



Waste prevention in the Nordics

What policies and measures
are needed to prevent waste
production and promote reuse?

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Executive summary

This study, funded by the Nordic Council of Ministers' Working Group for Circular Economy (NCE), aimed to identify realistic and effective measures to strengthen waste prevention and the promotion of reuse in the Nordic region, with a focus on municipal waste. More specifically, the project aimed to: (1) map existing measures to reduce municipal waste from households, businesses, and institutions, (2) identify effective policy measures and steering instruments, with a specific focus on economic steering instruments, and (3) develop policy recommendations for the implementation of good practices for waste prevention and reuse in the Nordics.

Waste prevention and reuse measures and policies were evaluated and analysed with a focus on their impact (reducing the quantity of waste, reducing the adverse impacts of waste and/or harmful substance content) and feasibility (ease of implementation and monitoring as well as applicability to the Nordic region). Within municipal waste, the waste fractions of textiles, consumer electronics, and plastic packaging were specific focus areas.

It was found that waste prevention has been considered in the national waste plans in the Nordic countries, but there is no systematic approach to implementing waste prevention and reuse policy. An in-depth case study on economic steering instruments was conducted for the textiles value chain. It looked into the potential of implementing value added tax (VAT) reductions for repair services and second-hand products, fees for fast fashion, and research and development (R&D) funding for developing new circular business models.

The study emphasises that transitioning to a circular economy requires a fundamental shift from recycling-focused policies to a holistic approach that addresses the entire product lifecycle. Sufficiently stringent economic instruments are critical for overcoming the market and cultural barriers that sustain linear economies. However, economic measures alone are rarely impactful enough when implemented in isolation. Instead, policymakers must adopt a comprehensive 'toolbox' approach, combining multiple measures rather than relying on any single solution to drive significant change.

The study concludes that achieving the Nordic Vision 2030 of becoming the world's most sustainable and integrated region necessitates a well-designed policy mix. This includes aligning extended producer responsibility (EPR) with economic and regulatory measures, supported by informational guidance, to create a favourable environment for a circular economy. Additionally, targeting the early stages of the product lifecycle is crucial for addressing waste prevention effectively.

Sammanfattning

Denna studie, som utfördes på uppdrag av Nordiska ministerrådets arbetsgrupp för cirkulär ekonomi (NCE), hade som mål att identifiera realistiska och effektiva avfallsförebyggande och återanvändningsfrämjande åtgärder i Norden, med fokus på kommunalt avfall. I synnerhet syftade studien på att 1) kartlägga existerande åtgärder som minskar kommunalt avfall från hushåll, företag och institutioner, 2) identifiera effektiva policyåtgärder och styrmedel, med fokus på ekonomiska styrmedel och 3) utveckla policyrekommendationer för avfallsförebyggande och återanvändning i Norden.

Avfallsförebyggande och återanvändningsfrämjande åtgärder analyserades utifrån deras effektivitet, dvs. potentialen att minska mängden avfall, miljökonsekvenserna och/eller innehållet av skadliga ämnen i avfall samt deras genomförbarhet, dvs. hur enkla åtgärderna är att implementera och följa upp samt hur väl ägnade de är att tillämpas i Norden. De fraktioner inom kommunalt avfall som granskades var i synnerhet textilier, konsumentelektronik samt plastförpackningar.

Studien fann att de nationella avfallsplanerna i de nordiska länderna tar god hänsyn till avfallsförebyggande på ett överordnat plan, men det saknas systematiska strategier för att förebygga avfall och främja återanvändning. En fallstudie genomfördes för att granska potentiella ekonomiska styrmedel inom textilvärdekedjan. Fallstudien granskade potentialen av nedsatt mervärdesskatt (moms) för reparationstjänster och begagnade produkter, avgifter för fast fashion produkter samt forsknings- och utvecklingsfinansiering (FoU) för utvecklandet av nya cirkulära affärsmodeller.

Studien betonar att övergången till en cirkulär ekonomi kräver ett grundläggande skifte från återvinningsfokuserad politik till ett holistiskt förhållningssätt som tar hänsyn till produkternas hela livscykel. Striktare ekonomiska styrmedel är väsentliga för att övervinna de marknadsrelaterade och kulturella barriärerna som upprätthåller den lineära ekonomin. Ekonomiska styrmedel är dock sällan tillräckligt effektiva i sig. Ingen enskild lösning kan driva en betydande förändring, utan beslutsfattare behöver en hel "verktygslåda" som kombinerar många olika åtgärder.

Studien drar slutsatsen att förverkligandet av den nordiska visionen om en hållbar och integrerad region endast kan drivas med en välplanerad kombination av politiska åtgärder. Ekonomiska och regulatoriska styrmedel bör inriktas så att de har synergier med genomförandet av utökat producentansvar (EPR), och informationsstyrning behövs i tillägg för att skapa en gynnsam omgivning för den cirkulära ekonomin. Slutligen är det viktigt att i högre grad rikta de avfallsförebyggande åtgärderna på tidiga stadier av produkternas livscykel.

1. Introduction

1.1 Background

Our current, linear economy exceeds many planetary boundaries, threatens biodiversity and is diminishing natural resources. Currently, the European Union generates more than 2 billion tonnes of waste every year (European Parliament, 2023). As populations grows, the demand for natural resources and products increases globally, while in the meantime we need to decouple economies from the use of virgin natural resources and shift to circular economies instead, in order to maintain functional ecosystem services and create a more sustainable future (Sitra, n.d. and Government of the Netherlands, n.d.).

The aim of the circular economy is to promote the sustainable use of resources by designing out waste and pollution, keeping products and materials in use, and regenerating natural systems. The transition from the linear to the circular economy is seen to reduce the environmental impact of economic activities and create a more sustainable and resilient future. This can be achieved through strategies such as reducing the use of virgin materials, prolonging the lifespan of materials and products, sharing, and ensuring materials retain their value at the end of their lifespan.

Waste prevention and the promotion of reuse are key components of the circular economy. The R framework is often used to structure the various strategies of the circular economy. Figure 1 presents the six levels of the R framework for promoting waste prevention and reuse: refuse, rethink, reduce, reuse, repair and refurbish.

Circular economy strategy	Explanation
Refuse	Making a product redundant by cancelling its function, or by substituting it with a radically different product
Rethink	Intensifying product use (e.g. via product sharing or multifunctional products)
Reduce	More efficient use and/or manufacturing of products by using less in the way of natural resources, materials and hazardous substances
Reuse	Reuse of discarded yet still usable products, for the same purpose, by a different user
Repair	Repair and maintenance of defective products so they can be used for their original function
Refurbish	Refurbishing and/or modernising an older product, so that the improved version can be used for the product's original function

Figure 1. Circular economy strategies (based on UNEP, n.d.).

The rationale of waste prevention lies in the production of various goods for human use with smaller amounts of virgin raw materials. By preventing excess production and wasteful consumption habits, fewer natural resources are extracted, processed, and utilised in the economy. The waste hierarchy (Figure 2) is a framework that ranks product and waste-related practices based on their environmental impact. The European Union defines the waste hierarchy as “a priority order in waste prevention and management legislation and policy,” which aims to both minimise the adverse impacts of waste generation and waste management, as well as improve resource efficiency (European Union, n.d.). The waste hierarchy consists of five layers, which illustrate the most preferred option at the top and disposal as the very last option at the bottom. Waste prevention occupies the peak position.

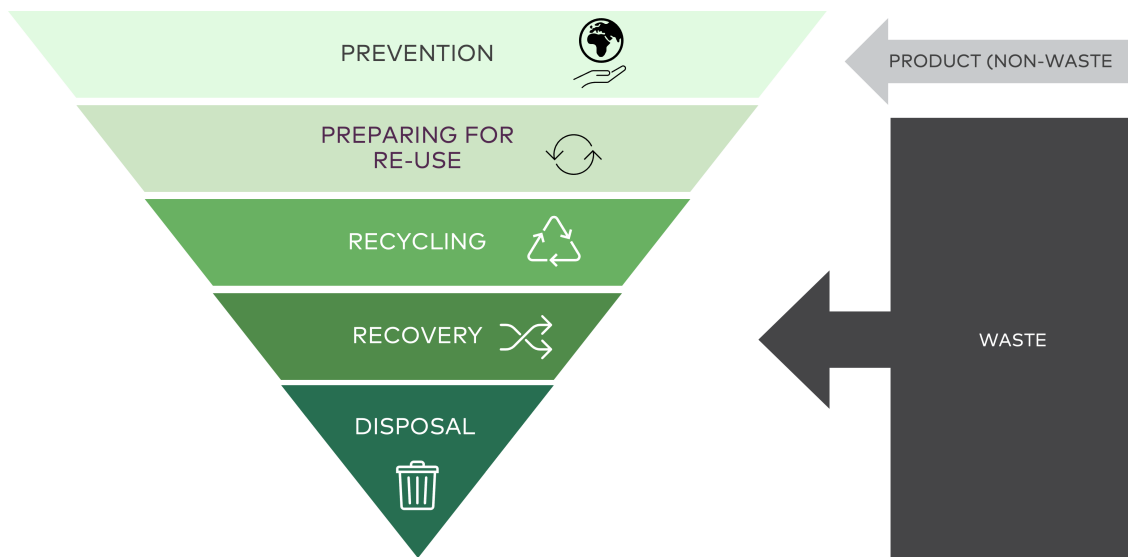


Figure 2. Waste hierarchy (based on figure from European Union, n.d.).

In the Nordic region, as well as widely in the EU, waste management relies on the principles of the waste hierarchy, but policies and practices are still often focused primarily on recycling. The challenge lies in how we can integrate waste prevention and reuse practices into the economy before waste is created. At the waste management stage, there is relatively little that can be done in terms of waste prevention.

Despite high per-capita municipal waste levels in the Nordic countries, efforts to control waste generation are still only just getting underway. Targeting policy measures at earlier stages of a product's lifecycle is complicated by the fact that measuring impacts is often challenging, given waste avoided does not appear in statistics, and the total amount of municipal waste provides only a limited view of the status of various waste prevention actions, as there are many variables that influence the total amount of municipal waste. To promote waste prevention and reuse, Nordic decision-makers need additional information and justified policy recommendations on how to manage and reduce the amount of municipal waste and thus transform our linear economy into one that relies less on virgin natural resources.

1.2 Objectives of the study

This study aimed at identifying realistic and effective measures to strengthen waste prevention and the promotion of reuse in the Nordic region, with a focus on municipal waste. More precisely, the project aimed to: (1) map existing measures to reduce municipal waste from households, businesses, and institutions, (2) identify effective policy measures and steering instruments, with a specific focus on

economic steering instruments, and (3) develop policy recommendations for the implementation of good practices for waste prevention and reuse in the Nordics.

The project was conducted in three parts:

Part 1 of the project consisted of a study on potential effective measures to prevent production of municipal waste by households, as well as in businesses and institutions. According to the Terms of Reference for the project, these could include, but should not be limited to: voluntary measures, fiscal measures, regulatory measures, and others. In this part, best practices in waste prevention and reuse in the Nordics, selected European Union Member States and the United Kingdom were studied. In Part 1, insight was sought on the questions:

- What effective means have been used to prevent waste production in the Nordics, the United Kingdom and the EU?
- What kind of steering instruments have been used and how useful would those be in the Nordics?
- What are the best practices in waste prevention, based on their impacts and relevancy for the Nordic countries?

Part 2 of the project aimed to execute a targeted investigation of certain economic steering instruments for waste prevention and reuse, and identify strengths, drawbacks, and challenges in implementation. At the inception of Part 2, the Nordic Council of Ministers' Circular Economy Working Group opted to have the study focus specifically on economic steering instruments and a few critical material flows in the Nordics, which would later be concretised into a case study on the implementation of selected economic steering instruments in the textiles and clothing value chain.

Part 3 of the project focused on communicating and reporting the recommendations for policies and steering instruments. The present TemaNord report summarises the findings of the project. In addition to this, selected findings were presented in a policy brief and in presentations for wider audiences.

1.3 Content of this report

This report contains the following parts: [Chapter 1](#) is an introduction to waste prevention and familiarises the reader with the background and the aim and objectives of this study. [Chapter 2](#) presents our approach to the issue at hand, including definitions and scope, as well as methods used. [Chapter 3](#) presents waste prevention and reuse policies in the European Union and each of the Nordic countries. [Chapter 4](#) presents an overview of effective measures for waste prevention and reuse that were identified in the first part of the project. [Chapter 5](#) presents the findings of the in-depth analysis of the role of economic steering

instruments, as well as the case study on textiles. [Chapter 6](#) presents the summary and conclusion of the work and [Chapter 7](#) summarises some policy recommendations for the Nordic governments and the Nordic Council of Ministers. The report includes executive summaries in English and Swedish.

2. Approach and methods

2.1 Key definitions

In this study, waste prevention and reuse were defined according to the EU Waste Framework Directive (EUR-Lex, 2008):

Waste prevention means measures taken before a substance, material or product has become waste, that reduce:

- a. *the quantity of waste, including through the re-use of products or the extension of the life span of products;*
- b. *the adverse impacts of the waste generated on the environment and human health; or*
- c. *the content of harmful substances in materials and products.*

This means that this study focused on all of the R-strategies of the circular economy, with the exception of the recycling of materials and energy recovery, which were agreed to be beyond the scope of this project. Strategies like minimalism and degrowth, aiming for less material use mainly through decreasing consumption, were also agreed to be beyond the scope of this project, even though broadly speaking, they will also ultimately reduce the amount of waste.

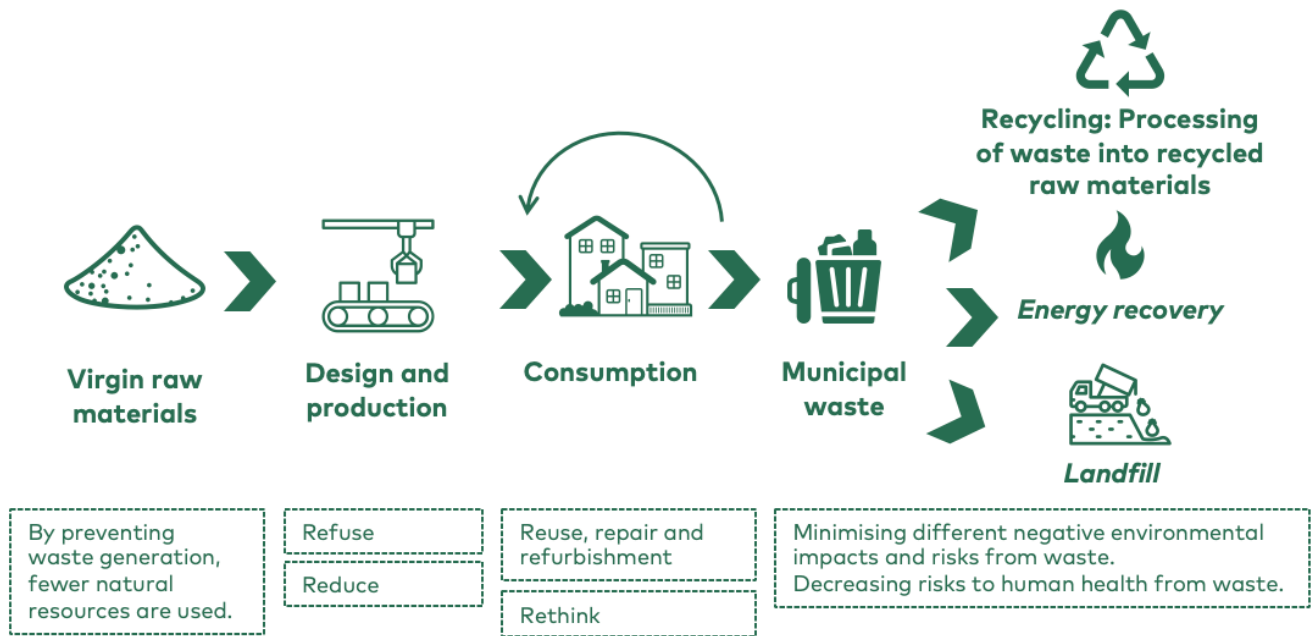


Figure 3. This study focused on the circular economy strategies of refusing, reducing, reusing, repairing, refurbishing, and rethinking. These strategies relate to the production and consumption phases of materials and products. Recycling and recovery were decided to be beyond the scope of the project.

A **steering instrument** refers to a policy or tool that is used to guide, regulate, or influence practices and behaviours. These instruments are typically implemented by governments or other relevant authorities. Steering instruments can be categorised in different ways. In this study, we included the following types of steering instrument (European Environment Agency, 2023a):

- **Regulatory steering instruments:** Waste prevention measures that actors are obliged to implement by law, including bans, restrictions and other requirements or obligations.
- **Economic steering instruments:** Tax regulations, subsidies, the introduction of fees and other waste management operations that make 'waste-light' products or services more competitive, incl. green public procurement.
- **Voluntary steering instruments:** Actions taken by both governmental and non-governmental stakeholders that are not legally binding/obligatory, as well as voluntary agreements between stakeholders that do not necessarily require a political decision-making process but instead require negotiations. Research and pilot initiatives, establishment of reuse centres and networks, and other projects.

- **Informative steering instruments:** Communication campaigns, educational and training activities, and awareness-raising materials for consumers, businesses, or other target audiences.
- **Extended Producer Responsibility:** Establishment of EPR schemes, whether legally binding at EU level or voluntary, as well as activities that affect the core strategy and operation of EPR schemes. EPR schemes mean extending the producer's financial responsibility for a product to include the waste management stage.

2.2 Scope defined for the study

Geographical boundaries of the study

The aim of the study was to develop findings relevant to the whole Nordic region (Denmark, Finland, Iceland, Norway, Sweden, Åland, the Faroe Islands, and Greenland). Part 1 of the study included a light mapping of the national waste strategies and plans in each country or region. To ensure the policy relevancy of the study, the analysis included looking at EU-level regulatory development that affects the development in the countries. When identifying effective policy measures and steering instruments, the Nordic project team made an effort to pick examples from across the Nordic region. In order to provide some additional inspiration, good practices were also identified in some benchmark countries (Germany, Slovakia, Belgium, the United Kingdom, and the Netherlands).

Municipal waste fractions in the scope of Part 1 of the study

Municipal waste fractions within the scope of Part 1 were chosen with a view to the potential to reduce the environmental impacts, risks, or hazardous substance content. The choice was made to intentionally pay less attention to some waste fractions for which there are already well-functioning recycling markets. Thus, paper and cardboard, glass, metals, and wood waste were excluded because, in terms of municipal waste, waste prevention was deemed more important for other fractions. As a result, in Part 1 the following waste fractions were included in the scope of the project:

- plastics
- textiles
- biowaste
- waste from electrical and electronic equipment (WEEE)
- hazardous waste
- mixed waste.

Plastics, textiles, WEEE, and hazardous waste were selected to be included in the scope due to their high negative environmental impacts. Biowaste and mixed waste, on the other hand, represent a significant portion of the volume of municipal waste, and preventing the generation of mixed waste is crucial because its recyclability level is often the lowest of all the waste fractions.

Municipal waste fractions in scope of Part 2 of the study

In Part 2 of the project, it was decided to further narrow the scope, concentrating first on the three waste streams of textiles, plastics and WEEE, and later on, conducting an in-depth case study on textiles. Biowaste was at this stage excluded as the measures identified in Part 1 focused primarily on decreasing food waste, which does not fully align with the concept of reuse. Mixed waste was excluded from the project's focus at this stage, as it is a very diverse waste category and would have necessitated several parallel studies. Reducing hazardous waste is very important for the environment, but as a focus area it is very challenging and diverse, and those working on project made the choice to focus more on material streams for which the quantitative reduction of waste is more eminent.

Economic instruments in the scope of Part 2 of the study

The economic instruments in the scope of Part 2 are presented in Figure 4.

Taxes	Fees	Subsidies
Resource tax	Charges for the use of natural resources	R&D funding
Environmental tax	Waste fees	Business subsidies
Product tax/import tax	Targeted fees for non-sustainable products	Investment aid
Changes to VAT	Refund deposit system	Tax deductions
Labour taxation	Emissions trading	Cutting harmful subsidies and reductions

Figure 4. Economic instruments in scope of Part 2.

The taxes section includes instruments such as a resource tax, environmental tax, product and/or import tax, changes to VAT and labour taxation relief. A resource tax is a tax imposed on the extraction of natural resources, such as minerals, oil, and gas. The aim is to ensure that the depletion of these resources is accounted for in terms of environmental impact and economic value. An environmental tax is designed to encourage environmentally friendly practices by taxing activities that harm the environment. It can include taxes on carbon emissions, pollution, and other ecological degradation. A product and/or import tax refers to taxes levied on specific goods and services at the time of sale or importation. It can be used to protect local industries, regulate consumption, and generate revenue for the government. Changes in VAT can impact prices and consumer behaviour, influencing overall economic activity. VAT is a consumption tax placed on a product whenever value is added at each stage of production and distribution. Labour taxation relief involves reducing taxes on wages or salaries to encourage employment and stimulate economic growth. It can include tax credits or deductions for employers, making it more affordable to hire and retain staff.

In terms of fees, the economic instruments were charges for the use of natural resources, waste fees and targeted fees for non-sustainable products. Refund deposit systems and emissions trading also belong to this group, but they were outside of the scope of this study. Charges for the use of natural resources are fees imposed on individuals or companies for the extraction or use of natural resources (like water, minerals, or forests). The goal is to encourage sustainable use and limit environmental degradation. Waste fees are charges levied on individuals or businesses for the disposal of waste. They are designed to promote responsible waste management, reduce landfill use, and encourage recycling and waste reduction practices. Targeted fees for non-sustainable products apply to products that are deemed harmful to the environment or not sustainable (such as single-use plastics). The intention is to disincentivise the consumption of these products and promote more sustainable alternatives.

Regarding subsidies, the economic instruments investigated were R&D funding, business subsidies, investment aid, tax deductions and cutting harmful subsidies and reductions. R&D funding covers financial support provided by governments or organisations to encourage research and development activities. This funding helps businesses innovate and develop new products or technologies. Business subsidies are financial aid provided by the government to support businesses, especially in certain sectors or regions. Subsidies can lower operational costs and promote economic growth. Investment aid is a financial incentive aimed at encouraging businesses to invest in specific areas, such as technology, infrastructure, or renewable energy. This can come in the form of grants, loans, or tax breaks. Tax deductions are reductions in taxable income that businesses can claim for specific expenses, such as R&D costs, which can lower their overall tax liability. Cutting

harmful subsidies and reductions refers to the process of eliminating or reducing government financial support for activities or products that have negative environmental impacts, encouraging more sustainable practices.

2.3 Methods

The methods used in Part 1 included a literature review and data analysis, a survey, and analysis of effectiveness and feasibility, which led to policy cards presenting existing good practices for preventing waste and promoting reuse.

The work began with mapping waste management strategies and plans in the countries, as well as mapping good practices regarding steering instruments for preventing waste. The screening of waste management strategies was done to give a quick overview of how waste prevention and reuse is emphasised in the current policies. The overview of waste prevention and reuse measures was done to gather a catalogue of good practices that could be assessed for scaling. The measures for the catalogue were chosen based on their potential for:

- decreasing the quantity or adverse impact of waste;
- decreasing the harmful substance content in waste;
- contributing to waste prevention and/or longer lifespans in products; and
- dematerialisation.

The good practice examples were then assessed for feasibility and effectiveness by the project team and through an expert survey conducted in Finland, Sweden, Norway, Denmark, and Iceland. The expert survey had the dual objective of validating the preliminary assessments carried out by the consultants and providing in-depth insights on the most relevant measures and steering instruments.

The assessment was carried out using a tool for assessing the effectiveness and feasibility of each measure, where effectiveness was assessed as the potential to reduce the quantity of waste, and/or potential to reduce harmful substances in / adverse impacts of waste. The feasibility was measured based on the following dimensions: ease of implementation (e.g. time, resources, money, mindset), ease of monitoring, and applicability in the Nordics. Each dimension was scored on a scale of 0–3, and the definitions are presented in Table 1.

Table 1. Framework for feasibility and effectiveness assessment of relevant measures and steering instruments in Nordics.

	0	1	2	3
Potential to reduce quantity of waste	Impact on reducing the quantity of waste cannot be evaluated or the impact is marginal. For example, the measure is too unclear to be judged or measures are taken within only one company.	Has a slight impact on volumes, but quite marginal. The impact is mostly on a municipal, but not national level, for example, local campaigns.	Could have a moderate impact on volumes. National-level impact, for example, national green deals.	Could have a substantial impact on volumes at Nordic level.
Potential to reduce harmful substances in/adverse impacts of waste	The ability to reduce the harmful substance content/ adverse impacts of waste cannot be evaluated or the impact is marginal.	Harmful substance levels/ adverse impacts of waste reduced slightly, e.g. in a few companies' consumer products.	Could have a moderate impact on harmful substance levels/adverse impacts of waste, e.g. through affecting several product lines.	Could have a substantial impact on harmful substance levels/adverse impacts of waste at Nordic level.
Ease of implementation (e.g. time, resources, money, mindset)	Extremely difficult or impossible to implement.	Implementing the measure would be challenging and could require a substantial amount of time, effort, and resources.	While there may be some challenges or complexities involved, the measure is generally feasible and can be implemented with a reasonable amount of effort.	Easy to implement.
Ease of monitoring	Extremely difficult or impossible to monitor the impact.	Monitoring the impact of the measure would be challenging.	Monitoring of the impact can be implemented with a reasonable amount of effort.	Easy to monitor.
Applicability in the Nordics	Extremely difficult or impossible to apply in the Nordics.	Applying the measure in the Nordics would be challenging or the measure has clear geographical limitations.	The measure can be applied with a reasonable amount of effort in all or most of the Nordic countries.	Easy to implement in all the Nordic countries.

The output of Part 1 was a review of effective measures and steering instrument to prevent municipal waste production and promote reuse in the Nordics. This part can serve independently as inspiration for enforcing and scaling measures through different kinds of policy tools (including voluntary and informative tools).

Part 2 of the project focused specifically on economic steering instruments and their potential in driving significant change. The work began with describing the potential role of economic instruments in the value chains of textiles, consumer electronics and plastic packaging. A range of potential economic instruments were identified, and the same assessment tool that had been used in Part 1 was applied to tentatively assess the effectiveness and feasibility of these, resulting in a reduced number of alternatives for in-depth case study.

Case studies are used to provide in-depth insights and real-world examples that help illustrate concepts and inform decision-making by showcasing practical applications and outcomes. It was therefore decided to do a case study focusing on a few selected economic instruments that were seen to have potential effects on consumer behaviour and therefore municipal waste. Textiles were chosen as the object of the study. The key methods used were desk study, individual interviews and targeted group interviews with a number of Nordic experts, organised as one sprint in September 2024. Desk study was used to create the basis for four light case studies on selected economic instruments for promoting a circularity-based textile sector. The group interviews were organised with selected experts from the Nordic countries, representing different substance areas and perspectives (public officials, NGOs, advocacy organisations or the research sector). The interviews focused on the effectiveness and feasibility of each instrument, as well as elaborating on the need for policy action. The experts evaluated each instrument's strengths and weaknesses, challenges and factors supporting their implementation and the possible next steps for Nordic decision-makers to proceed with each instrument discussed. The findings were validated and summarised by the project group as light case studies.

In the final phase of the work, the project group came together and developed the findings of the study into conclusions and policy recommendations. The outcomes of the work were discussed with the steering group of the project, the Nordic Waste Group, and the Nordic Circular Economy Working Group, as well as being presented to wider audiences, at a webinar in June 2024, as well as at the Nordic Circular Summit in November 2024.

3. Waste prevention and reuse policies in EU and Nordic countries

3.1 Key EU policies

The Waste Framework Directive (2008/98/EC) (WFD) sets out the basic concepts and definitions related to waste management, including the waste hierarchy, and introduces waste prevention, recycling, and recovery targets.

According to the EU waste hierarchy (Article 4 of the Waste Framework Directive (WFD)), waste prevention measures, followed by reuse, are the top priority when it comes to waste management and policy. Article 9 (1) (j) of the WFD obliges Member States to reduce the generation of waste, in particular waste that is not suitable for preparing for reuse and recycling.

Member States are obliged to adopt waste prevention programmes (Article 29 of the WFD) incorporating at least those waste prevention measures that are listed in Article 9 of the WFD. Waste prevention programmes must be evaluated at least every six years.

There are several notable and recent directives and regulations presented in Table 2 that aim to minimise and avoid waste at different (in some cases, all) stages of the production–use chain.

Table 2. Relevant recent directives and regulation focusing on minimising and avoiding waste in several parts of the value chain.

Directive/Regulation	Description
Directive (EU) 2019/904 on the reduction of the impact of certain plastic products on the environment 'SUP (Single Use Plastics) Directive'	The aim of this directive is to prevent and reduce the impact of certain plastic products on the environment, particularly the aquatic environment, and on human health. It promotes the transition to the circular economy using sustainable business models, products, and materials.
Packaging Directive (94/62/EC)	Addresses packaging and packaging waste. With the introduction of the European Packaging Directive, a Europe-wide standard was created that applies to all Member States of the EU.
The Packaging and Packaging Waste Regulation (PPWR)	The PPWR sets out to stop unnecessary packaging, i.e. packaging that is designed to increase the perceived volume of the product. From 1 January 2030, packaging will be subject to a 'maximum empty space ratio' of 50% – that is, space filled by padding materials such as bubble wrap or foam chips.
The Plastic Bags Directive (Directive (EU) 2015/720)	The Plastic Bags Directive (Directive (EU) 2015/720) is an amendment to the Packaging and Packaging Waste Directive (94/62/EC) and was adopted to deal with the unsustainable consumption and use of lightweight plastic carrier bags.
Directive (EU) 2024/1799 on common rules promoting the repair of goods	The Right to Repair (R2R) aims to provide common rules strengthening the provisions related to the repair of goods. It will be achieved through the obligation on manufacturers to repair for free, or for a reasonable price, at the consumer's request, any goods for which the EU has established reparability requirements by legal acts. Currently, those goods are household appliances, refrigeration appliances, electronic displays, welding equipment, servers and data storage products, phones, tablets, and goods incorporating batteries for light means of transport.
Directive EU/2024/825 on Empowering Consumers for the Green Transition	This directive aims at providing consumers with better information on durability and reparability of goods at the point of sale.
Regulation (EU) 2024/1781	The Ecodesign for Sustainable Products Regulation (ESPR) is the cornerstone of the Commission's approach to more environmentally sustainable and circular products. It repeals the Ecodesign Directive (2009/125/EC).

Besides regulation and directives, some EU-level initiatives (presented in Table 3) are already active or emerging at the moment.

Table 3. Examples of EU-level initiatives on waste prevention.

EU-level initiative	Description
The European Green Deal	A wide-ranging package of environmental measures and financial support, with the overarching aim of Europe being the first climate-neutral continent by 2050. The Circular Economy Action Plan (CEAP) is derived from the Green Deal, as are directives such as the Right to Repair.
The Circular Economy Action Plan (CEAP)	A key building block of the European Green Deal, it contains 54 actions, as well as four legislative proposals on waste, including new obligations for separate collection of textiles and biowaste.
Proposal for a directive on substantiation and communication of explicit environmental claims (Green Claims Directive)	Ensuring that environmental labels and claims are credible and trustworthy will allow consumers to make better-informed purchasing decisions. It will also boost the competitiveness of businesses striving to increase the environmental sustainability of their products and activities.
Proposal for a regulation on preventing pellet losses to reduce microplastics pollution	The proposal is aimed at addressing the environmental impact of plastic pellets, which are small plastic granules used in manufacturing. These pellets can be lost during production, transport, and handling, leading to significant pollution in oceans and waterways. The proposal seeks to mitigate the impact of microplastics on ecosystems and human health by ensuring that plastic pellets are managed responsibly throughout their lifecycle.

Many requirements are still flowing from the WFD. For example, the WFD mandates that from 2025, EU Member States must establish separate collection systems for used textiles.

The concept of ecodesign and the whole product lifecycle has been taken further with recent directives and regulations. The provision of data and information is emphasised in later legislation; consumers should receive trustworthy and relevant information on products at the point of sale, including on their lifespan and on the availability of repair services, spare parts, and repair manuals, and there is a greater emphasis on the management of goods during their design and consumption lifecycle phases.

3.2 Policies in the Nordic Countries

Each Nordic country (Finland, Åland, Sweden, Norway, Denmark, Greenland, Iceland, and the Faroe Islands) has its own national waste plan and/or other related policies and programmes. The common thread of the national waste plans' targets is significantly reducing waste generation and enhancing reuse and recycling. However, the level of ambition varies, and some of the national policies are still much more focused on waste management and recycling than waste prevention. In addition to this, many of the countries have other policies and programmes to promote the circular economy and waste prevention. Below is a summary of waste prevention and reuse policies outlined in key policy documents of the Nordic countries.

Denmark

On 16 June 2020, a broad political agreement was reached on the Climate Plan for a Green Waste Sector and Circular Economy in Denmark. The agreement contains the following visions for a green waste sector:

- The waste sector must be climate neutral by 2030.
- At least 80 per cent of plastic must be sorted and the amount of incineration reduced by 2030.
- The amount of waste produced must be reduced – less waste and more recycling.

In order to increase recycling and reduce CO₂ emissions, the plan aims to implement three elements. First, the amount of waste needs to be reduced, with more waste sent for recycling and less to incineration. Secondly, the incineration capacity must be reduced and adjusted to match Danish waste volumes, so the available capacity is not filled up with imported waste. And thirdly, investments must be made in new recycling plants.

In 2021, the Ministry of Environment published the CEAP 2020–2032. The plan complements the political agreement of climate plan with a number of different measures. Regarding recycling, the municipalities in Denmark are set to ensure that citizens can sort 10 fractions to increase the overall recycling rate. Virtually all the municipalities have completed this.

On 1 July 2025, EPR for packaging will come into force in Denmark. The aim of this is to reduce the amount of packaging produced. Additionally, the strategy Plastics Without Waste and its 2018 action plan contains 27 initiatives, one of the main elements of which is the establishment of a national plastics centre, which is to be the focal point for Danish plastics efforts. Other main initiatives are a ban on thin plastic bags as well as better and more uniform sorting and collection of plastic waste.

Finland

The vision of the Finnish National Waste Plan (Ministry of the Environment, 2022a) is to significantly reduce the amount of waste produced by 2030, while also elevating levels of reuse and recycling. To achieve this goal, the plan emphasises waste prevention through a variety of actions. One key initiative is the introduction of voluntary agreements involving the state, municipalities, and various sectors, which aims to foster collaboration in minimising waste. Additionally, public administrations are committed to reducing both the volume and harmfulness of waste generated through their own activities. The plan also seeks to enhance awareness and provide valuable information on waste prevention, separate collection, and waste management advice for businesses via the Suomi.fi service, ultimately aiming to reduce waste generation in the business sector. To further support waste prevention and promote recycling, there will be an assessment of the necessity for an increase in the waste tax and an extension of its scope. The plan also highlights reducing plastic waste in line with the Plastics Roadmap for Finland (Ministry of the Environment, 2022b) and ensuring funding for necessary projects.

The Plastics Roadmap for Finland outlines several targets and measures related to waste prevention and reuse. One of the key initiatives involves implementing the measures required by the SUP Directive through a green deal agreement between business organisations and the Ministry of the Environment. This agreement focuses on replacing disposable plastic portion packs with reusable or plastic-free alternatives, and it introduces a separate fee for consumers who use these portion packs. Additionally, public authorities will discontinue the use of disposable containers made partially or fully of plastic at public events and in public spaces. The roadmap also aims to reduce unnecessary packaging for building products while promoting new packaging solutions and films made from recycled materials.

The third important Finnish policy action is the Strategic Programme for the Circular Economy (Ministry of the Environment, 2021). This programme aims to maintain Finnish consumption of primary raw materials at its 2015 levels by 2035, focusing on reducing non-renewable resource use while promoting the sustainable usage of renewable resources. By 2035, the aim is for the productivity of resources to have doubled compared to 2015, with a further aim of doubling the circular

material use rate (CMU). The vision is for sustainable products and services to become mainstream in the economy, with the sharing economy integrated into everyday life. Through the transition to a circular economy, Finland aims to position itself as a strong player in the global arena, providing sustainable solutions in the international market.

Iceland

Iceland's Waste Prevention Programme 2016–27 has been included in Iceland's strategy for circular economy, published June 2021 (Ministry for the Environment and Natural Resources, 2021). The general goals of the waste prevention programme are to reduce waste generation and greenhouse gas emissions, improve the utilisation of resources (with an emphasis on innovation), reduce the use of raw materials while also reducing the environmental impact, and reduce the distribution of substances that are harmful to health and the environment.

Iceland has developed action plans with targets for key waste flows, including food waste, plastics, textiles, and electronics, aiming for sector-specific waste reduction (European Environment Agency, 2023b). For example, in the case of textiles and footwear, the goal is to limit consumption to no more than 10 kg per person per year. The Icelandic action plan for plastics includes targets such as reducing the amount of plastics in packaging, increasing the recycling rates of plastics and raising awareness of the excessive consumption of single-use plastics (The Government Council of Iceland, 2020). Hackathons are also being used as a creative platform to address environmental challenges. The Circular Economy Team at the Environment Agency of Iceland (2023) has prepared a guide to organising an environmentally themed onsite or online hackathons.

Norway

Norway's national waste plan 2020–2025 was compiled by the Norwegian Environment Agency and published by the government in 2019. This plan describes waste quantities, the status of processing different types of waste, and treatment and recycling facilities in Norway. The plan also sets out the need for changes in the waste infrastructure on the basis of EU requirements for preparation for reuse and material recycling.

A key national goal in the plan is to ensure that the increase in waste is considerably smaller than the growth of the national economy. The plan also highlights the importance of utilising waste as efficiently as possible. Other waste-related objectives will be addressed in the future. Norway also aims to eliminate or reduce emissions of substances harmful to health and the environment and to halve food waste by 2030.

In addition to the national waste plan, Norway has a national strategy for a green, circular economy, which offers action points for various sectors. The strategy states that Norway aims to be a role model in the circular economy. Four main areas of focus are addressed in this strategy:

- circular economy as a driver for innovation, value creation, and jobs in Norway
- non-toxic circular cycles
- sustainable production and product design
- sustainable ways to consume and use materials, products, and services.

Sweden

Sweden's national waste plan 2018–2024, 'Doing more with less,' (Swedish Government, 2018) describes the targets, instruments, and measures to manage waste in Sweden in accordance with the waste hierarchy. The plan is primarily aligned with the waste minimisation targets outlined in European legislation. A significant national milestone within the plan is a 20% reduction in per capita food waste between 2022 and 2025. The document emphasises the phasing out of environmentally hazardous substances from material cycles, as well as the importance of new technologies, innovative products and services, sustainable business models, and changes in consumer behaviours in the transition to the circular economy. A number of sector and material specific plans that detail specific measures are referred to. The ongoing increase in waste generation is recognised, as well as the need for a broad range of measures to reverse this. Better material selection, technologies, behavioural changes, business models, economic development and reduced environmental and climate impacts are identified as factors tied to the circular economy.

In November 2024, at the time of publishing the present report, Sweden renewed its national waste plan (Swedish Environmental Protection Agency, 2024a). The new waste plan 'Waste in a circular society' 2024–2030 is accompanied by a waste prevention programme which emphasizes the waste hierarchy and focuses on prolonging life cycles in a sustainable circular economy (Swedish Environmental Protection Agency, 2024b).

To assist in the development of the policy landscape, the Swedish Government initiated the Delegation for a Circular Economy in 2014. Its remit is to research and advise the Swedish Government on policy areas that facilitate businesses' transition to the circular economy. The delegation has also convened a committee on financial instruments for the circular economy. It was appointed by the Swedish Government to investigate suggestions previously raised by the delegation. It reported in October 2024 on financial instruments that could be further

investigated across a range of materials, including textiles, plastic packaging, and consumer electronics.

In 2020, 'Circular economy – Strategy for the transition in Sweden' (Swedish Government, 2020) was published, along with a management plan for the circular transition and a management plan for plastics. The plan has four focus areas: design and production, consumption models, hazard-free and circular loops, and circular economy as a driver for business and innovation. The management plan details specific measures that shall be pursued. An example of measures detailed in the plan, and subsequently implemented, is the reduction of VAT on repairs to bicycles, shoes, leather goods, clothing, and household textiles from 25% to 12% (this was lowered to 6% in 2022 but then subsequently raised back to 12% in 2023).

Examples of waste minimisation and avoidance goals in the circular management plan for plastics (Swedish Government, 2020) include a commitment to limiting the use of thin plastic carrier bags to 40 per person per year by 2025, and the obligation on the Swedish Environmental Protection Agency to monitor this. Other Swedish initiatives include the introduction of standards for the circular economy by the Swedish Institute for Standards, focusing on terminology, business models and evaluation.

In summary, there is a large body of plans, measures, and commitments regarding the circular economy, of which waste minimisation is only one part alongside other environmental and economic considerations. The targets are mainly tied to existing European legislation, and many of the measures outlined in public plans are still in the process of being implemented.

The Faroe Islands

In the Faroe Islands, there is no national waste policy. However, the current Faroese government has initiated a process working towards a new regulation and national plan for waste handling. The intention is to increase sorting of waste fractions and to ensure the quality of fractions for reuse as a part of the bigger plan to transition the whole of Faroese society towards the circular economy.

Currently, municipal waste management legislation includes a waste hierarchy to be followed (reuse, recycling, incineration, landfill). Municipalities are responsible for collecting and processing waste, which is incinerated, except for hazardous waste and paper/cardboard. Landfilling is still very prevalent.

Greenland

Greenland's waste plan for the period 2020–2031 sets the objective of reducing waste volumes in the public and business sectors through continued efforts. In terms of direct reuse initiatives, the government encourages municipalities to

support and guide private initiatives that promote reuse, such as second-hand shops and repair workshops. The waste plan highlights the many existing private initiatives and notes that both the government and municipalities can play a key role in creating a supportive environment for waste prevention actions and disseminating information about these initiatives.

Åland

Åland's waste plan dates back to 2010, and updates for the current programme are planned, although they have not yet been published (as of autumn 2024). The waste plan includes several action points, such as designating specific areas for recycling centres where visitors can drop off and collect items for reuse, integrating sustainable development education into school curricula, and launching awareness-raising campaigns aimed at businesses and the general public. It also promotes EPR schemes, incorporating waste prevention requirements into environmental audits, and setting waste prevention criteria for public procurement.

In addition to the waste plan, Åland has developed a strategy to prevent plastics and microplastics from entering the environment, focusing on reducing plastic use and phasing out unnecessary plastics. Furthermore, Åland has a development and sustainability agenda, with the main strategic goal of promoting "sustainable and mindful patterns of consumption and production." This agenda includes sub-goals of reducing the amount of waste generated on Åland to a maximum of 1.2 tonnes per person per year and achieving a lifestyle based on circular economy principles for at least 80% of the population.

3.3 Summary of the waste policies

The WFD (2008/98/EC) sets the foundation for waste prevention and reuse efforts in the EU. The waste hierarchy places waste prevention and reuse efforts as the top priorities. The WFD, along with directives on packaging, plastics, and ecodesign, are driving the transition toward the circular economy. For instance, the Packaging and Packaging Waste Regulation (PPWR) aims to eliminate unnecessary packaging, while the SUP Directive seeks to reduce the environmental impact of certain plastic products. The Right to Repair (R2R) introduces common rules to strengthen the reparability of goods. Additionally, the ESPR, which replaces the previous Ecodesign Directive, focuses on sustainable product design. At the time of writing, EPR for textiles is under negotiation in the EU, potentially incorporating eco-modulated fees that account for environmental and climate impacts across the product lifecycle.

All Nordic countries have addressed waste prevention to varying extents in the key policy documents. These documents recognise both voluntary and regulatory-based

policy actions, including voluntary agreements, the promotion of eco-friendly public procurement, increased waste taxation, and targeted initiatives such as plastic waste reduction and improved waste sorting. Educational measures and awareness campaigns are also emphasised, alongside the need for innovation in resource utilisation, EPR and the integration of sustainable practices into public policy.

A shift is underway from traditional, narrower waste policy towards a more comprehensive circular economy approach, aiming for waste reduction on a larger scale. National strategic circular economy programmes represent an important step toward more holistic waste prevention policies to minimise waste and maximise resource efficiency at all societal levels. This shift aligns with ongoing European Union work, as the concept of ecodesign and the whole product lifecycle have been taken further with recent regulatory developments, including the provision of data and information for consumers.

Nordic policy documents acknowledge that current waste prevention efforts are inadequate. The plans emphasise the need for improved tools and measures to better monitor and promote waste prevention. To effectively drive systemic waste reduction and reuse, it is crucial for Nordic countries to explore new options and extend the existing good policies for the circular economy.

4. Overview of measures for promoting waste prevention and reuse in the Nordics and beyond

Part 1 of the project identified 50 existing good practices (36 from the Nordic countries and 14 from other European countries) with potential to reduce municipal waste and promote reuse in the Nordics. These practices were selected for their ability to:

- reduce the quantity or harmful impact of waste
- reduce the content of hazardous substances in waste
- support waste prevention and extend product lifespans
- facilitate dematerialisation.

The results provide actionable insights into effective waste prevention and reuse strategies, laying a foundation for advancing circular economy goals in the Nordic region. By showcasing proven practices from both the Nordics and other European countries, the findings highlight transferable solutions that can enhance circularity and minimise waste generation.

Table 4 categorises the identified good practices into distinct groups, while the full list of 50 measures is provided in [Annex 1](#). The examples draw from the Nordic countries as well as Belgium, Germany, the Netherlands, the UK, and Slovakia – countries chosen based on their advanced waste management systems and circular economy initiatives.

Table 4. Categorisation of identified good practices – some examples.

Type of steering instrument	Description	Examples from the Nordics
Regulatory	Waste prevention measures that actors are obliged to implement by law, including bans, restrictions and other requirements or obligations.	• municipalities' obligation to inform households of waste prevention activities and recycling activities.
Economic	Tax regulations, subsidies, the introduction of fees and other waste management operations that make 'waste-light' products or services more competitive, incl. green public procurement.	• pay-as-you-throw pricing systems • deposit systems for beverage containers • waste taxes • fees for plastic bags.
Voluntary	Actions taken by both governmental and non-governmental stakeholders that are not legally binding/obligatory, as well as voluntary agreements among stakeholders that do not necessarily require a political decision-making process but instead require negotiations. Research and pilot initiatives, establishment of reuse centres and networks, and other projects.	Green deals/voluntary commitments • Finnish material efficiency commitment for the food and packaging industry • Swedish voluntary waste reduction 25/25 (reducing the amount of food and incineration waste by 25% by 2025 compared to 2015). Market-based business models • Too Good to Go app for reducing food waste • platforms for selling second-hand goods • clothing libraries/rental subscription services. Municipal actions • Swedish reuse platform for municipalities • promoting the sharing economy via borrowing of goods from libraries • reuse stations managed by municipal waste management companies. Consumer movements • Stop Spild Af Mad voluntary consumer movement against food waste in Denmark.
Informative	Communication campaigns, educational and training activities, and awareness-raising materials for consumers, businesses, or other target audiences.	• food waste reduction campaign: Food Waste Week (Finland) • 'Best before but not bad after' label on food (Norway) • PRIO tool created by the Swedish Chemicals Agency to search a database of chemical substances and their hazardous properties.

**Extended
producer
responsibility
(EPR)**

EPR is an environmental policy approach that holds manufacturers and importers responsible for the entire lifecycle of their products, particularly after they have been sold. The main objectives of EPR are to reduce waste, promote recycling, and encourage the design of products that are easier to reuse and recycle (OECD, n.d.). This includes the establishment of EPR schemes, whether legally binding at EU level or voluntary, as well as activities that affect the core strategy and operation of the EPR schemes. EPR schemes mean extending the producer's financial responsibility for a product to include the waste management stage.

(Specifics of different EPR schemes were not studied in this project).

The measures identified included various levels of actions, ranging from grassroots initiatives to governmental steering instruments. The 36 Nordic measures analysed were distributed as follows: regulatory 3%, economic 25%, voluntary 55%, informative 17%. Although the list of measures and steering instruments is not exhaustive, it reflects a quite significant imbalance between regulatory and economic measures versus the more abundant voluntary and informative initiatives.

Of the measures identified, the ones offering the most potential were shortlisted, and based on an expert assessment divided into two categories: 'low-hanging fruits' and 'challenging but effective'. The category 'low-hanging fruits' includes measures that were assessed to be relatively easy to implement in the Nordic countries, and where the potential to reduce the quantity of waste was seen to be relatively high. These measures provide examples of ways to fast-track waste prevention in the Nordic countries (Figure 5).

In the category of 'challenging but effective', the potential to reduce the quantity of waste was assessed to be high, but the implementation was seen to be more demanding (Figure 6).

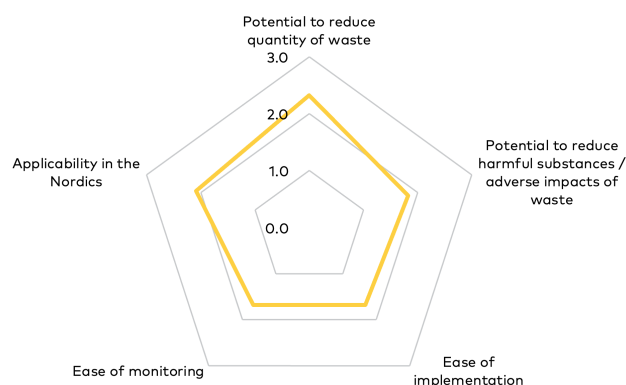
Figures 5 and 6 present a summary of the waste prevention measures analysed that could be leveraged for broader use in the Nordic region. A summary of the full evaluation is available in [Annex 2](#), and separate policy cards for each measure analysed in-depth can be found in [Annex 3](#).

Examples of effective and easy-to-implement waste prevention measures

Material efficiency commitments and green deals

In Finland, the food and packaging industries and the food retail sector made the first Material Efficiency Commitment 2019–2021, encompassing nearly the whole value chain. The general objective of the commitment is to improve the profitability and reduce environmental impacts of food production, packaging and distribution. The commitment includes elements such as the target of reducing food waste by 50% by 2030 in addition to reducing of the amount of plastic in the containers and increasing reuse of packages.

Expert evaluations of effectiveness and feasibility



The general attitude of experts towards material efficiency commitments was positive, with many recognising their potential to drive meaningful change. However, the experts noted that while making voluntary material efficiency commitments is relatively straightforward, achieving the goals set and delivering tangible impact is far more challenging. A key difficulty lies in ensuring that the commitments are sufficiently ambitious, and effective reporting can also pose a significant hurdle.

Measure	Category	Examples
 Digital platforms for selling products near their expiration date	Voluntary measure: business models	In Norway, food waste is reduced from restaurants, cafes, hotels etc., by selling surplus foods and drinks through Too Good To Go app. There are similar examples from other Nordic countries (e.g. ResQ in Finland).
 Second-hand platforms for private persons and companies	Voluntary measure: business models	Finn.no is the largest second-hand platform in Norway for both private persons and companies. It is exceptionally broad in scope, including everything from properties to various commodities. There are similar platforms (with narrower scope) in other Nordic countries (such as Tori.fi in Finland).
 Informative product stamps for consumers	Informative measure	A stamp on food and drink items in grocery stores, to help the consumer to understand that some foods and drinks still can be ok after the expiration date.
 Reuse stations	Voluntary measure: municipal actions	Norway has reuse stations for used items that are not damaged. It is free to pick up items from these stations.

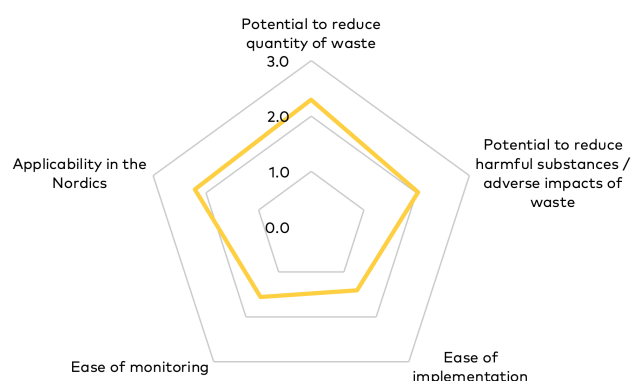
Figure 5. Examples of effective and easy-to-implement waste prevention measures.

Examples of effective but challenging-to-implement waste prevention measures

Concrete ecological requirements for public procurement

In Berlin, concrete ecological requirement criteria are made binding for the procurement of various products, construction, and services. For example, in the case of products for IT equipment, among other things, the availability of spare parts and the possibility of repairing them or expanding their performance with replaceable components and expansion interfaces must be guaranteed even several years after production has ceased.

Expert evaluations of effectiveness and feasibility



There was general agreement among experts that public procurement holds significant potential but should rely on factors like Life Cycle Assessment (LCA) to avoid greenwashing. Respondents emphasised the need for clear, prioritised criteria to address environmental concerns effectively, especially when objectives to do with the climate, environment and nature may conflict. Many also highlighted the importance of environmental factors being given sufficient weight, even when monetary considerations are involved.

Measure	Category	Examples
 Consumer movements against food waste	Voluntary measure: consumer movements	Stop Wasting Food movement (Stop Spild Af Mad) – is a non-profit organisation in Denmark founded in 2008 that collaborates nationally and internationally with politicians consumers and the entire food value chain to combat food waste. As one many examples they also lead Denmark's biggest online food platform www.GratisMad.dk which helps alleviate food insecurity minimize food waste and provides free surplus food from local supermarkets and food producers to local charities.
 Reduced VAT for repairing services	Economic measure	In Sweden, the VAT rate on services repairing bicycles, shoes, leather products, clothes and textiles was lowered to 12% from the general level of 25% in 2017. In 2022 it was further lowered to 6%. On April 1 2023, VAT-level was changed back to 12% again.
 Weight-based pay-as-you-throw (PAYT) pricing	Economic measure	Weight-based PAYT (Pay-As-You-Throw) is a waste management system that charges individuals or businesses based on the weight of their waste. It involves the use of specially designed waste containers or weighing bins to determine the weight of the waste, and fees are applied based on a predetermined rate per unit of weight.
 Municipal waste reduction commitments	Voluntary measure: municipal actions	Avfall Sverige – the association of Swedish waste management - has challenged municipalities to a voluntary commitment to reduce the amount of food and incineration waste by 25% by 2025, compared to 2015. Gothenburg Municipality aims to reduce waste from its own institutions by 40% per employee.

Figure 6. Examples of effective but challenging-to-implement waste prevention measures.

The results of this part of the study showed that the predominance of voluntary and informative measures contrasts with the ambitious circular economy targets set by the Nordics and the EU. The relative lack of regulatory and economic measures, including, for example, concrete ecological requirements for public procurement and VAT reductions, alone are not enough to drive deeper systemic changes in a move towards the circular economy. There is a need to innovate new policies and steering instrument for the circular economy, while scaling existing tools to create a more robust and effective policy mix that supports circularity.

Economic instruments are often seen in environmental policy as an effective way to influence the behaviour of individuals and businesses. Their core idea is to make environmentally harmful activities more expensive while making environmentally friendly actions more economically attractive. Part 2 of the project focused on exploring the potential of economic instruments in waste prevention ([Chapter 5](#)).

5. Economic steering instruments for effective waste prevention

5.1 Vision for waste prevention in some critical value chains

The value chains of textiles, consumer electronics and plastic packaging are essential value chains in municipal waste prevention. In all three value chains, the potential to reduce environmental impacts and risks or the hazardous substance content is high, the recycling markets need further improvement and the potential to prolong the lifespan of products is high. However, the value chain dynamics differ from one another and therefore different waste prevention and reuse strategies are necessary. For example, plastic packages are often short-lived products by nature and promoting the circular economy can often mean promoting recycling processes rather than reuse, although different kinds of reusable packaging are gradually becoming more common. In the case of consumer electronics, the promotion of waste prevention and reuse can be hampered by factors such as programmed degradation, the difficulty of repair and the accumulation of unused products in households. The textiles sector, on the other hand, is largely defined by the dynamics of fast fashion and the challenges it poses, such as low-quality products, products that quickly end up as waste, and marketing strategies convincing consumers to constantly buy new products. These differences are visible in the circular economy visions (partly based on the Ellen MacArthur Foundation (2018)) for the three sectors, leading to variations in the high-level policy targets for the implementation of a systemic circular economy in each sector.

5.1.1 Textiles

The vision for a circular-economy-based value chain for textiles can be described as a transformation of the entire value chain from material production and design to manufacturing, retail, use and end-of-life, so that the aim throughout the whole system is to minimise waste and maximise product lifespans through closed-loop cycles, emphasising efficient and long-term product use, reuse, repair, and refurbishment (Figure 7).

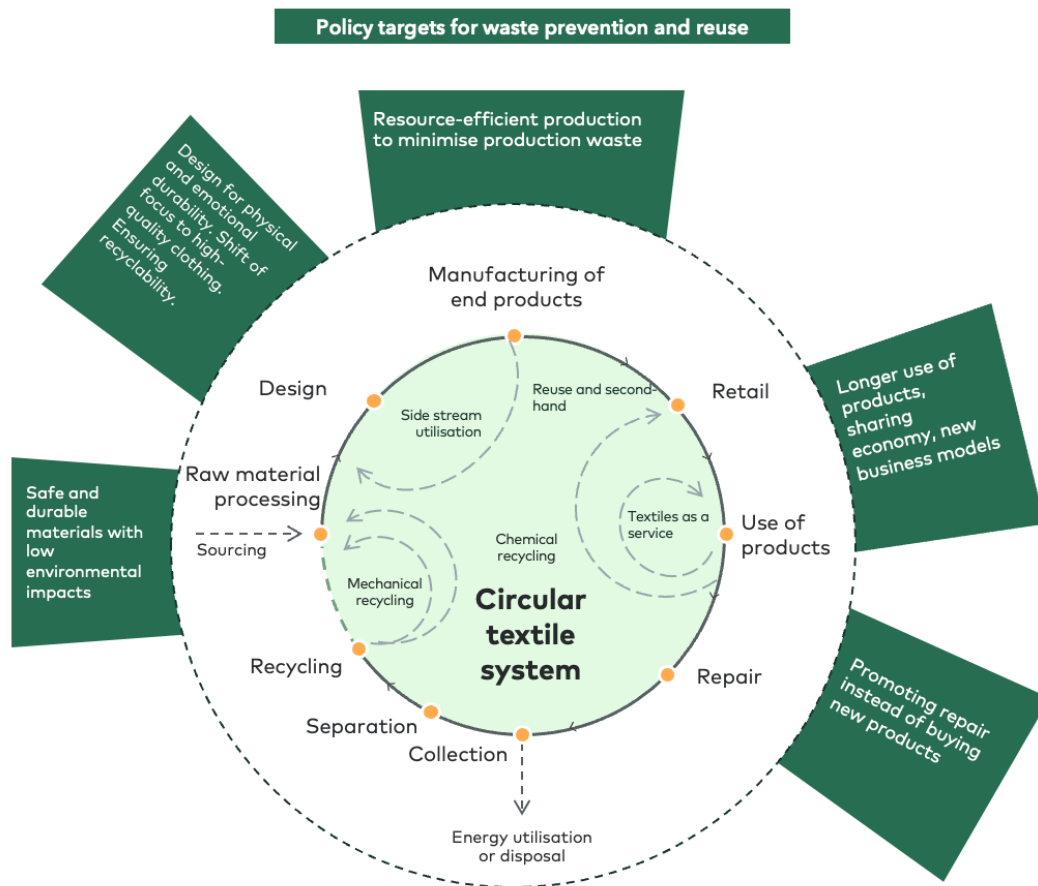


Figure 7. Policy targets for waste prevention and reuse in the textile value chain.

For textiles, implementation of the R-strategies would mean:

Refuse: Choosing not to produce or buy low quality textile products with a short material lifespan and low emotional durability.

Rethink: Changing the way textiles are designed, perceived, and used. Implementing circularity-oriented business models, e.g. clothing rental, textiles as a service, second-hand and new fibre innovations.

Reduce: Aiming to minimise the input (e.g. water, energy, raw materials) in textiles. Reducing the use of hazardous substances in the manufacturing process as well as the use of fabrics with high environmental impacts and mixed fabrics with poor recyclability.

Reuse: Encouraging the prolonged use of textiles in their original form by a different user once the original owner no longer needs them. This can be facilitated through second-hand stores, online platforms (peer-to-peer, business-to-consumer), donation programmes, swap events and brands' own reselling programmes, among other approaches.

Repair and refurbish: Promoting and facilitating the repair, cleaning, and restoring of damaged or worn-out textiles to enhance their appearance and extend their lifespan. This can include mending tears, re-dyeing fabrics, or updating designs.

5.1.2 Consumer electronics

The vision for a circular-economy-based consumer electronics value chain can be described as a transformation of the entire value chain from material production and design to manufacturing, retail, use and end-of-life. The system aims to minimise waste and maximise product lifespans through closed-loop cycles. Eventually, devices end up in the hands of specialists, who will professionally refurbish products, reuse, or remanufacture the valuable components inside, and separate and recycle the various materials (Figure 8).

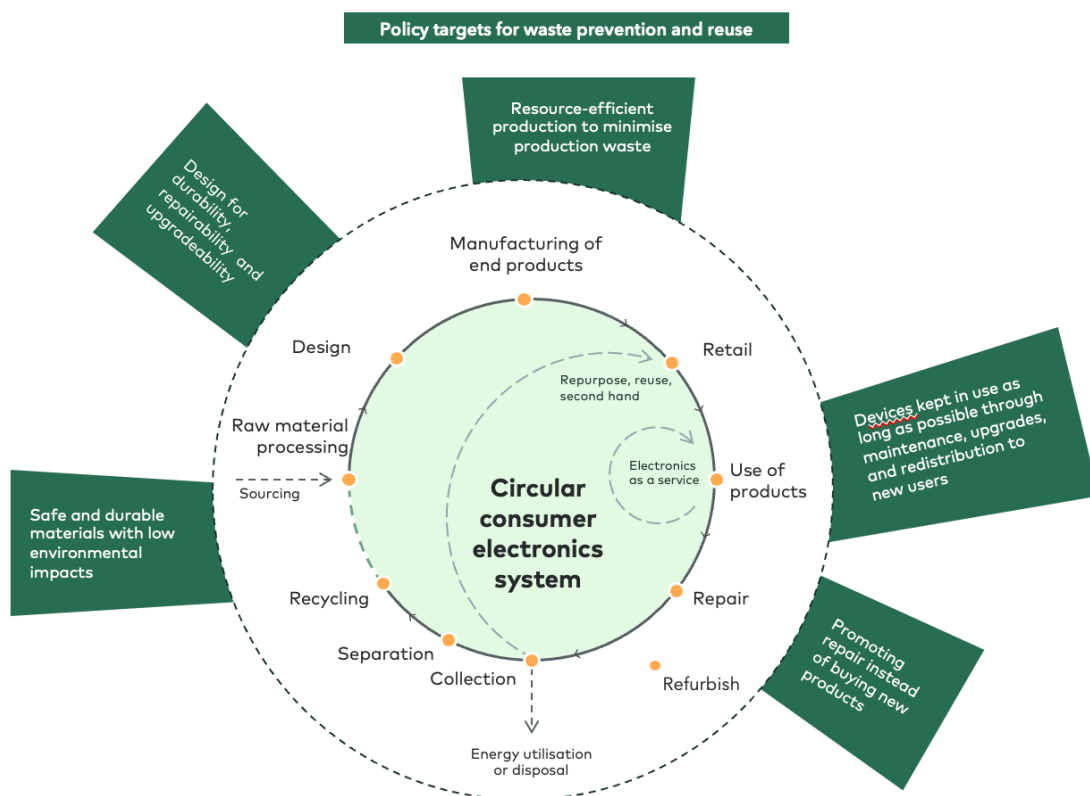


Figure 8. Policy targets for waste prevention and reuse in the consumer electronics' value chain.

For consumer electronics, implementation of the R-strategies would mean:

Refuse: Choosing not to produce or buy low quality consumer electronics with a short lifespan and low emotional durability.

Rethink: Changing the way electronics are designed, perceived, and used. Designing products that have high physical and emotional durability, repairability, upgradability and ease of disassembly. Utilising modularity to enhance versatility and longevity in electronics.

Reduce: Aiming to minimise the input (e.g. water, energy, raw materials) in electronics. Reducing the use of hazardous substances (e.g. heavy metals, flame retardants, plastic softeners) in the manufacturing process as well as the use of virgin materials with high environmental impacts.

Reuse: Encouraging the prolonged use of electronics in their original form by a different user once the original owner no longer needs them. In the case of electronics, this can be facilitated through means such as online platforms (peer-to-peer, business-to-consumer), as well as through municipal or private reuse centres and donations.

Repair and refurbish: Adopting a new set of right-to-repair rules designed to encourage people to repair broken devices, rather than replace them. This requires products to be designed for repair as well as support for repairers of all kinds (such as electronics repair shops and repair cafés). Business models focusing on refurbishment of used electronics, such laptops and mobile phones, should also be advanced.

5.1.3 Plastic packaging

The vision for a circular-economy-based plastic packaging value chain can be described as a sustainable, circular plastics system encompassing the entire value chain from polymer production and product design to manufacturing, retail, use, and end-of-life management. The aim is to reduce reliance on virgin plastic resources, minimise environmental impacts, and enhance material recovery through efficient recycling processes, reuse, and innovative upcycling. The system emphasises product design for circularity, extended product lifespans, and high-quality recycling to close the loop on plastic use (Figure 9).

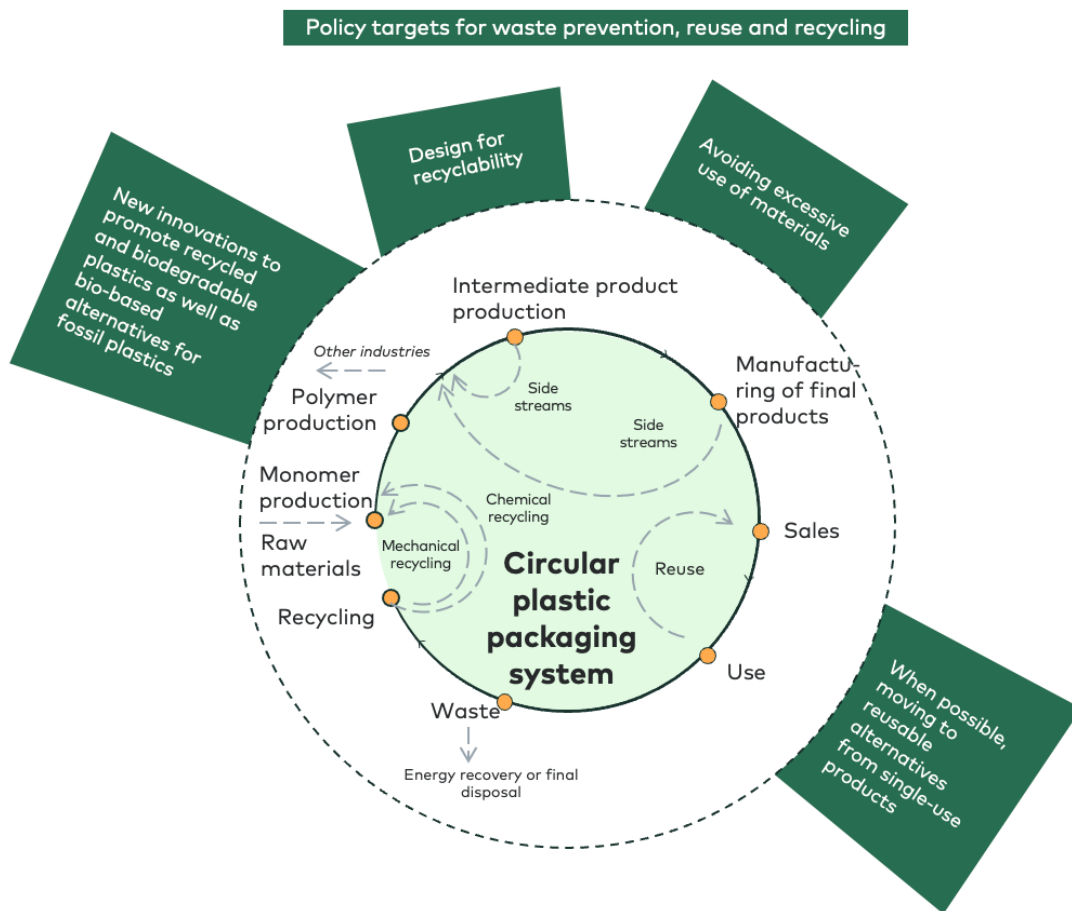


Figure 9. Policy targets for waste prevention and reuse in the plastic packaging value chain.

For plastic packaging, the R-strategies include the following aspects:

Refuse: Opting not to produce or purchase single-use plastic items and, when applicable, favouring alternatives that are non-fossil based and/or biodegradable.

Rethink: Transforming the design of plastic products to increase their durability and multifunctionality, as well as promoting products that can be easily integrated into circular business models, such as product-as-a-service systems (e.g. reusable packaging solutions).

Reduce: Aiming to minimise the input (e.g. water, energy, raw materials) in plastics production. Reducing the volume of virgin plastics used in products by incorporating recycled plastics and designing for minimal material use without compromising on product integrity. Also, reducing harmful additives that complicate recycling processes.

Reuse: When possible, moving to reusable alternatives from single-use plastic packaging products.

Repair and refurbish: While less common for plastic packaging, the concept can apply to durable plastic items such as storage containers, where cracks or damage can be repaired rather than the item being replaced. Refurbishment for plastics could also include reinforcing weakened structures or aesthetic enhancements to extend the lifespan.

5.2 Economic steering instruments preventing textile waste – a case study

Scope of the case study

Textiles constitute a relatively substantial proportion of household waste and, both in terms of waste volume and reduction of harmful impacts of waste, the textile sector has a crucial role to play in the circular economy. Textiles therefore provide a good object for an in-depth case study on how economic instruments can accelerate change. Furthermore, a recent report of the Swedish national committee for exploring economic instruments for a circular economy (SOU 2024) points out textiles as a suitable value chain for more economic steering, and the French eco-modulated fee as an example worthy of consideration when EPR schemes for textiles are negotiated with the EU.

This case study aims to show what kind of system impact could be created through the combination of several economic instruments. As the R strategies elaborated on in section 5.1 show, it is important to look at both producer and consumer perspectives, and at different points in the value chain, to target overproduction and overconsumption. The case study focuses on three economic instruments with the potential to influence consumer behaviour and reduce municipal waste: targeted fees on fast fashion products, VAT reductions for second-hand sales and repair services, and R&D funding to support new circular business models. These instruments aim to promote sustainable consumption and circular economy practices.

In addition to the above, resource taxes and import taxes were identified as economic tools with a potentially significant impact on waste prevention. Resource taxes have been dealt with in a recent study (Eriksson et al., 2023), where it was found that they require globally convergent rules to be effective and should preferably be analysed within broader geographical boundaries than the Nordic region. This does not mean that the global work of the Nordic countries is seen as less important, on the contrary, the textile sector could benefit from similar frameworks to those of the global plastic agreement, where the Nordic countries are active negotiators.

The forthcoming EPR system for textiles was also identified as a significant tool. Under the proposed amendment to the WFD, the Member States must have their EPR system established within 18 months of the entry into the force of the directive, i.e. 2025 onwards (European Parliament, 2024; Compliance & Risks, 2024). France is the only Member State that has had an EPR system for textiles in place for a long time – since 2007. The Netherlands implemented an EPR system for textiles in 2023. EPR as such is not dealt with here as an economic instrument, but the development of economic instruments for waste prevention in the textile sector should preferably be linked to the EPR so that the measures strengthen its effectiveness and go beyond responsibility for collecting textiles for recycling.

Although this case study focuses on economic instruments, it is good to note that there are a range of other measures that also have the potential to change textile value chains. These include but are not limited to sharing economy activities by municipalities, reuse stations, commitments by the textile and fashion industry, and collaborative initiatives encouraging communities to engage in repair activities. These kinds of non-economic measures are presented in [Chapter 4](#).

5.2.1 Targeted fees for fast fashion products

Description of the instrument

France's proposed legislative initiative No 2129, passed in March 2024 by the French National Assembly, presents targeted fees for fast fashion products. The initiative can be seen as a form of environmental tax/fee aimed at mitigating the negative impacts associated with the fast fashion industry (Assemblée Nationale, 2024). In spring 2024, French lawmakers unanimously approved the bill, greenlighting it for the Senate to consider – either to approve it, or to tweak it and send back to the lower house – before it can become law (AP News, 2024).

The initiative introduces two key measures to mitigate negative impacts of fast fashion:

Advertising ban and duty to inform: The bill bans advertising for fast fashion, including on social media, from January 2025, with penalties for breaches. Fast fashion businesses must also display messages, next to the price, encouraging moderate consumption as well as repair, reutilisation, and recycling and raising awareness about the environmental impacts.

Companies affected by these actions are defined through the number of new products introduced to the market. At the time of writing (October 2024), it is unclear what the concrete thresholds will be, but during the debates, the threshold of 5,000 new references a day was suggested (Grau, 2024). Thus, it seems that the legislative proposal is intended to target large fast fashion platforms such as Shein and Temu in particular.

Environmental penalty and bonus system: Another of the key features of the proposal is a financial penalty and bonus system. France has long had an EPR system for textiles (see Table 4 for the definition of EPR), and the new penalty system can be seen as an adjustment for the existing EPR system (Grau, 2024). Companies falling short of established sustainability benchmarks face a gradual levy that starts at €5 per item in 2025, increasing to €7 by 2026 and €10 by 2030 (AP News, 2024; ESG Investor, 2024). Eco-friendly companies may receive bonuses and a portion of the penalties will also be used to finance collection and recycling infrastructure in non-EU countries. The sustainability benchmarks for the products will be based on the French Product Environmental Footprint (PEF) system, which is currently being finalised (Grau, 2024). The French PEF is a method used to assess the environmental impact of products throughout their entire lifecycle. It evaluates various environmental indicators, such as greenhouse gas emissions and water usage. The French PEF system has faced some criticism. Kassatly and Townsend (2024) indicate that the system partially overlooks the usage phase of textiles, specifically the number of uses, as it calculates this based solely on garment type. Additionally, the lack of consideration for social sustainability in PEF scores has also raised concerns.

Motivation for adopting this instrument

The fast fashion sector is notorious for its detrimental effects, including massive textile waste, water pollution, and poor labour conditions (Niinimäki et al., 2020). The approach aligns with global efforts to promote sustainable consumption and has the potential to reshape consumer behaviour. It encourages consumers to rethink their purchasing habits, leading them to invest in higher-quality, sustainable alternatives (France24, 2024). This economic instrument aims specifically at directly targeting overconsumption and overproduction, which are key sustainability problems in the textile sector. The fees would demonstrate through political guidance that fast fashion is not considered to be sound. Starting with a low fee of €5 and increasing gradually to €10 in 2030 will give businesses time to adapt.

Examples of how this kind of instrument has been applied before

In 2015, England implemented a mandatory five pence (€0.06) charge for each single-use plastic bag provided by large stores. The impact evaluation demonstrated that all demographic groups – including various age, gender, and income categories – significantly reduced their usage of plastic bags within just one month of the charge's introduction (Thomas et al., 2019). Additionally, support for the bag charge grew among all key demographic groups. Increased support for the plastic bag charge in turn predicted greater support for other charges to reduce plastic waste, suggesting a 'policy spillover' effect. The plastic bag tax was also introduced in Sweden in 2020 as a way to achieve the EU's goal of reduced use of plastic carrier bags. The EU's goal is to get down to a consumption of no more than 40 carrier bags per person per year. Since the tax was introduced in Sweden, the consumption of carrier bags has decreased, from 83 per person in 2017 to 17 in

2022, according to figures from the Swedish Environmental Protection Agency (2023). As the targets have been met, the plastic bag tax was not extended from 1 November 2024 onwards (Sustainable Plastics, 2022).

Success stories from other areas, like tobacco, alcohol, and sugar taxes, provide evidence that health-related or environmental taxes and fees can reduce unwanted consumption (Jungsberg et al., 2024). A 10 per cent tax on waste from sugar-sweetened beverages was associated with an average decrease in demand of 5 to 10 per cent (Afshin et al., 2017; Green et al., 2013). According to some researchers, modest tax rates might not cause major shifts in consumption but can still result in substantial tax revenues. These funds could then be allocated to supporting alternative health and nutrition programmes (Capacci et al., 2012). These precedents suggest that applying similar mechanisms in the fast fashion industry could yield positive results.

The biggest challenges of adopting this instrument in the Nordic context

Firstly, defining what constitutes fast fashion can be complex, as it varies widely between companies and products. This ambiguity may complicate the application of fees, as companies could potentially exploit loopholes by altering their branding or marketing strategies without genuinely improving sustainability.

The transnational nature of the fashion supply chain makes it difficult to monitor and regulate practices effectively. Moreover, there is concern that low-income consumers may be disproportionately affected by increased prices resulting from such taxes, raising ethical questions about fairness and accessibility in fashion (France24, 2024).

There is also the risk that companies might relocate their production to countries with less stringent regulations to evade financial responsibilities, undermining the intended environmental benefits.

Expected short- and long-term impacts of this instrument

In the short term, consumers may experience an increase in prices for fast fashion items, leading them to reconsider their purchasing habits. Initial resistance may arise as consumers adjust to the new economic landscape; however, there is potential for a gradual acceptance of the idea that sustainable products come at a higher price due to their ethical production processes (CNN, 2024).

In the long term, the hope is that such measures will foster a cultural shift toward sustainable fashion practices. As brands strive to improve their sustainability metrics to avoid financial penalties, innovation may flourish within the industry. Companies might invest in sustainable materials, ethical labour practices, and circular fashion models, ultimately leading to a more responsible fashion ecosystem. This transformation could result in reduced environmental degradation, enhanced social equity, and a growing awareness among consumers about the true costs of their purchases (DLA Piper, 2024).

Additionally, the revenue generated from these targeted fees could be redirected toward supporting sustainable fashion initiatives, including education and awareness campaigns about the impacts of fast fashion. This reinvestment could further catalyse positive changes in consumer behaviour and industry practices.

Key takeaways or conclusions regarding this instrument's potential in the Nordic countries

While there are unresolved questions regarding the definition of fast fashion and the implementation and scoping of this instrument, its potential to drive systemic change is seen high, as it aims to target its steering mechanism directly at limiting overconsumption and thus at the root causes of sustainability problems in the fashion sector. The successful implementation of environmental or health-related taxes and fees, for example for plastic bags and tobacco, provides an encouraging example that consumption can be steered in the right direction through economic incentives. Aspects of social justification will need to be considered when using fees as a steering instrument.

5.2.2 VAT reduction on second-hand products and repair services

Description of the instrument

A VAT reduction on repair services refers to a decrease in the rate of VAT applied to certain types of repair or maintenance services. VAT is a consumption tax imposed on goods and services, and governments may lower VAT rates on specific services to support more sustainable consumption and employment in the repair sector.

VAT differentiation between new and second-hand textile products can be used to promote sustainable consumption by incentivising the purchase of second-hand goods. This differentiation is achieved by applying lower VAT rates (or exemptions) to second-hand textiles than to new products. The aim is to reduce the environmental impact by encouraging the reuse of existing textiles and lowering the demand for resource-intensive production processes used in manufacturing new textiles.

VAT reductions are a part of environmental taxes, which are defined by the European Environmental Bureau (EEB, 2022) as “taxes that go beyond the objective of internalising external costs, focusing on reducing the extraction, production and consumption of resources, retaining material values, and providing incentives for designing out waste and pollution”. In the case of private sales of second-hand textiles, VAT may not be required, but in general sales of used items, VAT usually needs to be paid by firms (NiinMaa, 2020; Vero, 2023). In the trade of second-hand clothing and some other items, such as used electronics, the so-called hidden VAT increases the consumer price of the product (Kaupan Liitto, 2023). Some exceptions may appear where margin schemes are used, such as charity sales in Finland. For example, if the textiles are sold by a registered charity and the proceeds are used for charitable activities, these sales may be exempt from VAT (Vero, 2023).

VAT reductions in practice aim to provide incentives to guide people towards more sustainable consumption behaviour via price signals. Reducing the VAT on repair services and second-hand products aims to boost the availability and accessibility of repair services and encourage people to choose second-hand or repair services over purchasing new products (EEB, 2022). VAT can be lowered for repair services or second-hand products to differentiate them from new items and influence consumers' purchasing behaviour.

Motivation for adopting this instrument

VAT reductions could simplify the regulatory framework for operators offering second-hand products or repair services (Regeringskansliet, 2024) and therefore encourage consumers towards more sustainable consumption, promote taking better care of items and reuse of textiles, and prolonging the lifecycle of textiles.

In general, people in Europe would be willing to use repair services instead of purchasing new items, but rarely do so as repair services are too expensive for them to access (RREUSE, 2017). While taxes on use of natural resources are relatively low, labour is heavily taxed in Europe and a VAT reduction on repair services could address the need to fix items instead of replacing them with new purchases and result in a limitation in the use of natural resources (Dalhammar et al., 2020).

Examples of how this kind of instrument has been applied before

VAT reductions on repairs of bicycles, shoes, leather goods, clothing and household linen were applied in Sweden from 2017 to 2023. The VAT rate was first decreased from 25 per cent to 12 per cent in 2017, and further decreased from 12 per cent to 6 per cent. In 2023, the committee proposed increasing VAT back to 12 percent, due to a desire for uniformity in the VAT system – a revenue source for the Swedish state – and the competitive neutrality of the markets. The committee also saw the effectiveness of this instrument as relatively minor and considered the economic situation overall to be challenging, which lent itself to the increase in VAT. The Swedish Government also stated that VAT is essentially designed as a fiscal tax, and using VAT reductions as an economic policy instrument oversteps the primary purpose of VAT (Sveriges Riksdag, 2022).

A qualitative analysis was also conducted in Sweden to find out the effects of the VAT reduction. According to Eunomia's and EEB's interviews (EEB, 2022), a minority of the interviewees noticed an increase in use of their repair services since the implementation of the VAT reduction. Furthermore, it was hard to determine whether the possible increase in the use of repair services was due to VAT measures or other factors, such as the high purchase price of new, similar products.

In Belgium, there have previously been trials of VAT reductions for certain types of second-hand shops, where VAT was lowered to 6 per cent instead of the usual 21 per cent. (Miljøministeriet, 2014). The examples were relatively limited, and no measurements of waste prevention effects could be found. Based on the

theoretical discussions on VAT, there were suggestion of reducing VAT "on products with an extended warranty, products that can be shown to be less waste-intensive than similar products and on services that can be shown to be a more environmentally friendly alternative to purchasing a similar product" and differentiated VAT could be applied in particular to repair services for white goods (e.g. refrigerators, freezers and washing machines).

The biggest challenges of adopting this instrument in the Nordic context

According to an earlier comprehensive study in Denmark (Miljøministeriet, 2014) economic instruments that seek to promote repair services, such as VAT differentiation, affect mainly the relatively small industry of repair services and the effectiveness of these instruments seems to remain mostly symbolic. The effects of VAT differentiation on actual demand among customers remain uncertain. Furthermore, examples are relatively limited, and measurements of any waste prevention effects are largely non-existent. Although this study is somewhat older, the situation seems to have remained by and large the same until recently.

VAT reductions may not have such significant effects on products with relatively low prices, such as textiles, as the role of VAT and any reduction in its level in price formation remains small. Compared to more expensive products, such as consumer electronics, the VAT reduction on second-hand items and/or repair services could more strongly guide consumer behaviour towards sustainable consumption, as the economic advantage is larger. Regarding consumer behaviour, there is a dilemma as to whether buying second-hand really reduces the amount of textiles purchased. This dilemma calls for a more systemic change in our consumption habits. According to Finnish studies (Kaupan Liitto, 2023; Baltic2Hand, 2023), even if people purchase second-hand items instead of consuming new items, many tend to purchase items they don't need or use.

This instrument would be fairly easy to apply in Nordic countries, as the VAT system is governed by the EU Directive on the common system of value added tax (Directive/112/EC) and several EU Member States, including Finland and Sweden, have already made efforts to reduce VAT on repair services and second-hand products (RREUSE, 2017). The case example from Sweden made VAT reductions and increases seem quite flexible and relatively easy to implement, as the VAT rates were modified according to the wishes of the government at the time and several times during the years 2017–2023.

Despite the relatively easy implementation of VAT reductions and increases, the Swedish example highlighted the understanding of the primary purpose of taxation and economic impacts of taxes for the Member States, which may conflict with implementing different tax reductions, especially in economically challenging times.

Expected short- and long-term impacts of this instrument

The lack of thorough impact assessments studying the effects of VAT reductions at national level makes it difficult to draw conclusions on their effectiveness. As stated by the Norwegian government and the expert committee, there is not enough research available on how economic instruments such as environmental taxes and VAT reductions might affect or develop the circular economy. The committee strongly emphasised the importance of up-to-date research and studies in the field (Eriksson et al., 2023). Such impact assessments need to be carried out for each Nordic country separately, before being aggregated at Nordic level, as they are based on national statistics and the specifics of each country.

Additionally, referring to Sweden's example and decision making, the evaluation of VAT reductions' long-term effects needs to give careful consideration to the impacts on revenues from taxation for Member States and the overall market dynamics (Eriksson et al., 2023). It can be concluded that there is potential to increase overall demand for second-hand items and repair services by reducing VAT. According to an older Dutch study (referred to in Miljøministeriet, 2014), a maximum of a 10% increase in the second-hand and repair market can be expected, and in the textile sector, the impact is potentially smaller than this. When interpreting these results, one should, however, note that consumer awareness regarding sustainability and the circular economy have developed significantly in the past 10 years.

Key takeaways or conclusions regarding this instrument's potential in the Nordic countries

A VAT reduction on second-hand products and repair services as an economic instrument is not seen to be impactful enough as such without systemic change and a focus on behavioural aspects of consumption, too. The overall influence of VAT in the price formulation of relatively cheap products like textiles remains marginal and does not directly address problems related to overproduction. Still, VAT reductions could have a symbolic effect and send an important message to consumers, directing them towards more sustainable consumption of textiles, and should not therefore be forgotten when assembling the toolkit of economic instruments promoting waste prevention and reuse. On the other hand, the recent report by the Swedish national committee looking into potential economic instruments promoting the circular economy (SOU 2024) points out that, for example, repair vouchers will have exactly the same impact, and be easier to both implement and monitor.

5.2.3 R&D funding for developing new circular business models

Description of the instrument

Over the past ten years, the Nordic countries have made significant systematic efforts to target public innovation funding towards the development of circular

business models. While many of these efforts are targeted at ensuring an efficient collection and circulation system for textiles (e.g. the Nordic SATIN project). This case study focused on new circular business models for the textile sector, such as sharing platforms, product-as-a-service models, and different solutions for product life extension (like second-hand sales). These kinds of business models are supported through means such as innovation programmes in the Nordic countries.

- Product-as-a-service models for the textile sector include, for example, renting work clothing and consumer clothing. For work clothing, there are functional market-based solutions in place (e.g. Lindström in Finland). On the consumer markets, companies have faced a greater struggle with surviving. The Norwegian quality-clothing rental company Vibrent (originally called Fjong) went bankrupt in February 2024, and the Finnish equivalent Vaatepuu closed down its outlets in autumn 2024 until further notice and is concentrating on developing its business models (Vaatepuu, 2024).
- Product life extension is supported by means such as the second-hand trade, with a few online businesses functioning in the markets. In Finland, a frequently cited success story is Emmy Clothing Company. Some bigger companies have implemented their own take-back-and-reuse models, one example being the Finnish children's clothing company Reima, which launched its Reima Rescue app in 2021 for consumers wishing to resell their used Reima items. As an additional incentive, the company offered bonuses to consumers who used the app.

Motivation for adopting this instrument

The rationale of targeting public R&D funds at the development, testing and piloting of new circular business models is to accelerate market-based activity where value creation is detached from the use of (virgin) resources. Based on evaluations of such RDI programmes, the main benefits for companies can be summarised as falling into the following categories.

Risk reduction. Public RDI funds help to reduce and share financial risks for companies pursuing innovative business models, like product-as-a-service models (e.g. clothing rental) or 'take back and reuse' models (e.g. market-driven platforms for second-hand sales). It also enables smaller companies that would not have the resources for innovation and technology development, and different kinds of digital service providers, to participate in developing business models in ecosystems with more established companies.

Boosting market creation and business model innovation. Public R&D funding helps boost business model innovation and promote business models that encourage reuse and reducing textile waste, including driving a shift in consumer habits toward sustainability. From the consumer perspective, to be attractive, such models need to be affordable, easy, and accessible to use, meet a real need and preferably offer some additional benefits to normal linear purchasing models.

Support from existing structures. The instrument is, in general, considered easy to implement. There are established systems and national and regional development programmes that support businesses' R&D activities, making the implementation and monitoring relatively easy.

Examples of how this kind of instrument has been applied before

Different support instruments for innovation and business development are used in all of the Nordic countries.

- Business Finland's Bio and Circular Finland programme (2021–2023) followed by the mission area 'Circular transition for zero waste' aimed at developing competitive circular economy solutions and ecosystems with market potential, one of the focus areas being textiles (Business Finland, 2024). One of the key developments funded by Business Finland within the Telaketju/Telavalue textile innovation ecosystem in Finland has been the exploration of innovative models such as 'clothing-as-a-Service' for work clothing needed by municipal institutions (Telaketju, 2024) and 'take-back-and-resell' initiatives aimed at companies operating in the consumer market (Launonen, 2023).
- Sweden's strategic innovation programme RE:SOURCE (established in 2016) finances projects within the sustainable materials field, the aims being to decrease material use, prolong lifecycles and promote reuse and waste prevention. The governmental programme is funded by VINNOVA, the Swedish Energy Agency and Formas, and led by the Swedish research institutes RISE. Recent projects include a study on households' wardrobes and the potential to decrease wardrobe size and promote reuse (RE:SOURCE, n.d.).
- As one of its focus areas, Innovation Norway funds projects aiming at new business models for longer lifecycles and reuse of products, components and materials. (Innovation Norway, 2024)

Evaluations of innovation programmes show that some funded companies have been able to develop functional business models. The effectiveness of this economic instrument relies on both the skills of the supporting organisation providing the investment, how good the investors are at assessing the potential of the businesses, and other market aspects, as it is classified as risk funding.

The biggest challenges of adopting this instrument in the Nordic context

The biggest drawback with this kind of public support for developing new circular business models for the markets is the uncertainty of results and impacts, i.e. the instrument does not have any direct impacts on waste prevention, and any possible results occur only in the longer run and are dependent on many other factors within the markets. One of the key challenges for new circular businesses is the market

maturity of new business models. Even good ideas might not survive scaling after the initial phase without further support, limiting their long-term impact. This is not, as such, a challenge of the scheme itself, but more one of the markets for these kinds of business models, and the time it takes to impact consumer behaviour.

Limited impact on new clothing production. While promoting reuse, this instrument does not directly tackle the core issue of overproduction and overconsumption of textiles. The supported business models may not significantly reduce the overall production of new clothing, which is a primary source of textile waste. As clothing is a commodity that is usually not limited to just a few items per household, there is a risk that more affordable ways of purchasing clothes will just add to the number of purchases. At best, these kinds of schemes probably work with clearly focused customer groups (e.g. parents of rapidly growing children, or professional institutions who need specific professional gear). With increasing awareness of sustainable lifestyles, there should, however, be more potential in the future for consumer-oriented clothing-as-a-service businesses.

Expected short- and long-term impacts of this instrument

One of the major drawbacks is the lack of evidence that new sharing or product-as-a-service models will have significant impacts on resource use and the environment, as they might actually accelerate consumption and come with significant logistical needs. However, as research done by the RE:SOURCE ecosystem in Sweden (Mellquist, 2023) shows, there is a rising desire among consumers in Sweden to downsize the volume of their wardrobes. With more alternatives on the market to traditional 'purchase-use-discard' linear thinking, the impacts could be expected to grow over time. Evidence shows that alternatives need to be sufficiently accessible and easy to use, even if their use, to a large extent, is value-driven, rather than driven by economic factors. With the current access to affordable fast fashion products, it is not expected that clothing rental or other alternatives to buying clothes will become widely popular in the short term, for example. A significant shift in consumer values, perception of ownership, and consequently consumer behaviour is needed.

Key takeaways or conclusions regarding this instrument's potential in the Nordic countries

While R&D funding for circular business models is an essential part of a supportive policy mix, changing the existing structures of the textile system needs other instruments. R&D funding does not directly address the core issue of overproduction and overconsumption in the textile sector, and the supported business models will probably not, at least in the short term, reduce new clothing production and waste generation to a significant extent. Such public innovation incentives are, however, still an important part of creating enabling environments for businesses' transition to a circular economy.

5.2.4. Summary of key findings of the case study

Table 5 summarises the key results of the case study.

Table 5. Key results of the case study on economic instruments for waste prevention in the textiles sector.

Economic steering instrument	Targeted fees for fast fashion	VAT reduction for second-hand trade and repair services	R&D funding for developing new circular business models
Implementing the economic policies: why, who and how?			
Why should this be implemented?	To reduce the production, import and sale of unsustainable textile items. This economic instrument would directly target overconsumption and overproduction . The fees would demonstrate through political guidance that fast fashion is not considered to be sound.	To encourage prolonging the use phase of textile items and make purchasing second-hand products more attractive.	To accelerate market-based activity where value creation is detached from the use of (virgin) resources .
Who can implement this?	The government and the administrative sector of finance departments in collaboration with the environmental department in charge of EPR.	The government and the administrative sector of finance departments.	The government and public innovation and business funding agencies, possibly together with private investors.
Who will benefit?	Companies whose products receive high ratings in the ranking system gain a competitive advantage and even direct financial bonuses compared to those that are ranked lower, who will have to pay eco-fees for their products.	Consumers can benefit from more affordable repair services, leading to lower costs for maintaining textiles instead of buying new items. Second-hand and repair businesses may see increased demand.	Companies engaged in developing circular business will benefit from opportunities for new innovations, increased competitiveness, and risk reduction .
Obstacles for implementation	Defining what constitutes 'fast fashion' can be complex. This ambiguity may complicate the application of fees. Free riders (actors who do not register as part of the system) might also be a problem. Moreover, there is concern that low-income consumers may be disproportionately affected.	There are no major obstacles, but previous research suggests that VAT differentiation may have a limited impact on waste prevention . It remains uncertain whether, or to what extent second-hand purchases actually replace new purchases.	The biggest drawback is the uncertainty of results and impacts , i.e. the instrument does not provide any direct impacts on waste prevention, and any results occur only in the longer run. Even good business ideas might not survive scaling after the initial phase, limiting their long-term impact.
How can it be done?	The first step is to gather insights from the French example and consider how similar fees could be implemented locally in the Nordic countries as part of EPR for textiles.	This instrument could be relatively easily applied in Nordic countries. Several EU countries, including Sweden, have already reduced VAT on repair services or second-hand products.	There are already established national and regional development programmes, as well as public innovation and business funding agencies that support businesses' R&D activities. Requires targeting of funds towards these topics.

Implementing the economic policies: effectiveness and applicability			
Applicability	Medium (requires a set of criteria similar to those already in use in France)	High (has been tested, and all Nordic countries work with differentiated VAT schemes)	High (instruments are already in use in all Nordic countries and can be improved)
Impacts on volumes of waste	Medium	Low	Low
Environmental impacts	Medium	Low	Low
Impacts on harmful substances	Medium–High	Low	Low
Summary of potential for waste prevention	The tool has the highest direct potential for impact of the instruments analysed, although no calculations of actual impacts were found. The tool combines EPR with negative economic incentives for producers who do not comply and information steering (marketing bans) for the market, showing that economic tools have higher potential when combined with other steering tools.	No evidence of a direct impact on waste. The price difference is not expected to affect consumer choices. The tool is, however, considered important by businesses involved in models that would be affected by the change. For this reason, it would make sense to consider it as part of a larger policy package of incentives supporting the shift from linear to circular economic logic.	No evidence of a direct impact on waste but is considered an important tool for accelerating the transition from linear to circular economy. With more viable circular business models, it is expected that impacts on waste should occur over time.

To summarise the lessons learnt from the case study, **economic instruments targeting overproduction and overconsumption are needed in particular in value chains, where the global environmental impacts of unsustainable production and consumption patterns are considerable.** The case study on textiles shows the challenges in finding effective economic steering instruments suitable for open, democratic, and market-based Nordic economies. At the same time, it clearly underlines the need for economic instruments. In addition to decreasing negative environmental impacts in particular, economic tools give strong messages on the direction society wishes to take.

Bans and fees have the highest potential for pure economic effects. Of the proposed measures, increasing the cost of new products was identified as having the most potential for limiting resource exploitation and reducing waste. The structure of fees allows for almost unlimited price increases, as seen with the implementation of landfill taxes, while measures such as VAT changes hold more symbolic significance without making huge economic impacts. Strong bans and fees entail other potential risks, though, and need to also be considered from a social justice point of view.

Economic instruments should be measured against their long-term potential to change market and cultural barriers that sustain linear economies. When products become significantly more expensive, consumption tends to decrease. However, lessons from other sectors (such as the tobacco industry) demonstrate that even considerable price increases will not necessarily change consumer habits in the short term. The potential for incentivising longer-term changes in consumer attitudes needs to be considered when assessing the potential of economic instruments. Instruments that incentivise reuse, repairs, and rental services (be it through VAT reductions or vouchers, for example) can help to steer attitudes and behaviour in a more sustainable direction.

The economic incentives for the technology and skills development needed for circular transformation should not be overlooked. Preventing waste generation and promoting reuse requires a transformation that challenges the skills development of individuals and organisations: technical, conceptual, and interpersonal skills are needed to replace the operating models of the linear economy. R&D funds, while providing unclear indications on direct short-term impacts on the markets, are an important building block in creating the skills needed.

Economic instruments are rarely significant enough, when analysed in isolation, but do earn their place in an effective policy mix. One of the key findings of the case study is that policy makers need to decide on a 'toolbox' with a sufficient number of different measures, rather than just relying on one specific measure to bring about significant change. This does not mean that the instruments are not important enough to implement. Building on cumulative impacts and policy tools combining regulation, economic incentives, and information steering will bring about systemic change. The most significant progress toward the circular economy is achieved by aligning EPR with regulation and economic steering, as well as informational guidance, to create an enabling and favourable environment for the circular economy. While financing the circular economy is a key aspect of the policy mix for the circular economy, measuring the impact of promoting these new business models on waste prevention and the sustainable use of resources can be complex as impacts will usually be realised only in the longer term.

6. Summary and conclusions

Global climate and biodiversity challenges call for more effective measures and the circular economy provides tools for a more sustainable future. Vision 2030 of the Nordic governments aims at turning the Nordic region into the most sustainable and integrated region in the world. Making the shift to an efficient and effective circular economy will support this vision, and waste prevention policies are playing an increasingly significant role in facilitating this shift.

This study investigated effective measures and steering instruments for promoting waste prevention and reuse of municipal waste by households, businesses, and institutions in the Nordics. Within municipal waste, the waste fractions of textiles, consumer electronics, and plastic packaging were a specific focus area of this study. The measures analysed included, to varying extents, all levels of policy measures and steering instruments (regulatory, economic, voluntary, informative, EPR), but the emphasis was on economic steering instruments through a case study on textiles. Throughout the study, measures and policies were evaluated and analysed with a view to their impact (reducing the quantity of waste, reducing the adverse impacts of waste and/or harmful substance content) and feasibility (ease of implementation and monitoring as well as applicability in the Nordic region). The key conclusions are presented here.

Waste prevention is prioritised in the Nordic national waste plans, but we lack systematic measures to implement the policies. The current measures to promote waste prevention and reuse are primarily informative and voluntary, while regulatory measures, for example, still emphasise the end-of-life treatment of waste.

The transition to a circular economy requires a clear shift from recycling-focused policy to covering full product lifecycles. At EU level, environmental regulation is gradually shifting to cover the entire lifecycle of products more comprehensively. To prevent waste at the end-of-life phase, measures need to be targeted at the beginning of products' lifecycle (use of natural resources, design, production). To achieve this, stronger regulative and economic steering is needed to create an encouraging, well-aligned policy mix with systemic impact.

Regulatory measures and EPR are imperative. The transition from waste legislation to more comprehensive circular economy legislation has only recently begun. As each Member State implements EU regulations, the Nordic countries should foster knowledge-sharing and collaboration and drive systemic change across the Nordics. The upcoming EPR framework for textiles needs to be accompanied by supporting policy measures.

Economic measures are vital means to reinforce regulatory impact. France's legislative initiative targeted at fast fashion serves as an example of a regulatory tool that incorporates strict economic measures similar to taxes on harmful products, and marketing bans, into environmental regulation. Strong steering is necessary to accelerate the transition to the circular economy, and the textile sector has been found to be in need of more economic steering. While reduced VAT rates and voucher systems for repair services might not have as strong direct impacts on waste prevention as bans and fees, they are also vital elements of a healthy policy mix that incentivises reuse and prolongation of product lifecycles. The Nordic countries should continue developing enabling environments for circular business models in various ways, although these measures cannot be expected to solve the waste challenge in the short term.

Informative and voluntary measures are needed to support a change of mindset. Economic steering mechanisms require support from informational guidance. There is already a rich array of informative and voluntary measures for waste prevention in the Nordics that consumers have adopted widely, and a lot of good practices to be scaled. The Nordic governments can do more in sharing these examples and support their scaling across the region.

7. Policy recommendations

Achieving systemic change for a circular economy necessitates policy measures and steering instruments that target the entire product value chain rather than focusing solely on the end-of-life stage. We need well-targeted and robust measures that tackle the core issue of overconsumption of virgin natural resources. The following steps will help lead developments in this direction:

1. **Revise existing strategies:**
 - i. Review what waste prevention actions are already present in the national waste policies and how these are monitored and evaluated for impact.
 - ii. Assess what targets and measures for waste prevention in the production-consumption phase should be strengthened in the waste plan and exchange knowledge between the countries on this.
2. **Aim high, start with easy steps:**
 - i. Keep the focus on systemic change toward the circular economy and aim to identify impactful leverage points for policy actions.
 - ii. Assess which of the 'low-hanging fruit' measures identified in the study could be easily implemented.
 - iii. Implement a couple of these at Nordic level, facilitating joint monitoring and evaluation of impacts.
3. **Anticipate and make the change:**
 - i. Discuss how the Nordic countries can share experiences and work together on interpreting and implementing upcoming EU regulations in the Nordic countries.
 - ii. Discuss which of the economic instruments reviewed in this report would best support and strengthen the forthcoming EPR schemes, to ensure that they can make a real difference.
4. **Provide clear messages:**
 - i. Use information steering as a necessity for achieving the needed behavioural shift in overproduction and consumption patterns. While most economic instruments (when studied in isolation) might not have massive impacts in terms of savings or environmental benefits, they can drive a shift when used in combination.
 - ii. Discuss which economic steering instruments would provide strong messages of political will and choose to start with these.

5. **Pilot a toolbox of economic steering instruments that have been tested elsewhere, using the examples analysed in this study, for example:**
- i. Enforcing eco-fees on unsustainable products (which drive excessive use of natural resources or where the origin and material cannot be tracked).
 - ii. Enforcing tax exemptions or subsidiary systems (like vouchers) for repair services, strengthening the message that reuse is politically supported.
 - iii. Consider lowering VAT for second-hand products (strengthening the message that reuse is politically supported).
 - iv. Driving EPR systems to more directly support waste prevention rather than merely covering waste management costs of products.
 - v. Continue targeting innovation and business funding towards developing viable business models that are decoupled from increased material use.

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Annex 1: Full list of 50 different measures from the literature review

Waste prevention measure/ steering instrument	Description	Country
Sharing economy activities by municipalities – information sharing on local businesses that promote the sharing economy	Several municipalities support the sharing economy activities in their region, through means such as providing information on sharing economy related businesses in the area (e.g. repair services).	Finland
Sharing economy activities by municipalities – libraries	Several municipalities support sharing economy activities in their region. Activities related to our scope include lending of different goods by libraries	Finland
Food waste reduction campaign, Food Waste Week, voluntary measure	The goal of Food Waste Week is to stimulate discussion about food waste, minimise food waste and increase the extent to which food is valued. There are marketing materials and tips to help different kinds of organisations, municipalities, and consumers to participate. Held once a year.	Finland
Green deal: Public procurement criteria to reduce harmful substances in goods purchased for kindergartens	The Finnish municipality of Tampere, together with Tuomi Logistiikka logistics firm, signed a green deal promising to reduce the amount of harmful substances in goods (mostly toys for indoor and outside use and cleaning agents) purchased for day care use. Procurement criteria have been developed; implementation is ongoing.	Finland
The public administration commits to waste reduction in its own operations	The public administration must act as an example for private actors and various industries. Goals for reducing the amount and harmfulness of waste could be set, for example, for shared spaces, waste-free operations and events, and reuse of goods. Defining the goals and actions of the public administration can be done, for instance, through a societal commitment to sustainable development (https://kestavakehitys.fi/sitoumus2050) or as part of environmental systems.	Finland
Avoiding single-use takeaway food packaging	Finnish startup Kamupak offers reusable packaging solutions for takeaway food and drinks.	Finland
Red labelled food products	Grocery stores in Finland sell food products that are about to expire with a discount that is marked with red labels. This is a very popular system and reduces the amount of food waste.	Finland
Material efficiency commitment for the food and packaging industries	The food and packaging industries and the food retail sector made the first Material Efficiency Commitment 2019–2021 in Finland, encompassing nearly the whole value chain. The general objective of the commitment is to improve the profitability and reduce the environmental impacts of food production, packaging, and distribution. The food retail sector has set more detailed targets, and their aim is to reduce food waste by 13% and raise the recycling rate from 74% up to 78% during the commitment period. A further goal is to reduce food waste by 50% by 2030, for example, in addition to reducing the amount of plastic in the containers and increasing reuse of packaging.	Finland
Voluntary agreements between the state, municipalities, and various industries	The Finnish National Waste Plan presents green deals as a potential waste prevention measure. Green deals are voluntary and time-limited agreements aimed at finding solutions to challenges such as climate issues, loss of biodiversity, overconsumption of natural resources, and promotion of circular economy.	Finland, the Netherlands

PRIO and the Swedish Centre for Chemical Substitution	The Swedish Chemicals Agency has developed a tool called PRIO, where users can search a database of chemical substances and their hazardous properties. It is also possible to search for different materials and get information on which chemical substances can exist in different materials. The Research Institutes of Sweden (RISE) were also given the task by the government of creating a centre for chemical substitution, with the purpose of offering information, education, and tools to support the industry and public institutions work with substitution of hazardous chemicals in products and materials.	Sweden
Municipalities' responsibility for informing	Since 2020, municipalities have been obligated to inform households of their waste prevention activities. The Swedish Environmental Protection Agency (EPA) has produced guidelines on how information can be provided.	Sweden
Waste prevention competition	The region of Gothenburg is organising a national waste prevention competition. Interested households in participating municipalities are challenged to change their lifestyle and reduce their waste production as much as possible for a six-month period. A total of 50 municipalities participated in 2021–2022 and the households involved reduced their waste by 45% on average. Participating households get different challenges and are invited to information meetings to share experiences as tools in the competition.	Sweden
Textile & Fashion 2030	A national platform for sustainable fashion and sustainable textiles. The platform is run by Smart Textiles, part of Science Park Borås at the University of Borås in collaboration with various universities, research institutes, the fashion industry, and retail sector operators. The platform offers education, activities and tools for measuring sustainability.	Sweden
Strategic innovation programmes	Sweden has 17 Strategic innovation programmes. RE:SOURCE contributes fundings for innovation within waste prevention. RE:SOURCE started in 2016 and has supported around 250 projects with around MSEK 50. Private companies, research institutes, universities and public sector operators can apply for funding.	Sweden
Internal reuse platform	Several municipalities have created a digital and/or physical internal reuse platform for furniture and other equipment. It is either mandatory or recommended to search for second-hand equipment before purchasing new products. In many municipalities, the system is called TaGe (take and give).	Sweden
Reduced VAT for repairing services	VAT on repair services for bicycles, shoes, leather products, clothes and textiles was lowered to 12% from the general level of 25% in 2017. In 2022 it was further lowered to 6%. On 1 April 2023, the VAT level was changed back to 12%.	Sweden
Voluntary waste reduction commitment 25/25 goal	Avfall Sverige – the Swedish waste management association has challenged municipalities to a voluntary commitment to reduce the amount of food and incineration waste by 25% by 2025, compared with 2015. By 2022, 91 municipalities had accepted the commitment.	Sweden
Waste prevention in Gothenburg	Gothenburg Municipality has in its waste management plan set a target of reducing the amount of waste from its own institutions by 40% per employee. The municipality has developed extensive guidance, checklists, and routines for its different institutions, such as schools, offices, care institutes, etc. All tools and materials are free to use by other municipalities.	Sweden
Waste treatment tax	A tax on landfilling (2000–present) and incineration (2006–2010 and 2020–2022) of waste. The taxes have been introduced partly with the motive of promoting recycling and reuse of waste. The incineration tax was discontinued as of 2023.	Sweden
Reusable bags in grocery stores	Reusable bags contribute to less one-time-use of plastic bags in grocery shops.	Norway

CO ₂ tax on waste combustion (implemented in 2022)	For 2023, the Norwegian Parliament adopted an increase of NOK 155 per tonne of waste incineration, which will lead to a total CO ₂ tax for waste incineration of NOK 261/tonne of waste. Since Norway differentiates between so-called quota-obliged and non-quota-obligated sectors, the EEA must approve the new increase in the fee before it can come into force in Norway.	Norway
Waste fee	Each municipality must determine fees to cover costs associated with the waste sector, including collection, transport, reception, storage, treatment, follow-up, etc. The costs must be fully covered through the fees. These costs cover both capital costs and operating costs. For waste that the municipality has a duty to collect, receive and/or process according to paragraph 29, 30 or 31, the fee must not exceed the municipality's costs.	Norway
Rekoringen	Offers local food from local farms. Reduces food waste from cafés by sending fruits and vegetables to farms close by.	Norway
Refill/ Påfyll – Klar (Orkla)	På(fyll) is a circular service for household goods. As part of the service, refilled household items are delivered to the door.	Norway
Fretext	Largest physical second-hand store	Norway
Finn.no	Finn.no is the largest second-hand platform in Norway for both private persons and companies.	Norway
Too Good To Go app	Reducing food waste from restaurants, cafés, hotels etc. by selling left-over food and drinks through the Too Good To Go app.	Norway
'Best before but not bad after'	A stamp on food and drink items in grocery stores, to help the consumer to understand that some food and drink still can be safely consumed after the expiration date.	Norway
Reuse stations (Miljøstasjoner)	Reuse stations for used items that are not damaged. It is free to pick up items from these stations.	Norway
Fjong AS	Subscription solution for an online clothes and shoes rental platform	Norway, Denmark
Reuse – the Danish deposit system for glass bottles, plastic bottles, and cans	In Denmark, there is a deposit included in the price of a large number of types of packaging containing beverages. More than nine out of ten bottles and cans with a deposit are returned. A total of 1.9 billion bottles and cans were returned in 2021. Around 94% of containers collected via the deposit scheme are recycled into new bottles and cans. The remaining 6% are used for other types of packaging. Some examples of included drinks: ● beer ● carbonated drinks (e.g. soft drinks with an alcohol content of 0–0.5 per cent) ● fermented beverages other than wine and fruit wine (e.g. cider, with an alcohol content of less than 10 per cent) ● mixed products based on spirits, wine or other fermented beverages and mixed with beverages such as soda, cider or juice (e.g. alcoholic soda with an alcohol content of 0.5–10 per cent) ● mineral water, spring water, water, lemonade, iced tea and similar, which are immediately ready to drink and without carbonation ● concentrated juice or cordials that must be mixed with water before being drunk ● pure juice, juice or must of fruit or vegetables ● smoothies (without milk).	

	The consumer pays for the deposit when buying the item in the store, as part of the price. They can then get the deposit back in the store when handing in the empty container. Deposit A = DKK 1 (glass bottles and metal cans under 1 litre) Deposit B = DKK 1.50 (plastic bottles under 1 litre) Deposit C = DKK 3 (all bottles and cans with a capacity of 1–20 litres)	Denmark
Reuse - clothes	Several different NGOs collect clothes in Denmark. The clothes are then sorted and sold. The best-known player in the market is the Red Cross. The money goes to various aid projects.	Denmark
Waste prevention – plastic	From 1 January 2021, you must pay a minimum of DKK 4 if you wish to have a new plastic carrier bag when, for example, shopping in a supermarket, and thin plastic carrier bags, for example for pizzas, were banned regardless of what they are made of.	Denmark, Sweden
Waste prevention – food	The organisation Stop Spild Af Mad is a non-profit, voluntary consumer movement that fights food waste. The association engages in extensive cooperation with politicians at national and municipal level. In many municipalities, the organisation ensures that local supermarkets can hand over food products that are about to pass their expiry date. The food is collected up and can be collected free of charge by people who need it.	Denmark
Nordic Swan Ecolabel	The Nordic Swan Ecolabel contains criteria that enforce a reduction in environmental impacts and hazardous substance content.	Denmark, Finland, Iceland, Norway, and Sweden
Scottish REVOLVE reuse mark	A voluntary accreditation to boost the quality of reusable items for resale. Shops can apply for accreditation but must meet the requirements, through means such as documentation, testing and certifying of products (if relevant), retail display, etc.	Scotland
Scottish carbon metric	A weighted tool applied to municipal waste, which produces a carbon-weighted result for municipal tonnage. The objective is to steer policy and implementation towards waste streams with the highest carbon content. So, it is not primarily to do with waste reduction by weight, but rather weight reduction by climate effect. It was introduced in 2010 and initially made mandatory alongside EU recycling targets for municipalities to meet. However, the mandatory nature was withdrawn amidst complaints from municipalities that insufficient consultation had been undertaken. It is now voluntary, but all annual waste reports feature a 'carbon metric' version. The initial effect it had was significant. Overnight, municipalities strove to move collections to waste streams with the highest carbon content. However, these were not always compatible with existing infrastructure and services were geared towards weight-based reporting. The tool is available for anyone to use and is based on LCA data that is updated annually. https://www.zerowastescotland.org.uk/resources/what-carbon-metric	Scotland
Consumer surveys	Conducting surveys on consumers (households, business) on how they perceive waste and what society actually thinks, answering questions such as what are the problems, what can be done, do people realise they are being wasteful, and what resources are needed. The outcome of societal surveys can help direct policy to where it is needed and reach a broad cross-section of society that normal consultations do not (e.g. consultations that are conducted on draft legislation and usually only target stakeholders rather than society at large).	Scotland

Making Things Last – Scottish national circular economy and reuse plan	A national plan for the circular economy and extension of goods' lifespan. How different sectors should collaborate and the work packages needed to advance the circular economy in Scotland	Scotland
The Repair Network	Creation of repair networks so that goods can be fixed rather than thrown out.	UK
Strict rules on the use of household and business waste bins	Stringent rules are applied to the use of household and commercial waste bins – e.g. maximum permitted, no overfilling, no 'side waste'. Rigidly enforced, the idea is to restrict bin capacity and therefore compel householders and businesses to reduce waste.	UK
Kiel Zero Waste City Programme: Example action: Nappy service/promotion of reusable nappies	In order to make the switch easier for Kiel residents, the state capital supported the purchase of reusable nappies in a pilot project with a subsidy of EUR 200. After a very successful first year, the council decided to continue the reusable nappy funding for 2023.	Germany
Berlin green procurement	In order for the state of Berlin to focus on procurement that promotes and requires environmentally compatible services and products on a binding basis, the Administrative Regulation on Procurement and the Environment came into force on 1 January 2013 (last updated at the beginning of 2019). This applies to all public procurement agencies in Berlin. With performance sheets, concrete ecological requirement criteria are made binding for the procurement of various products, construction, and services. Calculation tools for calculating lifecycle costs are also included. In terms of waste prevention, the procurement of beverages in disposable packaging, disposable tableware and cutlery in canteens and refectories and at large events, as well as products whose cardboard transport packaging does not contain at least 70 per cent recycled material, is not permitted. In the case of products for IT equipment, among other things, the availability of spare parts and the possibility of repairing items or expanding their performance with replaceable components and expansion interfaces must be guaranteed even several years after production has ceased.	Germany
Kiel Zero Waste City Programme	The twelve measures of the Zero Waste concept aim to reduce food waste in various sectors.	Germany
Subsidies for investments and reuse	Flanders has taken several steps to prevent the production of waste for instance, by giving support to businesses by providing subsidies for reuse. OVAM (the Public Waste Agency of Flanders) also provides investment subsidies to municipalities and inter-municipal associations for waste prevention, separation, and treatment (e.g. to build drop-off centres and compost plants or implement pay-as-you-throw systems).	Belgium
Rest-o-Pack initiative	In the Brussels-Capital Region, the Rest-o-Pack initiative allows customers in restaurants to take their leftovers home. For those who are interested, the region provides restaurants with a starter pack containing 100 cardboard boxes, awareness-raising material, and window sticker to signal to customers that they are participating in the initiative. Rest-o-Pack is one of the measures implemented by the Good Food Strategy.	Belgium
Repair Together	A social association that supports local and citizen initiatives for greater sustainability and circularity. They have a network of Repair Cafés in Brussels and Wallonia. All kinds of items can be repaired at Repair Cafés, from small broken electrical appliances to trousers with holes.	Belgium

Weight-based pay-as-you-throw (PAYT) pricing	Weight-based PAYT is a waste management system where the cost of waste disposal is determined by the weight of the waste generated by individual households or businesses. This encourages waste reduction and recycling because individuals or organisations have a financial incentive to minimise the amount of waste they generate. It is an alternative to fixed-fee waste collection systems or volume-based waste fees. The system usually involves the use of specially designed waste containers or bins that weigh the waste being disposed of. Alternatively, waste bins can be weighed when collected. The weight of the waste is recorded, and the corresponding fee or charge is applied based on a predetermined rate per unit of weight.	Belgium, Sweden, Germany
Informational strategy to effectively reduce household waste	"The informational intervention strategy consisted of a range of interventions (see Table 2). During the information evening (see above), participating households were asked to sign a form indicating that they would participate in the study and fill out the questionnaires as part of the evaluation. About 80% of all participating households attended this information evening and signed the form. Via an online environment that participating households could log in to, they received tips on how to separate, recycle, and reduce their waste, and they had the opportunity to share tips with other participants as well. ROVA provided five tips. Furthermore, households received 14 weekly assignments in the online environment aimed at providing them with insight into their waste behaviour. In the online environment, participating households could also report the amount of residual waste they produced per week. The reported values could be compared to the average reported amount of residual waste by all households in the area and the reported values of other households. The intervention started on 1 January 2015, and lasted for 100 days, until 10 April 2015."	The Netherlands
Circularity support programmes for SMEs (The Front Runner Project, CIRCO)	In 2019, the municipality initiated the Front Runner Project (Koploperproject) to support SMEs in the implementation of more sustainable and circular business models. Over the course of a year, expert advisers of companies define a 'sustainability profile' based on which each company establishes an action plan and a communication strategy. The project foresees networking events to promote the exchange of experiences and create a permanent network among members. CIRCO is a programme supported by the Dutch Ministry of Infrastructure and Water Management. CIRCO supports creatives and professionals within the manufacturing industry to create circular business. Entrepreneurs and industry professionals can attend a three-day Circular Business Design Track. Designers can participate in a CIRCO one-day Circular Design Class. The idea is to identify business opportunities and use circular design strategies to redesign participants' plans, products, services, and business models.	The Netherlands
'Outsmart the waste' initiative for teachers and schools	Initiative of the Slovak Environment Agency for schools, with specific activities throughout the school year, always focusing on a particular theme. This initiative is very popular and used by schools, with practical proposals for everyday life. The initiative also helps teachers to promote environmental themes more suitable for students, with activities for students.	Slovakia

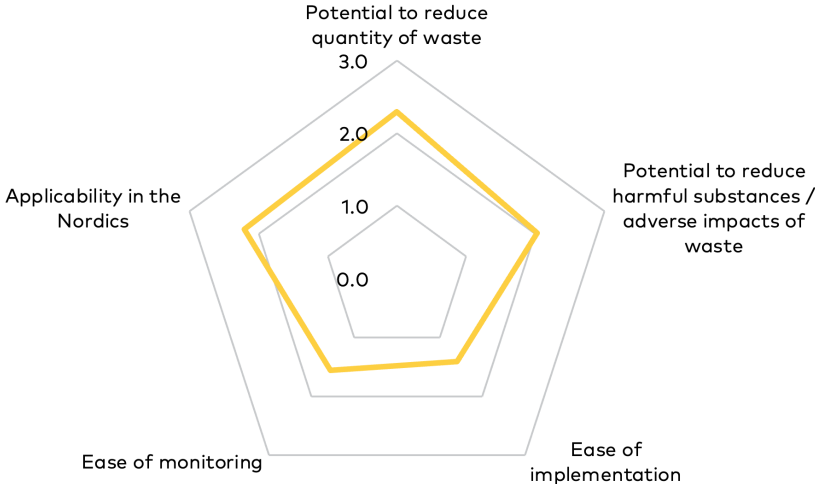
Annex 2: Expert evaluations of effectiveness and feasibility of policy measures promoting waste prevention and reuse

Combination	Potential to reduce quantity of waste (average)	Potential to reduce harmful substances/adverse impacts of waste	Ease of implementation (average)	Ease of monitoring	Applicability in the Nordics	Average (quantity, ease of implementation)	Average (all)
Material efficiency commitments	2.32	1.8	1.7	1.7	2.1	2.00	1.92
Concrete ecological requirements for public procurements	2.29	2.0	1.4	1.6	2.2	1.85	1.90
Too Good To Go app	2.09	1.0	2.2	1.5	2.6	2.13	1.89
Municipal waste prevention plans	2.06	1.4	1.3	1.7	2.1	1.66	1.70
Subsidies for waste prevention and reuse	1.97	1.4	1.5	1.6	1.9	1.74	1.68
'Best before but not bad after' stamps	1.91	0.8	2.5	1.4	2.7	2.21	1.86
Reuse stations (Miljøstasjoner)	1.91	0.9	2.1	1.5	2.6	2.01	1.79
Consumer movements against food waste	1.88	1.0	1.4	1.2	2.3	1.63	1.56
Second-hand platforms for private persons and companies	1.85	0.5	2.6	1.6	2.7	2.21	1.85

Voluntary waste reduction commitments	1.76	1.1	1.8	1.9	2.2	1.79	1.75
Weight-based pay-as-you-throw (PAYT) pricing	1.70	0.9	1.0	1.9	2.0	1.35	1.50
Reduced VAT for repairing services	1.56	0.8	1.8	1.5	2.4	1.69	1.61
Carbon metric tool to evaluate climate impacts of waste	1.09	0.9	1.0	1.3	1.7	1.06	1.22
Incineration tax	1.09	0.8	1.6	2.0	1.9	1.37	1.48
Ecolabels such as the Nordic Swan	0.90	1.9	1.8	1.5	2.5	1.35	1.72

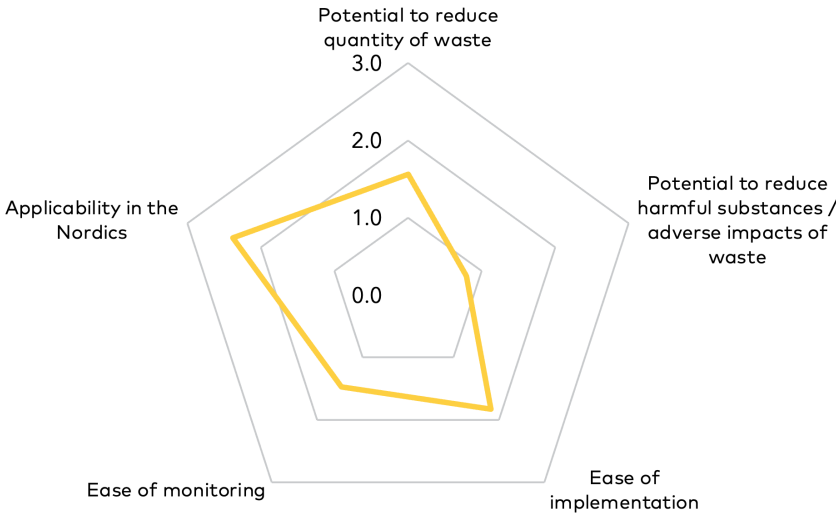
Annex 3: Policy cards for the 15 measures analysed in-depth

Concrete ecological requirements for public procurement

	
Description	In order for the state of Berlin to focus on procurement that promotes and requires environmentally compatible services and products on a binding basis, the Administrative Regulation on Procurement and the Environment came into force on 1 January 2013 (last updated at the beginning of 2019). This applies to all public procurement agencies in Berlin. With performance sheets, concrete ecological requirement criteria are made binding for the procurement of various products, construction, and services. Calculation tools for calculating lifecycle costs are also included. In terms of waste prevention, the procurement of beverages in disposable packaging, disposable table-ware and cutlery in canteens and refectories and at large events, as well as products whose cardboard transport packaging does not contain at least 70 per cent recycled material, is not permitted. In the case of products for IT equipment, among other things, the availability of spare parts and the possibility of repairing items or expanding their performance with replaceable components and expansion interfaces must be guaranteed even several years after production has ceased.
	
Waste fraction(s)	Any
Responsible party	Public authorities
Notes about effectiveness and feasibility	There was general agreement that public procurement has a lot of potential, but there was a suggestion that the requirements should be based on factors like Life Cycle Assessment (LCA) to avoid greenwashing. Some respondents believe that for public procurement to be effective in addressing environmental concerns, clear and prioritised criteria are essential, especially when climate, environment, and nature may conflict. The responses also highlighted the importance of environmental factors having values that can outweigh immediate monetary considerations in public procurement. This suggests a shared belief that environmental considerations should hold significant weight but may differ in how much weight they should carry compared to monetary concerns.
References	European Environment Agency. (2023) . Waste prevention country profile – Germany. Available at: https://www.eea.europa.eu/themes/waste/waste-prevention/countries

Reduced VAT on repairing services

	
Description	IVAT on repair services for bicycles, shoes, leather products, clothes and textiles was lowered to 12% from the general level of 25% in 2017. In 2022 it was further lowered to 6%. On 1 April 2023, the VAT level was changed back to 12%.
Waste fraction(s)	Clothes, textiles
Responsible party	Public authorities
Notes about effectiveness and feasibility	Some respondents believed that a greater reduction in VAT is necessary to provide a more significant incentive for repair activities. Concerns were raised about ensuring that the reduction in VAT translates to lower service prices, as there is a fear that companies might maintain the same prices and benefit from the tax reduction. For example, in Finland, there is a political consensus on the need for this measure, but its implementation is seen as challenging due to the potential for companies not passing on the savings to consumers. The potential impact on waste reduction was acknowledged, but its magnitude remains uncertain. The issue of it being cheaper to buy new items rather than repair is highlighted, and there are questions about how to legally define and implement the measure.
References	Naturvårdsverket. (2018). Att göra mer med mindre. Nationell Avfallsplan och avfallsförebyggande program 2018-2023. https://www.naturvardsverket.se/publikationer/6900/att-gora-mer-med-mindre/



Weight-based pay-as-you-throw (PAYT) pricing



Description

Weight-based PAYT is a waste management system where the cost of waste disposal is determined by the weight of the waste generated by individual households or businesses. This encourages waste reduction and recycling because individuals or organisations have a financial incentive to minimise the amount of waste they generate. It is an alternative to fixed-fee waste collection systems or volume-based waste fees.

The system usually involves the use of specially designed waste containers or bins that weigh the waste being disposed of. Alternatively, waste bins can be weighed when collected. The weight of the waste is recorded, and the corresponding fee or charge is applied based on a predetermined rate per unit of weight.

Waste fraction(s)

Any

Responsible parties

Public authorities, waste management companies

Notes about effectiveness and feasibility

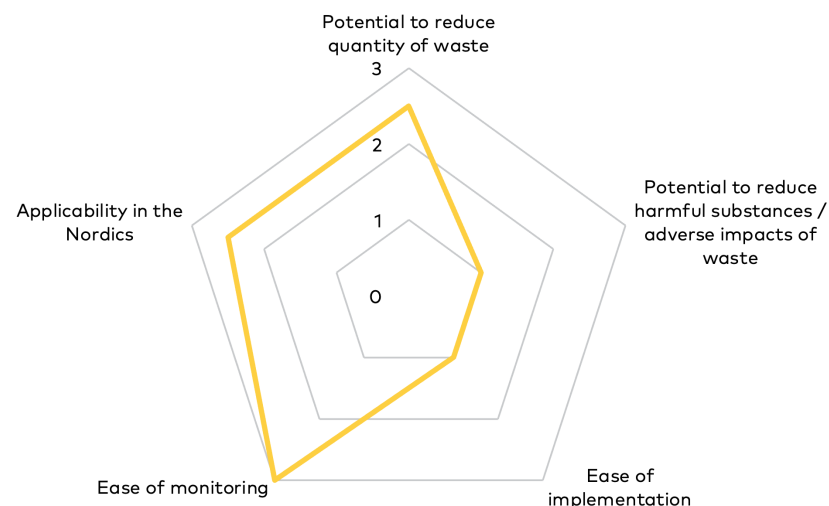
There was a consensus that PAYT can be effective in waste management and promoting recycling but also recognition of the challenges, costs, and potential limitations associated with its implementation. Any PAYT scheme must be supported by a well-developed collection infrastructure, information for participants, and an appropriate transparent pricing policy. Transitioning to weight-based PAYT may require significant changes in collection equipment and incur high costs.

Additionally, implementation of weight-based PAYT schemes requires careful consideration of the operational environment, e.g. who is responsible for the waste collection and what the regulations are affecting the implementation. Weight is not the only parameter relevant for implementing the polluter pays principle because the quality of collected waste is also equally relevant.

References

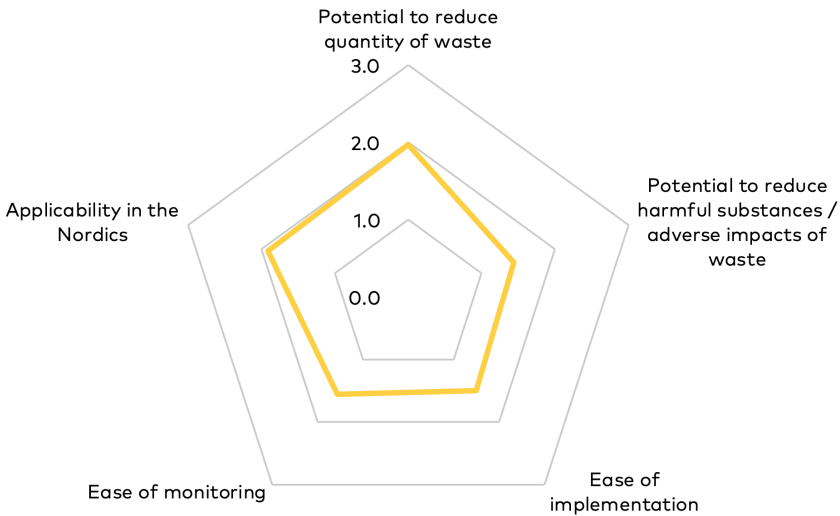
Ukkonen, A., & Sahimaa, O. (2021). Weight-based pay-as-you-throw pricing model: Encouraging sorting in households through waste fees. *Waste Management*, 135, 372-380.

Salmenperä, H., Dahlbo, H., Turunen, S. et al. (2019). Punnitukseen perustuva kotitalouksien jätemaksujärjestelmä: Toteuttajan tietopaketti. Available at: <http://urn.fi/URN:ISBN:978-952-361-000-2>



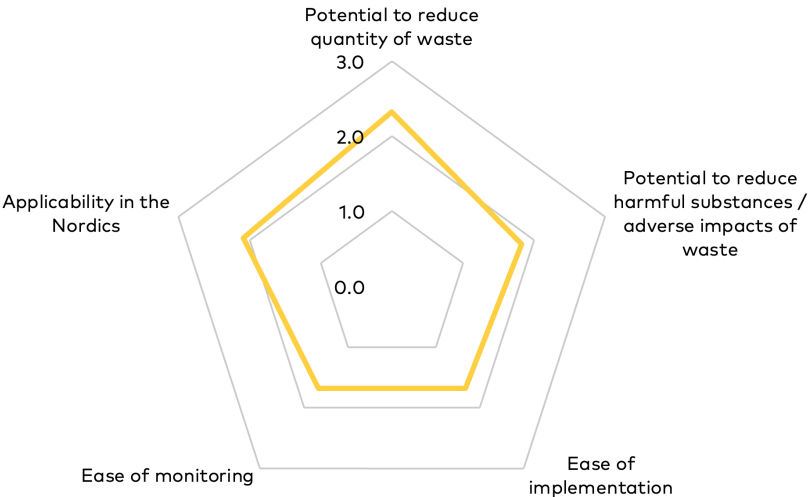
Subsidies for waste prevention and reuse

Description	Flanders has taken several steps to prevent the production of waste for instance, by giving support to businesses by providing subsidies for reuse. OVAM (the Public Waste Agency of Flanders) also provides investment subsidies to municipalities and inter-municipal associations for waste prevention, separation, and treatment (e.g. to build drop-off centres and compost plants or implement pay-as-you-throw systems).
Waste fraction(s)	All
Responsible party	Government
Notes about effectiveness and feasibility	Some respondents found the concept interesting and believed it would be well-suited for Nordic countries. One respondent emphasized that the success of such an instrument depends on the balance between costs and bonuses. This measure has potential to have a real impact but it also requires new funding, extra work and resources.
References	European Environment Agency. 2023. Waste prevention country profile - Belgium.



Material efficiency commitments

	
Description	The food and packaging industries and the food retail sector made the first Material Efficiency Commitment 2019–2021 in Finland, encompassing nearly the whole value chain. The general objective of the commitment is to improve the profitability and reduce the environmental impacts of food production, packaging, and distribution. The food retail sector has set more detailed targets, and their aim is to reduce food waste by 13% and raise the recycling rate from 74% up to 78% during the commitment period. A further goal is to reduce food waste by 50% by 2030, for example, in addition to reducing the amount of plastic in the containers and increasing reuse of packaging.
Waste fraction(s)	The food chain, i.e. food waste and packaging, which are environmentally heavy
Responsible parties	Government, businesses
Notes about effectiveness and feasibility	The experts mentioned that it is easy to make a voluntary material efficiency commitment, but it is more challenging to actually reach goals and have an impact. The challenge is to ensure that the commitments made by parties are ambitious enough. Reporting might also be difficult.



Reuse stations (Miljøstasjoner)



Description

Reuse stations for used items that are not damaged. It is free to pick up items from these stations.

Waste fraction(s)

Mostly furniture, electronic products, and textiles

Responsible parties

Municipal authorities, citizens

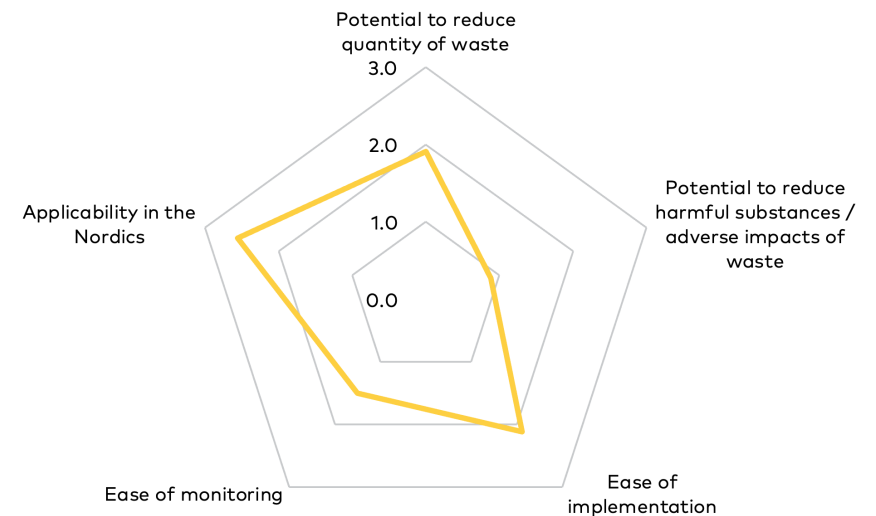
Notes about effectiveness and feasibility

According to the Norwegian example, the same operating model can be copied to several municipalities. Most Norwegian municipalities have this solution already. Some respondents expressed significant concerns about who is responsible for the safety of reusable products

Respondents highlighted the importance of easily accessible locations for these stations, with a preference for placement in city centres and suburbs. They also emphasise the need for cleanliness, attractiveness, and polite staff at these locations. Some experts express scepticism about the ability of reuse stations to make a significant difference. They suggest that promoting circular business models might be more effective in promoting sustainability.

References

BIR. (2023). Hent gratis i brukthallen! Available at: <https://bir.no/bli-kvitt-boss/vaare-brukthaller/>



Second-hand platforms for private persons and companies



Description

Finn.no is the largest second-hand platform in Norway for both private persons and companies. It is exceptionally broad in scope, including everything from properties to various commodities. There are similar platforms (with narrower scope) in other Nordic countries (such as Tori.fi in Finland).

Waste fraction(s)

All

Waste prevention instrument

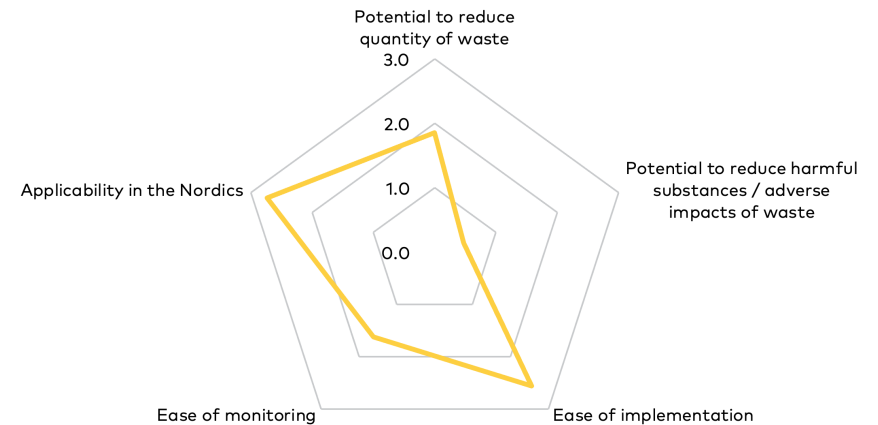
Business platform connecting people's needs and unused resources

Responsible party

Businesses

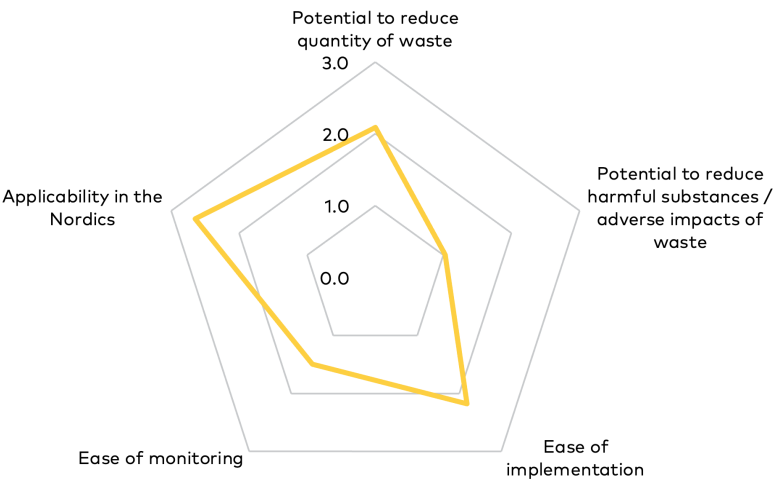
Notes about effectiveness and feasibility

Many respondents acknowledge that second-hand platforms can help increase the demand for reusable products and prolong their lifespan. However, there is a consensus that these platforms do not always reduce waste or change individuals' behaviour significantly. It was noted that selling/buying items on second-hand markets may involve a risk of a rebound effect, where new purchases are "morally licensed". It is also a bit unclear how to expand the potential of the platforms as there are already various forms of second-hand platforms, from Facebook groups to private businesses.



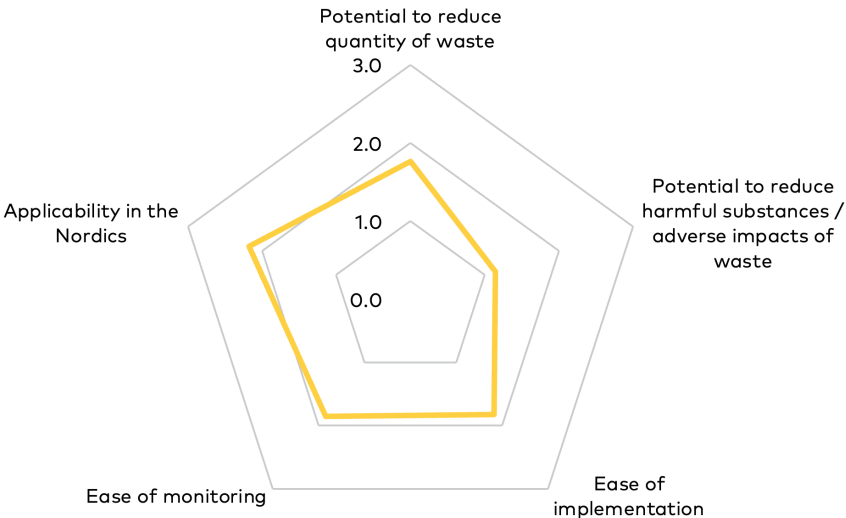
Too Good To Go app

	
Description	In Norway, food waste is reduced from restaurants, cafes, hotels etc., by selling surplus foods and drinks through the Too Good To Go app. There are similar examples from other Nordic countries (e.g. ResQ in Finland).
Waste fraction(s)	Food waste
Responsible party	Businesses
Notes about effectiveness and feasibility	The initiative was generally seen as a positive step towards reducing food waste and financial losses for businesses but there were concerns about its ability to address the underlying causes of food waste and the potential for consumer waste due to uncertainty about the items received. Some experts felt that the effectiveness of these kind of initiatives can vary depending on the provider, and there are challenges in measuring the true impact on waste reduction.
References	https://www.toogoodtogo.com/



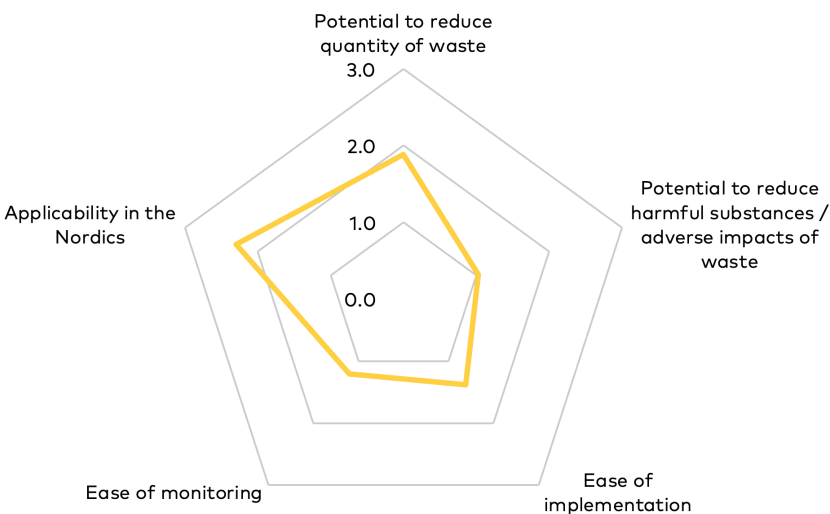
Voluntary waste reduction commitments

	
Description	Avfall Sverige – the Swedish waste management association has challenged municipalities to a voluntary commitment to reduce the amount of food and incineration waste by 25% by 2025, compared with 2015. By 2022, 91 municipalities had accepted the commitment.
Waste fraction(s)	Biodegradable kitchen and canteen waste Mixed municipal waste
Responsible party	Municipality
Notes about effectiveness and feasibility	There were differing opinions regarding the effectiveness of voluntary commitments in waste management. While some view them as positive and see potential in expanding their scope, others are sceptical and stress the importance of concrete responsibilities and regulations in achieving waste management goals. The potential impact of voluntary commitments is difficult to assess at a broader national or Nordic level. Scaling is easy but needs of course work from each municipality.
References	Avfall Sverige. (2022). En bit på väg mot 25/25-måle. Available at: https://www.avfallsverige.se/aktuellt/nyheter/en-bit-pa-vag-mot-25-25-malet/



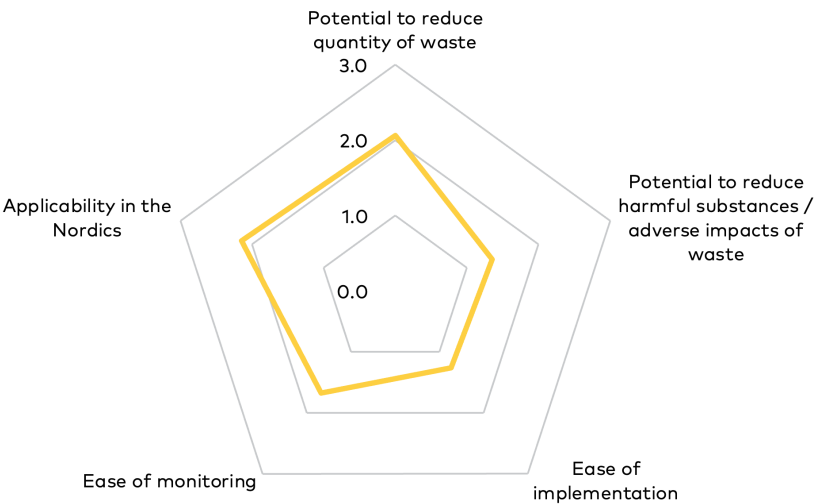
Waste prevention – food

	
Description	In the Nordics, there are several non-profit, voluntary consumer movement that fights food waste, among other things by ensuring that local supermarkets can hand over food products that are about to pass their expiry date. The food is collected up and can be collected free of charge by people who need it.
Waste fraction(s)	Food waste
Responsible party	NGO
Notes about effectiveness and feasibility	The survey responses revealed a range of opinions, with some emphasising the importance of addressing the root causes of food waste and others highlighting the value of practical solutions and successful citizen movements. Actions against food waste were seen as important as food waste typically causes a lot of environmental impacts. Different NGOs are already working on the topic in different countries. Food safety must be always guaranteed. While consumers movements were seen as a valuable method for handling surplus food, they do not necessarily tackle the underlying issue of overproduction and overstocking, thereby underscoring the importance of addressing the fundamental causes of food waste rather than merely concentrating on its management.



Waste prevention in Gothenburg

	
Description	Gothenburg Municipality has in its waste management plan set a target of reducing the amount of waste from its own institutions by 40% per employee. The municipality has developed extensive guidance, checklists, and routines for its different institutions, such as schools, offices, care institutes, etc. All tools and materials are free to use by other municipalities.
Waste fraction(s)	All
Responsible party	Municipalities
Notes about effectiveness and feasibility	The survey responses revealed varying opinions on the effectiveness and challenges of waste prevention targets in municipal contexts. In summary, the differing opinions revolved around the effectiveness and practicality of waste prevention targets, with some supporting ambitious goals and others emphasising the need for flexibility and considerations of the specific sector or municipality. Additionally, concerns about administrative burdens and funding constraints were also highlighted. The effectiveness may be low if there are no real consequences for inaction.



'Best before but not bad after' stamps



Description

A stamp on food and drink items in grocery stores, to help the consumer to understand that some foods and drinks still can be safely consumed after the expiration date.

Waste fraction(s)

Food waste

Responsible party

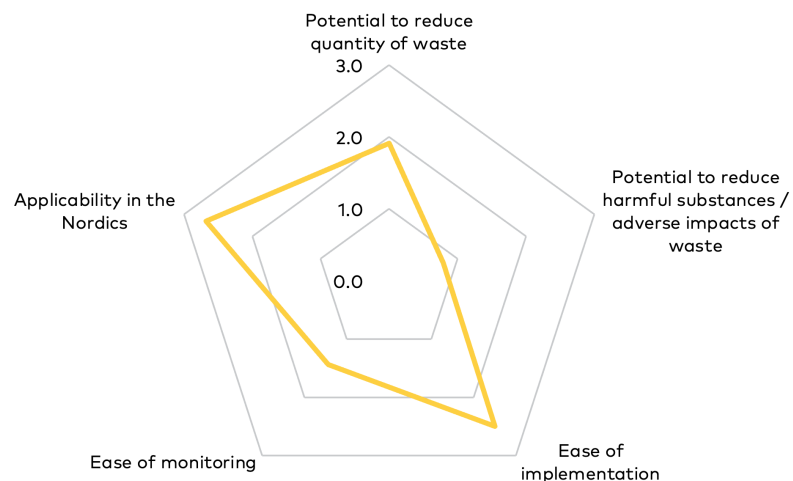
Retail sector

Notes about effectiveness and feasibility

Most the food waste originates from the households. If the label were to prevent throwing food away, the potential is high, but monitoring is difficult. No apparent regulatory barriers identified. This measure was evaluated to be kind of nudging that has proved effect.

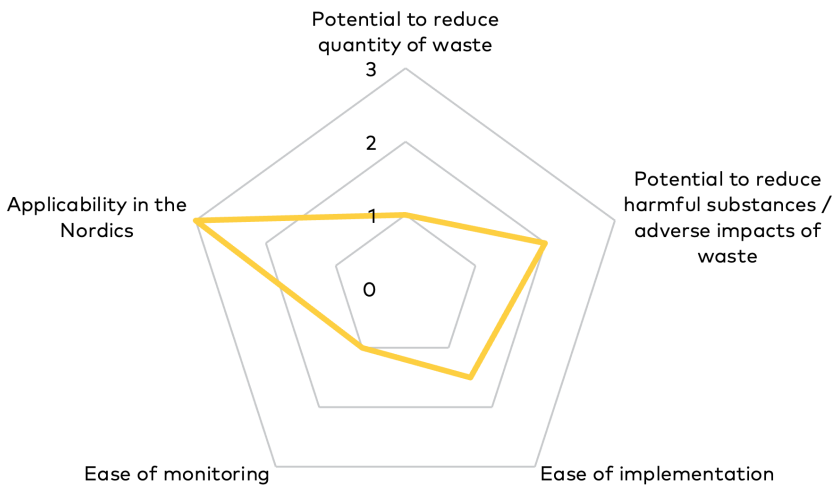
References

Spis opp maten. (2023). Best før, men ikke dårlig etter!. Available at: <https://www.spisoppmaten.no/single-post/2018/01/09/best-f%C3%B8r-men-ikke-d%C3%A5rlig-etter>



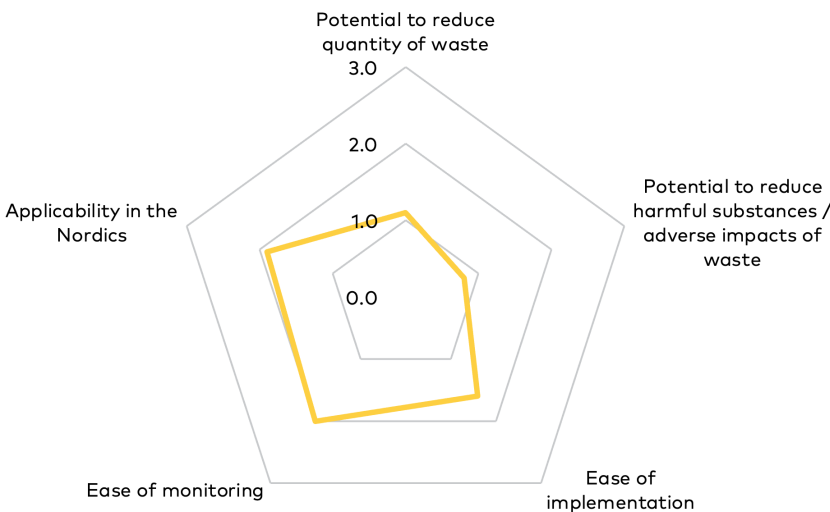
Nordic Swan Ecolabel

  	
Description	The Nordic Swan Ecolabel contains criteria that enforce a reduction in environmental impacts and hazardous substance content.
Waste fraction(s)	Several
Responsible party	Governments
Notes about effectiveness and feasibility	Survey respondents felt that the effect of ecolabels depends on the consumers' willingness to buy certified products. Product groups might also be too narrow for impact.



Waste treatment tax

	
Description	A tax on landfilling (2000–present) and incineration (2006–2010 and 2020–2022) of waste. The taxes have been introduced partly with the motive of promoting recycling and reuse of waste. The incineration tax was discontinued as of 2023.
Waste fraction(s)	All
Responsible party	Government
Notes about effectiveness and feasibility	Respondents' opinions vary, with concerns about adverse effects such as increased challenges in recycling and burdens on municipalities. Some argue it challenges waste incineration dependency, while others doubt its impact on waste reduction. There are concerns about waste export if taxes rise, conflicting with EU waste movement goals. Suggestions include targeting producers of non-recyclable products and exploring a middle ground for countries reliant on waste incineration for heat. The Swedish experience is cited as evidence of the tax's limited impact on waste.
References	https://skatteverket.se/download/18.96cca41179bad4b1aa991d/1633068526576/Utv%C3%A4rdering%20av%20avfallsf%C3%B6rbr%C3%A4nningsskatten.pdf



Scottish carbon metric



Description

A weighted tool applied to municipal waste, which produces a carbon-weighted result for municipal tonnage. The objective is to steer policy and implementation towards waste streams with the highest carbon content. So, it is not primarily to do with waste reduction by weight, but rather weight reduction by climate effect. It was introduced in 2010 and initially made mandatory alongside EU recycling targets for municipalities to meet. However, the mandatory nature was withdrawn amidst complaints from municipalities that insufficient consultation had been undertaken. It is now voluntary, but all annual waste reports feature a 'carbon metric' version. The initial effect it had was significant. Overnight, municipalities strove to move collections to waste streams with the highest carbon content. However, these were not always compatible with existing infrastructure and services were geared towards weight-based reporting.

The tool is available for anyone to use and is based on LCA data that is updated annually.
<https://www.zerowastescotland.org.uk/resources/what-carbon-metric>



Waste fraction(s)	All
Responsible parties	Government, municipalities
Notes about effectiveness and feasibility	Respondents expressed doubt about a waste optimisation tool's effectiveness, especially regarding substances beyond CO ₂ . There is skepticism about its impact without a focus on waste minimisation. The respondents emphasise the need for a holistic view on material footprints instead of solely focusing on CO ₂ .
References	https://www.gov.scot/publications/scotlands-zero-waste-plan-carbon-metric-guidance/

About this publication

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Nordic co-operation is one of the world's most extensive forms of regional collaboration, involving Denmark, Finland, Iceland, Norway, Sweden, and the Faroe Islands, Greenland and Åland.

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Nordic co-operation promotes regional interests and values in a global world. The values shared by the Nordic countries help make the region one of the most innovative and competitive in the world.

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