, e.g., REACH. Nor can it be used to monitor the relationship between its use by companies and substitution efforts, as discussed in Section 4.3.7.

Unlike Policy Measures 1-6 and similar to Policy Measure 7, the authorities are not required to enforce usage of the sustainable substitution guidance. Therefore, the enforcement aspect is not relevant for this policy measure.

4.7.9 Policy Measure 9 – Direct support of companies involved with a subsidy for advisory services (version 1)

Intelligibility

The subsidy provided in Policy Measure 9 does not directly impact the intelligibility of the sustainable substitution structure. This policy measure therefore faces the same intelligibility problems discussed in Policy Measure 8.

The intelligibility of the subsidy scheme is dependent on the authorities' ability to develop clear criteria for applicability. The authorities can utilise the knowledge pool from the sustainable substitution structure to establish this criterion. As it will likely take significant time to establish a robust knowledge pool and, if knowledge expands in response to new developments, the criterion may also be adapted over time. For example, if a sustainable substitution process was once technically complex but due to new developments is no longer complex, that substitution process may no longer be applicable for the subsidy.

Implementability

In addition to the sustainable substitution structure, the authorities will need to implement and monitor a payments system. The implications for implementability are likely to be slightly more complex than Policy Measure 4, which has a financial subsidy attached to successful completion of a mandatory substitution action plan, if more complex. That is, the authorities must establish a payment system, create criteria by which applicability can be discerned, and make payments to companies. The creation of criteria is likely to be a lengthy iterative process as the guidance is structured and justifiable reasons for the subsidy (e.g., significant costs occurred by developing a substitution action plan) are decided. The authorities can take

learnings from the Ecology Premium+ plan, which provides financial compensation for Belgian companies that will realise ecology investments in the Flemish Region (VLAIO, 2023), such as for the development of their structure and results.

The financial subsidy is not designed to directly impact companies' use of the sustainable substitution structure. Rather, the subsidy is meant to be used to improve their ability to implement learnings from the structure and realise information relevant to sustainable substitution of SVHCs at their companies where information is lacking in the structure. That is, companies can use the subsidy to pay for advisory services to discover substitution pathways that are not available in the sustainable substitution structure.

The subsidy is likely to increase the implementability of the sustainable substitution structure as it will likely attract companies to the structure. Financial support has helped other countries in increasing participation in public substitution programs (OECD, 2023a). The extent to which the subsidy encourages participation is dependent on the scale of burden for substitution compared to the financial relief, which can be different depending on the size and experience of the company with substitution. For example, companies may be less incentivised to utilise the structure if they are already aware that the subsidy will not significantly offset additional substitution efforts. Especially as the structure is designed to encourage sustainable substitution, which can be more resource intensive. The subsidy is capped at 25% of advisory costs with a maximum of €25,000 per company.

Overall, Policy Measure 9 is more difficult to implement for the authorities than Policy Measure 8 due to the additional provision of a subsidy. Conversely, Policy Measure 9 may improve the use of the sustainable substitution structure in so far as companies are attracted by the subsidy, but this is assumed not to be significant.

Monitorability and enforcement

The addition of a financial subsidy increases the complexity of monitoring compared to the sustainable substitution structure alone as the authorities will need to discern how the subsidy is spent by companies on advisory services. The authorities will need to monitor changes in how the subsidy is used over time, as justification for spend may change over time. For example, a substitution pathway is discovered that is implementable by companies that would have otherwise been applicable for the subsidy. The number of companies that apply for the subsidy will differ annually, with the majority of applicants likely to occur in the first few years if the availability of the subsidy is communicated successfully.

This measure will require some enforcement as the subsidy is only given to companies for certain uses. This will likely be a relatively small level of enforcement as, depending on the robustness of initial review of applicability, companies are likely to use the subsidy for its intended use. No penalty has been designated for this policy in case of misuse.

Overall, the monitorability and enforcement of this policy is likely to be more burdensome than Policy Measure 8, similar to the increase in burden between Policy Measures 3 and 4.

4.7.10 Policy Measure 10 – Direct support of companies involved with a subsidy for advisory services (version 2)

Intelligibility

Policy Measure 10 does not directly impact the intelligibility of the sustainable substitution structure, but, similar to Policy Measure 9, the authorities will need to communicate this subsidy to all relevant companies, which may be difficult. Additionally, increased participation in the structure due to the subsidy may improve the intelligibility of the structure over time. If more companies are attracted to the structure because of the larger subsidy, it is likely that the knowledge share would be greater. Overall, due to the difficulty of communicating the methodology introduced under Policy Measure 8, this measure may be challenging to communicate and understand.

Implementability

Similar to Policy Measure 9, the authorities will need to implement and monitor a payments system in addition to the sustainable substitution structure. This policy largely does not impact the implementability of Policy Measure 8 for the authorities differently from Policy Measure 9. The only exception is that this policy has a higher cost to the authorities, which may increase the difficulty of implementation depending on internal approval structures. Although, this is not expected to be significant.

The increase in financial subsidy equally is not designed to directly impact companies' use of the sustainable substitution structure. Rather, the subsidy is meant to be used to improve their ability to implement learnings from the structure and pursue sustainable substitution of SVHCs.

Policy Measure 10 only increases the implementability of the sustainable substitution structure in so far as companies are incentivised to use the structure to apply for the subsidy. The subsidy will attract applicants to apply who would have otherwise not used the subsidy in Policy Measure 9 because of the increased payment threshold. Policy Measure 10 offsets the cost of advisory services for substitution pathways at double the rate than Policy Measure 9 (50% versus 25% of costs, respectively).

Overall, Policy Measure 10 can be assumed to have somewhat better implementability than Policy Measure 9. The reasons include, it does not impact the implementability from the side of the authorities and may improve implementability of the sustainable substitution structure more so than Policy Measure 9 as the increased subsidy may attract more companies to the structure.

Monitorability and enforcement

Policy Measure 10 is likely to have the same impacts on monitoring as Policy Measure 9 as the increase in subsidy is unlikely to affect the monitoring responsibility of the authorities. The authorities will still need to implement and monitor the payment scheme.

Policy Measure 10 is also likely to have the enforcement requirements as Policy Measure 9. That is, the measure will require some enforcement as the subsidy is only given to companies who pursue sustainable substitution.

4.7.11 Summary of assessment of practicability

The following table outlines the assessment summary of the practicability attributes for Policy Measures 1 to 10. A full comparison of the policy measures is included in Chapter 5.

Table 4.8: Summary assessment of practicability, Policy Measures 1-10

Policy measure	Assessment type	Assessment Criteria		
		Intelligibility	Implementability	Monitorability and enforceability
Policy Measure 1	Score	3 - Somewhat challenging to communicate and understand	3 - Somewhat challenging to implement	2 - Challenging to monitor and enforce
	Justification	The authorities will have little difficulty establishing notification as they can rely on similar regulatory initiatives. Much of the information required would be familiar to companies. Market share and volumes data are more difficult, especially for SMEs.	The burden of establishing and monitoring an online database is reasonable. Large companies will have a relatively lesser burden to comply than SMEs. Risk of companies hampering the implementation of the policy is low.	Policy Measure 1 is likely to face some monitoring and enforceability issues, given the large number of companies potentially involved and the lack of existing information about companies that should be complying
Policy Measure 2	Score	2 - Challenging to communicate and understand	3 - Somewhat challenging to implement	2 - Challenging to monitor and enforce
	Justification	The addition of a substitution action plan is likely to cause greater complexities relating to intelligibility because 1) some companies may not be familiar with the information required while others may already have that information available and 2) the authorities will need to develop the substitution action plan.	Companies would need additional resources to complete the substitution action plan, which will be relatively more difficult for companies that have not explored substitution pathways before. The authorities will need to develop an additional system to receive the substitution action plans. As the robustness of the plan is unknown, it is assumed that the increased difficulty to implement is marginal.	Policy Measure 2 is likely to face similar monitoring and enforceability issues to Policy Measure 1. The difficulties may increase if companies become less willing to accept the obligation with an additional substitution action plan requirement.
Policy Measure 3	Score	3 - Somewhat challenging to communicate and understand	3 - Somewhat challenging to implement	3 - Somewhat challenging to monitor and enforce
	Justification	Non-financial support is likely to help avoid some of the intelligibility issues discussed for Policy Measures 1 and 2, especially for companies that are unfamiliar with substitution pathways. The authorities will	Introducing non-financial support for the substitution action plan will increase effort needed by the authorities to implement but will also reduce the challenges faced by companies in the development of the	Non-financial support may improve the process of monitoring and enforcing the mandatory use notification and substitution action plan, as it will lessen the burden for companies to comply.

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Policy measure	Assessment type	Assessment Criteria		
		Intelligibility	Implementability	Monitorability and enforceability
		need to develop the support which is an added complexity.	substitution action plans and reduce the likelihood of protests.	
	Score	2 - Challenging to communicate and understand	3 - Somewhat challenging to implement	3 - Somewhat challenging to monitor and enforce
Policy Measure 4	Justification	Financial support is unlikely to impact the intelligibility of the obligations. The support will need to be communicated to companies and is an additional complexity for the authorities to deliver.	Financial support is likely to improve the implementability of the obligations as it is a direct compensation for compliance and is likely to improve acceptance of the obligations. The authorities will have to ensure payments for an unknown number of notifications.	The addition of financial subsidy is unlikely to significantly increase the difficulty of monitoring as it is tied to monitoring the notification and substitution action plan obligations.
	Score	2 - Challenging to communicate and understand	2 - Challenging to implement	2 - Challenging to monitor and enforce
Policy Measure 5	Justification	An annual fee is unlikely to impact the intelligibility of the obligations. The fee structure will need to be communicated to companies and is an additional complexity for the authorities to deliver. The fee structure is likely more complex than the subsidy for the authorities but not significantly.	The authorities will need to go through a complicated process to approve of a fee, which is a more difficult process than a financial subsidy for completion of regulatory obligations.	Enforcement will be more complex than the previous policy measures as the authorities will need to monitor annual fee income and is differentiated by use volumes. Further difficulty arises from not knowing which companies are applicable.
	Score	1 - Very challenging to communicate and understand	1 - Very challenging to implement	2 - Challenging to monitor and enforce
Policy Measure 6	Justification	The modular fee will likely be less intelligible than the fixed fee as the fee is dependent on receipt of the sustainable action plan within a year of notification.	The modular fee is more complex for both the authorities to establish and for companies to follow along than the fixed fee system. An optional substitution action plan	The modular fee will be more difficult to monitor than the fixed fee as it requires the authorities to track submissions of the

Policy measure	Assessment type	Assessment Criteria		
		Intelligibility	Implementability	Monitorability and enforceability
			will have the same levels of implementability as the authorities will still need to establish it.	substitution action plan in addition to the requirements outlined in Policy Measure 5.
Policy Measure 7	Score	3 - Somewhat challenging to communicate and understand	4- Neither challenging nor easy to implement	3 - Somewhat challenging to monitor and enforce
	Justification	Information sharing networks already exist and are widely understood. The challenge will be in attracting those companies who are less likely to be already engaged in similar activities.	The Belgian authorities already run networks which could serve as a model for this one. Implementation is subject to resource availability, as well as ensuring sufficient engagement of the right stakeholders to provide value to network members in the longer term.	Participation is voluntary so enforceability is not relevant. Authorities will be able to monitor engagement with the helpdesk and information hub, and attendance at network events.
Policy Measure 8	Score	1 – Very challenging to communicate and understand	3 - Somewhat challenging to implement	3 - Somewhat challenging to monitor and enforce
	Justification	The sustainable substitution structure has the most complex guidance for the authorities to produce as it requires significant industry stakeholder consultation to develop.	Implementing the sustainable substitution structure will likely be more challenging for companies than previous measures, but for fewer companies given the voluntary nature of the measure. As the measure is not mandatory, companies that find it excessively challenging are unlikely to participate. The process of developing guidance will be more resource and time consuming than for the non-financial guidance in Policy Measure 3 as it will require significant stakeholder engagement.	The authorities are not required to enforce usage of the sustainable substitution guidance, but monitoring the structure in relation to the number of companies that could be using it will be difficult.

Policy measure	Assessment type	Assessment Criteria		
		Intelligibility	Implementability	Monitorability and enforceability
Policy Measure 9	Score	1 – Very challenging to communicate and understand	2 - Challenging to implement	2 - Challenging to monitor and enforce
	Justification	The addition of a subsidy is an added complexity for the authorities. It may increase the intelligibility of the structure because more companies would be interested in the programme. Although, the significance of increased interested is deemed limited because of the low financial incentive.	The subsidy increases the difficulty of implementation but is not so significant as the fee structures.	The addition of a financial subsidy increases the complexity of monitoring compared to the sustainable substitution structure alone as the authorities will need to monitor how the subsidy is spent by companies on advisory services.
Policy Measure 10	Score	2 - Challenging to communicate and understand	2 - Challenging to implement	2 - Challenging to monitor and enforce
	Justification	The intelligibility of this measure is slightly higher than the lower subsidy as the financial incentive is stronger to participate in the structure.	The greater subsidy does not impact the implementability from the side of the authorities. It may improve implementability of the sustainable substitution structure more than the lower subsidy as it may attract more companies to the structure.	This measure will have similar monitoring implications as the lesser subsidy.

4.8 Wider and distributional impacts

This section explores the wider and distributional impacts of the policy measures. A description of this attribute is presented in Section 2.2.5. This section is structured by assessment criteria per policy measure.

4.8.1 *Policy Measure 1 - Mandatory notification of use*

Impacts on competitiveness

Mandatory use notification will be a Belgian-specific obligation, and as such, may lower the competitiveness of Belgian companies. The significance of this effect will depend on how burdensome and costly companies consider the use notifications to be. That is, Belgian companies may increase their prices to compensate for the additional cost which could decrease their competitiveness with companies outside Belgium. A more unlikely scenario would be that costs are considered too high and that some companies may choose to leave Belgium, as was the case in the US after the passing of the US Toxics Release Inventory (Leong & Hazelton, 2019). It is more likely, that mandatory notification will only slightly impact competition as the cost to register is relatively low (see Section 4.5.1). This has been the case for companies that register with the Nanoregister annually.

Mandatory notification could positively impact competition if it provides benefits to Belgian companies, such as improved understanding or industry knowledge on SVHCs. For example, the EPA's 33/50 program gave companies public recognition through press releases, newsletters, and awards. Respondents indicated that the mandatory notification would benefit them because of less regulatory uncertainty (22%, n=9), improved supply chain communication (22%, n=9) and better or easier sustainability reporting (11%, n=9).

Additionally, after an initial 'innovation shock' caused by the introduction of new regulation, some companies can shift to alternative processes and even higher value markets (Oosterhuis, 2006). Innovating alternative process would enable Belgian companies to achieve first access to markets, giving them a 'first mover' advantage and increasing their competitiveness significantly. Achieving this status is a key goal of the Belgian authorities.

Impacts to competition would not likely be equal between SMEs and large companies. Oosterhuis (2006) argues that though large companies may react to new regulation with innovativeness, SMEs are often risk-averse and may not have resources available to be innovative. In this way, large companies would gain a competitive advantage over SMEs in the same industries.

In the industry survey, three respondents (43%, n=7) indicated that mandatory notification is unlikely to cause a behavioural change. Considering this and the lack of significant negative or positive changes already mentioned, it is unlikely that Policy Measure 1 will have significant negative impacts on the competitiveness of Belgian industry.

Concerns for SMEs

The make-up of company sizes in Belgium for companies that use SVHCs is unknown, in large part due to the lack of information generally on SVHC usage in the country. Over 80% of companies in Belgium with

REACH substance registrations are large companies and only 5% are micro (ECHA, 2023b). In Belgium – as well as in the EU – 99.8% of companies are small or medium enterprises (SMEs) (European Commission, 2019), and, in the EU, around 20% of value added in the EU manufacturing sector originates from small and micro companies (Eurostat, 2022). Therefore, it is reasonable to conclude that the majority of manufacturers of SVHCs are large companies while the majority of DUs are likely to be SMEs.

SMEs would react to mandatory notification differently than large companies due to them having several key differences. These include:

- Small companies are less likely to already have collected the required information³⁵, increasing the absolute costs faced.
- Small companies are less likely to have a detailed understanding of regulatory chemicals policy. That is, the absolute costs of developing the human capital required to comply will be larger.
- Small companies are more affected by the same level of costs, as it will be a higher proportion of the company's revenue.
- Small companies are less likely to already be engaging in other similar notification policies, as currently EU level regulations do not generally apply to DUs of CL SVHCs.
- Smaller companies are likely to have less complex operations, reducing the costs of compliance
- SMEs are significantly more dependent on their suppliers of basic chemicals and are usually short-term oriented and risk adverse (Oosterhuis, 2006).

If emission reporting was added as a requirement of the use notification, these concerns would all increase. Policy Measure 1 does not specifically take into consideration the differing circumstances for SMEs. That is, there is no specific exemptions or otherwise designed for SMEs in the notification process.

Financially, SMEs have higher relative costs to comply with the notification requirements, which means that the relative burden is also higher. Their limited funds and usually short-term orientation of SMEs also make them less likely to gain benefits from a first mover advantage, as they tend to be late(r) adopters of technology. As discussed, competitive gains from regulation-stimulated innovation are more likely to occur for large companies (Oosterhuis, 2006), which can have negative consequences for SME competitiveness.

In terms of likely responses to mandatory notification provided in the industry survey, there is no correlation between specific actions or concerns and SME status (though this may be due to an insignificant response rate). In the case of REACH registration, SMEs often state that registration would be costly for them (ECHA, 2016), but the requirements under REACH Registration is also significantly more burdensome to comply with than the requirements under Policy Measure 1.

Fairness of cost distribution

'Fair cost distribution' refers to alignment with the polluter pays principle and avoidance of disproportionate burden on a few actors. The two types of actors directly impacted by this policy are DUs (companies) and the Belgian authorities.

³⁵ All companies manufacturing articles containing SVHCs in concentration above 0.1% w/w on EU market must submit information on these articles to the SCIP database. However, as with any regulation, SMEs are more likely to be less knowledgeable or unaware of such obligations.

Use notifications will only lead to costs for companies using SVHCs, whilst companies not using such substances will not be affected. All companies using SVHCs will be subject to the same obligations and is not distributed by volume or company size. That is, companies who use less SVHCs than others have an equal burden to comply. SMEs are likely to be the most disadvantaged by mandatory notification. Therefore, though the costs are given to the 'polluters', the cost would not be distributed in alignment with those who pollute the most, paying the highest costs.

Some of the cost will, however, fall on the authorities, as they will have to manage, monitor, and enforce the system. In this respect, it is not fully aligned with the polluter pays principle. However, overall, it is considered that though it is not completely fair the unfair elements are acceptable.

Impacts on the job market

There are no direct impacts on the job market from mandatory notification. Rather impacts would arise from behavioural changes of companies. Negative impacts to the job market (i.e., job loss) could arise from decreases in competitiveness or if changes in production processes lead to less workers required (e.g., through greater automation). However, as noted above, it is believed that Policy Measure 1 is unlikely to have significant impacts to competition.

A modest net increase in the job market may occur due to the increased resource need associated with data gathering and reporting within companies, and management and enforcement activities within government agencies. Respondents indicated their main concerns with the notification process were administrative burden (50%, n=8) and a lack of staff resources (25%, n=8), both of which may indicate that companies would increase their staff to comply with notification. This is not expected to be significant and overall, it is believed that this measure will have negligible impacts on the job market.

4.8.2 Policy Measure 2 – Substitution action plan

Impacts on competitiveness

Additional burden from a mandatory substitution action plan will be a Belgian-specific obligation, and as such, may lower the competitiveness of Belgian companies. The significance of this is dependent on how burdensome and costly companies consider the substitution action plan to be in addition to the notification process. It is unlikely that the cost would be so significant as to cause companies to leave Belgium as was the case after the passing of the US Toxics Release Inventory (Leong & Hazelton, 2019). The burden from completing the substitution action plan is relational to the requirements, though is likely to be relatively low as the plan is expected not to be as robust as REACH (see Section 4.5.2). Assuming the cost will be manageable, similar to Policy Measure 1, it is expected that companies will internalise the costs rather than negate their competitiveness.

The substitution action plan could positively impact competition if it provides benefits to Belgian companies, such as better understanding of substitution possibilities and encouraging innovation. As the substitution action plan is designed to make companies consider possible substitution pathway, it is more likely than notification alone to encourage innovation. As discussed in Policy measure 1, the realisation of benefits to competitiveness is dependent on company size. That is, SMEs are less likely to innovate as a result of regulation (Oosterhuis, 2006). In this way, large companies would gain a competitive advantage over SMEs in the same industries.

Two more respondents to the industry survey indicated that Policy Measure 2 would initiate or increase substitution efforts than Policy Measure 1 (3 compared to 1). Two respondents indicated that their main benefit from the measure was 'better or easier sustainability reporting' compared to one respondent for Policy Measure 1. Note there were fewer responses for this measure than Policy Measure 1 (7 compared to 9).

In summary, the addition of a substitution action plan will cause more financial burden but is not expected to have significantly worse impacts on competitiveness at a Belgian level than Policy Measure 1.

Concerns for SMEs

As discussed in Section 4.8.1, SMEs are likely to react differently to mandatory reporting requirements than large companies. For example, the benefits from better information on substitution may not be realised by SMEs who are short-term oriented and risk adverse (Oosterhuis, 2006). Policy Measure 2 does not specifically consider the differing circumstances for SMEs. That is, there is no specific exemptions or otherwise designed for SMEs in submitting a substitution action plan.

This measure can also have greater impact to competitiveness for SMEs compared to Policy Measure 1. As discussed above, the substitution action plan is more likely to encourage innovation than mandatory notification alone. Although, the realisation of this is not likely for small companies.

Additionally, SMEs may have higher relative financial burdens from Policy Measure 2 as is believed to be the case for REACH registration (ECHA, 2016). However, the concern is considered comparable to that of Policy Measure 1.

Fairness of cost distribution

Similar to Policy Measure 1, the two types of actors directly impacted by this policy measure are DUs (aka, companies) and the Belgian authorities.

Costs associated with Policy Measure 2 will only be applicable to companies that use SVHCs and would not apply to companies that do not use SVHCs. Furthermore, all companies using SVHCs will be subject to the same obligations, which creates an unfair balance for companies that use less SVHCs.

Some of the cost will fall on the authorities, as they will have to manage, monitor, and enforce the system. In this respect, it is not fully aligned with the polluter pays principle and is similar to the fairness of Policy Measure 1.

Impacts on the job market

There are no direct impacts on the job market from mandatory reporting of a substitution action plan. Rather impacts would come from behavioural changes of companies. Negative impacts to the job market (i.e., job loss) could come from decreases in competitiveness or if changes in production processes lead to less workers required (e.g., through greater automation). As discussed above, Policy Measure 2 is unlikely to have significant impacts on competition for larger companies but may reduce the competitiveness of smaller companies. Any adverse impacts on the job market will result from these changes in competitiveness.

The additional substitution action plan may increase the potential growth in jobs from fulfilling (companies)

or managing (the authorities) the notification process as more resources would be required than for Policy Measure 1. Respondents indicated their main concerns with Policy Measure 2 were administrative burden (66%, n=6) and a lack of staff resources (16%, n=6), both of which may indicate that companies would increase their staff to comply with mandatory reporting.

Overall, this measure is believed to have similar negligible effects on the job market as Policy Measure 1.

4.8.3 Policy Measure 3 – Non-financial support for the use notification and/or the substitution action plan

Impacts on competitiveness

Policy Measure 3 has similar implications for competition as Policy Measures 1 and 2. That is, mandatory notification and substitution action plans will be Belgian-specific obligations, and as such, may lower the competitiveness of Belgian companies. However, as discussed in Section 4.7.3, non-financial support may decrease the burden on companies, thereby lessening any impact on competition.

Similar to Policy Measure 2, this policy could improve competition if, the non-financial support encourages innovation in addition to a substitution action plan (Oosterhuis, 2006). However, an equal number of industry survey respondents indicated that they would not change their behaviour as for Policy Measure 1 (3, n=6 and 7 respectively), and the same number of respondents indicated that they would transition to an alternative (1, n=7 for Policy Measure 1 and n=6 for Policy Measures 2 and 3). Fewer companies responded that Policy Measure 3 would incentivise them to increase substitution efforts compared to Policy Measure 2 (1 versus 3, n=6).

Overall, Policy Measure 3 is believed to have negligible impacts on competitiveness.

Concerns for SMEs

The non-financial support was designed with SMEs particularly in mind. This is because public support helps SMEs who cannot afford the same level of research as large companies (Thorpe & Rossi, 2007). However, the benefits from better information on substitution may not be realised by SMEs who are short-term oriented and risk adverse (Oosterhuis, 2006). Additionally, non-financial support may not be enough to incentivise substitution if substitution is not financially viable, which is more often the case for SMEs (ECHA, 2016). Overall, Policy Measure 3 is more likely to aid SMEs than the previous policy measures as the non-financial support would be designed with the intension of improving SME knowledge on the notification process and substitution.

Fairness of cost distribution

The actors directly impacted by this policy measure are DUs and the Belgian authorities.

DUs costs are expected to decrease if non-financial support for the use notification and the substitution action plan is provided. Companies using SVHCs would face costs that are not incurred by companies who do not use SVHCs, albeit less so than under Policy Measure 2. All companies using SVHCs would still be subject to the same obligations, which would mean those that use fewer or lower volumes of SVHCs, which is not fully aligned with the polluter pays principle.

The non-financial support will add greater burden to the authorities compared to the previous policy

measures. Effectively, the authorities take on some of the burden that should have fallen on companies using SVHCs. Therefore, this has a somewhat unfair cost distribution.

Impacts on the job market

Like the previous measures, there are no direct impacts to the job market from mandatory reporting. Instead, impacts would arise from behavioural changes of companies. Negative impacts to the job market (i.e., job loss) could come from decreases in competitiveness or if changes in production processes lead to less workers required (e.g., through greater automation). As the negative impacts on competitiveness from notification are limited, any negative impact to the job market is also believed to be lessened compared to Policy Measures 1 and 2. Further, if the support increases the likelihood of innovation, it may improve job market outcomes.

The authorities will likely hire more staff to develop and monitor the support, but reversely, Companies may be less likely to hire additional staff to fulfil the mandatory notification process as the non-financial support may cover support they would have otherwise needed. Overall, the effect on the job market is likely to be negligible.

4.8.4 Policy Measure 4 – Subsidy for the substitution action plan

Impacts on competitiveness

Financial support for companies completing the substitution action plan in addition to non-financial support can potentially avoid the negative impacts to competition outside Belgium that are attached to Policy Measures 1 and 2. As discussed, the introduction of mandatory use notification and substitution action plan are Belgium-specific, potentially affecting the competitiveness of Belgian companies due to increased regulatory costs. A financial subsidy offered in Policy Measure 4 would alleviate the financial burden on companies, reducing the adverse effects of mandatory notification requirements and the substitution action plan on competition. Although this is dependent on how much of the cost is covered by the subsidy.

Within Belgium, the impacts to competition are dependent on the scale of the burden compared to the financial relief. Companies that are familiar with the process may face lower costs to comply whereas companies that are unfamiliar with the process may have higher costs than the maximum subsidy (€20,000 per substance). Although, rather than spending more than the subsidy, they may choose to lessen the quality of their substitution action plan, as discussed in Section 4.3.4.

The introduction of subsidies could positively impact competition if it provides benefits to Belgian companies by alleviating financial burdens, especially if the payments provide a net monetary benefit, and encourage innovation (Thorpe & Rossi, 2007). In the industry survey, two respondents (50%, n=4) of the industry survey indicated that Policy Measure 4 reduces the cost of substitution efforts, and two respondents (n=3) believe that this measure would diminish competitive disadvantages of Belgian companies.

Overall, it is believed that Policy Measure 4 could lead to a small, positive impact on competitiveness.

Concerns for SMEs

SMEs often face relatively higher compliance costs to meet mandatory notification and substitution action

plan requirements. For example, SMEs may have higher relative financial burdens from Policy Measure 2 as they believe to be the case for REACH registration (ECHA, 2016). Policy measures 4 can help to alleviate the financial burden which is particularly significant for SMEs compared to larger companies as the subsidy is a standard base rate per hour. Although, the helpfulness of this measure is probably not significantly more than with non-financial support alone as small companies are still less likely to innovate without additional support.

Fairness of cost distribution

The financial subsidy is not differentiated by usage volume, which means that there is no financial benefit for companies that use less SVHCs than others. In fact, the subsidy is capped per substance, meaning that a company who uses multiple SVHCs can gain more subsidy than a company that uses fewer SVHCs (and presumably, less overall volume).

Moreover, Policy Measure 4 places a greater financial burden on authorities as they must provide the subsidies to the polluters. Subsidies do not align with the polluter pays principle and involve an opportunity cost of public funds (OECD, 2023b). Furthermore, once implemented, scaling down or eliminating subsidies becomes challenging, as they often stimulate the formation of interest groups composed of beneficiaries striving to protect their advantages (OECD, 2023b). As such, this measure has a somewhat unfair cost distribution.

Impacts on the job market

As discussed previously, the mandatory notification of use and substitution action plan are not anticipated to directly impact the job market. Instead, any effects on employment would stem from the behavioural changes made by the companies. As Policy Measure 4 is likely to reduce any negative impacts to competition with companies outside Belgium, job losses are unlikely to occur. This measure may increase jobs if companies hire additional staff to support the mandatory notification process.

These factors may further influence the potential for companies to hire additional staff to cope with mandatory reporting, particularly given that subsidies can alleviate the financial burdens associated with such resource increases. Overall, the measure is likely to have a positive impact on the job market, causing a limited increase in the number of jobs.

4.8.5 Policy Measure 5 – Annual fee for the use of SVHCs

Impacts on competitiveness

The introduction of an annual fee for companies using SVHC(s) is expected to negatively impact competitiveness more than the previous policy measures. The fee would increase costs for companies using SVHCs on top of the burden attached to the mandatory notification and substitution action plan. This fee, determined as a percentage of a company's expenditure on the SVHC substance they use, will affect companies differently through substance price and SVHC usage levels. Larger companies, which typically use higher volumes of SVHCs, will be subject to a higher fee due to their larger sales value, increasing negative impacts on competition compared to mandatory obligations alone. This could potentially level the playing field for SMEs to some extent, albeit the burden relative to their revenue is likely to still be greater for SMEs.

Concerns for SMEs

Although Policy Measures 5 is tailored to accommodate varying volumes of SVHC usage, it does not take into consideration the relatively higher burden that the use notification, substitution action plan and the fee would be on SMEs. Additionally, a more significant burden would occur for SMEs that depend heavily on SVHCs in their operations. Due these difficulties, the Policy Measure 5 is expected to create significant concern for SMEs.

The authorities could mitigate this challenge for SMEs through financing grants to small businesses to support substitution (OECD, 2023), however, this has not been assessed as a policy measure in this report.

Fairness of cost distribution

Policy measures 5 is aligned with the polluter pays principle as companies that utilise the most SVHCs bear a greater financial burden. Instead of placing the burden on authorities, this approach ensures that those who contribute the most to SVHC usage also contribute proportionally to the costs associated with it. However, there are some perverse incentives built into the measure (discussed in Section 4.3.5) that could lead to lower fees for those using higher volumes, and users of higher cost substances pay higher fees regardless of whether these substances have greater negative effects.

Moreover, the fee can provide authorities with the necessary funds to negate negative impacts from SVHC usage or to support publicly led substitution efforts. Therefore, it is judged to have a mostly fair cost distribution.

Impacts on the job market

The introduction of Policy Measure 5 is not expected to have a major direct impact on the job market as though companies will require personnel to navigate the notification process, similar to the requirements outlined in Policy Measure 3, this effect is not expected to be significant.

As the fee is an additional expense, the impact of this measure on competitiveness would be more negative. Companies are more likely to attempt to redistribute the cost downstream in the supply chain or absorb it through other means rather than resorting to job cuts. Small companies may have more difficulty distributing costs, and, therefore, the impacts to jobs at these companies would be worse.

The authorities responsible for overseeing the fee system may need to expand their workforce to effectively manage and enforce it. According to VITO estimates, this could necessitate the hiring of upwards of 3.5 full-time employees, which is considered negligible. Overall, the expected impact on the job market is negligible.

4.8.6 Policy Measure 6 – Modular annual fee for the use of SVHCs

Impacts on competitiveness

Policy Measure 6 offers more flexibility by allowing companies to choose between paying the fee set out under Policy Measure 5 or submitting a substitution action plan and pay a modest fee on their use of the SVHC. This flexibility could potentially benefit companies by reducing the financial burdens and administrative requirements and removing unfair disadvantages that a complying company would suffer (Slunge & Sterner, 2001)

With this flexibility, the impact on competitiveness would vary depending on how companies choose to

respond to Policy Measure 6. Companies that embrace the measure, submit substitution action plans, and actively work to replace SVHCs with safer alternatives may gain a competitive advantage both domestically and internationally by appealing to environmentally conscious consumers and complying with increasingly stringent regulations. The potential advantages will depend on how high the modest fee level is. Conversely, companies that opt to pay the annual fee may face challenges in the long run, potentially limiting their competitiveness.

Overall, this measure is believed to have limited negative impacts on competition. For companies that submit the substitution action plan, the impacts to competitiveness are similar to Policy 3. Although there is still a low fee even if a substitution action plan is submitted, these companies may be more likely to gain competitive advantage from innovation.

Concerns for SMEs

The modest fee structure has the same issues for SMEs as the fixed fee system for SMEs that do not comply. That is, the fee is a relatively higher burden for small companies, and especially so for companies that rely heavily on SVHCs. If companies choose to submit a substitution action plan, they would still be subject to a modest fee alongside the administrative burden of the fee system. Overall, it is therefore not expected that this measure will have similar negative concern for SMEs as Policy Measure 5.

Fairness of cost distribution

Policy Measure 6 places a financial burden on companies that choose not to submit substitution action plans by requiring them to pay an annual fee. The alignment with the polluter pays principle lies in the fact that all companies using SVHCs are penalised, while those not taking proactive steps to reduce or eliminate SVHCs from their processes are financially penalised. Moreover, the fee can provide authorities with the necessary funds to mitigate negative impacts from SVHC usage or to support publicly led substitution efforts.

However, there are some perverse incentives built into the measure (discussed in more detail in Section 4.3.5) that could lead to lower fees for those using higher volumes, and users of higher cost substances pay higher fees regardless of whether these substances have greater negative effects. Further, companies that aren't able, for whatever reason, to submit a substitution action plan must bear the largest burden.

Overall, this measure is judged to have a slightly unfair cost distribution.

Impacts on the job market

Despite the presence of the companies that choose to not submit a substitution action plan and pay the fee, the impact on the job market is not expected to be significant as companies are more inclined to redistribute the cost downstream in the supply chain or absorb it through other means rather than resorting to job cuts.

However, companies choosing to embrace the measure and invest in SVHC substitution efforts may create job opportunities in fields related to research, development, and implementation of alternative technologies and materials. The waiver of the submission fee for the first year can help companies to allocate their resources to new personnel.

Moreover, the authorities responsible for overseeing the modest fee system may need to expand their

workforce to effectively manage and enforce it. This job market impact for the public sector is expected to be more significant than of Policy Measure 5 as a modest fee system is more complicated than a fix fee and require more resources. According to VITO, resources required to monitor the modest fee system are significantly higher than in the fixed fee system (3.5 FTE versus 10.5 FTE, higher estimates). This is still not a significant increase in the jobs market overall, and this measure is believed to have negligible impacts on the job market.

4.8.7 *Policy Measure 7 – Awareness creation and facilitation of networking*

Impacts on competitiveness

Because involvement in the network will be voluntary, companies would be unlikely to participate if they felt it would negatively impact their competitive position, e.g., due to cost or loss of confidential information etc. Thus, negative competitive effects are unlikely.

Positive impacts on competitiveness could result if, through becoming more informed about good working practices and substitution opportunities, Belgian companies improve their processes, become more efficient and modernise. However, the overall impact on competitiveness is not expected to be significant.

Concerns for SMEs

The substitution network as outlined does not target SMEs particularly, but as the preceding discussion has highlighted, there are several ways in which the policy could affect SMEs differently from larger companies. SMEs could benefit more from the information provision aspects of the network, as they are less likely to have access to current knowledge and expertise compared to larger companies. However, they also face higher relative costs of participation, which could put them at a disadvantage.

Fairness of cost distribution

‘Fair cost distribution’ refers to alignment with the polluter pays principle and avoidance of disproportionate burden on a few actors. The groups most affected by this policy are SVHC DUs, suppliers of alternatives, third parties and the Belgian authorities.

Cost will be incurred by all who attend the network, but attendance is voluntary and hence so is incurrance of participation costs. Thus, the largest polluters may avoid the costs of participation. The costs of setting up and running the network would be paid for by the Belgian authorities (and, hence, Belgian taxpayers). It could be argued that this does not align with polluter-pays. Overall, this cost distribution is considered somewhat unfair.

Impacts on the job market

There are no direct impacts on the job market from a substitution network. Any impacts would come from behavioural changes of companies. Negative job market impacts (i.e., job losses) could come from decreases in competitiveness or if changes in production processes lead to fewer workers required (e.g., through greater automation). Any changes are likely to be marginal, however.

4.8.8 Policy Measure 8 – Development of methodology and structure to support the sustainability-focused analysis of alternatives

Impacts on competitiveness

Within Belgian companies who use SVHCs, companies who are unaware of sustainable substitution methodologies benefit more from the guidance than companies who have experience with substitution (Khanna & Damon, 1999). Targeted trainings for these companies may create a more level playing field.

As there is practically no mandatory element, i.e., using the sustainable AoA methodology is voluntary, it can be confidently assumed that there would be no negative impacts to Belgian companies' competitiveness due to this policy measure. Instead, the guidance is designed to increase innovation across Belgian companies using SVHCs. Therefore, the impacts on competitiveness between Belgian and other companies is likely to be positive for the companies utilising the guidance (which would be those that find this beneficial).

On the other hand, the uptake of the measure is expected to be low, and hence, the impacts on competitiveness at a Belgian level are negligible.

Concerns for SMEs

This policy measure could, benefit SMEs more than Policy Measures 3, 4 and 7, which provide non-financial and financial support, and networking to companies that comply with the substitution action plan, as the structure includes targeted training. This is particularly true for SMEs that are unfamiliar with sustainable substitution or developing an AoA for their processes, which is often the case due to their short-term oriented and risk-averse nature (Oosterhuis, 2006). As discussed above, SMEs can use the guidance and trainings to achieve a level field of knowledge with large companies who are often already aware of these processes or are able to innovate more quickly (OECD, 2023b).

However, the cost of participating and applying the sustainability focussed AoA methodology is likely to prevent SMEs from utilising these resources.

Fairness of cost distribution

Companies that use SVHCs would benefit from guidance that targets industry specific uses of SVHCs, assuming it will aid their innovativeness and save them costs if they were pursuing substitution. Companies not using SVHCs will not face any additional costs but will also not gain any benefits from this measure. This is also the case for companies using SVHCs but are not pursuing substitution. As such, it cannot be considered a fair cost distribution.

Policy Measure 8 does not align with the polluter pays principle as the authorities are required to develop and sponsor the sustainable substitution structure and companies can access this information for free. Companies that use SVHCs may also benefit from the industry specific knowledge and AoA guidance, whereas companies that use less harmful chemicals may not have access to similar knowledge and guidance.

Overall, Policy Measure 8 has a more unfair cost distribution than Policy Measures 1 to 6, as authorities bear the full burden of establishing the structure and any associated training. Companies using SVHCs do not bear any costs.

Impacts on the job market

There are no direct implications for the private job market at companies that use SVHCs from Policy Measure 8. Companies are unlikely to significantly increase their overall staff numbers as utilising the sustainable substitution action plan is voluntary and take-up is expected to be relatively low.

Rather, impacts will occur from behavioural shifts from companies as a result of the sustainable substitution structure. Negative impacts to the job market (i.e., job loss) could come from changes in production processes, influenced by the structure, if these lead to less workers required (e.g., through greater automation). Positive impacts to the job market would come from positive shifts in competition between Belgian and other companies. It is not possible to infer shifts in the job market between Belgian companies from competitive shifts.

To meet the requirements for this policy measure, the Belgian authorities may hire staff to support implementation and monitoring of the sustainable substitution structure. Alternatively, the authorities may outsource to consultants. As the role of the authorities is less burdensome than in the policy measures with mandatory obligations (i.e., no obligation for enforcement for yearly submissions), the impacts to the job market from the side of the authorities are likely insignificant.

Overall, impacts to the job market are unlikely to be directly caused by this policy measure and are likely to be insignificant.

4.8.9 Policy Measure 9 – Direct support of companies involved with a subsidy for advisory services (version 1)

Impacts on competitiveness

The impact on competitiveness is not expected to be significantly different than that of Policy Measure 8. The reason for this is that the cost of a sustainability focussed AoA is believed to be significant, and the subsidy will only cover 25% of these additional costs. The companies that are accepted for subsidy will be in a better position from a competition point of view, but the overall impact at a Belgian level is expected to be negligible.

Concerns for SMEs

It is not believed that the impact on SMEs will be significantly different than under Policy Measure 8. The reason for this is that the cost of a sustainability focussed AoA is believed to be significant, and the subsidy will only address 25% of these additional costs, hence, SMEs are unlikely to make use of this subsidy.

Fairness of cost distribution

In addition to the guidance discussed in Policy Measure 8, companies that use SVHCs would benefit from the financial subsidy, assuming they utilise it to discover substitution pathways and improve their innovativeness. Companies' who do not use SVHCs would likely not have access to this subsidy.

Policy Measure 9 is even less in alignment with the polluter pays principle than Policy Measure 8 as the measure increases the cost for the authorities to implement, whereas companies receive greater support through the addition of a financial subsidy. Additionally, companies that use SVHCs benefit from the guidance and financial support, whereas companies that use less harmful chemicals may not have access to these resources.

Overall, the distribution of costs from Policy Measure 9 is wholly unfair as authorities bear costs while companies do not face any mandatory costs.

Impacts on the job market

There are no direct impacts to jobs in the private sector due to Policy Measure 9. Rather, impacts would occur in relation to behaviours from companies that participate in the guidance and financial subsidy. For example, a company may increase employment if the subsidy is substantive enough to incentivise research into substitution pathways. Further, there would probably be an additional positive impact on the job market if this measure were to improve competitiveness between Belgian and other companies more so than with sustainable substitution guidance alone. Although, the uptake of the subsidy is not expected to be high.

The authorities may hire additional staff to implement and monitor the subsidy scheme to meet the additional requirements of this policy. Further, the authorities would also need to increase employment to cover enforcement of the subsidy scheme.

Overall, impacts to the jobs market from Policy Measure 9 are likely to be more significant than with the sustainable substitution structure alone and result in a limited increase in the number of jobs.

4.8.10 Policy Measure 10 – Direct support of companies involved with a subsidy for advisory services (version 2)

Impacts on competitiveness

Due to the higher subsidy under this policy (up to 50% of service costs), it is believed that pursuing a sustainability-based substitution process will be more beneficial for companies. The advantage of being able to market themselves as ‘more sustainable’, may therefore in some cases balance out the additional costs associated with this approach. The uptake of the measure is expected to be higher than for Policy Measures 8 and 9, and the net effect on competitiveness at a Belgian level is expected to be small, but positive.

Concerns for SMEs

It is not believed that the impact on SMEs will be significantly different than under Policy Measure 8 and 9. The cost of a sustainability focussed AoA is believed to be significant, and the subsidy will only reduce these costs by 50%. Hence, SMEs are unlikely to make use of this subsidy.

Fairness of cost distribution

In addition to the guidance and lower subsidy discussed in Policy Measure 9, companies who use SVHCs would be benefitted by a greater financial subsidy, assuming they utilise it to discover substitution pathways and improve their innovativeness more so than with a lesser subsidy. Companies who do not use SVHCs would not have access to this subsidy. Though the scale of this is dependent on the uptake of the subsidy.

Policy Measure 10 is less in alignment with the polluter pays principle than Policy Measure 9 as the measure increases the cost for the authorities to implement, whereas companies receive greater support through the addition of a larger financial subsidy. Additionally, companies that use SVHCs benefit from the guidance and larger financial support, whereas companies that use less harmful chemicals may not have access to

these resources.

Overall, the distribution of costs from Policy Measure 10 is wholly unfair as authorities bear costs while companies do not face any mandatory costs.

Impacts on the job market

As discussed, there are no direct impacts on the private sector job market due financial subsidy for pursuing substitution pathways. Rather, in comparison to the lower subsidy, indirect impacts may be greater with the larger subsidy. For example, more companies may choose to utilise the subsidy and employ more persons to participate in the process of discovering new substitution pathways. Additionally, assuming that the competitive advantage between Belgian companies and companies outside Belgium is greater than for the lower subsidy, this measure would have a greater positive impact on the jobs market.

The authorities are likely to hire a similar number of additional staff compared to providing the guidance alone, as the effort required to monitor and enforce the larger subsidy scheme would likely be the same as for the lesser subsidy scheme. Overall, the impact on the job market is expected to be positive, indicating a limited increase in the number of jobs.

4.8.11 *Summary of assessment of wider and distributional impacts*

Table 4.9 summarises the conclusions from the assessment of the wider and distributional attributes in this chapter. A full comparison of the policy measures is included in Chapter 5.

Table 4.9: Summary assessment of wider and distributional impacts

Policy measure	Assessment type	Assessment criteria			
		Impacts on competitiveness	Concerns for SMEs	Fairness of cost distribution	Impacts on the job market
Policy Measure 1	Score	3 - Limited negative impacts on competitiveness	2 - Some concern for SMEs	3 - Acceptable fairness in cost distribution	3 - Negligible impacts on the job market
	Justification	Large companies would likely be able to absorb increased burden from mandatory notification as the cost is relatively low. The cost to SMEs may be more significant.	Costs for SMEs due to mandatory notification may be relatively higher. They are less likely to innovate (gain a competitive advantage as a result of notification).	The majority of overall costs are borne by companies, and SMEs likely bear a significant portion of that cost. The authorities will have costs to establish and monitor the process.	There is unlikely to be any negative impacts to the private job market, especially for large companies using SVHCs. Companies may hire more staff to comply with notification. The authorities will hire some staff to monitor notification.
Policy Measure 2	Score	3 - Limited negative impacts on competitiveness	2 - Some concern for SMEs	3 - Acceptable fairness in cost distribution	3 - Negligible impacts on the job market
	Justification	The addition of a substitution action plan will cause more financial burden, especially for SMEs who are not usually familiar with substitution pathways. The substitution action plan is more likely to encourage innovation.	Costs for SMEs are likely to be relatively higher to complete the substitution action plan. They are also less likely to innovate.	Costs are distributed equally across companies that use SVHCs, i.e., it is not distributed by volumes and thereby does not abide by the polluter pays principle. The authorities will have costs to establish and monitor the process.	There is unlikely to be any significant negative impacts to the private job market, especially for large companies using SVHCs. Companies may hire more staff to comply with notification. The authorities will hire more staff to monitor the substitution action plan in addition to notification.
Policy Measure 3	Score	4 - Negligible impacts on competitiveness	3 - Limited concern for SMEs	2 - Somewhat unfair cost distribution	3 - Negligible impacts on the job market
	Justification	Negative impacts to competitiveness are lessened as the non-financial aid should	The relative cost imbalance for SMEs may be lessened with the non-financial aid. They are still	The benefit of non-financial aid would be relatively higher for companies that are not as	With the non-financial support, job losses are unlikely to occur. If the support increases the

Policy measure	Assessment type	Assessment criteria			
		Impacts on competitiveness	Concerns for SMEs	Fairness of cost distribution	Impacts on the job market
		lessen the burden to comply, especially for companies who are not familiar with substitution pathways. The support may also introduce companies to industry knowledge that will aid their innovativeness.	not as likely to innovate as a result of regulation as large companies.	familiar with notification and substitution pathways. These are also often SMEs, and, in this way, is fairer than without support. The authorities will have higher costs to provide the non-financial support.	likelihood of innovation, it may improve job market outcomes. The authorities will likely hire more staff to develop and monitor the support.
	Score	5 - Positive impacts on competitiveness	3 – Limited concern for SMEs	2 - Somewhat unfair cost distribution	4 – Limited increase in the number of jobs
Policy Measure 4	Justification	The financial subsidy is likely to avoid any negative impacts to competition. The combination of both the non-financial and financial support will help companies' competitiveness, especially those who are less familiar and financially able to investigate substitution pathways.	The financial subsidy may improve the relatively higher cost for SMEs to comply and may increase their chance of innovation.	Companies receive financial subsidy to comply with obligations. The authorities are liable for potentially a significant amount of financial aid depending on uptake. Both are against the polluter pays principle.	With additional financial support, job losses are not expected to occur, assuming the subsidy covers the cost of compliance. If the support increases the likelihood of innovation, it may improve job market outcomes. The authorities will hire staff to monitor and execute the payments scheme.
	Score	2 - Some negative impacts on competitiveness	1 - Significant concern for SMEs	4 – Mostly fair cost distribution	3 - Negligible impacts on the job market
Policy Measure 5	Justification	The fixed fee would increase the potential for negative impacts to competitiveness and would not encourage competition more so than Policy Measure 2.	The fixed fee is applicable for all companies that use SVHCs regardless of size. The total burden of the obligations and the fee will be more significant for SMEs.	Companies with the most SVHC usage bear the largest fee. The authorities can use the income to mitigate negative impacts from SVHC usage.	Companies are more financially burdened compared to previous measures, but, assuming the fee is reasonable, are unlikely to result to job cuts. The authorities will hire staff to monitor and execute the fee.

Policy measure	Assessment type	Assessment criteria			
		Impacts on competitiveness	Concerns for SMEs	Fairness of cost distribution	Impacts on the job market
Policy Measure 6	Score	3 - Limited negative impacts on competitiveness	1 - Significant concern for SMEs	2 - Somewhat unfair cost distribution	3 - Negligible impacts on the job market
	Justification	For companies that submit the substitution action plan, the impacts to competitiveness are similar to Policy 3. Although, there is still some fee even if a substitution action plan is submitted. These companies may be more likely to gain competitive advantage from innovation.	SMEs will bear a relatively higher burden than large companies as compliance is often more difficult for them. For those that complete the substitution action plan, the impacts would be similar to Policy Measure 3, but with and added administrative burden of the fee system.	Companies who do not submit a substitution action plan bear the hardest burden compared to those that complete the substitution action plan. The authorities can collect fees from those that don't.	So long as companies fulfil the substitution action plan, the modular fee is unlikely to impact private sector jobs. The authorities will hire staff to monitor and execute the fee.
Policy Measure 7	Score	4 - Negligible impacts on competitiveness	4 - Negligible benefits or concerns for SMEs	2 - Somewhat unfair cost distribution	3 - Negligible impacts on the job market
	Justification	No negative impacts on competitiveness would be expected since participation in the substitution network is voluntary. Positive impacts could occur if companies are informed about and adopt more efficient work practices.	SMEs are not explicitly a focus on the network but could be affected differently by it. They could potentially benefit more from the information provision benefits of the network. However, they would also face relatively higher costs of participation, which could discourage them from attending.	Costs of participation are voluntary, whereas costs of implementing the policy are borne by taxpayers, which could be said to go against fair cost distribution. However, taxpayers and wider society could benefit disproportionately from any increased substitution which occurs.	Any impacts on the job market are likely to be indirect and minor.
Policy Measure 8	Score	4 - Negligible impacts on competitiveness	4 - Negligible benefits or concerns for SMEs	1 - Highly unfair cost distribution	3 - Negligible impacts on the job market

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Policy measure	Assessment type	Assessment criteria			
		Impacts on competitiveness	Concerns for SMEs	Fairness of cost distribution	Impacts on the job market
	Justification	The sustainable substitution structure would aid innovativeness, but low uptake is believed to make the overall impacts negligible.	The high cost of applying sustainability focussed AoA methodology will likely discourage SMEs to utilise the resources.	The authorities bear the full burden of establishing and monitoring the sustainable substitution structure. The companies receive the information for free.	There are no negative job market impacts. There are potential private sector job increases from innovation spurred on by the guidance. The authorities will hire more staff to establish and monitor the guidance.
	Score	4 - Negligible impacts on competitiveness	4 - Negligible benefits or concerns for SMEs	1 - Highly unfair cost distribution	4 – Limited increase in the number of jobs
Policy Measure 9	Justification	The subsidy may increase companies' competitiveness for those that are rewarded, in addition to the benefits from the guidance, but it is unlikely many companies will utilise the subsidy.	The high cost of applying sustainability focussed AoA methodology will likely discourage SMEs to utilise the resources. A 25% discount in these costs is not likely to significantly increase the uptake by SMEs.	The companies receive financial subsidy directly from the authorities, which is not in alignment with the polluter pays principle.	The uptake for the subsidy is not expected to be high and, therefore, the increase in jobs to support R&D is not likely to be significant. The authorities will increase their staff to implement and monitor the subsidy.
	Score	5 - Positive impacts on competitiveness	4 - Negligible benefits or concerns for SMEs	1 - Highly unfair cost distribution	4 – Limited increase in the number of jobs
Policy Measure 10	Justification	The higher subsidy should attract more companies to apply and innovate, potentially giving them a competitive advantage.	The high cost of applying sustainability focussed AoA methodology will likely discourage SMEs to utilise the resources. A 50% discount in these costs is not likely to significantly increase the uptake by SMEs.	The companies receive a higher financial subsidy directly from the authorities, which is more not in alignment with the polluter pays principle than the lesser subsidy. It is not likely the difference would be a significant increase in costs for authorities.	The higher subsidy would likely have greater job market increases in R&D as companies are more likely to begin researching substitution with this subsidy compared to the lesser subsidy. Though the uptake may still not be significant. The authorities will

Socio-economic analysis of measures to promote substitution of SVHCs in Belgium

Policy measure	Assessment type	Assessment criteria			
		Impacts on competitiveness	Concerns for SMEs	Fairness of cost distribution	Impacts on the job market
					likely not increase their staff compared to the lower subsidy.

5. Comparison of policy measures

5.1 Introduction

This chapter builds upon the results derived in Chapter 4. Three different scenarios have been defined, which represent different political priorities, which are described in more detail in Chapter 2:

- **Scenario 1:** All the attributes are considered equally important and are thus given equal weights.
- **Scenario 2:** *Effectiveness* is the main policy goal and is given a higher weight than the attributes.
- **Scenario 3:** Under Scenario 3 *Effectiveness* remains the main policy goal, but *Wider and distributional impacts* are also prioritised. *Competitiveness* is considered the most important performance indicator for *Wider and distributional impacts* under this scenario. To reflect this priority structure, *Effectiveness* and *Wider and distributional impacts* have a higher weight except *Competitiveness* which is weighted higher than the other assessment criteria under *Wider and distributional impacts*.

Implementability is another critical criterion that could have been added as a priority, as it is not meaningful to pursue a measure that is not implementable. However, following the screening process carried out under Work Package 3, all the measures assessed are considered feasible to implement albeit some are associated with more practical challenges.

The complete set of weights for the different attributes and assessment criteria is set out in **Table 2.4**. The same underlying scores are used for all the scenarios, so the only differing elements are the weights (priorities). The qualitative analysis carried out in Chapter 4 provides in-depth justifications for these scores and **Table 5.1** summarises the assessment criteria scores given to each policy measure. The highlighting indicates positive (green), negative (red) or a negligible/neutral effect (no colour). The colour coding is used to distinguish between positive or negative effects and should not be interpreted as judgements on the acceptability or magnitude of impacts.

Note that all scores are based on the implementation of the measure in isolation, whilst potential synergy effects are described in Section 5.6 below.

The scoring in **Table 5.1** does not take into account any potential priorities from a political point of view, but it is a useful tool to assess the trade-offs between the measures. It can also be used to identify specific weaknesses of a measure, which could be reduced by a redesign or combination with another measure. For example, Policy Measure 5 is the most effective measure in terms of incentivising substitution efforts, and it might have positive budget implications for the authorities. However, it is also the measure that puts the most significant financial burden on affected companies, which may have significant adverse impacts on SMEs. This weakness could be reduced by, for example, exempting SMEs from the fee, which would increase the scoring and ranking of this measure. Potential synergy effects which may be achieved by combining measures are described further in Section 5.6.

Table 5.1: Scoring of assessment criteria, before weighting

Attribute	Assessment criteria	PM 1	PM 2	PM 3	PM 4	PM 5	PM 6	PM 7	PM 8	PM 9	PM 10
Effectiveness	Substitution efforts	1	2	3	3	4	3	2	1	1	2
	Substitution success rate	1	2	3	3	3	3	2	1	1	1
	Improving future regulations	2	3	4	4	4	4	2	2	2	3
Financial impacts	Financial impacts on authorities	3	3	2	1	5	4	3	3	3	2
	Financial impacts on companies	3	2	2	3	1	2	3	4	4	4
	Financial impacts on consumers	4	4	4	4	3	4	4	4	4	4
Health, environment, and sustainability	Regrettable substitution	3	3	4	4	4	3	2	3	3	4
	Use and emissions of the SVHC	1	1	2	2	3	3	2	3	3	3
	Other impacts on human health and the environment	1	1	1	1	1	1	1	1	1	1
	Sustainability	1	1	1	1	1	1	2	3	3	4
Practicability	Intelligibility	3	2	3	2	2	1	3	1	1	2
	Implementability	3	3	3	3	2	1	4	3	2	2
	Monitorability and enforcement	2	2	3	3	2	2	3	3	2	2
Wider and distributional impacts	Impacts on competitiveness	3	3	4	5	2	3	4	4	4	5
	Concerns for SMEs	2	2	3	3	1	1	4	4	4	4
	Fairness of cost distribution	3	3	2	2	4	2	2	1	1	1
	Impacts on the job market	3	3	3	4	3	3	3	3	4	4

Table note: In this table, the colour coding is as follows: **green** indicates a positive effect, **red** indicates a negative effect and no colour indicates a neutral effect.

5.2 Scenario 1

Figure shows the results for Scenario 1, which have been derived using the scoring approach described in Section 2.4. The colours represent the different attributes, and the bolded numbers indicate the ranking based on the total score. Since there is no particular focus on substitution under this scenario, i.e., all attributes are equally important, low-effectiveness measures can achieve a high total score if they perform well under other attributes. This effect can be observed for Policy Measure 7-10, which achieve comparatively high scores under this scenario, despite having very limited effectiveness when

implemented in isolation. Policy Measures 1 and 2 have the lowest scores, which is driven by the combination of limited effectiveness and low auxiliary benefits to human health, the environment and sustainability. As argued in Section 4.5.2 this is because these obligations can easily turn into a ‘tick-box’ exercise, which do not generate robust information that can be utilised by the companies themselves or the authorities. The effectiveness of these measures could be increased by additional reporting criteria, for example adding emission reporting to the use notification and/or requiring a more detailed analysis of alternatives in the substitution action plan. However, as highlighted in Chapter 4, this would also increase some of the negative impacts, such as financial impacts and concerns for SMEs.

Another way of improving policy measures 1 and 2 is to provide more support to affected companies, illustrated by the comparatively higher scores of Policy Measures 3 and 4, which are ranked second and first respectively. The combination of regulatory obligations and non-financial support is believed to increase the compliance rate, number of companies submitting the use notifications and substitution action plans, as well as the quality of information submitted. The latter is an important point, as the quality of information generated determines its usefulness for the authorities in designing future regulations, as well as the extent to which companies can utilise it for substitution activities or potential improvements of their overall processes. Different combinations and designs of measures are further explored in Section 5.6.

Overall, none of the measures scores very high (at most 57% of the maximum achievable score of 100%), and the variation between the measures is small. This is partly due to intrinsic trade-offs within the measures assessed. The more effective measures tend to be associated with more significant negative impacts, such as higher costs on practicality challenges. Conversely, the less invasive measures are typically less effective.

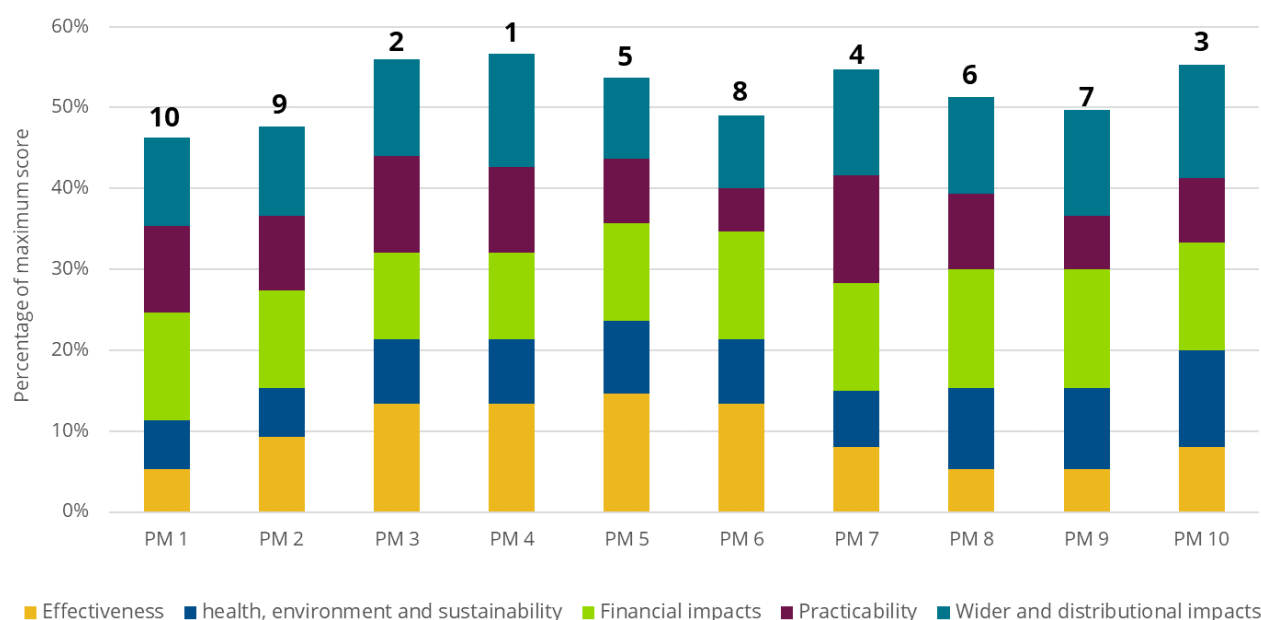


Figure 5.1: Summary of scoring of the policy measures under Scenario 1

Note: the bolded numbers indicate the ranking based on the total score.

5.3 Scenario 2

Under Scenario 2, the focus is on effectiveness, i.e., the ability of a measure to induce substitution, either through increased efforts, reduction in technical barriers (increased success rate) or through potential improvement of future regulations. The differences between the measures are more noticeable under this scenario, as any difference in effectiveness is amplified.

The most effective measure, Policy Measure 5, achieves the highest score under this scenario. The high effectiveness of Policy Measure 5 is linked to the economic incentives induced by the combination of a fee, use notifications and substitution action plan, complemented by non-financial support to meet these obligations. Policy Measures 3 and 4 score close to Policy Measure 5. They are slightly less effective, as the economic incentives are not as strong without the fee, but this is partially compensated for by the increased practicability; Generally, it is easier to implement support systems than fee structures, and it is easier to enforce and monitor when the affected actors would benefit from engaging with the authorities. The measures with no obligations, Policy Measures 7-10, score relatively low because uptake relies on companies increasing expenditure voluntarily. A low uptake, i.e., few companies making use of the support, means that few companies will engage in substitution activities as a direct result of these measures.

Of the measures with no obligations, Policy Measure 10 scores higher than Policy Measures 7-9, as it is expected that the higher subsidy will increase companies' willingness to invest in substitution (i.e., higher substitution efforts). The increased uptake will also increase the ability of the measure to generate information that can be utilised by the authorities to improve future regulations. However, as mentioned in Section 4.5.10, Policy Measure 10 is unlikely to have a significant impact on substitution in the short-term. This is because the primary route through which this measure induces substitution is by generating information and know-how for authorities, which can be utilised to improve future regulations. Similar to Scenario 1, Policy Measure 1 is considered to be the least suitable measure as the mandatory notification of SVHC use is implemented in isolation.

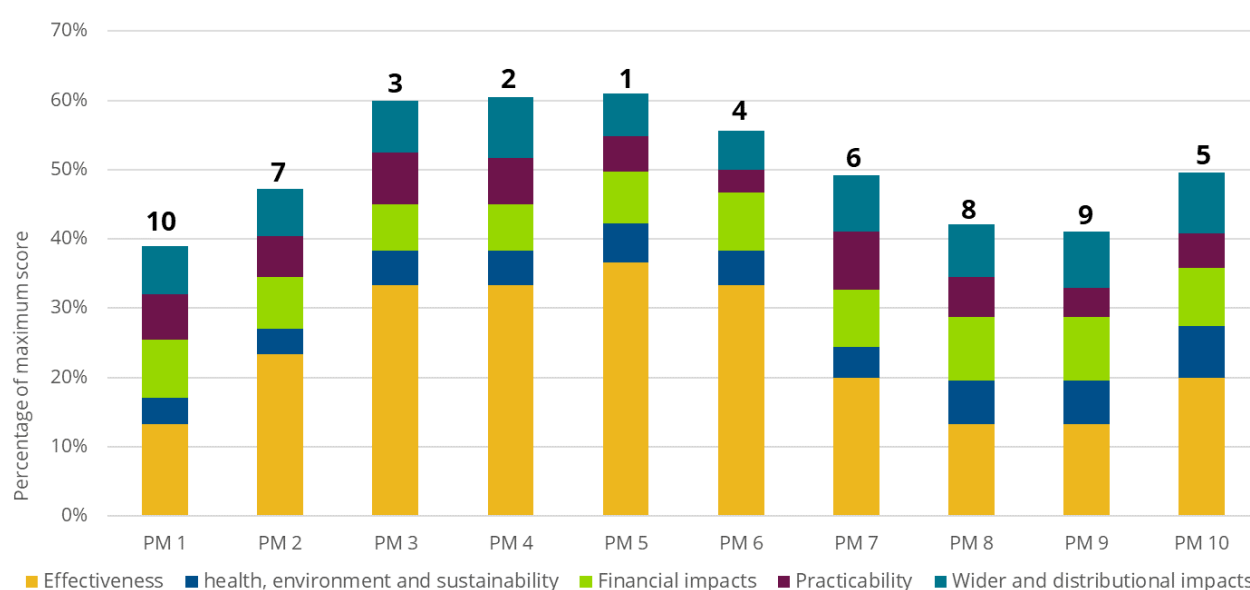


Figure 5.2: Summary of scoring of the policy measures under scenario 2

Note: the bolded numbers indicate the ranking based on the total score.

5.4 Scenario 3

Scenario 3 is a hybrid scenario, where effectiveness is still the most important policy goal, but competitiveness is also considered a key criterion, thereby increasing the importance of the wider and distributional impacts attribute.

The results of Scenario 3 are similar to that of Scenario 2, but the differences between the measures are smaller. The most notable difference is the shift in the ranking between Policy Measures 3-5. With a broader set of priorities, the most effective measure (Policy Measure 5) is no longer the highest ranked. This is because the introduction of a fee on top of the use notification and substitution action plan obligations is likely to adversely affect the competitiveness of Belgian companies as compared to companies outside Belgium. A subsidy, on the other hand, may provide a competitive advantage which means that Policy Measure 4 is now considered the most beneficial measure. The reason why Policy Measures 9 and 10, which also include a subsidy, do not score higher is due to the expected lower uptake of these voluntary measures.

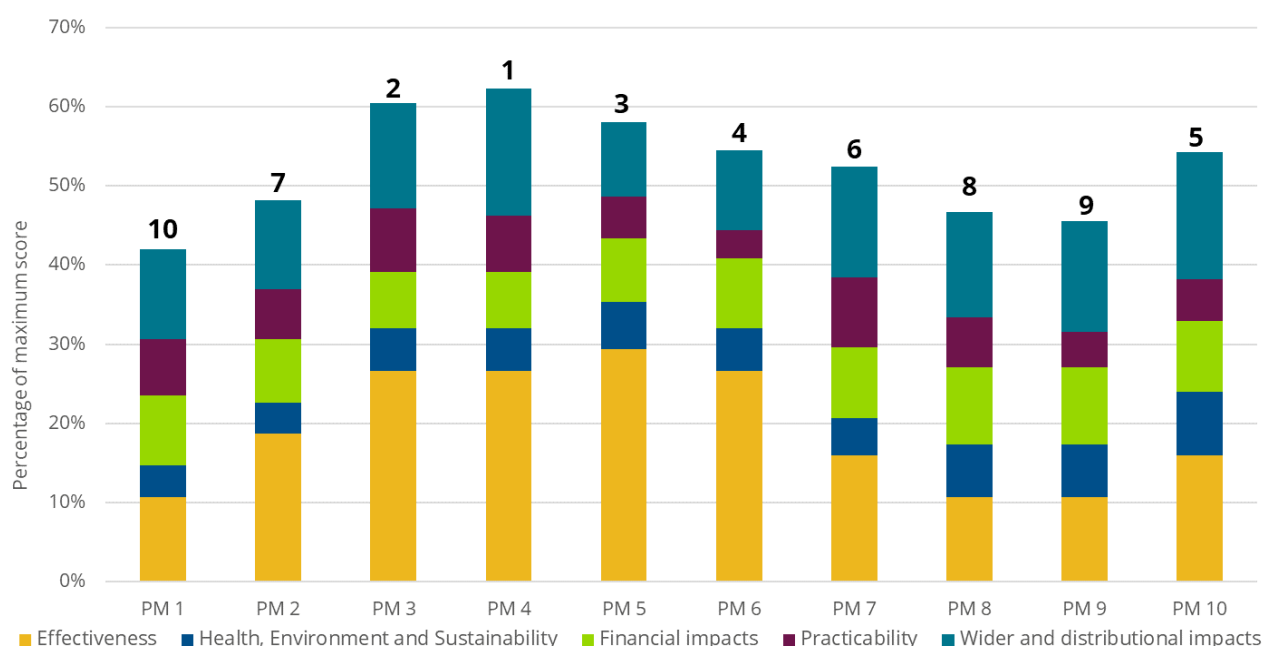


Figure 5.3: Summary of scoring of the policy measures under scenario 3

Note: the bolded numbers indicate the ranking based on the total score.

5.5 Comparison across scenarios

Comparing the measures across scenarios can be useful to identify measures that overall performs well or badly, regardless of policy scenario. As can be seen in [Table 5.2](#), Policy Measure 3 and 4 are in the top three measures for all scenarios. This indicates that they are overall good candidates for implementation in Belgium, if the trade-offs such as budgetary implications are acceptable. On the opposite end is Policy Measures 1 and 9, that will likely not be beneficial if implemented in isolation.

Table 5.2: Ranking of attributes and aggregated ranking across scenarios

Attributes	Scenario	PM1	PM 2	PM 3	PM 4	PM 5	PM 6	PM 7	PM 8	PM 9	PM 10
Effectiveness	Scenario 1	8	5	2	2	1	2	6	8	8	6
	Scenario 2	8	5	2	2	1	2	6	8	8	6
	Scenario 3	8	5	2	2	1	2	6	8	8	6
Financial impacts	Scenario 1	3	7	9	9	7	3	3	1	1	3
	Scenario 2	3	7	9	9	7	3	3	1	1	3
	Scenario 3	3	8	9	9	7	3	3	1	1	3
Health, environment, and sustainability	Scenario 1	9	9	5	5	4	5	8	2	2	1
	Scenario 2	9	9	5	5	4	5	8	2	2	1
	Scenario 3	9	9	5	5	4	5	8	2	2	1
Practicability	Scenario 1	3	5	2	4	7	10	1	5	9	7
	Scenario 2	3	6	2	3	7	10	1	5	9	7
	Scenario 3	3	5	2	4	7	10	1	5	9	7
Wider and distributional impacts	Scenario 1	7	7	5	1	9	10	3	5	3	1
	Scenario 2	7	7	5	1	9	10	3	5	4	2
	Scenario 3	7	7	5	1	10	9	3	5	3	1
Aggregated across all attributes	Scenario 1	10	9	2	1	5	8	4	6	7	3
	Scenario 2	10	7	3	2	1	4	6	8	9	5
	Scenario 3	10	7	2	1	3	4	6	8	9	5

Figure below shows the absolute scores of all the measures across the three policy scenarios. The figure shows that many of the measures have very similar scores, which is a key point that is not apparent if looking at the ranking alone. Considering that the analysis has significant inherent uncertainties (discussed in Chapter 7), a small difference in scoring is not necessarily significant, as the ranking could change if underlying assumptions in the analysis change or new data becomes available. From this perspective, one can surmise that Policy Measures 2 and 3 may be equally beneficial, and Policy Measures 8 and 9 are equally 'unsuitable' if implemented in isolation.

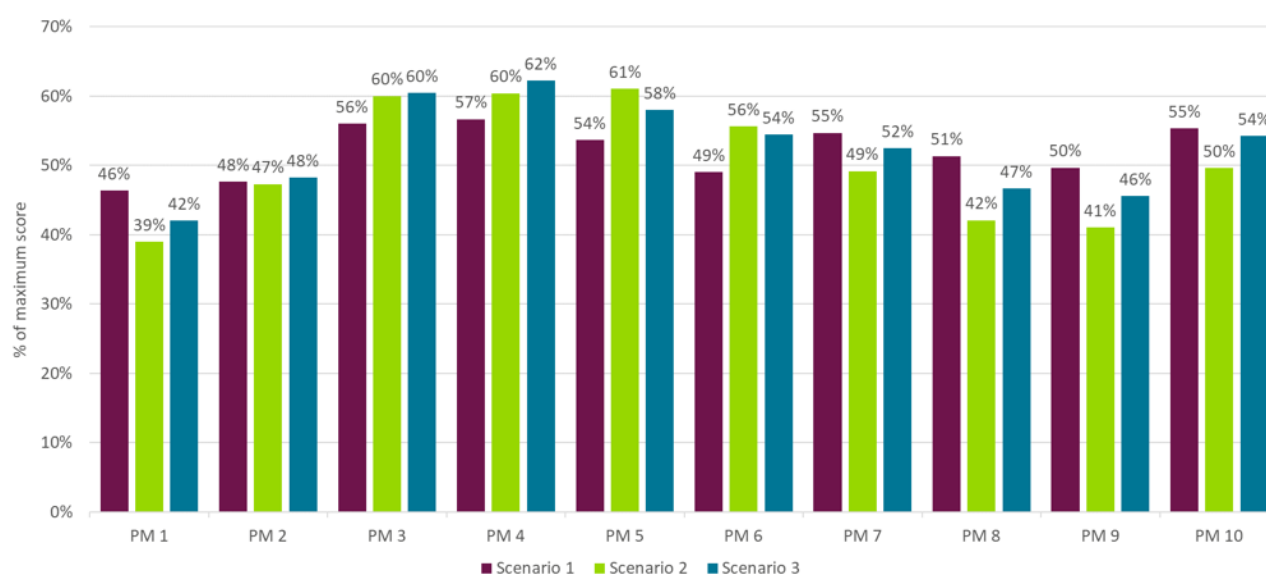


Figure 5.4: Scoring of measures across all scenarios

5.6 Synergy effects

As emphasised above, the analysis has been carried out under the assumption that each measure will be implemented in isolation. This can give a somewhat skewed picture, as some of the measures are best suited for implementation in combination with other policies (i.e., in a policy package).

Policy Measures 3-6 are already types of policy packages, in the sense that they consist of multiple elements creating a combination of incentives. These four measures all score higher than Policy Measures 1 and 2 under all scenarios. The reason for this is that the additional elements address some of the intrinsic weaknesses in the first two measures. For example, adding non-financial support will likely increase the scoring of all effectiveness criteria, whilst the corresponding increase in costs is not expected to be as significant. It is also important to keep in mind that most downstream users, who are the main target group for the measures assessed, are likely to be smaller companies with less experience and available funds to comply with regulatory requirements. It is therefore believed that non-financial support will be highly beneficial and needed to maximise the substitution potential of the measures.

Another example is Policy Measure 7, which, in isolation, scores in the middle of the group. If this was combined with a measure that induces stronger incentives for substitution, for example, a fee linked to use volumes, the total score could improve significantly. Firstly, a fee can give strong incentives for increasing substitution efforts for large volume users, but it does not reduce technical barriers for substitution. Conversely, the communication structures that are at the core of Policy Measure 7 are expected to increase the success rate for the companies participating, but since participation is voluntary the effectiveness (both efforts and success rate) is expected to be fairly low. Combining a fee on use volumes with Policy Measure 7 may address the main weaknesses of both of these measures, which can potentially lead to significant improvements in the overall beneficial effects.

Policy Measures 8-10 are other examples of voluntary measures, but with a focus on sustainability more than just substitution in itself; The intention is to achieve 'better' substitution. The clear weaknesses of these measures are that they lack clear incentives to increase substitution efforts, and they are unlikely to have a significant effect in reducing technical barriers. As mentioned in Chapter 4, there is a risk that the substitution success rate may decline if PM 8-10 is implemented in isolation, as it is more challenging to find a suitable alternative which is also sustainable than just finding a suitable alternative. 'Better' substitution cannot occur without sufficient uptake of the measure, which will be challenging to achieve. The reason for this is that substitution activities in themselves can be costly and requiring a full-scale sustainability focussed AoA will increase these costs further, which in turn will reduce companies' willingness to engage in such activities. The subsidy may help, but if the net costs remain high after the subsidy (which is not unlikely), the uptake will be low. The effectiveness of the measure may be improved if an obligation, such as mandatory submission of a sustainability focussed AoA is introduced. However, the cost this would impose on companies would create significant concerns for SMEs and overall competitiveness. A better option could be to target high-volume users, who are more likely to be able to bear such costs and/or allow companies to carry out a "lite" version of the AoA which could focus on a specific topic, e.g., avoiding regrettable substitution.

There are also other attributes beyond effectiveness for which synergies can occur. For example, Policy

Measures 1 and 2 were found to have practicability challenges, both in terms of identifying and communicating obligations to all relevant actors as well as ensuring that the submissions of the use notification and substitution action plan are completed to a sufficient standard (both of which have knock-on effects on effectiveness). Introducing elements that encourage companies to engage with the authorities, for example a subsidy, will make it easier for the authorities to get an overview of the market and it will allow for better steering and monitoring of the quality of submissions. Also, here it is believed that targeting SMEs with such support will be particularly beneficial, as these companies are less likely to engage and be aware of regulatory obligations.

6. ADCA case study

6.1 Scope and purpose of case study

This chapter assesses the ten policy measures in the context of specific substance and use, namely the use of ADCA as a blowing agent in the construction sector. In Work Package 2 of this project, Apeiron state that ADCA was prioritised for this project due it being a “respiratory sensitiser and [because] a successful alternative [is] produced by a Belgian company. [Furthermore], SMEs are dominant users of ADCA [and] will require more specialised substitution services” (Apeiron, 2023c).

While quantitative analysis is not possible for the measures as a whole, this case study is designed to illustrate the costs and potential effects of the measures using a scope for which more detailed, albeit still limited, information is available. Where information about the substance and its use could change the more general conclusions of Chapter 4, these are also highlighted and discussed in Section 6.3.

6.2 Substance information

About the substance

Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)), shortened for the purpose of this report to ADCA³⁶, has a molecular formula $C_2H_4O_2N_4$.

ADCA is classified in Annex VI, part 3, **Table 3.1** of Regulation (EC) as a respiratory sensitiser category 1, meaning that it has a high potential to induce hypersensitivity of the airways following inhalation. It was put on the CL for Authorisation in 2013 due to its respiratory sensitising properties and is not subject to any restrictions. The ADCA Task Force noted that following ADCA's listing as an SVHC in 2012, it has twice been proposed for inclusion in Annex XIV (REACH Authorisation List), and in both cases, a decision was taken by the REACH Committee to remove ADCA from the list.

Manufacture, import and export

ADCA is registered under the REACH Regulation and is manufactured in and / or imported to the European Economic Area, at $\geq 10,000$ to $< 100,000$ tonnes per annum (ECHA, 2023f). Across the EU there are 18 full active registrations and no active intermediate registrations (ECHA, 2023f).

Within Belgium there are no active registrations under REACH and the substance is not mentioned in any Belgian permits. The industry survey indicates that it is used by DUs in Belgium (VITO, 2023b). Six responses from ADCA users in the construction sector on volumes were used, and the average reported use volume was 275 tonnes (VITO, 2023b). Four of the six responses from the construction sector (and five of the eight respondents to the industry survey who used ADCA in any industry) were large companies, with the remaining two companies being classed as SMEs. ADCA is not manufactured and/or imported to Belgium from outside of the EU, but it is used in Belgium by DUs and is therefore supplied to DUs through companies in neighbouring countries (e.g., Germany and France) (VITO, 2023b).

³⁶ CAS number: 123-77-3, EC number: 204-650-8

Uses in the EU and Belgium

The main use of ADCA is as a blowing agent in the rubber and plastics industry (Environment Agency Austria, 2013), with approximately 75% of ADCA imported into the EU being used in the production of plastics (EUPC, 2019). It is estimated that in Europe between 2 and 3 million tonnes of plastics products are foamed with ADCA (EUPC, 2019). In the EU, more than 450,000 articles contain more than 0.1% ADCA w/w (ECHA, 2022a; Solvay, 2023a).

As a chemical blowing agent, the function of ADCA is to off-gas and create pores (or holes) in the polymer matrix. As such, ADCA is mixed with the polymers and heated to 230°C at which it “explodes” and releases gas, creating small and evenly distributed pores. When using a catalyst, the temperature can be reduced to 140°C (EUPC, 2019).

ADCA has been registered for uses in industrial settings for the formulation of mixtures and the manufacture of plastic products, use by professional workers during foaming processes and use by consumers in construction chemicals and air fresheners (Environment Agency Austria, 2013). End uses of ADCA also include its use in the automotive sector (approx. 21% of ADCA applications), e.g., sealings, moss and sponge rubber, corrosion protection, as well as in the construction sector (approx. 51% of ADCA applications), e.g., in luxury vinyl tiles, in electrical appliances, and in consumer products (approx. 27% of ADCA applications) e.g., leisure products such as shoe soles and mats, household products such as hoses and air fresheners (VITO, 2023b).

Although ADCA is used in the production of end products, it is not found in the end-product above trace amounts (i.e., above 0.1% w/w). This is because during the manufacture of foamed articles, ADCA is thermally decomposed in the final processing step in an industrial environment (EUPC, 2019; VITO, 2023b). If any residual ADCA remains in the article, it would be fully embedded within the polymer matrix and end users are therefore typically not exposed (EUPC, 2019; VITO, 2023b). In case of presence, the concentration of such traces is usually below or around 0.1% (VITO, 2023b).

Emissions and exposure

Releases to the environment from industrial uses of ADCA could occur from its use in processing aids and in the production of articles at industrial sites (VITO, 2023b). Some of the environmental release categories (ERC) that have been identified in industrial and professional settings include releases during (Environment Agency Austria, 2013):

- formulation of preparations (ERC 2)
- formulation in materials (ERC 3)
- industrial use of processing aids in processes and products, not becoming part of articles (ERC 4)
- industrial use resulting in inclusion into or onto a matrix (ERC 5)

ECHA has no public registered data on the routes by which this substance is most likely to be released to the environment from consumer uses of the substance. According to the Austrian Competent Authority, use of construction chemicals by consumers (containing ADCA) could be released into the environment during the following processes (Environment Agency Austria, 2013):

- wide dispersive outdoor use of processing aids in open systems (ERC 8d)

- wide dispersive outdoor use resulting in inclusion into or onto a matrix (ERC 8f)
- wide dispersive outdoor use of long-life articles and materials with low release (ERC 10a)

There is no emissions data specifically for Belgium.

Exposures to ADCA can occur through formulation of mixtures and formulation in materials. ADCA can be found in a variety of products that might impact both workers and consumers. The SCIP database notes 404,392 entries for this SVHC (VITO, 2023b). There is scientific evidence that ADCA induces occupational asthma with initial symptoms like rhinitis, conjunctivitis, wheezing, cough followed by symptoms like chest tightness, shortness of breath and nocturnal asthmatic symptoms, with a possible delay of symptoms up to years (Environment Agency Austria, 2013). Exposure to ADCA may result in persistent symptoms of bronchial hyperresponsiveness lasting for years (Environment Agency Austria, 2013). Respiratory diseases including occupational asthma after exposure to ADCA have been recorded at national level in the UK and the NL (Environment Agency Austria, 2013). There is no monitoring data available specifically for Belgium.

According to the Austrian Competent Authority, the highest inhalation exposure to ADCA for workers in industrial settings is expected to occur during the following process categories: calendaring operations (PROC 6); industrial spraying (PROC 7); and roller application or brushing (PROC 10) (Environment Agency Austria, 2013).

Currently, there is an Occupational Exposure Limit (OEL) defined in the UK set at 3 mg/m³ for short-term exposure (15 minutes) and 1 mg/m³ for long-term exposure (8-hour average). In Finland, the OEL is 0.5 mg/m³ for long-term exposure (EUPC, 2019).

Analysis of alternatives

Technical feasibility

As noted in the section above, ADCA is used as a chemical blowing agent, decomposing at a given temperature to create pores in the polymer matrix enabling the polymer product to achieve higher levels of performance. Performance is related to the decomposition temperature and the off-gas properties which determines the cell size, distribution (i.e., homogeneity) and dimensional stability. The ADCA Task Force noted during an interview that the main benefit of ADCA is that it produces finer bubbles [of gas] than any other product of chemical blowing agent and that this has benefits to the durability of the end product.

The EUPC (2019) report notes that polymer foams produced with ADCA can have densities between 2 kg/m³ and 750 kg/m³. The EUPC (2019) report also includes in chapter 4.2.2.2. Main investigated alternatives a description of the two main potential alternatives to ADCA, sodium bicarbonate and 4,4'-oxybis(benzenesulfonylhydrazide), henceforth OBSH.

The EUPC (2019) report states that sodium bicarbonate alternatives cannot product high-quality foams because: *"...the reversible character of the reaction leads to a reduction in gas concentration in the expanding system due to internal pressure build-up, leading to a decay of pressure in the cells. High-quality foams are difficult to produce with carbonates because even distribution is a problem with these salts. At the same time, the N₂ produced by ADCA diffuses less quickly out of the cells than the CO₂ of sodium bicarbonate."* Consequently, two to three times the amount of chemical blowing agent would be required to achieve the same performance.

OBSH alternatives are described as having significantly worse performance [than ADCA] in plastisols as OBSH decomposition temperatures are not appropriate compared to the fusion of the plastisol, resulting in poor cell structure. To conclude, the EUPC (2019) report said that the analysis of the alternatives to ADCA, resulted in no other substances demonstrating that can be used as a viable alternative, since they are either less performant or of equivalent concern in terms of health properties (e.g., OBSH) (EUPC, 2019).

This notwithstanding, some other stakeholders, including the Environment Agency Austria (2013), stated that there are several chemical substitutes on the market. The applicability of these substitutes depend on the technical process, the polymer and the result/properties needed. It can be assumed that the production processes for the of a variety of foamed plastic and rubber products have been optimised according to the specific technical requirements for the different products. Thus, a change of the blowing agent requires an appropriate technical adaptation in the process to obtain similar properties of the products (Environment Agency Austria, 2013).

Similarly, Solvay, a manufacturer in Belgium, claim that their sodium bicarbonate-based alternative – Alve-One® - fulfils the technical requirements for all resin types except XLPO (very low-density polymers). During an interview with Solvay, it was explained that there are 7 grades of Alve-One® which are all specific to the use (which requires a chemical blowing agent). **Figure** demonstrates that Alve-One® adheres to the technical requirements of ADCA for the majority of applications based on Solvay's market feedback. As is detailed in the table, the one use where Alve-One® is unable to demonstrate equivalent functionality to ADCA is in very low density foams (e.g., <25 kg/m³), which includes XLPO foam blocks.

Resin type	Applications	Technical requirements					
		Expansion ratio	Density	Cellular structure	VOC emitted	Sound insulation	Shock absorption
PVC Plastisol	Flooring Artificial leather Wallcovering	Achieved	Achieved	Achieved	Achieved	Achieved	To be confirmed
PVC Flexible	Cables Hoses	Achieved	Achieved	Achieved	Achieved	N/A	N/A
PVC Rigid	Cladding Pipes Foam sheets	Achieved	Achieved	Achieved	Achieved	N/A	N/A
XLPO	Insulation panels Auto parts Sport & Leisure	Partially developed	Partially developed	Partially developed	Achieved	Partially developed	Partially developed
EVA	Shoe midsole Sport & Leisure	Achieved	Achieved	Partially developed	Achieved	N/A	To be confirmed
PP	Auto parts Packaging Pipes	Achieved	Achieved	Achieved	Achieved	N/A	To be confirmed
PE	Food trays Pack films Bottles	Achieved	Achieved	Achieved	Achieved	N/A	To be confirmed

Figure 6.1: Alve-One positioning regarding technical requirements per application according to market feedback

Source: based on information in Solvay (2023)

More specifically, Solvay include comparable data that demonstrates Alve-One®'s technical feasibility compared with ADCA. Their density and cell size (produced) are similar, with ADCA's being 199 kg/m³ and 207 µm and Alve-One®'s being 202 kg/m³ and 251 µm, respectively (Solvay, 2023a). Furthermore, the distribution of cell size is comparable, see **Figure 6.2** for foams used in footwear based on crosslinked polyolefins (left) and polyolefin foams – formed through a semicontinuous/continuous process (right), below.

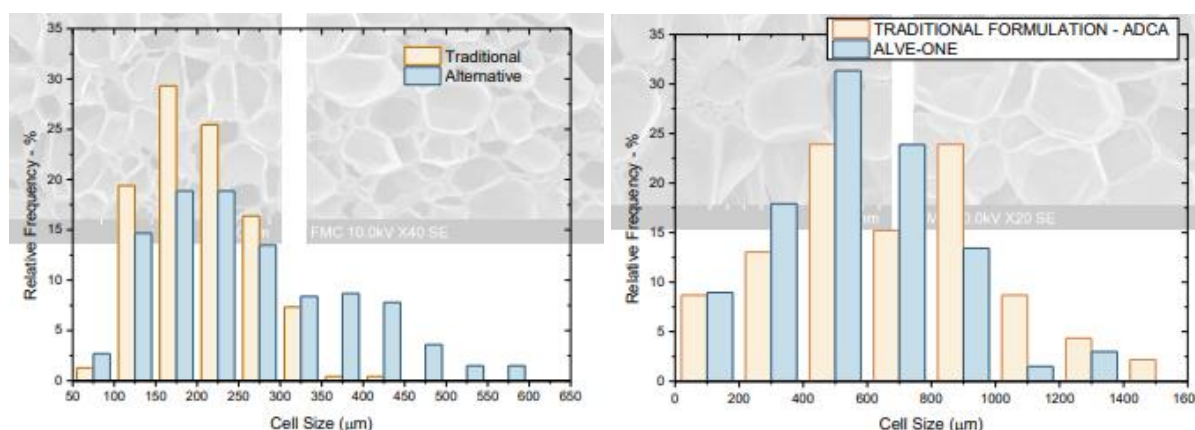


Figure 6.2: Cell size and relative frequency comparison between ADCA (Traditional) and Alve-One® (Alternative) in footwear (left) and polyolefin foams (right)

Source: Solvay (2023a)

Economic feasibility

Solvay informed that substitution of ADCA formulations with Alve-One® formulations would entail similar or lower total cost of ownership. This is because their assessment (comparing ADCA and Alve-One®) states that the cost of chemicals, personnel costs and energy costs are the same and that process modification costs, medical surveys associated with exposure to SVHC substances, storage and logistics costs, and therefore, total production costs are lower. The ADCA Task Force similarly agreed that economic feasibility (i.e., cost of substitution) was not a barrier to companies that were attempting substitution.

Availability

Sodium bicarbonate accounts for over 90% of the composition of Alve-One and is widely available in the region. Solvay themselves are a world leading manufacturer of sodium bicarbonate and a pilot unit is foreseen to be installed that will serve primarily the European plastic foaming market (Solvay, 2023b).

Risk reduction

As explained in Chapter 2, regrettable substitution is the consequence of substituting a substance with another substance of greater or equal hazard profile. Therefore, for an alternative to be suitable for substitution, it must have a better hazard profile, i.e., the substitute should be less hazardous. As previously mentioned, OBSH is deemed an unviable alternative due to its reduced performance as it is not technically feasible. It also has an unfavourable hazard profile, with three harmonised classifications³⁷ and several self-

³⁷ OBSH's harmonised classifications are for Aquatic Chronic 1, Aquatic Acute 1 and Self-react. D.

classifications, including Muta. 2, STOT RE 2 and Skin Irrit. 2 (ECHA, 2023c).

Previously, ADCA was used in the bakery industry as a dough-improver, however it is not permitted as a flour treatment agent in the EU (Environment Agency Austria, 2013). ADCA was also formerly authorised as a blowing agent in plastic materials and articles intended to come into contact with foodstuffs but has since been prohibited for such applications (Directive 2004/1/EC and Directive 2007/19/EC) (Environment Agency Austria, 2013).

When decomposing, ADCA produces nitrogen, carbon monoxide, carbon dioxide and ammonia in gaseous form. Additionally, unreacted ADCA and solid residues (such as urazole, cyanuric acid, hydrazodicarbonic acid diamide, cyamelide) from partial decomposition would remain in the polymer foam. Conversely, sodium bicarbonate-based Alve-One® produces carbon dioxide and water vapor as gases and no harmful solid residues after decomposition in the plastic foam (Solvay, 2023a). Additionally, Alve-One® does not negatively impact the recyclability of the foamed end-products as the only solid residue remaining in the foam is sodium carbonate, a salt. Solvay have conducted a Life Cycle Analysis (LCA) for the use of foaming agents in plastic materials comparing Alve-One® and ADCA. The results of the preliminary study (performed by Solvay) are shown in **Figure 6.3** below.

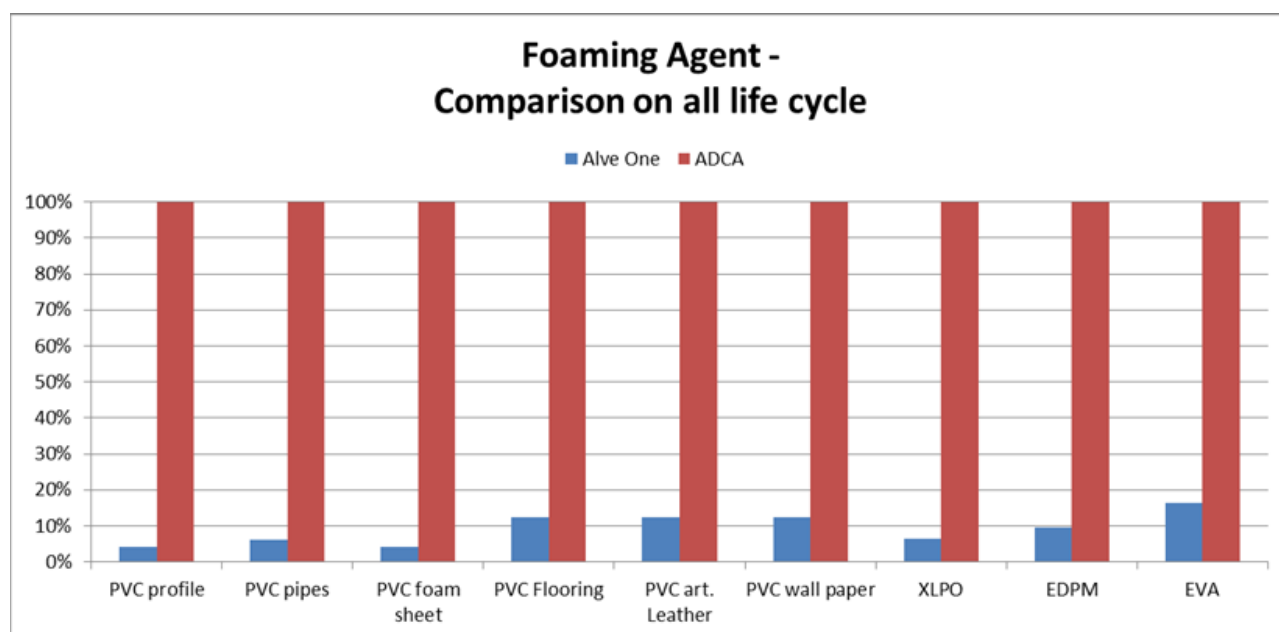


Figure 6.3: Life Cycle Analysis for the use of foaming agents in plastic materials: Alve-One and ADCA

In addition to the reduction in risks (i.e., hazards), this is an environmental benefit, as Alve-One presents LCA values that are 85-95% lower than for ADCA for the environmental footprint of foaming formulations (Solvay, 2023b).

Substitution status

There were insufficient numbers of respondents to the eftec stakeholder consultation; as such, it is not possible to understand whether widespread substitution of ADCA has occurred in Belgium. The ADCA Task Force claim that some ADCA users still have no obvious substitutes (i.e., feasible alternatives) for ADCA across all of their applications, which is explained in more detail in the EUPC's (2019) report. The ADCA Task

Force also noted that several companies (who are members of the group) had conducted R&D to substitute ADCA but had not found any viable alternatives for their given uses – with the exception of one company who had found a viable alternative to their use of ADCA when creating coatings for wires.

Solvay claim that their product, Alve-One®, can replace ADCA sufficiently in almost all of its uses³⁸ – e.g., PVC wallpaper, vinyl flooring, PVC artificial leather, elastomeric foams, EVA foams and polyolefin foams. These materials are used in a number of end-markets including building and construction, automotive, footwear and consumer goods. Furthermore, Solvay noted that sodium-based chemical foaming agents were already being used (as successful substitutes to ADCA) in certain industries; for example, in the automotive industry where polypropylene foams are used for dashboards and door panels and polyvinyl chloride is used for artificial leather (Avient, 2023). As well as expandable microspheres which have successfully replaced ADCA in footwear and automotive industry which utilise artificial leather . Furthermore, Solvay noted during an interview that expandable microspheres have successfully replaced ADCA in some uses in the footwear and automotive industries (Nouryon, 2023). Thus, demonstrating the viability of alternative substances / technologies to ADCA for at least some uses where a chemical blowing agent is required.

6.3 Analysis of attributes for ADCA construction

This section describes each of the attributes from the perspective of impacts induced by uses of ADCA in the construction sector. It does not repeat the analysis from Chapter 4, but rather highlights specific relevant points and differences from the above analysis.

6.3.1 Effectiveness

Substitution efforts are likely to increase across the policy measures amongst ADCA users in the construction sector. As has been discussed in Section 4.4, the availability of a potential alternative increases the effectiveness of each of the policy measures. If an alternative is available, which is the case for ADCA, companies are more likely to increase substitution efforts to avoid the regulatory burden associated with reporting information via the use notification and the substitution action plan, as well as seeking to avoid any potential fees associated with the continued use of ADCA. The availability of an alternative to ADCA means that companies using ADCA who have not so far substituted because there has not been any regulatory pressure to substitute would be incentivised to increase substitution efforts in response to regulatory pressure. This is particularly the case for Policy Measures 1 to 6 which have mandatory regulatory requirements which companies would seek to avoid through substitution. The availability of a known alternative to ADCA therefore increases the efficacy of the policy measures in increasing substitution efforts and increasing successful substitution of ADCA.

Work package 2 of this project suggests that use of ADCA is widespread amongst SMEs, and as has been discussed in Section 6.2, most of the policy measures that have been assessed affect SMEs to a greater extent than the measures affect large companies. The regulatory burden and fees associated with many of the policy measures have a greater impact on SMEs and therefore drive substitution efforts to a greater extent than they would amongst large companies. Policy measures that provide information and technical

³⁸ Solvay acknowledge that for high density materials (e.g., XLPO foams) that there is a difference in performance between Alve-One® and ADCA, but that this will eventually be negated as Alve-One® is continuously being reformulated and improved.

support, such as Policy Measures 3-10, would also increase substitution efforts and the successful substitution of ADCA with an alternative amongst SMEs who previously may not have had information on the alternatives available or information on how such an alternative could be applied to the construction sector. This is reflected in the industry survey which found that 71% of ADCA users in the construction sector believed that limited information is either a very important, important, or somewhat important barrier to substitution (VITO, 2023b).

However, it should be noted that the availability of a known alternative to ADCA does not necessarily indicate that such an alternative is either economically or technically feasible. As has been discussed in the analysis of alternatives in Section 6.2, the applicability of potential ADCA alternatives depends on the technical process, the polymer and the result/properties needed. If an alternative cannot meet the functional requirements achieved with the use of ADCA, the effectiveness of the policy measures in driving substitution efforts and successful substitution are reduced. The industry survey found that all ADCA users thought unknown testing for the technical feasibility of alternatives was not a barrier to substitution, rather, the identified alternatives are not technically feasible is a very important barrier to substitution (VITO, 2023b). This suggests that whilst there are known alternatives to ADCA, which could improve the efficacy of the policy measures in increasing substitution efforts and successful substitution by 'nudging' uptake of the known alternatives amongst companies using ADCA, the fact that such alternatives are known does not mitigate the biggest barrier to substitution which is that the known alternatives are not technically feasible given their inferior performance. The effectiveness of the policy measures in driving the substitution of ADCA is therefore likely to be curtailed by the lack of availability of an alternative that meets the functionality of ADCA.

Similar to other SVHCs, Policy Measures 1 to 6 are likely to improve the effectiveness of future regulations in driving the substitution of ADCA by providing the authorities with varying degrees of information on the use of ADCA and potential substitution of ADCA, which will allow the authorities to develop more targeted regulations. Policy Measures 7-10 do not include mandatory reporting and are therefore less effective at providing the authorities with the information necessary to better design future regulations.

6.3.2 *Financial impact*

For **authorities**, many of the financial impacts of the measures are unlikely to be significantly affected by the particular circumstances of ADCA users. Costs of establishing services and developing training materials would largely be the same as outlined in Chapter 4, as these are dependent on the designs of the measures not the substances being regulated.

However, as ADCA is a well-known substance to authorities, which has been an SVHC since 2012 (ECHA, 2023d), it is more likely that substance users are aware of ADCA, its properties, and its alternatives. There is already at least one analysis of alternatives for ADCA (EUPC, 2019), discussed in more detail in Section 6.2. This should reduce the costs to authorities of enforcement and communication across the measures, as companies are likely to understand the measures quicker and have greater access to and awareness of the resources needed to comply.

Some operational costs and fee income would be tailored to ADCA circumstances, particularly the fee under PM5 and PM6. Using the assessed fee structure, a company using the average tonnage and price from the industry survey, purchasing around 275 tonnes ADCA per year at a price of between €1,900- €5,600

(Procurement Resource, 2023), would pay an annual fee under PM5 in the range €26,125 - €77,000, with a central estimate of €51,600.

This tonnage estimate may be excessively high, as most of the surveyed companies were large companies (VITO, 2023b). Work package 2 of this project suggests that use of the substance is widespread amongst SMEs, which would typically face significantly lower fees (due to lower use volumes). Due to the limited responses to the industry survey, it is not possible to firmly conclude on what the fee for a 'typical' ADCA user in the construction sector would be.

Across all measures, any costs that are linked to the number of companies in scope of the measures (e.g., subsidies, assessment of substitution action plans etc.) will be lower if the scope is reduced.

For **companies**, the availability of information on and awareness of ADCA should also reduce the costs of compliance for companies. The existence of the ADCA Taskforce suggests that companies already have communication links with each other, which would reduce the costs of Policy Measure 7. The availability of an existing analysis of alternatives would support companies' efforts towards the obligations under policy measures one to six, and the costs of a full substitution action plan under policy measures eight to ten. The fees for ADCA users in the construction sector estimated above suggest that the financial impact on companies of PM5 or PM6 could be relatively large in absolute terms. This is based on limited data from the industry survey, where two thirds of the relevant respondents were larger companies (VITO, 2023b).

6.3.3 *Health, environment, and sustainability*

Regrettable substitution of ADCA with another SVHC is likely to be avoided if the chosen policy measures apply to all SVHCs, although there is still a risk of **regrettable substitution** with non-SVHC substances. The risk of a substitution being regrettable can be mitigated depending on how much the policy measure encourages and enables the assessment of the safety and sustainability of chosen alternatives.

Some alternatives identified by the EUPC report, such as OBSH (see Section 6.2), might be of equivalent or even higher concern than ADCA when it comes to their impacts on human health. For example, OBSH has a negative hazard profile that is not clearly more beneficial than ADCA's hazard profile. A substitution of ADCA with OBSH might thus be claimed to be a regrettable substitution. However, OBSH has also been claimed to be an inferior alternative in terms of performance (EUPC, 2019), so it is not likely that its uptake as an alternative will be widespread.

Alternatively, Alve-One® may match ADCA in terms of technical performance (Solvay, 2023b), and it is therefore a more likely alternative to ADCA. Alve-One® is sodium bicarbonate-based, lending it a better hazard profile than ADCA and is therefore not regrettable as a substitute (Solvay, 2023b). Considering that Alve-One® is the most likely substitute to ADCA, **regrettable substitution is deemed less likely** than for all SVHCs discussed in Chapter 4.

The risk of a substitution being regrettable can be mitigated depending on how much the policy measure encourages and enables the assessment of the safety and sustainability of chosen alternatives. For example, policy measures 8 to 10 are the most likely to encourage companies to investigate the sustainability of alternatives to SVHCs. Larger companies, such as the majority of the relevant respondents to the industry survey, are more likely to be able to utilise the support offered in PM8-10. These measures

could thus be beneficial for targeting ADCA uses in the construction sector in terms of mitigating risk of choosing alternatives with equivalent or worse cause for concern when it comes to impacts on human health and the environment.

It is likely that the policy measures will have a positive impact on safety and **sustainability** if they result in ADCA being substituted with Alve-One®. Alve-One® does not leave harmful residues and does not impact the recyclability of foam end-products in which it is used. As described in Section 6.2, Solvay claim that Alve-One® has values 85-95% lower than ADCA in a life-cycle analysis looking at the environmental footprint of foaming formulations (Solvay, 2023b). Alve-One®'s sodium-bicarbonate base is a common ingredient in baking and is considered safe for human consumption in small doses. It is likely that Alve-One® is a more sustainable and safer alternative to ADCA.

The policy measures are not expected to result in additional incentives for ADCA users regarding its **use and emissions** or to have **other impacts** on health, environment and sustainability outside of those discussed here or in Section 4.6.

6.3.4 *Practicability*

Focussing on ADCA users in the construction sector will reduce some of the practicability challenges discussed in Chapter 4. Firstly, ADCA is a data rich substance that was identified as an SVHC in 2012. Although a full market outlook on ADCA in Belgium is not known, the authorities would be better able to identify key players in the construction industry more so than users of many other SVHCs. For example, the ADCA Task Force, an industry association with over 40 members covering major supply chains (Reachcentrum, 2023), is focussed on communicating and assisting its members with regulatory obligations. The available information on the substance, use and the major actors will ease communication and understanding of any measures implemented, and hence, significantly **improve the intelligibility**.

ADCA users may be more accepting of the measures if the authorities work with associations such as the ADCA Taskforce, which will also make the measures **easier to implement**. Lastly, the availability of more market data for ADCA (discussed in Section 6.3.2) means that the authorities would be able to **better monitor and enforce compliance with and uptake** of the policy measures than for the broader SVHC market discussed in Chapter 4.

6.3.5 *Wider distributional impacts*

Two of the six relevant survey respondents state that they export more than 70% of their sales, suggesting that firms in this sector could be trade exposed and therefore more vulnerable to **competitiveness** concerns related (VITO, 2023b). However, there is evidence indicating that alternatives are available at least for some uses of ADCA in this sector, but as described in Section 6.3.2, there is no consensus on the availability and quality of alternatives. Companies that can substitute will have an improved competitive standing and gain a first-mover advantage compared to ADCA users that are not able to substitute both within and outside of Belgium.

Further, as discussed in Section 6.3.2, the availability of ADCA specific information can be used to improve the intelligibility of the policy measures, such as the appropriateness of fees for the sector and sector specific substitution information provided as guidance. Because of this, ADCA users may have a lower cost

to comply/participate in the policy measures. Lower costs of compliance/participation would likely improve the relevant companies' chances of achieving a first movers' advantage as a result of policy measures. It would especially help ADCA users that are not familiar with substitution efforts.

Work Package 2 found that most ADCA users are **SMEs**, although the majority of respondents to the industry survey were large companies (which may be explained by the low response rate). As discussed in Chapter 4, the economic burden of the policy measures and burden associated with substitution efforts will be greater for SMEs. However, since there are industry associations active in the regulatory field and more information is available on alternatives SMEs that use ADCA would likely have more positive outcomes from the policy measures compared to SMEs that useless 'mature' SVHCs.

As mentioned above, costs of compliance with or uptake of the policy measures may be lower for some ADCA users as part of fulfilling policy requirements or accessing support. At the same time, the cost to authorities (e.g., of communication and enforcement) is expected to be lower, so the **fairness of cost distribution** may remain similar.

Impacts on the job market tends to follow the costs and impacts on competitiveness, and as such, should be less significant for ADCA users, particularly for the larger companies. However, trade exposure increases the risk of companies moving outside Belgium and, as a consequence, may reduce the number of jobs in Belgium.

6.4 Cost effectiveness

This section presents a cost effectiveness analysis of the ten measures when applied to the use of ADCA in construction. The costs per company of participation and compliance (but not of substitution itself) are compared with the expected effectiveness of each of the measures. The analysis utilises survey data from authorities and ADCA users in construction, the largest group in the industry survey (VITO, 2023a, 2023b) and data from the performance of other policies. This supplements the analysis of substitution effectiveness and financial impacts of the measures in Chapter 4 and Section 6.3.2 by providing a fully quantified example. The results will not necessarily be consistent with findings in previous chapters, as the scope of the analysis is only ADCA users in construction, and the data used here is more limited than in Chapter 4. Only three to four quantified estimates of costs to companies were available for each measure.

6.4.1 Analytical approach

The cost-effectiveness of the measures is calculated as the expected tonnes of ADCA reduced for each company, divided by the annualised cost of the measure:

$$\begin{aligned} \text{Expected tonnes substituted} \\ &= \text{ADCA use volume} \times \text{Maximum share of use volume that is substitutable} \\ &\quad \times \text{Percentage reduction in usage from measure} \end{aligned}$$

The use volumes and maximum substitutable shares are based on survey data and external information on the use of ADCA. Based on six responses from ADCA users in the construction sector and average reported use volume per company was estimated at 275 tonnes (VITO, 2023b).

Calculating effectiveness

Research provided by the ADCA TF claim that ADCA cannot be substituted for most applications, while Solvay suggested that in most applications of ADCA, substitution is technically feasible (EUPC, 2019; Solvay, 2023b). Although scientific information was received by both parties and follow-up interviews were held, it has not been possible to adjudicate between these two views. It is therefore centrally assumed that 50% of ADCA use volumes can be substituted. This is broadly in line with the industry survey, where three of six surveyed companies using ADCA in the construction sector stated that they could reduce their usage volumes of ADCA in response to the measures described above (VITO, 2023b). Reflecting the high uncertainty associated with these figures, low and high scenarios are also tested which assume that only 10%, or 100%, of the ADCA use volume in this sector is substitutable.

The survey responses did not allow for an estimation of accurate reduction in use volumes following implementation of the policy measures. The percentage reduction in use caused by each measure has therefore been linked to the total score across the substitution efforts and substitution success rate criteria. The scores for the effectiveness attribute are not deemed to change when applied to ADCA usage in the construction sector. See Section 6.3.1 for more information. Measures which score a one on both measures are assumed to have no impact. Research on taxes similar to the fee discussed under Policy Measure 5 found that taxes have been associated with substance usage reductions of between 60% and 96% (Apeiron, 2023c; Oosterhuis, 2006; Tickner et al., 2015), considering a tax in Denmark and measures implemented under the Massachusetts TURA. As a conservative estimate, this lower bound of 60% effectiveness is chosen to be linked with the total overall score for Policy Measure 5 of seven out of ten across the two criteria. The effectiveness assumed for scores of between two and six is linearly interpolated from these assumptions of minimum 0% and maximum 60% reduction in use, resulting in an increase of 12 percentage points use reduction for each additional point across the two criteria.

Calculating costs

The costs estimations derive from survey data on the costs of various components of the measure cost. Surveyed companies and the authorities were asked to provide estimates of the costs of each element of the measures. Some cost components apply to more than one measure. See **Table 6.1** below for a complete list of the measure cost components assessed by the survey, the actor which pays for them and the policy measures that they are applicable to.

Table 6.1: Measure cost components used in ADCA case study

Measure cost component	Actor paying	Relevant policy measures
Initial use notification	Companies	1, 2, 3, 4, 5, 6
Subsequent updates of use notification(s) on a yearly basis	Companies	1, 2, 3, 4, 5, 6
Set up an inventory of Candidate List substances (if not already done)	Companies	1, 2, 3, 4, 5, 6
Developing a substitution action plan	Companies	2, 3, 4, 5, 6
Attend workshops, networking events etc.	Companies	7
Participate in the development of sector-specific adaptation of the generic methodology for sustainability-focused analysis of alternatives methodology	Companies	8, 9, 10

Attending trainings on how to implement sustainability-focused analysis of alternatives methodology	Companies	8, 9, 10
Implementing sustainability-focused analysis of alternatives methodology, with support/training	Companies	8, 9, 10
Annual fee (average)	Companies	5
Modular fee (average)	Companies	6
Online registration	Authorities	1, 2, 3, 4, 5, 6
Enforcement of use notification	Authorities	1, 2, 3, 4, 5, 6
Templates for use notification	Authorities	1, 2, 3, 4, 5, 6
Templates for substitution action plan	Authorities	2, 3, 4, 5, 6
Help desk	Authorities	3, 4, 5, 6
Networking events	Authorities	7
Information pamphlets	Authorities	7
Fixed fee system	Authorities	5
Modular fee system	Authorities	6
Sustainability assessment	Authorities	8, 9, 10
Training companies	Authorities	8, 9, 10
Subsidy applications (ver1)	Authorities	9
Subsidy applications (ver2)	Authorities	10

Where survey data requested an estimation of the range of likely costs, the midpoint of the range is used for aggregation purposes. Each measure is matched to the cost components incurred by both companies and authorities. The analysis does not include the overall costs of measures, rather only the marginal costs of one additional company in scope of the measure. What is termed the 'variable costs to authorities' includes the marginal costs to authorities of implementing the measure for one additional company in scope of the measure, and excludes costs that are not dependent on the number of companies that participate in the measure. This approach is taken to avoid the issue of attributing costs of measure implementation to companies within a case study that is expected to represent a small portion of the overall scope of the measure.

For the mandatory measures, the costs can be interpreted as applying to all companies. For PM5 and PM6 it is assumed that the average fee is €51,666, or the average of the three fee cap levels. This is similar to the expected fee level for a company using 275 tonnes of ADCA (see Section 6.3.2). In the case of PM6, it is assumed that half the companies choose to pay the fee and half choose to submit the substitution action plan.

The uptake of PM7 – PM10 is not known. For the purposes of this analysis, the costs presented here are only for those that make use of the support provided within these measures and should not be interpreted as average costs that would apply to all in-scope companies.

Comparison with approach to estimate costs used in Chapter 4

The way in which costs are analysed in this section is significantly different to the approach in the main analysis and the two approaches should not be directly compared. In the main analysis, the cost information from the industry survey is presented in a raw form and is not aggregated as it is in this section. Survey data is relied on more heavily in this section, while the main analysis supplements survey data with broader evidence on costs. This reflects the very high levels of uncertainty when applying a very small sample size to SVHCs as a whole.

Furthermore, costs presented in this section reflect the overall costs of measures, across all of their elements, while in the main analysis only the additional costs compared to previous related measures that are assessed. For example, the costs of PM3 in this table include the costs of use notification, but these costs are not discussed under the analysis of PM3 in Section 4.5.3.

Assumed costs and effectiveness

The costs and effectiveness are calculated at a per company level, instead of an industry wide analysis, to avoid any sensitivity of the analysis to assumptions on the number of companies that would be affected by the measures. Thus, the final costs are the sum of a company' total costs and the authorities' variable costs per company.

All four quantified industry survey responses were used to calculate average annual undiscounted costs for companies over a ten-year period. Capital costs are assumed to incur only once, while operational costs are incurred annually. The results of this analysis are shown in **Table 6.2**.

Table 6.2: Assumed costs and effectiveness of policy measures

Policy measure	Variable authorities' costs (€/year/company)	Annualised company costs (€/year/company)	Total costs (€/year/company)	Policy effectiveness (% usage reduction)	Policy effectiveness (tonnes usage reduction/company)
PM 1	1,000	9,000	10,000	0%	0
PM 2	1,000	16,000	17,000	24%	66
PM 3	1,000	16,000	17,000	48%	132
PM 4	4,000	14,000	18,000	48%	132
PM 5	-50,000	67,000	17,000	60%	166
PM 6	-22,000	38,000	16,000	48%	132
PM 7	3,000	3,000	6,000	24%	66
PM 8	-	32,000	32,000	0%	0
PM 9	3,000	29,000	32,000	0%	0
PM 10	6,000	27,000	33,000	12%	33

Table note: Annualised company costs includes both Capx and OpEx. CapEx occurs once over a 10-year period.

6.4.2 Results

The results of this cost effectiveness analysis can be found in **Table 6.3**. This table shows the total estimated cost of each measure for each tonne of ADCA usage reduction it creates, across the low, medium, and high scenarios. These scenarios represent differing assumptions on the portion of ADCA usage which is substitutable. Measures listed with 'No effect' are assumed to have no significant impact on substitution if implemented in isolation, and thus do not have a calculable cost effectiveness.

It is important to note that the costs do not contain the cost of substitution. This is because the project scope is to assess measures to increase substitution, not to assess whether substitution is a worthwhile activity. The implicit assumption underlying results that substitution of SVHCs is itself beneficial. Furthermore, the companies experiencing these costs will typically not be the same as those that substitute, as costs of compliance can often be avoided through substitution.

The cost-effectiveness therefore only reflects other costs associated with the implementation and compliance with the measure. The results should be interpreted as a measure of the effectiveness of the policy measures compared to the typical burden they place on companies and authorities.

Note that estimates for optional policies (PM 7 – 10) are based on the costs of a single participating company. In practice, many companies will not participate in these measures, reducing the burden that it typically incurs. Thus, direct comparisons cannot be made between the mandatory and optional measures.

Table 6.3: Cost effectiveness of measures

Policy measure	Cost effectiveness (€/tonne)		
	Low	Medium	High
PM 1	No effect	No effect	No effect
PM 2	2,545	509	255
PM 3	1,281	256	128
PM 4	1,357	271	136
PM 5	1,066	213	107
PM 6	1,215	243	121
PM 7	829	166	83
PM 8	No effect	No effect	No effect
PM 9	No effect	No effect	No effect
PM 10	9,761	1,952	976

Table note: Note that commonly used benchmarks are often given in €/kg, but the number in the table is (for readability) given in €/tonne.

The best performing measure is Policy Measure 7, which has a cost of between €83 and €829 per tonne of ADCA reduced (or €0.08 to €0.83 per kg reduced). This is largely because the cost to companies of attending workshops is limited, and this measure is expected to be somewhat effective.

The transfer policies, such as PM3, PM4, and PM6, also perform relatively well under this analysis. The costs

of paying the fees or providing the subsidies in these policies, the elements that make these some of the most effective measures, are cancelled out by the corresponding benefits to actors receiving the fees/subsidies. The only remaining costs are the costs of administrating the fee, and other elements of the measures. There are other reasons to avoid fees or subsidies that are not captured by this ranking, such as distributional impacts.

Aside from those which are not expected to have any impact, the worst performing measure is Policy Measure 10, owing to the reported high costs of implementing the substitution methodology under Policy Measures 8 to 10, and the measure's limited effectiveness. Industry survey respondents reported that the costs of implementing the methodology are not completely offset by even the higher subsidy of €50,000, resulting in substantial remaining costs both for companies in implementing the methodology and for authorities in providing the subsidy.

7. Uncertainty and limitations

This chapter addresses uncertainties and limitations in the preceding analysis. Key uncertainties are described in addition to potential implications for the conclusions of the analysis. Significant uncertainties may limit how the results can be used, which is highlighted where relevant. Key uncertainties and limitations are:

- **Key policy design features are undefined.** The impacts of some of these measures will depend heavily on policy design choices that are not decided by the measure descriptions in Section 4.1. For example, the extent of enforcement and the standards set for a compliant submission will be instrumental in determining the impact of the mandatory substitution action plan under Policy Measure 2. The analysis and scores are underpinned by reasonable assumptions about these choices, but implementing authorities would not be constrained by these assumptions and could thereby make improvements to the measures. These assumptions are outlined in Section 4.2.
- **Differing interpretations of policy measures by stakeholders.** Another risk associated with ambiguity of policy features is that the stakeholders responding to the survey may have interpreted the measures differently to the interpretation presented in this analysis. However, as the results are to a lesser extent reliant on the survey results, the uncertainties induced by this is likely limited.
- **Low number of survey responses.** The industry survey used to collect information about the chosen measures received only 15 responses from downstream users of SVHCs (VITO, 2023b). This is unlikely to be a sufficient number of responses to fully understand the implications of the measures for surveyed downstream users. Furthermore, as responses were sought for only four substances, the survey provides limited evidence to analyse measures that may apply to over a hundred substances. The survey is not the only evidence used to guide the analysis and scores, so this does not render the analysis as a whole uncertain. However, this should be taken into account when interpreting any reported survey results.
- **Few examples of similar policies targeting downstream users.** One of the main sources of evidence was evaluations of previous policies that have implemented similar requirements. The evidence review conducted for this project suggested that relevantly similar policies specifically targeting downstream users are relatively rare, limiting the usable evidence base. Where measures that are not tried and tested are implemented, it will be particularly important to implement robust monitoring and evaluation programmes to ensure that they can be understood more thoroughly.
- **Limited information available about the Belgian market.** One of the primary motivations for many of the analysed policy measures was the limited information that exists about the use of SVHCs in the Belgian market. However, the effectiveness of the policy measures will in many cases be dependent on features of the Belgian market, such as the number of companies using SVHCs or the availability of suitable alternatives for the most used substances. This limits the evidence base that can be used for measure analysis.
- **Many substances with many uses could be in scope.** There are 107 substances on the Candidate List (CL) for authorisation that have not already been listed on Annex XIV or the Restriction list in Annex XVII. These substances will themselves have many uses and the measures are likely to act differently on downstream users depending on the specific use of the SVHCs that they are a user of. There is likely also a large variety of sectors affected by the policy, with different financial

circumstances, knowledge, cultures, and thus behavioural responses across affected sectors. The policy could be analysed more reliably for specific substances or uses of that substance (see Section 6.3 for an example), but it is infeasible to attempt this analysis for all substances and uses.

- **Results are dependent on the setup of the MCA.** The MCA method has been defined with the intention of providing a comprehensive assessment of the policy. To ensure that it is not excessively dependent on choices, three policy scenarios with differing priorities have been assessed. At a political level it is expected that there will be differing opinions on the relative importance of the assessment criteria, and thus the results may not perfectly guide decision making for such actors. Given this kind of uncertainty that is inherent in MCAs, it is important for decision-makers to pay attention to the qualitative assessment and the individual scores, not just the overall score and ranking of measures.
- **Limited relevant information for the ADCA case study:** Only six responses to the industry survey were received from ADCA users in the construction sector. Not all of these respondents were able to answer the questions on costs and effectiveness of the measures, and several questions only had around three responses. This is insufficient to provide an overall picture of DUs in this sector, and conclusions drawn from this limited information are inherently uncertain.
- **Limited and conflicting information on alternatives to ADCA:** Information for the analysis of alternatives (Section 6.2) to ADCA was gathered through the industry survey, literature submitted by stakeholders and interviews with the ADCA Task Force and Solvay. As previously mentioned, the industry survey was only answered by six respondents (that use ADCA in the construction sector) and the dataset has several gaps and considerable uncertainty. Furthermore, the ADCA Task Force and Solvay provided conflicting information about the availability of suitable alternatives. Consequently, the analysis does not provide a concrete conclusion as to whether there is a viable alternative to ADCA.

8. Key messages and recommendations

This chapter summarises the key messages and recommendations of the analysis. These recommendations provide key considerations for the development of tangible policy actions to limit the use of SVHCs in Belgium and support Belgium's implementation of the European Union (EU) Chemicals Strategy for Sustainability. Key messages and recommendations are:

- The average time from when a SVHC is proposed to when it is listed in REACH Annex XIV (authorisation list) is 7 years, so there is a limited time window for accelerating the substitution of SVHCs. This needs to be considered when implementing policy measures, as some measures (e.g., Policy Measures 8-10) will only indirectly affect substitution efforts of DUs and the substitution success rate. These indirect measures represent slower pathway to increased substitution.
- Most DUs are likely to be SMEs with limited experience and available funds to comply with regulatory requirements. It therefore believed that non-financial support will be highly beneficial and necessary to maximise the substitution potential of the measures.
- The most beneficial of the assessed policy measures are Policy Measures 3 and 4, which contain a combination of a mandatory use notification, mandatory substitution action plan and financial and/or non-financial support.
- The effectiveness of each measure is closely linked to their stringency and can be increased by changes in the policy design. For example, emission reporting could be included in the use notification to better target sustainability objectives, greater detail required for the substitution action plan may provide authorities with more information to inform decision-making or increasing fee levels may influence a company's decision to invest in substitution. However, there is a trade-off where more stringent measures are typically more costly, less practicable and/or increase the SME concern.
- Any fee system needs to be carefully designed to avoid unintended effects. It is especially important to prevent perverse incentives, i.e., where an increase in the use of SVHCs can lead to a fee reduction. It is also important to ensure that the fee level is 'right', i.e., a too low level does not incentive substitution, and a too high level increases the risk that companies shut down or relocate outside of Belgium.
- Measures combining obligations with support ('stick and carrot') are likely to yield the best overall outcomes for Belgium. Smart combinations of elements (e.g., reporting requirements, financial and non-financial support, fees etc.) mitigate weaknesses as far as possible, and synergy effects, such as improved compliance, effectiveness and reduction in costs, can be maximised.
- Policy measures that impose mandatory reporting requirements without additional support or financial incentives (e.g., Policy Measures 1 and 2) may be less effective in increasing substitution efforts as the reporting requirements may be treated as a 'tick-box' exercise.
- Information about the Belgian SVHC market remains limited, which means that accurate impacts of the measures cannot be predicted. The conclusions may also change if only a few SVHCs are targeted by the policy measures, or if different combinations or designs of measures were assessed.

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Appendix 1 Information from stakeholders

This appendix presents key results from the industry survey (VITO, 2023b). The tables are presented alongside the total response rate, and the response rate for each of the assessed substances.

A1.1.1 Users of each of the prioritised substances

Appendix Table 1 presents the number of companies who reported using one of the SVHCs prioritised for substitution.

Appendix Table 1 Number of companies using each substance

Substance	Number of companies
ADCA	8
Phenol, dodecyl	2
Alkanes, C14-17	5
2-methoxyethanol	0
Total respondents	15

Appendix Table 2 presents the number of respondents who are SMEs (small or medium enterprises).

Appendix Table 2 Number of companies who are SMEs

Survey response	Number of companies
Yes	6
No	7
Not relevant	1
I don't know	1
Total respondents	13
Response Rate	87%

Appendix Table 3 presents the industries or broad categories in which the companies' products are used. Companies were asked to select the most important broad uses to their organisation.

Appendix Table 3 Industries or broad categories in which the products are used

Industry / Broad use	Number of companies
Automotive	0
Aerospace & defence	1
Other transportation, including shipping	0
Construction	8

Industry / Broad use	Number of companies
Electronics, telecommunication & power generation	0
Power	0
Oil & Gas	1
Metallurgy	0
Mining	0
Chemical manufacture	1
Detergents & household chemicals	0
Personal care and cosmetics	0
Agriculture, forestry, fishery	0
Medical, pharma & biopharma	0
Food & Feed	0
Textiles	0
Water supply & management	0
Plastic and plastic products	2
Toys	0
Other	1
Response Rate	80%

A1.1.2 Substitution and alternatives

Appendix Table 4 presents the average annual amount spent by companies on R&D on alternatives to each of the prioritised substances. Companies were asked to report an average over the past 5 years.

Appendix Table 4 Average annual spend on R&D on alternatives to each substance

Annual spend (2023 €/yr)	Number of companies	ADCA	Phenol, dodecyl	Alkanes, C14- 17	2- methoxyethan ol
<€10,000	4	2	0	2	0
€10,000 - €25,000	3	2	0	1	0
€25,000 - €50,000	0	0	0	0	0
€50,000 - €75,000	0	0	0	0	0
€75,000 - €100,000	1	1	0	0	0
€100,000 - €250,000	0	0	0	0	0
€250,000 - €500,000	0	0	0	0	0
€500,000 - €1 million	0	0	0	0	0
€1 million - €2.5 million	0	0	0	0	0

Annual spend (2023 €/yr)	Number of companies	ADCA	Phenol, dodecyl	Alkanes, C14- 17	2- methoxyethan ol
€2.5 - €5 million	0	0	0	0	0
€5 - €10 million	0	0	0	0	0
>€10 million	0	0	0	0	0
I don't know	0	0	0	0	0
Total respondents	8	5	0	3	0
Response rate	53%	63%	0%	60%	0%

Appendix Table 5 presents the number of non-SVHC substances on the market that companies claimed could potentially serve as an alternative to the SVHCs they use.

Appendix Table 5 Potential alternatives to SVHCs

Response	Number of companies	ADCA	Phenol, dodecyl	Alkanes, C14-17	2- methoxyethan ol
Yes	5	2	0	3	0
No	5	4	1	0	0
I don't know	1	1	0	0	0
Not relevant	0	0	0	0	0
Total respondents	11	7	1	3	0
Response Rate	73%	88%	50%	60%	0%

Appendix Table 6 presents key differences between products manufactured using SVHCs and products manufactured without using SVHCs.

Appendix Table 6 Differences between products manufactured using SVHCs and products manufactured without using SVHCs

Difference	Number of companies	ADCA	Phenol, dodecyl	Alkanes, C14- 17	2- methoxyetha nol
There are no marginal differences	2	0	0	2	0
The alternative products have better technical performance	1	1	0	0	0
The alternative products have lower technical performance	1	1	0	0	0
The alternative products are less durable	1	1	0	0	0

Difference	Number of companies	ADCA	Phenol, dodecyl	Alkanes, C14-17	2-methoxyethanol
The alternative products are less temperature resistant	0	0	0	0	0
The alternative products are less chemical resistant	0	0	0	0	0
The alternative products are less water or oil repellent	0	0	0	0	0
The alternative products are less water resistant	0	0	0	0	0
Total respondents	5	3	0	2	0
Response Rate	33%	38%	0%	40%	0%

Appendix Table 7 presents companies' estimated total one-off costs to their organisation based on the following generalised substitution steps: 1) planning, 2), R&D to identify alternatives, 3) developing the alternatives for customers' specific uses, 4) customer qualification and validation testing, and 5) production or import-scale up.

Appendix Table 7 Substitution costs CapEx

Estimated CapEx substitution cost (2023 €/yr)	Number of companies	ADCA	Phenol, dodecyl	Alkanes, C14-17	2-methoxyethanol
<€10,000	2	1	0	1	0
€10,000 - €25,000	2	0	0	2	0
€25,000 - €50,000	0	0	0	0	0
€50,000 - €75,000	1	1	0	0	0
€75,000 - €100,000	1	1	0	0	0
€100,000 - €250,000	0	0	0	0	0
€250,000 - €500,000	0	0	0	0	0
€500,000 - €1 million	1	0	1	0	0
€1 million - €2.5 million	1	1	0	0	0
€2.5 - €5 million	0	0	0	0	0
€5 - €10 million	0	0	0	0	0
>€10 million	0	0	0	0	0
I don't know	0	0	0	0	0
Total Respondents	8	4	1	3	0
Response Rate	53%	50%	50%	60%	0%

Appendix Table 8 presents companies' estimated annual costs to their organisation based on the following generalised substitution steps: 1) planning, 2), R&D to identify alternatives, 3) developing the alternatives for customers' specific uses, 4) customer qualification and validation testing, and 5) production or import-scale up.

Appendix Table 8 Substitution costs OpEx

Estimated OpEx substitution costs (2023 €/yr)	Number of companies	ADCA	Phenol, dodecyl	Alkanes, C14-17	2-methoxyethanol
<€10,000	2	1	0	1	0
€10,000 - €25,000	1	0	0	1	0
€25,000 - €50,000	2	1	0	1	0
€50,000 - €75,000	1	1	0	0	0
€75,000 - €100,000	0	0	0	0	0
€100,000 - €250,000	1	0	1	0	0
€250,000 - €500,000	0	0	0	0	0
€500,000 - €1 million	0	0	0	0	0
€1 million - €2.5 million	0	0	0	0	0
€2.5 - €5 million	0	0	0	0	0
€5 - €10 million	0	0	0	0	0
>€10 million	0	0	0	0	0
I don't know	0	0	0	0	0
Total Respondents	7	3	1	3	0
Response Rate	47%	38%	50%	60%	0%

A1.1.3 Substance usage

Appendix Table 9 presents the total annual volumes of SVHCs used in Belgium by the companies.

Appendix Table 9 Annual volumes of SVHCs used in Belgium

Volume used in Belgium (tonnes/year)	Number of companies	ADCA	Phenol, dodecyl	Alkanes, C14-17	2-methoxyethanol
<0.1	2	1	0	1	0
0.1-1	2	0	0	2	0
1 - 10	2	1	1	0	0

Volume used in Belgium (tonnes/year)	Number of companies	ADCA	Phenol, dodecyl	Alkanes, C14-17	2-methoxyethanol
10-100	1	0	0	1	0
100-500	4	4	0	0	0
500-1,000	1	1	0	0	0
1,000-4,000	0	0	0	0	0
4,000-7,000	1	0	0	1	0
7,000-10,000	0	0	0	0	0
10,000-15,000	0	0	0	0	0
15,000-20,000	0	0	0	0	0
>20,000	0	0	0	0	0
Total responses	13	7	1	5	0
Response Rate	87%	88%	50%	100%	0%

Appendix Table 10 presents companies' annual revenue from sales of SVHC products in Belgium.

Appendix Table 10 Revenue from sales of SVHC products in Belgium

Revenue (€/year)	Number of companies	ADCA	Phenol, dodecyl	Alkanes, C14-17	2-methoxyethanol
<€10,000	4	2	0	2	0
€10,000 - €100,000	0	0	0	0	0
€100,000 - €1 million	4	1	1	2	0
€1 - €10 million	1	0	0	1	0
€10 - €50 million	1	1	0	0	0
€50 - €100 million	2	2	0	0	0
€100 - €200 million	1	1	0	0	0
€200 - €300 million	0	0	0	0	0
€300 - €400 million	0	0	0	0	0
€400 - €500 million	0	0	0	0	0
>€500 million	0	0	0	0	0
Total responses	13	7	1	5	0
Response Rate	87%	88%	50%	100%	0%

Appendix Table 11 presents the companies' estimates of the percentage of their sales that are exported outside of Belgium.

Appendix Table 11 Percentage of sales of SVHC products exported outside Belgium

Percentage of sales exported	Number of companies	ADCA	Phenol, dodecyl	Alkanes, C14-17	2-methoxyethanol
0	0	0	0	0	0
<1%	0	0	0	0	0
1-10%	0	0	0	0	0
10-20%	0	0	0	0	0
20-30%	1	0	0	1	0
30-40%	1	1	0	0	0
40-50%	0	0	0	0	0
50-60%	1	0	0	1	0
60-70%	0	0	0	0	0
70-80%	1	1	0	0	0
80-90%	0	0	0	0	0
>90%	3	1	0	2	0
I don't know	0	0	0	0	0
Total responses	7	3	0	4	0
Response Rate	47%	38%	0%	80%	0%

A1.1.4 Measures

Appendix Table 12 presents definitions of the measure components that the following tables refer to.

Appendix Table 12 Component Number Descriptions

Component Number	Full Measure Component Description
Component 1 (C1)	Initial use notification
Component 2 (C2)	Subsequent updates of use notification(s) on a yearly basis
Component 3 (C3)	Set up an inventory of Candidate List substances (if not already done)
Component 4 (C4)	Developing a substitution action plan
Component 5 (C5)	Attend workshops, networking events etc.
Component 6 (C6)	Participate in the development of sector-specific adaptation of the generic methodology for sustainability-focused analysis of alternatives methodology
Component 7 (C7)	Implementing sustainability-focused analysis of alternatives methodology, without support/training
Component 8 (C8)	Attending trainings on how to implement sustainability-focused analysis of alternatives methodology
Component 9 (C9)	Implementing sustainability-focused analysis of alternatives methodology, with support/training

Appendix Table 13 presents the respondents' estimations of the capital costs of each of the measure components.

Appendix Table 13 CapEx results

Cost of component (€)	C1	C2	C3	C4	C5	C6	C7	C8	C9
No additional costs	2	0	1	0	1	0	0	0	0
<€10,000	2	3	2	2	2	1	0	3	2
€10,000 - €50,000	0	0	0	1	0	2	3	0	1
€50,000 - €0.1 million	0	0	0	0	0	0	0	0	0
€0.1 - €0.25 million	0	0	0	0	0	0	0	0	0
€0.25 - €0.5 million	0	0	0	0	0	0	0	0	0
€0.5 - €1 million	0	0	0	0	0	0	0	0	0
€1 - €2.5 million	0	0	0	0	0	0	0	0	0
€2.5 - €5 million	0	0	0	0	0	0	0	0	0
€5 - €10 million	0	0	0	0	0	0	0	0	0
>€10 million	0	0	0	0	0	0	0	0	0
Total responses	4	3	3	3	3	3	3	3	3

Appendix Table 14 presents the respondents' estimations of the operational costs of each of the measure components between one and five years from initial implementation.

Appendix Table 14 OpEx to 5 years results

Cost of component (€/year)	C1	C2	C3	C4	C5	C6	C7	C8	C9
No additional costs	2	0	1	0	1	0	0	0	0
<€10,000	1	3	2	3	2	2	1	3	3
€10,000 - €50,000	0	0	0	0	0	1	2	0	0
€50,000 - €0.1 million	0	0	0	0	0	0	0	0	0
€0.1 - €0.25 million	0	0	0	0	0	0	0	0	0

Cost of component (€/year)	C1	C2	C3	C4	C5	C6	C7	C8	C9
€0.25 - € 0.5 million	0	0	0	0	0	0	0	0	0
€0.5 - €1 million	0	0	0	0	0	0	0	0	0
€1 - €2.5 million	0	0	0	0	0	0	0	0	0
€2.5 - €5 million	0	0	0	0	0	0	0	0	0
€5 - €10 million	0	0	0	0	0	0	0	0	0
>€10 million	0	0	0	0	0	0	0	0	0
Total responses	3	3	3	3	3	3	3	3	3

Appendix Table 15 presents the respondents' estimations of the operational costs of each of the measure components between six and ten years from initial implementation.

Appendix Table 15 OpEx to 10 years results

Cost of component (€/year)	C1	C2	C3	C4	C5	C6	C7	C8	C9
No additional costs	2	1	2	0	2	0	0	0	0
<€10,000	1	2	1	3	1	2	2	3	3
€10,000 - €50,000	0	0	0	0	0	1	1	0	0
€50,000 - €0.1 million	0	0	0	0	0	0	0	0	0
€0.1 - € 0.25 million	0	0	0	0	0	0	0	0	0
€0.25 - € 0.5 million	0	0	0	0	0	0	0	0	0
€0.5 - €1 million	0	0	0	0	0	0	0	0	0
€1 - €2.5 million	0	0	0	0	0	0	0	0	0
€2.5 - €5 million	0	0	0	0	0	0	0	0	0
€5 - €10 million	0	0	0	0	0	0	0	0	0
>€10 million	0	0	0	0	0	0	0	0	0
Total responses	3	3	3	3	3	3	3	3	3

Appendix Table 16 presents descriptions of each of the measures that the following tables refer to.

Appendix Table 16 Measure Number and Description

Measure Number	Policy Measure
M1	Mandatory notification of use
M2	Substitution action plan
M3	Non-financial support for the use notification and/or the substitution action plan
M4	Subsidy for the substitution action plan
M5	Annual fee on the use of SVHCs
M6	Modular annual fee system on the use of SVHCs
M7	Awareness creation and facilitation of networking
M8	Development of methodology and structure to support the sustainability-focused analysis of alternatives
M9	Direct support of companies involved with a subsidy for advisory services (version 1)
M10	Direct support of companies involved with a subsidy for advisory services (version 2).

Appendix Table 17 presents the respondents' reported behavioural responses to each of the measures.

Appendix Table 17 Behavioural response

Survey response	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
I don't know	0	0	0	0	0	0	0	0	0	0
No actions will be carried out, business as usual	3	2	3	1	0	0	2	1	0	0
Reduce the use of the CL substances	2	0	1	0	0	0	0	0	0	0
Implement exposure/emission reduction measures	0	0	0	0	0	0	0	0	1	0
Initiate/increase substitution efforts	1	3	1	2	2	2	1	1	2	2
Transition to an alternative (i.e., alternative identified)	1	1	1	1	1	1	1	1	1	1
Start or increase importation of an alternative	0	0	0	0	0	0	0	0	0	0
Move operations outside Belgium	0	0	0	0	1	1	0	0	0	0
Other (please explain)	0	0	0	0	0	0	0	0	0	0
Total usable responses	7	6	6	4	4	4	4	3	4	3

Appendix Table 18 presents the benefits that respondents stated each of the measures would have.

Appendix Table 18 Benefits summary

Survey response	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Improved knowledge of the substance and its uses	0	0	1	1	0	0	1	0	0	0
Less regulatory uncertainty	2	1	1	0	1	0	1	2	1	1
Improved supply chain communication	2	1	1	0	0	0	1	0	1	1
Competitive advantage compared to non-Belgian companies	0	0	0	0	0	0	0	0	0	0
Reduced costs of substitution efforts	0	0	1	2	0	2	1	1	0	0
Other savings	0	0	0	0	0	0	0	0	0	0
Improved public image	0	0	0	0	0	0	0	1	0	0
Better or easier sustainability reporting	1	2	1	0	0	0	0	0	2	2
Negligible or no benefits	4	3	2	1	4	2	1	1	3	3
Other (please explain)	0	0	0	0	0	0	0	0	0	0
Cost of complying	0	0	0	0	0	0	0	0	0	0
Limited knowledge/expertise to comply	0	0	0	0	0	0	0	0	0	0
Lack of staff resources	0	0	0	0	0	0	0	0	0	0
Time constraints	0	0	0	0	0	0	0	0	0	0
I have no concerns related to this measure	0	0	0	0	0	0	0	0	0	0
Other (please explain)	0	0	0	0	0	0	0	0	0	0
Total usable responses	9	7	7	4	5	4	5	5	7	7

Appendix Table 19 presents the extent to which respondents stated that each of the measures reduces the barriers to substitution they face.

Appendix Table 19 Barriers summary

Survey response	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Reduces all barriers	2	1	1	0	0	0	0	0	0	0
Reduces most barriers	0	1	2	2	1	1	2	2	2	1
Reduces some barriers	2	2	1	1	2	2	2	0	2	3
Does not affect barriers	3	3	3	2	2	2	1	3	1	1

Survey response	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Increases the barriers	2	0	0	0	0	0	0	0	0	0
Total usable responses	9	7	7	5	5	5	5	5	5	5

Appendix Table 20 presents the concerns that respondents stated they had with each of the measures.

Appendix Table 20 Concerns summary

Survey response	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Administrative burden	4	4	3	1	0	0	0	0	0	0
Cost of complying	0	0	0	0	2	2	0	1	0	0
Limited knowledge/expertise to comply	0	1	1	1	1	1	0	0	0	0
Lack of staff resources	2	1	2	1	1	1	2	1	2	1
Time constraints	0	0	0	0	0	0	0	0	0	1
I have no concerns related to this measure	2	0	1	1	0	0	3	2	3	2
Other (please explain)	0	0	0	0	0	0	0	0	0	0
Total usable responses	8	6	7	4	4	4	5	4	5	4



10F Printing House Yard, Hackney Road
London, E2 7PR



020 7464 5383



info@eftec.co.uk



eftec.co.uk



[@eftecUK](https://twitter.com/eftecUK)



PHASE THREE: POLICY MEASURES DEVELOPMENT

Lead Authors

Jean-Pierre Feyaerts - JP Feyaerts
Michel Vander Straeten - Vander Straeten Consulting Services

Reviewer

Hiram Moerman – Apeiron-Team NV

Executive Summary

This part of the BEP4CAL project aimed to identify policy measures that can be used for supporting the substitution of SVHCs included in the CL and that present a higher interest in relation to the importance of their production or use in Belgium, the level of the emission and/or the opportunity the development of the alternatives may present for the Belgian economy while ensuring a reduction of the use of the concerned substances. More than simply ensuring substitution, the project aimed to identify policy measures that could accelerate the process for the concerned substances by selecting sustainable alternatives and avoiding regrettable substitution. The substances already included in the Annex XIV or Annex XVII of the REACH Regulation were not considered.

The identification of policy measures was done in three stages:

The first step was the development of a long list of measures comprising 38 measures which were categorised into 4 broad groups: regulatory measures, economic measures, information and knowledge measures and voluntary measures (initiated or only facilitated by the authorities).

The approach taken to identify the measures in the long list that would ultimately make up the short list, considered the fact that the long list was essentially a list of generic measures. The short list, on the other hand, was made up of measures that were clearly defined to allow for an in-depth proportionality and socio-economic analysis in Phase 4 of the project. An initial reduction of the long list to an intermediate list was thus necessary before the remaining candidate measures could be refined for Phase 4.

The intermediate list was developed based on two major considerations (i) the pathway of the substitution for a responsible enterprise aiming to identify and developed a sustainable alternative and (ii) the selection of the measures (within the long list) to be developed in Belgium that can help these enterprises and/or the authorities and/or other stakeholder that are using or producing the prioritized substances. The intermediate list consisted of 17 measures.

The intermediate list also made it possible to examine the proportionality of a wider range of measures than the short list itself. Some of these measures may prove useful in future related areas of public intervention, particularly regarding sustainability but they were not considered for various reasons such as:

- They should be developed preferably at the EU level or the international level.
- They should be considered in their own framework as they concern other cases as well.

- There are already many existing initiatives (in particular for RDI) and it is preferable to try to improve them (including organizational aspects); Additional measures of that type were also examined.
- The measures exist already and fall under the responsibility of the authorities, or they present several problems beside some intrinsic qualities. The fees/taxation are a particular as it is clearly a legitimate instrument considering the negative externalities generated by the production or the use of the SVHC. Only one measure of that type is included in the short list.

The last stage of this process was to further reduce the number of policy measures down to a short list of 10 different scenarios for which an SEA could be conducted. Through a discussion of proportionality and a refinement of measures, this stage led to the establishment of a short list, paying particular attention as far as possible to the priority substances identified in Phase 2 of the project, considering, for example, feedback from the user sectors concerned. The ten measures deemed suitable for the NPS and selected for an SEA, were expected to be more effective if developed at the Belgian level (subsidiarity consideration) and could present an interest for individual substances (vertical dimension).

The final list of policy measures identified were a combination of legal obligations and instruments with measures to facilitate change and direct support measures for businesses in carrying out a sustainability-based analysis of alternatives. These measures are summarised below:

Broad category of measure	Policy scenarios
Legal obligations and instruments	1. Mandatory notification of use
	2. Substitution action plan for substances prioritised as of high relevance for Belgium
	3. Non-financial support for the use notification and/or the substitution action plan
	4. A subsidy for the substitution action plan
	5. Annual fee on the use of SVHCs
	6. A modular fee system
Change facilitation measures	7. Awareness creation and facilitation of networking
Structure supportive measures	8. Development of methodology and structure to support the sustainability-focused analysis of alternatives
	9. Direct support of companies involved with a subsidy for advisory services (subsidy version 1)
	10. Direct support of companies involved with a subsidy for advisory services (subsidy version 2)

It should be noted that some policy measures overlap, particularly measures 1 to 6 and measures 8 to 10. For example, measure 4 contains all the elements of measures 1, 2 and 3, plus a grant.

This will make it possible in Phase 4 of the project, i.e. the socio-economic study, to check, for example, whether the additional elements improve the policy as a whole, or vice versa.

During the implementation of the project, the information publicly available for the identification of the uses and emissions of SVHC included in the CL of ECHA was too limited and additional consultations and surveys were not sufficient to have a good vision of the situation in Belgium for a good prioritization of substances. More information is clearly needed. This led to the proposal of a mandatory notification of the uses of the SVHC included in the CL (first scenario of the short list). If such information is available, it would help the authorities to identify the most important pieces of information to make available to the concerned enterprises and to update latter the priority list.

The priority list in itself will constantly be updated as new substances are added progressively and as other substances will later be included in Annex XIV, XVII or as substances reach their sunset date. The legal framework and its implementation at the EU level is also progressing and the same is valid for the RDI. This means that the best policy measures for an initial set of prioritized substance can be different from the one valid for a review list of priorities. So, it remains important to also consider the measures that will help the substitution of the non-prioritized substances.

Even if the list of the priorities can be optimized, it does not mean that the efficiency of policy measures will be higher for such substances compared to others. That is why an important focus was given to policy measures having an impact on the reactivity of enterprises, considering first how the responsible diligent enterprises behave and trying to promote this behaviour by specific requirements (like a mandatory substitution action plan (PASS) as proposed under measure 2) with a support for the enterprises that do not have equivalent resources (measures 3 and 4).

In order to speed up the transition to safer alternatives, a fee was proposed (scenario 5). At the same time, in order to not penalize the diligent Belgian enterprises against their competitors, such fee may be suspended, as long as the said enterprise is really working on the substitution (measure 6). The communication among the supply chain through cooperation and exchanges of information (best practices) was identified during the consultation as an important element for a sustainable substitution. This aspect was at the heart of the measure 7.

Finally, as mentioned, as the global framework of the green economy continues to develop, enterprises have to face many challenges towards a sustainable economy. To meet the objective of replacing SVHCs by safer alternatives and for the competitiveness of the Belgian enterprises, they must be able to find holistic solutions that are well balanced between the

different targets of the sustainable economy. Measures 8 to 10 were proposed having that consideration into mind.

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Abbreviations

ACTIRIS	The Brussels Region's public service providing training and guidance for the unemployed
AoA	Analysis of alternatives
BBBC	Belgium Build Back Circular investment project (part of the Belgian Recovery and Resilience plan)
BELAC	The Belgian Accreditation Service (within the FPS Economy)
BELSPO	The Federal Public Planning Service Science Policy
BEL4CAP	Belgian Plan for Chemical Alternatives = the current project.
CAD	Chemical Agents Directive
CEFIC	European Chemical Industry Council
CL	Candidate list
CLP	Regulation (EC) No 1272/2008 on the Classification, Labelling and Packaging of substances and mixtures
CMR	Carcinogenic, mutagenic or toxic for reproduction
CN	Combined Nomenclature
COSME	EU programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises
CSR	Corporate Social Responsibility
CSRD	Corporate Sustainability Reporting Directive
DNSH	Do not Significantly Harm
DU	Downstream user
ECHA	European Chemicals Agency
ECRN	European Chemical Regions Network
EEA	European Economic Area (Agreement)
EMAS	(European) Eco-Management and Audit Scheme
EPPA	Consultancy that produced the pre-study with RDC
ESG	Environmental, social and corporate governance
ESRS	European Sustainability Reporting Standards
ESPR	Eco-design for Sustainable Product Regulation
EIT	European Institute of Technology
EU	European Union
EUCLEF	EU Chemicals Legislation Finder
Euratex	The European Apparel and Textile Confederation
EFRAG	Previously known as the European Financial Reporting Advisory Group
FAIR (data)	Findable, accessible, interoperable and reusable data
FEB/VBO	Confederation of Belgian industry
FOREM	The Walloon public service providing training and guidance for the unemployed

FPS	Federal Public Service
GPP	Green public procurement
GRA	Generic approach to risk management
GRI	Global Reporting Initiative
IPR	Intellectual Property Rights
ICCA	International Council of Chemical Associations
ICSG	International Copper Study Group
ILZSG	International Lead and Zinc Study Group
ING	International Nickel Study Group
IT	Information technology
JRC	Joint Research Centre of the European Commission
MHS	Most Harmful Substances
MS	Member State
NAPED	National Action Plan on Endocrine Disruptors
NGO	Non-governmental organization
NPS	National Plan of Substitution
OECD	Organization for Economic Co-operation and Development
PACT	Public Activities Coordination Tool
PASS	Plan of Actions for the Substitution of SVHCs
PFAS	Per- and polyfluoroalkyl substances
QR code	Quick-response code
RDC	RDC Environment (consultancy) who completed the pre-study together with EPPA
RDI	Research Development and Innovation
REACH	EU Regulation 1907/2006 concerning Registration, Evaluation, Authorisation and Restriction of Chemicals
RTO	Research and Technology Organisations
SAICM	Strategic Approach to International Chemicals Management (in the framework of UNEP)
SEA	Socio Economic Analysis
SDS	Safety Data Sheet
SFDR	Sustainable Finance Disclosure Regulation
SIEF	Substance Information Exchange Forum
SME	Small and Medium-Sized Enterprises
SRIP	Strategic Research and Innovation Plan
SSbD	Safe and Sustainable by Design chemicals and materials
SSP	SVHC Substitution Plan (project outline)
SVHC	Substance of Very High Concern
TARIC	Integrated Tariff of the Community (French: TARif Intégré de la Communauté)
TFUE	Treaty on the Functioning of the European Union
TPCI	Transition Pathway for the Chemical Industry

UNEP	United Nation Environment Programme
US EPA	Environmental Protection Agency (USA)
WHO	World Health Organisation
VDAB	The Flemish public service for employment and vocational training (Vlaamse Dienst voor Arbeidsbemiddeling en Beroepsopleiding)
VLARIP	Essenscia Flanders' Reach Implementation Project (Vlaanderens Reach Implementatie Project)
WALRIP	Essenscia Wallonia's Reach Implementation Program

Glossary

CLP Regulation	The EU regulation on Classification, Labelling and Packaging of substances and mixtures (Regulation (EC) No 1272/2008 of 16, amended December 2008 amended 32 times up to the 11 July 2023 ¹ . The Commission proposed on the 19 December 2022 a revision of the Regulation and introducing new hazard classes for endocrine disruptors and other harmful chemical substances to better protect people and the environment from hazardous chemicals (COM (2022) 748 final) – 2022/0432 (COD)
Do No Significant Harm (DNSH)	This requirement concerns the financing of activities within the framework of Regulation 2020/852 (on the establishment of a framework to facilitate sustainable investment, also called ‘Taxonomy’). Article 17 enumerates different activities that <i>shall be considered to significantly harm</i> . It also covers the activities under the Next Generation EU temporary financial instrument.
European Sustainability Reporting Standards (ESRS)	This Regulation is not directly linked to REACH, but it implements the accounting Directive (2013/34/EU) on the reporting on sustainability that large enterprises and listed small and medium-sized enterprises as well as their parent companies have to include in their management report. This also includes information within the supply chain and, therefore covers a significant part of the enterprises concerned by the REACH. The regulation was adopted on the 31 July and is currently under scrutiny. ² More information is provided in the Box of Appendix B.2, point 4.
Externalities	In public economy: the impact on people and/or on the environment of decisions taken by enterprises or individuals (or public authorities) that are outside their framework of decision (like pollution not in breach of legislation for enterprises or congestion of road by citizen). Externalities can be negative (like for the previous examples) or positive (investment by enterprises may have several positive impacts in their municipalities on employment, public finances and other activities or individuals may improve the quality of life by the decoration of their garden with flowers and trees, also as capturing CO ₂ and improving the freshness of air). The internalisation is incorporating in the framework of decision – via legislation or other means- the identified externalities.
Green deal (European)	The European Green Deal Communication of the Commission (COM (2019) 640 of 11 December 2019 can be considered as the current keystone of the EU strategy for sustainable development. Its annexe is a complete roadmap for the development of various more specific proposals

¹ See: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02008R1272-20230731&qid=1694894893394>

² The formal adoption should take place in October 2023.

MHS	Most Harmful substances are substances classified³ under the CLP Regulation for at least one of the following hazard classes: • Carcinogenicity, category 1A + 1B • Mutagenicity in germ cells, category 1A + 1B • Reproductive toxicity, category 1A + 1B • Endocrine disruptor for human health, category 1 (ED) • Respiratory sensitization, category 1 • Specific target organ toxicity (repeated exposure), category 1 (STOT-RE), including immunotoxicity and neurotoxicity • Persistent, bioaccumulative and toxic (PBT) • Very persistent and very bioaccumulative (vPvB) • Persistent, mobile and toxic (PMT) • Very persistent and very mobile (vPvM) • Endocrine disruptor for environment, category 1 (ED)
PASS (Plan of Actions for the substitution of SVHCs)	The Plan of actions for the substitution of SVHCs should be understood as a standard action plan in the development of a project, at the very beginning of that project. It aims to define the main actions that will be needed to achieve the project's final objective (to find a sustainable alternative to the current use of an SVHC), to define a tentative timetable and key milestones, to identify the various gaps, particularly in terms of information and human resources needed, and to identify the initial steering group/team leader. There are several ready-to-use programmes for project development. This PASS needs to be regularly updated when new milestones/deadlines are reached or when major changes are envisaged in the design of the project itself (referred to as the SSP or SVHC Substitution Plan in this document).
REACH Regulation	The EU Regulation on Registration, Evaluation, Authorizations (and Restrictions) of Chemicals n° 1907/2006 of 18 December 2006 (74 times amended up to 17 July 2023⁴). A revision of the regulation was foreseen for the last quarter of 2022, but the latter is still waiting (on 16 September 2023)

³ See: <https://publications.jrc.ec.europa.eu/repository/handle/JRC128591>

⁴ See: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02006R1907-20230806&qid=1694882614083>

Safe and Sustainable by Design (SSbD)	The concept of safe-by-design existed since several years and was used by different institutions, including the Dutch authorities for their study ‘Safe-By-Design for materials and chemical (2019). It was further developed in the concept of Safe and sustainable by Design, appears in the communication of the European Commission ‘Chemicals Strategy for Sustainability – Towards a toxic-Free Environment’ of 14 November 2020 (COM (2020) 667 final) foresees to develop several actions on innovating for safe and sustainable by design substances, materials and products (see its chapter 2, with a special box and its annexes)⁵. In June 2022 the JRC published its framework for the definition of criteria and evaluation procedure for chemicals and materials (as SSbD)⁶ and on 8 December 2022, the European Commission published its recommendation ‘establishing a European assessment framework of the ‘safe and sustainable by design’ chemicals and materials’⁷. Parts of the approach appears also in other EU policies related to information (see the box in Appendix B.2, point 4). The OECD has its own “<i>Safe and Sustainable Innovation Approach</i>” (SSIA) or the UNEP its ‘<i>Design for Sustainability</i>’.
SME	An independent company with fewer than 250 employees (full time equivalent), with an annual turnover not exceeding €50 million and a balance sheet total not exceeding €43 million. (In conformity with the Commission Recommendation of 6 May 2003 defining such enterprises.)
Subsidiarity	The principle of subsidiarity (covered by a protocol (#2) to the Treaty on the functioning of the EU) also covering the principle of proportionality) aims to adopt policy measures at the best political level (EU level or national level). It can be widened to larger levels (like the United Nations) or regional level. So, one may speak about a vertical subsidiarity. There is another form of subsidiarity that is to determine the most appropriate policy measure to cover a specific measure/action that can be very specific or rather quite large or to include the measure in another framework. One may speak in that case about horizontal subsidiarity. In addition, one may also try to define the best political level: mandatory legislation fixing the rules (like the EU regulations) or the objectives (like the EU directives), soft legislation (including standards, for example), or voluntary measures (that may be binding for those who make the agreement). Finally. one may also add the recommendations and guidelines.

⁵ The green deal communication, under point 2.1.8 already foresaw that the Commission will present a chemical strategy for sustainability that will ‘*encourage innovation for the development of **safe and sustainable alternatives***’

⁶ See : <https://op.europa.eu/en/publication-detail/-/publication/eb0a62f3-031b-11ed-acce-01aa75ed71a1/language-en/format-PDF/source-search>

⁷ COM (2022) 8854 of 8.12.2022

SVHC

Substances of very High Concern in the meaning of Article 57 of REACH and identified in accordance with its Article 59. These are substances with the following hazard properties:

- Substances meeting the criteria for classification as **Carcinogenic**, **Mutagenic** or toxic for the **Reproduction** (CMR) of category 1A or 1B in accordance with the CLP Regulation;
- Substances which are **Persistent**, **Bioaccumulative** and **Toxic** (PBT) or very persistent and very bioaccumulative (vPvB) according to REACH Annex XIII;
- Substances on a case-by-case basis, that cause an equivalent level of concern as CMR or PBT/vPvB substances.

In addition to their inclusion in the candidate list of substances to be submitted to the authorisation process of REACH, this inclusion brings obligations for producers or importers of articles containing such substances to notify to the ECHA their presence in accordance with Article 7 (2); to the suppliers of such substance as such or in a mixture to supply a SDS and communicating on the safe use (in accordance with Article 31) or, for the suppliers of articles containing such substance responding to consumer requests within 45 days under the conditions of Article 33.

1 Introduction to Policy Measures Development

1.1 Background

The second part of the BEP4CAL project was divided in two sub-parts: Phase 3- the development of policy measures and Phase 4- the socio-economic analysis of the policy measures under consideration.

The aim of the policy measures development phase was to propose the most relevant policy to support the main objective of the National Plan for Substitution which is to improve the development of alternatives for substances of very high concern (SVHCs) produced by Belgian manufacturers and/or used by Belgian downstream users and/or present in the Belgian environment and which meet the following criteria:

- They are of particular interest to Belgium (in terms of volumes, number of companies involved, political priorities, importance to users and developments potential in Belgium).
- According to the principle of subsidiarity, action at national level appears to be the most appropriate and the intervention of the Belgian authorities can offer significant added value.

The approach for policy development as presented in Figure 1 began with the establishment of a long list of measures based on previous studies, own research and consultations with experts and relevant stakeholders. The long list was then reduced to an intermediate list in which the experience gained by this project in identifying and prioritizing SVHCs relevant to Belgium was incorporated. The intermediate list was then subjected to a proportionality test to come to a set of 10 measures which were further refined before being subjected to a socio-economic analysis.

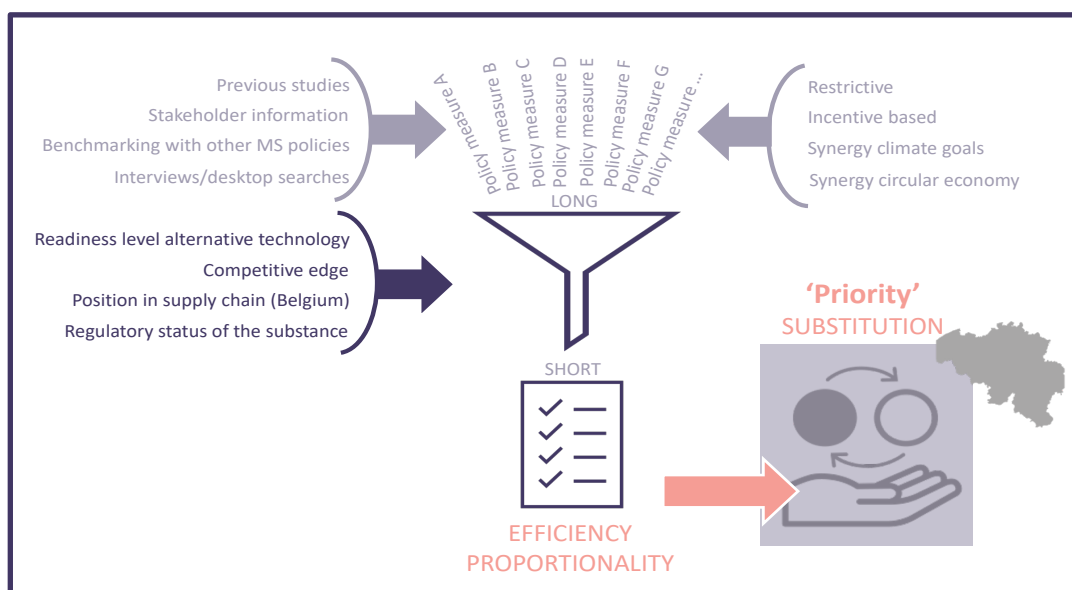


Figure 1: Approach for policy development

This report on the development of policy measures started with an inventory of possible measures in order to arrive at a short list of measures. The final list of the identified policy measures was foreseen to enable better and faster substitution of the prioritized substances identified and prioritized in part A (Phase 1 and Phase 2).

1.2 Objective

The objective of Phase 3 of the BEP4CAL project was to identify and review a series of policy measures that could be adopted to promote and accelerate the substitution of SVHCs that would be identified as most relevant for the Belgian economy (“priorities”), or other substances identified by the Belgian authorities as relevant. The policy measures evaluation phase aimed to review the possible measures as identified in previous studies, Organization for Economic Co-operation and Development (OECD) reports etc as well as expert judgement – especially based on experience gained during Phase 1 of the project where, for example, identification and prioritisation of SVHCs relevant to Belgium proved a challenge due to lack of available data on the use of SVHCs in Belgium - and to develop a short list of prioritized policy measures deemed the most suited to be part of the National Plan for Substitution (NPS).

The objective also included speeding up the substitution of the substances concerned and identifying the best sustainable alternatives, which is a central objective of the sustainable economy as currently developed by the Safe and Sustainable by Design (SSbD) approach of the EU institutions.

In addition to the prioritized measures, other measures that would especially support the NPS, but adopted at EU or international level or in the framework or in the context of another strategy or policy (R&D, reporting standards etc.) were evaluated.

1.3 Structure of the report

This report is divided into the following sections:

- Chapter 2 details the methodology that was applied in the development of the policy measures.
- Chapter 3 describes the challenges when defining policy measures to accelerate substitution.
- Chapter 4 gives an overview of the challenges encountered when substituting SVHCs.
- Chapter 5 covers the development of the long list of policy measures that were considered in the first stage.
- Chapter 6 describes the development of the intermediate list.
- Chapter 7 describes how the final list (short list) was developed and describes the key elements of the selected measures.
- Chapter 8 covers the policy measures that were considered in Chapter 5 but not selected.
- Chapter 9 provides the conclusions of the policy development process
- Appendices A-D provide additional information on chapters 5-8.

2 Methodology

2.1 Data Sources Consulted

The process of identifying policy measures took as its starting point the pre-study *"Development of a strategic roadmap for SVHC substitution in the context of a sustainable economy"* of April 2019 carried out by RDC Environment in collaboration with Eppa. The 'vertical actions' mentioned in the RDC pre-study formed the first set of potential measures evaluated with individual factsheets.

In addition to the RDC report several other reports were taken into consideration:

- *"Dutch Safe Chemicals Innovation Agenda"*⁸
- Lowell Center for Sustainable Production evaluation report for ECHA (August 2016) *"Improving the Identification, Evaluation, Adoption and Development of Safer Alternatives"* and its follow-up report of July 2017 *"Approaches for Accelerating Substitution under REACH and Beyond: Strategic Options Assessment"*
- Lowell Center for Sustainable Production report for the European Commission of June 2019, together with Wood. *"Chemicals Innovation Action Agenda; Transition to Safer Chemicals and Technologies"*

Different background documents were examined among which the main are:

- ECHA Strategy to promote substitution to safer chemicals through innovation of January 2018
- European Green Deal⁹ (COM (2019) 640 of 11 December 2019)
- New Industrial Strategy for Europe¹⁰ (COM (2020) 102 of 10 March 2020)
- EU new Circular Economy Action Plan (COM (2020) 98 of 11 March 2020)
- EU General Union Environment Action Programme to 2030 (COM (2020) 652 of 14.10.2020)
- EU Chemicals Strategy: Towards a Toxic-Free Environment (COM (2020) 667 of 14 October 2020)
- new EU Strategy on Adaptation to Climate Change (COM (2021) 82 of 24 February 2021)
- EC communication 'On making sustainable products the norm'¹¹ (COM (2022) 140 of 30 March 2022)

⁸ Safe-by-design for materials and chemicals: 'towards an innovation programme in Horizon Europe'

⁹ And the Sustainable Europe Investment Plan (COM (2020) 21 of 14 January 2020).

¹⁰ Updated by Communication COM (2021) 350 of 5 May 2021.

¹¹ And the JRC technical report "Safe and Sustainable by Design chemicals and materials" (July 2022).

- proposal for a Regulation establishing a framework for setting eco-design requirements for sustainable products (COM (2022) 142 of 30 March 2022)
- Strategic Research and Innovation Plan for safe and sustainable Chemicals and Materials (SRIP) of October 2022
- Materials 2030 Roadmap (draft, June 2022)
- Commission recommendation 'establishing a European assessment framework for 'safe and sustainable by design' chemicals and materials' COM (2022) 8854 of 8 December 2022¹²

Key documents specific to Belgium that were consulted were:

- Federal Plan of sustainable development
- Federal Action Plan for a circular economy 2021-2024
- Report of the Belgian Federation of Enterprises on the progresses toward a circular economy¹³
- Draft NAPED (for consultation)

Activities of international bodies and European associations related to sustainable development were also scrutinized (these include OECD, SAICM, UNEP, WHO, US EPA, CEFIC (in particular Suschem), ICCA, Eurometaux, ILZSG, ICSG and INiSG in Lisbon, Euratex, ECRN, Enterprise Europe Network, Euro chambers, ChemSec)

Own experience gained by one of the lead authors as head of the Belgian REACH Helpdesk (and participation in the REACH HelpNet and in SEAC) and actions developed in Belgium such as the VLARIP initiative¹⁴ of Essencia Vlaanderen were also an important source of inspiration.

Finally, the opinions of stakeholders were taken into account, in particular following a meeting with several of them held at the end November 2022.

For the evaluation and designing of the measures, other legislative background was assessed, in relation to the Research and Development and the EU legislation on state aid:

- Regulation (EU) No 651/2014¹⁵ declaring certain categories of aid compatible with the internal market ('block exemptions')

¹² As well as the consultation of the corresponding Web pages.

¹³ See: <https://www.vbo-feb.be/publicaties/vooruitgangsrapport-circulaire-economie-2022/>

¹⁴ See: <https://www.essencia.be/prioriteiten/productveiligheid/vlarip/>. This initiative is still ongoing and provide different activities related as well to authorizations and restrictions under REACH and communication within the supply chain for example.

¹⁵ Amended by Regulation 2023/1315 of 23 June 2023: For the consolidated text see: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02014R0651-20230701&qid=1698218366990>

- Regulation (EU) 2015/1588 on the application of Articles 107 and 108 (TFEU) to certain categories of horizontal State aid)
- Framework for State aid for research and development and innovation (Communication from the Commission C (2022) 7388 of 19 October 2022),
- Market surveillance (Regulation (EU) 2019/1020),
- Accreditation (Regulation (EC) No 765/2008),
- EMAS Regulation (No 1221/2009),
- EU Ecolabel Regulation (EC) No 66/2010
- Belgian law on product norms
- Sustainable finance strategy (in particular the Regulation (EU) 2019/2088 of 27 November 2019 on sustainability related disclosures in the financial services sector,
- “Taxonomy” Regulation (EU) 2020/852 of 18 June 2020 on the establishment of a framework to facilitated sustainable investment + implementing measures
- Measures related to Corporate Social Responsibility (EU & OECD).

The final report of the Life/Fit for REACH project was also considered¹⁶.

2.2 Stages of policy measures development

The selection of measures to be developed in Belgium under this study was done in 3 stages:

Stage 1: An initial inventory of potential measures (long list - see [Appendix A](#)) was drawn up based on the pre-study, an analysis of available documentation, contacts with stakeholders and expert analyses. The aim was to identify as broadly as possible all the possible measures that could contribute to the development of alternatives to the use of SVHCs. This step led to a list of more than 40 measures, far too long to result in feasible package of measures.

Stage 2: The next step was to draw up an intermediate list of measures. An initial selection was made by considering how, where and when in the substitution pathway (Chapter 6) the measures could take effect and bear fruit. The substitution pathway considers the various stages between the identification of SVHCs likely to be subject to substitution and the result of the efforts made to find a suitable alternative.

This analysis resulted in a so-called intermediate list of 17 measures, still too many for the proportionality and socio-economic analysis, for which a limit of 10 measures had been set.

¹⁶ LIFE/Fit for REACH – Final project report – Substitution, use reduction and overall improved chemicals risk management: Companies in Baltic States are fitter for REACH!
https://www.fitreach.eu/sites/default/files/editor/publications%20ENG/FFR_FinI%20report_cover%20version%202%20full.pdf

However, we felt it was necessary not to bypass the intermediate list stage and to define the final 10 measures at this stage.

In fact, we felt it was very important to have a list of measures that could be subjected to an initial purely qualitative, even intuitive, proportionality analysis, which would result in a ranking and a possible revision of the definition or scope.

Stage 3: Through a discussion of proportionality and a refinement of measures, this stage has led to the establishment of a shortlist, paying particular attention as far as possible to the priority substances identified in Phase 2 of the project, taking into account, for example, feedback from the user sectors concerned.

It is important to stress here that the proportionality criteria are fairly standard and are therefore close to those used in the substantive evaluation of the last ten measures carried out in the socio-economic analysis. At this stage, the important thing was not to define the best measure, but those that would be most appropriate for this in-depth analysis, in Phase 4 of the project.

For practical reasons, this selection was made at the same time as the identification of the first list of prioritized substances and is therefore not based on this specific list.

Factsheets were developed to characterise the possible measures. The measures were grouped together on the basis of whether they appeared to be more effective at a higher level (EU, OECD or other - vertical subsidiarity) or within a more specific framework (such as the competition policy – horizontal subsidiarity) or whether they appeared more organizational or rather in support of others.

The different stages are further described in chapters 5 -7.

3 Defining substitution policy measures for Belgium

3.1 The Belgian context

To better understand the policy measures development process, it was considered important to clarify the Belgian institutional framework and context, as these have an impact the type of policy measures that can be implemented at Belgian level.

Institutional framework in Belgium

Given the institutional complexity in Belgium and the expertise developed by the authorities, it would not be advisable to change the current practices of cooperation between the different levels of government. Nevertheless, a formal agreement may need to be reached on the sharing of common instruments such as a database, which could be done within the framework of the REACH cooperation agreement.

Belgium in the European (and international) context.

Belgium is a medium-sized EU Member State with a very open economy, both to other EU Member States and to the rest of the world. It has first-rate logistics infrastructures, such as the ports of Antwerp-Zeebrugge and Ghent-Terneuzen. Belgium is also traditionally very committed to finding European or international solutions rather than purely national ones.

In 2022, Belgium accounted for 8.2% of EU imports from third countries and 7.5% of EU exports to these countries. Belgium accounted for 8.5% of intra-EU imports ('introductions') and 9.7% of intra-EU exports ('dispatches' or 'consignments'). Using the broadest definition of chemicals (chapters 28 to 40 of the Harmonized System nomenclature), the corresponding shares were 13.9% for imports from and exports to third countries. In terms of internal EU trade in chemical products in the broadest sense, Belgium's share was 13.5% for 'introductions' and 14.8% for 'shipments' within the EU.

For pharmaceutical products, the proportion even reached 20.7% for total imports (intra + extra) and 18.4% for total exports (intra + extra).

In 2022, the total value of Belgium's trade in goods (imports + exports to the EU and non-EU countries) represented the equivalent of 39% of Germany's total trade, while the Belgian population is only around 14% of that of Germany, Belgium's main trading partner and by far the EU's trading country. This means that, calculated per capita, international trade in Belgium is around 2.8 times greater than in Germany.

The degree of openness and this interdependence with a multiplicity of trading partners makes the concept of subsidiarity essential for Belgium. It was therefore important to assess measures that could be more effective at the Belgian level rather than at the European or international level, and whether national action would offer the greatest added value for the

Belgian economy. Action at EU level tends to be more effective for countries whose economies are highly integrated into and dependent on the industrial fabric of the continent, while action at national level may be more effective in countries that are relatively less interdependent in trade terms, such as Germany, France or Sweden.

Open economy and competitiveness of companies.

Belgium is not only an open economy in terms of trade, but also for foreign investment. Most major Belgian companies are part of multinationals, although there are a few large Belgian companies, both in the chemicals sector (e.g. Solvay) and in the metals sector (e.g. Umicore). It should be remembered that REACH does not only concern the chemical sector, but also many other sectors, albeit to varying degrees. With financial decision-making centres abroad, many Belgian companies find themselves weakened when they have to report a lower return on investment. This is one of the weaknesses of the Belgian economy, even if other factors such as its location at the heart of the EU's industrial heartland represent a real advantage.

However, because of their long exposure to international competition, Belgian companies are often quite good at adapting to different situations, such as different legislations in the various customer countries, and often offer production that is more tailored to the specific needs of their customers ("specialities") because it is almost impossible, without any natural advantage, to compete on basic products.

Low level of information about the SMEs

As in most EU Member States, the proportion of SMEs among companies is very high, at around 99% (depending whether one uses the definition of the Commission, or the Belgian concept based solely on the number of employees). The percentage of companies that use SVHC substances within the meaning of REACH is unknown. The share of the SMEs may differ between the industrial companies and the services companies (particularly commercial companies), as well as in the different sub-sectors (for example, with most likely a lower percentage in the metallurgy sector).

The percentage of SMEs tends to increase for two reasons: firstly, progress has made it possible to increase labour productivity considerably requiring fewer workers for the same level of production and, secondly, there has been a major trend towards companies outsourcing various service activities, such as logistics, maintenance or customs management. For the smallest companies, RDI is often limited, and SMEs tend to turn to external expertise for this type of activity.

When it comes to the challenge of SVHC substitution or adapting to the circular and sustainable economy, it is likely that small spinout companies from universities or research centres will be better able to deal efficiently with these challenges and know what to do than traditional industrial companies established for many years and without major changes to their product range or chain. The type of management can also be important. These

companies are therefore by no means a homogenous group in terms of the main obstacles they face.

While there are many specificities of the SME, there are also many specific policies targeting SMEs, at EU level (COSME)¹⁷, at Belgian level and at regional/municipal level.

In any case, the low level of knowledge about the real extent of SME involvement in REACH, particularly with regard to the use of SVHCs, is a major obstacle to the development of an NPS. Improving this knowledge must therefore be at the hearth of the strategy, but other actions must also be taken into account, such as raising awareness and informing SMEs as part of the Belgium Builds Back Circular project which is part of the Belgian recovery and resilience plan.

3.2 Factors considered when defining substitution policy measures

When looking at the various possible measures for speeding up the substitution of SVHCs, there was a wide range of measures considered, from generic measures or measures designed to resolve specific sectoral challenges, to measures with different degrees of constraint. The exploration of possible measures came up against a major obstacle, namely the lack of granular information on the uses of SVHC in Belgium, information that is essential for any incentive policy. Other aspects were considered and described below:

Horizontal vs. vertical measures

In the context of the policy identification exercise, a horizontal measure is a regulatory provision that applies to all stakeholders, across all industry sectors concerned by the substances selected for accelerated substitution. It may, for example, be a notification obligation applying to all producers, importers or users of a priority substance.

On the other hand, a vertical measure is tailored to address the needs identified in the supply chains of a priority substance. Vertical measures require more information about the needs in terms of resources and knowledge of the companies concerned by the specific substances. Actions to improve communication along the supply chain also fall into this dimension as do actions focused on monitoring the substitution process and checking how it can be improved. Once stakeholders are effectively identified and duly informed, the effectiveness of vertical measures will depend on the goodwill of the players involved and their knowledge and understanding of the issues. Vertical measures can help raise awareness, reduce information gaps and speed up substitution of more substances. The information gathered can help to update priorities and refine the various actions undertaken.

¹⁷ EU programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises

The RDC report recommended combining horizontal measures, covering most SVHCs, with vertical measures tailored to specific substances of greater interest to Belgium.

Push or pull measures

Push measures are often considered when the use of a substance generates negative externalities and consist of regulatory or market-based disincentives aimed at internalising these externalities through a tax¹⁸. Corrective measures need to be proportionate and fair (e.g. any form of positive discrimination¹⁹ must be considered with great caution). Consultations with various sectors of industry showed us that they are reluctant to accept restrictive measures that reduce companies' room for manoeuvre on a complicated issue such as substitution. During our discussions, the fear often arose that push measures would entail financial costs disproportionate to the expected benefits. For companies that have to compete at EU level, this concern was seen as a major obstacle.

As later described in this report, the approach suggested in our conclusions was to promote pull and information/education measures aimed at promoting and rewarding diligent company behaviour in the search for sustainable substitutions. *Pull measures* such as a subsidy instead of a tax make it easier to avoid the complex debate on fairness that is at the heart of discussions on push measures and to concentrate on the effectiveness of the measure.

However, research in Sweden (Ejelöv et al., 2022) suggested that combining push and pull measures could be advantageous from a political implementation perspective, with the possibility of garnering broader support. This is an element that was considered when selecting and refining the packages of measures for the socio-economic analysis.

Availability and suitability of sustainable alternatives

There are different elements to consider when selecting alternatives. For instance, there might not be an alternative at all, or the alternative can exist but not generally known or not known to a specific downstream user. The alternative may in some cases present drawbacks making it a potentially regrettable substitute. These drawbacks can be hazard driven or can affect the sustainability of the alternative as a whole in the lifecycle of the alternative. Eurometaux proposed in the latest version of the iRMOA guidance to consider the 4C approach in selecting appropriate regulatory measures (Chemicals management, Climate change, Circularity and Criticality of the supply of the material). At EU level, the concept of safe and sustainable by design is being developed aimed at supporting the design process of new products and materials to yield sustainable solutions and avoiding regrettable

¹⁸ Ejelöv E., Harring N., Hansla A., & Nilsson A. (2022). Push, Pull or Inform – an Empirical Taxonomy of Environmental Policy Support in Sweden. *Journal of Public Policy*, 42(3), 529-552

¹⁹ Positive discrimination occurs when a measure aims to compensate for a 'natural' or 'de facto' inequality of conditions. Such a measure requires solid evaluation and justification in order to avoid disguised forms of subsidy, for example.

substitution. While these concepts are very helpful, they clearly indicate the complexity of sustainable substitution.

The alternative may not yet be available and thus subject to further industrial development. An alternative considered to be generic may not be technically or economically suitable for specific uses. There may also be uncertainties about the toxicological profile of the alternative for instance by lack of available test results.

Several OECD countries such as France, Germany, the Netherlands and the USA have invested in means to ensure that information on alternatives is made publicly available and can reach all the stakeholders involved²⁰. Such initiatives aim at improving the functioning of the market by improving the transparency and information on alternatives. Such initiatives require a centralized processing of information with data that is reliable, up to date, easily accessible and relevant to companies using substances that should be substituted.

Risk of failure

The risk of not being able to find a technically and economically appropriate alternative, even if the time available seems sufficient, can be a hindrance to any RDI activity. This risk is greater when the effort required for substitution exceeds the company's own resources, which is often the case for SMEs. It can be just a fear, be influenced by some contacts or it can be based on more objective information (and initial unsuccessful searches).

If the use of the substance to be substituted is considered critical, management will also consider the consequences of an unsuccessful RDI investment on the continuation of the company's activity in Belgium.

Though this aspect was considered, it was not retained within the short list, but remains valid in the wider framework of the sustainable economy and EU green economy.

High level of uncertainties and information gaps

While the REACH regulation allows information on the registration of substances to be collected from manufacturers, importers or only representatives, it does not require direct information on use from downstream users.

The publicly available information does not make it possible to identify the part of the manufacture or imports carried out by the Belgian registrant that is not used in Belgium, nor

²⁰ OECD (2023), Cross Country Analysis: *Approaches to Support Alternatives Assessment and Substitution of Chemicals of Concern – 2nd edition*, OECD Series on Risk Management, No. 77, Environment, Health and Safety, Environment Directorate, OECD

is it possible to identify the various substances used in Belgium (and the volumes involved) that have been registered only outside Belgium.

To obtain this type of information, surveys were used in the BEP4CAL project, but in practice they cannot be sent to every potential user of an SVHC. As observed from the surveys sent to industry in Phase 1, only a few companies that received a questionnaire provided a response, and these were not necessarily complete or accurate. Hence, it was not possible to know what share of use in Belgium they represented. In addition, it was not easy to find the right balance between the questions that are of interest and the workload imposed on companies.

REACH does not provide direct information on companies that have substituted on their own initiative, or on the characteristics of the alternative. As a result, it is not possible to know whether substitution is ultimately regrettable, either in terms of risk reduction or other sustainable development objectives such as circularity.

At the same time, a great deal of information is already being collected at various levels but is not being fully exploited to provide a useful analysis of SVHC substitution.

For these reasons, a great deal of attention was paid to this specific issue and how information gaps (whether at Belgian or European level) could be reduced with a view to defining specific actions tailored to Belgian SVHC concerns.

Availability of qualified experts

Despite the many training courses on offer at colleges and training centres, a training profile that brings together all the qualifications needed for effective and sustainable substitution was not identified. If the companies concerned, particularly the SMEs, do not have qualified experts in their teams, the profile of expertise sought will more likely be found with service providers with a multidisciplinary team. Individual companies may have difficulty finding qualified and reliable experts at an affordable price. In fact, it can be questioned if the expectation to have all the required knowledge to support a sustainable substitution can be centralized in one expert. Most likely, a multi-disciplinary team of experts will be required. This is for instance relevant in case authorities would aim to evaluate the suitability and sustainability of alternatives by expert opinion.

A dynamic framework

Since the RDC report was finalised, several new elements have emerged, and existing initiatives have been developed further. It was also foreseen that once the BEP4CAL project would be completed, and even before the final definition of the Belgian substitution strategy, other elements will emerge, particularly following the revision of REACH. It was therefore desirable to develop a dynamic strategy that could incorporate new political developments.

Outside REACH there have been important developments related to the European Sustainability Reporting Standards (ESRS) with further developments expected on 31 July 2023²¹. Although these rules will be applicable to both large companies and listed SMEs, this will represent an additional challenge for companies, which will need to be addressed in a consistent manner with regard to the SVHC substitution. The monitoring of this information can be a serious challenge for authorities. This point is further discussed under point 4 of Section 2 of Appendix B.

The status of the different substances and the measures that become applicable is another important dynamic aspect as new substances will be included in the candidate list (CL), in Annex XIV or reach their sunset date.

This report provides a list of prioritized substances which is expected to be updated at regular intervals, using the methodology developed for this purpose.

The “Do no Significant Harm” (DNSH) principle

This principle was introduced into European legislation with the EU's Next Generation temporary financial instrument, which also covers the Belgian recovery and resilience plan. Although this principle makes sense and has been well received, it is not always easy to implement. Companies may want to explore different possible alternatives, and they often do not know prior whether these alternatives will meet all the requirements of the DNSH-principle. They may undertake to carry out the assessment and to rule out any alternative that does not comply with this principle. A second-best solution for the safe substitution of an SVHC may, in some cases, be much better when considered in a wider context. Similarly, companies, particularly SMEs, are not in a position to draw up different business plans for each of the sustainable development objectives. For these companies, it is preferable to develop a single strategy, which may involve several stages of implementation. Here too, the DNSH criteria may be of interest and offer a degree of flexibility.

²¹ See the Questions and Answers on the Adoption of European Sustainability Reporting Standards: https://ec.europa.eu/commission/presscorner/detail/en/qanda_23_4043

4 The substitution pathway

4.1 Introduction

The authorities' primary objective is for priority substances to be replaced more effectively and more quickly than at present, in line with the National Substitution Plan. The authorities wish to support the introduction of safe and sustainable alternatives that meet the various challenges of a sustainable economy. As such, it was decided as follows:

- For potentially interesting measures that may take time to become fully operational, it may be necessary to assess the feasibility of a gradual or early introduction.
- It would also be necessary to determine which measures would be the most suitable for the substitution of prioritized substances and which seem to offer the best added value for implementation at Belgian level and being confirmed by a socio-economic analysis.
- The potential measures on the short list would be divided into two categories:
 - basic measures and
 - flanking measures, which may make the first more effective or be essential to their implementation.

In order to get a clear picture of the measures and their potential contribution, it was considered useful to develop what we call the Substitution pathway.

The Substitution pathway forms the frame of reference for positioning measures over time in relation to a 'substitution pathway', from the identification of an SVHC to the final phase of the substitution effort.

4.2 Approach

The substitution pathway framework is presented as the development of a project and divided into three stages as presented in Figure 2 and this was used for the discussion of the measures in the Intermediate list in function of the phase during which they will operate. This comprises three stages:

- i. The starting stage of the substitution project following regulatory signal and first consideration of approach for substitution. The trigger point considered is the inclusion of a new substance in the CL (following the procedure of Article 59 of REACH). The inclusion of a substance on the CL should be a signal to any diligent company producing, importing or using it to consider the introduction or development of an alternative, in preparation for the possible prioritisation of that substance for authorisation.
- ii. The operational stage of the substitution project i.e. the development of the alternative(s) as such.
- iii. The concluding stage of the substitution project (and after).

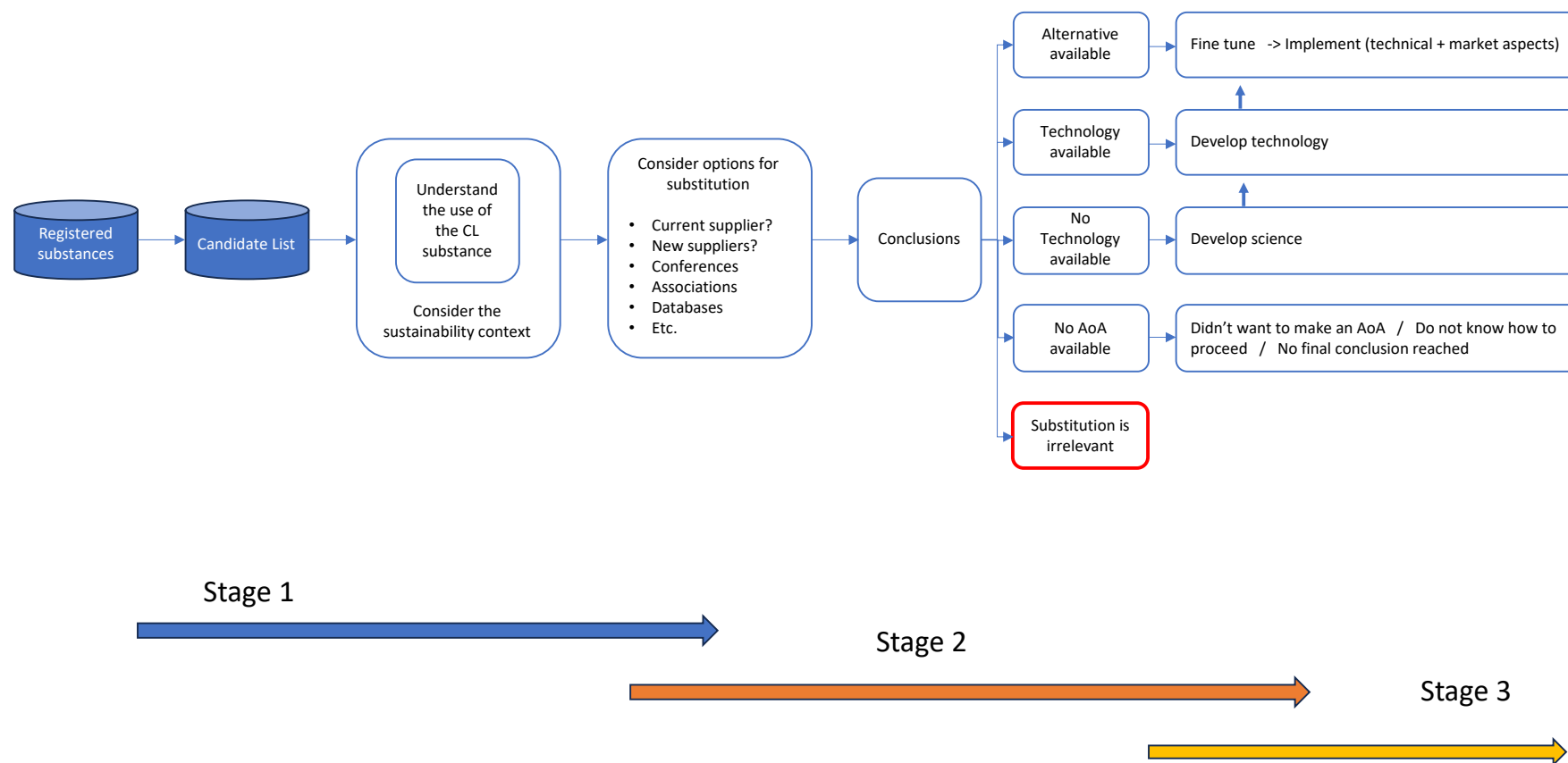


Figure 2: Logical framework of the substitution framework in 3 stages

4.3 Analysis of Alternatives

The analysis of alternatives (AoA) is a key step in the identification and feasibility assessment of alternative substances or technologies. Its aim is to achieve safer and sustainable chemistry and to avoid regrettable substitution.

The various dimensions and outcomes of the analysis of alternatives and the way policy measures may result in increased substitution are discussed further.

4.3.1 Conclusions of an Analysis of Alternatives

When conducting an AoA, there are five conclusions that may be considered:

- 1) An alternative (at least) is available,
- 2) An alternative technology is available,
- 3) No alternative technology is already available,
- 4) No analysis of alternative (AoA) is available,
- 5) The substitution is not relevant.

1) At least one alternative is available:

In practice, the alternative must, in most cases, to be adapted to the specific technical and economic conditions of the company concerned. It will be developed in-house or with external support. Economic feasibility is linked to market aspects, which may change over time, but can benefit from better consumer information towards consumers. This measure is explored when discussing policy measure 8. For priority sectors/groups of substances, the authorities may also consider financial support, for example via calls for proposals. (See currently the BBBC project).

2) A suitable technology is available but not yet developed in the form of a specific alternative:

The technology available must be developed. The company can act independently and enter a partnership with a research centre, university or equivalent. It may also be more effective to work in partnership with other companies and this may even be a necessity for smaller companies with less R&D capacity and financial resources. At this stage, external support may be considered to promote joint research.

3) No technology is available in Belgium or the EU:

The necessary development is linked to science (fundamental research - see R&D strategy measure). Belgium is currently considered by the EU to be a spearhead of R&D&I in the EU and the sectors linked to substitution needs are among those in which the country is fairly specialised.

4) No AoA is available:

The analysis is not available either because:

- The company didn't wish to make an AoA. A policy measure that could subject enterprises to a fee for their use of SVHC could be envisaged to address this.
- The company lacks knowledge on how to do an AoA. A policy measure that facilitates direct support to companies for advisory services in the form of a subsidy could be used to avoid such cases.
- There is no final decision yet regarding an alternative.
- The termination of the activity seems to be the best option. In case of cessation of activity, the company will not be subjected to the SVHC fee but the social implications for the workers and the local economy or even the consumers may have to be considered.

5) Substitution is not relevant:

Substitution is not relevant if we consider that, in the absence of an alternative solution to the use of the substance prioritised by Belgium, the continuation of the activity will represent a cost for the company and society (sustainability perspective) exceeding the benefits.

4.3.2 The concluding stage of the search for an alternative

In principle, the process, terminates when the enterprise stops manufacturing, importing or using the SVHC concerned. This does not mean that no further action can be taken.

It is highly desirable to know more about the alternative solution that has been developed, particularly if substitution is made before the sunset date in case of authorisation, as this may provide valuable information for other companies concerned, in Belgium or in other EU Member States. But also feedback about the non-successful substitutions can be just as useful.

The cessation of activity could also be due to bankruptcy of the company or the absence of an alternative. In this case, a system of aid for retraining workers may be envisaged under certain conditions, as, for example, provided by the European Globalisation adjustment fund

for displaced workers. Cessation may also result from a relocation outside the EU leading to subsequent import of articles containing the substance.

The concept of a "green deal" (in the sense of an agreement) concluded when the company presents its substitution plan could cover the provision of this information post-AoA (substitution or not).

4.3.3 Actions from the authorities

The different actions described here above have various consequences for the authorities. Some of them require specific phase-in actions.

1) Before the inclusion of substances in the Candidate list

Specific support actions may be envisaged, prior to the European Commission's formal decision to add a substance to the CL, with the possibility of updating the list of priority substances for Belgium (cf. the methodology developed in the BEP4CAL project).

The combined nomenclature does not make it possible to identify the various flows of SVHCs imported or introduced into Belgium, exported to third countries or sent to other EU Member States, Norway, Iceland or Liechtenstein. It would therefore be useful for the EU to allocate specific TARIC codes for SVHC as a support measure.

One of the policy measures proposed (policy measure 1) and described in detail in this report on voluntary notification of use may help the authority in developing an inventory that will require to develop an IT tool. The inventory (and prioritization) is helpful to see where information is needed (that may be partly available in databases but not necessarily in a very convenient manner. Such action can also be undertaken in partnership with associations/stakeholders).

Once substances are identified and information on their use is available, an evaluation of what exists in terms of research, at least at the EU or international level, is desirable (possibly performed at an EU level as it is beneficial for any EU Member State). The Federal Public Planning Service Science Policy (BELSPO) could play a role in that matter.

2) As soon as a new substance is included in the CL

In the event, there is a requirement for mandatory notification by companies, the companies will have a few months to meet this obligation.

Notifications are a valuable source of information, particularly for the enforcement of legislation (risk analysis) and contribute to fair competition between companies. They are

also a source of information for other support actions (such as the organisation of workshops).

Companies should have drawn up an action plan by the same deadline (or even earlier). To do this, they may need external expertise provided by accredited experts. This requires a certain amount of organisation (adapting what already exists for other purposes). A policy measure that could facilitate this, is a measure that provides financial support to DUs identified using prioritised SVHCs in Belgium in their development of a substitution action plan. This measure would provide an incentive to the companies concerned, especially SMEs.

The action plan for substitution requires a conformity check if it forms the basis for other regulatory measures such as the exemption (or reduction) of the SVHC fee based on a credible substitution action plan.

One can envisage going further and having a sort of “green deal” agreement between the company and the competent authority, on the basis of the plan, for all the measures arising from it. These measures may include financial aid (loans, premiums, insurance or other with repayment obligations), but as well as other obligation (implementation delays, conditions for revising the plan, etc.) and provide for what happens if the plan in question fails.

3) Actions related to the development of the alternatives

These actions generally concern methodologies (such as support to SVHC diagnosis, accreditation of experts, risk assessment and R&D strategies) or the role of facilitator or informant (such as the development of sustainability assessment approach and AoA method development), but they may also include financial support, including in the form of insurance. This already includes the current initiative under the ‘Belgium Builds Back circular’ (BBBC).

Such actions need to ensure the dissemination of good knowledge in the various departments, which is why the Belgian REACH Committee is an appropriate place but may require more human resources. At the same time, promotion of such types of action at EU level or within other international bodies (such as the OECD) is strongly recommended as it is of general interest and the addition of new substances to the CL has EU-wide implications.

As regards financial support, priority should be given to existing schemes that can be adapted such as support for the cost of researchers or support for external expertise for SMEs, where appropriate with the addition of a research insurance scheme as proposed. In addition, the dialogue with the financial sector, already initiated by the FPS Economy on the financing of the circular economy, should be continued, possibly with greater emphasis on the substitution of SVHC and other aspects of sustainable development.

For the direct funding of research and development, the current BBBC approach makes it possible to focus on priority substances/groups of substances as well as on previous

initiatives and seems appropriate, also taking into account budgetary limitations on the one hand, and existing support at EU and international level on the other. The authorities should therefore focus their attention on the content of these initiatives, in partnership with the sector associations.

4) On other stakeholders

Stakeholders in Belgium are very active in a number of these areas and have proved to be excellent partners. They are less mentioned in the description of measures, but this does not mean that they do not play an important role, particularly in information actions and even more so in the definition of methodologies and guidelines, especially those focusing on specific sectors. Their role should be assessed in more detail once the priorities for Belgium are clearer.

Stakeholders are not limited to the professional associations of the various industrial sectors. They include the education sector, the financial sector and research centres (including universities). Associations such as chambers of commerce (also covering the Enterprise Europe Network) and representatives of consumers and traders/distributors may also be involved.

4.4 Barriers to substitution

There are key challenges which constitute barriers to substitution, and which relate more to the framework governing the field of substitution (the REACH regulation and its implementing rules) or which have been identified by practitioners in the search for alternatives in the context of authorisation or restriction dossiers.

Table 1 lists the main challenges identified in this area, in addition to the difficulties encountered previously. This table will be used at a later stage of the report, when the measures selected for the short list will undergo a final validation stage.

Table 1: Barriers to substitution of SVHCs

	Key challenges
1.	Incentives for regrettable substitution (regulatory certainty; avoiding scrutiny etc.)
2.	Lack of reliable criteria/methodology to conclude on the suitability of an alternative in generic (upstream) uses i.e. those with multiple 'substitution scenarios'
3.	Incentives for applicants for authorisation not to collaborate, including intellectual property and confidential business information
4.	Uncertainties inherent to 'complex' substitution scenarios: • Lack of suitable alternatives at point of regulation • Incomplete understanding of risks and externalities of alternatives • Practical constraints to substitution • Supply/value chain inertia (first-mover disadvantage)
5.	Capacity and capability constraints in the European Commission, ECHA's scientific committees, particularly SEAC as well as member State CAs
6.	Competitive disadvantages for EU producers (EU strategic autonomy)
7.	Asymmetries between the Authorisation and Restriction regime
8.	Continued use of hazardous substances in 'non-essential' uses whilst guaranteeing the availability of 'essential' goods and services
9.	Difficulties to communicate the 'readiness' of alternatives reliably and consistently to the regulator as well as to affected supply and value chains; supply/value chain information asymmetries
10.	Addressing the uncertainties in the hazard and risk profile of alternatives – generating safety datasets
11.	Effective enforcement
12.	Regulatory inflexibility (substitution as the only means to address the identified risk)

5 Definition and selection of measures

5.1 Introduction to drawing up the long list and initial sorting of measures

The process of identifying policy measures took as its starting point the pre-study "*Development of a strategic roadmap for SVHC substitution in the context of a sustainable economy*" of April 2019 carried out by RDC Environment in collaboration with Eppa. The 'vertical actions' mentioned in the pre-study formed the first set of potential measures evaluated during this stage with individual factsheets.

Since the completion of the RDC pre-study, the general framework, in particular at the EU level, has continuously evolved. Greater attention is now being paid to the various dimensions of the sustainable economy, drawing also on the lessons of the pandemic, the war in Ukraine and the worsening impacts of climate change. Therefore, particular attention was given to several new developments in this area that could influence the faster substitution of SVHCs by suitable and sustainable alternatives and avoid regrettable substitution.

The drawing up of the long list consisted mainly of an inventory of possible policy measures and other actions, based also on the team's expert experience in related fields.

From the initial stage, the principle of subsidiarity was taken into account as was the added value of a measure at Belgian level rather than at an international level (EU or other international institution)²². In addition to this 'vertical' criterion, there were considerations such as the added value of a measure devoted specifically to the substitution of substances identified as SVHC compared with a broader action such as corporate responsibility. It also took into account that adapting existing measures to the specific needs of SVHC substitution could be beneficial. These different aspects were referred to as framework criteria in this document.

It also appeared that, in some cases, it was better to use existing measures and see how they could be improved to facilitate the substitution of SVHC rather than adding more specific measures. This type of measures formed another group of potential measures under the inventory.

[Appendix A](#) lists the different potential measures from the long list, intermediate list and short list and provides more details on the long list of policy measure that were considered.

²² The support of measures at the EU or international level by Belgium should be an important part of the NPS, but this is not, as such, the purpose of the present study. Therefore, these potential measures were included in the inventory. The adoption and implementation of action at this level could be slower, with Belgium able to consider transitional measures as a front runner.

5.2 Development of Long list of policy measures (stage 1)

The measures likely to be of interest to Belgium and beyond, for example by serving as a full-scale test for actions that could be extended to the whole of the EU, were identified and classified into four categories based on their main characteristics:

1. Regulatory measures,
2. Economic measures,
3. Information and knowledge measures and
4. Voluntary measures (initiated or only facilitated by the authorities).

Individual factsheets were drawn up for most of the potential measures to characterize each of them.

5.2.1 Regulatory measures

Table 2 shows the different types of measures of general application that could be adopted by regulatory authorities and for which compliance would be mandatory.

Table 2: Regulatory measures in the long list

Type of measure	Description of measure
Taxation	Tax on the use of selected substances (for example: SVHCs, substances prioritized by Belgium)
Mandatory notification of information	Companies manufacturing, importing or using substances in the CL (are required to notify them)
Accreditation of experts	A system of accreditation of training or expertise
"Name and shame"	A form of public shaming of companies not prepared to substitute certain hazardous substances (SVHC)
Support to venture capital (for RDI)	Measure(s) to provide risk mitigation for investments in RDI
Extension of the corporate responsibility obligations	Measure by which corporate social responsibility provisions are modified so as to include reporting obligations in terms of substitution or risk management strategy regarding SVHC
Labelling	Provisions to ensure certain substances or articles containing them are labelled in a way that downstream users and final users (consumers) are properly informed
Border measures (customs, nomenclature),	Measures to ensure that the customs administrations can collect data on export/import of certain substances as such as well as in certain articles
Amendments to the intellectual property rights and to the competition rules	Measures that, for example, make sharing of information about alternatives possible between companies where currently this might be difficult from a legal point of view

Type of measure	Description of measure
Green public procurements (and requirements)	Measures whereby public administrations introduce sustainability requirements in calls for tender for public procurement
Standards	Modification of product standards to facilitate the uptake of alternative substances or processes

5.2.2 Economic measures

Economic measures include measures that are meant to create the financial infrastructure or provide the economic means to address the policy objective of accelerated substitution as well as its consequences. The measures under this category are listed in Table 3.

Table 3: Economic measures in the long list

Type of measure	Description of measure
Support to public research	Develop and support a research programme dedicated to the substitution of an SVHC
Private research and private development	Support mechanism for private research focused on cases where there is no identified alternative
Support to the consultancy of experts (for SMEs)	Mechanism to financially support consultancy services for substitution
Public-private sustainability partnerships	Contracts between government departments and private entities to ensure, for example, that some public assets (buildings) are provided and managed in accordance with sustainability requirements
Permitting rules (and enforcement)	Introduction of stricter permitting rules to protect workers and the environment in case of manufacturing or use of substances identified as SVHC
Chemical leasing	Promotion of a new business paradigm driving cooperation between supplier and customer and whereby the utility of a substance and the performance of the processes/products related to it become the centre of the buying process
Support to the cessation of production (company liabilities vs. employees)	Measures to mitigate the social impacts of the closure of activity due to cessation of use of an SVHC

5.2.3 Information and knowledge measures

Information and knowledge measures as listed in

Table 4 covered all possible initiatives aimed at improving information resources and their content, as well as means of bringing interested parties together.

Table 4: Information and knowledge measures in the long list

Type of measure	Description of measure
Dedicated on-line information	System of providing information via on-line accessible databases
Support to collaboration (e.g. workshops)	Support to industry organisations and other existing networks to promote exchanges of information and collaboration opportunities
Network of independent research institutes	Organisation of cooperation between research institutes to achieve certain R&D goals
Individualized information and advice of companies (SME) by experts, based on a first diagnosis.	System whereby companies can benefit from external expertise when they meet certain conditions (SME, prior diagnosis)
Methodologies/guidance for sustainable development analysis, on risk assessments, on reporting standards	Development and/or promotion of methodologies that will guide those performing and evaluating risk assessments, sustainability assessments and reporting.
Consumers information (including professional users)	Measure(s) to ensure that downstream users, including professional users as well as consumers, are provided with relevant information on certain substances (including their presence in articles)
National single point of contact on RDI and role of The Federal Public Planning Service Science Policy (BELSPO)	Administrative measure whereby a single point of contact is established at Belgian federal level, including a new role for BELSPO
Development of databases	A set of measures to establish databases relevant to substitution about known alternatives, alternative business models, relevant research bodies in Belgium and abroad etc.
Inventory of existing supporting measures (mainly related to RDI and its financing)	Establishment and circulation of information on existing measures to support RDI
Early warning	Provision of information on the regulatory status of and regulatory activity about a substance, whereby companies or research institutes can start early planning for research and/or substitution
Forum on substitution	Creation or promotion of a forum where all parties interested in substitution can meet, discuss and cooperate

Type of measure	Description of measure
Experts in social sciences	Development of expertise in social science to influence behaviour of producers and users in order to accelerate substitution

5.2.4 Voluntary and supervised measures

The measures covered under this category and listed in

Table 5 consist of voluntary measures within a framework agreed with or approved by authorities.

Table 5: Voluntary and supervised measures in the long list

Type of measure	Description of measure
Voluntary notification of information on use to the authorities	Voluntary system for notifying manufacturing, import and use of SVHCs
Development of substitution action plans	System whereby the development of substitution action plans is encouraged or proposed as part of a set of measures to accelerate substitution
Cooperation with existing networks (and information)	Cooperation with existing networks based on substitution objectives
Labelling (private initiatives)	Promotion or recognition of private labelling initiatives where users/consumers are informed on the presence of a hazardous substance (SVHCs)
Voluntary notification of information on use to the authorities	Voluntary system for notifying manufacturing, import and use of SVHCs
Development of substitution action plans	System whereby the development of substitution action plans is encouraged or proposed as part of a set of measures to accelerate substitution
National single point of contact on RDI and role of The Federal Public Planning Service Science Policy (BELSPO)	Administrative measure whereby a single point of contact is established at Belgian federal level, including a new role for BELSPO
Development of databases	A set of measures to establish databases relevant to substitution about known alternatives, alternative business models, relevant research bodies in Belgium and abroad etc.

5.3 Long list of measures

The long list of measures is presented in

Table 6 in a way that facilitated the selection work for the intermediate list. Table 6 also shows under which of the four categories described above i.e. regulatory, economic, information and knowledge and voluntary, the policy measure in the long list falls.

Table 6: Long list of policy measures considered

No.	Policy measure	Regulatory measures	Economic measures	Information and knowledge measures	Supervised voluntary measures
1	Use identification to the authorities				
1.1	Voluntary notification				X
1.2	Mandatory notification	X			
2	Taxation				
2.1	Tax on the use of SVHC				
2.2	Notification fee	X			
3	Consultation with stakeholders			X	
4	Information on-line (targeted information)			X	
4.1	Dedicated website on technologies			X	
4.2	Other awareness raising information			X	
5	Network of independent research institutes				X
6	Cooperation with existing networks			X	
7	Support to collaboration (e.g., workshop)				X
8	Diagnosis of the needs of individual enterprises		X		
9	Support to consultancy by experts		X		
10	Support to private research		X		
11	Support to private development		X		
12	Public research		X		
13	Name and shame	X			
14	Permitting rules	X			
15	Enforcement	X			
16	Education			X	
17	Accreditation of experts	X			
18	Action plan for substitution	X			
19	Developing methodologies	(X)			X
19.1	Risk assessment	(X)			X

No.	Policy measure	Regulatory measures	Economic measures	Information and knowledge measures	Supervised voluntary measures
19.2	Sustainability assessment method	(X)			X
19.3	Analysis of alternatives				X
19.4	Reporting standard				X
20	Information of consumers (including professionals)			X	
21	Public-Private sustainability partnership				X
22	Support to venture capital (financial risk) (RDI)		X		(X)
23	National Single point of contact on RDI			X	
24	Role of BELSPO and research strategy			X	
25	Development of databases (on alternatives ...)			X	
26	Extension of the Corporate Responsibility; Corporate Sustainability Reporting; Sustainable Finance	X			
27	Border measures (customs, including new TARIC codes)	X			
28	Intellectual property rights and competition law (review of provisions on information sharing)	X			
29	Green public procurement				
29.1	Proactive public procurement	X			
29.2	Criteria and guidelines for public procurement				X
30	Labelling and digital product passport	X			(X)
31	Restrictions or bans	X			
32	Chemical leasing		X		
33	Support to the cessation of production		X		
34	Standards	X			
35	Sociology studies (& experts)			X	
36	Early warning			X	
37	Inventory of measures applicable to a substance			X	
38	Certification of substances		X		

6 Development of the intermediate list (stage 2)

6.1 Motivation and approach for an intermediate list

The approach taken to identify the measures in the long list that would ultimately make up the short list considered the fact that the long list was essentially a list of generic measures. The short list, on the other hand, was made up of measures that were clearly defined to allow for an in-depth proportionality and socio-economic analysis in Phase 4 of the project. An initial reduction of the long list to an intermediate list was thus necessary before the remaining candidate measures could be refined for Phase 4.

The intermediate list also made it possible to examine the proportionality of a wider range of measures than the short list itself. Some of these measures may prove useful in future related areas of public intervention, particularly regarding sustainability.

The selection process at this stage was based on the following rationale:

1. It needed to be clear at which stage of the substance's substitution pathway the measure would have an effect. At each stage in the substitution pathway, and for each category of actors, the project team considered which of the identified potential measures would contribute to an accelerated substitution and/or a more sustainable alternative at the Belgian level. The project team also made sure that the package of measures selected for the intermediate list and further refinement would be able to address issues identified at the different stages of the substitution pathway.
2. The complementarity between measures had to be considered, taking into account the extent to which one measure could reinforce the effectiveness of another one or could be a prerequisite for another measure to function properly. This specific aspect is further discussed in [Appendix B](#).
3. The hurdles companies encounter along the substitution pathway needed to be considered and the measures need to be able to respond to them. The input of authorities and stakeholders regarding their own hurdles/limitations was considered.
4. Measures that are already part of the normal implementation of EU legislations like REACH and the CLP were not considered for the intermediate list. This led to the non-selection of measures such as enforcement or permitting rules.
5. Measures that clearly fall within the remit of the European level or are even being considered there (e.g. product passport), were not considered further.
6. Measures that are likely to cause confusion, particularly for internationally traded substances (labels), and those that are likely to be too complex to define and too time-consuming to implement (e.g. standards) were ruled out.

6.2 Screening and consultations

Stakeholders were surveyed and a pre-selection of possible measures was discussed with input from industry associations.

The opinion of industrial sectors varied as to what should be done to accelerate the substitution of SVHC.

Sectors that operate on a global scale and have a close relationship with consumers, such as the textile industry, indicated that internationally recognised labels, such as the ökotex label, provide proven added value by creating transparency on the substances that can or cannot be used in textiles. The chemical sector in Belgium is large enough to allow cooperation and joint initiatives (such as Vlarip or Walrip, for example) and their trade organisations are very active in the collection and dissemination of EU information (i.e. the first stages in the substitution pathway).

Other sectors, such as those using metals, are more likely to be in favour of early initiatives and consultations at European level, from the very first stages of the substitution pathway.

The most active sectors at European and international level are aware that the lack of information on who is using SVHCs is a handicap for the authorities. They understand the logic of an obligation to notify use, but reserve judgement until they have a clear view of the practicalities of such notification.

At this exploratory stage, the concept of a fee for the use of SVHC was only mentioned in principle. Generally, industry prefers incentives to coercive or 'stick behind the door' measures such as taxes on the use of SVHCs and to a more limited extent a notification fee.

Finally, there is a general agreement that the traditional downstream user SMEs are ill-equipped to meet the challenge of substitution and rely on their suppliers to find a solution, unless the SVHC to be replaced is an essential raw material in their production process. In this case, many SMEs tend to be more pro-active but face limitations in terms of expertise and other resources.

Stakeholders were also invited to share their experience with challenges to substitution in industry. Broadly, these were summarized as follows and elaborated upon in more depth in [Appendix A](#):

- A lack of awareness of the issues ahead leading to complacency in considering and planning ahead substitution.
- A blind faith in suppliers which is risky in minor markets with suppliers not interested in investing in them.

- A lack of financial stimulus for substitution (use of SVHC may be more profitable than moving to alternative).
- Company management culture.
- Limited autonomy in decision-taking (subsidiaries of some multinational companies) or fear for consequences of a 'bad message' (closure of activity) and thus application of delaying tactics.
- Fear for business confidentiality, intellectual property conflicts and competition law issues when cooperating with other companies in a search for alternatives.
- Difficulty in familiarising themselves with the wider context of sustainability.
- Financial barriers, particularly for SMEs.
- Questions about how to include professional uses in substitution, as professional users (very small or one-man businesses) are often unable to meet the challenge of substitution and are dependent on suppliers.

6.3 Intermediate list of 17 candidate policy measures for the Belgian Strategy

Based on the above-presented approach, 17 measures were selected for further analysis while bearing in mind that further assessment could lead to changes in the precise definition or scope of some of these measures. The discussion looked at whether the measures:

- would be horizontal or vertical
- could be designed to target specific substances and
- the jurisdiction where their introduction would be more suitable (national or international level).

Table 7 presents the measures that were selected as well as their categorisation. This categorisation will be useful in the subsequent discussion. It also made it easier to establish a hierarchy and distinguish between their impacts and implications.

Four of the measures introduce a legal obligation and require the development of a legal instrument to enable them to be implemented. Five measures were aimed at facilitating change, in this case the substitution of SVHCs, through information and contact. Finally, eight measures involve structural or methodological support.

Table 7: Measures selected for the Intermediate List

Legal obligations and instruments	
1	Voluntary notification of use
2	Mandatory notification of the use
3	SVHC fee
4	Action plan (for substitution)
Change facilitation measures	
5	Education
6	Awareness creation
7	Networking
8	Consumer information
9	Joint research
Supportive measures for structure and methodology	
10	Support to SVHC diagnosis
11	Accreditation of experts
12	Risk assessment
13	Sustainability assessment method development
14	AoA method development
15	Reporting standards
16	Financial risks (related to RDI)
17	R&D strategy

Measures that were not retained at this stage could be part of the supporting measures to be implemented in another framework and this is discussed in Chapter 8.

6.4 Validation of the Intermediate list

In Table 8, the measures of the intermediate list are presented in 3 categories (legal obligations and instruments, change facilitation measures, supportive measures for structure and methodology) and discussed in function of the stage in the logical framework of substitution (see Figure 2) during which they will operate.

The result of this validation via the substitution phases showed that the measures selected would act from the first signs of a need for substitution (placing of the SVHC on the CL) and could provide support during the phase of setting up and carrying out substitution efforts. Much less emphasis is placed on the final phase, with the implementation of alternatives, because public intervention seems to be much less useful there.

Table 8: Stages of policy analysis framework

		Stage 1	Stage 2	Stage 3
		Identification of SVHC Initiation of the Substitution process	Actual work on substitution (projects, R&D)	Concluding phase of substitution (implementation if process successful)
Legal obligations and instruments				
1	Voluntary notification of use			
	On the basis of the CSR/SDS on the one hand and specific information relating to the company concerned on the other (type of use, quantities involved, products in which the substance is present and their volume, etc.), it is possible to make a voluntary notification to the authority, which will be made compulsory from a certain time after the date of inclusion of the substance in the CL and from a date to be determined for substances already included in the CL.			
2	Mandatory notification of the use			
	See above			
3	SVHC fee			
	The application of a fee indicates the resolve of the authorities to exert pressure for substitution to happen. The fee can be flexible in the sense that it can be suspended or reduced if an action plan is presented.			
4	Action plan (for substitution)			
	Development and presentation of an ‘action plan (for the substitution)’ to be accepted by the authorities (compliance with the requirements).			
Change facilitation measures				
5	Education			
	See Measure 10: SVHC Diagnosis			
6	Awareness creation			
	See measure 10: SVHC diagnosis			

		Stage 1	Stage 2	Stage 3
		Identification of SVHC Initiation of the Substitution process	Actual work on substitution (projects, R&D)	Concluding phase of substitution (implementation if process successful)
7	Networking			
	Once the information required to start awareness creation has been processed, authorities may have precious indications to stimulate networking activities whereby trade associations and industrial research organisations are going to play a central role.			
8	Consumer information			
	Not selected for the strategy. Results of substitution efforts may be communicated to promote uptake by consumers.			
9	Joint research			
	Not selected			
Supportive measures for structure and methodology				
10	Support to SVHC diagnosis			
	It is recommended that any company concerned, on the basis of the CSR or SDS, make an initial diagnosis of what it will have to do to find an alternative. This may involve a relatively simple substitution (e.g. replacement by a substance with similar performance), but it may also involve the need to develop a genuine alternative (e.g. another substance to be identified, other technologies, or even finding innovative business models). As far as possible, this analysis should take account of essential sustainable development considerations. Link with measures 6 and 7: To carry out this diagnosis, companies must have sufficient resources (financial, technical and human) and know what they need to do. As far as human resources are concerned, sufficient information (for companies) and training (at least for scientists and people involved in the production and safety aspects of the company) are needed. Education is therefore one of the most important support measures and raising awareness is also a fundamental obligation for the authorities (although it can be carried out by other players).			

		Stage 1 Identification of SVHC Initiation of the Substitution process	Stage 2 Actual work on substitution (projects, R&D)	Stage 3 Concluding phase of substitution (implementation if process successful)
11	Accreditation of experts			
	The action plan includes the result of a diagnosis performed by qualified experts. This action consists in the certification by the authorities of diplomas and accreditation of experts.			
12	Risk assessment			
	For substances considered under the national substitution plan, the authorities would benefit from a risk analysis (which requires a standardised methodology). On the basis of the information gathered through notification, specific additional risk management measures could be required as part of environmental permits.			
13	Sustainability assessment method development			
	Before embarking on the development of an alternative for safer products/solutions, we need to look again at the issue of sustainable alternatives. The challenges for society as a whole and for individual companies are not limited to safer products. There are many others, such as climate change (with different aspects such as CO2 emissions, use and availability of water, etc.), energy efficiency and the type of energy, availability of raw materials and the circular economy (including business models favouring circularity), biodiversity, geopolitical aspects (local supply vs. dependence on outside sources). The best technical solution in terms of alternatives is not necessarily the best for the other dimensions of interest to society. For companies, it makes no sense to address each of the above dimensions separately and successively. It is therefore worth making as broad an assessment as possible from the outset, but this should not have too great an impact on the timescales. The right balance needs to be struck, and that starts with having the information and tools to carry out a good quality assessment, hence this measure.			

		Stage 1 Identification of SVHC Initiation of the Substitution process	Stage 2 Actual work on substitution (projects, R&D)	Stage 3 Concluding phase of substitution (implementation if process successful)
14	AoA method development			
	The first step in developing an alternative solution is to identify both the needs and the specific constraints of the company concerned, and to be able to analyse the data relating to this alternative in the light of these needs and constraints. This requires a sound methodology.			
15	Reporting standards			
	They can help to change the way in which companies take account of the need for substitution as soon as the signals are clear in this direction.			
16	Financial risks (related to RDI)			
	The financial risk can act as a brake on substitution efforts.			
17	R&D strategy			
	The Belgian authorities can help companies find the best information. They can also play a role in the relevant fora to develop the best methodological and analytical tools (cf. measures 13 & 14). They can also play an important role in two directions for the circulation of information (downwards: information on existing research programs and upwards: transfer of specific needs that could be added to research programs and help shape the overall R&D strategy). In Belgium, BELSPO could be an important player in this respect, although it is not currently involved in the REACH regulation.			

7 Development of the short list (Stage 3)

7.1 Introduction to proportionality assessment

The selection of the short list of policy measures results from a two steps approach, followed by a validation:

- 1) A preliminary selection based on the assessment of the 17 measures which was performed before the selection of the substances to be prioritized.
- 2) A subsequent review that considered the practical feasibility aspects and led to a rearrangement of the various actions envisaged under the proposed measures with a view to making them as precise as possible for the socio-economic analysis.
- 3) The validation of the measures involved comparing the measures selected with the obstacles to substitution and the major challenges presented in Table 1.

Among the measures not selected, some are of real interest if they were to be developed at international level, while others could be considered in a broader context than just SVHC substitution. Particular attention has also been paid to what already exists (or is being developed). These measures are covered in Chapter 8.

7.2 Proportionality discussion and scoring

Twelve selection criteria were also considered with five possible scoring levels (++ , + , = , - , - -) in four proportionality categories (effectiveness, efficiency, regulatory consistency and broader impacts) as listed in Table 9.

Table 9: Selection criteria applied to intermediate list of measures to develop the short list

No.	Selection criteria
	Effectiveness
1	Is the measure likely to increase the number and quality of substitutions compared with the current situation?
2	How likely is the increase of substitution?
	Efficiency
3	Burdens on industry in terms of costs and resources?
4	Burdens on authorities (including challenges related to design, implementation and/or enforcement)
5	Time needed for the measure to produce results in terms of substitution
6	Is the measure monitorable?

No.	Selection criteria
Regulatory consistency	
7	Compatibility with legal constraints in Belgium and, where applicable, with European legislation
8	Consistency with other existing and proposed measures and regulations
Broader impacts	
9	Impacts on the competitiveness of the Belgian enterprises concerned
10	Impact on other dimensions of sustainability
11	Impact on SMEs
12	Impact on specific categories of the population or non-industry sectors

The scoring results were presented in Figure 3, Figure 4 and Figure 5.

Figure 4 displays the score of the four legal obligations and instruments in terms of effectiveness, it shows that the best performance may be expected from a mandatory notification and an individual action plan for substitution. Both measures could be combined for highest effectiveness. The SVHC fee scored lower in terms of effectiveness and badly for broader impacts. The discussion of taxes and fees is further expounded in [Appendix B](#) and illustrates the difficulties with such a measure which explains its low score. However, it may be a useful measure if it can be designed as a financial penalty for non-action.

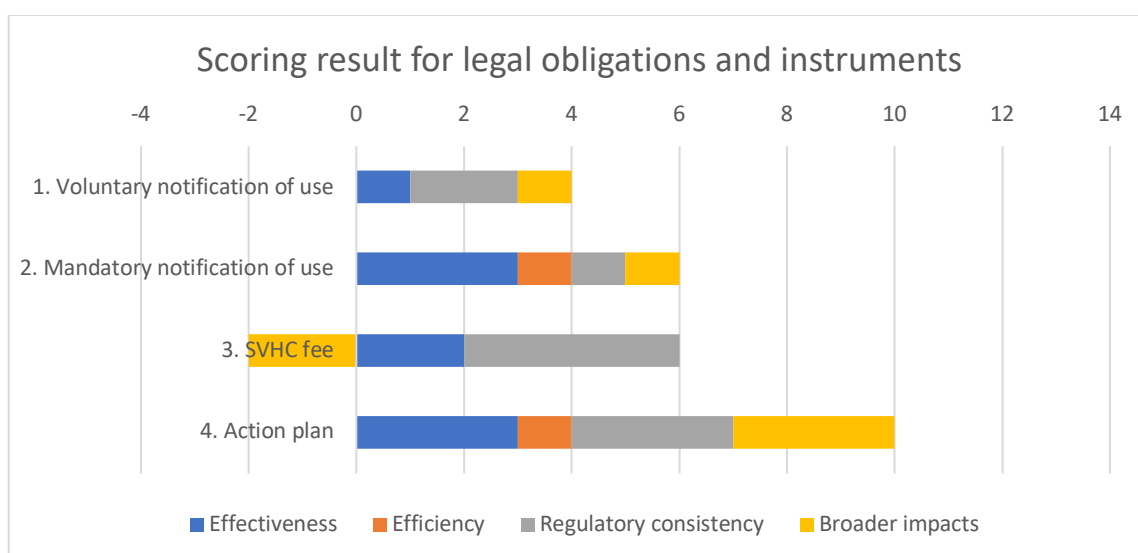


Figure 3: Scoring result for legal obligations and instruments

Figure 4 presents the scoring performance of the change facilitation measures. Networking proved to be the most effective measure, even if it did not appear to be very efficient because

of the considerable effort to set up. Moreover, it can be difficult, even tricky, to measure the effectiveness and results of networking. Joint research appears to be much more efficient, but it cannot be imagined without prior information and networking.

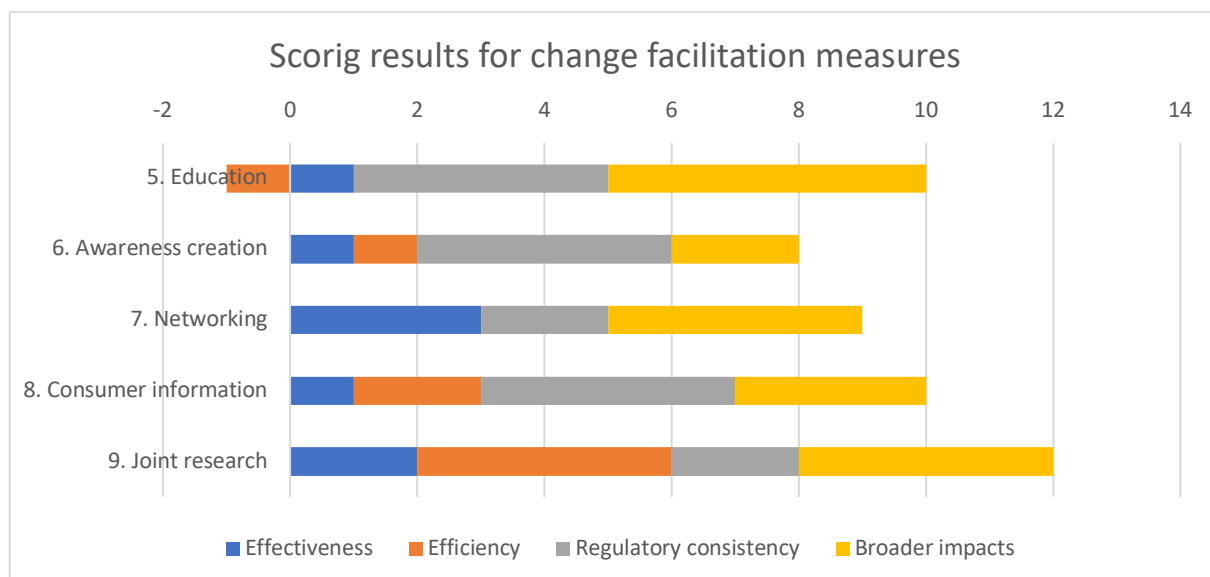


Figure 4: Scoring result for change facilitation measures

Figure 5 presents the scoring performance of the structure supporting measures and measures aiming at the development of methodologies. Support to SVHC diagnosis scored the best and a combination with accreditation of experts seemed attractive.

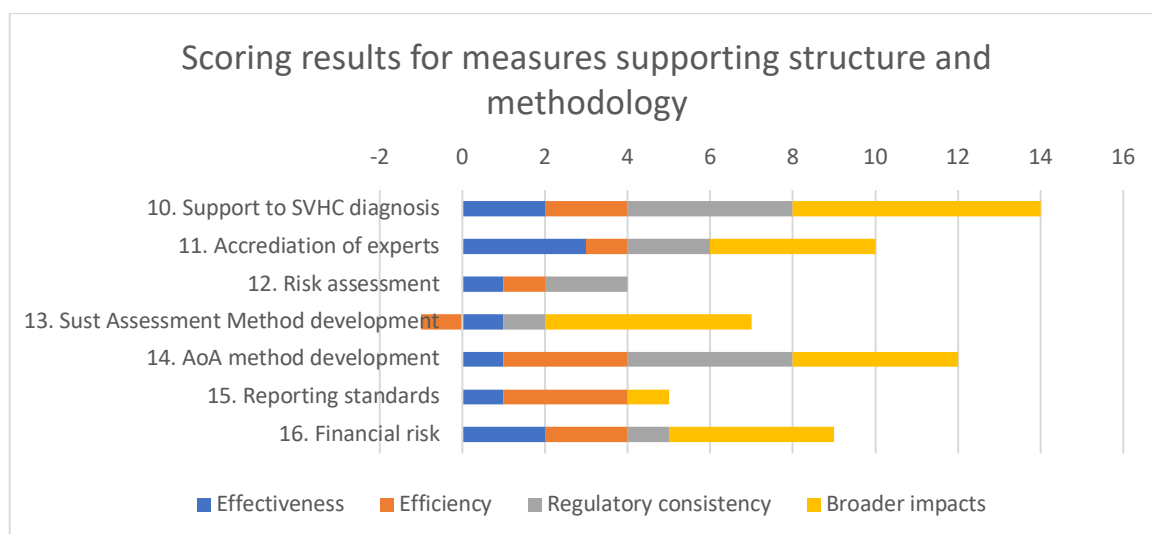


Figure 5: Scoring result for measures supporting structure and methodology

The scoring exercise, which was based on individual expert appraisals, provided guidance and showed the relative performance of the various measures.

The application of the 12 evaluation criteria listed in Table 9 and the scoring as presented in this section did not, on their own, allow a clear hierarchy of measures to be established. Consequently, the experts' assessment focused on identifying those measures which, combined and refined, offered the greatest benefit, considering the expected behavioural responses, the foreseeable impact on substitution in Belgium and the added value for the country's economy.

7.3 Measures considered for the Belgian Strategy (shortlist)

Based on the evaluation described above, a list of 10 possible policy scenarios (to be submitted for an SEA) was proposed. The policy measures were categorised into three broad groups covering measures related to change facilitation, instruments and structures.

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This does not mean that the other measures, some of them previously de-selected could not be used to support the future National Plan of Substitution (NPS).

The ten measures deemed suitable for the NPS and selected for an SEA, were expected to be more effective if developed at the Belgian level (subsidiarity consideration) and could present an interest for individual substances (vertical dimension).

These ten policy scenarios were proposed in the interim report prepared for the meeting of 6 March 2023 with the Belgian authorities (Policy measures for the Belgian Strategy for Substitution of SVHC – Interim Report). During the meeting with the Belgian authorities, five types of measures with variations leading to 10 were considered as priority scenarios. The five types of measures were:

1. Mandatory notification of CL substances by downstream users
2. Mandatory substitution plan²³ for priority substances
3. Annual fee for Downstream users of substances of the candidate list with reduced fee (for non-prioritized substances, for which a substitution plan is under development)
4. Setting-up of a 'substitution network' (or 'community') of the prioritized substances

²³ Or 'action plan' to align with the terminology used for the financing of measures by banks and other financial institutions (in the framework of the Sustainable Finance of EU)

5. Direct support for the development of alternatives following the assessments of sustainability and safe by design of chemicals and materials.

These 10 policy scenarios are presented in Table 10 and their essential elements are described below. More details of the measures were presented in [Appendix D](#).

Table 10: Measures proposed to be included in the short list of measures

Broad category of measure	Policy scenarios
Legal obligations and instruments	1. Mandatory notification of use
	2. Substitution action plan for substances prioritised as of high relevance for Belgium
	3. Non-financial support for the use notification and/or the substitution action plan
	4. A subsidy for the substitution action plan
	5. Annual fee on the use of SVHCs
	6. A modular fee system
Change facilitation measures	7. Awareness creation and facilitation of networking
Structure supportive measures	8. Development of methodology and structure to support the sustainability-focused analysis of alternatives
	9. Direct support of companies involved with a subsidy for advisory services (subsidy version 1)
	10. Direct support of companies involved with a subsidy for advisory services (subsidy version2)

7.3.1 Mandatory notification of use

The authorities have information (via the ECHA database) on the manufacture and import of SVHCs by legal entities established in Belgium and on their export to the EEA by foreign companies represented in Belgium by an Only Representative established in Belgium, but no information on their use in our country by downstream users.

It was considered that the information on these uses in Belgium is essential for effective management of the SVHCs that are of greatest interest to the country, for various reasons such as the volumes treated, emissions into the environment, exposure of workers or users of products incorporating SVHCs, and the economic potential of successful substitution.

This information is not easily accessible or completely unavailable, and in particular, it is not possible to map downstream uses and their potential impact with the necessary precision. This lack of information was also a hurdle for the prioritization in this project of the first set of substances.

In the absence of European notification of information on the uses of these substances, provision should be made for an obligation to provide information on the uses of SVHCs in Belgium, on the basis of the information normally available in the companies concerned.

Key elements of the measure:

Within a period of [6] months from the application of this rule or [6] months after the inclusion of a new substance in the CL, downstream users of substances on the CL will have to provide information on e.g. the company, suppliers, use, volumes, relevant markets (Belgium, EU, worldwide)

The notifying companies will be required to update their notification information on a yearly basis.

In addition to the type of information described above, the Belgian authorities may wish to collect additional information on the relevant markets and the share of products sold in Belgium, in the rest of the EEA and globally. Examples of such additional points are presented in Appendix D.

Important remarks:

- If the European Commission were to propose including a similar provision in the revised REACH Regulation (which would be very useful also at EU level), even if it came into force later, it would be difficult to maintain such a measure at Belgian level for a transitional period.
At this stage, it is unclear whether the Commission will propose such a provision, let alone whether it will eventually be adopted.
- The broad scope of this measure, as set out above, most likely goes further than the European Commission would propose. However, it is difficult to ask Belgian companies for additional information to that required at European level, which would oblige them to make two separate notifications.
- Even if the Belgian competent authorities were able to access European notification information from the ECHA website, it is still easier to access a Belgian database directly than the ECHA database.
- What is important to bear in mind is how the information is used:
 - It makes it easier to monitor the substitution process and, for each substance, the importance of its use, and the risks for workers, consumers and the environment.
 - It also provides a means of finding out the challenges facing companies looking for alternatives.
 - It can be used to identify companies that should draw up a substitution plan as part of measure 2 below.
- The identification of the companies handling prioritized substances is an essential condition for the creation of a 'substitution community' under measure 7 below.

7.3.2 Substitution action plan for substances prioritised as of high relevance for Belgium (mandatory measure)

Downstream users will have to notify their Plan of Actions for the substitution of SVHCs (PASS) within the first 12 months following their notification of the list of substances prioritized. This plan is called a plan of actions to avoid the confusion between a substitution plan and an R&D plan as used within the context of REACH authorisations. The concept presented here would involve both types of plans but would document and justify the maturity of the alternative (including non-existent) as assessed by the downstream user.

The action plan's summary should be drafted in accordance with the template prepared by the authorities²⁴.

The action plan for substitution may cover the following elements (indicative and non-exhaustive list):

- Intention to phase out the CL substance
- Past and current substitution activities
- Assessment of the maturity of any potential alternative. This involves possible analysis of the alternatives
- Development / Substitution timeline if substitution is deemed feasible

Downstream users will be required to update their action plan information in case of major amendment on a regular basis (possibly every two years, and yearly during the 2 last years before the substance reaches its sunset date). While the action plan will not be validated as such by the authorities, the plan can be seen as an engagement of the companies to progress on the substitution of the SVHC. The plan can be verified through authority inspections. To what extent non justified deviations to the plan would be sanctioned is not evaluated in the context of this study. Also not evaluated in the context of this study is the use of these plans to compare the suitability of the investigated (or not investigated) alternatives.

²⁴ Based on the SSbD and ESRS approach (see the box in [Appendix A.2](#), point 2), both of which are still under development. In particular, the action plan should be ready to support any request of funding by a financial institution in line with the requirements of sustainable finance.

7.3.3 Non-financial support for the use notification and/or the substitution action plan

This measure consists of a non-financial support to measures 1 and 2 and is therefore a variation (extension) of the said measures.

This measure takes into consideration that many downstream user companies will lack the knowledge to correctly notify their use(s) and prepare a substitution action plan. It has, as a primary purpose to strengthen the framework outlined in measures 1 and 2.

Key elements of the measure:

- Support for the **use notification** will be in form of:
 - On-line tutorials re. inventory of SVHCs (links with LIFE/ Fit for REACH project) and for the reporting of exposures/emissions (in case of Policy scenario 1, option 2)
 - Support from the helpdesk
 - Training sessions for industry
- Support to the preparation of a substitution action plan will include:
 - A template for the plan and an accompanying guidance document
 - A list of possible resources (possibly including experts who have made themselves known by an invitation of the authorities with proven qualifications and specialisation).
- An information hub on the existing Research, Development and Innovation (RDI) programmes as well as on the financing and the requirements.

7.3.4 A subsidy for the substitution action plan

The measure consists of a financial support for the substitution action plan for the users of substances prioritized by Belgium.

This measure adds a variant to measure 2 by adding a subsidy for companies involved in the substitution of prioritized substances. It would provide an incentive for the companies concerned, especially SMEs and thus increase the chances that these companies will invest in time in the identification and introduction of a sustainable alternative.

A subsidy for the preparation of the substitution action plan of €125 per hour with a maximum of 160 hours (€20,000) is proposed as thought starter.

7.3.5 Annual fee for the use of SVHCs

Companies using a substance listed on the CL will have to pay an annual fee for as long as they continue to use that substance. A reduction (or exemption) of the fee should be applicable to companies that submit (and implement) an action plan for the substitution of the concerned SVHCs following the requirements presented under policy scenario 2 above.

The measure is designed to encourage users of these SVHCs to commit in good time to their diligent and sustainable substitution (avoiding regrettable substitution).

The measure would also provide the authorities with additional resources to finance their strategy of substitution of the SVHCs.

Key elements of the measure:

Annual fee will be introduced for users of CL substances in Belgium. The annual amount of the fee will depend on the volume of SVHCs used by the company for one or more different products produced by that company or resold to another company.

- For a volume higher to 1 ton but not exceeding 100 ton: 7.5% of the value of the substance for the quantity exceeding 1 ton with an amount not exceeding 50,000€
- For a volume exceeding 100 tons: the amount obtained for the first 100 tons, + 5% of the value of the substance for the quantity exceeding 100 tons with a maximum amount of 90,000€.

The annual fee will be applicable to any user of an SVHC included in the CL, including importers of such substances who have submitted a registration dossier but excluding independent professional users, from 6 months after the legal requirement enters into force or from 6 months after the inclusion of a new substance in the CL. The fee is applicable per substance from an annual use of one tonne and for as long as the downstream user continues to use the substance.

If the company can demonstrate to the satisfaction of the competent authority that it has stopped using the substance and has not replaced it with another SVHC, the fee will no longer be applicable.

7.3.6 A modular fee system

Under this variant of the policy measure 5, a fee reduction (or exemption) would be applicable to DU companies that submit (and implement) an action plan for the substitution of the SVHCs concerned (non-mandatory substitution) in accordance with the other requirements presented in measure 2 above.

The measure is designed as an incentive for users of substances to commit to timely and diligent substitution of the SVHCs concerned in a sustainable manner.

The measure would also provide authorities with additional resources to fund their SVHC substitution strategy.

Key elements of the measure:

Annual fee: This will be the same as for measure 5.

Companies that undertake to submit, within one year, an action plan for the substitution of the SVHC concerned will benefit from a suspension of the payment of the fee until they submit the summary of their action plan (as for measure scenario 5). Depending on the situation, the fee may be reduced or companies may benefit from an exemption in this case.

Specific consideration might be required for uses of SVHC which are currently not subject to regulatory driven substitution such as substances used as intermediates under REACH. In these cases a substitution plan is maybe less relevant, however based on emissions, the fee could be used as an incentive to reduce the burden to society associated with the use of the substance.

7.3.7 Awareness creation and facilitation of networking

This policy measure aims to raise awareness and provide information to companies (and other actors) involved in the supply chains of the prioritized substances. In addition to general information on the obligations of companies that manufacture, import or use these substances, links to other sources of information targeting substance substitution and funding opportunities for RDI activities will be provided. The measure aims to create a community of companies using or manufacturing the substance concerned. This information can be obtained from Belgian registration data available at the ECHA database for manufacturers, importers and only representatives or, for downstream users, from the notifications (on the use of substances on Annex XIV or the notification as defined in the earlier measure). These communities or networks must be open to any other company concerned or interested in the substance, in particular companies in the supply chain of identified users as well as research and technology organisations (RTOs), such as Collective Research Centres (Centexbel or Sirrus, for example). The initial organisation of these communities or networks could be based, *mutatis mutandis*, on the SIEF approach.

The role of the authorities should be to facilitate the creation of such networks and to provide information on known opportunities for substitution, as well as on the national substitution plan and related issues. Particular attention should be paid to the safe and sustainable by design (or Do Not Significant Harm) approach for the alternatives to avoid regrettable substitutions.

The possible participation of representatives from the authorities in these networks can also facilitate the gathering of information on best practice and on the difficulties encountered in the search for alternatives carried out in partnership.

Key elements of the measure:

General information

The authorities' information-related support activities are set out in detail in [Appendix C](#). This type of support is a continuation of the information provided under the REACH regulation, although specific attention will be paid to priority substances. At the same time, the authorities have an interest in promoting and contributing to action at EU and international level regarding the international database and other information on alternatives.

Facilitation of the creation of Substitution communities

The authorities will invite all identified companies established in Belgium that have registered priority substances or notified the use of these substances (on the basis of the first scenario). They will encourage the extension of this network to companies in the relevant supply chain (upstream and downstream) and to RTOs.

Support from the authorities may include organising workshops, identifying companies affected by priority substances, establishing contacts with RTOs or with non-Belgian partners with similar objectives or past experience (as speakers in workshops). This support may also involve using existing forums in Belgium to promote the creation of substitution networks.

It will be up to the enterprises of the network to organize their work and define the conditions of the partnership with the aim of facilitating substitution for each participant who will have to stop manufacturing or using the substances (or stop importing and distributing the substances).

7.3.8 Development of methodology and structure to support the sustainability-focused analysis of alternatives

This measure involves the creation of a permanent structure to support the substitution of SVHCs in the context of sustainability. This structure could cover several aspects of the substitution process including monitoring of uses, prioritising support, linking up, raising awareness, training, etc.

It is essential to avoid regrettable substitutions, not only from the point of view of the safety of the alternative in terms of human exposure or the environment, but also considering all the aspects of the sustainable economy, in accordance with the 'Do not significant harm' principle and the general approach of the SSbD.

The safe and sustainable by design approach was mentioned in chapter 2 (*'Towards a toxic-free Environment: A new long-Term vision for EU Chemicals policy'*) of the communication "*Chemicals Strategy for Sustainability – Towards a Toxic-Free Environment*"²⁵. It was developed by the JRC in June 2022²⁶ and taken up in the Commission recommendation of 8 December 2022 'establishing a European assessment framework for 'safe and sustainable by design' chemicals and materials'²⁷.

The objectives of the proposed measure are to:

- a) ensure that the substitution action plans are in line with the EU assessment framework guidelines for safe and sustainable by design chemicals, and
- b) provide methodological and logistical support throughout the search for alternatives.

These methodologies will not be mandatory but should become the benchmark for demonstrating the sustainability performance of companies involved in SVHC substitution. Logistical support could, for example, consist in bringing together the various stakeholders in the ecosystem of a specific SVHC.

To this end, it is proposed to set up a structure (a specialized unit within a Federal Public Service or a collaborative network) to manage the different activities provided for in the measure. The package of actions includes a significant cooperative/consultative aspect, between authorities, representatives of the companies concerned and the research sector (academia, Research and Technology Organizations (RTO)) as well as, to a certain extent, the EU Commission²⁸.

Key elements of the measure:

- Establishment of a structure (specific unit or collaborative network) to design, perform or outsource the actions outlined in the following points:
 - Development of a **generic approach to support sustainable substitution** of SVHC. This approach covers the different stages of the substitution pathway such as: documentation development, awareness creation on use, evaluation of the substitution action plans, network development to bring

²⁵ COM (2020) 667 of 14.10.2020

²⁶ See : <https://op.europa.eu/en/publication-detail/-/publication/eb0a62f3-031b-11ed-acce-01aa75ed71a1/language-en/format-PDF/source-search>

²⁷ C (2022) 8854 of 8.12.2022

²⁸ One avenue that may be explored would be a link with the Horizon Europe project PARC that is tasked with building a toolbox to make SSbD more operational or a cooperation with INCITE (Innovation Centre for Industrial Transformation and Emissions (under IED revision).

together users, providers of alternatives and R&D community, etc. The methodology will build on and make use of EU/OECD/... sustainability approaches²⁹.

- Development of **sector-specific adaptations** to the generic methodology, including guidance material.
- Communication of the methodology through various channels.
- Training of company executives, independent experts (to the benefit of professional use associations e.g.) and other relevant professionals for the implementation of the methodologies developed.

7.3.9 Direct support of companies involved with a subsidy for advisory services (subsidy version 1)

This measure is an extension of measure 8 above but adds an element of financial support for companies.

The correct implementation of these methodologies, preferably at an early stage, is not obvious for many companies, in particular SMEs, and they may benefit from cooperating with other companies dealing with the same or similar substances. If dedicated information may be useful, it may not be sufficient for SMEs that do not have the skilled human resources in-house to implement the methodologies. External experts may be required, but this may not be affordable for such companies. It is however in the interest of society as a whole that these companies also look for DNSH alternatives rather than for a minimum or easy substitution solution to just meet their legal obligations at the time. In this case, financial support should also be provided for these companies (in addition to technical support, such as help in finding partners). This support is even more welcome to the first movers, not only to speed up the substitution process but also to support the further development of the SSbD concept.

With this approach, the authorities would accelerate the uptake of the SSbD approach (and indirectly the ESRS) to the benefit of society which will ultimately translate into reduced costs and public spending (health care, environmental remediation). It can also be a major incentive for RTOs to invest more in developing their knowledge and expertise in these areas, not only to train the necessary experts. Experts and technical centres could also develop their customer base. It may also encourage them to develop their own RDI activities with a greater focus on the SSbD Approach. If this happens, both the country's reputation and the competitiveness of our businesses will benefit.

²⁹ Presently, the methodology developed by the JRC is proposed but if there are new developments, the methodology should be adapted.

This approach is consistent with that used in the BBBC2 project, although here the initial stage receives more attention (assessment of the potential substitutes).

Once companies have identified suitable potential alternatives using the recommended methodologies, they may be eligible for other RDI funding (public or private, in line with the sustainable funding requirements).

Key elements of the measure:

- Financial support:

A subsidy for **advisory services** covering 25% of the service costs with a maximum of €25,000 per company where the need for external support has been established, e.g.

- Companies with unique uses that cannot be discussed in broader networks;
- Frontrunning SMEs;
- Consortia (associations) of professional users;
- High complexity cases in terms of technologies + circularity – climate + criticality of uses where companies on their own lack resources to identify the most adequate sustainability pathway.

7.3.10 Direct support of companies involved with a subsidy for advisory services (subsidy version 2)

This is also a variation of measure 8 but with a higher level of financial support.

The level of support proposed here is a grant for consultancy services covering 50% of the costs of the service with a maximum of €50,000 per company where the need for external support has been established.

7.4 Validation of the short list of policy measures

The procedure for selecting the ten measures followed the classic pattern based on a qualitative assessment of the proportionality of the measures envisaged. However, we felt it would be useful to add a validation stage, which involved comparing the ten measures selected with the obstacles to substitution and the major challenges presented in Table 1 and are summarised in Figure 6. This was done so that the measures could be considered to cover all the challenges, except for concerns that cannot be addressed by measures specifically aimed at SVHC substitution.

Key Challenges	Policy measures									
	1	2	3	4	5	6	7	8	9	10
	Mandatory notification of use	Substitution action plan for substances prioritised as of high relevance for Belgium	Non-financial support for the use notification and/or the substitution action plan	A subsidy for the substitution action plan	Annual fee on the use of SVHCs	A modular annual fee system	Awareness creation and facilitation of networking	Development of methodology and structure to support the sustainability-focused analysis of alternatives	Direct support of companies involved with a subsidy for advisory services (subsidy version 1)	Direct support of companies involved with a subsidy for advisory services (subsidy version 2)
1. Incentives for regrettable substitution (regulatory certainty; avoiding scrutiny etc.)		X		X	X		X	X	X	X
2. Lack of reliable criteria/methodology to conclude on the suitability of an alternative in generic (upstream) uses i.e. those with multiple 'substitution scenarios'								X	X	X
3. Incentives for applicants for authorisation not to collaborate, including intellectual property and confidential business information	The issues of preserving competitive positions or clarifying the intellectual property resulting from research are not primarily matters for a policy aimed at accelerating substitution. These issues are part of a broader regulatory approach.									
4. Uncertainties inherent to 'complex' substitution scenarios:										
· Lack of suitable alternatives at point of regulation	The measures in question are part of a plan designed to ensure, as far as possible, that industries do not have to deal with an emergency situation such as prioritisation for authorisation without alternatives being available. Feedback on knowledge of alternatives may also be useful in European decision-making processes (Restriction or Authorisation).									
· Incomplete understanding of risks and externalities of alternatives		X					X	X	X	X
· Practical constraints to substitution							X		X	
· Supply/value chain inertia (first-mover disadvantage)		X		X			X			
5. Capacity and capability constraints in the European Commission, ECHA's scientific committees, particularly SEAC as well as member State CAs	The measures considered can be seen as contributing to achieving the main objective with regard to SVHCs, which is to see them replaced as quickly as possible. Without putting too much strain on the resources available to the Belgian authorities, they can have a multiplier effect at European level and therefore reduce, to some extent, the capacity and expertise constraints weighing on the expert bodies at ECHA and in the Member States.									
6. Competitive disadvantages for EU producers (EU strategic autonomy)		X	X	X			X	X	X	X
7. Asymmetries between the Authorisation and Restriction regime										
8. Continued use of hazardous substances in 'non-essential' uses whilst guaranteeing the availability of 'essential' goods and services	Addressing this concern is not directly part of a plan to accelerate the substitution of SVHCs in Belgium.									
9. Difficulties to communicate the 'readiness' of alternatives reliably and consistently to the regulator as well as to affected supply and value chains; supply/value chain information asymmetries		X				X	X			
10. Addressing the uncertainties in the hazard and risk profile of alternatives – generating safety datasets								X		
11. Effective enforcement	X				X	X	X			
12. Regulatory inflexibility (substitution as the only means to address the identified risk)	The proposed measures should enable the authorities to be in a better position to assess the potential for substitution in a greater number of applications and, in certain cases, to consider alternative risk management measures for certain uses for which the alternative solutions are unsatisfactory.									

Figure 6: Validation of the short list of policy measures

8 Measures not selected at the Belgian level which could be considered in a broader policy framework

Detailed explanations for the non-selection of certain policy measures or actions are presented in sections 1 to 5 of [Appendix B](#). Some measures were of real interest but would rather be developed at an international level (EU or other international institution, such as the OECD) or within another framework. Other measures were not selected because they would duplicate already existing actions that can support substitution. In this case, a few changes could be proposed to increase their impact at a broader policy perspective. Financial support for RDI: This measure does not correspond to the scope we have defined (cf. detailed analysis in [Appendix A](#)) for possible measures. In the absence of a clearly identified and verified need for this type of support, and where existing tools do not meet this objective, the best approach would be to launch a public call for proposals linked to the prioritized substances (this approach could be repeated when the list of substances prioritised in Belgium is updated). This measure already exists and was presented on 15th March and 13th October 2023 as part of the 'Belgium Builds Back Circular (BBBC)' policy. The scope of substitution in the BBBC context is broader³⁰. In addition to PFAS and endocrine disruptors, it may cover the 13 substances pre-selected for prioritization or any of the Most Harmful Substances.

Education: Since the RDC Pre-study was finalised, the EU and other institutions have further developed their policy on the sustainable economy, which includes the safety of products³¹. The Safe-and Sustainable by design (SSbD) approach includes an important set of measures under development that deserve strong support³². Various reports and position papers on this European framework stress the importance of education and skills (cf. the Transition Pathway of the Chemical Industry, in particular in its Chapter II, section 7 on skills)³³. This corresponds to some of the measures of the intermediate list grouped together as change facilitation measures.

The education and skills aspects are not limited to the chemical safety and cover many other areas of sustainability. It would therefore be more effective to develop them as part of a

³⁰ The BBBC also includes a part on Ecodesign.

³¹ See the Chemical Strategy for Sustainability: Towards a Toxic-Free Environment – COM (2020) 667.

³² See also: the proposal for a Regulation establishing a framework for setting ecodesign requirements for sustainable products – COM (2022) 142 of 30 March 2022.

³³ See: https://single-market-economy.ec.europa.eu/sectors/chemicals/transition-pathway_en#:~:text=In%20January%202023%2C%20the%20European,NGOs%20and%20other%20interested%20parties.a

broader and more coherent vision, taking account in particular of the development of the European Education Area³⁴ and the European Skills Agenda³⁵.

Labelling: This is another measure that Belgium should support in a European context as the Communication on Ecodesign will specifically cover this aspect through the **Digital Product Passport** as provided for in the Communication on making sustainable product the norm³⁶. This concept could also be used to inform consumers more effectively than with the current, often confusing proliferation of labels. Developments under the Ecodesign for Sustainable products Regulation (ESPR)³⁷ should encourage the exchange of information along value chains, thereby contributing to safer and sustainable alternatives for SVHCs.

Financial support: For companies wishing to have their investments financed by a bank or other financial institution, the **EU taxonomy for sustainable activities** will play a more important role and will be the subject of many future developments. This aspect is also not specific to the substitution of SVHC substances and must be considered in the broader context of the sustainable economy, including the reduction of **financial risks** in the development of new technologies (cf. measure 16 of the intermediate list).

In terms of taxonomy or sustainable finance, particular attention should be paid to the EU's Next Generation temporary financial instrument, which covers the Belgian recovery and resilience plan, including this current project, as well as the Belgium Builds Back Circular (BBBC) investment project. Any project funded under this framework must comply with the "Do Not Substantially Harm" (DNSH) principle, which is clearly linked to the Safe and Sustainable by Design Approach.

Though this approach is clearly appropriate, it may create new obstacles to the substitution of SVHC. This aspect of DNSH was discussed in point 3.2 "Challenges when defining substitution policy measures".

Public procurement: One aspect of competition law concerns public procurement. Common rules are needed at EU level to cover all areas of the transition to a sustainable economy. Public procurement can play a vital role in helping to bring products that include truly sustainable alternatives to maturity, but the difficulty lies in the fact that these are also often more expensive than less sustainable alternatives.

Joint research: While in general it can be expected that a joint development of alternatives can be more cost effective and can lead to a shorter development cycle, a joint effort has drawbacks. The joint development of innovative alternatives may come up against obstacles

³⁴ See: <https://education.ec.europa.eu/education-levels>

³⁵ See: <https://ec.europa.eu/social/main.jsp?catId=1223&langId=en>

³⁶ COM (2022) 140 of the 30 March 2022, part of the same package.

³⁷ See in [Appendix B.3](#) point 4 on labelling and digital product passport.

linked to the general principles of competition law and intellectual property rights, particularly when the number of companies involved is limited and the size of the market concerned is restricted, leaving room for only one or two companies, even though the uses may be considered critical or essential. This may require specific rules on cooperation between companies and sharing the results of joint research. However, this issue must first be resolved at EU level. It is important to make competition and intellectual property rights experts aware of the specific problems encountered with these laws when organising an effective and rapid search for innovative alternatives. It should be noted that similar difficulties are found in other research related to the sustainable economy. EU state aid rules have recently been revised, but further improvements are still desirable. This is clearly a responsibility of the European Commission, but it is also the role of the Member States to inform the Commission and to participate actively in the consultation processes.

Reporting standards:

Corporate Social Responsibility and the Corporate Sustainability Reporting are key elements to overcome corporate inertia or shareholder indifference. They are not included in the proposed measures, because of their international dimension and their scope is much broader than the substitution of SVHCs. However, this is a dimension not to be overlooked as it can play an important supportive role, especially when large companies are concerned, which is often the case.

Beyond reporting standards³⁸ and at a more technical level, other supportive measures would be helpful such as the development of databases or even border measures (already mentioned in the pre-study, such as adapting TARIC codes to be able to differentiate the SVHC from other substances that fall under one single CN code) and generally speaking controlling the import of SVHC substances (as such, in mixtures or in articles) to ensure a level playing field. These measures were also not retained for further assessment.

³⁸ On this point particularly see the Section B point 2 as well as the [Questions and Answers on the Adoption of the European Sustainability Reporting Standards](#) of the 31 July 2023.

9 Conclusions

This part of the BEP4CAL project aimed to identify policy measures that can be used for supporting the substitution of SVHCs included in the CL and that present a higher interest in relation to the importance of their production or use in Belgium, the level of the emission and/or the opportunity the development of the alternatives may present for the Belgian economy while ensuring a reduction of the use of the concerned substances. More than simply ensuring substitution, the project aimed to identify policy measures that could accelerate the process for the concerned substances by selecting sustainable alternatives and avoiding regrettable substitution. The substances already included in the Annex XIV or Annex XVII of the REACH Regulation were not considered.

The identification of policy measures was done in three stages:

The first step was the development of a long list of measures comprising about 40 measures which were categorised into 4 broad groups: regulatory measures, economic measures, information and knowledge measures and voluntary measures (initiated or only facilitated by the authorities).

The approach taken to identify the measures in the long list that would ultimately make up the short list, took into account the fact that the long list was essentially a list of generic measures. The short list, on the other hand, was made up of measures that were clearly defined to allow for an in-depth proportionality and socio-economic analysis in Phase 4 of the project. An initial reduction of the long list to an intermediate list was thus necessary before the remaining candidate measures could be refined for Phase 4.

The intermediate list was developed based on two major considerations (i) the pathway of the substitution for a responsible enterprise aiming to identify and developed a sustainable alternative and (ii) the selection of the measures (within the long list) to be developed in Belgium that can help these enterprises and/or the authorities and/or other stakeholder that are using or producing the prioritized substances. The intermediate list consisted of 17 measures.

The intermediate list also made it possible to examine the proportionality of a wider range of measures than the short list itself. Some of these measures may prove useful in future related areas of public intervention, particularly regarding sustainability but they were not considered for various reasons such as:

- They should be developed preferably at the EU level or the international level.
- They should be considered in their own framework as they concern other cases as well.

- There are already many existing initiatives (in particular for RDI) and it is preferable to try to improve them (including organizational aspects); Additional measures of that type were also examined.
- The measures exist already and fall under the responsibility of the authorities, or they present several problems beside some intrinsic qualities. The fees/taxation are a particular as it is clearly a legitimate instrument considering the negative externalities generated by the production or the use of the SVHC. Only one measure of that type is included in the short list.

The last stage of this process was to further reduce the number of policy measures down to a short list of 10 different scenarios for which an SEA could be conducted. Through a discussion of proportionality and a refinement of measures, this stage led to the establishment of a short list, paying particular attention as far as possible to the priority substances identified in Phase 2 of the project, considering, for example, feedback from the user sectors concerned. The ten measures deemed suitable for the NPS and selected for an SEA, were expected to be more effective if developed at the Belgian level (subsidiarity consideration) and could present an interest for individual substances (vertical dimension).

The final list of policy measures identified were a combination of legal obligations and instruments with measures to facilitate change and direct support measures for businesses in carrying out a sustainability-based analysis of alternatives. These measures are summarised in Table 11.

Table 11: List of policy measures considered

Broad category of measure	Policy scenarios
Legal obligations and instruments	1. Mandatory notification of use
	2. Substitution action plan for substances prioritised as of high relevance for Belgium
	3. Non-financial support for the use notification and/or the substitution action plan
	4. A subsidy for the substitution action plan
	5. Annual fee on the use of SVHCs
	6. A modular fee system
Change facilitation measures	7. Awareness creation and facilitation of networking
Structure supportive measures	8. Development of methodology and structure to support the sustainability-focused analysis of alternatives
	9. Direct support of companies involved with a subsidy for advisory services (subsidy version 1)
	10. Direct support of companies involved with a subsidy for advisory services (subsidy version 2)

It should be noted that some policy measures overlap, particularly measures 1 to 6 and measures 8 to 10. For example, measure 4 contains all the elements of measures 1, 2 and 3, plus a grant.

This will make it possible in Phase 4 of the project, i.e. the socio-economic study, to check, for example, whether the additional elements improve the policy as a whole, or vice versa.

During the implementation of the project, the information publicly available for the identification of the uses and emissions of SVHC included in the CL of ECHA was too limited and additional consultations and surveys were not sufficient to have a good vision of the situation in Belgium for a good prioritization of substances. More information is clearly needed. This led to the proposal of a mandatory notification of the uses of the SVHC included in the CL (first scenario of the short list). If such information is available, it would help the authorities to identify the most important pieces of information to make available to the concerned enterprises and to update latter the priority list.

The priority list in itself will constantly be updated as new substances are added progressively and as other substances will later be included in Annex XIV, XVII or as substances reach their sunset date. The legal framework and its implementation at the EU level is also progressing and the same is valid for the RDI. This means that the best policy measures for an initial set of prioritized substance can be different from the one valid for a review list of priorities. So, it remains important to also consider the measures that will help the substitution of the non-prioritized substances.

Even if the list of the priorities can be optimized, it does not mean that the efficiency of policy measures will be higher for such substances compared to others. That is why an important focus was given to policy measures having an impact on the reactivity of enterprises, considering first how the responsible diligent enterprises behave and trying to promote this behaviour by specific requirements (like a mandatory substitution action plan (PASS) as proposed under measure 2) with a support for the enterprises that do not have equivalent resources (measures 3 and 4).

In order to speed up the transition to safer alternatives, a fee is proposed (scenario 5). At the same time, in order to not penalize the diligent Belgian enterprises against their competitors, such fee may be suspended, as long as the said enterprise is really working on the substitution (scenario 6).

The communication among the supply chain was identified during the consultation as an important element for a sustainable substitution, in particular when there is no clear substitute or alternative available. Cooperation and exchanges of information (best practices) can be a way to find more rapidly better alternatives. This aspect was at the heart of the measure 7.

Finally, as mentioned, as the global framework of the green economy continues to develop, enterprises have to face many challenges towards a sustainable economy. To meet the

objective of replacing the SVHC by safer alternatives and for the competitiveness of the Belgian enterprises, they must be able to find holistic solutions that are well balanced between the different targets of the sustainable economy. Measures 8 to 10 were proposed having that consideration into mind.

Appendices

Appendix A: Measures considered during the development of the project (long list of policy measures)

1 Introduction

During the development of this project, over 40 different policy measures (including variations within the same of measure) were considered on the basis of the RDC Environment and EPPA pre-study "*Development of a strategic roadmap for the substitution of SVHC as part of a sustainable economy*", own research and internal brain storming.

Table 12 provides an overview of the measures from the long till the short list.

Some measures were developed during the process, others were revised at a later stage, while others were not developed further because they were too 'theoretical' or clearly inapplicable.

Table 12: Overview of measures from long list to short list

Long List		Intermediate list	Short list
1	Notification of use to the authorities		
1.1	Voluntary notification	Voluntary notification of use	
1.2	Mandatory notification	Mandatory notification of use	Mandatory notification of use
			* Non-financial support for the use notification and/or the substitution action plan
2	Taxation		
2.1	Tax on the use of SVHC	SVHC fee	Annual fee on the use of SVHCs
			A modular annual fee system for the use of SVHCs
2.2	Notification fee		
3	Consultation with stakeholders		
4	Information on-line (targeted information)		
4.1	Dedicated website on technologies		
4.2	Other awareness raising information	Awareness creation	Awareness creation and facilitation of networking
5	Network of independent research institutes		
6	Cooperation with existing networks		
7	Support to collaboration (e.g., workshop)	Networking	
8	Diagnosis of the needs of individual enterprises	Support to SVHC diagnosis	
9	Support to consultancy by experts		
10	Support to private research	Joint research	
11	Support to private development		
12	Public research		
13	Name and shame		
14	Permitting rules		
15	Enforcement		
16	Education	Education	
17	Accreditation of experts	Accreditation of experts	
18	Action plan for substitution	Action plan for substitution	Substitution action plan for substances prioritised as of high relevance for Belgium
			* Non-financial support for the use notification and/or the substitution action plan
			A subsidy for the substitution action plan
19	Developing methodologies		
19.1	Risk assessment	Risk assessment	
19.2	Sustainability assessment method	Sustainability assessment method development	Development of methodology and structure to support the sustainability-focused analysis of alternatives
			Direct support of companies involved with a subsidy for advisory services (subsidy version 1)
			Direct support of companies involved with a subsidy for advisory services (subsidy version 2)
19.3	Analysis of alternatives	AoA method development	
19.4	Reporting standard	Reporting standards	

Long List		Intermediate list	Short list
20	Information of consumers (including professionals)	Consumer information	
21	Public-Private sustainability partnership		
22	Support to venture capital (financial risk of RDI)	Financial risk of RDI	
23	National Single point of contact on RDI		
24	Role of BELSPO and research strategy	R&D strategy	
25	Development of databases (on alternatives ...)		
26	Extension of the Corporate Responsibility; Corporate Sustainability Reporting; Sustainable Finance		
27	Border measures (customs, including new TARIC codes)		
28	Intellectual property rights and competition law (review of provisions on information sharing)		
29	Green public procurement		
29.1	Proactive public procurement		
29.2	Criteria and guidelines for public procurement		
30	Labelling and digital product passport		
30.1	Mandatory labelling and product passport		
30.2	Private initiative labelling		
31	Restrictions or bans		
32	Chemical leasing		
33	Support to the cessation of production		
34	Standards		
35	Sociology studies (& experts)		
36	Early warning		
37	Inventory of measures applicable to a substance		
38	Certification of substances		

Table 12 above shows the progression from the measures identified for inclusion in the long list to those included in the short list.

We thought it would be useful to outline the selection process in a way that highlights the deselection criteria that made it possible to sort out the measures that might have seemed attractive. That explains the design of Table 13 which represents all the policy measures in five categories:

1. **Shortlisted measures:** These are the 10 measures on the short list, some will have been reformulated and accompanied by one or two variants;
2. **Existing measures:** These are the measures in the long/intermediate list that were not selected for the short list because they have already been implemented and could, if necessary, be improved or better geared towards supporting substitution;
3. **Higher level:** These are measures that were not included in the short list because, for various reasons of legal competence, effectiveness or subsidiarity, they could be better considered at EU level or could lead to instruments developed by other institutions such as the OECD;
4. **Other framework:** Measures that should be developed within a more appropriate policy framework (such as the sustainable economy, for example, or R&D policy);
5. **Not retained:** These are measures that were not retained for reasons other than those mentioned above (i.e. existing, better at higher level, or to be developed in another framework).

It should be emphasised that if a measure has not been selected, this does not mean that it could not be useful in supporting the Belgian Strategy of substitution of SVHC.

The internal organisational aspects of the authorities were taken into account to some extent, particularly in connection with the gradual introduction of the measures. However, these aspects, as such, were not covered by the project.

Table 13: Categorisation of measures vs. shortlisted measures

		Shortlisted measures	Existing measures	Higher level	Other framework	Not retained
1	Use identification to the authorities					
1.1	Voluntary notification					X
1.2	Mandatory notification	X				
2	Taxation					
2.1	Tax on the use of SVHC					X
2.2	Notification fee	X + variant				
3	Consultation with stakeholders					
4	Information on-line (targeted information)					
4.1	Dedicated website on technologies					X
4.2	Other awareness raising information					X
5	Network of independent research institutes					X
6	Cooperation with existing networks					X
7	Support to collaboration (e.g., workshop)					X
8	Diagnosis of the needs of individual enterprises					X
9	Support to consultancy by experts					X
10	Support to private research		X (in BBBC)			
11	Support to private development		X (in BBBC)			
12	Public research		X			
13	Name and shame					X
14	Permitting rules					X
15	Enforcement					X

		Shortlisted measures	Existing measures	Higher level	Other framework	Not retained
16	Education				X	
17	Accreditation of experts				X	
18	Action plan for substitution	X + support variant				
19	Developing methodologies					
19.1	Risk assessment					X
19.2	Sustainability assessment method	X + 2 funding variants				
19.3	Analysis of alternatives	X + 2 funding variants				
19.4	Reporting standard			X		
20	Information of consumers (including professionals)		X			
21	Public-Private sustainable partnership					X
22	Support to venture capital (financial risk) (RDI)		X			
23	National Single point of contact on RDI		X			
24	Role of BELSPO and research strategy		X			
25	Development of databases (on alternatives ...)			X		
26	Extension of the Corporate Responsibility; Corporate Sustainable Reporting; Sustainable Finance			X		
27	Border measures (customs, including new TARIC codes)			X		
28	Intellectual property rights and competition law (review of provisions on information sharing)				X	
29	Green public procurement				X	
29.1	Proactive public procurement decisions					

		Shortlisted measures	Existing measures	Higher level	Other framework	Not retained
29.2	Criteria and guidelines for public procurement					X
30	Temporary support for the marketing of new innovative sustainable products				X	
31	Labelling and digital product passport				X	
32	Restrictions or bans					X
33	Chemical leasing					X
34	Support to the cessation of production					X
35	Standards					X
36	Sociology studies (& experts)					X
37	Early warning					X
38	Inventory of measures applicable to a substance					X
39	Certification of substances					X

2 Identification of possible policy measures

On the basis of the various sources of background information and with a view of proposing possible policy measures, an initial assessment of possible obstacles was carried out in parallel. This subsection groups together those that were considered during this inventory stage:

A. Confidence in the safety (measures) to control risks and hazards of SVHC (and most harmful substances (MHS) currently used; denial of the hazards/risks associated with the use of these substances.

There are various reasons for such attitudes, but they lead to a late decision to embark on substitution and entail a high risk of not developing an alternative. In addition, they are often based on a lack of knowledge/awareness about the substances and/or legislation.

It can be observed that there are two major factors that reinforce this behaviour, which are often (but not necessarily) interlinked:

- The combination of the feeling that there is plenty of time before the situation needs to be reconsidered and the opinion that, in the meantime, new solutions will appear on the market, so that any early action would be a waste of time and financial resources.
- The view that the current situation is more cost-effective (at least in the short/medium term) than any alternative solution, so that it is preferable to maintain the current use while it is still possible (and possibly move the activity outside the EEA at a later date).

This situation can be exacerbated by a feeling of non-responsibility for current harmful effects on health and the environment, particularly those resulting from end use. ("It's not my problem, but the problem of those manufacturing the final product").

Possible remedies:

- Improve information, including on alternatives³⁹. *(NB. These behaviours are difficult to detect except through direct contacts, so information campaigns run the risk of being ineffective and missing their target.)*
- Increase the responsibility of companies that manufacture, import or use these substances through various actions such as:
 - Through general legislation on corporate responsibility (including the smaller ones)

³⁹ When there are already examples of successful substitution so that the development of the own alternative is may be easier than imagined.

- For users, via better information from suppliers; although, in principle, this information should already be available via the SDS
- By introducing an obligation to notify the manufacture, import, use or supply of products incorporating SVHCs
- Labelling or equivalent (digital passport)
- Taxation
- By naming and shaming companies that are not proactive (provided they are identified)
- Improve enforcement (strict compliance with legislation);
- Permitting rules

B. Obstacles/reasons linked to the company: Size, location, history, sector, inputs ...

1. Size: The risks are probably higher in SMEs, but they are more related to certain characteristics more frequently found in SMEs without being intrinsic to them. Directly linked to the size are the issues of the availability of sufficient expertise within the company itself or the possibility, in economic terms, of having access to external expertise. Externalisation also exists in larger enterprises, in particular in autonomous entities of multinationals (so, not classified as SMEs), which are typically Belgian SMEs that were absorbed by a global enterprise.

Possible remedies

- Support for the recruitment of in-house experts
 - Specific training for internal resources
 - Help in finding qualified external support
 - Financial support for the use of external experts
 - Assessment of the company's situation - needs for sustainable adaptation covering at least the substitution of the SVHC.
2. The type of management: It may have a strong influence, particularly from shareholders (even in family enterprises) from outside the company, who often focus on short/medium term return on investment rather than on the company's corporate responsibility.
 3. The company's history (particularly for SMEs): New enterprises, even more so spin-offs, are probably more willing to consider substitution, if necessary, than an old family business that has been producing essentially the same product for several decades.
 4. The economic situation of the enterprise (viability): The company's economic situation may not allow it to invest in the search of an alternative. In these circumstances, the best option for the company may be to cease the SVHC-related activity, but at the very end (if this activity is profitable enough). However, it may be in the public interest to cease the activity as soon as possible.

Possible remedies

- Taxation/fee related to the impact on health and/or environment;
 - Support for cessation of activity (taking into account the social impact on workers, local economy...)
5. *The substitution of the SVHC is not the first priority:* The company concerned may face other challenges (which may include issues such as low energy efficiency, high greenhouse gas emissions, water supply etc.) that are considered to be priority challenges. Shareholders may consider other projects to be priorities, particularly in large companies with different activities and plants. In most cases, substitution will be considered after these.

Possible remedies

- Support for company diagnosis. This approach can lead to the development of an action plan that considers the various challenges in an integrated form.
 - Financial support for the RDI of alternatives that can change the ranking of priorities.
6. *The location of the enterprise (and other logistical aspects):* There are various aspects related to location:
- Access to various resources (such as water, possible local raw material)
 - Human resources as an important source of employment (but can be also an obstacle to recruiting new employees from afar). This also applies to the availability of housing
 - Synergies/clustering with other companies
 - Relations with local authorities and the population, as well as with regional authorities.

Implementing a good alternative may require a change in production location. It makes therefore sense to try to find, for as long as possible, another solution that will enable the business to remain in the same location or nearby.

Possible remedies

- Carry out an ad-hoc assessment (using internal or external resources).
7. *The sector of activity:* in particular its collective organization (trade association), the existence of a common research centre and other aspects of collaboration. These can contribute to effective and efficient substitution. Their absence (or weak organization), on the other hand, can have a negative impact.
8. *The inputs needed for a (theoretically) suitable alternative:* Are they readily available (including the logistical aspects)? Are they geopolitically sensitive? Are we dealing with strategic resources?

Possible remedies

- Carry out an ad-hoc assessment (using internal or external resources).

9. Communication aspects, in particular within the supply chain: Perhaps the aspect most often mentioned in contacts with stakeholders and in several studies on substitution.

Possible remedies

- Support for existing structure of this type (where they exist)
- Support for the creation of a cooperation ('substitution community')
- Improving on-line information (authorities, professional organisations, research community etc.)

10. Business confidentiality, intellectual property rights and similar aspects related to competition (level playing field) and effective enforcement of these aspects: This is perhaps an aspect that is too often neglected. Among other things, insufficiently effective enforcement of the relevant legislation leads to more confidentiality and less transparency, which makes cooperation between companies more difficult (including how to share the benefits of common actions, how to avoid natural monopolies, etc). A sub-aspect of this problem concerns border issues (customs), starting with information on imports with additional controls to ensure a truly level playing field.

Possible remedies

- Carry out a thorough review of existing legislation to identify areas that may constitute an obstacle to RDI and cooperation
- Improve the application of existing legislation.

C. Other aspects of the sustainable development/ sustainable economy, such as but not limited to climate change and the circular economy:

Companies may need to look at aspects other than just SVHC substitution. Sometimes it may make sense to deal with them one at a time (when the urgencies are not the same at company level), but in many cases it is essential to take a holistic approach. This may mean that a second-best option, in terms of a specific aspect of SVHC substitution, may be better.

This is probably even important for SMEs which are not necessarily well prepared and informed to deal effectively with such a challenge.

1. RDI aspects:

There are at least two major aspects:

- Companies' knowledge of what can be done (in terms of financing, but not only) and the maturity of research.
- The level of RDI development, which can range from basic research that does not yet offer a relevant solution, to various alternatives that are just waiting (insofar as this is possible) for the specific needs of a company and its customers.

A secondary aspect is the exchange of information about RDI needs on the one hand, and the opportunities that the current RDI offers for further development on the other, and this at various levels, including within public authorities. In addition, there may be shortages of experts, knowledge, laboratories and other technical facilities. This could be remedied by actions at education level and within their substitution 'communities of interest' (in particular for sharing existing facilities or for investments that can be shared by a larger group of companies).

Possible remedies (for RDI in general)

- Sector organizations and/or authorities can improve access to information for companies on what is available and how to have access RDI programs (and their funding).
- Improve information among authorities in charge with RDI on needs (to encourage new actions) and opportunities (to make the best use of the potential of existing programmes) relating to the substitution of SVHCs and the safe and sustainable development of alternatives.
- Develop databases on solutions.
- Facilitate the cooperation within RDI sectors, including networking of experts.
- Public funding (preferably at EU level).

2. Financial aspects: Lack of sufficient financial resources (various reasons, including refusal of proposals)

Possible remedies

- When companies are not in a position to develop an RDI strategy with their own technical and financial resources, their relations with the financial sector (in the context of sustainable finance and its various information requirements) are obviously key, but they may not have a sufficient knowledge on how to deal with sustainable finances. There is hence a need for providing them ad-hoc information (by authorities, federations, other stakeholders) on how to access finance.

- The second approach for companies is to explore opportunities for cooperation possibilities/partnerships (including within their supply chain) to cover parts of the necessary research.
 - The third approach is to make the best use of existing schemes (with some adaptations).
 - Finally, authorities can identify additional support when the previous ones are not sufficient.
 - In addition (as it is in fact underway), ensure that the sector is better informed about the value of funding certain initiatives (there are many examples of good solutions, but which are unable to find the necessary financial resources – at least within the EEA)
3. High cost of alternatives: Quite often, alternatives are more expensive, at least until they reach their full market or use potential. This can considerably slow interest in several good solutions, or even lead to them not being developed at all

Possible remedies

- Support demand, either through subsidies (cf. electric cars) or via public procurement.
 - Appropriate labelling/passport.
 - Certification of these alternatives; development of standards.
 - Information on the benefits of these alternatives for their users.
4. Down the supply chain: So far, the focus has mainly been on manufacturers, but specific user barriers (formulators, producers of articles, professional users) as well as the other supply chain actors (importers and their only representatives, distributors, transporters (of SVHCs), retail companies (supermarkets) should also be considered. Special attention should be paid to professional users. On the one hand, their situation is like that of very small companies, but on the other, their needs are generally extensive. Individually, it is very difficult for them to look for an alternative (even if practice shows that one or other may have a brilliant idea), so they need to be represented effectively (by own organisations or by their direct suppliers who have an interest in maintaining this activity).

Appendix B: Discussion of measures not selected for the short list

B.1 Existing measures

1) *Research and Development – RDC*

There are numerous programmes to support Research, Development and Innovation (RDI) at the EU level (Horizon Europe and several others), as well as at the level of other international institutions (OECD, UNEP, SAICM etc). There are also private sector initiatives, some of which receive public support (like [Suschem](#), [VinylPlus](#)). The RDC report also mentioned initiatives at federal or regional level in Belgium. These measures were focused on the sustainable economy and were essentially market-oriented rather than focusing on specific issues such as the substitution of SVHC. Systemic research aimed at changing social habits is much less common, with the exception of the EU Strategy for sustainable textiles⁴⁰ which considers the avoidance of fast fashion, or several initiatives aimed at promoting the circular economy.

The European Commission has also drawn up a Strategic Research and Innovation Plan (SRIP) for safe and sustainable chemicals and materials, which is primarily a framework approach⁴¹.

Enterprises are not necessarily aware of the opportunities offered by this support, but multiplying similar actions and spreading the available funds is not a good option either. Basically, it is up to the enterprises to ensure the costs of developing alternatives to substances that present risks for the environment or the health of the population⁴². This does not rule out action being taken to inform the companies concerned of what is available in terms of support to RDI support, funding schemes and eligibility conditions. In addition, if a company wants to find an alternative for the SVHC it uses (or manufactures), it makes sense to also consider the wider field of sustainable development. It is therefore possible to support the positive externalities of these developments or to compensate for certain market failures identified by the EU authorities. The cost of new alternatives that have not yet reached maturity is an example of a 'market failure' that may justify the use of public funds.

⁴⁰ COM (2022) 141 of 30 March 2022

⁴¹ <https://op.europa.eu/en/publication-detail/-/publication/9f04603f-534b-11ed-92ed-01aa75ed71a1/> adopted on 26 October 2022.

⁴² Enterprises are responsible of the products they put on the market (corporate responsibility of enterprises) in the framework also of the Directive 2001/95/CE on the Safety of the Products (see also the Book IX on the Belgian Economic code.

Aid schemes for RDI, in particular regarding sustainable development (or ‘green deal’) and SMEs are covered by several rules relating to the implementation of the Articles 107 and 108 of the TFUE.

The EU has adopted Regulation (EU) No 651/2014 (amended)⁴³ covering the block exemptions and which is expected to be amended further in the framework of the State aid Temporary Crisis and Transition Framework⁴⁴. If a measure does not benefit from a block exemption, it may nevertheless be compatible with the TFUE. Commission communication COM (2022) 7388 of 19 October 2022⁴⁵ provided a revised framework for state aids for research, development and innovation and its point 15 defined the compatibility criteria for measures subject to the notification obligation.

The fact that a measure is compatible does not mean that all expenditure is eligible, and additional conditions may apply. In addition, the level of the support is often limited and may vary according to the size of the company. For this last aspect, the EU principles are applicable (Commission Recommendation of 6 May 2003).

In addition of the EU legal framework, account must also be taken of the distribution of competences in Belgium in accordance with the Special Law of 8.8.1988.

In the RDC pre-study, many existing measures that can support SVHC substitution were identified (see appendices IX and X of the RDC pre-study), what was lacking however, were specific actions for SVHC substitution. It therefore seemed reasonable to increase the awareness of this specific need among people dealing with RDI while also considering other aspects of sustainable development.

In this context, as part of Belgium Builds Back Circular, a new initiative was launched in 2022 to provide an appropriate complementary policy measure corresponding to Belgium’s specific needs for the SVHC substitution with successive calls for submission of proposals, the third one being presented on 13 October 2023 with a deadline of 31 December 2023. The project was too recent to be evaluated but the approach of its technical requirements was clearly appropriated and could be further extended as an additional tool to the large number of initiatives, public or private, at the regional, federal, European or international level already

⁴³ See: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02014R0651-20210801&qid=1676200385688> recently revised and the proposal on the amendments of the General Block Exemption Regulation: https://competition-policy.ec.europa.eu/state-aid/legislation/regulations_en

⁴⁴ See: https://ec.europa.eu/commission/presscorner/detail/en/speech_23_527. The Regulation 651/2014 is proposed to remain valid until the end of 2026 (presently up to the end of 2023).

⁴⁵ See: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12777-State-aid-rules-for-research-development-innovation-framework_en

existing but to which it remains very difficult for individual enterprises (even autonomous entities or multinationals) to find their way.

This was recently highlighted in a European Commission document entitled ‘Transition Pathway for the Chemical Industry’⁴⁶. On page 15 it stated:

“Accessing EU funding for research and innovation is also more complex for SMEs, as they often lack the time, experience and skilled staff necessary to successfully apply for this funding. As they typically have few employees, SMEs rarely have dedicated staff to manage regulatory changes”.

This corresponds quite well to the proposed measure related to the diagnostic of enterprises.

The same report also encouraged (page 15) to develop “one-stop-shops” providing SMEs (and public sector organisations) with tailor-made advice and support (training, “test-before-invest”, access to financing, match-making services etc.). This was in line with the approach the BEP4CAL project took under networking.

For these reasons, no additional specific RDI action was proposed bearing in mind the importance of informing any Belgian official dealing with RDI of the specific needs of SVHC substitution and, on the part of the latter, of informing the Belgian REACH Committee of any initiative that may be relevant for Belgian companies that find themselves obliged to find alternatives.

2) “Research strategy”- RDC – Stage 2

This mainly entailed the management of information relating to research and development that was envisaged, notably through the development of single points of contact for companies and the exchange of information between authorities and with other stakeholders, with a potential important role for BELSPO. For SMEs it is difficult to easily find the best information on research and funding. As this is primarily a matter of the organisation of the authorities and as it was not possible to establish a contact with BELSPO, this policy measure was not retained.

3) Financial risks – Stage 2

The approach of this policy measure was to develop an insurance scheme for companies engaging in high-risk research and development, given that a similar system exists for export-related risks ([Credento](#)). At the meeting with the stakeholders at end of November 2022, this type of approach was not recommended, even though it is compatible with state aid rules.

⁴⁶ See https://single-market-economy.ec.europa.eu/sectors/chemicals/transition-pathway_en

In addition, the European Commission is working on a mechanism to cover the financial risks as part of the European Green Deal Investment Plan ('Just Transition Fund'⁴⁷, a part of InvestEU with an EU guarantee of EUR 38 billion supported by a combination of an EU budget of EUR 15.2 billion (i.e. 40% provision rate) and contingent liabilities for the remaining amount").

This approach could be re-examined in a larger framework (after considering possible new developments at the EU level): See section Appendix B.3.

4) Consumer information – Stage 2

A specific measure related to information for users and consumers (industrial, professional and individual), with a particular emphasis on active dialogue with these players at the end of the supply chain, who can be important drivers in the search for good alternatives, especially if they are better informed about the risks with incorporated SVHCs. In addition to these contacts and general information for the consumers, specific actions could be developed via the labelling and digital product passports (to be developed at EU level⁴⁸) on which additional information adapted to Belgium (and in French and Dutch) could support the actions undertaken at international level.

There are also interesting ongoing initiatives in other EU member States or at EU level (see the LIFE Ask REACH project⁴⁹, now available in Belgium or in the US (SaferAlternatives⁵⁰ in Massachusetts (USA)).

As with the previous measure, this measure can also be reconsidered in a broader context (based on the proportionality principle⁵¹).

NB: Consumer information, including for the professional consumers, may gain in importance with the development of the 'extended generic approach' (GRA) as envisaged in the framework of the REACH review on Article 69 (2).

⁴⁷ See also: https://ec.europa.eu/info/funding-tenders/find-funding/eu-funding-programmes/just-transition-fund_en.

⁴⁸ See, in particular, within the package of the 30 March 2022, the communication on making sustainable products the norm (COM (2022)140), the proposal for an Ecodesign for Sustainable Product Regulation (ESPR) (COM (2022) 142) and the proposal for a Directive (amending the directives 2005/29/EC and 2011/83/EU) as regarding empowering consumers for the green transition through better protection against unfair practices and better information.

⁴⁹ See: <https://www.askreach.eu/>

⁵⁰ See: <https://www.saferalternatives.org/>

⁵¹ Some efforts, if they are limited to the sole objective of the substitution of the SVHC, can be rather inefficient but they may be more efficient in a larger framework considering the large synergies they present.

B.2 Measures to be better (or further) developed at a higher level

1) Sustainability assessment method development

On 8 December 2022, the European Commission agreed on a major recommendation establishing a European framework for 'safe and sustainable by design' chemicals and materials (C(2022) 8854 final)⁵² following the circulation of several documents after the 30th March package, including the Joint Research Centre report 'Safe and Sustainable by Design chemicals and materials' of July 2022⁵³ and the Strategic Research and Innovation Plan for chemicals and materials (SRIP) made available on 26 October 2022.

This meant that the SSbD approach was well underway at EU (as well as OECD) level, including the development of sectoral guidelines. It is rather the practical implementation of these guidelines that requires action at Belgian level as proposed in the short list of measures.

The SSbD approach will continue to be developed in the coming months and years and should play a key role in the substitution of SVHCs (e.g. the Digital Product Passport under the ESPR is closely linked to the SSbD approach and is already the subject of ongoing activities). These developments at the EU level (plus some additional work at OECD level) are welcome and certainly deserve to be strongly and effectively supported by Belgium (authorities, enterprises and the professional organisations and Research and Technology Organisations (RTO), as mentioned several times in the Commission's recommendation).

2) Development of methodologies and reporting standards

Communication, whether within a supply chain or with potential partners, particularly when they are outside Belgium, is crucial. It is therefore important to find common definitions (understandable in the same way in all EU languages) and to develop common reporting standards, including on the essential data required. (See also the box under the point 4 below.) These standards can be more sector-specific (and therefore fairly vertical), but their

⁵² See : https://research-and-innovation.ec.europa.eu/news/all-research-and-innovation-news/recommendation-safe-and-sustainable-chemicals-published-2022-12-08_en

⁵³ See: <https://op.europa.eu/en/publication-detail/-/publication/eb0a62f3-031b-11ed-acce-01aa75ed71a1/language-en>.
The approach of this document is also used as reference for the design of projects under the BBBC2 call.

development should be ensured at least at EU level or better at OECD level (in cooperation with the EU).

This measure is a support tool which, as such, will not really accelerate the development of alternatives, but can contribute to their quality through more effective cooperation. The SRIP can be an ad hoc framework for this type of development.

3) Development of databases on alternatives

Such databases exist, and the OECD is also trying to identify what is being done in this area. They are not necessarily sufficient to find an alternative but are useful.

The existence of a single body (the OECD in this case) is certainly preferable to a multiplication of initiatives, and the fact that it is at OECD level is advantageous because the need for alternatives does not stop at the EU's borders.

The European Commission is promoting findable, accessible, interoperable and reusable (FAIR) data. It is developing a common data platform on chemicals to facilitate the sharing, access and re-use of existing data used in EU legal acts relating to chemicals.

At Belgian level, it is important to raise awareness on such databases and to gather information on suitable alternatives developed in Belgium.

Such databases could play a very important role in the effective development and implementation of alternatives, but there is certainly room for improvement in support of companies such as SMEs. Support of their development should be seriously taken into account in Belgium's actions in international fora.

While developing these databases, care should be taken on the positioning of the alternatives mentioned in these databases. For instance, ECHA has recently published a list with alternatives for substances on Annex XIV of REACH. This list was not validated as such by ECHA but was assembled on the basis of submitted applications for authorisation. Each of these alternatives were evaluated for suitability from the perspective of the applicant. While such a list can be informative to downstream users using the same substances in the same or similar uses, the fact that alternatives are included in this list does not mean that this alternative is suitable in general. Specific evaluation on the suitability of the alternative is still needed.

Similar considerations can be made for databases published by private organisations. In all cases it needs to be considered that the substitution of SVHCs is not only a sustainability driven process but also a commercial driven process for the hazardous substances as well as for the proposed alternatives.

4) Extension of the Corporate Responsibility of Enterprises, Corporate Sustainable Reporting, Sustainable finance

Developments at the EU level or international level (in particular the OECD) in Corporate Responsibility of Enterprises (CSR) activities can provide an important incentive to take a proactive approach to seeking suitable and sustainable alternatives, particularly for large companies. This is particularly relevant for Belgium where 83.47% of the REACH Registrations in Belgium were made by large enterprises. The development of sustainable finance, which sees the areas compatible with sustainable financing being limited, should also contribute to obliging any company seeking financing from the financial sector to already carry out initial research to develop a sustainable approach. Progress in this area could be quite important in a relatively near future. It would be important to consider the development bank requirements. In this context, see, among others, the work of EFRAG⁵⁴. The concept of DNSH used for any financial support by authorities is useful and can be strongly supported.

Although CSR (or Responsible Business Conduct) is focused on large companies, it can also be applied to small companies. In addition, the production or use of SVHCs by large companies remains significant⁵⁵, so they are an important target. Large companies must also consolidate the information from their subsidiaries and collect information throughout their supply chain (see ESRS requirements in the box below). As a result, although the number of reports is still limited, a significant part of the production (and use) of chemicals will gradually be covered. It should be an interesting source of information for the authorities, although somewhat cumbersome since the information will be available in different countries and each large parent company will have to be examined to identify the subsidiaries in Belgium. Reporting is also foreseen under private initiatives, in particular the GRI⁵⁶. The OECD is a key player in this framework via its various actions linked to due diligence, starting with its Guidelines for Multinational Enterprises and more sectoral approaches (for example on agriculture or garment and footwear) which can develop a common approach (to be implemented by the participating countries).

The major impact is to make public the activities (or their absence) related to health and environmental due diligence (and sustainable development in general).

As far as corporate responsibility and sustainable finance is concerned, the Belgian Federation of Enterprises (FEB/VBO) has devoted a substantial part of its “Reflect” magazine No. 29 of December 2022 to non-financial reporting (ESG)⁵⁷. It also covers information on

⁵⁴ The Commission adopted on 31 July 2023 the ESRS prepared by EFRAG following a public consultation

⁵⁵ In Belgium, 83.47% of the registrations were made by large enterprises against 59.28% at the whole EU level (situation on the 31 May 2023)

⁵⁶ EFRAG ensures full consistency between the GRI and the ESRS.

⁵⁷ Environmental, Social and Corporate Governance. Also, the subject of a conference on the 31 January 2023. See: Reflect #https://ec.europa.eu/commission/presscorner/detail/en/ip_21_1804 which provide also the link to the Reflect (either in Dutch or in French): <https://www.vbo.be/publicaties/reflect-vbo-feb--redt-esg-de-finance-van-uw-business/>

taxonomy. The FPS Economy is also active in this area, including on the financing of the circular economy.

The EU has its own directives, and the Member States have the option of going further than what the EU directive requires. This is probably a better approach than 'name and shame'.

European Sustainability Reporting Standards (ESRS)

EU law requires all large companies and all listed companies (except listed micro-enterprises) to disclose information on what they see as the risks and opportunities arising from social and environmental issues, and on the impact of their activities on people and the environment. This helps investors, civil society organizations, consumers and other stakeholders to evaluate the sustainability performance of companies, as part of the [European green deal](#). The information will help enterprises meet their disclosure requirements under the Sustainable Finance Disclosure Regulation (SFDR).

The Corporate Sustainability Reporting Directive (CSRD) outlines the obligation for companies to use standards to fulfil their legal sustainability reporting obligations. The Commission found it appropriate to adopt common standards to help companies to communicate and manage their sustainability performances more efficiently. Therefore, it adopted, on the 31 July 2023 a Commission Delegated Regulation supplementing Directive 2013/34/EU as regards sustainability reporting standards⁵⁸.

Although these provisions relate to a limited number of companies, the number may increase in the future and the approach may extend to related features affecting the development of substitution action plans. The provisions cover reporting and, as such, are not intended to facilitate communication along the value chain, but they can make a significant contribution (as the text is available in the 24 official languages of the EU).

Balanced with the health, social and environmental components of the sustainable economy, the ESRS provides a high-level (and detailed) approach to sound corporate financial management, which is essential for a successful substitution of SVHCs with safe and sustainable alternatives.

It will be helpful to follow the evolution of these types of reporting.

The new Regulation is based on extended preparatory work made by the EFRAG under the form of 12 ESRS⁵⁹ including, two general drafts on General requirements and General

⁵⁸ see: https://ec.europa.eu/finance/docs/level-2-measures/csrd-delegated-act-2023-5303_en.pdf and https://finance.ec.europa.eu/regulation-and-supervision/financial-services-legislation/implementing-and-delegated-acts/corporate-sustainability-reporting-directive_en

⁵⁹ see: <https://www.efrag.org/lab6>

disclosure, a draft on pollution, a draft on resource use and circular economy, a draft on workers in value chain or a draft on consumers and end users and finally a draft on the business conduct. These 12 ESRS are included in the Annex 1 of the delegated act⁶⁰.

NB: For the linguistic versions of the delegated regulation and its annexes, use the link: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13765-European-sustainability-reporting-standards-first-set_en and look under 'Commission adoption'

The information under the ESRS shall include information related to short, medium, and long-term time horizon and shall contain (among others):

- (i) a description of the undertaking's policies in relation to sustainability matters;*
- (ii) a description of the due diligence process implemented by the undertaking with regard to sustainability matters;*
- (iii) the principal actual and potential adverse impacts connected with the undertaking's own operations and with its value chain;*
- (iv) any actions taken by the undertaking in relation to actual or potential adverse impacts, and the result of such actions, (...)*

For the companies concerned, this is a good incentive not to postpone SVHC management measures. At the same time, it provides valuable information to the authorities and stakeholders.

The requirements will come into force on 1 January 2024 for large companies that were already subject to the non-financial reporting requirements of the Non-Financial Reporting Directive and will be phased-in for other categories of companies. Implementing these rules may prove difficult for some companies and require ad hoc training. At the same time, it can also encourage universities to introduce these requirements into some of their courses given that they pay greater attention to the various aspects of the sustainable economy (for example, MBAs or masters in bioengineering).

Some enterprises may also need external support from specialised consultants, especially when considering the multi-disciplinary aspect of the matter. This is also an incentive for the RTOs to adapt their offerings. This expertise may be useful to other companies which are not subject to reporting obligations, but which may be confronted with certain aspects of sustainability reporting with a view of obtaining financial support from banks or other financing institutions.

⁶⁰ see: https://ec.europa.eu/finance/docs/level-2-measures/csrd-delegated-act-2023-5303-annex-1_en.pdf

5) Customs (border) measures (including creating new TARIC codes)

This type of measures must be undertaken at the EU level. For proper monitoring of trade with third countries (and compliance with REACH), at least the SVHCs themselves should be classified separately using additional TARIC codes. This would also be useful for internal EU trade however the challenge is that it is of no use for customs or tax purposes. Even the right classification under the Combined Nomenclature is already weak when the companies concerned do not trade with non-EU countries.

ECHA's recent initiative (cf. the [Forum](#)) is an example of border measures that can indirectly encourage substitution (because one of the risks is relocation).

B.3 Measures to be (further) developed in other frameworks

Some important support measures could be developed on their own current (Belgian and/or international) context such as legislation on intellectual property rights and competition, as their improvement is necessary for many aspects of the sustainable economy, in particular in relation to the RDI. Other measures could also be considered in the framework of the Belgian Sustainable Development strategies (federal or regional level) and/or of the circular economy strategy. The first obvious example is education-related issues, which is a long-term objective. This chapter presents measures that could help to improve the Belgian SVHC substitution strategy.

1) Legislation related to intellectual property rights and competition

Insufficient intellectual property rights (IPR) protection is often a reason for not cooperating with other companies. Competition rules may, in some cases, constitute an obstacle to such cooperation and to the exchange of information. In addition, the minimum optimal size of production of a product in a particular market (normally the EU) can leave room to a very small number of producers, or even just one. In this case, joint research requires specific rules for sharing the results and benefits of research. This issue is not at all specific to SVHC substitution and is at least general in the context of the sustainable economy.

Another essential aspect is the confidentiality of the solution developed (e.g. which component was used for the substitution). Identification can be the result of costly testing, research and development. It is not in the interest of these companies to disseminate that information (and lose market share, as a result), but it also allows the continued use of SVHCs by competitors who have not found a suitable alternative yet!

This is difficult to navigate and, as such, certainly falls outside the scope of the National substitution strategy. However, innovative solutions in that field can make a significant contribution to the search for alternatives. The Unitary Patent System, which will apply from 2023⁶¹, is expected to bring significant improvements, but the subject is broader and cannot be covered in this study.

2) Green public procurement

The development of specific Green Public Procurement (GPP) requirements is not limited to product safety aspects but encompasses many different aspects that can be covered by the same technical requirements for the procurement of goods or services by public authorities.

⁶¹ See, for instance: <https://www.sirris.be/en/inspiration/sirris-patent-cell-participated-conference-unitary-patent-system>

The EU has developed GPP criteria for several sectors⁶². The OECD is also active in this area and has developed a compendium of best practices⁶³.

It remains possible to establish rules at national or regional level. As such it does not constitute a specific incentive for faster substitution and requires that an alternative already exists. It may nevertheless constitute an advantage for companies that are able to meet the requirements of these GPP contracts.

Various methods are possible, including standardisation. Implementation mainly requires the development of guidelines and should be done in close cooperation with the sectors concerned in a fully transparent manner.

3) Temporary support for the marketing of new innovative sustainable products

Temporary support for the newly developed alternative may be necessary when the cost of producing the new product in limited quantities makes it difficult to compete with the "old" products it is intended to replace while the latter are still on the market. For example, it could be applied until the sunset date of the SVHC concerned, with a certain delay to take into account the stocks remaining on the market. This approach is similar to what exists for the replacement of internal combustion cars by electric cars, for example.

Although these measures correspond to the conditions under which subsidies are justified and are compatible with EU rules on state aid and may seem interesting, they are not easy to implement and, in particular, determining the appropriate level of aid is a difficult task.

It would be preferable to have a framework law for such aid that covers all new innovative sustainable products and not just those that replace SVHCs. On the other hand, support for certain products should be decided on a case-by-case basis, provided that the link with the substance being replaced is clearly established and that it does not create unfair competition with products already on the market that have not been specifically designed to replace an SVHC.

This type of measure could therefore be developed as part of a sustainable economy strategy. It is also fairly comparable to the public procurement strategy for innovative sustainable products.

4) Labelling and digital product passport

On 30 March 2022, the Commission included in its package of measures a communication (COM (2022) 140) aimed at making sustainable products the norm. This is complemented by

⁶² See: (https://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm).

⁶³ See: <https://www.oecd.org/gov/public-procurement/green/>

a draft Regulation (COM (2022) 142) establishing a framework for setting requirements for sustainable products (and repealing Directive 2009/125/EC) (ESPR)⁶⁴.

The Ecolabel (voluntary) (Regulation (EC) No 66/2010 foresees in its Article 6(6) that *“the EU Ecolabel may not be awarded to goods containing substances or preparations/mixtures meeting the criteria for classification as toxic, hazardous to the environment, carcinogenic, mutagenic or toxic for reproduction (CMR), in accordance with Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, nor to goods containing substances referred to in Article 57 of Regulation (EC) No 1907/2006”*

The use of specific labels is interesting but can also be a source of confusion for the consumers who, over time, forget the precise meaning of the labels, particularly when there are several on the same package. National labels also create burdens for producers of other EU Member States. The EU should instead be able to offer, for example, QR codes that provide a link to a website where all relevant information about a consumer product can be found, including the various private logos.

In this context, specific Belgian labelling requirements for products incorporating SVHCs may not be the best option. This is even more true if the future development of the digital product passport is considered. This passport *‘provides for the setting of mandatory green public procurement criteria and creates a framework to prevent unsold consumer products from being destroyed’*. The communication on making sustainable products the norm also states that this passport *‘will also **help track the presence of substances of concern throughout the life cycle of materials and products, following through on commitments made in the Chemicals Strategy for Sustainability** and contributing to the EU’s aim to achieve zero pollution. Digital product passports **can also enable consumers** to make more informed choices, **improve transparency for public interest organisations and help national authorities in their enforcement and surveillance work.***

The weakness of this measure is that it will require some time before the delegated acts come into force. This will leave room for transitional measures at Belgian level (if these can be applied well before the EU texts).

Once adopted (potentially in early 2024), the ESPR will be progressively implemented by delegated acts during the period 2024-2030 and will be an increasingly important element of the Chemicals Strategy for Sustainability, providing a strong incentive to exchange information along different value chains. Companies (including SMEs) will need to adapt to

⁶⁴ The communication precises *“Regarding chemicals, the ESPR’s area of competence is clearly defined: it will be able to take action to restrict the presence of chemicals in products for reasons linked to improving the product’s environmental performance along its life cycle. This can complement existing law governing chemicals such as REACH, the primary focus of which is ensuring chemical safety”*

this new framework. Work is currently underway including as part of the CIRPASS project⁶⁵. This project will start with 3 sectors: electronics, batteries and textiles. For batteries, the rules are now set out in Regulation (EU) 2023/1542 of 12 July 2023 concerning batteries and waste batteries and must now be detailed in a delegated act under the ESPR. After the 3 sectors mentioned, the following sectors have been identified as priorities: iron and steel; cement, aluminium, furniture, tyres, detergents, paint, lubricants, chemicals and energy-related products.

5) Education – Stage 2

This policy measure is perhaps one of the most important and ranked first in the long list of measures because it covers many different aspects and has the longest impact and is not just related to SVHC substitution. It covers all aspects of sustainable development. In addition, it also involves the Communities in Belgium (even though the federal government has residual powers in this area).

The scope of application is very broad, ranging from basic education (primary and secondary schools) to higher education and other training, with an important role for the universities and high schools, including basic research. Hence, education should form part of Belgium's sustainable development strategy and become a major component that may require new institutions such as the creation of a permanent council in which education, authorities, business and other stakeholders with a particular focus, to develop the appropriate skills in society needed for sustainable development.

In the absence of an appropriate framework, more limited actions are possible, ranging from the provision of documentation for primary and secondary schools, covering various subjects such as the different sustainable development professions, an introduction to the different sciences involved and the diversity of aspects, to tailor-made training for specific needs (such as assessing what can be done by a specific company for a sustainable transition).

It is evident that the development of a genuine Belgian Strategy of Education in support of the sustainable development requires time (and this has made it even more urgent) and that, in the meantime, more limited actions can be envisaged but, again, with a priority on the broader scope of sustainable development. Some of these can be integrated into awareness-raising (development of documentation, for example) or in the networking approach which should also involve the RTOs.

The importance of education (or certain aspects of it) is now well integrated into the action programmes of EU institutions, in particular the EIT. For instance, it was recently highlighted

⁶⁵ See: <https://cirpassproject.eu/>

in the Transition Pathway for the Chemical Industry⁶⁶ (TPCI) document under the digital education action plan, the European strategy of universities. In section 7, skills reference is made to the specific situation of the SMEs that *“are especially vulnerable to the risk of employees leaving the workplace after completing the vocational education”*. Therefore, *“skills partnerships for stakeholders in the chemical industry (and skills partnerships under the Pact for Skills⁶⁷) will provide opportunities to investigate the existing and emerging skills needs across the chemical industry, including the skills needs for people working in or managing SMEs”*. Topic 23 of the pathway (Education (re-skilling/upskilling the workforce) in that section, and its sub-part ‘Adapt secondary, post-secondary and university education’ or under ‘Increasing the attractiveness of the sector (of technical level)’ develop the actions further.

The document highlights the risk of the chemical sector running out of skilled workers in technical, digital/IT, R&I, production, logistics, chemical safety and chemical regulation⁶⁸.

6) Accreditation of experts - Stage 2

Regarding education, this measure should facilitate the training of experts in the sustainable economy, including for the substitution of SVHCs and support by experts provided in the shortlisted measures.

It is recommended to develop an accreditation system for these experts either for measures financed under the NPS or other public funding and to help SMEs that do not have qualified experts on their team to outsource some tasks.

In contacts with academics, it seems that there is sufficient training in Belgium though it does not cover all the relevant aspects. It also seems that newly qualified experts are not likely to work as independent experts. Given the multidisciplinary nature of many of the tasks, consultancy firms are more likely to help the companies concerned in their substitution journey and, consequently, the consultants would need accreditation. However, experienced specialists who have worked in the manufacturing industry or in research centres may also be interested in working on a freelance basis.

⁶⁶ See: https://single-market-economy.ec.europa.eu/sectors/chemicals/transition-pathway_en#:~:text=In%20January%202023%2C%20the%20European,NGOs%20and%20other%20interested%20parties.

⁶⁷ See: <https://ec.europa.eu/social/main.jsp?catId=1517&langId=en>. The Pact is the first flagship action under the [European Skills Agenda](#). The TPCI adds that *“the EU’s Pact for Skills, for example, could provide common support, leadership and monitoring for the development of skills in the chemical industry among stakeholders in the EU chemical industry”* and that *“the SRIP (...) identifies the skills that will be critical (...)”*. See also: file:///C:/Users/jfeya/Downloads/Communication_30June_v2.pdf

⁶⁸ *“Specific attention should be given to training university students on the regulatory and safety aspects of the chemical industry”*

B.4 Other measures (not prioritised)

A number of vertical measures in the RDC report were not considered as part of the intermediate list of measures because they are part of the normal implementation of legislation by the authorities or are organisational measures for which it is difficult to define and assess their precise socio-economic impact. Indeed, in developing the Belgian strategy further, the authorities may wish to highlight their actions and the specific emphases they wish to give to some priorities. However, the Belgian authorities are currently in a better situation to define the implementation activities, given the expected contributions from the proposed policy measures. This is typically the case of implementing measures⁶⁹ or permitting rules, as well as the role BELSPO could play in the context of REACH (and sustainable development).

The taxation (fee) approach (included in the long list) and the 'name and shame' approach have been set aside mainly for legal reasons (and for practical implementation). However, a fee is proposed for notifiable substances with a possible reduction if an action plan is proposed.

Raising awareness as such is not in the shortlisted measures either. It is a measure that already exists under REACH and will support the measures selected.

1) Taxation (fees)

The application of a form of taxation on production or products presenting negative externalities as such is well motivated and certainly deserves to be considered. However, the implementation of such taxes must respect other principles such as non-discrimination (between similar products/productions) and be proportionate and non-discriminatory. In addition, the measure must avoid creating a significant competitive disadvantage for production activities in Belgium compared to elsewhere in the EU. If taxation relates to use, it must comply with the EU single market rules.

The fact that a substance requires the production of a safety data sheet, in accordance with Article 31 (1) of REACH, means that it presents risks to health and/or the environment, but that these risks can be adequately controlled. Furthermore, the impact on health and or environment must be properly assessed in terms of the volume of emissions and of the costs to society of protecting public health or the environment.

If these emissions can be correctly categorised, it may be appropriate to apply the fees/taxation not to all substances requiring an SDS but only to those at the top of the priority

⁶⁹ For example, the implementation, at the Belgian level, of the REACH-en-force 11 work package on SDS and checking the conformity with the requirements of Annex II of REACH.

list which may be considered non-discriminatory (as a prioritisation measure). Similarly, the application of a fee/taxation for any substance included in the Candidate list, or in Annex XIV can also be considered non-discriminatory, as can the application of a low fixed fee to any product placed on the market containing SVHCs. This is in theory, because in practice it would be very burdensome for the authorities and the benefits, if any, would be limited. While the principle is acceptable, it is the details (proportionality) that are problematic. Even if limited differences in the amount paid in relation to the cost for society are acceptable, major differences could easily be challenged in court.

If taxes were to be applied to a subset of substances on the candidate list (or simply subject to an SDS), the justification needs to be really strong. The fact that a methodology to prioritize certain substances would be developed will probably not be sufficient; it should be demonstrated that this would be the best possible methodology.

The alternative would be to apply a fee to any substance included in the candidate list⁷⁰ (or an equivalent list), but the fee has to be proportionated and this is challenging and quite burdensome. Only a limited fee is finally proposed accompanying the notification.

A fee system may seem simple as a concept, but its application will require a well-thought-out system for defining the tax base. For example, a substance may go through a formulation stage before being used in the manufacture of an article, and the question then arises as to who should pay the fee in order to avoid double taxation and the complications associated with linking the fee to the drawing-up of a substitution action plan.

In an attempt to address the challenge posed by a formulation step between manufacture and subsequent downstream use, Figure 7 which in a simplified way outlines a possible approach, developed based on the concept of where the function of the SVHC is used. If the function of the SVHC is required for formulation, and not for further use, it would be up to the formulator to pay the fee. If the formulator's DU uses the function of the SVHC in its manufacturing process, the DU should pay. This simplified diagram does not consider the cases that will complicate the application of the principle, for example what needs to be done when the SVHC provides a function to both the formulator and his DU. The main concern should be kept in mind, which is to link the fee to the substitution action plan.

⁷⁰ The way the substances are added in the Candidate List and at the EU level can be considered as a more valid reason of discrimination.

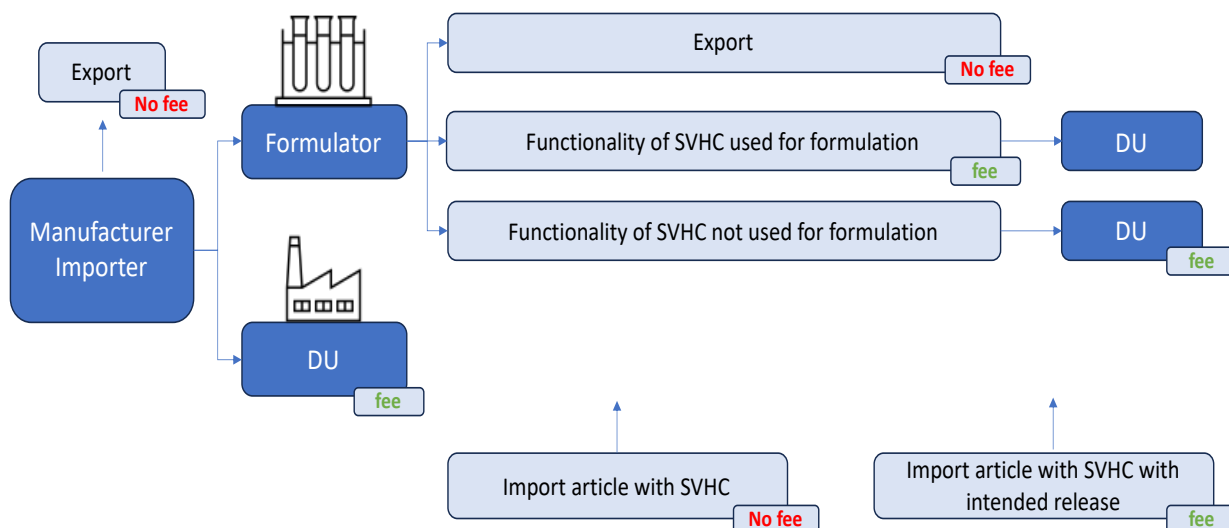


Figure 7: Simplified example of fee system built on the concept of functionality of the SVHC

In addition, it is not enough to design a good fee system, with or without exemption/reduction, it is also necessary to apply it correctly, avoiding the risks of fraud (or simply ignorance of the obligation). Applying such a fee to products from another EU Member State requires verification of its compatibility with Single Market rules.

The advantage, of course, of the fee approach is that it generates funds that can be used for the substitution strategy. However, the effectiveness of such a measure has not been demonstrated in terms of accelerating substitution by a suitable alternative. The measure may generate other strategic behaviours on the part of companies that may reduce the availability of important goods for downstream users and consumers.

Despite these considerations, the fee approach is retained in connection with the notification of CL substances. The aim is to encourage companies to draw up a substitution plan as soon as the substances are notified.

Remark on the exemption/reduction and progressivity approach to the SVHC fee

The exemption/reduction of the fees is a key element that was seen as an incentive to speed up substitution, forcing companies to be truly proactive, developing a substitution plan rather than waiting until the last moment (with a higher risk of simple 'drop-in substitution' due to lack of time). Initially the idea of introducing a progressive fee was considered; but this idea was finally abandoned as it would require a fairly high fee that could no longer be considered a fee, but rather as a tax, particularly for companies that are not seriously considering finding an alternative, but wish to take advantage of older, more profitable technologies.

2) Name and shame - RDC

The 'name and shame' approach is an incentive to be pro-active and, as such, can be an interesting way of motivating the well-known companies to avoid such embarrassment. However, it also presents a number of difficulties similar to those of fees.

Enterprises, before, being submitted to such a statement, must be given sufficient time to act proactively and find an alternative (as was envisaged for the suspension of the fees above). The starting point should be the same: the inclusion in the Candidate list or in Annex XIV. A period of 6 months to present a substitution plan could be interesting to suspend the application of such a measure to individual companies.

The measure does, however, present difficulties in terms of its practical implementation. It must first be decided by a court, which could be seen as rather burdensome for the judicial authorities. The case needs to be properly assessed, although inclusion in the candidate list may be a valid argument. In any event, companies should have the opportunity to defend their position, which would be burdensome for companies, authorities and courts.

The effectiveness of the measure depends on the extent of a brand's reputation. Those that are well known to individual customers are more affected than those that represent intermediate products in the supply chain and are not known to the general public.

The measure must also be proportionate: the impact of shaming a large company will be the same regardless of the scale of the actual threats to society. The production concerned may be totally marginal or, on the contrary, constitute a company's main activity!

It must also be proportionate in relation to equivalent measures. It might be preferable to replace it with a positive 'name and celebrate' approach, for example by drawing up a list of companies that present their sustainable development actions on line in the spirit of the Corporate sustainable reporting⁷¹ and also in the sense of the global reporting initiative (GRI). A rewards policy could also be envisaged. Positive actions should be preferred to negative ones.

A more acceptable approach than 'name and shame' could be to simply list the companies that currently manufacture or use SVHCs that are in the Candidate list (after a 6-month period) and that have not submitted a substitution plan to the authorities, given that this information is factual.

⁷¹ See: <https://www.consilium.europa.eu/en/press/press-releases/2022/11/28/council-gives-final-green-light-to-corporate-sustainability-reporting-directive/>

3) Enforcement - RDC

Enforcement is a normal task for public authorities required by Article 4(3) of the EU Treaty and Article 121 of the REACH Regulation. There is no reason to propose changes to the prioritized substances or uses. What is proposed is to improve certain aspects of it by better information through the notification of the SVHCs.

Of course, when the Belgian authorities present their strategy, they may wish to highlight certain aspects of the enforcement or priorities actions, but this is not an aspect to be covered by the measures to be prioritized.

4) Permitting rules - RDC

These rules form part of the management by the competent authorities. It is for this reason, that we can envisage helping the authorities in this specific task. The same measures as those mentioned for enforcement, such as better information, can contribute to this.

5) Awareness raising - RDC

This type of action, in particular the information to be presented online, was no longer retained as a specific measure but simply as a particular action within the framework of the measures retained. As such, it is considered as an already existing measure under REACH and does not require a decision under the NPS. Actions will focus on the retained measures (what needs to be notified, why substances are in the CL and how the list is revised, what enterprises need to do for an efficient, effective, safe and sustainable alternative by design etc. Meetings are also proposed as part of the process of setting up a substitution community for the prioritized substances.

6) Support to SVHC diagnosis – Stage 2

This measure has been considered in the intermediate list as a supporting action to other measures with the aim of helping the downstream user SMEs to complete their notification (if necessary); and essentially to start drawing up a plan of actions for substitution by carrying out an overall diagnosis of the company (through a qualified external expert). This will enable the company to clearly determine its obligations, its needs in terms of human resources (either internal or external), knowledge, exchanges of information (in the supply chain), financing (including how to participate in the existing support programmes and what needs to be done to apply for support from a funding institution) and other missing information to develop a safe and sustainable alternative. This would also cover aspects of the sustainable economy other than SVHC substitution.

In addition to notifying the authorities of use, the aim was to be able to introduce an action plan, without prejudice of the other policies measures related to the development of an action plan (now limited to the prioritized substances under measure 4) and then its actual

implementation (also, where appropriate, with support under measures 9 or 10 of the short list).

The uncertainties related to the actual need for such support and the availability of qualified experts (or the need to set up specific accreditation for such experts) mean that this measure should not be considered for inclusion in the shortlist. Furthermore, after consulting academics on the type of qualifications and curricula, present and future, it appears that this is a rather multi-disciplinary issue which may, in fact, require different experts and the support of specialized offices rather than an individual specialist.

This type of measure could possibly be considered as part of an overall strategy on the sustainable economy which would also include a section on education (or possibly a parallel strategy on education).

7) Restrictions or bans

The use of Belgian restrictions should only be considered in the context of the EU' strict Single Market rules. Belgium must comply with the free movement provisions of Article 128 of REACH. The concept of rules not harmonised by REACH is quite sensitive and must be examined on a case-by-case basis. Article 129 (safeguard clause) is more relevant, but the principle of a safeguard clause is completely different from the approach of devising measures to improve the substitution of SVHCs.

If Belgium wishes to restrict or to ban the marketing of a substance, it must meet the requirements of the [guide on Article 34 – 36 TFEU](#). Belgium would have also to follow the procedure of Directive (EU) No 2015/1535.

Furthermore, the REACH Regulation includes provisions that implicitly prohibit new national restrictions. Article 67(3) of REACH provides that until 1 June 2013, an EU country could maintain any existing and more stringent restrictions in relation to Annex XVII on the manufacture, placing on the market or use of a substance, provided that those restrictions had been notified according to the treaty. Logically, after that date, they are no longer allowed (and must of course be notified).

8) Chemical leasing

Chemical leasing is certainly a possibility that fits perfectly with a circular and sustainable economy and can be beneficial by encouraging the spread of alternative substances or technologies. However, it is linked to the characteristics of substances and uses and depends on the management choices of individual companies. It is part of new innovative models (as part of the functional economy), but it is not appropriate to elevate the approach to the level of a political measure.

As part of the diagnostic/screening support, auditors should be able to consider, where appropriate, all possible alternatives and their own merits, including these alternative economic models.

9) Requirements for public procurements

An indirect way of contributing to substitution is to support, through public procurement, the use of products for which substitution has already taken place.

Despite its own merits, this measure did not appear to be a candidate for inclusion in the shortlisted measures that would contribute to the substitution of the prioritized substances. One of the reasons for this was that it would not be easy (in particular at the Belgian level) to make a clear distinction between the sustainable alternatives and alternatives that eliminate health and environmental hazards but are not optimal from a sustainability point of view, or even regrettable substitutions with the risk of major complaints⁷².

This type of measure is, therefore, not appropriate for the narrow scope of SVHC substitution and would clearly be better used as part of the sustainable development strategies.

10) Support to the development of platforms within a supply chain

In the absence of available technical solutions for the development of suitable and sustainable alternatives, if there is a scientific basis for developing such technologies, it may be desirable to create platforms (partnership/alliances/communities) in which different actors of a supply chain concerned by the use of an SVHC will cooperate, in particular at a scientific level. The transition from basic research to the development by the individual companies is sometimes referred to as 'crossing the valley of death' and the [European Institute of Technology](#) (via its [Innovation communities](#)) was created for this purpose. The approach of the [Key Enabling Technologies](#) is also conceived in this way.

The difficulty probably lies in creating such a platform and to bring its participants together. Like existing platforms, it should be run based on contributions from participants⁷³. They can also benefit from the implementation of their work from existing support at the EU, international level or from Belgian programs.

The initiative should be voluntary and emanate from one or more potential players, especially considering that such kind of platform is generally market-led and needs to be set up at an

⁷² The complaints in the context of public procurement are a very complex issue, as those who legitimately complain generally find it difficult to obtain compensation, and the negative consequences for the public procurement contracts concerned (especially in terms of delays) are considerable.

⁷³ See, for example the [Global Battery Alliance](#). Such alliance is also driven by [the actions of the European Commission](#) (in the framework of the green deal and circular action plan) on the modernisation of the EU legislation on batteries

early stage. At this stage, the authorities have only limited information on the companies likely to be involved in the specific supply chains.

This measure was envisaged in the long list of measures. A more limited version was proposed as part of the networking by creating a platform for each prioritized substance somewhat along the lines of the SIEFs under the REACH Regulation, in which representatives of the research sector (universities, etc.) would be invited to participate as well as any interested parties in the supply chains concerned.

11) Voluntary notification of use – Stage 2

This measure was intended as an extension of the mandatory notification of use, but on a voluntary basis, and covering substances that are not yet included in the CL (typically the MHS that may be included in the CL later). It is unlikely that companies will make such notification, even if it is very simple, on a voluntary basis, except if the company has an interest in making its uses known to the authorities. Another possibility is to extend the benefit of financial aid (measures 4, 9 and 10 of the short list) to companies having made such a notification.

Given that the policy measures to be analysed in greater detail as part of the SEA are only those listed in the CL, this measure was excluded.

12) Consultation of stakeholders

The project team did not see the justification to promote this type of action, which already exists as a separate policy measure. This measure was inspired by contacts with stakeholders in the Belgian REACH helpdesk after 2008, which enabled an exchange of information on the activities of the Belgian authorities and other Belgian stakeholders, with the aim of helping companies to identify alternative substances or replacement solutions and to develop them. This measure remains a possibility for the authorities, particularly in the context of measure 7 (networking) of the short list.

13) Network of researchers

Such networks already exist, and the authorities can cooperate or encourage their development. Here again, there is no valid reason to promote them as a separate policy

measure. What was initially envisaged is largely covered by measure 7 of the shortlist. At European level, there is EUChemS⁷⁴ and at Belgian level BELNET⁷⁵.

14) Cooperation between existing networks

This is also an action that is already possible and does not need to be promoted as a new and separate policy measure. It was mentioned in policy measure 7 of the shortlist. The main existing networks are the Enterprise Europe Network⁷⁶ and Euro Chambers⁷⁷, which are represented in Belgium by the chambers of commerce⁷⁸. These chambers could help to organise events in their region, as was the case for raising awareness of REACH. Among other things, Eurochambers are developing various positions to support the development of the single market, for example on the circular economy. The Enterprise Europe Network can be an effective partner in helping Belgian companies to find partners in other EU Member States.

⁷⁴ The European Chemical Society was established on 3 July 1970 as “an umbrella organisation representing national Chemical Societies and other Chemistry organisations in Europe” with headquarters in Belgium. It represents now some 160,000 professionals from 49 Member Societies and “relies on a unique network of active researchers involved in all fields of chemistry”. It is present in 33 countries, including non-EU states such as Israel, Montenegro, North Macedonia, Norway, Russia, Serbia, Switzerland, Turkey and the United Kingdom. In Belgium, the two affiliated members are the ‘Société Royale de Chimie’ (Wallonia) and the ‘Koninklijke Vlaamse Chemische Vereniging (KVCV).

EUChemS participates in the High-Level Roundtable on the Chemicals Strategy for Sustainability.

⁷⁵ Belgian National Research and Education Network. See: https://www.belspo.be/belspo/belnet/index_en.stm

⁷⁶ See: <https://een.ec.europa.eu/>

⁷⁷ See: <https://www.eurochambres.eu/>

⁷⁸ See: <https://belgianchambers.be/en/the-chambers-of-commerce/>

B.5 Other measures not selected that were not covered by the pre-study or discussed in previous sections

Based on our own research, other measures were considered for inclusion in the long list of measures but were not selected. Some are partially covered by existing legislation.

1) Risk assessment and action plan for all CL substances

These measures, as separate actions and covering any of the CL substances, were not included in the short list. The development of a substitution plan (or 'action plan') was proposed for the prioritised substances and as a condition for benefiting from a reduced notification fee.

2) Support to the cessation of production

If a company is not in a position to develop an alternative, it may be preferable to help them put an end to SVHC-related activities before the sunset day thus avoiding continuing production that is harmful to the environment and/or to human health.

A similar measure has existed at EU level since 2007 for the impact of new agreements (European Globalisation adjustment fund for displaced workers). This measure is more of a safety net to minimise some negative impacts of the cessation of activity.

This measure, which can also be costly does not encourage the search for an alternative. It may simply eliminate the negative impact of an SVHC earlier.

3) Standards

Standards can be helpful for various aspects, including the qualification of experts and auditors, such as ISO 17000 and 17011-2017 on conformity assessment, ISO 14000 on Environmental management systems (+ 14001) or ISO 26000 on social responsibility.

Belgium's National Bureau of Standards (NBN) could be useful in identifying relevant existing standards that could support substitution.

4) Sociological studies

Most often, sociological (behavioural) aspects are not taken into account or receive limited attention, despite the fact that consumers, downstream users and stakeholder drivers play an important role in the market. A better understanding of these drivers and the underlying social norms may prove useful in anticipating the level of acceptability of a policy measure, particularly when deciding between a push and a pull measure. For example, it might be interesting to understand how teenagers concerned about climate change are prepared to

change their personal consumption behaviour (their relationship to brands, fast fashion, second hand or sorting) or how shareholders are prepared to adopt a longer-term vision or are prepared to take risks, or even how managers are ready to move to new business models etc.⁷⁹

All too often, socio-economic analyses only take into account the impacts on gender, on workers and some categories of citizens, but much less the behavioural aspects, which can be major obstacles to the adoption of innovative approaches.

5) Early warning (alert system)

An early warning system exists under Regulation 2019/1020 on Market surveillance. To add a specific alert system for SVHCs did not seem to add value.

6) Others not developed

Finally, for completeness, the following measures were initially considered for further analysis (to be included in the long list):

- Inventory of measures. ECHA has developed its PACT database and EUCLEF, so no other need was identified.
- Certification of substances identified as alternatives. In this case, the digital product passport is probably more appropriate.

⁷⁹ de Groot JIM and Schuitema G (2012) How to Make the Unpopular Popular? Policy Characteristics, Social Norms and the Acceptability of Environmental Policies. *Environmental Science and Policy*, 19–20: 100–107. <https://doi.org/10.1016/j.envsci.2012.03.004>

Appendix C: Proportionality assessment of measures of the Intermediate list

The assessment presented here is the initial one before revision of the measures for inclusion in the short list. The scoring method applied to assess the measures contained in the intermediate list is presented in Table 14.

Table 14: Scoring method for measures in the intermediate list

Very negative	Rather negative	Neutral	Rather positive	Very positive
The measure appears very problematic. The issues encountered with this measure may require significant efforts to be resolved.	The measure is problematic. The issues encountered with this measure are not expected to require disproportionate efforts to be resolved.	The measure is neutral.	The measure is considered favourable.	The measure is very favourable.
Score				
--	-	0	+	++

1. Voluntary notification of use

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Effectiveness							
Is the measure likely to increase the number and quality of substitutions compared with the current situation?	Potential to accelerate substitution without affecting the number or quality of substitutions. However, the companies that agree to notify information are most likely to be those that intend to tackle the problem of substitution.						
How likely is the increase of substitution?	The measure could create additional pressure for increased substitution.						
					1+		+1
Efficiency							
Burdens on industry in terms of costs and resources?	The data requested from companies will be limited to what is strictly necessary and available within the company.						
Burdens on authorities (including challenges related to design, implementation and/or enforcement)	Requires a legal framework, communication tools to reach the companies as well as the installation and maintenance of an appropriate IT tool for the efficient collection and use of information. This IT tool can represent a significant investment						
Time needed for the measure to produce results in terms of substitution	There is no relationship between the two						
Is the measure monitorable?	The information provided can be verified. However, it is not necessarily representative of all users.						
			1-		1+		0
Regulatory consistency and compatibility							
Compatibility with legal constraints in Belgium and, where applicable, with European legislation	Measure is compatible, even if it may require a legal text. No incompatibility with EU provisions.						
Consistency with other existing and proposed measures and regulations	The measure is consistent with other measures in the overall effort to raise awareness and promote substitution.						
					2+		2+
Broader impacts							
Impacts on the competitiveness of the Belgian enterprises concerned	No detrimental effect could be identified. The possibility that some companies will be encouraged to accelerate their substitution efforts may benefit their competitiveness.						
Impact on other dimensions of sustainability	No direct impact. Benefits could only be indirect.						
Impact on SMEs	No specific impacts identified.						
Impact on specific categories of the population or non-industry sectors	No impact expected.						
				3n	1+		1+

2. Mandatory notification of use

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Effectiveness							
Is the measure likely to increase the number and quality of substitutions compared with the current situation?	This measure is not designed to have a significant impact on SVHC substitution directly, but it can support and make possible other measures that would be part of the strategy (such as awareness creation or networking).						
How likely is the increase of substitution?	The measure could create additional pressure for increased substitution.						
					1+	2+	3+
Efficiency							
Burdens on industry in terms of costs and resources?	No significant burden is expected. The information requested from companies would be limited to directly available information and to information not yet communicated (Belgian internal rules require to not ask an information that another government body already received ('Only Once' Law (see https://www.kafka.be/fr/la-loi-only-once)).						
Burdens on authorities (including challenges related to design, implementation and/or enforcement)	The measure would require legislation which seems rather easy to define and adopt – although probably at regional level - as well as a significant investment in an appropriate IT system. Once effective, the measures will be a crucial source of information for the authorities.						
Time needed for the measure to produce results in terms of substitution	The measure will take time to be implemented but it is not directly linked to the substitution.						
Is the measure monitorable?	The measure is monitorable, but the challenge will be to identify the companies that didn't notify although using substances covered by the obligation to notify.						
			1-	1n	2+		1+
Regulatory consistency and compatibility							
Compatibility with legal constraints in Belgium and, where applicable, with European legislation	To be compatible with Belgian rules, the legislation to implement the measure may have to be adopted at regional level, leading to different times of implementation						
Consistency with other existing and proposed measures and regulations	This measure is more of a support measure and is not in contradiction with any current or planned policy action or objective.						
				1n	1+		1+
Broader impacts							
Impacts on the competitiveness of the Belgian enterprises concerned	No impact is foreseen.						
Impact on other dimensions of sustainability	There may be an indirect positive impact thanks to information collected.						
Impact on SMEs	No impact is expected.						

Impact on specific categories of the population or non-industry sectors	No impact is expected.						
			3n	1+			1+

3. SVHC fee

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Effectiveness							
Is the measure likely to increase the number and quality of substitutions compared with the current situation?	The measure is seen as an incentive to speed up substitution. This suggests that the number of substitutions will increase, although we cannot be certain that their quality will improve. In addition, there is a risk that, in some cases, the fee will lead to relocation rather than substitution.						
How likely is the increase of substitution?	The financial incentive to speed up substitution should increase substitution. It is uncertain to what extent this will happen.						
					2+		2+
Efficiency							
Burdens on industry in terms of costs and resources?	The measure will weigh on companies. Only those preparing a timely action plan will benefit from a fee reduction/or exemption.						
Burdens on authorities (including challenges related to design, implementation and/or enforcement)	Any tax measure requires a legislative framework and regular monitoring, so the effort involved cannot be underestimated. If the measure is effective and businesses are proactive, the net revenue generated by the tax, which should in particular be used to finance other incentives to substitution, could be insufficient to cover the costs of the tax itself. Even if the measure were to be implemented at European level, it would involve a long drafting and negotiation process before a directive could be put in place.						
Time needed for the measure to produce results in terms of substitution	The measure will need time to set up but once in place, effects should be relatively quick.						
Is the measure monitorable?	Authorities are equipped to regularly assess the operation of the tax system and its effects.						
		2-	1-		1+	2+	0
Regulatory consistency and compatibility							

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Compatibility with legal constraints in Belgium and, where applicable, with European legislation	No incompatibility has been identified with Belgian or EU legislation.						
Consistency with other existing and proposed measures and regulations	The measure is certainly consistent with the overall EU policy ambitions. It is not inconsistent and may even be supportive for other measures in the field of sustainability.						
						4+	4+
Broader impacts							
Impacts on the competitiveness of the Belgian enterprises concerned	A purely Belgian fee will have a significant negative impact on the competitiveness of the companies affected. An EU-wide approach may create a competitive advantage for companies in neighbouring countries such as the UK or Switzerland and could encourage relocation.						
Impact on other dimensions of sustainability	There might be a benefit through the encouragement of accelerated innovation, but the type and scale of the benefit is unknown.						
Impact on SMEs	SMEs may have difficulty coping with the measure in the absence of other support measures that would reduce their costs and mitigate uncertainty.						
Impact on specific categories of the population or non-industry sectors	The incentive to set up action plans should benefit experts.						
		2-	1-	1n	1+		2-

4. Action plan

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Effectiveness							
Is the measure likely to increase the number and quality of substitutions compared with the current situation?	It should have a significant positive impact in terms of effective, efficient, sustainable and timely substitution. This measure represents what companies would have to do on their own to achieve substitution.						
How likely is the increase of substitution?	The action plan is the right thing to do, and it should lead to an increase in substitution, provided that the industry is properly informed and agrees to participate.						
					1+	2+	3+
Efficiency							

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Burdens on industry in terms of costs and resources?	The action plan is for companies who are committed to try and achieve substitution. As such, it would not be an additional burden to them as they will need an action plan in any case. The only burden may come from the possible adaptation of the action plan to some harmonised approach in terms of content or presentation.						
Burdens on authorities (including challenges related to design, implementation and/or enforcement)	The measure requires extensive preparatory work before gradual implementation. It may require a set of guidelines to be more effective, as well as monitoring. Sufficient multidisciplinary human resources are therefore required.						
Time needed for the measure to produce results in terms of substitution	The action plan constitutes a necessary step for results to be obtained. The timing will depend on the elements of the action plan.						
Is the measure monitorable?	The measure is perfectly monitorable as there will be mechanisms to report the action plan and its follow-up.						
			1-	2n		2+	1+
Regulatory consistency and compatibility							
Compatibility with legal constraints in Belgium and, where applicable, with European legislation	A mandatory system would require legislation. A voluntary system would be possible but would be expected to be less effective. No conflicts in terms of compatibility have been identified with EU rules.						
Consistency with other existing and proposed measures and regulations	There is no inconsistency with existing measures. The action plan is a measure that would not make sense in isolation. It will have to be part of a set of measures.						
					1+	2+	3+
Broader impacts							
Impacts on the competitiveness of the Belgian enterprises concerned	There should be no negative effect on competitiveness with the action plan as such.						
Impact on other dimensions of sustainability	One of the objectives of a mandatory action plan is to ensure that substitution is considered from a holistic point of view, including sustainability.						
Impact on SMEs	The action plan proposes a methodological framework which, it is hoped, will be of greater benefit to SMEs than to large companies, which are better equipped with analysis procedures and tools.						
Impact on specific categories of the population or non-industry sectors	A pool of experts will see its know-how increased, improving their market opportunities						
				1n	3+		3+

5. Education

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Effectiveness							
Is the measure likely to increase the number and quality of substitutions compared with the current situation?	As such, the measure is not intended to increase substitution, its quality or to speed it up. It is a support measure that contributes to the overall objective.						
How likely is the increase of substitution?	The impact on substitution in the strict sense (i.e. not including the broader dimension of sustainability) would be rather limited. In the medium term, support for the quality and availability of experts/auditors may improve the prospects for substitution.						
				1n	1		+1
Efficiency							
Burdens on industry in terms of costs and resources?	The measure does not create additional burdens on industry. Additionally, the cost-benefit ratio of training should be positive.						
Burdens on authorities (including challenges related to design, implementation and/or enforcement)	The measure will require a heavy investment in terms of time and resources for the authorities. It will require cooperation with the educational sector and business organisations and dedicated programs. The creation of a forum to take charge of certain aspects of training content could help ease the burden in the medium term.						
Time needed for the measure to produce results in terms of substitution	The measure is not intended to address immediate substitution issues						
Is the measure monitorable?	The measure can be monitored (inventory of actions) but the monitoring of its efficiency will require additional evaluation mechanisms).						
			3-			2+	-1
Regulatory consistency and compatibility							
Compatibility with legal constraints in Belgium and, where applicable, with European legislation	At Belgian level, there is no risk of incompatibility if the actions are designed within the current framework, and if a broader measure is not adopted as part of the federal sustainable development plan. No inconsistency with EU legislation (competition e.g.).						
Consistency with other existing and proposed measures and regulations	The measure is essentially a support measure for the overall objective.						
					4+		+4
Broader impacts							

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Impacts on the competitiveness of the Belgian enterprises concerned	The impact of such a measure on the competitiveness of Belgian industry and the Belgian economy will be difficult to establish, as other factors come into play, such as pressure to innovate from foreign competitors. The measure will help to better equip companies to meet the challenges of substitution.						
Impact on other dimensions of sustainability	Education and training will inevitably touch upon other aspects of sustainability.						
Impact on SMEs	With their limited resources, SMEs are likely to benefit more than larger companies.						
Impact on specific categories of the population or non-industry sectors	Potential benefits for the education sector and even more so for employment services such as Forem, VDAB or Actiris, thanks to a potential reduction in the mismatch between training and the needs of industry in terms of sustainability.						
					3+	2+	+5

6. Awareness creation

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Effectiveness							
Is the measure likely to increase the number and quality of substitutions compared with the current situation?	By making the companies concerned aware of the assistance they can obtain, the measure can help to increase the number and quality of substitutions. Even without the adoption of other measures, better information will contribute to substitution, without necessarily speeding it up.						
How likely is the increase of substitution?	Not easy to assess. This will also depend on the quality of the information provided and therefore on the resources available for this task. As an isolated measure, the impact would be limited or non-existent. Combined with other measures, it should be positive but depends on the quality of the information as indicated above.						
				1n	1+		1+
Efficiency							
Burdens on industry in terms of costs and resources?	The measure will provide a benefit to the companies						

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Burdens on authorities (including challenges related to design, implementation and/or enforcement)	The measure requires sufficient resources, to regularly find information relating to the strategy (also in the context of other policies such as the EU's sustainable finance and its taxonomy + requirements for companies seeking support) and, if necessary, to take part in events, make presentations, etc. Finding information in areas related to REACH may prove more difficult. The fact that the REACH Helpdesk unit is currently located within the Sustainable Economy/Circular Economy Unit is an advantage.						
Time needed for the measure to produce results in terms of substitution	The measure is intended to promote and accelerate substitution. It has no direct effect and the time needed for results would probably be in the medium-term range.						
Is the measure monitorable?	Yes, this is possible thanks to the feedback forms and the substitutions themselves. The information provided online, the documents produced and participation in the organisation of events are clearly verifiable.						
			1-	1n	2+		1+
Regulatory consistency and compatibility							
Compatibility with legal constraints in Belgium and, where applicable, with European legislation	No problem of incompatibility at Belgian or EU level.						
Consistency with other existing and proposed measures and regulations	No inconsistency identified as the measure can help implement other measures.						
					4+		4+
Broader impacts							
Impacts on the competitiveness of the Belgian enterprises concerned	If the measure were taken in isolation and given the avalanche of information that companies have to process, it is possible that its impact would be limited. The uncertainty explains the neutral score.						
Impact on other dimensions of sustainability	As above.						
Impact on SMEs	SMEs may benefit most as they are the most at risk of having insufficient knowledge to even consider steps.						
Impact on specific categories of the population or non-industry sectors	Other stakeholders may benefit such as consumers and their representative organisations or some NGOs.						
				2n	2+		2+

7. Networking

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Effectiveness							
Is the measure likely to increase the number and quality of substitutions compared with the current situation?	By facilitating contacts and supporting partnerships, the measure can positively influence the level and quality of substitution. There is positive feedback on similar initiatives in France, for example.						
How likely is the increase of substitution?	The increase is very likely though its magnitude is uncertain.						
					1+	2+	3+
Efficiency							
Burdens on industry in terms of costs and resources?	No significant costs are anticipated, apart from the time required to participate in and to follow up on networking events.						
Burdens on authorities (including challenges related to design, implementation and/or enforcement)	Will not work without a significant effort on the part of the civil servants directly involved in business support (those who also deal with measure 6 (SVHC fee, for example). They may be overloaded with other tasks. The measure requires significant involvement of existing networks/organisations.						
Time needed for the measure to produce results in terms of substitution	This is impossible to estimate.						
Is the measure monitorable?	Difficult to control the real impact on substitution (rather through voluntary declarations).						
			1-	2n	1+		0
Regulatory consistency and compatibility							
Compatibility with legal constraints in Belgium and, where applicable, with European legislation	No incompatibility can be identified as the measure consists in voluntary initiatives.						
Consistency with other existing and proposed measures and regulations	There are no inconsistencies with existing Belgian or EU rules. The measure can help make other measures considered in this study more efficient.						
					2+		2+
Broader impacts							
Impacts on the competitiveness of the Belgian enterprises concerned	This measure poses no risk to the competitiveness of the Belgian companies concerned. It could have a positive impact.						
Impact on other dimensions of sustainability	There is some potential but may depend on the cases and on other measures considered.						

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Impact on SMEs	The measure can be beneficial if networking is organised in a decentralised manner.						
Impact on specific categories of the population or non-industry sectors	No impact was identified.						
				1n	2+	2+	4+

8. Consumer information

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Effectiveness							
Is the measure likely to increase the number and quality of substitutions compared with the current situation?	It is unlikely that the measure may have an impact on the number of substitutions but it may influence the quality of some substitutions.						
How likely is the increase of substitution?	Effect should be marginal.						
				1n	1+		1+
Efficiency							
Burdens on industry in terms of costs and resources?	No specific burden has been identified.						
Burdens on authorities (including challenges related to design, implementation and/or enforcement)	There is little involvement of authorities.						
Time needed for the measure to produce results in terms of substitution	There is no direct link between the measure and timing of substitutions.						
Is the measure monitorable?	Monitoring will require surveys.						
				2n	2+		2+
Regulatory consistency and compatibility							
Compatibility with legal constraints in Belgium and, where applicable, with European legislation	No inconsistency has been identified.						
Consistency with other existing and proposed measures and regulations	No inconsistency has been identified. The measure may increase the efficiency of other measures considered in the study.						
						4+	4+
Broader impacts							

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Impacts on the competitiveness of the Belgian enterprises concerned	No impact is expected.						
Impact on other dimensions of sustainability	May have an indirect impact, especially in the direction of higher quality substitutions.						
Impact on SMEs	None expected generically.						
Impact on specific categories of the population or non-industry sectors	Consumers should benefit from the information.						
				2n	1+	2+	3+

9. Joint research

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Effectiveness							
Is the measure likely to increase the number and quality of substitutions compared with the current situation?	The introduction of this measure could have a good impact on the quality of substitution by pooling resources and capacities. If it solves the problems encountered by isolated companies that do not have the resources to carry out substitution research, the number of substitutions could be increased.						
How likely is the increase of substitution?	There is a high level of uncertainty about the conclusions of joint research in terms of effective substitution.						
				1n		2+	2+
Efficiency							
Burdens on industry in terms of costs and resources?	The risk of not achieving effective cooperation can be significant and could be a waste of time and resources. However, this depends on the substance and the sector under consideration. Some sectors have more practice in this area (textiles).						
Burdens on authorities (including challenges related to design, implementation and/or enforcement)	Not expected to be significant						
Time needed for the measure to produce results in terms of substitution	Depending on substance and sector, the measure may accelerate the development and introduction of alternatives.						
Is the measure monitorable?	Yes, as joint research initiatives will be communicated (be it voluntarily).						

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
					4+		4+
Regulatory consistency and compatibility							
Compatibility with legal constraints in Belgium and, where applicable, with European legislation	There are no inconsistencies with Belgian and EU rules if the level of involvement of the authorities remains low and does not affect competition.						
Consistency with other existing and proposed measures and regulations	The measure is not inconsistent with existing measures nor with measures considered in this study.						
					2+		2+
Broader impacts							
Impacts on the competitiveness of the Belgian enterprises concerned	Successful joint research is expected to be beneficial to the Belgian companies involved and, potentially, to their supply chains.						
Impact on other dimensions of sustainability	Indirect positive impact, depending on the adoption of other measures promoting the uptake of the broader sustainability view.						
Impact on SMEs	Potentially positive impact (joint research may reduce costs)						
Impact on specific categories of the population or non-industry sectors	Existing R&D centres will improve qualifications.						
					4+		4+

10. Support to SVHC diagnosis

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Effectiveness							
Is the measure likely to increase the number and quality of substitutions compared with the current situation?	This measure aims to support the development of an action plan for the management of SVHCs at the level of companies that manufacture, import or use these substances. The aim is to develop sustainable alternatives or, where appropriate (e.g., for substances not included in Annex XIV of REACH and not prioritised by Belgium), to adopt effective risk reduction measures. Consequently, the measure is considered to have a positive impact on the overall objective.						
How likely is the increase of substitution?	The proactive approach and the expected quality of the audit should help to accelerate substitution						
					2+		2+
Efficiency							
Burdens on industry in terms of costs and resources?	Companies can outsource part of their work, which should reduce their burden.						
Burdens on authorities (including challenges	The measure is a priori costly if a satisfactory level of success is to be achieved. It also requires considerable						

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
related to design, implementation and/or enforcement)	preparation. However, the level of financial support (percentage of the cost of the diagnosis) can be reduced. It should be noted that assessment by appointed experts is common practice when citizens apply for financial aid (for energy savings, for example). The authorities therefore have experience of this type of measure. Defining the scope and parameters of the diagnosis will be a complex task, and adopting the legal framework may take time. In addition, the measure should logically be adopted at regional level. However, the text creating the legal framework may cover more than the substitution of SVHC (including other support linked to the sustainable economy). Implementation should not be more complex than in the case of similar policies (e.g. support for energy saving).						
Time needed for the measure to produce results in terms of substitution	The preparation and adoption of legal texts involving the different levels of government in Belgium may take time. Once the texts implemented, the measure is expected to rapidly produce results.						
Is the measure monitorable?	The measure can be monitored through an adequate evaluation scheme.						
			1-		1+	2+	
Regulatory consistency and compatibility							
Compatibility with legal constraints in Belgium and, where applicable, with European legislation	If the aid does not exceed what is compatible with EU state aid rules, there is no risk of any conflict.						
Consistency with other existing and proposed measures and regulations	As indicated in introduction to this measure, it would be consistent with other measures considered in this report.						
						4+	
Broader impacts							
Impacts on the competitiveness of the Belgian enterprises concerned	By enabling companies to have a professional diagnosis of the vulnerability of their business in terms of sustainability due to the use of SVHCs, the measure will help to maintain or improve their competitiveness. This will benefit the entire industrial fabric and the Belgian economy in general.						
Impact on other dimensions of sustainability	Provided the diagnostics tools are designed to look beyond the presence of SVHCs, they may force companies to adopt a broader view of how to address the SVHCs identified.						
Impact on SMEs	The measure is designed to fill a gap, namely the limited resources that many SMEs have at their disposal to tackle this issue. It will therefore primarily benefit these companies.						
Impact on specific categories of the population or non-industry sectors	Any support for substitution can only benefit the population, even if in some cases there is no exposure. The measure will develop a sector of expertise in Belgium.						
					2+	4+	6+

11. Accreditation of experts

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Effectiveness							
Is the measure likely to increase the number and quality of substitutions compared with the current situation?	The measure should increase substitution, thanks to the expertise that will be developed, and improve the sustainability of alternatives, thus avoiding regrettable substitutions.						
How likely is the increase of substitution?	There are uncertainties as to the number of experts and diplomas that would be certified. However, the increase in experts' qualifications should help to speed up substitution.						
					1+	2+	3+
Efficiency							
Burdens on industry in terms of costs and resources?	This measure does not entail any costs/burden for the industry.						
Burdens on authorities (including challenges related to design, implementation and/or enforcement)	The measure is rather difficult to implement, as there is a high risk that the Belgian accreditation body (BELAC) will not have the necessary human resources. It is not easy to estimate, ex ante, the number of training centres that will apply for accreditation (the first stage of training) and the number of experts who will apply for certification. The framework exists (BELAC) but the criteria defining the certificates will have to be defined. It may also be difficult for potential accredited centres to adapt to the specific objectives of substitution. However, this approach could serve as a pilot to be generalised to the various aspects of the sustainable economy (the circular economy in particular).						
Time needed for the measure to produce results in terms of substitution	Implementation will take time, more than for the first substances to be substituted.						
Is the measure monitorable?	The measure in itself constitutes a form of monitoring, hence the follow-up shouldn't be difficult to organise.						
			1-	2n		2+	1+
Regulatory consistency and compatibility							
Compatibility with legal constraints in Belgium and, where applicable, with European legislation	The only issue that will require some attention will be the accreditation of non-Belgian experts.						
Consistency with other existing and proposed measures and regulations	The measure poses no problem of consistency with other possible measures or existing mechanisms, even beyond the scope of SVHC substitution.						
					2+		2+
Broader impacts							
Impacts on the competitiveness of the Belgian enterprises concerned	By increasing the expertise available to Belgian companies, the measure should contribute to their competitiveness. The expertise will also benefit the						

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
	Belgian economy and society in general through improved sustainability performance.						
Impact on other dimensions of sustainability	As indicated above, the impact is expected to be positive thanks to increased knowledge and know-how.						
Impact on SMEs	(SMEs would be the prime target of this measure						
Impact on specific categories of the population or non-industry sectors	The measure will benefit experts/auditors and training centres.						
					4+		4+

12. Risk assessment

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Effectiveness							
Is the measure likely to increase the number and quality of substitutions compared with the current situation?	The measure should improve the quality of knowledge necessary to avoid regrettable substitution which will therefore improve the quality of some substitutions.						
How likely is the increase of substitution?	No marked positive effect is expected						
				1n	1+		1+
Efficiency							
Burdens on industry in terms of costs and resources?	The measure shouldn't lead to additional burdens for companies dedicated to substitution. The risk assessment may even create benefits at a later stage.						
Burdens on authorities (including challenges related to design, implementation and/or enforcement)	The measure requires an ad hoc legal basis and the definition of minimum requirements for risk assessment and for the identification of companies for which it is important to have such a verified risk assessment.						
Time needed for the measure to produce results in terms of substitution	The measure will require time for its implementation and will not lead to increased substitution in the short term.						
Is the measure monitorable?	Procedures to check the implementation of the measure and the quality of the risk assessment can be put in place with the legal instrument.						
			2-		2+		0
Regulatory consistency and compatibility							
Compatibility with legal constraints in Belgium and, where applicable, with European legislation	The measure requires an ad hoc legal basis but is not incompatible with Belgian and European rules.						

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Consistency with other existing and proposed measures and regulations	The measure could be consistent with measure 9 (or 2) for the main source of information and to measure 7 for its effective use. Some businesses may need external support (see measures 3 and 4).						
					2+		2+
Broader impacts							
Impacts on the competitiveness of the Belgian enterprises concerned	No specific impact is anticipated. There could be benefits downstream if the quality of the alternatives is improved.						
Impact on other dimensions of sustainability	No direct impact (indirectly if it contributes to adopting a more sustainable alternative).						
Impact on SMEs	No specific impact is expected.						
Impact on specific categories of the population or non-industry sectors	No specific impact is expected.						
				4n			0

13. Sustainability assessment method development

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Effectiveness							
Is the measure likely to increase the number and quality of substitutions compared with the current situation?	It is unlikely that this measure will increase the number of substitutions, but it may help to improve the quality of the alternatives adopted.						
How likely is the increase of substitution?	There is no direct link between this measure and the magnitude of substitution.						
					1+		1+
Efficiency							
Burdens on industry in terms of costs and resources?	The expected impact is minimal						
Burdens on authorities (including challenges related to design, implementation and/or enforcement)	If an international approach is followed for the first stage, the burden on the authorities is limited (Belgian participation in the competent body). If methods specific to Belgium are encouraged or even required, this implies having a good approval procedure. ⁸⁰						

⁸⁰ In the meantime (August 2023), it seems that an EU-wide development is underway, so the question is no longer relevant.

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Time needed for the measure to produce results in terms of substitution	The measure may take some time to be deployed						
Is the measure monitorable?	The methodology itself can be peer reviewed.						
			2-	1n	1+		-1
Regulatory consistency and compatibility							
Compatibility with legal constraints in Belgium and, where applicable, with European legislation	There is no incompatibility nor complexity except if the methodology/ies is/are made mandatory and public support mechanisms are put in place.						
Consistency with other existing and proposed measures and regulations	There is no inconsistency. The measure could serve as support to other measures.						
				1n	1+		1+
Broader impacts							
Impacts on the competitiveness of the Belgian enterprises concerned	No impact is foreseen.						
Impact on other dimensions of sustainability	By definition, the measure aims to improve the way in which other aspects of sustainability are taken into account.						
Impact on SMEs	SMEs could be the main beneficiaries of this measure, as they have the most difficulty in integrating the various dimensions of sustainability.						
Impact on specific categories of the population or non-industry sectors	The methodology will have a positive impact on the skills of Belgian experts and vocational education and training establishments.						
					3+	2+	5

14. Analysis of alternative sustainability method development

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Effectiveness							
Is the measure likely to increase the number and quality of substitutions compared with the current situation?	The measure can improve the quality of substitutions, but not their number, because the analysis is only relevant when a substitution is envisaged.						
How likely is the increase of substitution?	It is unlikely that the measure can contribute to increasing (and accelerating) substitution. It is typically aimed at the quality of substitution.						
			1-			2+	1+
Efficiency							
Burdens on industry in terms of costs and resources?	The method development will not cause any burden to industry. The application of the methodology may be burdensome when considering experience with existing schemes.						

Burdens on authorities (including challenges related to design, implementation and/or enforcement)	Taking over existing methodologies, developed in international for a, for example, would significantly reduce the burden.						
Time needed for the measure to produce results in terms of substitution	Depending on the approach chosen (taking over an already existing methodology or developing a tailor-made one), the time needed may vary to some extent.						
Is the measure monitorable?	Yes, via the contracting authority's internal control systems, which are trying to develop, and via the clauses of the service contract.						
				2n	1+	2+	3+
Regulatory consistency and compatibility							
Compatibility with legal constraints in Belgium and, where applicable, with European legislation	There is no incompatibility, especially if the measure is purely voluntary, under the form of a guidance.						
Consistency with other existing and proposed measures and regulations	There is no contradiction with any existing legal provision or policy objective. It could increase the efficiency of some other measures considered in this study.						
						4+	4+
Broader impacts							
Impacts on the competitiveness of the Belgian enterprises concerned	The measure promotes the quality of the analysis of alternatives, and this should have a favourable influence on the competitiveness of companies, in the long run.						
Impact on other dimensions of sustainability	A positive impact is the object sought as the measure intends to broaden the AoA approach toward more sustainability.						
Impact on SMEs	The measure does not target specific categories of businesses and it is difficult to determine whether SMEs will benefit.						
Impact on specific categories of the population or non-industry sectors	The measure should lead to an overall benefit for the quality of life in Belgium through the promotion of sustainable alternatives.						
				1n	2+	2+	4+

15. Reporting standard

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Effectiveness							
Is the measure likely to increase the number and quality of substitutions compared with the current situation?	The measure should have a positive impact, the magnitude of which is however impossible to estimate.						
How likely is the increase of substitution?	The probability of this effect is uncertain.						

				1n	1+		1+
Efficiency							
Burdens on industry in terms of costs and resources?	The burden is expected to be limited.						
Burdens on authorities (including challenges related to design, implementation and/or enforcement)	Normally, this is not a burden for the Belgian authorities, unless no initiative of this type can be developed at OECD or EU level (or, by default, at the initiative of certain sectors). Development and promotion at Belgian level may prove burdensome. It is not easy to develop a good reporting standard covering all relevant aspects with sufficient flexibility. This generally requires good cooperation, which is not easy to organise.						
Time needed for the measure to produce results in terms of substitution	It will depend on how the measure can be develop (international cooperation, industry initiatives, Belgian initiative). If the measure is to be made mandatory, a regulatory text will be needed, which requires time, especially if agreement needs to be found at EU-level, for example.						
Is the measure monitorable?	The measure is easy to monitor.						
				2n	1+	2+	3+
Regulatory consistency and compatibility							
Compatibility with legal constraints in Belgium and, where applicable, with European legislation	A mandatory measure will require legislation where issues may appear with EU rules.						
Consistency with other existing and proposed measures and regulations	No inconsistency with existing rules could be identified. The measure can complement other measures considered in this study.						
			1-		1+		0
Broader impacts							
Impacts on the competitiveness of the Belgian enterprises concerned	The measure should not jeopardize competitiveness, especially not if the standard is European.						
Impact on other dimensions of sustainability	No specific impact expected.						
Impact on SMEs	May help in communication with potential R&D or business partners internationally.						
Impact on specific categories of the population or non-industry sectors	No specific impact anticipated.						
				3n	1+		1+

16. *Financial risks (related to research)*

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Effectiveness							
Is the measure likely to increase the number and quality of substitutions compared with the current situation?	The measure is likely to facilitate R&D in areas where the risk of failure or regrettable substitution is higher.						
How likely is the increase of substitution?	High uncertainty in the absence of additional information on the likelihood of companies meeting the conditions for such action. The effect may however be limited in terms of number of projects.						
					2+		2+
Efficiency							
Burdens on industry in terms of costs and resources?	There might be some administrative burdens to prepare the dossiers and follow the conditions of the insurance.						
Burdens on authorities (including challenges related to design, implementation and/or enforcement)	The measure will require a legal provision and a potentially substantial budget (depending on the level of insurance coverage provided and the type of agreement that may be concluded with the financing sector)						
Time needed for the measure to produce results in terms of substitution	The measure should not take too much time to be implemented. It may ultimately accelerate the time of substitution in some projects.						
Is the measure monitorable?	The measure will consist in several procedures that will allow easy monitoring.						
			-1	1n	1+	2+	2+
Regulatory consistency and compatibility							
Compatibility with legal constraints in Belgium and, where applicable, with European legislation	A more specialized screening of the Belgian legislation related to the financing of research (and compatibility with EU competition rules) would have to be performed. In principle, but to be confirmed, there should be no insurmountable difficulties.						
Consistency with other existing and proposed measures and regulations	A priori, no inconsistencies with existing rules and the measure could fit in a package of measures to improve substitution.						
				1n	1+		1+
Broader impacts							
Impacts on the competitiveness of the Belgian enterprises concerned	The removal of financial barriers to the search for innovative and sustainable alternatives should benefit the competitiveness of Belgian companies.						
Impact on other dimensions of sustainability	The impact would be through the avoidance of regrettable substitution.						
Impact on SMEs	Unclear if the measure will attract SMEs although it reduces their risks.						

Impact on specific categories of the population or non-industry sectors	No impact is expected for other categories.						
				1n	2+	2+	4+

17. Research strategy (information on RDI)

Criteria	Discussion	Scoring					Total
		--	-	0	+	++	
Effectiveness							
Is the measure likely to increase the number and quality of substitutions compared with the current situation?	The increase will be the result of better information on RDI programmes or new programmes likely to provide a better response to the issue of research and development of appropriate (and sustainable) alternatives.						
How likely is the increase of substitution?	The measure will have no direct impact.						
				1n	1+		1+
Efficiency							
Burdens on industry in terms of costs and resources?	No burden has been identified.						
Burdens on authorities (including challenges related to design, implementation and/or enforcement)	There will be more work for the department which would facilitate the exchange of information but should be useful for the others; clearly requires more staff for Belspo which is already overloaded with work or any other service which would take on the main task; a subtle sharing of skills/responsibilities will have to be found between different services.						
Time needed for the measure to produce results in terms of substitution	There are many intermediate steps between the strategy and the results in terms of substitution.						
Is the measure monitorable?	The link between strategy and results in terms of substitution is difficult to establish....						
			1-	2n	1+		0
Regulatory consistency and compatibility							
Compatibility with legal constraints in Belgium and, where applicable, with European legislation	There is no problem with EU legislation and the measure should not require legislation, only legal adaptation by Royal Decree or Ministerial Order, if adopted at federal level.						
Consistency with other existing and proposed measures and regulations	The measure will help ensure consistency in strategies and policy measures.						

				1+	2+	3+
Broader impacts						
Impacts on the competitiveness of the Belgian enterprises concerned	The impact could only be indirect and certainly limited					
Impact on other dimensions of sustainability	The impact would be via the development of more sustainable alternatives.					
Impact on SMEs	SMEs may benefit indirectly through the improvement of information available to experts/auditors					
Impact on specific categories of the population or non-industry sectors	R&D centres may benefit.					
				3+	2+	5+

Appendix D: Selected measures for the shortlist

This appendix provides an extended description of the measures already presented in section 7.3, describing them as they were proposed in preparation of the socio-economic analysis. For the ten measures that have been considered the most suited as a package, the discussion extends to a qualitative description of their expected costs and benefits (prior to socio-economic analysis). It has to be noted that the measures not retained are essentially variations of the measures retained.

1. Mandatory notification of use (Measure 1)

Rationale and purpose of the measure

Under the REACH Regulation, substances that are included in the Candidate List (CL, i.e. list of Substances of Very High Concern) should be phased-out in the future and should eventually be prioritized for Authorisation.

Belgian companies should therefore initiate or accelerate efforts to identify and implement alternatives for these substances.

The registration dossiers provide information from the manufacturers, importers and only representatives of non-EU manufacturers. Despite this, the Belgian authorities know little about the actual use at downstream user level and have little data at hand to decide which SVHCs used in Belgium are particularly relevant. This policy scenario aims at addressing this data gap, which has severely hampered the work on mapping current use of SVHCs in Belgium and complicated the prioritization for substitution.

The notification of the use of substances included in the Candidate List of Substances of Very High Concern will allow Belgian authorities to:

- have a regular (foreseen yearly) view of the use of SVHCs in Belgium
- prioritize SVHC relevant for Belgium

Key elements of the measure

- The Federal authorities will establish an on-line register for notification by Belgian companies of the use of any substances on the CL.
- Within [6] months of the application of this rule or [6] months after the inclusion of a new substance in the CL, downstream users of substances on the CL will be required to provide at least the following information:
 - Name of company, location and enterprise number

- Name and EC number of the SVHC used and its supplier(s)
- Use descriptions and volume used (in principle the volume supplied)⁸¹
- The proportion of the company's total production (%) in which the SVHC is incorporated⁸² and, where applicable, the volume that is used but disappears during manufacture and is not present in the final products
- The relative proportion (%) of the production concerned that is sold on the Belgian market, in other EEA countries and in third countries.
- The notifying companies will be required to update their notification information on a yearly basis.
- More specifically, the following list provides an indicative overview of questions that may be considered for the notification:

Information on the company using the SVHC(s)⁸³:

- Identification of the enterprise (name and enterprise number)
- Contact person
- Size of the company (SME etc.)
- Existence of environmental permit
- Is the company a "Seveso establishment? Yes/No
- Number of employees
- Sector & subsector
- SVHC(s) used by the company
 - SVHC(s) are used as such
 - SVHC(s) used are present in mixtures (incl. alloys etc.)
 - SVHC(s) used are present in articles.
- Per SVHC
 - Storage location
 - Use location
 - Storage location of the SVHC before use in the company's processes
 - Storage location of the processed products (mixtures/articles) in which the SVHC is incorporated.

Information on supplier(s):

- Is the supplier a Belgian manufacturer?

⁸¹ For professional suppliers, indicate the type of activity. This is assuming that the obligation to notify is extended to all professional users (including self-employed workers). The added value of such an obligation seems, a priori, limited.

⁸² Not applicable to service providers using an SVHC

⁸³ During the practical, design of the project, the authorities may consider examining the possibility of automatically linking and/or extracting some of the information sought to/from existing government databases.

- Is the supplier a manufacturer in another EU Member State or Norway, Iceland or Liechtenstein (EEA)?
- Is the substance manufactured outside the EEA?

Information on use

- Volume used (tonnage and value)
- Use category: Intermediate (on site isolated / transported) or not, SR&D
- Use description: emission and exposure data
- Markets served by products for which the SVHC(s) are used
- Industrial markets
- Professional use markets
- Consumer markets
- Are the SVHC(s) used present in the substances/articles sold to

▪ Industrial markets	In article:	In mixture:
▪ Professional use markets	In article:	In mixture:
▪ Consumer markets	In article:	In mixture:
- Share of production delivered in Belgium
- Share of production exported to EEA
- Share of production exported outside the EEA.

Current state of play regarding the development of an alternative (per SVHC)

- Indication of companies' intention to phase-out the use of the substance
 - If yes
 - With an alternative substance?
 - With an alternative technology?
 - By stop using the substance without having to introduce an alternative (substance not really needed any more, adaptation of the existing process etc)
 - By ceasing the production that necessitates the substance:
 - Relocation of production?
 - Sustainability-inspired modification to product portfolio?
 - Other reasons?
 - No
- Companies having responded yes: questions on state of progress of search for alternatives:
 - Which stage has the company reached in its search for an alternative?
 - Exploration of possibilities
 - Research
 - Own research
 - Outsourced research

- Collective research (with other companies, in an association context?).
 - Testing.
 - Pilot
 - Confirmed alternative (if possible, which?)
 - Upscaling to industrial production level
 - Application for regulatory permits (cf. medical sector)
 - Preparation of roll-out (changing contracts, certification standards)
 - Other
- What are the main issues related to substitution
 - No alternative identified
 - Reasons Technical / economic feasibility / risk
 - R&D cost
 - Acquisition cost of alternative (licences/patented alternative)
 - Other? Specify.
- When may the alternative be introduced?
 - Don't know
 - 0 to 5 years
 - 5 to 10 years
 - > 10 years
- Companies having responded no, exploration of the reasons:
 - Not sure if a substitution will be required or not
 - Lack of information on the reasons to substitute
 - Lack of information on possible alternative
 - Substitution is too complex (Ask for reason)
 - Lack of expertise to engage into finding a sustainable alternative solution
 - Relying on supplier (Ask for reasons to do so)
 - Alternative is patented (and unavailable)
 - Other reasons? (Ask to specify).

Expected costs and benefits of the measure of the measure

Costs:

- Authorities
 - Development of the legal framework and budget
 - IT infrastructure and expertise able to handle and process the notifications
 - Analysis tools and human resources to translate the analysis results into actions and plans
- Companies:
 - Fill and update their notification(s)
 - Set-up an inventory of the SVHC (if not already done)
 - Consider their approach for the substitution

Benefits:

- Authorities
 - Authorities will have a view of the different uses of the SVHCs in Belgium and their volume and thanks to the yearly update, their evolution overtime. That information should be helpful for updating the list of prioritized substances and as such develop targeted policy measures. This listing could also serve as tool for enforcement agencies to develop targeted inspections on the proper use of these substances.
- Companies:
 - Establish or update inventory of substances used: The mandatory notification forces them to establish or check and update their own inventory list of substances used and review this list on the hazard properties and regulatory status as SVHCs
 - Awareness: The downstream users' companies which often lack information on the regulatory status of the substances they use will be forcibly made aware of the regulatory risks associated with the use of SVHCs

2. Substitution action plan (or PASS) for substances prioritised as of high relevance for Belgium (Measure 2)

Rationale and purpose of the measure

The intention of this measure is to create substitution dynamic by requiring downstream users of priority SVHCs in Belgium to present their efforts toward substitution, thereby forcing them to structure their approach in this respect.

The measure can be introduced after the substances that Belgium considers meriting priority treatment in its Strategy have been identified. This can be done on the basis of data collected and assessed through the notification obligation as presented in Policy scenario 1 or any other way. The notification data is intended to enable authorities to assess the complexity of SVHC supply chains and to adjust their substitution strategy accordingly.

The limitation of this obligation to the downstream users of the substances prioritized for Belgium, allows the authorities to fine-tune its substitution action plan provisions in function of supply chain characteristics. For example, SVHC-specific threshold level (volume) may be defined for professional users or, alternatively, grouped submissions may be suggested to this category of users.

In the implementation of the measure, the key concern will be to make this substitution action plan a milestone for downstream users to individually and collectively initiate or accelerate substitution.

Developing a substitution action plan of SVHCs (further referred to as **PASS** plan of actions for the substitution of SVHCs and as defined in the glossary of terms) is standard practice for any responsible and diligent company that understands it will need to take action as a result of the SVHC it uses. In most cases, this will require the development of a substitution project (SSP), of which the development of a PASS is the first step in implementation. This action does not therefore constitute an additional burden for companies, with the exception of communicating its summary to the authorities.

For authorities, the PASS should, thanks to its uniform template for the communication of its summary, allow to quickly identify where the issues are regarding sustainable substitution and consider means of support, from networking to subsidy.

Authorities may extend the list of the substances to which this mandatory PASS is applicable and recommend its use to any company that intends to initiate a substitution of an MHS. The authorities may, in fact, wish to have information on any substitution of SHM, in particular by which new substance (if any) the company plans to replace it.

Key elements of the measure

The key elements below listed are only the additional elements.

Elements in addition to Policy Scenario 1:

- Downstream users will have to notify their PASS within the 12 months following their notification of the list of substances prioritized.
- The summary of the PASS should be drafted in accordance with the template prepared by the authorities⁸⁴
- The action plan for substitution may cover the following elements (indicative and non-exhaustive list):
 - Intention to phase out the CL substance,
 - Historic and current substitution activities
 - Substitution timeline if substitution is deemed feasible
 - Justification if substitution is not deemed feasible, this involves possible analysis of the alternatives.

Downstream users will be required to update their action plan information in case of major amendment and also on a regular basis (possibly every two years, and yearly during the 2 last years before the substance reach its sunset date)

Expected costs and benefits of the measure in addition to Policy scenario 1

Costs:

- *Authorities*
 - The costs envisioned to be borne by the authorities include the development of a PASS template and significant additional work to verify the completeness of the report and the coherence of its justification (unless smart reporting is possible allowing datamining). Part of this assessment could be done during regular enforcement inspections, such as SEVESO inspections⁸⁵. In addition, review costs could be

⁸⁴ Based on the approach for the SSbD and of the ESRS (see the box in [Appendix A](#)) both being still under development. In particular the PASS should be ready for supporting any request of financing by a financial institution in accordance with the requirements of the sustainable finance.

⁸⁵ The accident near Seveso in 1976 gave its name to a European Directive (1982) aimed at reducing the risk of industrial accidents. In 2012 the original European Directive was updated with the Seveso III Directive. The Directive contains new rules to better manage major accidents involving dangerous substances. Each Belgian region has an inspection team made up of regional and federal inspectors. They regularly check Seveso establishments during proactive inspections and follow-up inspections.

controlled by sample inspection (risk analysis) instead of a full control of all substitution plans.

- *Companies*
 - The PASS will necessitate time and resources from different management levels in the companies. At the same time, it is what a diligent enterprise has to do, and which is potentially already required by other existing legislations such as CAD. For the large enterprises (or listed SMEs) it should be the basis for their ESRS obligations and the support to lodge a request of financing to a bank or other financial institution.

Benefits:

- *Authorities*
 - The PASS will significantly clarify the substitution trajectory and the difficulties encountered. It will also constitute a means to engage with companies/sectors based on their plans (and facilitate the constitution of 'substitution communities' (See scenario 4).
- *Companies*
 - The PASS will help companies to structure their strategic approach towards a sustainable substitution and start its planning. If the substance is later added to Annex XIV, the work initiated may either make an application for authorisation unnecessary or easier if the time needed before the sunset date is not sufficient.

3. Non-financial support for the use notification and/or the substitution action plan (Measure 3)

Rationale and purpose of the measure

The main purpose of this measure was to provide support to companies, in particular SMEs, for their notification of the uses and/or the preparation of a PASS via different information tools (on-line tutorials, support from helpdesk, training sessions, template for the development of the PASS, list of possible resources (possibly including experts/service providers who have made themselves known to the authorities, with proven qualification and specialisation)⁸⁶.

In addition, an information hub on the existing Research, Development and Innovation (RDI) programmes as well as on the funding possibilities and conditions was also part of this scenario.⁸⁷

Key elements of the measure

In relation to measure 1 (notification) depending on the final list of information required:

- Support for the **use notification** in form of:
 - On-line tutorials re. inventory of SVHCs (links with LIFE/ Fit for REACH project) and for the reporting of exposures/emissions (in case of Policy scenario 1, option 2)
 - Support from the helpdesk
 - Training sessions for industry

In relation to measure 2 (PASS):

- Online information on existing tools for the development of action plans
- Online information (template) on how to develop a minimum PASS
- Online information on potential consultants, also valid for the development of the SSP (following a call for such consultant to let them know they may provide such assistance with a justification of the competence)
- Helpdesk support
- If needed, training session or workshop

⁸⁶ As the Action plans are a largely used tool in the project management, there are many information available on internet, including various IT application. The aim is clearly not to require the use of a standard PASS, as long as the objectives are met, but well to inform the enterprises that are not familiarised with the project management and the development of action plan to find the information they need.

⁸⁷ Such information is also helpful for the development of the SSP itself and for the consultancy services that can help the enterprises, first in providing a PASS and then developing their SSP.

- Information on RDI programmes (also valid for the development of the SSP)
- Information on funding possibilities (also valid for the development of the SSP)

Expected costs and benefits of the support covered by measure

Costs:

- Authorities
 - Important search of the relevant information while trying to be neutral (especially regarding the different tools that can be found on internet)
 - May require calling consultants to let them know of their capacity to assist the enterprises with a sufficient proof of the latter one
 - Ensure a helpdesk service (Human resources needed)
 - Costs for organising workshops and/or trainings.
- Companies
 - Costs mentioned under the measures 1 and 2, the case being
 - Participation in workshops or training sessions, the case being.

Benefits:

- Authorities
 - No direct benefit. However, contacts with the stakeholders may provide information on the remaining obstacles to substitution and to have a better view on who does what in Belgium in relation to the substitution of the SVHC.
- Companies:
 - The measure should help them to develop their SPP and PASS by giving them a clearer vision of the alternative substances or technologies that follow the SSbD approach.

4. A subsidy for the substitution action plan (PASS) (Measure 4)

Rationale and purpose of the measure

The measure consists in a financial support for the substitution action plan (PASS) for the users of substances prioritized by Belgium.

At a later stage, after a positive evaluation of the measure, the authorities may decide to extend this support to other SVHCs or MHS.

This measure adds a variant to measure 2 by adding a subsidy for companies involved in the substitution of prioritized substances [SVHC/MHS]. It would provide an incentive for the companies concerned, especially SMEs and thus increase the chances that these companies will invest in time in the identification and introduction of a sustainable alternative.

Key elements of the measure

- A subsidy for the preparation of the PASS of €125 per hour with a maximum of 160 hours (€20,000) is proposed. The actions within the development of the PASS have to fulfil the rules related to the block exemption for state aids.
- Companies will first have to submit a request for aid, accompanied by sufficient information to identify the eligible costs. An advance payment could be considered if a security is lodged. The authorities may decide to add other requirements in order to qualify for this aid.

Expected costs and benefits of the measure of the measure

Costs:

- Authorities
 - It is difficult to know how many companies might be interested in such a measure (most likely SMEs). This is why it is proposed to limit it to the prioritized substances. The situation may however vary from one substance to another, so the cost of funding may be significant. However, if demand is low, an extension to more substances can be considered.
 - Authorities will need to put in place the legislation allowing companies to apply for financial assistance and develop the necessary infrastructure to receive and assess applications, possibly manage the securities and check the implementation of the actions under the funded part until the final payment is made.
 - Good control over the use of the money is essential and requires significant human resources.
- Companies

- As the development of a PASS is needed to manage an efficient substitution of currently used SVHCs, even if the companies must bear part of this cost, they will in practice benefit from a reduction in their total costs.
- Companies will first need to submit a properly documented application and then ensure that the necessary information is sent to the authorities.

Benefits:

- Authorities
 - Better evaluation of what companies need to do.
 - Lower risk of regrettable substitution (this aspect could be improved by stricter funding conditions⁸⁸)
 - Possibility of a greater number of alternatives meeting the SSbD requirements
- Companies:
 - A better assessment of what they need to do
 - By reducing their costs, it allows companies to go further in their search of a suitable alternative and it facilitates their access to expert consultation. This helps to reduce the risk of regrettable substitution and increase the likelihood of moving toward SSbD.

⁸⁸ However, in that case companies can simply refrain from applying for financial assistance, but the mandatory PASS remains (under measure 2)

5. Annual fee system for the use of SVHCs (Measure 5)

Given the impact of SVHCs on health and the environment, the application of a fee to the use of these substance is clearly a valid option, even if it is not obvious for the reasons presented in [Appendix B](#), sub-section B.4. There are, however, several examples of such fees/taxations in different EU Member States, generally linked to the negative externalities of certain substances of concern. This is the case in the Netherlands for plastics, with the possibility for companies to justify an exemption if they provide satisfactory justification. This is similar to what we are proposing in the next measure. Measure 5 does not propose any possibility of exemption.

Rationale and purpose of the measure

Companies using a substance on the CL will have to pay an annual fee for as long as they continue to use the substance.

The measure is designed as an incentive for substance users to commit themselves in good time to the diligent substitution of the SVHC concerned. In fact, if the company has made a late commitment, because it is satisfied with the current level of return on the use of the SVHC, it will have to pay the fee, and for a longer period. In effect, the levy changes the level of profitability in favour of an earlier assessment of what the company can do to replace the SVHC concerned.

The measure would also provide authorities with additional resources to fund their SVHC substitution strategy.

Given the additional burden on independent professional users and the additional number of dossiers, the limited added value of applying a fee to this category of users and the limited possibilities for these users to develop their own alternatives, it is proposed to exempt this category of users. In addition, as with registration, it is proposed to apply the fee from a minimum use of one tonne per year per downstream user for each SVHC.

Key elements of the measure

- An annual fee will be applicable to any user of an SVHC included in the CL, including importers of such substances who have submitted a registration dossier but excluding independent professional users, from 6 months after the legal requirement enters into force or from 6 months after the inclusion of a new substance in the CL. The fee is applicable per substance from an annual use of one tonne and for as long as the downstream user continues to use the substance.
- If the company can demonstrate to the satisfaction of the competent authority that it has stopped using the substance and has not replaced it with another SVHC, the fee will no longer apply.

- Payment of the fee will be due based on the volume used during the previous calendar year, from 6 months after the date of entry into force of the national measure or 6 months after inclusion in the CL, whichever is the later.
- The annual amount of the fee depends on the volume of SVHCs used by the company for one or more different products produced by that company or resold to another company.
 - For a volume higher than 1 ton but not exceeding 100 tons: 7.5% of the value of the substance for the quantity exceeding 1 ton with an amount not exceeding 50,000€.
 - For a volume exceeding 100 tons: the amount obtained for the first 100 tons, + 5% of the value of the substance for the quantity exceeding 100 tons with a maximum amount of 90,000€.

Expected costs and benefits of the measure of the measure

Costs:

- Authorities
 - Cost related to the development of the legal basis for implementing this policy measure.
 - Organising the fee collection and checking the data provided by downstream users to calculate the fee.
 - Cost of identifying all the companies that would have to pay this fee.
- Companies
 - Cost of the annual fee that is independent of the company using the SVHC and the substance's usage characteristics.

Benefits:

- Authorities:
 - The measure provides financial resources to cover the costs (or a part of them) of the NPS.
 - Accelerate the substitution of SVHCs⁸⁹ and so reduce the risks to citizens, workers and/or the environment.
- Companies:
 - A more level playing field for companies that engage in earlier substitution.

⁸⁹ With a risk that certain companies decide to relocate earlier (if they were going to do it anyway).

6. A modular annual fee system (Measure 6)

Rationale and purpose of the measure

This measure is a variation on the measure 5 by introducing a reduction [or exemption] of the fee for companies that draw up a PASS and ensure its implementation until the substitution or definitive cessation of the use of the SVHC.

Unlike measure 2, the obligation to submit a PASS applies to any substance included in the CL. The measure would also provide the authorities with additional resources to finance their strategy of substitution of SVHCs.

Key elements of the measure

- The annual fee concerned is that determined under measure 5.
- Companies that submit, within one year of the entry into force of the measure or the inclusion of a new substance in the CL, a PASS for the SVHC(s) concerned will benefit from a suspension of payment of the fee until they submit the PASS summary (as for scenario 2). During the suspension, a guarantee must be deposited, which will be released when the required proof is provided.

As for measure 5, as soon as the substitution is effective, either by an appropriate alternative (another substance, which is not a SVHC or another solution), or the use of the substance disappears due to the cessation of the activity using the said SVHC, the fee will no longer be applicable.

Expected costs and benefits of the measure in addition to Policy scenario 3

Costs

- Authorities

Organise the collection of the levy and the control of the data provided by downstream users for the calculation of the levy. Determine whether all companies that should be paying the fee are correctly registered and whether they are actually paying it.

- Companies
 - Cost of the annual fee which is independent of the company using the SVHC and of the characteristics of use of the substance.

Benefits

- Authorities
 - The measure provides financial resources to cover the costs of the NPS.

- *Companies*
 - for the diligent companies, a reduced (or exemption) of the fee will be applicable.

7. Awareness creation and facilitation of networking (Measure 7)

Rationale and purpose of the measure

This policy measure aims at raising awareness among companies (and other actors) involved in the supply chains of the prioritized substances. In addition to providing general information on the obligations of companies that are manufacturing, importing or using the said substances and links to other sources of information more specific to substance substitution, the measure foresees informing on funding possibilities for RDI activities. The main purpose of the measure is to create a community of the companies concerned (thanks to the information available from the registration in Belgium, via the ECHA database (for the manufacturers, importers and only representatives) or from the notifications for the downstream users. Such communities or networks must be open to any other company concerned or with an interest in the substance, in particular companies in the supply chains of identified users as well as research and technology organisations (RTOs), such as Collective Research Centres (Centexbel or Sirus, for example). The initial organisation of these communities or networks could be based, *mutatis mutandis*, on the SIEF approach. The experience gained by *essenscia vlaanderen* with their VLARIP programme, in particular the patronage between large enterprises and SMEs or *essenscia wallonia* with its own WALRIP programme, can be a source of inspiration.

The role of the authorities should be to facilitate the creation of such networks and to provide information on known opportunities for substitution, as well as on the national substitution plan (and related issues). In terms of important information, particular attention should be paid to the safe and sustainable by design (or Do Not Significant Harm) approach, or even to the requirements for access to sustainable finance (taxonomy). Where appropriate, and particularly for large companies and listed SMEs, information needs may be more specific.

The possible participation of representatives of the authorities in these networks may also facilitate the gathering of information on best practice and on the difficulties encountered in the search for alternatives carried out in partnership.

Key elements of the measure

General information

This type of support is more a continuation of the information provided under the REACH regulation, although specific attention will be paid to priority substances. At the same time, the authorities have an interest in promoting and contributing to action at EU and international level with regard to the international database and other information on alternatives.

The following actions could be developed under the information part (list not exhaustive):

- Belgian authorities can develop an on-line information hub
- A newsletter will be made available to the on-line information hub visitors
- A helpdesk can be available for companies/stakeholders interested in more information or in need of support.
- Leaflets and brochures can be produced and circulated through trade associations, chambers of commerce, RDI institutions etc.
- Workshops can be set up for the substances prioritized by the Belgian authorities
 - General communication to the interested industry branches
 - Substance-specific workshops:
 - measures developed and available to companies concerned
 - promotion of networking (formal or informal).
- Participation to business events (speeches, poster information, ...).
- Active engagement with existing networks such as “Enterprise Europe Network”, “Euro Chambers” and their national chamber of commerce relays as well as networks in the scientific world, either European or Belgian, like The Carnot network, EuChemS (European Chemical Society) or Belnet.

The authorities can disseminate the following information to the companies using SVHCs:

REACH and SVHCs:

- Legal requirements of REACH
- Information on the substances in the CL (in particular links to the relevant web pages of ECHA).
- Importance of pro-active action toward substitution for both substances in the CL and substances meeting the criteria of Article 57 (a) to (f) of the REACH Regulation
- Potential/known alternatives.
- Specific requirements of the Belgian Strategy (notification requirements, the fee system, if applicable, substitution action plans and their certification, support mechanisms) and how the Strategy may help companies.
- Known initiatives related to the substitution of the SVHC of particular interest to Belgium.
- Links to where more information can be found.

Sustainable Economy:

- Information on the evolution of the relevant EU legislation (Sustainability by design and sustainable finance e.g.)
- Substitution in the context of sustainability

Financing of RDI:

- Existing instruments

Specific information on the substances identified by Belgium as being of priority for support to substitution:

- The substances concerned at this stage are the following:
 - ADCA (CAS 123-77-3)
 - Phenol, 4-nonyl-, branched (CAS 84852-15-3)
 - Alkanes, C14-17, chloro (CAS 85835-9)
 - 2-methyloxyethanol (CAS 109-86-4)
- Reason why these substances in the CL were 'prioritised' for Belgian action
 - How Belgium will update this list may be updated
 - Specific information on the prioritized substances
 - Specific measures in function of the policy scenarios withheld
 - State of knowledge regarding potential alternatives
 - Known initiatives related to these substances (networks e.g.)
 - Known good practices (in terms of exposures/emissions)
 - Information on activities at EU level related to these substances (e.g. before their prioritization at EU level for inclusion in Annex XIV)
 - Where to find additional information of interest.

Facilitation of the creation of Substitution communities

The authorities will invite all identified companies established in Belgium that have registered priority substances or notified the use of these substances (on the basis of the first scenario). They will encourage the extension of this network to companies in the relevant supply chain (upstream and downstream) and to RTOs.

Support from the authorities may include organising workshops, identifying companies affected by priority substances, establishing contacts with RTOs or with non-Belgian partners with similar objectives or experience (as speakers in workshops). This support may also involve using existing forums in Belgium to promote the creation of substitution networks.

It will be up to the companies of the network to organize their work and define the conditions of the partnership with the aim of facilitating substitution for each participant who will have to stop manufacturing or using the substances (or stop importing and distributing the substances).

Expected costs and benefits of the measure

Costs:

- Authorities

- Resource intensive preparatory work and running of a package of actions for awareness creation and networking
- Operational costs (meetings etc.)
- Companies
 - Cost of participating in the network and sharing its costs (R&D). Investment in contacts with suppliers and/or customers to possibly join the network.

Benefits:

- Authorities
 - A single dissemination platform and the improved ability to identify needs and to monitor developments within industry and the RTOs. In general, it can be expected that this type of measure will accelerate the development and implementation of alternatives by actively supporting joint efforts.
- Companies
 - Development of partnerships dedicated to the substitution of a specific prioritized substance.

Remark: Outside the scope of this measure, which is limited to SVHCs, it should be noted that it could serve as an example for other companies dealing with substances other than priority substances. They may wish to create such communities, drawing on successful models of cooperation. This could be the case for companies that have already established cooperation/partnerships that then could be extended to other players.

8. Development of methodology and structure to support the sustainability-focused analysis of alternatives (Measure 8)

This measure involves the creation of a permanent structure to support the substitution of SVHCs in the context of sustainability. This structure could cover several aspects of the substitution process including monitoring of uses, prioritising support, linking up, raising awareness, training, etc.

Rationale and purpose of the measure

It is essential to avoid regrettable substitutions, not only from the point of view of the safety of the alternative in terms of human exposure or the environment, but also by considering all aspects of sustainable economics, in accordance with the "Do not significant harm" principle and the general approach of the SSdB.

The correct implementation of these methodologies, preferably at an early stage, is not obvious for many companies, in particular SMEs, and they may benefit from cooperating with other companies dealing with the same or similar substances. If dedicated information may be useful, it may not be sufficient for SMEs that do not have the skilled human resources in-house to implement the methodologies. External experts may be required, but this may not be affordable for such companies. It is however in the interest of society as a whole that these companies also look for DNSH alternatives rather than for a minimum or easy substitution solution to just meet their legal obligations at the time.

The safe and sustainable by design approach was mentioned in chapter 2 ('Towards a toxic-free Environment: A new long-Term vision for EU Chemicals policy') of the communication "Chemicals Strategy for Sustainability – Towards a Toxic-Free Environment"⁹⁰. It was developed by the JRC in June 2022⁹¹ and taken up in the Commission recommendation of 8 December 2022 'establishing a European assessment framework for 'safe and sustainable by design' chemicals and materials'⁹².

With this type of measure, the authorities would accelerate the uptake of the SSbD approach (and indirectly the ESRS) to the benefit of society which will ultimately translate into reduced costs and public spending (health care, environmental remediation). It can also be a major incentive for RTOs to invest more in developing their knowledge and expertise in these areas, not only to train the necessary experts. Experts and technical centres could also develop their customer base. It may also encourage them to develop their own RDI activities with a greater

⁹⁰ COM (2020) 667 of 14.10.2020

⁹¹ See : <https://op.europa.eu/en/publication-detail/-/publication/eb0a62f3-031b-11ed-acce-01aa75ed71a1/language-en/format-PDF/source-search>

⁹² C (2022) 8854 of 8.12.2022

focus on the SSbD Approach. If this happens, both the country's reputation and the competitiveness of our businesses will benefit.

This approach is consistent with that used in the BBBC2 project, although here the initial stage receives more attention (assessment of the potential substitutes).

Once companies have identified alternatives that are potentially suitable by using the recommended methodologies, they may be eligible for other RDI funding (public or private, in line with the sustainable funding requirements).

The objective of the proposed measure is

a) to ensure that the SSP are in line with the EU assessment framework guidelines for safe and sustainable by design chemicals, and

b) to provide methodological and logistical support throughout the search for alternatives. These methodologies will not be mandatory but should become the benchmark for demonstrating the sustainability performance of companies involved in SVHC substitution. Logistical support could, for example, consist in bringing together the various stakeholders in the ecosystem of a specific SVHC.

To this end, it is proposed to set up a structure (a specialized unit within a Federal Public Service or a collaborative network) to manage the different activities provided for in the measure. The package of actions includes a significant cooperative/consultative aspect, between authorities, representatives of the companies concerned and the research sector (academia, Research and Technology Organizations (RTO)) as well as, to a certain extent, the EU Commission⁹³ or other Member States.

Key elements of the measure

Establishment of a structure (specific unit or collaborative network) to design, perform or outsource the actions outlined in the following points.

- Development of a **generic approach to support sustainable substitution** of SVHC. This approach covers the different stages of the substitution pathway such as: documentation development, awareness creation on use, evaluation of the substitution action plans, network development to bring together users, providers of alternatives and

⁹³ One avenue that may be explored would be a link with Horizon Europe project PARC that is tasked with building a toolbox to make SSbD more operational or a cooperation with INCITE (Innovation Centre for Industrial Transformation and Emissions (under IED revision)).

R&D community, etc. The methodology will build on and make use of EU/OECD, sustainability approaches⁹⁴

- Development of **sector-specific adaptations** to the generic methodology, including guidance material
- Communication of the methodology through various channels
- Training of company executives, independent experts (to the benefit of professional use associations e.g.) and other relevant professionals for the implementation of the methodologies developed.

Expected costs and benefits of the measure

Costs:

- Authorities
 - The setting up and running costs of the structure proposed and the actions foreseen will require in-house and external expertise.
- Companies
 - Companies will have to adapt their organisation to effectively manage the SSbD approach and retrieve the information required.

Benefits⁹⁵:

- Authorities
 - Creation of a common approach at Belgian level (coordinated with work done in other Member States) and a structure that will bridge any policy gap at Belgian level between chemicals management *stricto sensu* and the broader sustainability agenda.
- Companies
 - Development of a partnership for the substitution of a specific prioritized substance. Better substitutions, with reduction of costs related to the management of substances of concern.

RTO community:

- For academics and other training centres: It would become more interesting for them to include aspects of SSbD and ESRG requirements in their current programmes or to create courses dedicated to these issues (including for experts who wish to offer services using these approaches).

⁹⁴ Presently, the methodology developed by the JRC is proposed but if there are new developments, the latter would probably be preferred.

⁹⁵ Benefits reinforced in case of a funding

- For the advisory services providers, this would provide an additional incentive to invest on knowledge of SSbD and ESRS (and not limited to the scope of this policy measure) and would offer greater opportunities to find customers and gain reputation (plus network).
- For technical advisors, laboratories and analysis centres, including collective research centres (such as Centexbel or Sirrus or of the type of the Belgian Packaging Institute IBE-BVI), the measure provides opportunities to develop cooperation activities requiring technical facilities. It would also enable them to develop their own expertise on the SSbD and ESRS requirements and on adapting industrial facilities to these requirements and give them the opportunity to promote their expertise in other countries.

Belgian competitiveness: The measure will be successful if, in addition to enabling the development of safer products, it meets the desires of a sustainable economy. The measure will thus contribute to achieving the United Nations' 17 sustainability goals.

The measure encourages a more rapid response to the need to develop alternatives (via information from the supply chain or via certain networks such as chambers of commerce and trade organisations). This will enable certain sectors to take the lead in marketing sustainable alternatives and thereby gain a foothold in innovation-driven markets.

9. Direct support of companies involved (Measure 9 - subsidy version 1)

Rationale and purpose of the measure

This measure follows the approach of measure 8 with the addition of financial support.

Financial support should be provided to these companies (in addition to technical assistance, such as help in finding partners). This support is particularly welcome for companies that are the first to commit, not only to speed up the substitution process, but also to support the further development of the SSbD concept.

Key elements of the measure

Financial support:

A subsidy for **advisory services** covering 25% of the service costs with a maximum of €25,000 per company where the need for external support has been established, e.g.

- Companies with unique uses that cannot be discussed in broader networks
- Frontrunning SMEs
- Consortia (associations) of professional users
- High complexity cases in terms of technologies + circularity – climate + criticality of uses where companies on their own lack resources to identify the most adequate sustainability pathway.

Expected costs and benefits of the measure

Costs:

- Authorities
 - Costs of the subsidies and their management.
- Companies
 - Costs to cover their share of the cost of the external experts.

Benefits

- Authorities:
 - More enterprises trying to develop alternatives following the SSbD approach.

Companies

- Better solutions thanks to the external support, with reduction of costs related to the management of substances of concern.

10. Direct support of companies involved (Measure 10 - subsidy version 2)

This scenario is a variation of the previous with a higher financial support. Its rationale is therefore the same as for the measure 9 here above.

Key elements of the financing

A subsidy for **advisory services** covering 50% of the service costs with a maximum of €50,000 per company where the need for external support has been established, e.g.

- Companies with unique uses that cannot be discussed in broader networks
- Frontrunning SMEs
- Consortia (associations) of professional users
- High complexity cases in terms of technologies + circularity – climate + criticality of uses where companies on their own lack resources to identify the most adequate sustainability pathway.