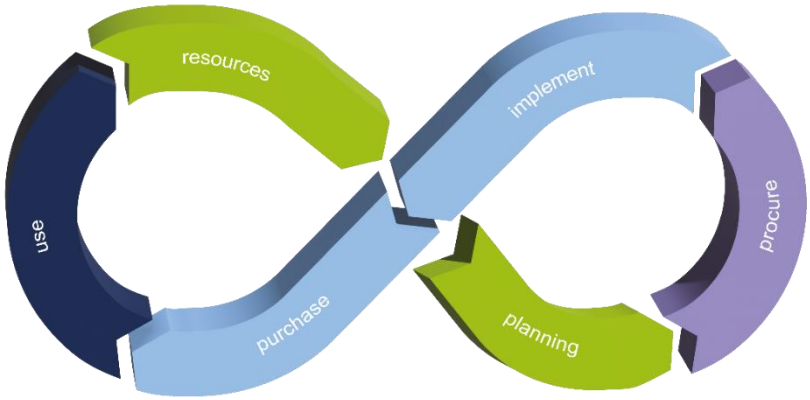
Interreg Baltic Sea Region
Co-funded by the European Union
CIRCULAR ECONOMY
ChemClimCircle-2



From ChemClimCircle-1 to ChemClimCircle-2: Setting the project frame and outlining the solutions

Scoping report 2.0

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Deliverable: 1.1
Date (version 1.0): 31 August 2025
Date (version 2.0): 5 March 2025

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Introduction

The ChemClimCircle-2 (CCC-2) project, part of the EU Baltic Sea Region (BSR) Interreg programme, aims to accelerate the uptake of green public procurement (GPP) practices that simultaneously address three key sustainability priorities: eliminating hazardous chemicals, reducing climate impacts and advancing circular economy solutions. The CCC approach, developed in ChemClimCircle-1 (CCC-1), was developed to bridge this gap, creating a holistic framework for sustainable purchasing that can be embedded in municipal procurement systems. Building on the foundation laid by the CCC-1 project (2022-2024)[1], CCC-2 seeks to move from a conceptual approach to a tested, operational solution that municipalities and regional authorities can apply in real procurement cases across the Baltic Sea region.

This report is organised into five main chapters. **Chapter 1** provides a comparative analysis of the insights gained from the CCC-1 project as well as the survey conducted in CCC-2, outlining the key differences, similarities and barriers to integrated (CCC) procurement throughout the municipalities. **Chapter 2** provides an overview of relevant procurement-related projects, initiatives and networks in the Baltic Sea Region and beyond, along with their key contacts. **Chapter 3** introduces the concept of Green Public Procurement (GPP) and highlights its potential as a lever for decarbonising supply chains. It emphasises how procurement strategies can extend beyond Scope 2 emissions by creating a demand-pull effect that addresses Scope 3 impacts. Particular attention is given to municipal procurement's upstream and downstream dimensions, especially where chemicals are involved. **Chapter 4** introduces the refined ChemClimCircle approach and establishes the conceptual framework for the Navigator, forming the basis for solution development and pilot implementation in subsequent work packages. The final part, **Chapter 5**, presents the method for evaluating solutions, introducing indicators derived from the features of the CCC approach. The method applies a sequential process that reduces uncertainty by aggregating raw data into the core dimensions of feasibility and acceptance, which are then tested for applicability across scales and contexts. This ensures that conclusions on replicability are grounded in specific, measurable evidence.

[1] See the CCC-1 project outputs here: https://interreg-baltic.eu/project/chemclimcircle/.

1 Setting the scene: from ChemClimCircle-1 to ChemClimCircle-2

This chapter examines the challenges and obstacles municipalities face in implementing the ChemClimCircle (CCC) approach within Green Public Procurement (GPP) and, where possible, compares the findings of the CCC-2 obstacles survey with the first project (ChemClimCircle-1) survey results. The aim is to identify persistent barriers and new issues that have emerged since CCC-1, providing a solid evidence base for targeted action in the next stages of CCC-2.

The CCC-1 project offered valuable lessons on the opportunities and difficulties of integrating chemical safety, climate neutrality and circular economy principles into public procurement. Although municipalities have significant potential to influence sustainable production and consumption, the uptake of an integrated approach remained limited. Most municipalities focused on single sustainability aspects, such as climate neutrality or resource efficiency, while chemical safety was rarely addressed. Fully integrated criteria were only found in a few procurement areas (e.g. work clothing, renovation services, ICT equipment). Barriers were identified across the three levels of governance:

- **Strategic level**. Policies and strategies were often operated in silos, with climate, chemicals and circularity addressed separately. Clear, binding frameworks and measurable objectives were often lacking, and priorities shifted with political cycles. Municipalities in countries with strong national support and established GPP traditions were more advanced than those with weaker frameworks.
- **Organisational level**. Many municipalities faced limited staff capacity and budgets, insufficient expertise (especially on chemicals) and underdeveloped internal procedures and guidance. Monitoring and follow-up systems were also weak, making it difficult to evaluate whether sustainability goals were achieved.
- **Operational level**. Procurement officers lacked practical tools, clear guidance and experience with systematic market engagement. For suppliers offering products, meeting the combined CCC criteria was scarce, which led municipalities to avoid ambitious requirements.

Overall, CCC-1 showed that while municipalities are motivated to advance sustainable procurement, fragmented policies, structural barriers and limited supplier engagement prevent large-scale adoption of the ChemClimCircle approach. The results highlighted the need for more coherent strategies, harmonised guidance and tools, training for procurement officers, better market dialogue and stronger monitoring systems.

Building on this foundation, CCC-2 was launched to refine the CCC concept and translate it into practical solutions. A new survey among 12 partner municipalities and 8 associated authorities, including several returning from CCC-1, provided updated evidence. This chapter consolidates the lessons learned, compares the results of CCC-1 and CCC-2, and identifies persistent and emerging obstacles at the strategic, organisational and operational levels. Together, these insights form the baseline for solution development in the following stages of the project.

1.1 Challenges and obstacles in implementing the ChemClimCircle approach in Green Public Procurement

The following section outlines the main barriers arising from the strategic framework, organisational set-up, and operational practices in the analysed municipalities and emphasises the key differences and similarities between them. To gather this data, a semi-open self-assessment survey was conducted among CCC-2 participants, in which they rated predefined obstacles on a 0-2 scale and provided brief written justifications for their responses. The questionnaire was completed by 20 municipalities (12 project partners and eight associated municipalities/regional authorities). It was carried out between April and June 2025. The numerical results were analysed in Excel to give a statistical overview of key obstacles and supplemented with a qualitative analysis to identify overarching trends, context-specific challenges, and

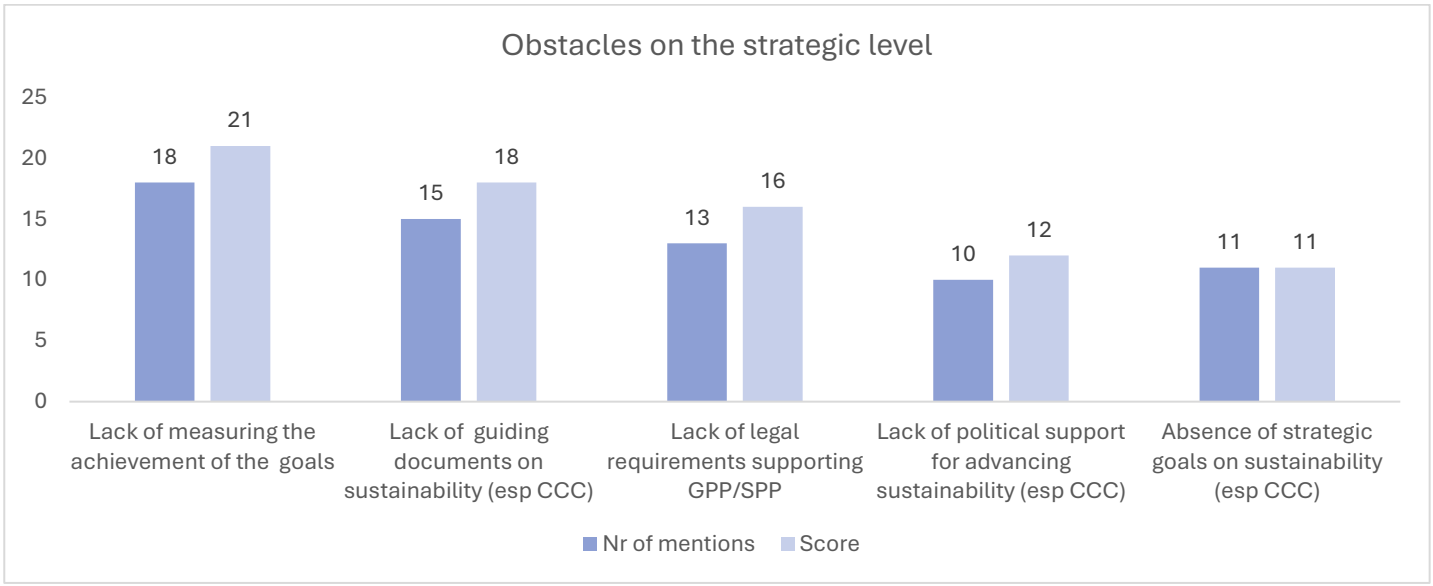
newly emerging issues across the municipalities in the Baltic Sea region. Where relevant, comparisons are made with the findings of the ChemClimCircle-1 scoping report (summer 2023), in which seven out of nine participants were the same municipalities which are also taking part of CCC-2 (Gentofte, Tallinn, Helsinki, Smiltene, Taurage, Stockholm, Västerås).

1.1.1 Strategic level

At the strategic framework level (Figure 1), the municipalities included in the survey perceived **a lack of measurement of the achievement of the goals** as the main barrier to the effective implementation of GPP. Lack of guiding documents (focusing on implementation, e.g., action plans, roadmaps) and legal requirements supporting GPP/SPP were also rated as significant obstacles. Lack of political support was mentioned a total of 10 times (50%) in CCC-2; however, the score for this was 12/40. These (unclear legal requirements and changing political priorities) were also mentioned in the top three obstacles mapped in ChemClimCircle-1.

While the lack of clear objectives and targets was assessed to be the greatest obstacle in CCC-1 (4/9 mentions), the municipalities participating in ChemClimCircle-2 rated this (absence of municipal, regional or organisational strategic goals on sustainability, especially CCC aspects) to be the least significant obstacle on the strategic level (11/20 mentions). The municipalities might have rated this as the least important obstacle; however, from the explanations given for the ratings, it is clear that most municipalities still miss strategic goals on at least one of the CCC elements. Often, the objectives and goals are fragmented from each other or elaborated in separate strategic documents altogether, which makes implementing the CCC approach difficult (further discussion in Chapter 1.1.1.1).

Figure 1. Obstacles on the strategic level.



Source: SEI Tallinn (2025)

Additional obstacles that the municipalities participating in the survey emphasised were that issues may arise from the lack of synergies between the goals and actions set in the programs or action plans (Stockholm) or strategies, laws, visions, etc (Schleswig-Holstein). The latter emphasised the need for binding national strategies that lead the way, making SPP/GPP obligatory for all municipalities. Umeå currently feels there is little guidance on implementing procurements (who does what and when) but hopes that this will be clarified in the upcoming strategic document for procurements. Katowice highlighted short-term costs for the contracting authority as a significant obstacle to adopting the goals and requirements. Smiltene emphasised the lack of qualitative analysis of procurements and recommendations for it.

The following subchapters further describe the factors leading to the main obstacles on the strategic level in the partner municipalities and associated organisations in the early stages of ChemClimCircle-2.

1.1.1.1 Setting and measuring strategic goals

In total, 15 municipalities report having some strategic goals in place; however, Cēsis, Stockholm, Västerås and Helsinki municipalities stand out by having **clearly defined and adopted strategic sustainability goals and policy documents** across the themes of climate, circular economy, and chemicals (the three aspects of the CCC approach) in place. Further, Stockholm goes beyond and sets the example for other municipalities by having developed action plans and milestones under the set goals. The latter emphasises procurement as a key tool in achieving the goals in various sectors. Turku, however, has several strategic goals set on the municipal, regional and organisational levels, but mentions that procurements are underutilised on all three levels.

While chemicals are not addressed in strategic documents in Tallinn, Bremen, Vilnius and Vidzeme alike, Tallinn and Bremen rated this as having no obstacles, whereas Vilnius and Vidzeme saw it as a minor obstacle. In several municipalities (Herz Lauenburg, Gentofte, Smiltene, Schleswig-Holstein, Valmiera), both chemicals and circularity aspects are lacking from the strategic documents. In Taurage, there are national sustainability goals, but these are only roughly reflected on the municipal level. Umeå and Gothenburg have strategic sustainability goals, but do not specify whether these are related to climate, chemicals or circularity. Umeå considers it a minor obstacle, while Gothenburg does not regard it as an obstacle. In both Schleswig-Holstein and Katowice, setting goals are not mandatory. The latter emphasises that legal (i.e. obligatory) requirements have a greater impact in the Polish public procurement system than setting (desirable) goals.

In CCC-1, data were gathered from nine municipalities, out of which seven are also part of CCC-2 (Gentofte, Tallinn, Helsinki, Smiltene, Taurage, Stockholm, Västerås). While there seem to be no changes/updates from Gentofte, Smiltene, Taurage, and Stockholm, three municipalities reported progress over the last 2 years. Tallinn has adopted its 2035 Development strategy and climate plan, Västerås has now specific targets for all three aspects of the ChemClimCircle approach and Helsinki now mentions Baltic Sea Challenge and two green deals on harmful substances.

12 municipalities have some version of a system set for **measuring the achievement of the strategic goals set in the municipal, regional or national strategies.** In Umeå, the achievement of strategic goals is measured frequently, therefore they do not see it as an obstacle. However, the municipality elaborates that the results of the monitoring are not utilised to their full potential. In Lithuania, there are environmental requirements for procurements monitored on the national level; however, the municipal strategies and action plans do not entail the goals specifically set for procurements. Helsinki, Stockholm and Smiltene face a similar challenge (minor obstacle) regarding the self-reporting system for sustainability criteria set up for procurers. As there is no external control for what sustainability criteria the procurers tick as “used”, this is highly dependent on the procurers’ understanding of the CCC aspects. For example, some municipalities may overdo it, by ticking the criteria which are actually not reflected in their procurements or miss some important criteria in the system that they have used due to different wording or lack of capacity. Tallinn, however, stated there are no obstacles in measuring the achievement of goals as GPP share of all procurements is measured, but similarly to the challenges in the other mentioned municipalities, this does not reflect what criteria were used and in which part of the procurement process that made the procurement “green”. The municipality of Taurage also measures the share of GPP in all procurements and rates this as a minor obstacle. Helsinki and Cēsis have a monitoring system set up for emissions and circularity, but not chemicals. The municipality of Västerås uses some monitoring tools, but does not specify further, and Vidzeme brings out data collection challenges as a minor obstacle. Gentofte also has some sort of measuring system in place and brings out benchmarking with other municipalities as a learning measure they use. Gothenburg emphasises challenges in evaluating the achievement of some goals that were set before the monitoring system. Turku has a climate-neutrality goal for 2029, which is monitored, but this does not include the monitoring of procurements specifically. Gladsaxe and Katowice face minor obstacles but do not specify which and whether there is some measuring taking place or not.

There is no measuring system in place at all in five municipalities. Three of which (Bremen, Herz Lauenburg and Falun) see it as a major obstacle and two rated it as a minor obstacle (Schleswig-Holstein, Valmiera).

A summary of the strategic documents on GPP, goals and measuring systems is provided in Table 1 below.

Table 1. Municipality-level strategic documents on GPP set goals for CCC and their measurement.

Municipality	Strategic document for GPP	Strategic focus areas of GPP	Measuring
Vilnius, LT	Regional, municipal and national strategies and action plans are in place.	Little attention is paid to chemicals.	National level: monitored for compliance with environmental requirements (publicly available data). The implementation of strategies and action plans is monitored through reporting (not directly linked to procurement).
Stockholm, SE	Environment programme 2030 for the City of Stockholm	7 areas of sustainability goals in the city's Environment programme, for all three aspects. Under the goals are 18 milestones, action plans for various areas.	Self-reporting system for the procurers to tick the sustainability criteria used (not external control whether the right boxes were ticked or if the criteria actually exist).
	The program for purchasing 2020-2023 (still in force).	Emphasises the importance of strategic purchasing to reach environmental goals.	-
Västerås, SE	Policy documents exist for chemicals, sustainability/circularity and climate (CO_2).	Chemicals, circularity and climate covered.	Few tools are used, but these are not sufficient.
Helsinki, FI	Multiple strategies (city strategy, procurement strategy, and Environmental protection goals) are in place.	To support the climate neutrality 2030 goal and the circular economy goals.	For Climate and circularity there are clear goals and ways to measure them: Monitoring of the emissions reduction plan & Circular Economy Watchdog (being updated). Chemical safety lacks clear strategy level goals thus they are not measured as well on the city level. Self-reporting system in the contract management system for ticking the sustainability criteria (no overview of used criteria).
	Baltic Sea Challenge between the cities of Helsinki and Turku.	Harmful substances in GPP.	
	Helsinki has signed and implemented two green deals.	To aid reduce (1) harmful substances in daycare centres and kindergartens and (2) CO_2 eqv. emissions on construction.	
Turku, FI	Municipal, regional and organisational strategic goals.	Not well connected to procurements.	Municipal reporting for achieving the 2029 climate-neutrality goal.
Bremen, DE	Climate Protection Strategy 2038 (Klimaschutzstrategie 2038).	Sustainable procurement is mentioned.	No measuring system in place.
	Sustainable Development Guidelines (Entwicklungspolitische Leitlinien).	The avoidance or reuse of objects and complete recyclability ("cradle to cradle") are to be	

		incorporated as criteria into the practices and rules of public procurement in the state of Bremen. The Senate Chancellery and the Senator for Finance will carry out a joint project to develop initial criteria for systematic establishment in the procurement system.	
Herzogtum Lauenburg, DE	Climate action plan with 21 measures.	No direct strategic goals on sustainability. Chemicals and circularity are not included in the strategic documents.	No measuring system in place.
Tallinn, EE	Tallinn 2035 Development Strategy and its implementation plan	*Strategic Goal No 4: Green transformation focuses on adaptation to climate change and reduction of greenhouse gas emissions to climate neutrality by the middle of the century.* *- clean air and water, and the biodiversity of urban nature are to be protected also;* *- citizens live in a resource-efficient manner and consume by the principles of circular economy.* Chemicals not addressed.	GPP share of all procurements monitored annually in the implementation plan.
	Tallinn Climate Plan	- Reduce the impact of city life and economy on the climate; - improve the use of bicycles and the bicycle roads; - improve the accessibility of public transportation; - support the complete renovation of apartment buildings to meet the energy efficiency requirements; - improve the extension of the district heating network and develop the district cooling network in close cooperation with the private sector; - promotion of biodiversity and the use of natural resources in a circular way.	-

	Development Plan of Circular Economy	Goals are set with the accuracy of the measured base level to start with and with the end-goal to achieve by 2035.	-
Vidzeme, LV	Strategic goals have been defined in the development planning documents.	Sustainability is the core of every strategic document. Chemicals are the least addressed.	Measuring principles are set, but there are challenges with data collection.
Taurage, LT	Only national sustainability goals.	Goals are only broadly translated to the municipal level, and detailed, strategic guidance is lacking.	GPP share of all procurements monitored.
Gentofte, DK	N/I	No clear goals for circularity and chemicals – only climate.	Measurement system in place (not specified), benchmarking with other municipalities to learn from the best practices.
Cēsis, LV	Cēsis Development Programme 2022–2028	Includes sustainability and circularity as cross-cutting priorities.	Monitoring mechanisms in place for climate action, circular economy and green procurement (KPIs in strategic documents, annual or mid-term reporting on development progress, internal evaluations and participation in EU projects. Still in development for chemicals. Public accessibility and data transparency are to be improved.
	Climate Action Plan (2023–2030)	Sets CO2 reduction targets and defines energy efficiency and adaptation actions.	
	Waste and Circular Economy Guidelines	Support material reuse, waste reduction, and local circular systems.	
	Municipal Procurement Regulations	Aligned with the Latvian Public Procurement Law, allowing the use of green criteria (climate, chemicals, circularity) in tenders. Participation in EU-level projects such as ChemClimCircle-1 and ChemClimCircle-2, which strengthen capacity.	
Falun, SE	N/I	Most of their 7 municipalities have their own goals. In addition, there are joint goals concerning sustainability in procurement.	No measuring system in place
Smiltene, LV	Have both sustainable strategies and action plans.	Climate addressed, circularity and chemicals not.	Self-reporting by the contracting authorities when the procurement is published.
	There are certain strategic goals in place, but not all of them are mandatory.	Climate change concept, climate change management and the municipality part of the fair-trade-town-network.	No measuring system in place in the municipality, support setting up a national monitoring system.

Valmiera, LV	N/I	Climate addressed (one goal), circularity and chemicals are lacking.	No measuring system is in place in the municipality.
Umeå, SE	New strategic document regarding procurement in progress.	There are a lot of strategic documents and goals; the challenge is the implementation.	Frequent measuring of achieving goals, however, the results are underutilised.
Gothenberg, SE	Environmental and Climate Programme	Ambitious environmental and climate goals with targets set for 2030.	Some goals are challenging to measure as they were set up before the monitoring system.
Gladsaxe, DK	N/I	N/I	N/I
Katowice, PL	N/I	In the Polish public procurement system legal (i.e. obligatory) reguirements have greater impact then the (desirable) goals.	N/I

Source: Compilation of survey results by the authors.

1.1.1.2 Political support

Political support is often cited as a foundational enabler of green public procurement (GPP). Therefore, it is reassuring to note that most municipalities (55%) do not see an obstacle in the lack of political support. In Vilnius, there is strong political support both on the national and municipal levels, while in Stockholm and Helsinki, there is stable and strong support deriving from the cities themselves. As these cities are often seen as frontrunners in sustainability, there is no fear in the municipality related to drastic changes in the city councils' priorities. This, however, is not the case in Turku, where the continuation of sticking to sustainability goals is foreseen to be greatly connected to the political positioning of the parties in power. Cēsis and (most municipalities of) Falun, which are less known for their sustainability ambitions, also state that there is strong political support on the regional level. Vidzeme and Umeå see political support as a minor obstacle, although they mention that political documents are approved, and political support is not an issue for the most part.

However, several regional municipalities have indicated that political factors present minor yet persistent obstacles to the full realisation of strategic sustainability goals. Although not insurmountable, these barriers can undermine momentum, consistency, and clarity in implementation. In some cases (Västerås and Gentofte), the lack of specific political guidelines hampers practical action. Without concrete guidelines, the implementing bodies are left without a clear mandate or direction. In Bremen, limited financial capabilities restrict the scope and ambition of GPP measures, even when political support exists in principle. A different nuance is seen in Herzogtum Lauenburg, where most measures are generally supported, indicating broad but possibly passive or non-directive political agreement. In contrast, Taurage and Gentofte both identify a lack of prioritisation from political bodies – sustainability goals exist, but these are not championed as political imperatives, reducing their operational weight. In Valmiera, political support is mentioned as a gap, but the issue is not further elaborated upon.

Lack of political support is seen as a major obstacle in the municipalities of Smiltene and Schleswig-Holstein (2). In Smiltene this is due to significantly higher costs and lack of state support for setting green mandatory criteria in procurements. In Schleswig-Holstein this is related to lack of capacity and financial capabilities in the municipality as well as political stability.

1.1.1.3 Legal requirements and guidance materials

Seven (out of 20) municipalities saw no **legal obstacles regarding GPP/SPP**. Unsurprisingly, this included the two Lithuanian municipalities included in the project – Vilnius and Taurage – as there is a national 100% GPP requirement for all procurements. Several municipalities mentioned that the national rules are

supporting GPP (Västerås, Gentofte, Falun, Valmiera) and Tallinn did not specify how the legal setup corresponds to GPP.

However, most municipalities still face minor legal obstacles. Stockholm emphasises national issues regarding the use of ecolabels as sustainability criteria. Interestingly, the four Latvian municipalities included in the project all rated legal requirements on GPP in Latvia differently. While Valmiera sees there are no obstacles from the legal side, Vidzeme and Cēsis rated it as a minor obstacle due to the lack of strong, binding national-level legal requirements and Smiltene as a major obstacle deriving from the national guidelines not being updated often enough. Similar to Latvia (Cēsis), the Finnish municipalities (Helsinki and Turku) see it as a minor obstacle that the GPP requirements are not mandatory and bring focus to the national environmental goals on GPP that are being developed for Finland by the end of 2025. Moreover, Gothenburg, Bremen and Herzogtum Lauenburg mention the uncertainty regarding national requirements due to the political positioning of the parties in power in Sweden and Germany. German municipalities also add that, as a federal state, they have more flexibility and the regional requirements are more ambitious than the national. Umeå emphasises the abundance of goals, but a lack of requirements, in their opinion. Gladsaxe does not specify the minor legal obstacles they face.

Nevertheless, two municipalities saw legal requirements as a significant obstacle. Schleswig-Holstein highlighted several aspects regarding why the situation in their municipality (lack of funds, educated employees, information, SPP is mostly voluntary, and the structures are old/complicated), while Katowice did not specify.

Three municipalities saw the **lack of guidance materials** on sustainability in procurement as a significant obstacle: due to the materials being too general (Falun), outdated (Smiltene) and not including any binding commitments (Gothenburg). At the same time, five municipalities do not see an obstacle in this, as there are too many (Stockholm) or enough (Västerås, Tallinn, Schleswig-Holstein, Bremen) guidance materials according to the respective municipalities. However, most municipalities (60%) saw the lack of guidance materials as a minor obstacle. In Helsinki, Vidzeme, Cēsis and Gentofte, there are no guidelines on chemicals in procurement. The latter emphasises that the guidelines lack in terms of details on how to use this information in procurement, who to include in the processes and when. However, Gentofte also notes that there are national guidelines with best practices for framework contracts.

In Vilnius, Umeå, Taurage and Valmiera, there are no guidelines on sustainable procurement (including any of the CCC aspects) on the municipal level. In Turku, there are guidelines related to circularity and in Herzogtum Lauenburg, focusing on climate. Gladsaxe and Katowice provide limited information on the topic.

Table 2 summarises national legal requirements on GPP/SPP and municipal guiding documents by country and municipality.

Table 2. National legal requirements and municipal-level guiding documents.

Municipality	National legal requirements for GPP/SPP	Guiding documents
Vilnius, LT	National legislation defines minimum environmental requirements and requires 100% of procurements to be GPP.	Some guiding documents on sustainable procurement, prepared by Public Procurement Office. Municipal guiding documents, not directly linked to procurement.
Taurage, LT		Municipal guiding documents, not directly linked to procurement.
Stockholm, SE	Procurement directive states that sustainability criteria must be used, national debate on the use of ecolabels	Too many action plans – overload of tasks for the municipal entities.
Västerås, SE		Several guidance materials.

Falun, SE	across product groups. Several goals, not so many requirements (Umeå). Ambitions lowered and funding cut for the National Agency for Public Procurement in 2022 when the new government started.	Existing guidance materials are too general.
Umeå, SE		Several guidance materials, not focusing on procurement specifically.
Gothenburg, SE		Gothenburg's Environmental and Climate Programme – no binding commitments, but voluntary actions.
Helsinki, FI	Finnish procurement law supports GPP, no mandatory requirements (Laki julkisista hankinnoista ja käyttöoikeuksista (1397/2016)). Specific requirements are mainly through EU legislation. National environmental goals for GPP (ongoing, finalised by the end of 2025).	The aforementioned action plans for circularity and climate have no guidance materials for harmful substances.
Turku, FI		Roadmap for circularity – procurements lightly included.
Bremen, DE	National requirements: - Section 13 of the Federal Climate Protection Act (Klimaschutzgesetz) - Section 45 of the Circular Economy Act (Kreislaufwirtschaftsgesetz) - Fuel Emissions Trading Act (Brennstoffemissionshandelsgesetz) - Clean Vehicles Procurement Act (Saubere-Fahrzeuge-Beschaffungs-Gesetz" (SaubFahrzeugBeschG) - Sustainability action program of the German government (Maßnahmenprogramm Nachhaltigkeit der Bundesregierung) - Competence Center for SPP - Regulations on Sustainable Procurement (Kompetenzstelle für nachhaltige Beschaffung - Regelungen zur nachhaltigen Beschaffung) Public administration of the federal agencies must follow the requirements of the "General Administrative Regulation on the Procurement of Climate-Friendly Services (AVV Klima)" which applies to the award of public contracts by federal agencies. This regulation is far reaching in regard to climate protection requirements but it does not apply to public procurement in Bremen. Uncertainty on the national level regarding SPP (voluntary) due to political positioning of the parties in power, however regional requirements for SPP in Bremen are further developed than national. Schleswig-Holstein has their own SPP guidelines as well (also voluntary).	Climate-friendly and circular procurement task in the Climate Protection Action Plan
Herzogtum Lauenburg, DE		Climate action plan with 21 measures, no chemicals or circularity.
		Several guidance materials, not enough accountability and commitment.

Tallinn, EE	Existing, not specified	In addition to the strategic documents listed above, there are guidance materials on sustainable travelling and event planning; internal website for GPP guidelines, training materials, examples; green office and sustainable governance model.
Gentofte, DK	GPP regulations are in place	Several action plans – mainly on climate, however e.g., the climate action plan also includes activities on circular economy and biodiversity. No clear guidance on how to prioritise, who and when to include in procurement processes. Additionally, there are central guiding documents for best practice utilisation of national framework contracts.
Gladsaxe, DK		N/I
Vidzeme, LV	Cabinet of Ministers Regulation "Requirements for Green Public Procurement and Procedures for the Application Thereof" (Latvia's Public Procurement Law) allows and encourages the use of GPP criteria, including environmental, climate, and chemical safety aspects, but it is not mandatory and minimum requirements are set for individual categories. Within the regulation 9 construction work, product and service groups have been presented which are subject to mandatory application of the GPP procedures. National guidelines not updated. Big disparities in GPP uptake between municipalities.	Strategic Framework for Energy and Climate Resilience 2030 – sustainability goals (chemicals lacking).
Cēsis, LV		Several strategic and guiding documents that address sustainability issues, e.g., Cēsis Municipality Development Programme (2022–2028) incorporates environmental and climate priorities. Cēsis Bioregion initiative promotes local, circular, and sustainable development. No unified, detailed municipal action plan or road map specifically dedicated to integrating CCC into all operational sectors, especially procurement.
Smiltene, LV		Existing guidance materials are outdated.
Valmiera, LV		Procurement guidelines from the Ministry of Smart Administration and Regional Development and the Procurement Monitoring Bureau, not focusing on CCC. Too few specific examples and necessary actions to ensure the sustainability and circularity of procurements.
Katowice, PL	N/I	Municipal/regional/organisational documents may to some extent replace national-level legal requirements, but these are not a priority.

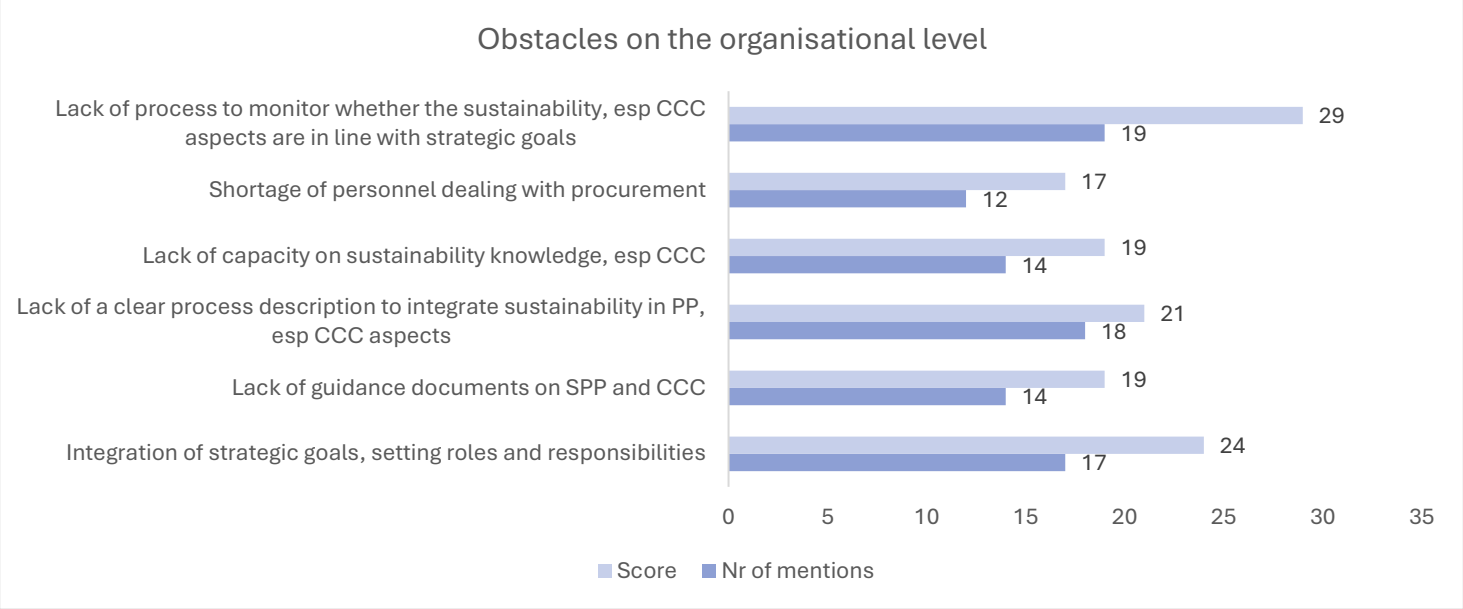
Source: Compilation of survey results by the authors.

1.1.2 Organisational level

Similarly to the strategic level, **the lack of monitoring processes' alignment with strategic goals** was considered as the main obstacle on the organisational level (Figure 2). The issue was raised by all but one municipality (Gladsaxe) participating in the survey (19/20) with a total score of 29. This was closely followed by the **lack of clarity regarding roles and responsibilities and insufficient integration of strategic goals** (mentioned by 17 municipalities, score of severity 24). However, in CCC-1, this (lack of a clear organisational set-up) was rated as the least significant obstacle.

The municipalities taking part in the current study also emphasised the **lack of clear process descriptions on how to integrate sustainability, particularly CCC aspects, into procurement processes** (18/20, scoring 21). This is amplified by the fact that in many of the municipalities (14/20), there is a lack of knowledge of sustainability and CCC topics and also a lack of guidance documents on sustainable public procurement or CCC aspects. Both obstacles have a total score of 19). Interestingly, lack of personnel, that was rated as the main obstacle in CCC-1 was now rated as the least significant barrier (mentioned by 12/20 municipalities, score 17). Lack of expertise and knowledge on sustainability issues was deemed an important obstacle both in CCC-1 and CCC-2.

Figure 2. Obstacles on the organisational level.



Source: SEI Tallinn (2025)

Additional obstacles that the municipalities participating in the survey emphasised were communication issues due to a high number of people being involved in the processes (Västerås), the vagueness of the municipality's climate and circularity goals making it hard to include in the tender documents (Helsinki) and low commitment from the management as sustainability goals are not reflected in the budget (Helsinki, Schleswig-Holstein). The latter also mentioned the robust and outdated structure of the municipality which does not allow to update the processes, fear of high bureaucracy and rising costs. Short-term costs for the contracting authorities were also emphasized by Katowice.

The following subchapters further describe the factors leading to the main obstacles on the organisational level in the partner municipalities and associated organisations in the early stages of ChemClimCircle-2.

1.1.2.1 Guidance documents, processes and integration of goals into the procurement system

Lack of guidance materials on sustainable procurement, specifically on CCC aspects, is not considered an obstacle in six municipalities (Stockholm, Västerås, Helsinki, Bremen, Schleswig-Holstein, Gladsaxe). In Stockholm, for example, guidance materials are already part of the action plans (see more in Table 3).

Nine municipalities (Vilnius, Turku, Herzogtum Lauenburg, Tallinn, Vidzeme, Valmiera, Umeå, Gothenburg, Katowice) consider this a minor issue. In Vilnius, Vidzeme and Gothenburg, there are no municipal guidelines, but all refer to national guidance. Turku stands out with having guidance on integrating chemical aspects into sustainable public procurement, while Tallinn mentions this as an obstacle. Chemical aspects are the least familiar to municipalities out of all three C-s as both CCC-1 and CCC-2 survey results confirmed. Herzogtum Lauenburg mentions the situation on guidance varies based on the product group, e.g., office materials and working clothes are quite well covered. In general, in Valmiera and Umeå, there are guidelines, but these put too little emphasis on CCC aspects or procurement, respectively.

Taurage, similarly to Vilnius and Vidzeme, refers to the national guidance prepared by the Public Procurement Office and Ministry of Environment as there are no municipal level guidelines, but unlike others, rates this as a major obstacle. Four other municipalities mentioned the lack of guidance materials as major obstacles. Gentofte, for example, emphasises that national and local strategic goals are often not translated into guidance documents. Cēsis has municipality guidelines from 2018, which are outdated, not tailored to procurement and do not reflect CCC aspects. Falun sees the existing political documents as too general and wishes for more detailed guidance, while Smiltene mentions that there is no guidance available in Latvian.

A lack of a clear process description for integrating CCC in GPP/SPP is seen as a minor obstacle in most municipalities (15). Overall, the public procurement process does not entail sustainability aspects. These are rather derived from other strategies, action plans or documents (Vilnius, Cēsis) or are being built up now (Herzogtum Lauenburg, Tallinn) or used without guidelines based on own interests (Vidzeme). In Stockholm, Helsinki, Bremen and Falun, there is a process description that includes sustainability aspects, but it is not always used (Stockholm), done in an informal non-systematic matter (Helsinki) or is considered to be too general (Bremen). Taurage, Gentofte and Schleswig-Holstein are using informal guidelines that need to be made official. Valmiera does not have a clear process description on integrating CCC in SPP/GPP with concrete examples, which is considered a minor obstacle. Gothenburg emphasises the issues in the process by bringing an example of the time it takes to include environmental criteria, e.g., on the reusability of products.

Two municipalities (Turku and Smiltene) see this as a major issue, as there is no process description. Umeå also rated this as a major obstacle, although they describe having a clear process in place that includes sustainable ambitions (both ecological and social) in all procurements. In Gladsaxe and Västerås, however, there are no obstacles related to process descriptions to include CCC in SPP/GPP.

The degree of **integration of strategic goals into procurement systems** varies considerably across the municipalities in the Baltic Sea region (see Table 3). Half of the municipalities (10) face minor issues regarding the integration of strategic level goals into the procurement system and setting the required roles and responsibilities for it. For example, in Helsinki, this is due to organisational misalignment and lack of communication (sustainability coordination across the city is done by specialists who lack decision-making authority and management is not too familiar with sustainability aspects). Similarly, in Turku, the responsibility of integration of sustainability goals lies entirely on the procurers who are provided with "strategy cards" which include guidance on which procurements it could be beneficial for to add sustainability aspects on, however it is not mandatory and no follow up is required. In Herzogtum Lauenburg, the strategic goals will be integrated into the system through the ongoing restructuring towards centralized procurement processes. Tallinn has issues with the procurers not being familiar with the need to reflect sustainability goals into procurements. Cēsis faces issues with assigning clear roles and responsibilities, staff capacity building, and consistently applying criteria in tendering processes. In Vilnius, the strategic goals exist but are often not reflected in procurement. Stockholm, Vidzeme and Smiltene alike lack strategic alignment of goals in procurement due to lack of capacity and high turnover of staff, which does not allow for getting familiar with the system and the strategic goals and therefore leads to lack of integration. While Stockholm and Vidzeme see this as an minor obstacle, Smiltene rated this as a major one. Although Valmiera and Gothenburg rated the integration of strategic level goals into the procurement system as a minor issue, they describe how national laws, regulations and guidelines are taken into account when carrying out sustainable procurement (including climate, circularity and/or chemicals) and in Gothenburg's case even environmental experts are involved.

Seven municipalities report major obstacles in integrating strategic-level goals into procurement. In Gentofte and Taurage, strategic ambitions remain disconnected from practice, as goals and responsibilities have not yet been translated into clear frameworks or actions. Similar uncertainty exists in Umeå and Falun: in the former, it is unclear who holds responsibility for implementation, while in the latter, the strategic role of procurement is not fully understood by member municipalities. Smiltene and Schleswig-Holstein both face structural shortcomings, with visions or ambitions present but no concrete targets, capacity, or

commitment to ensure integration, compounded in Smiltene's case by high staff turnover. Finally, Katowice illustrates a systemic barrier where the absence of national-level requirements leaves municipalities without any framework to guide sustainable procurement.

Västerås, Bremen and Gladsaxe do not face any significant issues regarding the integration of goals into the procurement system. In Bremen, this is due to the support provided to the procurement officers through trainings on the relevant goals and laws. Västerås and Gladsaxe did not clarify.

Table 3. Goals and guidance documents in procurement.

Municipality	Guidance documents for integrating CCC in GPP/SPP	Processes to integrate CCC in GPP/SPP	Integration of strategic sustainability goals into the procurement system
Vilnius, LT	Public Procurement Office guidance materials are available here. No municipal guidelines.	Public procurement process exists, but it is not connected to sustainability aspects.	The strategic action plans of the organisation, as well as national regulations, must be implemented by the administration of the municipality and the bodies under it. However, few of them include procurement.
Stockholm, SE	Guidance is part of the action plans. Additionally, there are lists with "tips for purchase" for ordering from the assortments in the e-commerce system. The tips state which article numbers are the best in the assortments in different areas. Available here.	Public procurement process exists, but it is often not used.	The integration is lacking due to high staff turnover in the procurement unit. The unit is too unstable to get to know the system and the goals that should be integrated there.
Västerås, SE	Not an issue.	Two roles dedicated to implementing sustainability aspects in every public procurement.	Not an issue.
Helsinki, FI	There are city-wide guidelines that are used the most (updated versions, e.g., KEINO-materials are available for all in the procurement intranet and in the procurement responsibility network Teams). There are case examples from previous pilots, city guidelines, and link to the table of different sustainability criteria (including e.g. Motiva, green deal and EU GPP criteria). Information is plentiful but it is not well known how widely it is used when planning procurement.	Assessing the effectiveness of procurement from a sustainability perspective, identifying sustainability objectives to be taken into account in procurement, and defining sustainability criteria suitable for procurement is not a systematic process in all procurement units. Consideration of the use of sustainability criteria is often done in a rather informal manner and its documentation varies. Some unis such as the city office have set quite clear process to integrate sustainability into	The strategic goals are quite well integrated in the procurement system, esp, climate and circularity. Chemicals are not addressed systematically, but rather ad hoc. The sustainability coordination is distributed throughout the city which can cause different practices between the divisions. As the main coordination is done by specialists in different divisions who do not have the authority to make decisions for the organisation, it makes the decision-making and process development ineffective.

		procurements. Some units do procurements ad hoc and there is really no set process to cover sustainability. Especially, smaller procurement units hope for a clear process to support the procurement preparation for this reason. Yet, all units have used sustainability criteria in their procurements, and sustainability is considered quite well, however informally.	
Turku, FI	Guidance on chemicals integration into SPP.	No process description	Strategic goals are up to the procurer to integrate based on the "strategy cards" that provide examples. Not mandatory to use them, no follow up required.
Bremen, DE	Two core guidance documents related to SPP: The Core Labour Standards Regulation (Kernarbeitsnormverordnung) focuses on socially responsible procurement and the labour standards of the International Labour Organisation. The administrative regulation for the procurement of the Free Hanseatic City of Bremen - State and Municipality of Bremen (Verwaltungsvorschrift für die Beschaffung der Freien Hansestadt Bremen - Land und Stadtgemeinde Bremen (VVBesch)) sets guidelines on green public procurement for each product group within its annex 2. It focuses mainly on the usage of independent or governmental eco labels, which include circularity, CO2 emissions and tox-free products. The latter is currently under revision to include stricter regulations on climate and circularity. Lagging due to delays on new rules and regulations on the national level.	The employees responsible for the procurement process must apply the obligatory guidelines on sustainable procurement in each step of the tender process. Rough guidelines of the process description are provided, however this is not a step-by-step approach.	The centralized procurement structures are used to make sure adequate support is given to the colleagues doing the tenders and they are aware of the goals and laws on sustainable procurement. Main focus is on climate neutral and circular procurement, aspects of tox-free products are kept in mind through usage of eco-labels but not written out specificlly in the goals.
Herzogtum Lauenburg, DE	Depending on the product: for some there are already quite good guidance documents available,	Process descriptions and structures are under preparation.	Ongoing restructuring – sustainability criteria will be integrated step by step.

	e.g. office materials, working clothes. Other, more specific product groups are more difficult, e.g. equipment for the administration´s construction yard.		
Tallinn, EE	No guidance materials on chemicals.	Process descriptions and structures are under preparation.	Lack of awareness and understanding of the sustainability goals and the need to integrate them into procurements.
Vidzeme, LV	National guidelines on GPP are seen as sufficient. They incorporate sustainability criteria and are considered relevant and up to date, but there are no guidance documents on sustainability or CCC aspects separately. This could lead to too high administratary burden.	No clear process description, but the employees composing the procurements take sustainability into account, based on common understanding and specific requirements, if there are any (case specific).	Lack of capacity in the procurement unit.
Taurage, LT	Guidance prepared by the Public Procurement Office and the Ministry of Environment. No municipal guidelines.	Using informal guidelines from CCC-1.	Strategic-level goals are not yet effectively integrated into the procurement system or translated into clear roles and responsibilities within the organization. While discussions are ongoing regarding how to formalise these roles, no official framework has been established so far.
Gentofte, DK	National and local strategic goals are often not translated into guidance documents.	Using informal guidelines.	Strategic ambitions are not translated into goals and actions, and responsibilities are not assigned.
Cēsis, LV	Municipality guidelines from 2018 are outdated, are not tailored to procurement and do not reflect CCC aspects. These do not translate the strategic goals into procurement procedures, such as criteria for green or circular procurement, recommendations for including climate or chemical safety considerations in tenders, sector-specific procurement standards (e.g., construction, food services), checklists or staff training material on sustainable procurement.	No formal process description or standardized workflow explicitly detailing how sustainability factors, particularly climate impact, circular economy, and chemicals management should be embedded throughout procurement stages. Some informal practices or partial procedures may exist, but these are not uniformly documented or institutionalised, which may cause variability in application and limit the	The regulatory framework permits green procurement, and sustainability is mentioned in strategic planning documents. However, there is a minor gap in terms of practical implementation, such as assigning clear roles and responsibilities, staff capacity building, and consistently applying criteria in tendering processes.

		consistent mainstreaming of sustainability.	
Falun, SE	Political documents are too general, and need more specific guidance.	General process descriptions exist.	The strategic dimension of procurement is not fully understood by all member municipalities.
Smiltene, LV	No guidance available in Latvian.	Process descriptions are not available in Latvian and are not adapted to the conditions in the municipality.	Lack of organisational targets and capacity, high turnover.
	SPP guidelines developed by the municipality, a climate change concept and the commitment to be a fair-trade organisation.	There are descriptions, information and guidelines, but they are voluntary and there is no way to ensure that employees follow them.	There are visions and guiding documents, but the municipality lacks commitment and clear goals.
Valmiera, LV	Too few examples and little emphasis on sustainability/CCC in the Ministry of Smart Administration and Regional Development website and the Procurement Monitoring Bureau guidelines.	There is a lack of a clear process description and explanatory information with real and factual examples to take into account and apply sustainability criteria in public procurement, especially related to CCC.	National laws, regulations and guidelines are taken into account when carrying out sustainable procurement (including climate, circularity and/or chemicals). No additional requirements.
Umeå, SE	Not specifically procurement-focused.	There is a clear process in place that includes sustainable ambitions (both ecological and social) in all procurements.	Lack of understanding about who is responsible for implementing the strategic goals in the procurement system.
Gothenberg, SE	Most valuable information is gained through the National Agency for Public Procurement and meetings with potential contractors.	The time for preparing environmental requirements for a procurement is short and sometimes a major revision to include, for example, reused products is not possible.	Clear process for procurements in which environmental specialists are consulted to integrate sustainability goals.
Gladsaxe, DK	N/I	N/I	N/I
Katowice, PL	N/I	N/I	Due to the absence of national-level requirements.

Source: compilation of the survey results by the authors.

1.1.2.2 Capacity on sustainability and procurement personnel

Most municipalities (9) regarded **the shortage of employees with knowledge of sustainability, especially climate, circularity, and chemicals, or insufficient access to such employees**, as a minor obstacle. The answers reflect different aspects of the problem. Stockholm and Tallinn have existing structures and

departments, but poor communication hinders processes. Similarly, in Turku, there is a sustainability department, but their help with procurements is not always sufficient and concrete. The Municipality of Vilnius has sustainability structures, but they note that the support of governmental institutions is limited. For Herzogtum Lauenburg, the minor issue is the lack of employees with expertise in sustainable procurement. Genofte and Falun both point out that they lack employees who are competent in all necessary areas, and Genofte is uncertain whether they should have in-house knowledge. With Gothenburg and Vidzeme, there are discrepancies between responses and the provided explanation. They stated that the lack of sustainability knowledge is a minor obstacle, but did not give a reason, only explaining that they have enough people with environmental knowledge.

Five municipalities see the shortage of employees with sustainability knowledge as a major obstacle. Smiltene, Schleswig-Holstein, Taurage, and Valmiera all emphasise that the position requires a broad range of knowledge (climate, circularity, chemicals, procurement). Genofte and Falun mentioned this as a minor issue. Taurage also notes the limited capacity of the responsible employee. Katowice's problem is the high cost of employing sustainability experts.

Six municipalities (Västerås, Helsinki, Bremen, Cēsis, Umeå, Gladsaxe) have enough competent employees, so they answered that there are no obstacles. However, two of these (Helsinki and Umeå) still describe minor obstacles in their explanations. Helsinki comments that core services should be more responsible for demanding sustainability criteria in procurements. Umeå highlights a structural problem where employees with in-depth sustainability knowledge are not working in the procurement department.

Five municipalities (Vilnius, Stockholm, Vidzeme, Smiltene, Schleswig-Holstein) view the **shortage of personnel dealing with procurement** as a major obstacle. Seven (Västerås, Herzogtum Lauenburg, Taurage, Genofte, Valmiera, Umeå, Gothenburg) consider it a minor one. Eight (Helsinki, Turku, Bremen, Tallinn, Cesis, Falun, Gladsaxe, Katowice) report no obstacles.

The municipalities rating this as a major obstacle describe the shortage as structural and ongoing, often worsened by high staff turnover (Stockholm). In some cases, procurement tasks are carried out without dedicated specialists or by staff managing other responsibilities, which constrains expertise and continuity (Vidzeme, Schleswig-Holstein). Vilnius marks the problem as major, but does not further explain.

Among the municipalities that see it as a minor obstacle, shortages are acknowledged but generally portrayed as intermittent or tolerable. However, Genofte and Valmiera mention that the shortage is continuous. Some municipalities experience gaps only occasionally (Västerås, Umeå). Others complete procurements successfully, but at a slower pace due to workload pressures (Herzogtum Lauenburg). For Taurage, the barrier lies more in the limited time than in the absence of staff.

Those reporting no obstacle generally rely on established procurement structures. Stable staffing or centralised services reduce the pressure (Turku, Bremen, Tallinn). Further, in Helsinki, the number of procurement personnel is sufficient, but they emphasise that in smaller units, there is capacity for further development of sustainability. Four municipalities (Cesis, Falun, Gladsaxe, and Katowice) reported no barriers regarding this.

Table 4. Municipalities' knowledge on sustainability topics and procurement personnel capacity.

Municipality	Knowledge	Procurement personnel
Vilnius, LT	Public institution established by the Vilnius City Municipality, "Climate Neutral Vilnius", and a Chief Sustainability Officer. The sustainable procurement unit of PPO and the Ministry of Environment gives advice and consultations; however, they are not always available.	N/I
Stockholm, SE	Sometimes there are obstacles in the internal communication, and it seems to take time to	There is a large turnover of staff at the unit doing many of the centrally procured contracts. They have challenges keeping

	have the sustainability coordinator function working optimally.	the staff and finding competent replacements when they quit. This lack of continuity results, and thus, the sustainability experts often become the ones knowing most about the specific procurement areas since they have been involved in multiple contract periods.
Västerås, SE	The two roles are placed within the procurement unit.	Shortages are experienced from time to time, but not always.
Helsinki, FI	Three of the biggest procurement units have their own sustainability/environment specialists. The municipality owned companies too have environmental specialists to ensure sustainability in the procurements. Also, there are shared resources to coordinate and aid in sustainable procurements city-wide. The city-wide network is co-lead by the city office and the environmental specialist from the Urban Environment Division. In addition, there is the opportunity to utilise external sustainable procurement experts through the VAUHTI network and other national and international cooperation networks. Procurement experts often have a reasonably good understanding of sustainability objectives, but core operations should be made more aware of them. One minor obstacle is that core services should be more responsible for demanding sustainability criteria in the procurements. Procurement specialists are the ones doing the tendering on behalf of the core service-> the core services need to demand sustainability.	The size of procurement units influences sustainability practices. Smaller units lack the resources needed to develop sustainability initiatives and struggle to allocate working time to development. Larger units, on the other hand, have specialised staff dedicated to developing sustainability.
Turku, FI	There is a department at the City of Turku that helps with sustainability questions, but some of the staff in the Procurement Services find it difficult to get clear and concrete help from them.	No shortage of personnel at the moment.
Bremen, DE	They have experts in socially responsible and green public procurement who work closely with employees responsible for procurement and tenders. The expert on socially responsible procurement is directly employed within the central procurement unit or organisation. The expert on green public procurement is based at the Ministry for Environment, Climate, and Science and maintains close contact with the central procurement unit.	A centralized procurement organisation with multiple staff dedicated to product groups and framework agreements is maintained. Tendering services and legal support for administrative organizations are also provided.
Herzogtum Lauenburg, DE	Regarding the sustainability criteria, there is only one employee in the climate action team, but she maintains regular contact with the procurement department, which is	The procurement department has a lot of work, so some processes might take a bit longer.

	responsible for procurement processes. Together, they determine which sustainability criteria can currently be integrated and which cannot.	
Tallinn, EE	They are often unaware of the existence of such experts in the organisation because it is not a single legal entity, and the structure of the entities and their tasks often remains unclear.	No shortage of procurement personnel is experienced, but difficulties with follow-up are faced.
Vidzeme, LV	All project managers and spatial planners work with projects and areas that promote sustainability. External experts can also be attracted to provide expertise on a particular field.	The biggest obstacle is considered the lack of procurement specialists. Procurement commissions are formed of other project managers with limited capacity.
Taurage, LT	The municipality has a Climate Action Lead, but due to limited capacity, this person is not involved in green public procurement (GPP). There are no staff members with expertise in chemicals, and overall, sustainability-related knowledge, particularly on climate, circularity, and chemicals, is lacking.	A public procurement department is present, but insufficient time is available to manage all procurements.
Gentofte, DK	Do not hold all competencies and remain unsure if they should have expert knowledge in-house themselves.	Continuous shortage of personnel
Cēsis, LV	Employees actively improve their knowledge through regular participation in trainings related to sustainability topics, including green procurement. Internal communication and cooperation between various units is functional and effective.	N/I
Falun, SE	They have knowledgeable staff, but the challenge lies in the wide range of knowledge areas required by the role.	N/I
Smiltene, LV	Problems with human resources turnover and capacity. It seems that one employee needs to know almost everything.	There is a high workload and low staffing levels.
Schleswig-Holstein, DE	Some employees work with sustainability and climate change, but the majority do not know enough about the topics. They do not have the time and resources to inform themselves about sustainability. Old/confusing structures within the municipality also hinder communication and cooperation in some parts.	Personnel with procurement and sustainability knowledge are difficult to find. Work on sustainable public procurement is often carried out “on the side” of other tasks.
Valmiera, LV	There is a shortage of staff with knowledge about sustainability, particularly climate, circularity, and chemicals. Seminars and training in this field are very limited.	A lack of staff capacity in procurement is present, especially in applying green public procurement, climate, circularity, and chemicals.
Umeå, SE	Many employees are experts in sustainability; however, they do not work directly within the procurement department. The employees within the procurement department have	Personnel shortages have been experienced from time to time.

	some sustainability knowledge, but are not specialists.	
Gothenberg, SE	The organisation has three environmental specialists who set environmental criteria in public procurements and share templates and formulations with each other. Another colleague specialises in climate data. They are supported by a national network of environmental specialists from other municipal contracting authorities.	Environmental criteria in procurements are set by three environmental specialists, who also share templates. Climate data specialization is carried out by another colleague.
Gladsaxe, DK	N/I	N/I
Katowice, PL	The costs of such employees are a major obstacle	N/I

Source: compilation of the survey results by the authors.

1.1.2.3 Monitoring of procurement processes

Monitoring the alignment of CCC in GPP/SPP with strategic goals was seen as an obstacle in almost all municipalities (except Gladsaxe): a major one in 11 municipalities and minor in eight.

The main reasons behind major obstacles were the absence of a formal, end-to-end monitoring framework and weak linkage between procurement activity and strategic sustainability goals (Vilnius, Stockholm, Cēsis, Taurage, Umeå), lack of tools/metrics to capture real impact rather than box-ticking (Stockholm, Tallinn, Gothenburg), and capacity or expertise constraints, especially around chemicals (Smiltene). Schleswig-Holstein explains that voluntary sustainable public procurement makes systematic oversight difficult and in Herzogtum Lauenburg, monitoring capabilities are simply not in place yet. Taurage notes that there are no strategic goals for chemicals in procurement.

The municipalities that consider monitoring as a minor obstacle have elements of monitoring in place, but they are late-stage, uneven across units, or not consistently executed (Helsinki, Gentofte, Falun). In Turku, there are guidelines without a mandatory process, leaving responsibility to individual procurers. Vidzeme mentions that monitoring happens from a project rather than a procurement perspective. Like many actors and communication gaps, practical frictions also keep the issue from being fully solved (Västerås). Valmiera and Bremen state that the monitoring is lacking, but do not expand on the topic.

Table 5. Monitoring processes for CCC in GPP.

Municipality	Monitoring
Vilnius, LT	Action-plan reporting is conducted, but the procurement process is not linked to the monitoring of strategic goals.
Stockholm, SE	The criteria themselves are not monitored. Procurement staff are required to tick a box for each sustainability goal reflected in the procurement, and statistics can be extracted from the system, but details of the actual criteria set are not captured.
Västerås, SE	Many people are involved, which sometimes leads to communication challenges.
Helsinki, FI	Each procurement is presented at a unit meeting and reviewed with a standard template to assess alignment with procurement strategy objectives. However, this review is performed at a fairly late stage. Additional approaches are being developed to better reflect alignment with sustainability targets (e.g., DigiHelsinki's company-specific targets and annual reporting, the "Kestävä Kymp" project). Smaller units are not resourced to carry out such development work.
Turku, FI	No mandatory process has been established in the procurement unit. General and national guidelines are available, but application is left to each procurer individually.
Bremen, DE	Such monitoring is currently lacking in day-to-day work, though improvements are desired.

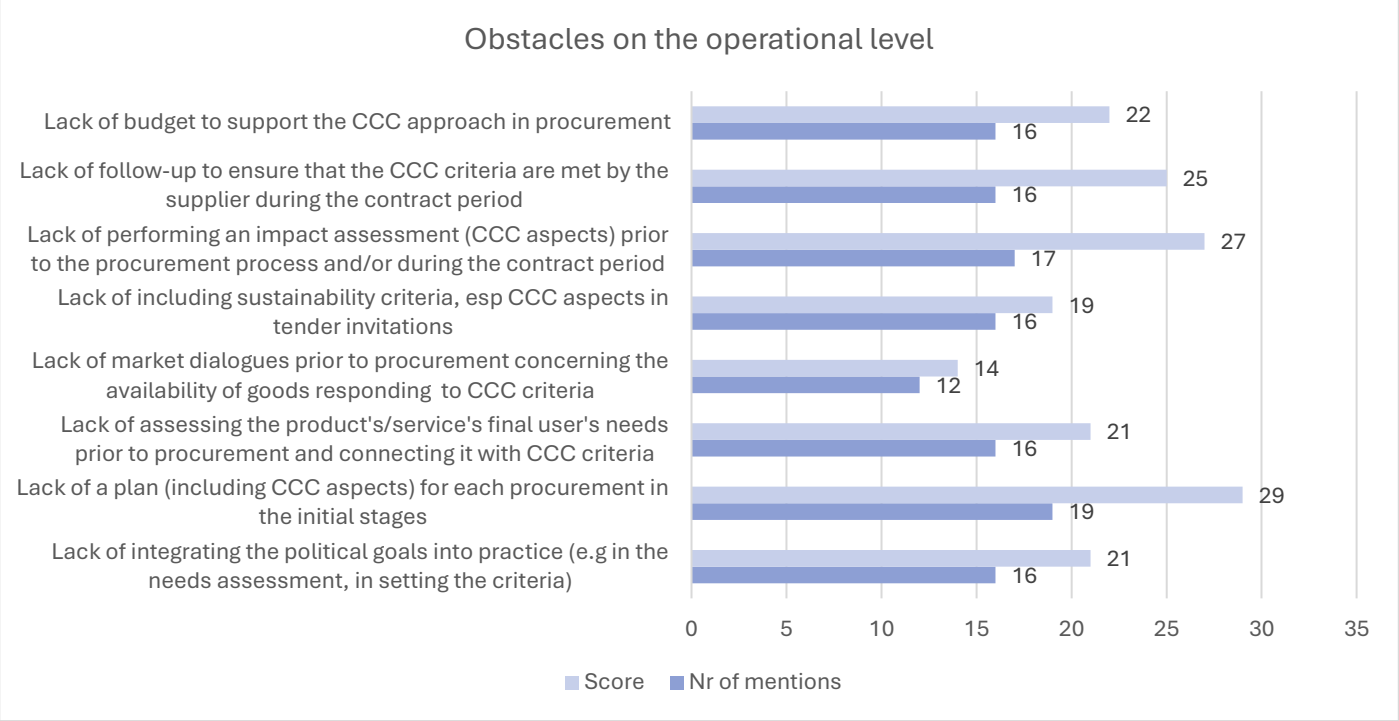
Herzogtum Lauenburg, DE	Adequate monitoring tools are not available at present.
Tallinn, EE	Goals can be set in ways that do not reveal the real impact.
Vidzeme, LV	Monitoring is performed from a project perspective (contribution to strategic goals), rather than from a procurement perspective.
Taurage, LT	Strategic goals for climate, circularity and chemicals in procurement have not been established. Municipal climate-neutrality and waste-management goals exist, but goals regarding chemicals are absent. Municipal sustainability goals are not well connected to procurement goals.
Gentofte, DK	A process exists but is not always executed and may require revision.
Cēsis, LV	A well-established, formal monitoring process to verify systematic alignment of procurement needs and criteria with strategic objectives has not been instituted. Oversight of green procurement implementation is limited; regular evaluations or audits are not performed; feedback loops are missing – creating a risk of gaps between policy ambitions and procurement outcomes.
Falun, SE	Processes are monitored, but alignment with the municipality's sustainability ambitions may be insufficient.
Smiltene, LV	Human and financial resources are lacking, and knowledge in the field of chemicals is insufficient.
Schleswig-Holstein, DE	Development is difficult to monitor because sustainable public procurement is voluntary.
Valmiera, LV	A process to monitor whether sustainability aspects (especially CCC) are aligned with strategic objectives is lacking.
Umeå, SE	Alignment is ensured for procurement, but not for other areas.
Gothenberg, SE	Measurement of these factors is difficult; only the share of electric or fossil-free vehicles on contracts is measured.
Gladsaxe, DK	N/I
Katowice, PL	N/I

Source: compilation of the survey results by the authors.

1.1.3 Operational level

The biggest obstacle on the operational level (Figure 3) that almost all municipalities (19/20) mentioned was **the lack of planning on how to integrate sustainability or CCC aspects into the procurement process in the initial stages** (score 29). **Lack of impact assessment during the procurement process or during the contract implementation** (mentioned by 17 municipalities with a total score of 27) is a key obstacle throughout the procurement process on all three levels. This closely corresponds to the issue of **minimal or obsolete follow-up during the contract period to oversee that CCC criteria are implemented** by the supplier (16 mentions, score 25). Lack of budget to integrate CCC criteria, lack of assessing the product/service's final user's needs prior to procurement and integrating the political goals into procurement are deemed as important but not the key obstacles by the municipalities (mentioned by 16 municipalities, scoring 21-22). While using CCC criteria in other stages of the procurement is a major obstacle, including sustainability criteria in tender invitations and organising market dialogues to determine the sufficiency of products and services available that fit the CCC criteria are not defined as big obstacles by many survey participants in CCC-2 (mentioned 16 and 12 times respectively, with a scoring of 19 and 14). Lack of suppliers (determined with market analysis and dialogues) was mentioned as an operational obstacle in CCC-1 as well.

Figure 3. Obstacles on the operational level.



Source: SEI Tallinn (2025)

Additional obstacles that the municipalities participating in the survey emphasised were dysfunctional dialogue during tendering since the questions are handled through the system, which is not flexible enough, leading to misunderstandings and retracting criteria (Stockholm), lack of budget (Västerås), limited educated personnel on sustainability issues, hard-to-understand information, lack of support and voluntary non-binding guidelines (Schleswig-Holstein).

The following subchapters further describe the factors leading to the main obstacles on the operational (procurement) level in the partner municipalities and associated organisations in the early stages of ChemClimCircle-2.

1.1.3.1 Integration of goals and planning into procurements

Integrating politically decided goals into procurement practice is seen as a significant obstacle in five municipalities (Smiltene, Taurage, Gentofte, Falun, Umeå). They emphasise above all the uncertainty that arises when political ambitions are not translated into the municipality's goals and/or procurement processes. In Falun, for example, although the political goals are translated into procurement processes, the goals are considered too general. Umeå states that following the goals varies significantly between procurements. Smiltene stresses resource shortages, noting that they lack sufficient staff and financial capacity to operationalise political objectives into procurement as award criteria or technical specifications.

For most municipalities (11), this is seen as a minor obstacle. In some cases, sustainability or innovation ambitions are integrated informally or without detailed guidelines/set procedure, which leads to inconsistencies (Vilnius, Stockholm, Västerås, Bremen, Herzogtum Lauenburg, Cēsis). In other cases, the political goals are difficult to link as procurements are part of specific projects (Vidzeme), there is a lack of capacity (Valmiera) or budget (Gothenburg) in the organization to assess the climate, circularity and chemical aspects in procurements to comply with the GPP requirements. Tallinn emphasises that the integration of goals in procurement depends on the client's awareness. Despite these obstacles, most of these municipalities stress that political goals can be integrated with some adjustments.

Finally, four municipalities report no obstacles with this integration (Helsinki, Schleswig-Holstein, Gladsaxe and Katowice). In Helsinki, procurement is already closely linked with sustainability and social policies, and political goals are systematically embedded in procurement. The sustainability aspects (CCC) are covered

depending on which aspect is central and most influential in the procurement. Schleswig-Holstein, however, states that there are no obstacles due to the politically decided goals being voluntary regarding procurement.

Almost all municipalities (except Gladsaxe) stated that the **lack of planning and integration of CCC aspects in procurements** is an obstacle in their municipality. Half of the municipalities (10) rated this a major issue, and the other half (9) minor. Interestingly, the associated organisations mainly stated it was a major obstacle (all but one), whereas the partner municipalities rather categorised it as a minor obstacle.

The major obstacles were related to a lack of involvement of sustainability experts in the initial stages (Stockholm) or not involving GPP/CCC in the yearly procurement plans (Taurage, Gentofte). While Smiltene, Gothenburg and Valmiera mention a lack of human and financial resources for planning and involving CCC, Schleswig-Holstein emphasises that there are too many people involved in the procurement process, making it difficult to plan for and monitor. Umeå explains the lack of planning with significant variability between procurement staff (hinting at no official planning process being set up). The municipalities that noted it as a major obstacle stressed that no early structured procurement planning meant sustainability experts or CCC criteria were seldom involved from the start, impeding the integration of climate/circularity goals.

The minor obstacles entailed having no formal planning process in place (Vilnius, Helsinki, Bremen, Cēsis), involving sustainability aspects too late in the process (Västerås) or a lack of knowledge (Vilnius, Turku). Similarly to Schleswig-Holstein (who listed this as a major obstacle), Helsinki stresses issues with coordination as procurement is part of the work of several divisions around the city; they state there is no process in place, but bring an example that most of the units map sustainability aspects in a procurement calendar well ahead of time. Tallinn and Vidzeme, however, have a process in place for preparing an individual plan for each procurement, but these do not include CCC aspects. The municipalities that saw this as a minor obstacle generally explained that while formal procurement plans might be lacking, they do conduct some upfront analysis or informal planning of criteria; therefore, CCC aspects are still considered to an extent.

Common themes were the lack of an official early-planning process. Still, the municipalities rating it "minor" often had some planning practices (or growing improvements in integrating criteria), whereas those rating it "major" highlighted the complete absence of systematic planning for each tender, leading to CCC criteria being overlooked or added too late.

Table 6. Integration of political goals and planning procedures into public procurement.

Municipality	Integration of political goals into practice	Lack of planning for CCC integration in the procurements
Vilnius, LT	Political objectives are not always linked to specific procurement procedures, achieved through many different purchases. Needs analysis, market study, and consultations usually conducted.	No formal plan, but an analysis of the criteria is always made. Sometimes, there is a lack of knowledge.
Stockholm, SE	Goals set at the political level are not always included in the planning of centrally procured contracts.	Some plans are made, but sustainability experts are rarely involved.
Västerås, SE	Sometimes, sustainability aspects are included too late in the process.	Sometimes, sustainability aspects are included too late in the process.
Helsinki, FI	Climate, circular economy, and chemicals are systematically included. Almost all tenders have environmental criteria. Practices include pre-demolition audits (Stara).	Sustainability coordination distributed across divisions, leading to different practices. No categorical process, but sustainability is included in planning of every procurement. In most units

		sustainability aspects are mapped in a procurement calendar well ahead of time.
Turku, FI	N/I	Depends on procurement target and working group. In some procurements it is easier to implement CCC than others.
Bremen, DE	Strategic thinking lacking in daily tender processes. Focus more on day-to-day than overarching political goals. Green procurement goals part of the expert's daily work.	No plan before procurement begins; approach is a work in progress, with exchanges with companies but no in-depth planning stage.
Herzogtum Lauenburg, DE	Starting to integrate sustainability in procurement processes; still building working structures.	Preparing the 2nd tender with sustainability criteria. Waiting for supplier feedback to see if ideas can be implemented in practice.
Tallinn, EE	Depends on the client's awareness of goals and the need to integrate those into procurement.	Each procurement has an individual plan, but there are no clear requirements for CCC aspects yet.
Vidzeme, LV	Hard to link political goals to specific procurement cases, as procurements are mostly project-based.	Internal instructions list steps before starting procurement (procedures, time planning), but not sustainability or selection criteria.
Taurage, LT	Goals not integrated into procurement. National-level GPP goals separate from municipal strategic goals.	Yearly procurement plans exist, but they do not involve GPP/CCC aspects.
Gentofte, DK	Need to translate political goals into concrete procurement criteria.	General tender process playbook does not specify planning for CCC aspects; no pre-screening of potential.
Cēsis, LV	Not all employees informed about political goals; no specific document instructing inclusion of sustainability criteria.	No specific document requiring inclusion of sustainability criteria.
Falun, SE	Although goals are integrated, they remain general. Need for more specific goals tailored to goods/services.	Significant room for improvement in planning processes.
Smiltene, LV	Lack of human and financial resources for integration.	Lack of human and financial resources.
	Politically decided goals are currently voluntary in procurement, therefore it is not an obstacle. There is a guideline with procurement criteria that can be used by the employees.	Too many people involved in procurement, making monitoring and planning difficult. CCC aspects need stronger focus.
Valmiera, LV	Procurements are subject to the minimum requirements set by the Green Public Procurement Law, but there is no staff capacity to assess sustainability, climate, circulation and chemical aspects of each procurement before making a procurement.	At initial stage of procurement there is lack of time, information, and methodology to apply and evaluate CCC aspects.
Umeå, SE	Integration varies depending on procurement.	Progress is being made, but implementation still varies depending on who is responsible for procurement.

Gothenberg, SE	Budgets of user organizations sometimes cannot cover costs of tough environmental requirements (e.g., organic foods).	Short preparation times make it difficult to include demanding environmental requirements, such as reused products.
Gladsaxe, DK	N/I	N/I
Katowice, PL	"Politically decided" goals not clearly defined in the Polish municipal system.	N/I

Source: compilation of the survey results by the authors.

1.1.3.2 Assessing users' needs, market dialogues and including sustainability criteria in tender invitations

Most municipalities (11) saw the **lack of assessing the product's/service's final users' needs** prior to procurement and connecting it with CCC criteria as a minor obstacle, while five (Stockholm, Gentofte, Smiltene, Gothenburg and Katowice) rated it as a major one. Across the major obstacle group, the common thread is weak or inconsistent engagement with end users early in the process, which leads to criteria that do not match operational needs and, in turn, off-contract purchases or missed sustainability follow-up (Stockholm, Gothenburg). Smiltene, similarly to many previous topics, lists this as a major obstacle due to capacity constraints.

Among the municipalities who rated this as a minor obstacle, there are generally partial practices in place that surface user needs, but these are uneven or come too late: ad-hoc demand can squeeze timelines (Turku, Västerås), engagement happens but is not always coupled with CCC know-how, so criteria are applied inconsistently (Vilnius, Tallinn, Vidzeme, Tauragė District, Cēsis, Falun, Municipality in Schleswig-Holstein). Several mitigate the risk by involving the eventual users directly or by asking for expectations up front, which keeps the obstacle from becoming critical (District of Herzogtum Lauenburg, Valmiera). Three municipalities (Helsinki, Bremen, Gladsaxe) reported no obstacles related to this and one (Umeå) did not answer the question. In municipalities where this is considered not an obstacle, more mature structures for continuous end-user dialogue (category management, standing working groups, framework agreements, and regular meetings) are in place, so needs are known and refreshed during the contract lifecycle (Helsinki, Bremen).

Overall, the difference between "major" and "minor" lies less in recognition of the problem and more in the consistency and timing of end-user engagement as well as capacity and know-how to translate needs into CCC-aligned criteria: where structured mechanisms and skills exist (e.g., Helsinki, State of Bremen), the obstacle recedes; where they are patchy or under-resourced (e.g., Stockholm, Smiltene, Gothenburg), it remains a binding constraint.

Lack of market dialogues prior to procurement concerning the availability of goods responding to CCC criteria was considered a minor obstacle in half of the municipalities (10), while two (Smiltene and Umeå) rated it as a major one. Eight municipalities (Vilnius, Helsinki, Turku, Taurage, Gentofte, Gothenburg, Gladsaxe, Katowice) did not see any obstacles related to the market dialogues.

The ones that see it as a major obstacle, point to limited capacity and expertise to run effective dialogues (Smiltene, Umeå), resulting in insufficient engagement with suppliers able to meet CCC criteria. The minor obstacle group generally conducts dialogues, but still mention several gaps: some see that practices are improving, yet often unevenly (Stockholm, Västerås, Bremen, Falun), depth and CCC focus can be inconsistent or dependent on specific staff (Tallinn, Vidzeme, Schleswig-Holstein, Valmiera), and in some cases below-threshold purchases or narrow supplier pools can constrain interaction (Vidzeme, Cēsis). Among those reporting no obstacles, regular, structured interactions make dialogue routine (Vilnius, Helsinki, Turku, Tauragė), though some still note room to better steer conversations toward CCC aims (Gentofte). Overall, the divide reflects capacity and consistency: where processes and staff capability to run targeted dialogues are in place, market engagement is not a barrier; where resources or CCC-specific know-how are thin, dialogue either doesn't happen or lacks the expertise needed to shape viable CCC criteria.

Lack of including sustainability criteria in tender invitations was considered a major obstacle in three municipalities (Turku, Smiltene, Schleswig-Holstein), while most (13) saw it as a minor obstacle. Four

municipalities (Helsinki, Taurage, Gladsaxe, Katowice) did not report obstacles related to including sustainability criteria in tender invitations.

In the major obstacle group, the reasons cluster around limited expertise and capacity (Turku, Smiltene) and inconsistent application that varies by person or category (Municipality in Schleswig-Holstein). These gaps make it difficult to translate sustainability intentions into concrete, reliable criteria at tender stage.

The municipalities that see it as a minor obstacle generally include criteria, but unevenly. Common patterns are partial or imperfect inclusion (Stockholm, Västerås, Falun, Umeå), procedural inclusion via eco-labels with room to diversify methods (Bremen), training needs leading to variable uptake (Tallinn, Vidzeme), cautious weighting while testing market response (Herzogtum Lauenburg), and "minimum compliance" driven by national rules or prioritization choices (Vilnius, Valmiera, Cēsis, Gentofte, Gothenburg).

Those reporting no obstacle typically have established practice or mandates that make inclusion routine (Helsinki, Tauragė), though notes suggest niche limitations (e.g., core service needs affecting specific categories in Helsinki). Overall, where skills, guidance, and consistent processes are in place, inclusion is standard and where they're resource-constrained, inclusion happens but lacks depth or consistency.

For more details, see Table 7.

Table 7. Lack of assessing users' needs, including sustainability criteria in tender invitations and checking the availability of products/services fulfilling CCC criteria in market dialogues.

Municipality	Lack of assessing the final users' needs	Lack of including sustainability criteria in tender invitations	Lack of market dialogues
Vilnius, LT	Needs planning usually done by beneficiary units; end-users not always consulted; occasional knowledge gaps.	Environmental criteria are mandatory nationally; additional criteria are allowed but can't replace minimums.	Market consultation always done (except low value); specs published for comments; public pre-tender consultation.
Stockholm, SE	Communication with end-user "reference groups" is often lacking; leads to off-contract buying and weak follow-up.	Some criteria included, but sometimes the wrong wording due to lack of communication with sustainability experts before the advertisement of tender.	The practice has improved. Often RFI and sometimes direct supplier dialogue.
Västerås, SE	Sustainability sometimes included too late, which causes this problem.	Often works, but contracting authorities sometimes have differing views on what to include.	RFIs are common, but sustainability questions are not always the right ones.
Helsinki, FI	Category management model, in which category managers and the procurement entity are in continuous dialogue with each other during the procurement contract period + working groups keep continuous dialogue with end-users.	Criteria for climate/chemicals/circularity are commonly used citywide (chemicals are less than others). Some limits where core services dictate needs (e.g., when the University of Applied Sciences needs combustion engine cars/trucks/etc for educational purposes, not all vehicles can be electric or use biofuels/gas).	Market dialogues used often; sustainability included. Only with small procurements and if the information about the market/products is readily available, the market dialoque might be left out. Proactive dialogues increasing.
Turku, FI	Sometimes there are ad-hoc needs where it is too late for CCC; otherwise there's time to consider criteria.	More expertise is needed to include these criteria in tenders.	Market dialogues are organised very often.
Bremen, DE	End-user needs considered via framework agreements, regular meetings to get feedback for new and	Criteria usually included via eco-labels in tender invitations (easier to monitor and trust). Open to broadening beyond labels.	Dialogues held for complex goods/high sustainability needs

	existing products + catalogue updates.		(e.g., furniture, textiles, cars).
Herz Lauenburg, DE	Procurement unit asks final users about expectations.	Started with low weighting for sustainability criteria to see the market reaction (2 first tenders), plan to increase.	Currently, no dialogues; preparing 2nd tender and awaiting supplier feedback.
Tallinn, EE	Works if the end-user knows the needs; CCC benefits must be introduced/explained.	Criteria availability varies across many entities; in-house training is needed for applying the criteria.	Works if GPP project manager is involved and can help with the market dialogue. Otherwise dialogue may be skipped or CCC options missed.
Vidzeme, LV	Specs are set by project managers who are often the final users.	Guidance would help; inclusion itself is not the biggest issue, follow-up is the main problem.	Below-threshold purchases use market research/price surveys along with the technical specification (no direct dialogue). Consultations must be open/transparent.
Taurage, LT	Planning done by initiators; it is unrealistic to expect everyone to know CCC in depth.	Sustainability criteria always included (national GPP goal).	Dialogues held before strategic buys or when knowledge/market gaps exist.
Gentofte, DK	The general tender process playbook does not specify planning for CCC aspects; no pre-screening of potential.	Sometimes included, but not always prioritised for analysis, formulation, or spending.	Market dialogues mainly happen; tools are needed to guide the dialogue toward CCC.
Cēsis, LV	Specialists lack knowledge.	Mostly, only mandatory national requirements are used to simplify the procurement process.	Small applicant pool in some categories; consultations held but response is limited.
Falun, SE	Challenging to anchor sustainability to users' needs.	Environmental criteria included, but not always comprehensive for all sustainability challenges (CCC).	Extensive dialogue, but not detailed enough to cover sustainability within the process.
Smiltene, LV	Lack of human and financial resources.	Lack of human and financial resources.	Lack of human and financial resources.
	Long-standing routines - hard to implement new strategies/criteria.	Varies by responsible person and category; some tenders are sustainable, others are not.	Innovative/open market dialogue lacking, issues with preferences, misinformation, and sustainability know-how.
Valmiera, LV	As a minimum, end-user needs are identified before procurement.	Minimum GPP requirements apply by law.	Law enables supplier consultations, but they're done case-by-case only.
Umeå, SE	N/I	Work in progress to start including the criteria, sometimes overlooked.	Limited dialogue with relevant expertise participating.

Gothenberg, SE	Requires active end-user engagement and internal support (e.g., for reused products).	Included in procurements/categories where environmental requirements are prioritized.	Not an issue.
Gladsaxe, DK	N/I	N/I	N/I
Katowice, PL	N/I	More an effect than a cause.	N/I

Source: compilation of the survey results by the authors.

1.1.3.3 Impact assessment, follow-up and budget

Lack of performing an impact assessment was considered a major obstacle in half (10) of the municipalities. Seven municipalities (Turku, Vidzeme, Cēsis, Falun, Valmiera, Gothenburg and Gladsaxe) considered the lack of impact assessment a minor issue. In most municipalities, the impact assessments are either completely absent or unsystematic, making it a major issue (Vilnius, Stockholm, Västerås, Helsinki, Bremen, Tauragė, Gentofte). The ones who saw it as a major obstacle also stressed limited know-how, tools, or capacity hampering implementation (Tallinn, Smiltene, Schleswig-Holstein).

Those calling it a minor obstacle generally do some assessment in specific cases or when time allows (Turku, Falun, Gothenburg), or deem it less relevant to their typical procurements, like for consulting (Vidzeme). Capacity gaps still limit consistency in many municipalities (Cēsis, Valmiera, Gladsaxe). Katowice was the only municipality that stated there were no obstacles related to impact assessment, while they did not provide any context to their answer. Two (Herzogtum Lauenburg and Umeå) did not answer the question.

Lack of follow-up during the contract implementation to check suppliers' compliance with CCC criteria was deemed a major obstacle by nine municipalities (Bremen, Tallinn, Vidzeme, Gentofte, Falun, Smiltene, Schleswig-Holstein, Valmiera, Umeå). Across these municipalities, the most common drivers were limited capacity and unclear ownership of monitoring (Tallinn, Vidzeme, Smiltene, Valmiera, Umeå, Schleswig-Holstein), reliance on eco-labels instead of active follow-up (Bremen), and incomplete routines for contract monitoring (Falun). These conditions mean CCC requirements are set but not systematically checked during delivery.

Seven municipalities (Stockholm, Helsinki, Turku, Cēsis, Gothenburg, Gladsaxe, Katowice) considered it a minor obstacle. Among this group, follow-up practices exist, but the uptake is uneven. Due to resource limitations, follow-up processes are carried out for prioritised procurements or in samples rather than a comprehensive process, similar to the major obstacle group (Helsinki, Turku, Gothenburg, Cēsis). Often, the practice varies by unit or contract (Stockholm).

Those reporting no obstacle (3) have clear accountability and routine checks built into contract management, like formal responsibility on contract owners and regular spot checks to keep CCC compliance on track (Vilnius, Västerås, Tauragė). Similarly to the previous questions, Herzogtum Lauenburg left it unanswered as they are not ready to set this up yet.

Half of the municipalities (10, mostly partner organisations) saw the **lack of budget to use the CCC approach in procurement** as a minor obstacle, while six municipalities (mostly associated organisations) rated it as a major obstacle.

In the municipalities where this is a major obstacle, the common thread is budget pressure versus (perceived or real) higher costs of CCC, either systematically across tenders or because lowest-price rules dominate (Vidzeme, Valmiera, Katowice). Additional factors include overall resource constraints that amplify cost concerns (Smiltene) and uncertainty that keeps CCC seen as costly (Schleswig-Holstein).

Those listing it as a minor obstacle generally are able to fund CCC in many cases, but feel the lack of explicit leadership sign-off to accept higher prices or extra budget (Helsinki, Bremen). Municipalities also mention category-dependent affordability (Tauragė), added effort/time to specify and coordinate (Gentofte), or

occasional shortfalls requiring creativity (Västerås). Vilnius notes that mandates or practice make inclusion routine, with only marginal budget friction.

The two no-obstacle cases reflect either an organisational setup where central support isn't budget-constrained for this (Stockholm) or an organisational view that circular/greener products are not more expensive (Tallinn).

Two (Herzogtum Lauenburg and Umeå) did not choose any answer for this question. More information can be found in Table 8.

Table 8. Lack of follow-up during the contract implementation, impact assessment and budget for CCC.

Municipality	Lack of follow-up during the contract implementation	Lack of performing an impact assessment	Lack of budget for CCC
Vilnius, LT	Contract owners monitor compliance with the terms of the contract, including CCC.	No individual purchase assessments, since there are national mandatory criteria procurement officers do not think about assessing the impact of these.	Can be an issue when CCC options cost more than market alternatives.
Stockholm, SE	Not all contracts followed up each period. For chemicals, the sustainability experts make yearly prioritizations on what to follow up on among prioritised areas for chemical criteria. This is synced with the contract controller unit for the centrally procured contracts.	Not conducted.	Not an obstacle for central support functions.
Västerås, SE	Regular spot checks during contract periods.	Not conducted.	Sometimes there is a lack of budget, decisions need to be creative.
Helsinki, FI	Verification/monitoring practices vary, mostly reviews in contract meetings, but no audits have been carried out due to resource limits.	Practices vary between units. Some untis do monitoring during contracts (e.g., the number of recycled devices and their carbon handprint), but there is no established, systematic process (including pre-procurement assessment).	Some units hesitate as stricter criteria may raise prices; need top-level backing/budget.
Turku, FI	Follow-up meetings held, but it is hard to verify all criteria are met.	If the procurement is not ad-hoc, there is time to do impact assessments before/during contracts.	It does not really affect the procurer, it is more the responsibility of the working group.
Bremen, DE	No systematic follow-up, rely on independent/government eco-labels.	Impact assessments are not performed before or during the contract period.	Tight financial situation (in Bremen and Germany) limits higher-ambition sustainability goals.
Herzogtum Lauenburg, DE	Not set up yet.	Not conducted.	No data yet, will see during the next procurements.
Tallinn, EE	Follow-up lacks ownership; responsibility shifts and interest is low.	Do not know how to assess impacts, the follow-up	Budget generally not a problem as usually the circular, environment friendly products

		process is difficult and roles unclear.	are not that much more expensive as the "normal" products and the general mindset of the organisation is supporting the CCC approach. Challenge is implementing/measuring CCC.
Vidzeme, LV	Capacity shortage and unclear methods for monitoring the criteria fulfilment (national issue).	Mostly conducting consulting/expertise procurements, product or service groups which are subject to GPP criteria are procured nationally, so assessments are not done by the region.	Higher costs conflict with lowest-price selection; depends on project/funding.
Taurage, LT	Staff responsible for the procurement are responsible for following up the contract clauses.	Not conducted.	Depends on category; some items much more expensive.
Gentofte, DK	N/I	N/I	Extra work/time to gather info and involve wider expertise.
Cēsis, LV	Implementers lack knowledge, due-diligence adds administrative burden.	Those preparing technical specifications and those responsible for contract execution lack knowledge and there is an additional administrative burden to carry out due diligence during the contract execution phase.	Limited municipal budget; multiple requirements can raise prices.
Falun, SE	Some follow-up, but monitoring sustainability within contracts remains challenging.	Some analysis takes place before procurement, which needs improvement/refinement.	Not clear.
Smiltene, LV	Lack of human and financial resources.	Lack of human and financial resources.	Main problem. As well as human resources.
	Very limited follow-up strategies due to resource constraints.	Task is difficult for most employees. Staff lack tools/knowledge/time (need easy state-provided tools). Some employees use LCA if possible, but often do not have enough time or information for it.	Often perceived (and sometimes real) higher costs for CCC procurements.
Valmiera, LV	Insufficient staff capacity to ensure suppliers meet CCC during the contract period.	Limited staff capacity for impact assessment before/during contract.	Lack of budget for CCC in every procurement.
Umeå, SE	There has not been enough resources for this part, but it is being monitored and a new method of working (routines, process descrition) is in the works.	N/I	N/I

Gothenberg, SE	Usually follow up, but limited resources force prioritisation among contracts.	Procurements prioritised based on environmental impact across contracts.	Not sure.
Gladsaxe, DK	N/I	N/I	N/I
Katowice, PL	N/I	N/I	Key factor.

Source: compilation of the survey results by the authors.

1.2 Lessons learned

The CCC-2 obstacles survey confirms progress since CCC-1 but also shows that practice remains uneven. Compared with CCC-1, several barriers have shifted from structural absence to partial, inconsistent practice, indicating movement, but also a need to formalise systems end-to-end. The biggest system-wide weakness is still impact-oriented monitoring: authorities commonly track a general "GPP share" rather than which criteria were used and what environmental outcomes were achieved.

The main obstacles on the strategic level regarding the effective implementation of CCC in GPP were the i) lack of measuring the achievement of the goals, ii) lack of guiding documents (focusing on implementation, e.g., action plans, roadmaps) and iii) legal requirements supporting GPP/SPP.

Unclear legal requirements and changing political priorities were important obstacles in both CCC-1 and CCC-2, although the situation is slowly improving as these are now seen as minor obstacles by most municipalities. While the lack of clear objectives and targets was assessed to be the greatest obstacle in CCC-1, in CCC-2 it was the least significant obstacle on the strategic level. Cēsis, Stockholm, Västerås and Helsinki are good examples of having integrated CCC goals in strategic documents. Yet in most municipalities, goals remain fragmented across documents, and one of the three C's (most often chemicals) is still under-represented. Although measuring strategic goals that address climate, circularity, and chemicals was considered to be the main obstacle on the strategic level, the study provided a few good examples – Umeå, Vilnius, and Taurage – that are the frontrunners in monitoring.

The main obstacle on the organisational level, similarly to the strategic one, was the lack of monitoring processes' alignment with strategic goals. This was followed by the lack of clarity regarding roles and responsibilities and insufficient integration of strategic goals and iii) the lack of clear process descriptions on how to integrate sustainability, particularly CCC aspects, into procurement processes. The comparison with CCC-1 survey results shows that while the lack of knowledge of sustainability and CCC topics is still a significant obstacle, the lack of clarity regarding roles and responsibilities, which was rated a key issue in CCC-2, was not seen as a key issue in the previous survey. Lack of personnel, which was rated as the main obstacle in CCC-1, is still a key issue in some municipalities in CCC-2, but is generally considered to be not the main obstacle anymore.

The main obstacles on the operational level were i) the lack of planning on how to integrate sustainability or CCC aspects into the procurement process in the initial stages, ii) the lack of impact assessment during the procurement process or during the contract implementation and iii) minimal or obsolete follow-up during the contract period to oversee that CCC criteria are implemented by the supplier. Lack of suppliers (determined with market analysis and dialogues) was a common operational obstacle in CCC-1 and CCC-2 alike. Lack of understanding of the CCC approach and lack of GPP guidance were key obstacles in CCC-1, and while these are still relevant in CCC-2, they are deemed to be less pressing now.

The obstacles on the operational level further reflect the need to create a system for monitoring and impact assessment, which are key focus areas on CCC-2. These are further described in Chapter 4.3 under the procurement process steps.

2 Identified and established contacts with relevant procurement projects, initiatives and networks

This chapter presents an overview of the work undertaken to identify and compile contacts with relevant procurement-related projects, initiatives and networks across the Baltic Sea Region and beyond. The objective of this activity is to support knowledge exchange, enable cooperation with external actors and create a shared resource to strengthen communication and dissemination throughout the ChemClimCircle-2 project.

An Excel-based contact list was developed and shared within the project consortium. Initial entries were based on previous collaborations, professional networks and knowledge of ongoing work in the field of sustainable and green public procurement. The list is structured to cover four main categories:

- Relevant policy areas of the EU Strategy for the Baltic Sea Region,
- Procurement-related projects,
- Procurement networks,
- Other initiatives linked to integrating circularity, climate and chemical aspects in procurement.

All project partners were invited to contribute by adding contacts from their own networks, including any new initiatives discovered during implementation. The table is accompanied by clear guidance, ensuring that each entry includes the type of initiative, its thematic relevance and contact details for a key person.

The contact list functions as a living document that will be updated on a rolling basis throughout the project's duration. It is intended to support both internal coordination and external outreach, for example, by informing stakeholder engagement in Work Package 3, sharing newsletters and policy briefs and facilitating potential partnerships. The most recent version of the list, dated 28 August 2025, is included in the Annex.

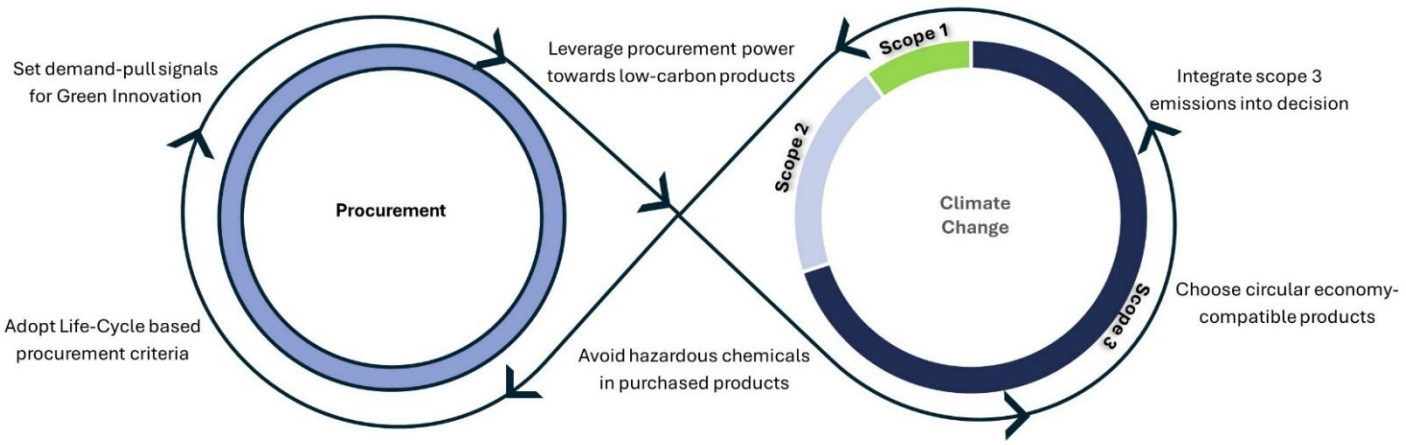
3 Background study on the public procurement role in mitigating climate change

This chapter examines how procurement can be leveraged as a strategic tool for decarbonising supply chains, with a focus on the European Union context. It highlights the current limitations of procurement practices, which often prioritise cost and Scope 1-2 emissions, while largely overlooking the broader climate impacts embedded in supply chains and scope 3 emissions. The chapter introduces the concept of demand-pull, showing how ambitious green public procurement can stimulate low-carbon innovation and reshape markets. It also explores municipal strategies that go beyond scope 2, analysing examples where scope 3 integration has begun to drive circularity and emissions reductions. Finally, particular attention is given to chemicals and hazardous substances as major contributors to upstream and downstream scope 3 emissions, illustrating both the challenges and opportunities for circular, climate-conscious procurement.

3.1 Leveraging procurement to decarbonise supply chains

Figure 4 presents an analytical model designed by BEF Germany team to capture the dynamic interconnections between procurement practices and climate change mitigation across emission categories. By conceptualising these linkages, the model articulates procurement's potential as a strategic lever for integrating sustainability objectives throughout supply chains.

Figure 4. Illustration showing the interconnected measures of sustainable procurement and their role in mitigating climate change.



Source: Baltic Environmental Forum Germany (2025)

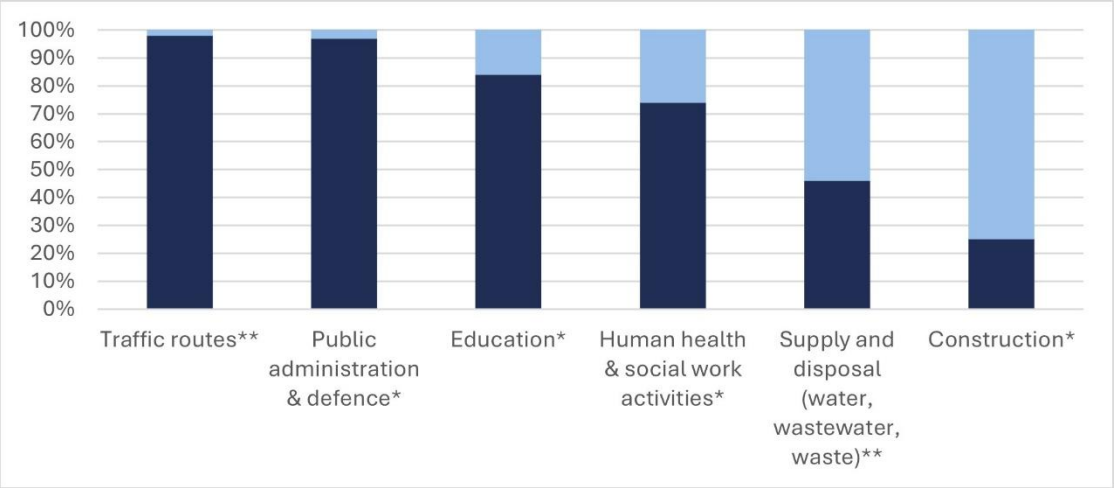
The illustration conceptually demonstrates the pivotal role of procurement in aligning organisational purchasing decisions with climate change mitigation across all emission scopes. By visually mapping procurement actions – such as establishing demand-pull signals for green innovation, applying life-cycle criteria, and promoting low-carbon and circular economy-compatible products – the graphic illustrates procurement's capacity to influence Scope 1, Scope 2 and Scope 3 greenhouse gas emissions. The interconnected cycles emphasise that procurement is not merely transactional; it is a strategic and systemic driver for sustainability, leveraging market mechanisms and decision-making processes to avoid hazardous substances and integrate upstream and downstream emission impacts. Overall, the diagram highlights procurement's function as a high-leverage intervention point in decarbonising supply chains and accelerating the climate transition.

The impact of procurement on climate change mitigation within the European Union (EU) context is both profound and insufficiently leveraged. Public procurement accounts for a significant share of the market volume of many economic sectors, making it a major contributor to the CO2 emissions of these sectors. It

is estimated that the products and services purchased by public procurement lead to approximately 7.5 billion tons of greenhouse gas (GHG) emissions per year. This is around 8 to 9 times more than the total emissions from the aviation sector and around 15% of global annual emissions[2].

Procurement plays a critical role in driving emissions, as evidenced by Figure 5, which shows that a substantial share of total sectoral emissions originates from public procurement activities. It shows the proportion of public procurement-related emissions (shown in dark blue) within the total emissions of various sectors (dark + light blue), including traffic routes, public administration and defence, education, human health and social work, supply and disposal and construction. In sectors like traffic routes and public administration, public procurement emissions constitute nearly all emissions, while in education and human health, they represent a substantial majority. Only the sectors such as supply and disposal and construction display a larger share of emissions from other sources (light blue). This highlights how public procurement constitutes the majority of emissions in several public sectors, underscoring its significant leverage potential for climate mitigation efforts.

Figure 5. Contribution of public procurement to total CO2 emissions of selected economic sectors.



*Source: * data from Mähönen, M., & Lehtilä, S. (2023)[3], ** data from McKinsey & Company, Inc. (2008)[4]*

The responsibility of public procurement activities for CO2-reduction efforts is being discussed increasingly in scientific circles and is slowly filtering through to public bodies and procuring organisations. Considering this, it is logical that procurement is increasingly seen as a lever for reducing climate change. Also, the EU has highlighted the critical role of public procurement for mitigating climate change. For this reason, the EU has emphasised its commitment to reforming the public procurement systems in various policy frameworks of the European Green Deal, including the Circular Economy Action Plan. Sustainable public procurement is explicitly mentioned in the United Nations Sustainable Development Goals (UNSDGs) under Goal 12: *Responsible Consumption and Production,* with Target 12.7 aiming to "*promote public procurement practices that are sustainable, in accordance with national policies and priorities*". This recognises public procurement as a key instrument for advancing sustainability objectives and achieving the SDGs. A pioneering example of a procurement initiative to reduce CO2 emissions is the intention of

[2] Bernardini, C., Manez Costa, M., & Molinari, F. (2025). Climate proofing of public procurement: a gap to be filled. *npj Climate Action*, *4*(1), 2.

[3] Mähönen, M., & Lehtilä, S. (2023). Public Procurement for Climate Neutrality: a transformative policy instrument?. *D4*, *2*, 2023-09.

[4] McKinsey & Company, Inc (2008) on behalf of the German Federal Ministry forEnvironment, Nature Conservation and Nuclear Safety. Potenziale der öffentlichen Beschaffung für ökologische Industriepolitik und Klimaschutz. https://www.bundesumweltministerium.de/fileadmin/Daten_BMU/Download_PDF/Produkte_und_Umwelt/mckinseystudie.pdf

some members of the Industrial Deep Decarbonisation Initiative (IDDI) to procure steel and concrete[5]. Nevertheless, procurement remains a largely untapped lever for climate action. Many procurement decisions are still based primarily on cost considerations, with sustainability criteria either absent or relegated to secondary importance. Although most EU municipalities have adopted climate change mitigation strategies, these do not use GPP as a strategic tool for achieving the targets[6]. A critical analysis of municipal climate action plans reveals that procurement is seldom integrated as a core component of these strategies, particularly with respect to scope 3 emissions[7]. The German Federal Environment Agency publishes an annual municipal survey on the status of implementation of climate protection measures in German municipalities. In 2023, only 393 out of 1533 municipalities stated that climate protection was not anchored in their administration. However, the climate protection concepts in German municipalities currently include systematic practice only for certain product groups like vehicles and electronic devices according to Umweltbundesamt (UBA) 2024[8]. The analysis of climate strategies from other EU municipalities reveals similar results. For example, the City of Helsinki's Climate Roadmap (2022) emphasises reducing emissions from municipal buildings and transport but makes only a passing reference to the emissions embedded in procured goods and services. After being involved in eight public procurement cases within the EU HORIZON project "ClimaBorough"[9].

3.2 Greenhouse gas emissions along the value chain

Greenhouse gas emissions associated with electronic devices are generated not only during their use phase, through electricity consumption, but across the entire product lifecycle. This encompasses emissions from resource extraction, manufacturing, transportation, usage and end-of-life treatment, illustrating that significant climate impacts occur well beyond the operational period of a device. Therefore, the emissions from a single product are often much higher than one could expect from the user perspective, where a large share of the lifecycle emissions is invisible. Following the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard[10], emissions are typically split into three scopes:

Scope 1: Direct GHG emissions – Direct GHG emissions occur from sources that are owned or controlled by the company, such as emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc., and emissions from chemical production in owned or controlled process equipment.

Scope 2: Electricity indirect GHG emissions – Scope 2 accounts for GHG emissions from the generation of purchased electricity, steam, heat, and/or cooling consumed by a user (e.g., company, procuring body, etc.). Scope 2 emissions physically occur at the facility where electricity is generated. Due to the traditional emphasis on energy consumption as the primary source of greenhouse gas emissions, Scope 2 emissions are at the forefront of public awareness.

Scope 3: Other indirect GHG emissions – Scope 3 covers upstream and downstream value-chain emissions. These emissions are a consequence of the activities of the company, but occur from sources not owned or controlled by the company. For example, this covers emissions in the production of chemical substances used in the synthetic rubber of a car tyre that an automotive original equipment manufacturer produces. You can imagine scope 3 emissions as emissions that occur in other companies through your own activities or consumption. Hence, it extends the quantity of emissions for which you consider yourself responsible by multiple times. Scope 3 emissions are of particular importance if highly emitting sectors like

[5] https://www.unido.org/news/worlds-largest-steel-and-concrete-buyers-make-game-changing-push-greener-solutions, accessed 30.06.2025

[6] Fyfe, A. (2023). The Ambition Gap: From Intent to Implementation in Local Climate Action.

[7] Siek, L. (2024). Wo steht Deutschland im kommunalen Klimaschutz? Auswertung der UBA-Kommunalbefragung „Klimaschutz in Kommunen 2023". Umweltbundesamt. ISSN 1862-4359.

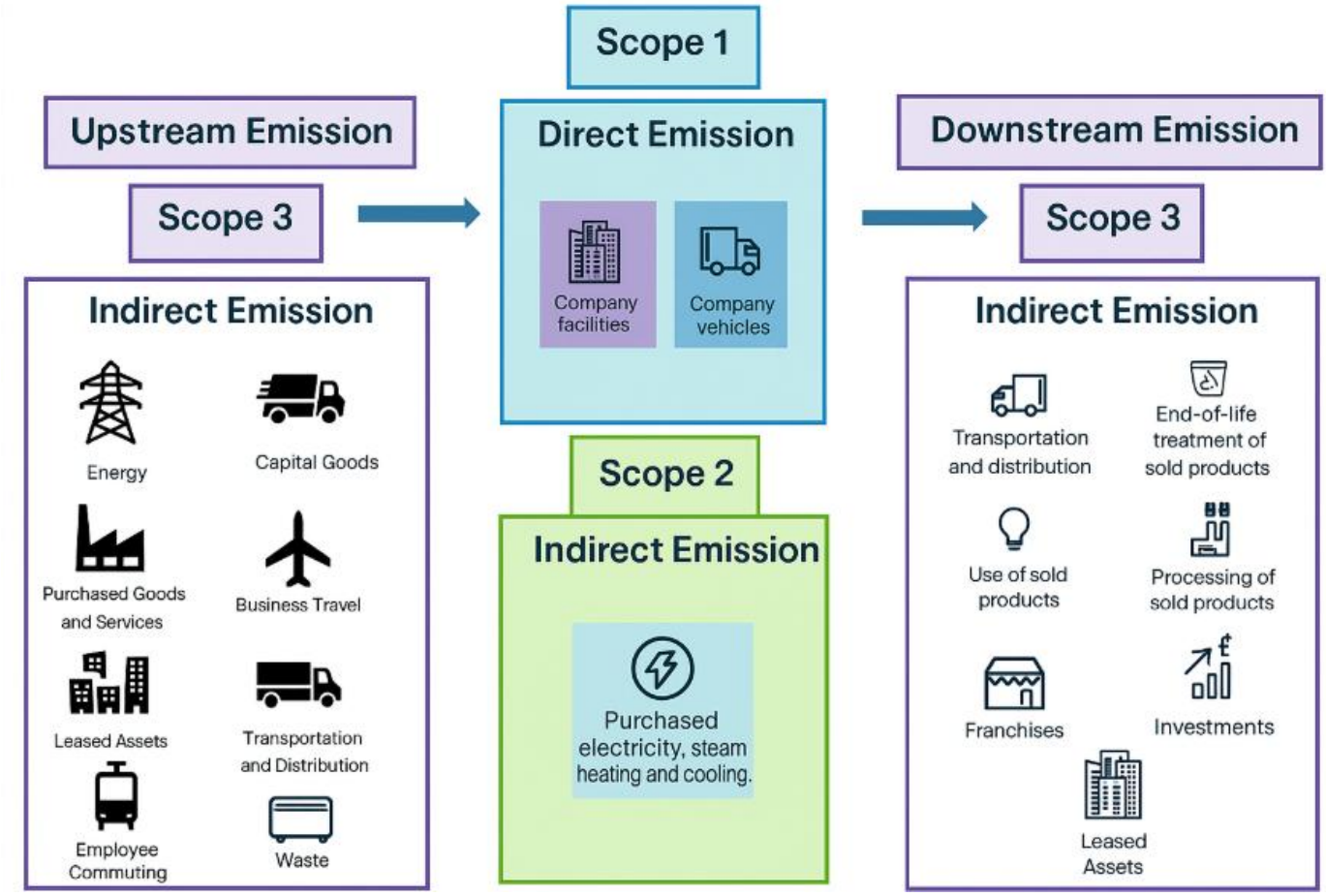
[8] Ibid.

[9] Bernardini, C., Manez Costa, M., & Molinari, F. (2025). Climate proofing of public procurement: a gap to be filled. *npj Climate Action*, *4*(1), 2.

[10] World Resources Institute & World Business Council for Sustainable Development. (2015). *Greenhouse Gas Protocol Corporate Accounting and Reporting Standard*. Greenhouse Gas Protocol. https://ghgprotocol.org/corporate-standard

the steel or chemical sector are involved in the upstream value chain of a product or if highly emitting processes, like incineration, are applied to a product in the downstream value chain. Figure 6 illustrates the allocation of CO2-emitting activities across the three scopes.

Figure 6. Illustration of GHG-emitting activities under the three scopes according to the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard.



Source: Baltic Environmental Forum Germany (2025); adapted from the World Economic Forum (2021)[11]

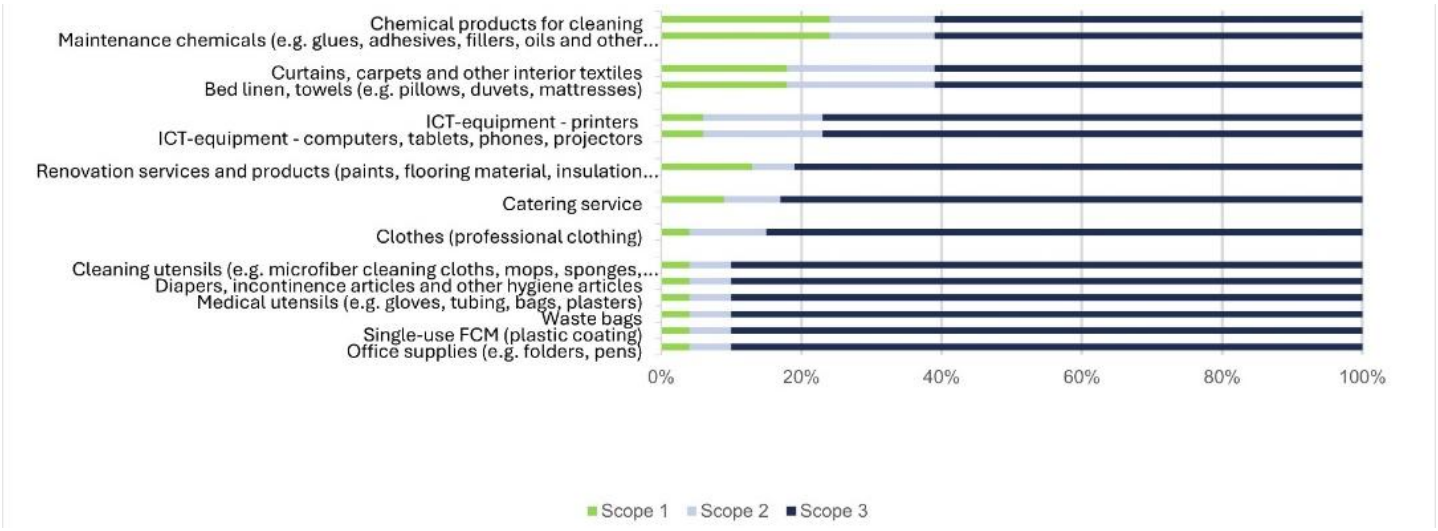
3.3 Going beyond scope 2: The demand-pull

A 2023 study of Swedish municipalities found that approximately 85% of their total emissions were procurement-related[12], while in the Netherlands, indirect emissions from public sector purchasing account for nearly two-thirds of total municipal carbon footprints[13]. Claudia Ghisetti (2017) investigated the role that public procurement can play in mitigating climate change[14]. Using real-world data from 28 EU member countries as well as the USA and Switzerland, Ghisetti concluded that GPP can promote environmental innovations. When public authorities leverage their procurement power to prioritise innovative and environmentally sustainable solutions, they send a clear and strategic signal to the market. This signal represents a reliable demand for low-emission products still in the early stages of technological development. The signal thus reduces market uncertainties, lowers technology costs, and enhances investment incentives. Ambitious green public procurement (GPP) can thus act as a catalyst for creating

[11] World Economic Forum. (2021). Net-zero challenge: The supply chain opportunity. *Insight Report*, 46.
[12] Sonnenschein, J., Ivanova, D., Vita, G., Stadler, K., & Wood, R. (2023). Assessing local government supply chain emissions. *Nature Reviews Earth & Environment*, *4*, 605–617. https://doi.org/10.1038/s44168-023-00032-x
[13] Ivanova, D., Stadler, K., Wood, R., Vita, G., & Tukker, A. (2024). Harmonized emission factors for consumption-based carbon accounting. *Nature Reviews Earth & Environment*, *5*, 400–416. https://doi.org/10.1038/s44168-024-00207-0
[14] Ghisetti, C. (2017). Demand-pull and environmental innovations: Estimating the effects of innovative public procurement. *Technological forecasting and social change*, *125*, 178-187.

lead markets that drive research and innovation in green technologies. This mechanism is termed 'demand-pull'. However, a transfer of the result of the theoretical scientific work by Claudia Ghisetti to the daily processes of a procurer has not yet happened widely. The toolbox of GPP so far does not include the tools to exploit the full potential for reducing greenhouse gases through GPP. In fact, the guidelines and procurement criteria mostly aim to reduce GHG emissions through what Maiju Mähönen calls the 'consumption effect' by focusing on scope 2 emissions[15]. The municipal survey conducted by the Federal Environment Agency in 2023[16] showed that the procurement concepts in the climate protection plans relate to vehicles and electrical appliances and are therefore typical measures for reducing scope 1 and scope 2 emissions. This means that energy-efficient products are purchased. This narrow set of GPP criteria does not initiate a demand-pull mechanism, which would lead to a decarbonisation of the entire supply chain. The necessity and efficient functioning of the demand-pull mechanism is underlined in a report by the World Economic Forum from 2021[17]. The World Economic Forum points out that companies can dramatically multiply their climate impact by decarbonising their supply chains. For most customer-facing sectors, end-to-end emissions, which include those generated throughout their value chain (scope 3 emissions), are substantially higher than their direct operational emissions. According to the report[18], up to 90% of the lifecycle emissions of a product belong to scope 3. Many product groups that the project CCC-2 is focusing on are also mentioned in the report. The share of emissions falling to the scope 3 in the groups of chemicals, textiles, electronics, construction, food, fashion, and fast-moving consumer goods is 61%, 61%, 77%, 81%, 83%, 85%, 90%, respectively. This emphasises how scope 3 emissions need to be the main concern of procurement criteria when aiming to reduce the carbon footprint of purchased goods and services. Figure 7 shows the contribution to the total life-cycle CO2e emissions by the scope of 15 product groups that CCC-2 is focusing on. The data is based on the report by the World Economic Forum (2021).

Figure 7. Contribution to total life-cycle CO2e emissions by scope for 15 product groups. The product groups are listed on the left.



Source: Based on data from "Net-Zero Challenge: The Supply Chain Opportunity" by WEF (2021)[19] with modifications by BEF, Germany.

Mähönen & Lehtilä confirm the argumentation by Ghisetti[20] about the demand-pull mechanism driving low-carbon innovations and add further arguments about the special responsibility of public procurement

[15] Mähönen, M., & Lehtilä, S. (2023). Public Procurement for Climate Neutrality: a transformative policy instrument?. *D4*, *2*, 2023-09.

[16] Siek, L. (2024). Wo steht Deutschland im kommunalen Klimaschutz? Auswertung der UBA-Kommunalbefragung „Klimaschutz in Kommunen 2023". Umweltbundesamt. ISSN 1862-4359

[17] World Economic Forum. (2021). Net-zero challenge: The supply chain opportunity. *Insight Report*, 46.

[18] Ibid.

[19] World Economic Forum. (2021). Net-zero challenge: The supply chain opportunity. *Insight Report*, 46.

[20] Ghisetti, C. (2017). Demand-pull and environmental innovations: Estimating the effects of innovative public procurement. *Technological forecasting and social change*, *125*, 178-187.

actors in the report titled "*Public Procurement for Climate Neutrality: a transformative policy instrument?"*[21]. Not only is EU public procurement a significant source of demand, accounting for 14% of EU GDP and thus having the huge purchasing power mentioned above. Also, public procurement is a major buyer of key emission-intensive products, such as structural steel or concrete. Decarbonising these highly relevant sectors is possible through the demand-pull mechanism by setting ambitious standards that will be adopted by the broader market later on.

3.4 Scope 3 in municipal procurement strategies: Examples and implications

Despite the general neglect of scope 3 emissions in municipal procurement, there are notable exceptions where forward-thinking municipalities have begun to address this challenge. For instance, the City of Copenhagen has integrated scope 3 emissions into its climate planning framework, as outlined in its participation in the EU Cities Mission and the Climate City Contract, both of which explicitly address scope 3 emissions. Copenhagen's procurement strategy sets ambitious goals to lower CO2 emissions through sustainable procurement, implementing specific measures such as stricter requirements for green transportation, promoting the purchase of eco-labelled products and services, and focusing on refurbished and circular products. The city also aims to achieve a 50% reduction of CO2 emissions from public procurement by 2035[22].

Similarly, the City of Rotterdam has adopted a circular procurement policy that prioritises products and services with low lifecycle emissions and high recyclability. By embedding scope 3 considerations into tender documents and evaluation criteria, Rotterdam has driven innovation among suppliers and achieved measurable reductions in embedded carbon, particularly in procuring building materials and chemicals.

In contrast, many municipalities in Central and Eastern Europe have yet to integrate scope 3 emissions into their procurement strategies. For example, an analysis of municipal procurement policies in Poland and Hungary reveals that sustainability criteria are often limited to energy efficiency or local sourcing, with little attention paid to the full lifecycle emissions of procured goods. This is partly due to capacity constraints and partly to the absence of national guidelines or incentives for scope 3 integration[23].

Data from the European Commission (2024) suggest that very few EU municipalities systematically consider scope 3 emissions in their procurement processes, while the majority either ignore them or address them only in an ad hoc manner[24].

[21] Mähönen, M., & Lehtilä, S. (2023). Public Procurement for Climate Neutrality: a transformative policy instrument?. *D4*, *2*, 2023-09.

[22] City of Copenhagen. (2024, October 2). *Orienteringsnotat om indgåelse af en klimakontrakt – Københavns Kommune deltagelse i EUs Cities Mission* [Orientation note on entering a climate contract – City of Copenhagen's participation in the EU's Cities Mission]. Retrieved from https://www.kk.dk/sites/default/files/2024-10/02.10.24%20-%20Orienteringsnotat%20om%20indg%C3%A5else%20af%20en%20klimakontrakt%20-%20K%C3%B8benhavns%20Kommune%20deltagelse%20i%20EUs%20Cities%20Mission.pdf

[23] OECD. (2022). *Public procurement for a low-carbon, circular economy*. OECD Publishing. https://www.oecd.org/governance/public-procurement/low-carbon-circular-procurement/

[24] European Commission, Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs. (2024, June 14). *Public procurement indicators 2022* (GROW.G – Ecosystems II: Tourism, Textiles, Digital Transformation of Industry and Social Economy, G4 – Data and Knowledge for policy, business and people). http://www.osservatorioappalti.unitn.it/viewFile.do?id=1724338913896&dataId=17724&filename=Testo.pdf

3.5 The big player of scope 3 emissions: Chemicals and hazardous substances

Most public bodies procure products containing chemicals and hazardous substances, yet these ingredients are often hidden and unrecognised by procurers and end-users. Not only do these ingredients harm human health and the ecological integrity of the Earth's system, but they also lead to huge upstream and downstream scope 3 emissions.

3.5.1 Upstream scope 3 emissions due to chemicals

The petrochemical industry requires 14% of global oil demand and 9% of global natural gas demand. In consequence, it is responsible for around 6% of the global CO2 emissions, where almost 4 % occur through the large energy demand of the chemical industry, and more than 2% comes from chemical reactions[25]. From a procurer's point of view, these are upstream scope 3 emissions, which must be considered in the assessment of the climate impact of a product. As an example, the production of 1 kg of butadiene can cause up to 11 kg of CO2[26]. Butadiene is a key industrial chemical primarily used in the production of synthetic rubber, which is essential for manufacturing vehicle tyres and the soles of shoes. Also, butadiene plays a vital role in the electronics industry and household appliances. As a versatile chemical intermediate, it is also crucial for producing a wide range of rubber and plastic products, including coatings for paper finishing or disposable gloves. Moreover, butadiene-based polymers contribute to impact-resistant plastics such as ABS, which are widely used in automotive parts, consumer goods, and electronic housings. Alternatives to the butadiene-containing materials exist on the market, which might require a demand-pull to increase the market share, e.g. aluminium or stainless-steel housing for laptops. Other alternative materials might not be appropriate in all cases, but certainly in some. This includes disposable gloves from natural rubber or even reusable gloves from wool. And finally, some products containing Butadiene, such as coated paper, can be easily avoided completely. As demonstrated in the example with butadiene, reducing chemicals as a primary component of a procured product or as an intermediate in its production can lead to a considerable reduction of upstream scope 3 emissions.

3.5.2 Downstream scope 3 emissions due to chemicals

The most efficient way to reduce the environmental impact of goods and products, including the avoidance of greenhouse gas emissions, is to reduce the amount of goods that we produce and dispose of. The circular economy model describes a state where the exploitation of resources and the production of new products are reduced to a minimum. Material is circulated in the economy for as long as possible. The cornerstones of this model are long-term use of products, followed by repair and reuse, before repurposing older products is considered. Only if necessary, the raw materials of a product undergo a recycling process and are used for remanufacturing into a new product, closing the loop. Disposal or incineration is limited to the lowest possible amount.

GHG emissions resulting from a product's incineration are downstream scope 3 emissions that need to be counted in a product's total climate footprint. Hence, a circular-ready product (where reuse, repurpose, and recycling are easily possible) is the better option over a linear product ending up on a landfill or incineration plant after the use phase.

Hazardous chemical substances in a product affect the options for reuse, repurposing and recycling negatively. Only a product that is free of chemicals is not at risk of being prohibited for reusing and repurposing at a later point in time. The regulation of chemicals is an ongoing political race with the industry. New chemicals are constantly coming onto the market. Although these are authorised, they are not regulated in a timely manner. In practice, 10 years can pass between the identification of hazardous

[25] ourworldindata.org – World Resources Institute, 2020

[26] Cullen, L., Meng, F., Lupton, R., & Cullen, J. M. (2024). Reducing uncertainties in greenhouse gas emissions from chemical production. *Nature Chemical Engineering*, *1*(4), 311-322.

properties and the regulation of a substance. There are currently (June 2025) 247 substances and substance groups on the REACH candidate list. These chemicals are already classified as substances of very high concern but are not yet regulated. Substances are often on the candidate list for several years. This has far-reaching consequences for products containing SVHC. It is possible that a product that is currently used legally without restrictions may no longer be used or reused in the future. This is the case if a chemical substance has been regulated in the meantime and the corresponding product exceeds the permitted limit value. With every product that contains a chemical additive, you are entering into a gambling game with the future. It is unclear whether reuse is possible after the first utilisation phase.

In addition, the recycling options are limited for materials that contain chemical additives. When products are mechanically recycled, various material flows are usually brought together. This means that products from different uses are collected, sorted by type as far as possible and then recycled together. However, sorting by type does not include a precise analysis of the chemical ingredients. This means that, in the best-case scenario, the recycling mass contains well-sorted materials, but it is not known which impurities in the form of chemicals or small quantities of foreign substances are present in the collection. The unknown contents of the recyclates often prevent them from being used. To ensure that products can be approved, have the desired properties and fulfil quality requirements, manufacturers understandably are interested in knowing exactly what the raw materials contain. In most cases, recycled materials cannot offer this certainty. Thus, recyclates are generally not marketable for high-level products.

If keeping a material in the economic cycle is not possible after the use phase, the emissions resulting from the end-of-life treatment need to be added to the product's climate footprint. The absence of harmful chemical substances is thus a prerequisite for avoiding downstream scope 3 GHG emissions through landfilling or incineration.

3.5.3 Key takeaways

Public procurement has traditionally approached climate mitigation through a narrow lens, focusing primarily on direct energy-saving measures. This conventional approach prioritizes immediate and visible actions such as energy-efficient buildings, vehicles, and lighting systems, while often neglecting broader climate impacts embedded throughout supply chains and product lifecycles. In fact, procurement is a critical, yet underutilised, lever for climate change mitigation in the EU. Integrating scope 3 emissions into procurement strategies is essential for achieving meaningful and lasting emission reductions. The procurement of chemicals exemplifies both the challenges and opportunities in this regard. By addressing scope 3 emissions, public procurement authorities can achieve a significantly greater climate impact than by focusing solely on reducing their own energy use. A central strategy for reducing these emissions is the transition to a circular economy, which is key to building a climate-neutral society. However, the widespread use of chemical additives in products poses a serious obstacle to circularity. These substances often prevent reuse and recycling, leading to increased downstream scope 3 emissions. Moreover, chemical additives production is typically associated with very high greenhouse gas emissions, thereby contributing substantially to the upstream climate footprint of products. Addressing the chemical composition of goods, besides other upstream and downstream scope 3 emissions, is therefore essential for truly climate-conscious and circular public procurement.

4 Developing the conceptual frame

The ChemClimCircle (CCC) approach was first introduced in the CCC-1 project as an integrated Green Public Procurement (GPP) concept combining three interlinked sustainability aspects:

- Chemicals: eliminating hazardous substances and supporting a non-toxic environment.
- Climate: reducing greenhouse gas emissions and contributing to climate neutrality.
- Circularity: conserving resources and closing material loops through reuse, repair and recycling.

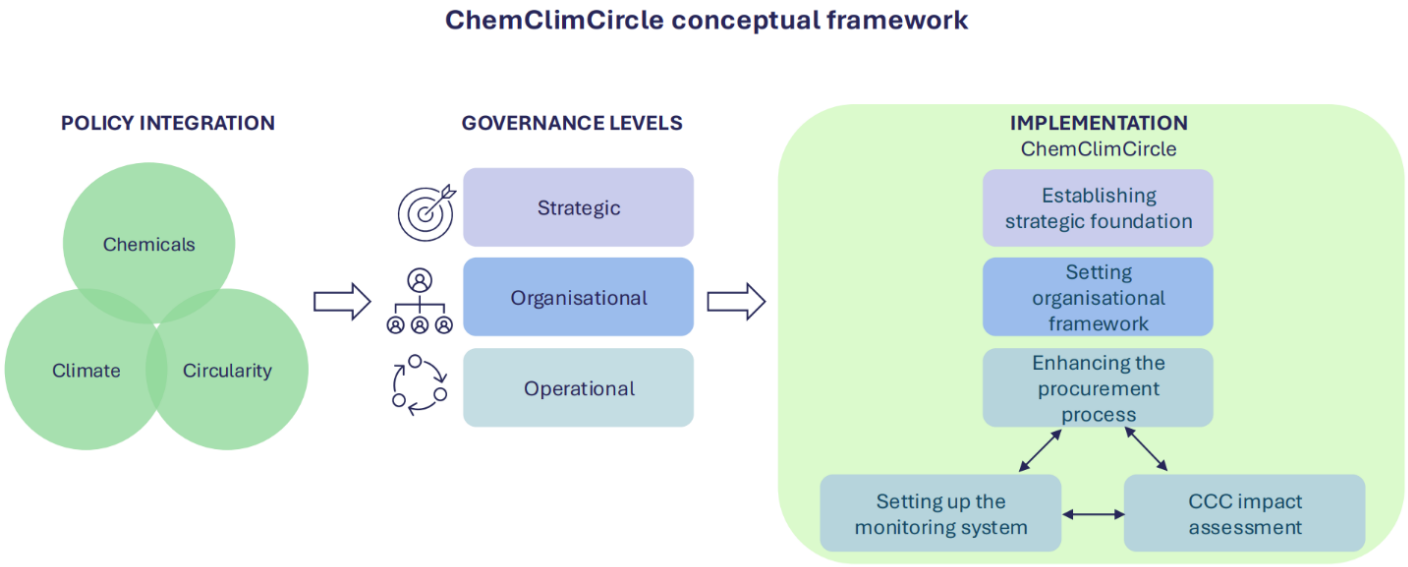
These three dimensions cannot be pursued in isolation. Circularity without chemical safety risks recirculating hazardous substances; chemical restrictions can enable safer reuse and recycling; climate neutrality benefits from circular solutions that reduce resource use and embodied emissions. CCC-1 demonstrated both the synergies and the tensions between these aspects, highlighting the need for a coherent framework rather than fragmented approaches. Public procurement, with its vast purchasing power, can act as a catalyst for achieving a non-toxic, climate-neutral, and circular economy, but only if policy integration, governance structures, and practical implementation work in tandem.

Building on these foundations, CCC-2 refines and operationalises the framework. The project takes lessons learned from CCC-1 (scoping report, procurement processes and sustainability coordination report, practical guide, supplementary report, etc) and the results of the CCC-2 survey on obstacles in partner and associated organisations as key inputs. While CCC-1 defined the *why* and *what*, CCC-2 emphasises the *how*, embedding the CCC approach into actual procurement processes. This is done by strengthening three interconnected elements (see also Figure 8)

- Policy integration – aligning climate, chemicals, and circularity within procurement policies and strategic frameworks.
- Governance structures – ensuring that municipalities and contracting authorities have the organisational capacity, competence, and procedures to support integrated procurement, monitoring and impact assessment.
- Implementation – providing step-by-step procurement guidance, CCC criteria examples and tools for monitoring and environmental impact assessment.

These elements are not linear stages but mutually reinforcing components. Policies set the direction, governance provides the structures and resources, and implementation ensures that ambitions are translated into practice.

Figure 8. The conceptual framework of ChemClimCircle-2.



Important additional aspects of the procurement process (compared to the CCC-1 approach) are monitoring and impact assessment, which feed back into governance and policy, creating a cycle of continuous improvement. The need for a step-by-step process on how to implement the CCC approach in GPP, especially on monitoring and impact assessment, became even more evident in the CCC-2 survey (see Chapter 1) compared to the survey results in 2022 during CCC-1.

Therefore, the conceptual frame developed in CCC-2 serves as the foundation for pilot activities and for the development of the ChemClimCircle Navigator, which will offer municipalities practical tools to embed the approach in daily procurement practice (set of criteria, monitoring concept, environmental impact assessment solutions that are easy to implement etc).

4.1 The integrated CCC framework: chemicals, climate and circularity

Public procurement has emerged as a key strategic tool for advancing environmental and sustainability goals throughout the EU. With public sector purchasing amounting to roughly 14% of EU GDP[27], governments significantly influence market demand and product development. Green Public Procurement (GPP) is designed to channel this purchasing power toward goods and services that minimise environmental impact over their life cycle. However, currently, GPP often addresses sustainability in a fragmented way, with climate aspects receiving the most attention. While important, a one-dimensional approach risks shifting environmental burdens, whereas integration maximises synergies and manages trade-offs transparently. Therefore, policy integration is the starting point of the CCC framework. It ensures that chemicals, climate, and circularity are not treated as separate issues but are systematically embedded into procurement strategies, guidelines, criteria, monitoring procedures and CCC impact assessment.

Chemicals - Procurement should avoid hazardous substances and promote safer materials (non-toxic). This extends beyond compliance with legislation (like REACH) by using procurement to phase out substances of high concern, require disclosure of material content, and promote toxic-free supply chains. Developing procurement criteria to prohibit or restrict these substances (across product life cycles, e.g., in food, construction, electronics, textiles, cleaning products and other areas of concern), require disclosure of material content, and prioritise products certified for environmental and health performance. This also enables safer reuse and recycling and supports a non-toxic environment.

Climate - Procurement should contribute to climate neutrality by reducing GHG emissions across product life cycles. This involves criteria for energy efficiency, low-emission alternatives, renewable energy, and long-lasting products. EU directives prioritise effort in sectors with the highest emissions, such as the Clean Vehicles Directive and the Energy Efficiency Directive, providing a baseline that municipalities can build on with more ambitious requirements.

Circularity - Procurement should conserve resources by extending product lifetimes and creating closed loops. Driven by EU policies like the Circular Economy Action Plan, which emphasises sustainable product policy, waste prevention, enhances circularity in a toxic-free environment, and recognises public procurement as a key tool to drive markets for circular and low-carbon products, circularity can be enhanced. This can be done by setting criteria for durability, repairability, modular design, recycled content, and take-back systems, as well as by adopting innovative business models such as leasing and product-as-a-service.

The ChemClimCircle approach acknowledges the links and possible tensions between climate, circular economy, and chemical policies. Its goal is to integrate these priorities comprehensively, fostering sustainable solutions while limiting negative trade-offs. Specifically, the approach supports aligning procurement objectives with broader sustainability commitments by

[27] OECD. (2025). Government at a Glance 2025. Available: https://www.oecd.org/en/publications/2025/06/government-at-a-glance-2025_70e14c6c/full-report/size-of-public-procurement_6979cd47.html#figure-d1e18995-94cb3dc3a1

- advancing the EU's objectives for a toxic-free, climate-neutral, and circular economy through the European Green Deal and the Clean Industrial Deal initiatives, the Circular Economy Action Plan, the Chemicals Strategy for Sustainability, etc.;
- safeguarding human health, biodiversity and ecosystems;
- promoting the adoption of safer and more sustainable chemical alternatives;
- strengthening circularity and climate goals by reducing the use of hazardous substances.

An integrated policy approach allows municipalities to

- identify synergies where one criterion supports multiple objectives (e.g. durable, non-toxic textiles reduce waste, lower emissions, and eliminate hazardous substances);
- recognise potential trade-offs (e.g. recycling contaminated materials may conflict with chemical safety; selecting low-emission products that contain harmful substances or promoting reuse without accounting for legacy toxins);
- make informed, transparent choices about priorities (greatest environmental impact) based on local context and procurement categories.

To support the practical implementation, the CCC framework proposes a two-level approach in prioritisation when having conflicts of interest:

- **Level 1 - Synergistic integration:** Where possible, select criteria that align and reinforce all three Cs
- **Level 2 - Strategic prioritisation:** Where trade-offs are unavoidable, focus on the most relevant environmental priority based on the procurement category, risk profile, and policy goals of the municipality. This prioritisation must be done on a case-by-case basis, ideally with the municipality's environmental experts (external – regional or national procurement, or environmental authorities might provide support as well).

A detailed description of all three pillars of the CCC approach can be found in the practical guide[28] developed in ChemClimCircle-1.

Policy integration thus sets the direction for governance and aligns procurement practitioners, policymakers, and sustainability experts by providing a framework within which procurement decisions are made.

4.2 Governance structures

For integrated policies to translate into practice, strong governance structures are required. Governance ensures that responsibilities are clear, expertise is available, and systems are in place to apply ChemClimCircle objectives consistently. It is reflected through three levels:

Strategic level. Political and top-management commitment is essential. Without political backing, it can be difficult for those committed to implementation to cooperate with colleagues from other departments. The commitment must be evident in municipal councils adopting clear policies and procurement strategies to implement CCC and allocate sufficient resources to it.

Strategic documents must set

- objectives,
- goals and targets related to chemicals, climate and circularity,
- strategic framework for CCC impact assessment and data collection,
- monitoring system requirements (throughout the three governance levels).

The policies and goals adopted in the municipality need to be in coherence with each other and entail continuous targets for improvement. Embedding environmental objectives across functional levels of governance ensures that the procurements carried out on the operational level support achieving the goals. A feedback mechanism for CCC impact assessment results should be established at the strategic level.

[28] ChemClimCircle: A Practical Guide Supplementary report. 2024. Funded by Interreg BSR. Available: Supplementary-report-to-ChemClimCircle-O1.2-A-Practical-Guide.pdf

This is where information on the performance of procured goods and services is reported back to management, helping to establish a baseline and support continuous improvement of procurement practices related to CCC within GPP. The CCC-2 project supports this by providing an ambition matrix with different levels of procurement strategies (described in D1.4 report published in September 2026). Continuous development needs to be ensured throughout the three governance levels, which can be assessed using the CCC procurement management framework self-assessment tool (parts A, B and C) (see D1.2 report).

Organisational level. Well-established internal structures and procedures enable the strategy to function effectively, which leads to a successful implementation of CCC in GPP. This includes establishing procurement units with clear responsibilities, building in-house competence on CCC (or accessing external support), and cross-departmental coordination (between procurement staff, environmental experts, contract managers, etc). Monitoring and impact assessment requirements established at the strategic level must be translated into clear roles and responsibilities at the organisational level. Assessing organisational readiness (roles and responsibilities) for implementing CCC in GPP can be carried out by using the CCC procurement management framework self-assessment tool (part B), which enables the organization to address the gaps in the current practices identified by the tool (regarding the procurement unit and its procedures). As the operational level focuses on the practical steps for carrying out a single CCC procurement, the procurement unit and its management are also part of the organisational level. Therefore, the gaps and lessons learned from previous procurement procedures should be assessed on the organisational level as well, using the self-assessment tool (part C). Based on this, the procurement procedure can be adjusted to enable procurement officers to address gaps in future procurements.

Operational level. Day-to-day procurement decisions must reflect the CCC approach. This includes early engagement with end-users of the products and services procured with the CCC approach and regular market dialogues with suppliers. These activities are essential on this level, as they bring all relevant participants on board to use the CCC approach in GPP. Communication with end-users can be done on a case-by-case basis, with either sustainability and procurement experts holding a specific seminar for end-users, or on a broader scale by continuously publishing articles on CCC in GPP or by organising an informational campaign. Market dialogues help identify potential bidders, available products and services that could fulfil the CCC criteria, build capacity in the market, inform on specific procurement requirements and contracts, and support suppliers in putting together stronger bids, thereby steering the market in the desired direction. To support these activities, the CCC-2 project develops practical tools (e.g., step-by-step guides, checklists, practical examples of procurement approaches and ambitious criteria, data sources and impact assessment calculation methods), which will be accessible on the Navigator platform (the project's final output). One of the tools, an ambition matrix (see D1.4), helps the organization set the suitable ambition level for the specific procurement (regarding ambition and data availability), considering the organisational capacity (assessed with the procurement management framework self-assessment tool part B). Further, the ambition matrix provides municipalities with input on their monitoring requirements (a system that should be established on the strategic level) and the needs for market analysis (operational level). Following the contract management procedures and using the monitoring system established on the strategic and set up on the organisational level, ensure that suppliers comply with the requirements and deliver expected results.

In conclusion, the three levels are interconnected: strategic commitment provides legitimacy and follow-through, organisational arrangements create capacity and coherence, and operational practices ensure delivery. Hindering factors at any level undermine the others.

4.3 Implementation of the ChemClimCircle approach in procurement

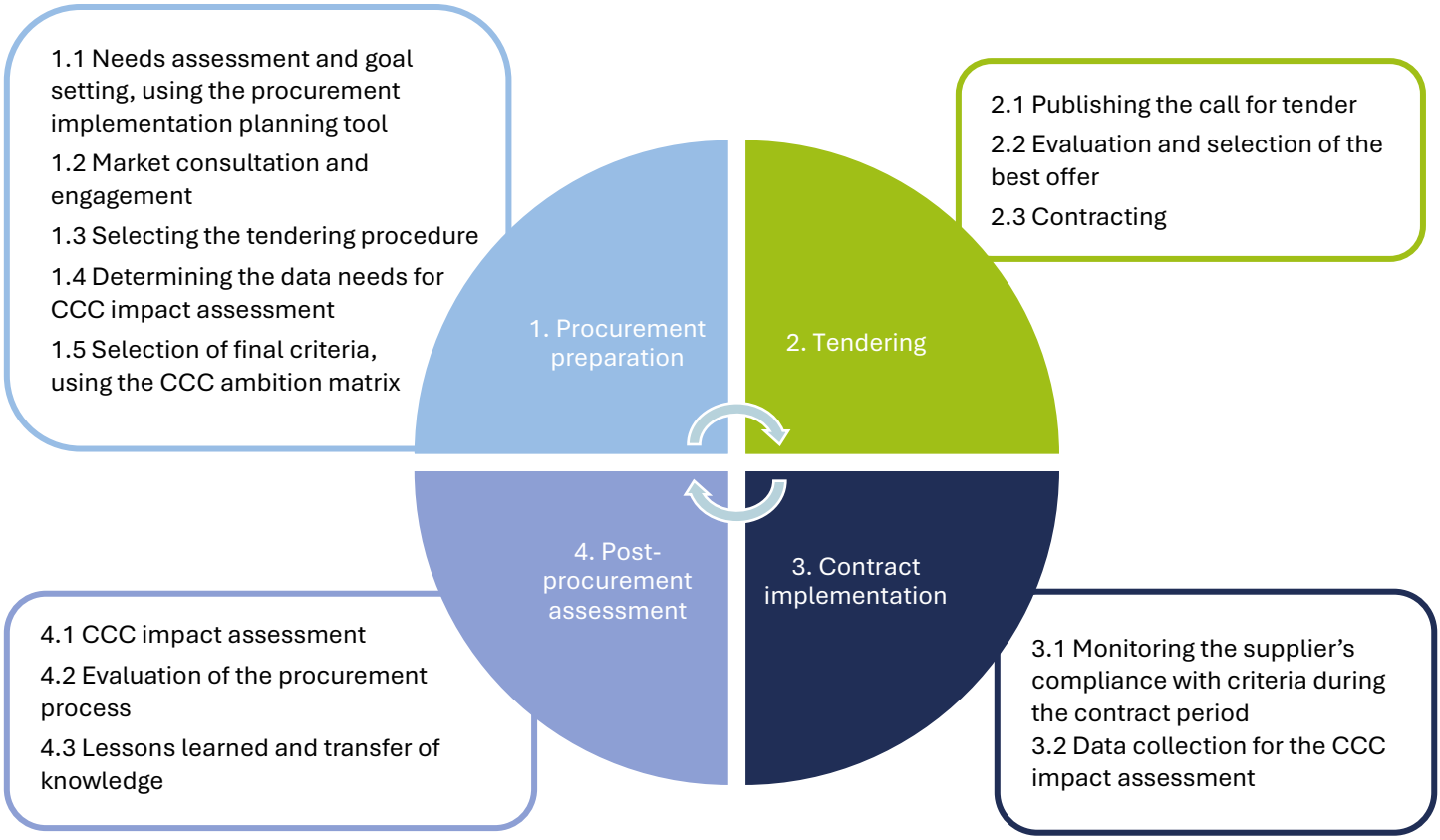
Integrated policy (CCC in GPP) must be reflected on all three governance levels (strategic, organisational and operational), but the main focus of ChemClimCircle-2 is on the operational level. The following chapter provides an overview of the necessary steps for implementing the CCC approach in green public procurement. The procurement process is structured as a cycle in which

1. procurement preparation;
2. tendering;
3. contract implementation;
4. post-procurement assessment

reinforce one another, creating a continuous improvement cycle (see Figure 9).

Each stage entails several steps. CCC-2 places particular emphasis on procurement monitoring and environmental impact assessment, as these were identified as key gaps on the operational level in the CCC-2 scoping survey (see Chapter 1). Both monitoring and impact assessment must be reflected throughout the procurement process.

Figure 9. ChemClimCircle-2 procurement process steps' description.



1. Analysis and preparation

This stage includes identifying the organisation's/end-user's needs, data needs for the impact assessment, checking the availability of desired products or services (market compliance), and preparing the tender documents and criteria.

1.1 Needs assessment and planning

The preparation phase begins with identifying and assessing the actual need for a purchase. Public authorities first consider procurement options and alternatives, including whether the purchase is necessary at all, as avoiding unnecessary procurement helps prevent overconsumption and reduces environmental impact at the source. This might include identifying the function that the purchase should cover and exploring whether this need could be satisfied by temporary leasing, product as a service or other options. When a purchase is required, procurers define objectives for the procurement that align with broader sustainability policies of the organisation (see Chapter 4.1), such as reducing greenhouse gas emissions, minimising waste, or supporting circular economy goals. For this, the procurement implementation planning tool can be used (see D1.2).

1.2 Market consultation and engagement

In this stage, contracting authorities explore what the market can offer regarding environmentally friendly products, services or solutions. Early engagement with suppliers helps to understand the availability and maturity of green alternatives, while also signalling demand and encouraging innovation and competition. Market consultation is crucial to identify best practices, assess costs, and ensure that procurement criteria are both realistic and ambitious. It also provides opportunities to involve small and medium-sized enterprises and eco-innovative businesses, while supporting the mainstreaming of sustainable solutions across supply chains. Market consultation also allows for feedback on the initially proposed criteria.

1.3 Selecting the tendering procedure

The selection of the tendering procedure is guided by Directive 2014/24/EU and national requirements but also by how clearly the contracting authority can define the object of procurement and by the maturity of the market in delivering sustainable solutions. For simpler and well-defined purchases where green alternatives are readily available and evaluating bids is straightforward, open or restricted procedures are the most suitable, as they ensure transparency and efficiency. In contrast, when procuring innovative or complex circular products and services, requirements are harder to define and more flexibility is needed. In such cases, procedures like competitive dialogue, negotiated procedures, or innovation partnerships are preferable, as they allow closer interaction with suppliers and support the joint development of environmentally ambitious solutions. Environmental impact considerations are central to this decision, since they determine both the level of flexibility required and the extent of supplier engagement necessary to achieve sustainability goals.

1.4 Data needs for CCC impact assessment

Here, the first considerations for the CCC impact assessment for the specific procurement should be made, including the methods and data needs. Impact assessment methods and data granularity are chosen depending on the purpose of the assessment: CCC impact assessment conducted as an internal procedure, might be less precise than an assessment submitted for official statistics or reporting purposes. Availability of methods and data sources depends on product and service category: high-impact sectors, such as construction, use pre-defined calculation tools and standardised data values; digital product passports containing key environmental information for manufactured goods and product environmental footprint category rules, while spending-based methods can be used to get a more high-level estimate. The minimum data necessary is the value and amount of procured goods, however for a more precise assessment, detailed information is necessary, such as weight, product specifications and factsheets. Considering data needs at this stage allows for including questions and validating data availability in market consultations.

The preparation phase benefits from the previous stage in the cycle – the transfer of knowledge – as lessons learned from the prior contract period should also be reviewed at this stage as well as the results of the previous impact assessment, if available. This stage ensures that CCC considerations are integrated from the outset and that the procurement decision contributes to long-term policy commitments and the achievement of environmental targets, both for the organization and for individual procurement.

1.5 Selection of criteria (definition of technical specifications, award criteria, contract clauses)

At this stage, contracting authorities define how environmental considerations will shape both the selection and execution of procurement. Three types of criteria play different but complementary roles:

- **Technical specifications** set the minimum environmental requirements that all bids must meet, such as energy efficiency standards, use of recycled materials, or restrictions on hazardous substances. These ensure that only solutions meeting a baseline level of sustainability are eligible.
- **Award criteria** are used to compare compliant bids and reward those offering the best overall value from an environmental perspective. Here, life-cycle impacts, resource efficiency, or eco-label certifications can be scored, ensuring greener options are given preference over other bids.
- **Contract clauses** secure the delivery of environmental commitments during contract performance. They may require reporting on emissions, take-back schemes, or adherence to specific sustainability practices, with penalties or incentives attached to ensure compliance.

Together, these three layers ensure that environmental objectives are integrated throughout the entire procurement process: from defining minimum standards, to choosing the best offer, to ensuring compliance during implementation.

The CCC-2 ambition matrix could be used to determine the ambition level of the criteria (see D1.4).

2. Tendering

2.1 Tendering process

The procurement is then published and opened to bidders. Offers are evaluated against the predefined criteria, with environmental considerations embedded both in mandatory requirements and in scoring. The evaluation determines the best offer, and the contract is awarded to the supplier who delivers the highest score of price, quality, and environmental performance. In the case of requiring or awarding for GPP criteria or ecolabels in the request for tender, these should be included similarly in the contract. The contract should also include sanctions or incentives to consider future actions and promises related to the award criteria, and determine how and how often compliance with the criteria will be checked.

2.2 Monitoring of the Green Public Procurement process in terms of CCC

After the contract is signed, the monitoring of the GPP can take place to analyse whether the procurement was successful in following the CCC approach and if the goal for the particular procurement was met (e.g., harmful substances avoided or reduced, climate impact reduced, and less material used).

3. Contract implementation

3.1 Criteria compliance check

At the contract implementation stage, the procurer or the end-user performs the criteria compliance check to ensure that suppliers meet the environmental obligations defined in the technical specifications, award criteria, and contract clauses. Authorities may require performance reports, site visits, or third-party audits to verify compliance. The criteria compliance check should be agreed on in

the contract. In this phase, the impact assessment can be carried out for the framework contracts as the actual purchase occurs at the contract implementation phase.

3.2 Data collection for the impact assessment

Throughout the contract period, relevant environmental performance data are collected to enable a comprehensive post-procurement impact assessment. At this stage, data needed for impact assessment is collected in agreed formats, for example, from procurement documentation, contracts and invoices, contract management reports, supplier reports, surveys, interviews, and environmental data management systems.

The data collection process, including roles, responsibilities, and detailed data requirements, must already be in place at the organisational level. In an ideal case, requirements for data include **1) timing** (e.g., at completion, 6-12 months after implementation, and/or at agreed milestones); **2) frequency** (once or regularly); **3) data management** (e.g., storage requirements, formats and location, updating, versions, access and security); **4) validation and quality management** (e.g., third party validation, cross-checking, comparing with research baselines, comparing to previous procurements); **5) data collection methods** (e.g., extracting specific data from certificates, questionnaires, automatic integrations, regular reports from suppliers; **6) roles and responsibilities for each of the indicated activities**. For complex data collection, dedicated contract clauses are included mandating suppliers to provide data as well as requirements for data.

4. Post-procurement assessment

4.1 CCC impact assessment

At this stage, the actual environmental performance of the contract is assessed. However, for framework contracts, due to their length, this step could be carried out already in the contract implementation phase (as step 3.3 instead of 4.1). The assessment can involve reflecting on organisational practices, such as measuring energy savings, reductions in packaging waste, re-use of products, or improvements in resource efficiency relative to baseline expectations. The step provides evidence of the procurement's real-world environmental outcomes. Further use of CCC impact assessment results depends on organisational practices, ranging from input for future procurement planning of similar procurements to evidence for setting strategic objectives.

4.2 Evaluation of the procurement process

Follow-up is a crucial stage of the procurement process, which is often not part of the official procedure in the municipalities. First, it can be done *ad hoc* for specific procurements, which will then help to build up the system for the municipality (organisational level) and make it a strategic decision to be used for all comparable procurements (strategic level). The purpose of follow-up is threefold: (1) verify that environmental promises became real results, (2) identify and address gaps in process, specifications or contract management, and (3) capture what worked (and what did not) so that future procurements are faster, cheaper and greener. At the follow-up, the results from monitoring the procurement process, compliance checks and impact assessment are turned into lessons learned so that they can be considered in future procurements.

4.3 Lessons learned and knowledge transfer

To ensure the knowledge transfer, it is crucial that lessons learned are documented and shared within the organisation or across public sector networks. Through the knowledge transfer, a procurement organisation can turn monitoring of the procurement process, compliance checks and impact assessment into practical, reusable improvements within the whole organisation. To make knowledge transfer systematic, the municipality should develop a process for procurement follow-up and knowledge transfer (from the operational to the strategic level).

5 Developing evaluation criteria for pilots & solutions

This chapter sets out how we evaluate the replicability of the CCC-2 approach, the monitoring concept, and the environmental impact assessment. It begins by introducing the concept of replicability and its two key components, transferability and scalability. Building on this, we present the three-level framework we developed, which narrows uncertainty step by step by assessing feasibility, acceptance, and overall replicability. The subsequent sections explain each level in detail, supported by examples of indicators and evaluation questions.

5.1 Evaluation of the solution

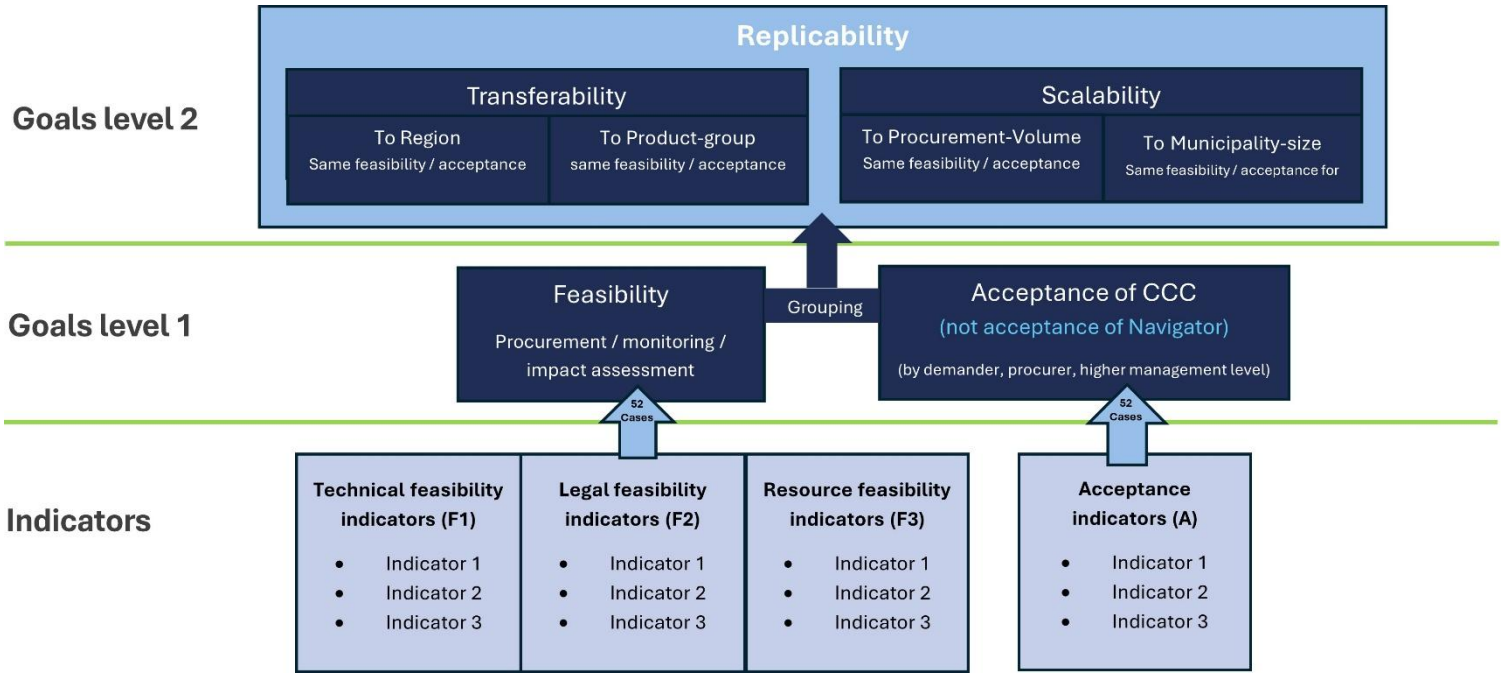
The CCC-2 approach is a structured methodology for embedding sustainability into public procurement, designed to be applied in diverse contexts and maintained long after project funding ends. Its most critical feature is **replicability** – the ability for the approach to be consistently adopted by municipalities of all sizes, in different countries, and across a wide range of product categories. Replicability matters because a solution's impact depends on its capacity to spread and endure; even a successful pilot has limited value if it cannot be adapted to other regions, applied to varying contract volumes, or accepted by new user groups.

In GoA1.4 of this project, we will evaluate the three solutions (CCC-2 approach, monitoring concept and environmental impact assessment) concerning the replicability. In the following paragraph, we describe the evaluation method. The logic of our evaluation method lies in its sequential narrowing of uncertainty: raw data is aggregated into core performance dimensions (feasibility and acceptance), which are then tested against the ultimate requirement of being usable in many different settings at different scales. This progression ensures that the final conclusion on replicability is rooted in specific and measurable evidence.

5.2 The two dimensions of replicability

Replicability, in the context of the CCC-2 approach, comprises two fundamental components: **transferability** and **scalability**. A solution can be considered truly replicable only when it demonstrates both attributes. **Transferability** refers to the capacity of a procurement approach to be applied effectively across differing contexts without loss of functionality or relevance. This includes adaptability to varying regional frameworks, legal systems, and administrative structures, as well as applicability to a broad range of product and service categories. In contrast, **scalability** denotes the ability of the approach to maintain its effectiveness when applied to procurement cases of different magnitudes and institutional capacities. This entails functionality across a spectrum of contract volumes - from small local purchases to large, complex procurements - and suitability for municipalities of diverse sizes, from resource-constrained rural administrations to large metropolitan authorities. Together, transferability and scalability ensure that the CCC-2 approach is not limited to isolated successes but can be systematically adopted, adapted and sustained across multiple settings and scales, thereby maximising its long-term impact and utility. The evaluation method is illustrated in Figure 10.

Figure 10. The evaluation method.



5.3 The evaluation process: Feasibility and acceptance

Assessing replicability involves rigorous, multidimensional testing of the solutions across a range of procurement cases. These include different countries, municipality sizes, procurement volumes and product categories within the Baltic Sea Region (BSR). This testing enables the collection of empirical evidence on how the methodology performs under varying real-world conditions.

5.4 Feasibility indicators

Feasibility forms the backbone of the replicability assessment and is broken down into three subcategories (indicator-groups), each represented by a number of dedicated indicators. The indicator groups are (F1) Technical Feasibility, (F2) Legal Feasibility, and (F3) Resource Feasibility. The description of the indicator groups is given in the following table, together with examples of indicators. We emphasise that at this point of the project, we are not presenting the final set of indicators, which will be used for the evaluation (GoA1.4). The indicator development will take place at a later point. Table 9 presents the categories of indicators, provides detailed descriptions for each group, and includes representative examples to illustrate their application. This structured overview facilitates a clear understanding of the classification and scope of the respective indicators within the study.

Table 9. Indicator groups and descriptions.

Indicator-group	Description of the indicator group	Example assessment criteria
F1: Technical Feasibility	Performance and capability of the solution to deliver intended results.	• Does it reliably achieve the target outcome across procurement cases? • Is all required data available and accessible for the given context? • Can it integrate with existing digital or administrative systems without major re-engineering?
F2: Legal Feasibility	Compatibility with regulatory environments.	• Are local, national and EU procurement regulations conducive to implementing the CCC-2 Approach?

		• Does the methodology support - and not conflict with - mandatory tendering procedures, competition laws, and contract award rules?
F3: Resource Feasibility	Availability and adequacy of necessary inputs.	• Are there sufficient financial resources to support implementation? • Does the municipality have enough qualified staff to use the approach effectively? • Are there other non-financial resources (technology, training, organisational support) in place?

High performance across these three feasibility categories indicates that the solutions can be realistically implemented in a given setting, while identifying areas for improvement if any dimension underperforms.

5.5 Acceptance indicator

Feasibility alone is not enough to guarantee replicability. Even the most technically sound approach will fail if its intended users - from procurement professionals to management decision-makers - are reluctant to adopt it. The **Acceptance Indicator (A)** gauges the willingness of stakeholders to continue using the approach. Common evaluation questions include:

- *"Would you continue to work with this solution?"* [yes/no]
- *"Does the approach fit into your current work practices without creating unnecessary complexity?"*
- *"Do you perceive the solution as adding value to achieving your procurement and sustainability objectives?"*

These insights capture qualitative and behavioural factors, including perceived usability, ease of integration into existing processes, and trust in the solution's reliability.

In summary, the CCC-2 approach offers a promising pathway for embedding sustainability into public procurement processes by prioritising adaptability and long-term impact across diverse contexts. Through its structured focus on transferability and scalability, combined with robust assessment of both feasibility and stakeholder acceptance, the approach establishes a foundation for solutions that can be broadly implemented and sustained. As a result, the CCC-2 approach supports the creation of procurement practices that are not only effective but also resilient and responsive to the varied needs of different municipalities and regions.

Annex 1. List of networks

Type	Name	Short description of the organisation/project/initiative (aim, function and other information relevant for the CCC-2 project)	Contact person(s)	Position(s)/role(s)	Contacts (email)	Website	Possible contribution of CCC-2 to the organisation/project/initiative	How and when to involve the organisation/project/initiative in CCC-2 activities?
Policy Areas of the EUSBSR	**PA Innovation**	PA innovation is actually the only policy area that proactively requests for actions on "innovation policies" and refers to the interlinks between policies.					In the application: Action 1, "Challenge-driven innovation cooperation" is the action that ChemClimCircle-2 will contribute to. ChemClimCircle can become a BSR example for PPI and can be brought further to EU level via the PA INNO network.	We seek continuing active cooperation and will welcome PAC INNO to the think tank workshops and partner meetings and present our project at their regular exchange events.
Policy Areas of the EUSBSR	**PA Energy**	PA Energy mostly refers to energy efficiency, electricity & energy sources	Ilze Prūse, Vytenis Barkauskas, Ruzanna Grigorjana, Anca-Iulia Cimpeanu	Policy Area Coordinators	ilze.pruse@kem.gov.lv, vytenis.barkauskas@ena.lt, ruzanna.grigorjana@kem.gov.lv, Anca-Iulia.CIMPEANU@ec.europa.eu	https://eusbsr.eu/policy-area-energy/	In the application: We would like to contribute to more policy integration at the PA's, as well as to bring our issue to the high level of the EU SBSR management. In WP3, GoA 3.5 we will address the issue of policy integration specifically with dedicated measures and produce policy recommendations.	We will invite the PACs to our events and seek for discussion with their groups.
Policy Areas of the EUSBSR	**PA Hazard**	PA Hazard names sources like consumer products and waste as important for future pollution reduction actions. The PAC confirmed the ChemClimCircle approach being of high interest to PA Hazard and wishes to be actively involved in the CCC-2 project, as previously in CCC-1.						
Policy Areas of the EUSBSR	**PA Bio-economy**	PA Bio-economy developed a strategic framework that builds on circular thinking. It addresses food, feed and non-food products from sustainable use of natural resources and also looks at smart use of bio-waste. It partly relates to our procurement criteria e.g. for catering services.						
Procurement-related projects	**Circular Economy Beyond Waste (CEBW), LIFE20, 2022-2029**	The Danish CEBW project has the ambition to integrate environmental and climate considerations in decision-making in a municipality setting, including procurement decisions.					In the application: It is expected that the pilots, the learning and output from CCC-2 will contribute to the action in the CEBW project as the project runs until 2029. Besides the concrete procurement considerations, it is expected that the CCC-2 concept for assessing environmental impacts or	
Procurement-related projects	**NonHazCity3, INTERREG BSR, 2023-2025**	NonHazCity network is the originator of the ChemClimCircle idea. In the currently ongoing NonHazCity 3 the partners are dealing with construction-related product groups and services. Specific criteria on the synergies and clashes between climate, circularity and toxicity aspects in building sector are being defined in NHC3.					In the application: NonHazCity 3 solutions and criteria can be applied in the CCC-2 infrastructure pilots, e.g. in Cesis, Taurage, and Vilnius, which are not partners of the current NHC3 project. The excellent knowledge from the NHC3 project on CCC in construction will form a great input to the procurement case work in CCC-2, it will provide to CCC-	
Procurement-related projects	**COACH, Horizon 2020, 2020-2023**	COACH will help coordinate strategies and disseminate good practices on how to strengthen territorial food systems and collaborative agri-food chains based on three building blocks: short food supply chains, civic food networks and sustainable public sector food procurement.	*to be contacted*			https://coachproject.eu/the-plan/spotlights/public-food-procurement/	They created a Farm-to-Fork procurement toolkit - could be useful for developing CCC criteria.	
Procurement-related projects	**SchoolFood4Change**	WP5 focuses on public food procurement (school food)	Monika Rut	WP5 lead in ICLEI	monika.rut@iclei.org	https://schoolfood4change.eu/	Procurement lessons learned from the 19 partner municipalities as input for CCC criteria. SF4C procurement	
Procurement-related projects	**Food Trails**	Food Trails is a four-year EU-funded Horizon 2020 project aiming to translate in Europe the Milan Urban Food Policy Pact's collective commitment to integrated urban food policies into measurable and long-term progress towards sustainable food systems. Public procurement was one key tool within a broader strategy to transform urban food systems in line with the Milan Urban Food Policy Pact.	Andrea Patrucco	Municipality of Milan – Area Food Policy. Education Department (School Canteens – Agriculture – Food Poverty – MUFPP)	andrea.patrucco@comune.milano.it	https://foodtrails.milanurbanfoodpolicypact.org/	Lessons learned from the living labs focusing on short food supply chains, local and seasonal products, sustainability criteria in tenders	
Procurement-related projects	**JA Prevent NCD, European Health and Digital Executive Agency (HADEA), 2024-2027**	The project aims at Reducing Europe's cancer and NCD burden through coordinated strategies on health determinants. Task 5.4 focuses on public food procurement.	Mette Svendgaard	Project manager and task lead for 5.4 (Copenhagen municipality)	mettesvendgaard@kk.dk	0	Partners working on task 5.4 on public procurement can be invited to relevant workshops throughout the CCC2 project.	Workshops, dissemination
Procurement-related projects	**Circular Minds - Circular Mindset for Change INTERREG Europe 2024-2028**	Circular Minds seeks to drive change by embedding circular economy principles into regional governance and public procurement. Objective is to achieve policy change through structured learning and stakeholder involvement at regional and interregional levels. CCC2 project could learn from their findings regarding capacity building and mindset shift in organizations.	Mirjam Akcay, Mervyn Jones	Ministry of infrastructure and water management	https://www.interregeurope.eu/circular-minds/contacts	https://www.interregeurope.eu/circular-minds	knowledge and experience exchange between projects regarding, e.g. GPP criteria, up-scaling of pilots, organisational mindset shift.	Workshops, dissemination
Procurement-related projects	**Circular Shift - Accelerating the SHIFT to CIRCULAR economy**	Circular Shift is part of the Interreg north west europe programm and aims to advance circularity through procurement in municipalities in seven countries. With multiple procurement pilots in the two areas of workwear and IT products it wants to advance circular procurement along the value chain with close cooperation between companies and public entities.	Amber Spuijbroek	Ministry of infrastructure and water management	amber.spuijbroek@rws.nl	https://circularshift.nweurope.eu/	knowledge and experience exchange between projects regarding, e.g. GPP criteria, up-scaling of pilots, organisational mindset shift.	workshops, dissemination, knowledge exchange
Procurement-related projects	**KISMET**	The project KISMET helps public authorities create favourable conditions for food producers and consumers to choose sustainable food options. With KISMET, we change our 'destiny' and transform the current unfavourable food systems in cities and regions around the Baltic Sea to sustainability. The project tackles the challenge that	Torsten Grasser	Project Manager	torsten.grasser@bwi.hamburg.de	https://interreg-baltic.eu/project/kismet/	Knowledge, impulses, ideas, exchange	The KISMET project is alomst finnished (Dec. 2025) so a breif exchange would be most likely
Procurement-related projects	**ProCirc**	The Interreg North Sea Region ProCirc project ran from December 2018 to June 2023 and aimed to develop knowledge and understanding on how circular procurement contributes to reducing raw material usage, waste, and CO2 emissions across industries. Throughout the project, more than 30 circular procurement pilot projects were initiated in various sectors, including textiles, clothing, construction, ICT, and furniture. Over a span of 4.5 years, the 11 organisations from 6 countries jointly acquired a wealth of experience, formulated recommendations and guidelines, devised tools and methodologies, and established robust transnational networks				ProCirc, Interreg VB North Sea Region Programme	Knowledge & ideas	The ProCirc project ended in 2023 but there seems to be some kind of network for circular procurement coming out of it: https://c-prone.acrplus.org/e
Procurement-related projects	**CircPro**	CircPro partnership consisting of 11 partners from 10 regions has identified main barriers that hinder the systematic implementation of the circular procurement in their regions. These are general lack of knowledge and expertise related to circular procurement, procedural and legal barriers, and procurers´ preconceptions about using, as well as lack of, recycled materials. With inter-regional cooperation, we aim to tackle these challenges by: - increasing partner regions' know-how on circular procurement and recycled materials - identifying, assessing, exchanging and disseminating the existing national/regional initiatives, - good practices, supporting measures, pilots and initiatives, main actors, organisations and networks that could boost the implementation of the circular procurement in the regions - identifying the procedural and legal barriers experienced by procurers and suppliers when implementing procurements with circular elements - providing a meeting place and enhance dialogue between procurers and suppliers (both groups are represented in the partnership and stakeholders' groups) - preparing regional Action Plans with specific proposals for improving the existing regional policies, programmes or instruments with their local stakeholder groups				https://projects2014-2020.interr	Knowledge & ideas, the description with good practises, dialogue between procurers and suppliers etc sounds similar to some of our efforts in CCC2.	The CircPro project ended in 2023
Procurement networks	**Procura+ European Sustainable Procurement Network**	Initiated and co-ordinated by ICLEI, Procura+ is a network of European public authorities and regions that connect, exchange and act on sustainable and innovation procurement.				https://procuraplus.org/		
Procurement networks	**SAPIENS - Sustainability and Procurement in International, European, and National Systems, EU's Horizon 2020 Marie Skłodowska-Curie programme**	SAPIENS is the world's most comprehensive PhD programme dedicated to sustainable public procurement—merging academic research, stakeholder engagement, and policy innovation across Europe. They train a new generation of experts (15 Early Stage Researchers/PhD candidates) capable of integrating sustainability criteria into public procurement across law, economics, and business disciplines, conduct interdisciplinary research, strengthening scholarship and practical application in sustainable public procurement (SPP), operate as a network of 10 EU universities and around 18–19 partner organisations (international bodies, public purchasers, R&D centers, think-tanks, etc).	Chiara Falvo	SchoolFood4Change Project Manager at EatingCity | SAPIENS Network Fellow & PhD Candidate in Law at UniTo	c.falvo@eatingcity.org	https://sapiensnetwork.eu/	Network of researchers and practitioners of PFP.	Workshops, dissemination
Procurement networks	**One planet network PFP (FAO)**	The One Planet Network is a global multi-stakeholder partnership, coordinated under the 10-Year Framework of Programmes on Sustainable Consumption and Production (10YFP). Hosted by the UN (including FAO among other UN agencies), it supports countries in implementing SDG 12—responsible consumption and production. They speak as the Sustainable Public Food Procurement Interest Group, advancing green procurement of food in public institutions, organize global conferences (e.g., the 4th and 5th) to promote systemic transformation of food systems and provide resources and guidance tools—like frameworks for urban food policy, multi-stakeholder collaboration guides, and SFS toolkits.	*to be contacted*			https://www.oneplanetnetwork.org/	High level network	Conferences?
Procurement networks	**EU Public Food Procurement network**	Network of public food procurement practitioners that grew out of the Best REMAP project partners. Led by the municipality of Copenhagen.	Betina Bergmann Madsen	Lead of the network from Copenhagen municipality	betmad@kk.dk	*not public yet?*	Learning best practices from the practitioners in the network.	Workshops, dissemination
Procurement networks	**MHU - Miljö och hälsa i upphandling (Swedish procurement network "Environment and health in procurement").**	The aim of the network is to share challanges and help each other to soulutions.	Anki Juthberg is the contact person for the CCC2-partners.	The network is administered by Adda (CCC2 AO05).	ann-cristin.juthberg@vasteras.se	https://www.adda.se/aktuellt/2022/natverk-driver-pa-hallbar-utveckling-hos-kommunerna/	Relevant feedback on how to best include different sustainability aspects in procurement processes.	The Swedish AO municipalities are recruited from the network, and will contribute in round table discuissions.