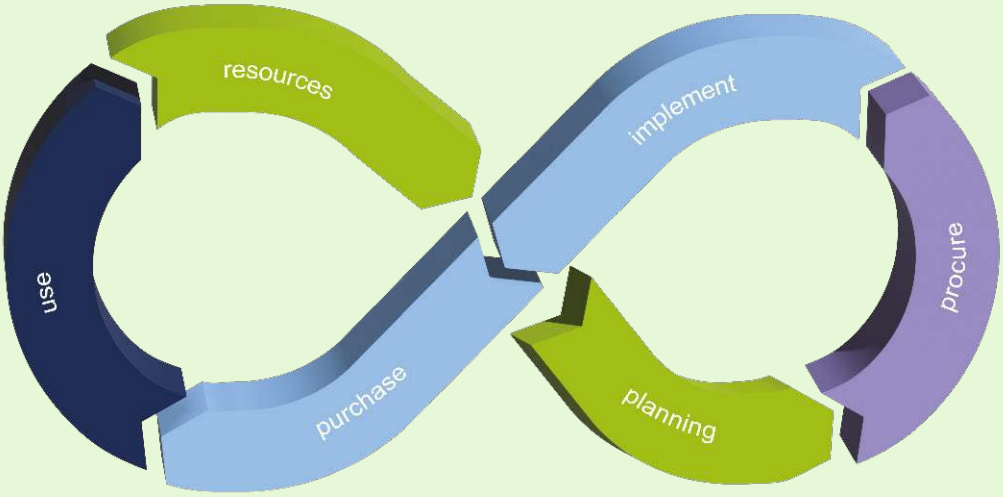

ChemClimCircle: A Practical guide

Integrating criteria for chemicals, climate and circularity in public procurement processes

Output 1.2

September 2024

The project ChemClimCircle is co-funded by the INTERREG Baltic Sea Region Programme of the European Union.

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1. Introduction

This guide is intended to support public procurers to integrate chemical, circular and climate (ChemClimCircle for short) aspects in public procurement.

European municipalities procure goods and services at large scale for various public facilities in the fields of child and elderly care, construction, education, vehicles, and traffic solutions. There is great potential to use the procurement process to achieve environmental goals, by demanding more sustainable products and services and, at the same time, to raise the quality of life for people by reducing harmful chemicals and materials they are exposed to in everyday life.

One challenge can be a lack of a holistic approach in governing goals and visions, as these sometimes focus on individual goals such as climate neutrality while the topic of avoiding hazardous substances might receive little attention, or none at all. The hazardous substances issue is also critical for a circular economy to be possible – the more material that does not contain toxic substances, the more opportunities there are for reuse and recycling.

Therefore, three pillars of sustainable procurement are brought together here, in the so called ChemClimCircle approach:

- Low toxicity (Chemicals);
- Climate-neutrality (Climate);
- Circularity (Circularity).

1.1 About the project

The ChemClimCircle Project is an EU Baltic Sea Region (BSR) Interreg project aiming to enhance and develop green public procurement focusing on integrating three topics: hazardous chemicals, climate impacts and the circular economy at different levels in municipal organisations.

This guide was prepared based on previous work on the ChemClimCircle approach to procurement:

- The Scoping report of the Project; Integrating Criteria for Chemicals, Climate and Circularity in the Public Procurement Processes.
- The Supplementary report collecting information for the development of this guide.
- Knowledge gained by working with partners in various workshops.
- Case presentation reports from municipalities .
- Good practise examples from the involved municipalities.
- External references.

If you wish to learn more and find the mentioned reports, visit the Project's website: https://interreg-baltic.eu/project/ChemClimCircle/

1.2 About this guide

The aim is to help to design and implement an integrated approach to green procurement for municipalities and other public organisations. This guide provides a general overview of how to integrate the ChemClimCircle approach in procurement processes and provides more specific guidance on selected product groups. Together with the Guide, there is Training material which is available here: https://interreg-baltic.eu/project/chemclimcircle/; Section „Solutions“ – „Outputs“.

How to use this guide

The guide has been structure in two main blocks:

- The process flow of ChemClimCircle procurement. The process flow shows the procurement process and the ChemClimCircle considerations in each of the steps of the process. Use the process flow to integrate ChemClimCircle aspects in the procurement at each step of the process.
- Procurement categories. This guide features the seven most popular and ChemClimCircle relevant product categories which municipalities procure. Each category describes the most significant environmental problems and gives recommendations according to the ChemClimCircle approach.

In this guide, we use three icons to mark the reference to climate, circularity, and chemicals. You will find them throughout the document.

	Chemicals
	Climate
	Circularity

2. The ChemClimCircle approach process flow

The ChemClimCircle approach to procurement aims to acquire goods and services with the best sustainability performance by considering a comprehensive definition of sustainability, including chemical criteria, climate criteria, and circularity criteria.

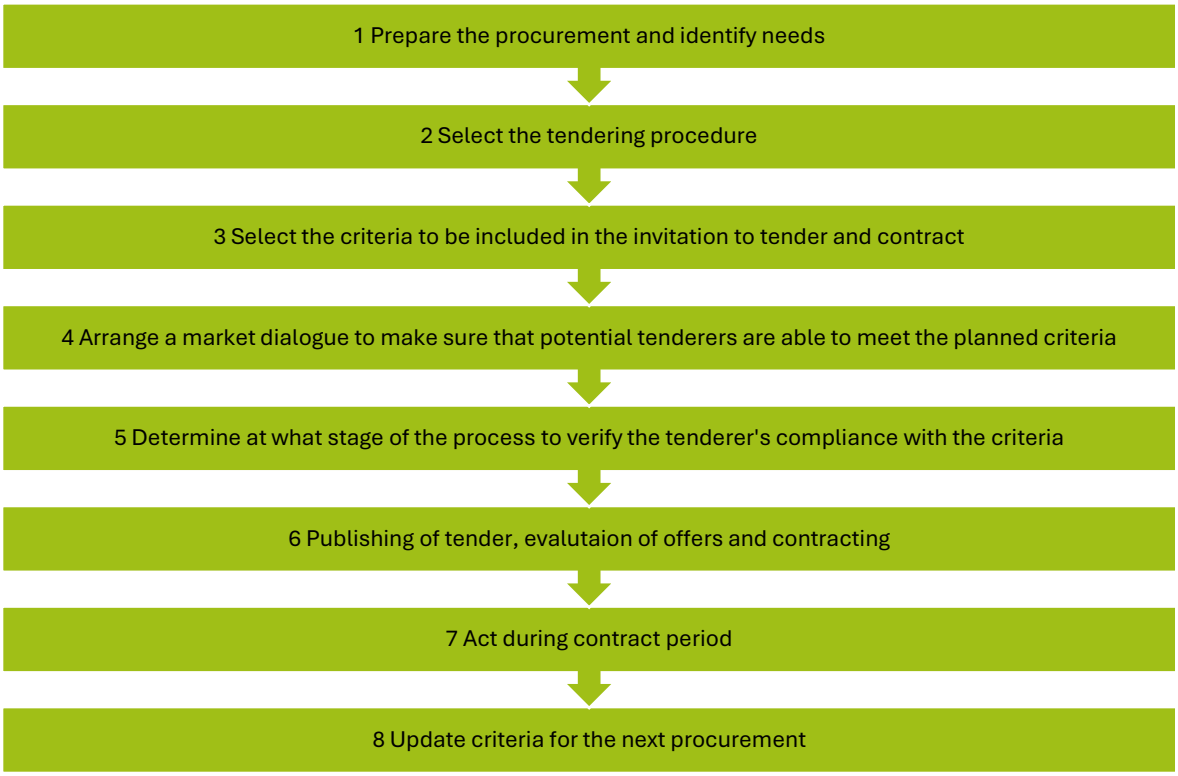
This part of the guide gives a step-by-step introduction on how to include chemical, climate, and circularity aspects in the procurement process and how to prioritize when having conflicts of interest. Priorities should be set so that they correspond to the goals of the municipality (often included in the strategic documents), regulation and policy frameworks. We suggest using the thinking provided below to prioritize between these aspects when they cannot all be met. Two approaches on how you can use the ChemClimCircle approach_to reach a wide range of sustainability goals in procurement are presented below, arranged in decreasing order of effectiveness:

- Level 1: Combining all ChemClimCircle aspects into the procurement criteria through synergies
  The highest priority is given to criteria that leverage synergies between all three ChemClimCircle aspects.

- Level 2: Prioritizing ChemClimCircle aspects based on objective decision-making criteria
  In cases where it is not feasible to include criteria from all three ChemClimCircle aspects, a focus on one or two aspects may still be possible. This prioritization must be done on a case-by-case basis, considering which aspect, Chemical, Climate, or Circularity, is most important to consider for unfolding the largest environmental benefit.

We recommend consulting chemical-, climate- and circularity experts of your own municipality and to ask them for support when identifying the potential of applying the ChemClimCircle approach. If such experts are not available in your organisation, check if regional or national procurement, or environmental authorities provide support.

The flowchart below shows how to integrate the three: chemicals, climate, and circularity right from the start of the procurement process. It starts with the identification of needs and ends with the feedback to improve future procurements.



The flowchart follows a typical procurement process and, in each step, shows what considerations and aspects are important for the ChemClimCircle approach. Some aspects are general and are relevant for all ChemClimCircle aspects, and some are specific to each of the aspects. You find them identified with the respective icons. Follow the detailed explanations below to understand what ChemClimCircle aspects are important in each step.

2.1 Preparation of the procurement and identification of the needs

- Identify the needs.
- Arrange an early market dialogue and look for innovative solutions from the markets that support the perspective of sustainability for chemicals, climate, and circularity.
- Define your ambitions for each perspective. Set clear and measurable goals for how you want to reduce the environmental impact by buying tox-free, circular, and climate neutral.
- To reach the widest range of sustainability benefits, apply the ChemClimCircle approach to take all three aspects (Chemical aspect, Climate aspect, or Circularity aspect) into account according to Level 1 above. If there are conflicts of objectives, prioritize among the sustainability goals, is it chemicals, climate, or circularity which is most important for the municipality in the procurement or which aspect is most important in the current procurement area?
- Consider synergies and conflicts of objectives. It might be that e.g. plastic materials last longer when containing toxic additives or that the use of recycled materials increases the energy use. For more information, consult the project's documents

(available at the project's website https://interreg-baltic.eu/project/chemclimcircle/): Integrating Criteria for Chemicals, Climate, and Circularity in the Public Procurement Processes: A Supplementary report and Interlinks, conflicts and dependencies between chemicals, climate, and circularity aspects in procurement: The Project's report, or specific procurement categories in this guide.

- Utilize specialists for chemicals, climate, and circularity either on a local or national level.
- Are there pre-made criteria available from a national authority or such?
- Have a dialogue with the authorities to find out if there are articles or products available which meet the pre-made criteria.

2.1.1 Consider from a CIRCULAR perspective

- Determine your functional needs. Identify what do you need from the product or service you are procuring, rather than specifying a particular solution. Consider favouring circular business models to fulfil your need (sharing, leasing, repairing, refurbishing, or recycling).
- What circular economy solutions can be found? Discuss with the possible suppliers before defining the solution to your need so that there is room for new approaches, and you do not select something that is not available.
- Have a dialogue with the users/recipients to understand if circularity is possible, for example, is there a facility/ability for e.g. recycling, washing, cleaning, or storing in the receiving unit?
- Consider eco design and life-cycle perspectives for the articles (see procurement areas for specific examples).
- The target of the procurement is defined in the perspective of circularity, for example textiles made from recycled material or textiles containing a certain % of recycled fibre.

2.1.2 Consider from the CHEMICAL perspective

- Search for information on what materials are available for the desired articles and which of them are tox-free. What does tox-free mean for the particular product group? Is there a database on materials available?
- Are there more materials in the composition of the articles or are they composed of mono-materials? Consider traceability and specific chemical content information of the materials.
- How to achieve low toxicity in materials? Consider also publishing a request for information to get more specific answers from the potential suppliers.
- Consider if you can negotiate and develop the assortment during contract period, or are sharp criteria possible to implement right from the beginning of the contract?

2.1.3Consider from a CLIMATE perspective

- Identify the product's/service's climate impact.
- What option would be most climate friendly (service, buying)? Do market research on options on the market.

- Research on what are the ways to compare procurements based on climate. Is it difficult to compare the tenders if there are no comparable GHG emissions data on various products/tenders.
- Do extensive research on what practices could be used to make the procured goods or services have less effect on the climate.
- If the climate criteria are the focus of the procurement, ask for life-cycle based information for the product group, from suppliers.

2.2 Select the tendering procedure used in the procurement process

- Consider making an innovative procurement.
- Consider making a procurement with a competitive negotiated procedure.
- In order to include small suppliers that have good CCC performance, but cannot ensure volumes, one can divide the request for tender into smaller lottes and specific topics.

2.3 Select the criteria to be included in the invitation to tender and contract

- Utilize pre-made criteria e.g. by EU GPP, the Swedish National Agency for Public Procurement (criteria available in English), and criteria of type I ecolabels.
- Consider if there is a possibility to require eco-labelled products/services.
- Choose only a few, prioritized criteria to start with. The selection of criteria can be expanded in future contracts as experience is gained from the current procurement process and the market has developed.
- Consider what are technical specifications and the minimum requirements and what aspects can be used for award criteria.
- Put criteria into the tender document/contract specifying that there could be certain changes in materials/products/articles during the contract period.
- Acknowledge the unfamiliarity of the development path and consider, whether to choose flexibility through short contract periods and renewing it more frequently, or to require development during the contract period in longer contracts. This is important for chemicals to a be able to replace materials containing hazardous substances while for circularity the aspects are inclusion of maintenance, repair and guarantees.

2.3.1 Consider from a CIRCULAR perspective

- Include criteria supporting circularity, for example a long guarantee time, the availability of spare parts, maintainability, service concepts, use of recyclable materials, recyclability, material choices etc.
- A product, service, or solution, which leads to the best maintenance of the value of materials and yields a harmless circulation, and thus supports the circular economy?
- The choice of procuring a service compared to procuring products might affect cost-efficiency and the quality of the product or service.

2.3.2 Consider from the CHEMICAL perspective

- What was the result of the early market dialogue and what are the needs? How do these compare to each other? Is there a good supply of low-tox articles or products? Is it possible to use ecolabels?
- The amount of hazardous substances in materials is minimized by using chemical criteria and selecting materials that do not contain hazardous substances.
- Choose criteria that aim to ensure that the products are free from the substances that were identified in the preparation stage and needs identification.
- Set criteria to know how the suppliers follow their sub-contractors so that certain products are free from certain substances, such as a description of the supplier's procedures to ensure compliance.

2.3.3 Consider from a CLIMATE perspective

- Consider the entire life cycle - if you lease work clothes, washing/detergents and transportation come in as considerations.
- Identify the product's/service's climate impact. Consider how to ensure contributing to achieving climate neutrality. Will it come through material choices, for instance timber construction? Or low emissions, for instance through vehicle choices?
- Note that it is very difficult to compare CO_2 between products/services/tenders. How to calculate greenhouse gas (GHG) emissions of different procurements? You could instead define and require practices that save CO_2.

2.4 Arrange a market dialogue to make tenderers able to meet the planned criteria

- To receive feedback, you can organise a market dialogue, potential suppliers will be given the opportunity to give feedback either face-to-face or in written format.
- Adjust the criteria based on the feedback from the market.

2.5 Determine at what stage of the process to verify the tenderers' compliance with the criteria

Decide in which stage you want to verify that the supplier or product meets the criteria. It saves both tenderers and companies time if the verification is only made with the winner of the contract.

- Is the supplier required to already deliver documentation of its own and subcontractors, officials, certifiers, or references when submitting their tender?
- Is it a more viable option to not require fulfilled criteria by the time of contracting, but requiring implementation after one year?
- Verification of criteria can be made during the evaluation and contracting period. For example, you can state that the ordering organization will select X amount of products of its choice and the supplier must provide documentation to show that the criteria are met. This is a good choice for product groups where there is large variety of products like toys and furniture or chemical products.
- Eco-labels are a convenient and reliable way to ensure compliance with criteria for product groups where there is a large variety of labelled products. Checking the ecolabels might also be one part of the check of a set of products during the evaluation and contracting.
- Set criteria that the supplier needs to have a verification system in place after one year, not by the time of contracting. The municipality will learn together with the supplier.

2.6 Publishing of tender, evaluation of offers and contracting

This step is in between design of criteria and signing the contract. Although it does not hold special significance to ChemClimCircle aspects, it is valuable to note here that this is an important stage and may take significant time and effort to sign the contract.

2.7 Contract period

- Monitor compliance with the requirements during the contract period. Does the supplier act according to the agreement?
- A dialogue with the supplier is beneficial to achieve better contact and understanding between them and the municipality. The follow-up and development of the product range is much easier if you meet with the supplier and work together to achieve sustainability goals.

- Development during the contract period, for example by making use of feedback from the users in the municipality.
- Depending on what is stated in the contract as potential improvements during the contract period, agree what improvements can be made and by when. For example, 50% recycled fibre will be added in 20 % of the textile products or 20 % of the contracted articles will have a type I ecolabel in one year after the contract is signed.
- The municipality might need to be flexible during the contract period in order to be able to introduce circular products and business models. This must be included in the procurement documents during step 1 and 3 (see above).
- Monitor and measure the performance and impact of the product or service using different indicators, such as resource efficiency, carbon footprint, or social benefit.
- Consider if the bonus or sanction systems that are in the contract (if they are) should be enforced.
- The possibility to supplement and develop the range of products during the contract period also must be accepted in the organization and the units using the articles or services.
- Items which are better from a sustainability point of view might require different methods, single use paper or plastic materials compared to textile multiple use materials for example.
- Consider if the initial goals are achieved, what lessons were learned and take notes that are used in the next procurement process.
- The sustainability experts will need to support the procurement staff and/or contract controllers through the process or give guidance in the contact with suppliers.

2.8 Update the criteria for the next procurement

- Utilize the experiences gathered from the previous procurement.
- What kind of development was made with the supplier during the contract period, is it possible to raise the bar?
- Do not forget to make a market dialogue, maybe something new and innovative has been made available on the market?

3.ChemClimCircle recommendations for selected procurement categories

This part of the guide provides recommendations for selected procurement categories by showing the aspects that need to be considered for a ChemClimCircle approach in procurement. You can start to develop your ChemClimCircle integrated procurement case, by making yourself familiar with the challenges and synergies together with the following recommendations in the procurement categories.

3.1 Packaging

The main function of packaging materials is to preserve the goods packed. There are different levels of packaging:

- Sales or primary packaging.
- Secondary or group packaging.
- Transport (tertiary) packaging.

The most common materials that are used for packaging are wood based (paper, cardboard, etc), plastic, metal, glass, and different niche materials with very specific functions. These specific function materials include all the varieties of plastic laminates and other combined materials. Below, all three packaging levels are considered as a whole, but there might be differences in the possibility for setting criteria. The primary packaging might be harder to influence for a retailer who mainly redistributes goods from a supplier chain, while the secondary and tertiary materials might be within their hand to change.

3.1.1 ChemClimCircle synergies and conflicts in the packaging category

	Packaging is often turned into waste after the first use. Depending on material type, there are different potentials for recycling, depending on the material. There might also be options for use of packaging made from already recycled materials. Plastics are not recycled to the same extent as paper currently, and a synergy exists between climate and circularity goals if using paper and cardboard options.
	Weight is an issue for packaging. • Plastic is very light weight and durable, and therefore a good choice from the transportation point of view. • Glass is a better choice for other reasons as it is a multi-use material which give less risk of hazardous substances compared to plastic, however, it is fragile and heavier and requires large amounts of energy in production and recycling.

	• Wood based materials such as cardboard solutions can be another lightweight option although sustainable forestry needs to be ensured. None of the mentioned resources are unlimited so reduction of packaging materials where possible is reasonable.
	Packaging plastics may contain hazardous substances, which is especially important for food contact materials, e.g. bisphenols, UV-stabilizers, and plasticizers. Such content also makes the material unfit for recycling. The plastic types of PE, PP and PET are the most commonly recycled and also the types which are least associated with hazardous chemical content.

3.1.2 Recommendations for packaging procurement category

	Prefer multi-use packaging over single use packaging and natural packaging materials (cardboard, wood, paper) over plastic or laminated materials. If the packaging material needs to be plastic, prefer the plastics PE, PP and PET, if possible, since these are the ones with the least toxic additives and most commonly recycled. When setting criteria, demand information on packaging material set up from the supplier.
	Consider if a recycling infrastructure is available for packaging materials in your municipality. Make sure that there is a contract for collection of packaging materials from the municipality's units. Demand packaging materials that are either made from mono-materials or materials that are easily separated and fits into the collection and recycling systems. Keep a dialogue with the supplier during the contract period, concerning the packaging materials used in the contract.
	Identify redundant packaging options, where choosing another method or system might be preferable. One example is coffee capsules substituted by larger coffee packs.
	Consider buying bulk or in larger bundles rather than each product single packed, to reduce secondary packaging materials.

3.2 Textiles

Municipalities are purchasing substantial amounts of textiles for a variety of uses. The most common sub-groups in procurement are:

- Professional work clothing and shoes for many different municipal units;
- Bed linens, towels, pillows, duvets, and mattresses;
- Interior textiles present in items such as furniture, curtains, tablecloths, and pillowcases.

- Laundry and cleaning services for textiles, including rental garments and other textiles.

Environmental problems of textile materials in general are that:

- To obtain textile fibres, whether natural or synthetic is connected to chemical use, e.g. pesticides for cultivation of cotton and processing chemicals for the production of polyester, acrylic, nylon, and viscose;
- The preparation and dyeing of fabrics are intense in chemicals for both synthetic and natural fibres;
- End-of-life for textiles is usually in landfill or as waste incineration since re-use or recycling is uncommon.

The chemicals used on the fields and in the factories can both affect the ecosystem around the production site, factory workers as well as the wearer and the water environment where the textiles are washed.

3.2.1 ChemClimCircle synergies and conflicts in the textile procurement category

	Many textiles are made of synthetic fibres such as polyester, acrylic and nylon. These are plastic materials mainly derived from fossil sources. The cultivation of natural fibres like cotton may involve the use of pesticides and have extensive water demand. Both synthetic and natural fibres require a variety of chemicals for preparation and dyeing processes. Energy is required to produce all these textile related chemicals.
	Synthetic fibres shed microplastic particles during wear and washing, which can enter waterways and ecosystems, and give rise to harmful effects in aquatic ecosystems.
	Textiles made from fibre blends can be challenging to recycle due to their complex chemical composition and mixed materials, limiting circularity.

3.2.2 Recommendations for textile procurement category

	Choose the following options: ○ recycled textiles where possible, or with partial recycled content. ○ eco-labelled natural fibres to reduce use of plastic and processing chemicals. ○ mono-fibres and textiles without print are preferred for the textile to be recyclable.
	Assess what the need is and for which user group within the municipality. It is more important for textiles that come into close contact with the skin, and those which are used by children, to be free from harmful substances. Criteria to avoid certain groups of hazardous substances can be used.

	Consider if textiles, for example work clothes, can be purchased as a rental service agreement. Make choices for the maintenance of the textiles such as laundry* and mending of zippers, holes, and faulty seams. Have an in-house mending service or demand it as part of the contract. *For the laundry services, please refer to the section on cleaning below.

3.2.3 Example from the city of Helsinki

The aim of the procurement was to take the environmental impact of work clothes into consideration. All sustainability criteria were mandatory, and they included criteria on chemicals and social responsibility. In the sustainability plans, tenderers were required to commit to development work during the contract period. The progress of the plans will be monitored annually (see inlet next page).

The suppliers of work clothes were required to take action to promote:

1) use of renewable energy, energy-efficiency, and smart water consumption.

2) sustainability of the fibres and fabrics used in the textiles included in the contract, as well as the transparency of the production chains of the supplier's purchases.

3) using alternative fibres, such as recycled ones in the textiles included in the contract. Tenderers were also asked to state the percentage of recycled fibres used in the textiles included in the contract.

The providers of laundry services (including the full service) were required to take action to promote:

1) Use of renewable energy, energy-efficiency, and smart water consumption.

2) Monitoring of the wash frequencies and preventing harmful chemicals and synthetic microplastics from ending up in nature, for example, with the help of sewage filters.

3) Providing information concerning presence of substances of very high concern according to the EU Reach legislation. Furthermore, some dyes and pigments were prohibited for use in the textiles.

4) Recycling and upcycling: The supplier shall be obligated to take care of the appropriate and responsible disposal, recycling or upcycling of the materials and fibres of the work clothes included in the contract during the contract period. Objectives shall be set for the recycling or upcycling of materials and fibres, as well as measures to achieve the objectives and monitoring of the progress.

More information on this and other cases available at: *https://interreg-baltic.eu/project/chemclimcircle/*

3.3 Plastic containing products

Plastics is a material that have a practical use in many products, both household and industrial. However, plastics have become a global problem, largely due to single use plastic items polluting the environment, both land, air, streams, seas, and oceans. Another issue is the use of finite raw materials such as fossil sources for the manufacture of plastic materials. Bioplastics also exist but their volume is insignificant compared to the conventional fossil plastic. And even though the materials used to produce bioplastics are renewable, there is still a set amount of such raw materials that can be taken out of the ecosystems each year, for the purpose of producing plastics, while still being sustainable.

There are many challenges associated with the use of plastic and it is a material that can be both long lasting and very short-lived. From a chemical point of view, long-lasting plastic materials can constitute a problem since some contain up to 70% of added hazardous substances that leak from the material over the lifetime of the items, exposing humans and the environment to hazardous chemicals over long time periods, long enough to be prohibited in legislation, making the material unfit for circulation. Please refer to the Integrating Criteria for Chemicals, Climate, and Circularity in the Public Procurement Processes: Supplementary report for more details on these chemicals.

In the assortment that municipalities procure, the most common items made from plastic are:

- Single use plastic containing articles[1] (medical supplies, incontinence articles, diapers, waste bags etc).
- Office supplies (folders, pens, rulers, erasers etc).
- Textiles and furniture.
- Workwear and shoes.
- Kitchen utensils (dishes, cups, containers, trays, spoons, spatulas etc). *
- Toys and art materials for schools, kindergartens etc.

[1] **Many single-use plastic items are already prohibited by the EU' s Singe-use Plastics Directive. Please check the items and their restrictions implied by Directive (EU) 2019/904 of the European Parliament and of the Council of 5 June 2019 on the reduction of the impact of certain plastic products on the environment or consult the national legislation transposing the Directive. (Link: https://eur-lex.europa.eu/eli/dir/2019/904/oj)*

3.3.1 ChemClimCircle synergies and conflicts in the plastics category

	Plastics often contain chemical additives, such as plasticizers, stabilizers, and flame retardants. Some of these additives can pose health risks and may leach into food or the environment.
	Plastics can break down into microplastic particles, leading to harmful effects, especially in aquatic ecosystems.
	There are many different types of plastic with different properties. Some plastics that are better from a chemical perspective are also better from a circular view since there are existing recycling systems; these are Polyethylene (PE), polypropylene (PP) and polyethylene terephthalate (PET). PVC is not suited for recycling since it often contains hazardous chemicals.
	Single-use plastics have a very short lifespan, leading to frequent disposal and waste generation. These materials can also be challenging to recycle since they are often made from composite materials or recycling systems are lacking, thus limiting circularity.
	Multiple-use plastics have a longer lifespan, potentially reducing the overall need for new plastic production and waste generation.
	For efficient recycling, a good collection and recycling system and manufacturing infrastructure must be in place. Another aspect is that each recycling cycle, in effect, downgrades the material.

At the strategic level, many municipalities are developing plastic strategies encompassing various ways how to reduce plastic and promote more sustainable use of plastic, see https://plasticsmartcities.org/

Several Swedish cities have strategies for use of plastic materials which all have similar content, such as:

- Investigate the need for plastics before each procurement
- Replace or complement single-use products with reusable alternatives
- Request products made with materials other than plastics
- Request products made with recycled plastics
- Request products made with bio-based plastics

3.3.2 Recommendations for the plastic containing products procurement category

	Natural materials can be better choices than plastics in certain applications. This can be wood, bamboo, stainless steel, or glass, which typically have low hazardous chemical content compared to plastics, reducing potential health and environmental risks. Natural materials might also have a lower impact on climate, like wood, which sequesters CO_2 when growing. When selecting the assortment for the procurement, investigate if there are alternatives to plastic materials.
	Select items made from the plastics that are better from a chemical perspective (Polyethylene (PE), polypropylene (PP), and polyethylene terephthalate (PET), as they are also the easiest to recycle in the current systems. Avoid Polyvinyl chloride (PVC) as much as possible. Avoid plastic materials which are advertised as compostable if there is no suitable industrial composting system available in your region.
	Demand the use of recycled plastics in articles, this gives a climate positive effect, since new fossil raw materials are not used and incinerated as waste.
	Change from single-use to multiple-use items to achieve a synergy, less plastic and less CO_2 footprint and a more circular approach. For example, textile wash napkins instead of plastic ones. These can be washed and used many times and then recycled into other textile items, although some energy is involved in the wash cycles. Multiple use items might be more resource intense to produce and it is important to ensure that these are used as many times as required to give a climate positive effect. For an efficient change to multiple use items, the municipality's users need to be involved. Communicate with the municipal staff on usability since there might be different methods required when using alternative materials. One example is wood kitchen utensils which cannot be washed in a high temperature dishwasher, as some plastic materials can. Behaviour changes might be needed in the units, for example when changing from single use to multiple use items.

3.4 Furniture

Furniture is a product group including a wide range of material types, both natural and synthetic. Depending on the materials used, the environmental and health impact can vary. Some of the materials involved, such as plastics and wood are already mentioned above. There are criteria developed for furniture both by the Nordic Swan eco-label[2] and EU GPP[3],and other organisations (Motiva, Mobelfakta https://www.mobelfakta.se/about.html and Swedish National Agency for Public Procurement). The Project's own investigations showed that the criteria of the Nordic Swan were the most comprehensive of all.

3.4.1 ChemClimCircle synergies and conflicts in the furniture category

	Circulating old furniture has chemical risks but gives positive circular and climate-neutral effects. The chemicals present in old furniture, for example flame retardants, risk to be prohibited in legislation and such items are not fit for circularity.
	Use of plastics is covered in Section 3.3 and most of the points there are relevant to furniture items or parts made from plastic. The use of textiles are covered in section 3.2 and are also relevant in furniture.
	Newly manufactured furniture might contribute to poor indoor air quality due to emissions of Volatile Organic Compounds (VOC) such as formaldehyde.
	A conflict arises if spare parts are not available for replacement and repair, this will result in wasted materials as a functioning piece of furniture might be discarded when only a small part is malfunctioning. For example, if a wheel on a chair is broken and the whole chair is thrown away.
	Wood is a common material in furniture which can be associated with unsustainable forest management. Although being a natural material, wood for interior use is often processed with chemicals (paints, lacquers etc.). A conflict may arise from use of these chemicals, but enhancing the lifespan of the furniture.

[2] Nordic Swan. Furniture and fitments. Link: https://www.nordic-swan-ecolabel.org/criteria/furniture-and-fitments-031/

[3] EU Green Public Procurement criteria for Furniture. Link: https://circabc.europa.eu/ui/group/44278090-3fae-4515-bcc2-44fd57c1d0d1/library/0788fd30-083f-4f9e-ba9e-86e9e432e822?p=1&n=-1&sort=name_ASC.

3.4.2 Recommendations for the furniture procurement category

	The best criteria-setting guidance for the furniture group of products currently is the Nordic Swan eco-label. The requirements include constituent materials, chemicals used in production, emissions of substances harmful to health and requirements related to the use phase and circular aspects such as quality, warranty, and material recycling. Although not many eco-labelled furniture items exist on the market, a few selected criteria can be taken from the requirement documents and used in the procurement of furniture. In that way, the pieces of furniture procured do not necessarily need to have the label, but the supplier should be able to show verification that the criteria is met. When there are more labelled options on the market, the verification can instead be the ecolabel certificate.
	Set demands for the possibility to buy refurbished furniture. For newly produced items, demand the use of sustainable and renewable raw materials, e.g., set requirements for information about constituent materials in the furniture and traceability of these. The design of the furniture should allow for reuse and recycling. Set criteria for warranty, availability of spare parts and circular design, to prolong the lifespan and durability of the procured furniture.
	Set criteria on environmental and health properties of chemicals used in production, added to the materials, or used in surface treatment. Flame retardants is one example where criteria can be set to avoid hazardous substances, surface treatments like lacquers and paints for wood and water and dirt repellence for textiles and construction materials are others.

3.5 Food and catering

Food production is associated with various environmental aspects. This includes processes such as the combustion of fossil fuels and energy use for farming and transportation of feed and goods, land use or land-use change, water use and water pollution as well as pesticide use and spread in the environment. The food procurement area is large, and some aspects of the products can differ substantially; animal or plant based, locally produced, or imported over large distances, ultra-processed, or unprocessed. All of these influence the environment and health aspects of the food in certain ways. Here, we focus on the options that can be addressed in procurement.

An excellent guidance material for sustainable food procurement is available from Motiva (2023). This document contains detailed advice for different food products along the whole chain of production, link: https://www.motiva.fi/files/21421/Guide_for_the_Responsible_Procurement_of_Food_2023_FINAL.pdf

3.5.1 ChemClimCircle synergies and conflicts in the food procurement category

	The production and use of antibiotics, pesticides and chemical fertilizers is associated with many food product groups such as meat, milk and cheese, eggs, fruit and vegetables, bread and cereals, oils and fats, coffee, and tea. These chemicals can remain in the food items and spread to the surrounding environment, causing adverse effects on health and ecosystems. Some of the impacts can be reduced by organic farming practices.
	The production of animal-based products involves livestock management, which contributes to more greenhouse gas emissions, primarily methane and nitrous oxide, as well as larger land and water use, compared to plant-based alternatives.
	For catering services, energy and water use are important contributors to the overall environmental impact, as are waste generation and waste management. Reducing food waste is crucial to reducing the overall environmental impact of a catering service.

3.5.2 Recommendations for the food procurement category

	Assess the packaging sizes needed in the municipality's kitchens, larger packs can reduce the amount of packaging materials and make the cooking procedures easier in large kitchens.
	Choose organic food products. For verification, use the established eco-labels: EU organic label (the leaf), or the equivalent. Many organic farmers are small producers which cannot ensure the volumes needed for the needs of a municipality. In this case, try to split the procurement into lottes or sections so small suppliers can be involved for specific parts of the procurement.
	In catering services, add criteria for the supply of vegetarian food options. With an increased offer of plant-based menus, the climate impact can be reduced. Food and beverage waste prevention should also be implemented by the service provider.

	Choose natural materials like steel, glass and wood for kitchen utensils and other food contact materials (FCM) in the municipality's own kitchens and catering services. See the section on Plastic containing products procurement area, for more details on the best types of plastics as well as alternative materials.
	Set criteria for energy and water consumption in the kitchen when catering services or kitchen appliances are procured.

3.6 Cleaning services and products

Cleaning is an area where the attention is mostly on the substances used in cleaning processes.

Cleaning services

Many authorities have their cleaning services carried out by private contractors. The tendering procedure for selecting the contractor offers opportunities for:

- Improving the environmental and health performance of these services.
- The reduction in the use of cleaning chemicals through using appropriate dosages or proper cleaning techniques and new types of equipment is a particularly efficient way to reduce the environmental impacts of cleaning. It will also provide a healthier work environment for both the cleaning staff and the people spending their time in the facility.

Cleaning products

There is a broad EU market for private, institutional, and industrial cleaning products, including various special purpose cleaners. There is good coverage of eco-labelled products in this product group, which can help to simplify the choice of cleaning products and verification. For example, laundry detergents (both household and professional use), dishwashing products (both household and professional use), hand dishwashing products and hard-surface cleaners (kitchen, sanitary, window, multi-purpose) have eco-label criteria established both in the Nordic Swan eco-label and EU Flower eco-label. Due to legal requirements in the directive for public procurement (2014/24/EU) sometimes a specific label cannot be demanded, but equivalents must be accepted and compatibility with the directive has to be ensured.

Furthermore, here are criteria for detergents and cleaning services published by the National Agency for Public Procurement in Sweden:

- For chemical-technical products: https://www.upphandlingsmyndigheten.se/en/criteria/cleaning-and-chemicals/chemical-technical-products/ and
- For laundry and textile services: https://www.upphandlingsmyndigheten.se/en/criteria/cleaning-and-chemicals/laundry-and-textile-services/

3.6.1 ChemClimCircle synergies and conflicts in the cleaning services and products category

	Chemical content in the cleaning products used in the services can be harmful for health and the environment. Large amounts can be released into the sewage system eco-toxicity, dermal contact (health) negatively impacting water quality.
	Sourcing of raw material (e.g. fossil raw materials or palm-oil) for chemical products. For palm oil the sustainability of production is very important, not to contribute to deforestation.
	There is a lot of plastic packaging for cleaning products, these can be made of recycled plastics and recyclable plastics.

3.6.2 Recommendations for the cleaning services and products procurement category

	Reduce the range of products used. It is often enough with one all-purpose cleaning product, a sanitary facility cleaning product, floor cleaning/polishing product as well as laundry and dishwashing detergents. Require that detergents and soaps do not contain microplastics.Avoid products that do not deliver any necessary function, for example fabric softeners or air fresheners, these do not provide any cleaning function, are unnecessary and can contain allergenic perfume substances. Both money and release of chemicals can be spared if these are omitted from the assortment.
	Investigate if it is possible to reduce the need of chemical cleaning products by using other cleaning methods such as water, steam, or de-ionized water together with microfiber cloths and other equipment.
	Request re-usable and refillable packaging choices when such are available on the market. Choose larger volume canisters to avoid unnecessary packaging.
	Set criteria for eco-labelled products or set a criterion for a minimum proportion of eco-labelled products (e.g. 50%) together with an award criteria if everything is eco-labelled.
	Demand information on ingredients from the supplier, whether they use the product as service provider or supply the product directly to the municipality. Ensure that there are material safety data sheets for each product, this is demanded by EU legislation.
	Use the sustainability criteria from the National Agency for Public Procurement in Sweden to limit environmentally hazardous substances in the products. Detailed criteria are available here: https://www.upphandlingsmyndigheten.se/en/criteria/cleaning-and-chemicals/chemical-technical-products/

	Demand clear procedures and training, of the staff employed in the service, including cleaning methods and dosage of the chemical products as well as sorting of empty packaging for recycling.

3.7. Electrical and electronic equipment (EEE), including IT-supplies

This product group contains many different products: mobile phones, computers, televisions, fridges, household appliances, lamps, also medical devices, and photovoltaic panels.

EEE's main environmental impact is associated with the energy use during use-phase. However, the EEE impact is not found only in electricity consumption. The resources and materials to produce EEE are extracted from various parts of the world. The ready-made products can contain hazardous substances. EEE's can cause major environmental and health problems if the discarded devices are not managed properly. The EEE often contains valuable, rare-Earth materials. Overall, it is not only materials that matter - but these are also complex products with high-added value that is entirely lost, even if materials are recycled at the end of the product's useful life. Therefore, extension of the product's lifetime is one of the smartest and environmentally friendly options.

In summary, the most significant ChemClimCircle aspects for EEE are:

- Extension of the lifetime of the equipment.
- Energy consumption during the use phase.
- Content of hazardous substances.

3.7.1 ChemClimCircle synergies and conflicts in the EEE category

	Plastics and valuable and rare Earth metals are common in EEE. This provides a synergy between climate and circularity: if products are used longer, less new rare Earth metals needed. It is also important that these rare elements are recovered in the recycling processes.
	Hazardous chemicals that might be present in EEE include flame retardants, lead, mercury, cadmium, highly fluorinated substances (PFAS) and phthalates as well as printer inks.
	Recycling old/invalid EEE can release the contained hazardous substances. The recycling includes shredding and separation of materials into plastic, metal, and glass. If less hazardous substances are present in the discarded products, this makes recycling easier with less risk of negative effects on human health and environment, and less circulation of these substances into new articles, providing a synergy with circularity.

3.7.2 Recommendations for the EEE category procurement category

	Set criteria for low energy consumption and stand by modes. The TCO-certification includes requirements for energy consumption and can be used in the procurement criteria.
	Set criteria for warranty, availability of spare parts and circular design, together with the possibility for repairs within the contract to prolong the lifespan and durability of printers, computers, phones and other equipment. It is possible to ask for the supplier to ensure that critical components* (e.g. motherboard in the computer) can be repaired or replaced, and that these are made available as spare parts for at least three years after the product has been delivered.
	Buy refurbished equipment and/or set criteria for a system to circulate or refurbish ICT equipment for either use in the own organization or for resale outside the organization (including clearance of all saved data on devices).
	Set criteria for systems at the supplier for conformity, and check compliance with the Restriction of Hazardous Substances Directive 2002/95/EC (RoHS).[4] and with the WEEE (Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE)).
	Use eco-labels. There are many in the EEE category. There are energy labels (e.g. Energy Star) and environmental labels that go beyond energy requirements: TCO, German Blue Angel, Nordic Swan and EPEAT.
	Set requirements for durability and repairability as well as for systems to retake used equipment.

[4] EC. RoHS Directive. https://environment.ec.europa.eu/topics/waste-and-recycling/rohs-directive_en

4. Environmental claims: how can ecolabels, self-declarations and environmental product declarations help

Manufacturers and retailers are progressively highlighting the environmental and health aspects of products on packaging or in marketing materials – with statements, symbols, or other marks. These assertions are known as environmental claims.

Certifications vary in their approach and can be used in green public procurement. Here we want to show you the varieties of environmental claims, so you understand how to use them in the public procurement.

All varieties of environmental claims and labels on products can be divided into three types:

- Certified ecolabels and environmental labels, verified by an independent third party.
- Environmental product declarations (EPDs) using a standardized system.
- Self-declared environmental claims.

Self-declared environmental claims are developed by a manufacturer or service provider and are not third-party certified. These are often mistaken to be verifiable and accurate but are on many occasions misleading and a type of greenwashing.

The best way to cut through greenwashing and choose products with reduced environmental impact is to choose products with certified ecolabels and environmental labels, these are more reliable since they are verified by an independent third party. Ecolabels identify the overall environmental preference of a product within a product category, while environmental labels focus on specific impacts (e.g., energy consumption, VOC emissions) within a particular sector (e.g., energy-consuming appliances, DIY products like wallpapers).

5. Support information for green public procurement in the ChemClimCircle context

Motiva *https://www.motiva.fi/en/public_sector/sustainable_public_procurements*

Swedish National Agency for Public Procurement: *The National Agency for Public Procurement (upphandlingsmyndigheten.se)*

Nordic Swan Ecolabel *https://www.nordic-swan-ecolabel.org/*

EU Ecolabel *https://environment.ec.europa.eu/topics/circular-economy/eu-ecolabel_en*

Blue Angel Ecolabel *https://www.blauer-engel.de/en*

EU Green Public Procurement *https://green-business.ec.europa.eu/green-public-procurement/gpp-criteria-and-requirements_en*

Chemical smart public procurement

https://thinkbefore.eu/en/guide-for-chemical-smart-public-procurement/

The circular ambition chart (Flanders) *https://aankopen.vlaanderen-circulair.be/en/getting-started/the-ambition-map*

Ministry of Environment, Finland. Finnish Green Deals *https://ym.fi/en/green-deals*

GPP information on construction materials and processes: *https://interreg-baltic.eu/project/nonhazcity-3/*

6.References and literature sources

Project's sources:

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- ProjectConsortium (2023). Integrating Criteria for Chemicals, Climate and Circularity in the Public Procurement Processes: The Supplementary report. Online. https://interreg-baltic.eu/project/chemclimcircle/

Other sources:

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- EU Green Public Procurement criteria for Furniture. Link: https://circabc.europa.eu/ui/group/44278090-3fae-4515-bcc2-44fd57c1d0d1/library/0788fd30-083f-4f9e-ba9e-86e9e432e822?p=1&n=-1&sort=name_ASC