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**Perspectives on the utilisation  
of recycled materials in public  
procurement of textiles in the welfare  
sector**





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# Contents

<b>Introduction</b>	<b>4</b>
Terms used in the publication	4
<b>PART I Towards the circular economy with textile procurement in the welfare sector</b>	<b>5</b>
<b>The welfare sector is a major purveyor of textiles</b>	<b>6</b>
<b>How can procurement units support the transition to a circular economy?</b>	<b>6</b>
<b>Circular procurement can promote change at the ecosystem level</b>	<b>6</b>
EU textile strategy aims to extend the lifecycle of textiles	7
Quota obligation for recycled materials to promote a circular economy	7
<b>Circular economy in textile procurement in the welfare sector</b>	<b>8</b>
<b>PART II What should a procurement unit know about recycled fibres?</b>	<b>9</b>
<b>Differences between recycled and recyclable materials</b>	<b>10</b>
<b>Virgin cotton and polyester, and their impact on society</b>	<b>10</b>
Virgin cotton	10
Virgin polyester	11
EU circular economy roadmap takes a stand on the problems of the textile industry	11
<b>Most common recycled fibre materials</b>	<b>12</b>
Recycled polyester	12
Textile industry side streams	12
Recycled fibres made from end-of-life textiles	12
<b>Textile recycling methods</b>	<b>13</b>
Mechanical recycling	13
Chemical recycling	13
<b>Comparison of the impact of virgin production and recycling</b>	<b>14</b>
Many faces of recycled fibres	15
<b>PART III Recycled fibres made from end-of-life textiles – opportunities and challenges in public procurement of textile products</b>	<b>16</b>
<b>PART IV Tips for public procurement units</b>	<b>20</b>
<b>PART V Through collaboration towards the circular economy of textiles</b>	<b>24</b>
<b>Textile procurement developer group and topical forum bring together key actors in the sector</b>	<b>25</b>
<b>Green Deal operating model boosts cooperation between procurement units</b>	<b>25</b>
<b>PART VI Ecosystem related to the utilisation of Finnish end-of-life textiles and its strengths and weaknesses</b>	<b>27</b>
<b>Finnish textile industry</b>	<b>28</b>
<b>In conclusion</b>	<b>29</b>
<b>References</b>	<b>30</b>

## Introduction

Textile industry production volumes have considerably increased during this millennium. The clothing industry alone accounts for up to 10% of global CO<sub>2</sub> emissions and one fifth of wastewater. The vast majority of the textile industry's production is incinerated after use.

The textile industry issues have been noticed in Finland. There is a need to reduce remotely imported virgin materials and find other solutions for the burning of textiles. In Finland there is forming infrastructure related to the utilisation and further processing of end-of-life textiles, and new products containing recycled fibres made from end-of-life textiles are constantly entering the market. Public procurement has been identified as an important tool to support the industry which is based on recycled fibres made from Finnish end-of-life textiles. Strengthening the Finnish textile industry is also seen as part of ensuring the security of supply.

This publication has been prepared as part of the Circwaste – Towards the circular economy project. It explains how the volume of products containing recycled fibres can be increased in public procurement and, on the other hand, what kind of challenges or opportunities procurement units and companies are facing in their efforts to develop the circular economy of textiles with the help of recycled textiles.

The publication focuses on textile procurement in the welfare sector, as the procurement volumes there are high. A clearly identifiable ecosystem is developing in the sector, aiming for the utilisation of recycled fibres made from end-of-life textiles in textile products. Procurement units in the welfare sector include for example hospitals, units serving the elderly or the disabled, and home care units. These organisations are public procurement units that consume a significant volume of different types of textiles such as patient clothing, linen, separate cleaning textiles, and working and protective clothing.

The results compiled in this publication are based on an extensive literature review, expert interviews and the results of market dialogue events and workshops conducted in 2022–2023.

### Terms used in the publication

- **Recycled polyester (rPET)** comes from used PET bottles.
- **Textile production side streams** refer to cutting waste from the textile industry, for example. It is a virgin material that is not utilised for its original purpose.
- **Recycled fibres made from end-of-life textiles** can be obtained by recycling the textiles in a mechanical or chemical process. Finland has the necessary infrastructure and supporting structures (e.g. identification methods, baling machines, dust management and the management of reject, i.e. non-salvageable fractions).
- **End-of-life textiles** are unusable clothes and other textiles that can be used as materials.



# **PART I**

**Towards the circular  
economy with textile  
procurement in the  
welfare sector**



## The welfare sector is a major purveyor of textiles

In 2022, the Finnish public sector published procurement notices related to textile industry products and services amounting to a total of EUR 481.7 million. Of this:

- The procurement of services accounted for 6%, or approximately EUR 30 million
- The procurement of goods and services accounted for 20%, or nearly EUR 100 million
- The procurement of goods accounted for 74%, or more than EUR 350 million

These figures are based on the volume (percentage) of textile procurement notices in euros for the procurement of goods and services and CPV codes\*. \*Common Procurement Vocabulary (CPV)

When looking at the percentages of the volume of textile procurement notices by public administration sector, one can see that:

- Publicly owned companies account for 34%
- Central government accounts for 32%
- Wellbeing services counties and hospital districts account for 22%
- Cities and municipalities account for 9%
- Joint municipal authorities account for 3%

It should be noted that the share of wellbeing services counties will increase in future. The current trend is a transfer of textile-oriented procurement from municipalities to the wellbeing services counties.

Source: [Tulevaisuuden tekstiilihankinnat developer group \(hankintakeino.fi\)](https://www.tulevaisuuden.tekstiilihankinnat.developer.group/hankintakeino.fi)

## How can procurement units support the transition to a circular economy?

According to a circular economy procurement manual published by the Finnish Environment Institute SYKE, circular procurement refers to the possibilities of public procurement to promote the sustainable use of natural resources. This refers to, for example, the need for smaller quantities of materials, virgin materials in particular. According to the publication, a public procurement unit can act in accordance with the circular economy if it purchases products that will last longer and reduces the use of virgin raw materials. When the products are nearing the end of their useful life, i.e. can no longer be used for the purpose for which they were purchased even if repaired, the procurement unit must ensure that they are properly recycled. Public procurement promotes the circular economy if it contributes to the circulation of materials in the form of recycled materials, for example.

## Circular procurement can promote change at the ecosystem level

At its broadest, circular economy procurement can contribute to a systemic shift towards the circular economy, i.e. at its best, it can create or at least accelerate the creation of a circular economy ecosystem. Such ecosystems are created based on a network of different actors and utilise material flows between the actors. Procurement leading to a systemic change is often based on long-term planning and development work, as well as local experiments. Building an ecosystem requires extensive market dialogue covering both suppliers and the entire subcontracting network. The building of an ecosystem may also involve discussions with other stakeholders such as influencers and decision-makers. A broad understanding of the entire field of actors is one of the key factors.



## EU textile strategy aims to extend the lifecycle of textiles

The objective of the EU textile strategy is that by 2030, all textiles placed on the EU market are long-lived, recyclable and mainly made from recycled fibres, do not contain any hazardous substances and are manufactured in a way that respects social rights and the environment. The aim is to boost the circular economy ecosystem for textiles, which is supported by innovative fibre recycling capacity. The plan is to minimise incineration and the taking of textiles to landfills.

The first step is to improve product design, as different chemicals, fibre blends and certain materials make the recycling of textiles difficult. Sorting and advanced recycling technologies need to be improved as well. The EU's voluntary schemes such as the EU green public procurement criteria for textile products and services already include environmental requirements for textiles. In addition, binding product-specific ecodesign requirements are being prepared in order to:

- Improve the properties of textiles in terms of durability, reusability, reparability and suitability for fibre recycling
- Determine the mandatory proportions of recycled fibres
- Monitor and minimise the presence of substances of concern
- Reduce the harmful climate and environmental impact

## Quota obligation for recycled materials to promote a circular economy

A quota obligation is a measure aimed at promoting the demand for recycled materials while reducing the use of virgin raw materials. It obliges the manufacturer, distributor or party placing the products on the market to use specific proportions of recycled raw materials. The obligation can refer to both binding legislation and other incentives. The quota obligation is also a means of promoting the circular economy, and its use as a policy instrument has been studied in several countries. For example, the EU is preparing for its implementation for plastic packaging and rechargeable batteries.

According to a government report, the availability of recycled materials has a major impact on functionality of the quota obligation. Currently, non-woven fabrics made from recycled materials are not extensively available and the recommendation for manufacturers of non-woven products is therefore a voluntary Green Deal agreement instead of a binding quota obligation.

Before using a quota obligation for non-woven fabrics made from recycled materials, the non-woven production volumes and recycling paths must be investigated. Product groups with the highest impact and the lowest material requirements should be selected first. Through accumulated experience, it could potentially be possible to expand the quota obligation also to non-woven fabrics.



## Circular economy in textile procurement in the welfare sector

The welfare sector has many procedures that are in line with the circular economy such as the sharing of textiles and textile rental procedures where textile products circulate between sites as they are needed instead of being in storage. Charges are based on usage.

Rental textiles are particularly interesting in terms of the recycling of textiles, as they provide an opportunity to identify the material of the product and its origins. These factors make the material an excellent candidate for recycling. In addition, textiles disposed of by hospitals are of uniform quality and clean, making them easier to sort and recycle.

The expert interviews conducted for the purposes of this report revealed that the welfare sector already requires some textile products made from recycled materials. The market has been able to meet this demand by using polyester fibres made from recycled PET bottles (rPET) in products. However, it seems that meeting the demand with recycled fibres made from end-of-life textiles could be possible in the near future. Some of the interviewees pointed out that a larger number of public procurement units could require that recycled fibres made from end-of-life textiles are used when acquiring textile products. This would increase the pressure on the market to use recycled textile fibres in products.

The procurement of textiles in the welfare sector has great potential and increase the volume of products containing recycled fibres made from end-of-life textiles on the market.





# **PART II**

**What should a  
procurement unit know  
about recycled fibres?**

## Differences between recycled and recyclable materials

### Recycled material

- It is important to be aware of from what kind of raw-materials the recycled material is made from.
- The material may originate from end-of life textiles and recycled textiles, cutting waste from the textile industry or other products such as PET bottles.

### Recyclable material

- Textiles can be recycled and reused when they reach the end of their useful life.
- Recyclability depends on the fibres, fibre blends and chemicals used, as they can make recycling more difficult.
- The recyclability of products containing recycled textiles should also be taken into account.

Figure 1. A public procurement unit can try to increase the volume of recycled materials in the acquired products, but considering subsequent recycling of the materials would also be beneficial.

## Virgin cotton and polyester, and their impact on society

### Virgin cotton

The most commonly produced natural fibre in the world is cotton, the production of which accounts for approximately one quarter of the total global fibre production and 81% of natural fibre production. In 2020, its total production volume was some 26.3 million tonnes. Virgin cotton comes from the seed coat of the annual cotton plant, grown in North and South America, Asia and Africa. Cotton is harvested from the fields either mechanically or by hand. Handpicking is slower but retains better cotton quality. The seeds are then separated from the fibres and the cotton is sent for cleaning and carding. The actual production of yarn begins after this.

The cultivation of cotton requires a great deal of land, and a large volume of chemicals is often used, as the cotton plant is highly sensitive to pests and plant diseases. The cultivation also requires lots of water: the water requirement varies between 4,000 and 29,000 litres per one kilogram of cotton. The chemicals and the abundant use of water deplete the soil, pollute bodies of water, reduce biodiversity, reduce the amount of groundwater, and increase the salinity of the soil. The largest producer countries are China, India, the United States and Pakistan. The cultivation of cotton also involves social responsibility, as it focuses in developing countries and rural areas. For example, according to the International Labour Organisation (ILO), child and forced labour is still used in some cotton production chains.





## Virgin polyester

Overall, polyester is the most commonly produced textile fibre. It covers around 56% of the global fibre market. Its total production volume in 2020 was 63 million tonnes, of which recycled polyester accounted for 14.7%. China is the most important polyester production country, but it is also produced in countries such as India, Taiwan, South Korea and the United States.

The manufacture of polyester is a chemical process, and the raw materials are made from crude oil distillation products. The polyester used in textiles is most commonly made from polyethylene terephthalate (PET). The manufacturing method is melt spinning at 280–290 degrees Celsius. The melted raw material is pressed through a nozzle and the strands coming from the nozzle are cooled until solid, then stretched and stabilised. If necessary, the fibres are also textured to make them curly or cut into staple fibres.

Most of the environmental effects of polyester are related to the non-renewable natural resources used in its manufacture, the large amount of energy needed for production, the use of potentially harmful chemicals and issues caused by the microplastics released from the products. Microplastics cause a wide range of environmental damage when entering bodies of water via wastewater, for example.

### EU circular economy roadmap takes a stand on the problems of the textile industry

In 2023, the European Commission published a circular economy roadmap for textile, construction and energy-intensive industries. This roadmap identifies key circular economy technologies and required innovations. The recycling technologies for textiles are already considered to be advanced, but there are still many challenges to be overcome. Digital technologies and business models play a crucial role in the transition of the industrial ecosystem towards the circular economy.

The circular economy of the textile industry could at least mean:

- a reduction in the volume of new textiles produced
- keeping products in use for as long as possible
- bio-based materials
- circular design and reuse, resell and rent,
- the recycling and recycled materials

A study published by the European Commission in 2021 about the technical, legislative, economic and ecological efficiency of textile fibre recycling indicates that political action should be taken to contribute to the development of the recycling capacity. Among other things, investments in planned development of recyclability should be made and the raw materials from recycled textile fibres should be made more easily available. In addition, demand for recycled fibres should be promoted and it should be ensured that new products entering the market are more easily recyclable.

## Most common recycled fibre materials

### Recycled polyester

The recycled polyester used in textiles mainly comes from used PET bottles. Polyester is a difficult textile to recycle, as it has often been mixed with other materials such as cotton in clothing. Textile dyes can also make recycling more difficult.

Recycling PET bottles for the textile industry is not necessarily in line with the circular economy approach, as the bottles could be recycled several times in the beverage industry. Meanwhile, if polyester derived from recycled PET bottles is used in textiles, it can no longer be recycled as efficiently and the material cycle stops with the textile.

### Textile industry side streams

The manufacture of textile products often produces waste materials or production side streams. For example, in the Finnish clothing industry, 15–20% of materials end up as cutting waste. In other words, such rejects and cutting waste from textile production are completely virgin materials that are not utilised in actual products. Cutting waste can be sorted by quality and colour, and mechanically recycled into fibres. This way, the cutting waste can also be utilised in the manufacture of textiles. Literature and discussions in the field also refer to the side streams from the textile industry as 'pre-consumer materials.'

### Recycled fibres made from end-of-life textiles

End-of-life textile waste (also called post-consumer textile waste) can be recycled into textiles. End-of-life textiles are unusable clothes and other textiles that can be used as materials. End-of-life textiles must be identified and sorted, and recyclable ones can be recycled. There are different recycling methods that can be divided into mechanical, chemical or thermal based on the process type.

Separate collection of end-of-life textiles began in Finland in 2023 and will be mandatory throughout the EU in 2025. This also applies to companies in the textile and fashion industries. End-of-life textiles are collected from both companies and consumers, amounting to a total of 100,000 tonnes per year. The challenges in utilising end-of-life textiles include varying quality and other characteristics, which vary according to the type of textile consumers have placed in recycling boxes.

A product responding to a need, being long-lasting and being maintainable are always the key aspects. What should be considered next is whether the product can be recycled and whether it can be made from recycled materials.

The most important thing is always that the product meets the needs, is long-lasting and maintainable. It is also important to check whether a product is recyclable and can be made from recycled materials.





## Textile recycling methods

There are mechanical and chemical recycling methods for textiles to be reused as textiles. In mechanical recycling, the material is torn and turned back to fibres, and in chemical recycling, fibres are separated by a chemical reaction.

Textiles can also be recycled into non-textile products by means of thermal recycling, for example. However, this publication does not focus on thermal recycling i.e. the melting of synthetic fibres with heat. At present, thermally recycled materials cannot be reused as textile fibres.

### Mechanical recycling

Mechanical recycling is based on splitting the textiles into fibres by cutting, tearing, carding or other mechanical processes. Nearly all fibres can be mechanically recycled, and the method is suitable for synthetic and natural fibres, as well as fibre blends. However, mechanical recycling is not the best option for all materials. Examples of unsuitable materials include dirty, contaminated, coated or elastane-rich textiles. To achieve the desired end result, the textiles are sorted by fibre composition, fabric material and colour prior to the recycling process.

The characteristics of the recycled fibres (such as length, strength and tenacity) determine the quality of the final product. Mechanical recycling reduces the quality of fibres and shortens them every time they are recycled, which means that the value of textile fibres can be reduced due to mechanical recycling – from a piece of clothing to an apron and further to an insulation material, for example. The quality can be improved by adding a virgin raw material, however.

### Chemical recycling

Chemical recycling is based on the chemical processing of textiles where the chemicals break the fibres into smaller polymers or monomers. This method can be used to recycle both natural and synthetic fibres, but it is mainly intended for cellulose-based materials. Fibre blends are also suitable, as it is possible to separate the unnecessary fibre component in the process. However, it would be good if a textile product that is processed contains only one raw material. Dirty textiles are also acceptable if a process to remove impurities is used.

Many types of products are suitable for chemical recycling, and there are fewer restrictions due to the process and the type of fabric than in the case of mechanical recycling. The solvents and reactions used depend on the raw material. The quality does not deteriorate during the recycling process, and the end products are often of similar quality to their virgin equivalents. Clothing can also be made from chemically recycled fibres, but in the cotton recycling process, for example, fibres are mixed with virgin viscose fibres to improve physical properties such as strength.

When arranging competitive tendering and acquiring recycled textile products, don't forget to pay attention to the fact that the textiles should also be recyclable. Look at the materials and any harmful substances. Overly complex products and logos could interfere with subsequent mechanical recycling.

## Comparison of the impact of virgin production and recycling

Table 1. Environmental, economic and social impact of virgin raw materials and mechanical and chemical recycling.

Virgin materials	Mechanical recycling	Chemical recycling
<b>Environmental impact</b>		
The greatest environmental impact is caused by carbon dioxide emissions, water consumption and the discharge of wastewater into bodies of water.	Enables the reduction of greenhouse gas emissions. Recycling synthetic fibres in particular is important due to their large carbon footprint.	Chemical recycling requires more energy than mechanical recycling, but it is a better alternative than virgin materials in terms of the environmental impact.
Dyeing and finishing products in textile production account for approximately 20% of the world's clean water pollution.	For example, Rester Ltd's mechanically recycled fibres save an estimated 5,170 kg CO <sub>2</sub> e of greenhouse gas emissions and 1.5 million litres of water per one tonne of recycled fibres.	Chemical recycling requires chemicals but enables keeping the raw materials in circulation and saves clean water.
The cultivation of natural fibres in particular requires plenty of water and land. Globally, the textile and clothing industry used an estimated 79 billion cubic metres of water in 2015.	The colour of the final product is determined by the colour of the recycled fibres used.	The pre-treatment in the recycling process for cotton involves decolourisation.
<b>Economic impact</b>		
In the EU, the textile and clothing sector is economically significant. More than 160,000 companies operate in the sector, employing 1.5 million people and having a combined turnover of EUR 162 billion in 2019.	Mechanical recycling of textiles takes place in Finland and abroad.  If price is the decisive factor, it is difficult for recycled fibres to compete with virgin fibres.	Most chemical recycling facilities are in their pre-pilot phase due to the complexity and capital intensity of the process. There are some facilities around the world..
The global value chains make the operating sequences vulnerable. For example, disruptions in value chains and price increases cause problems for companies.	The method is a wise solution from the resource perspective because it requires little energy and water. The process results in recycled fibre.  The challenge is quality, because the older the textiles being recycled, the lower the quality of the new fibres produced.	A technically demanding and more expensive recycling method with higher energy consumption.  The quality of chemically recycled fibres can be the same as virgin fibres. Product value does not decrease.
<b>Social impact</b>		
Complex global value chains, often under pressure to minimise production costs.	Textile waste is not exported but recycled nearby. The textile industry is closer by, making it easier to control the operating sequence.	
The operating sequences can also be unsustainable in terms of gender equality and child labour.	More jobs in fields such as sorting, processing and the manufacture of new materials and products.	
Chemicals harmful to human health may be used.	Reduces the export of textile waste.	
Most textiles are imported from outside the EU, and in some countries labour and environmental legislation is weak or not properly monitored.		



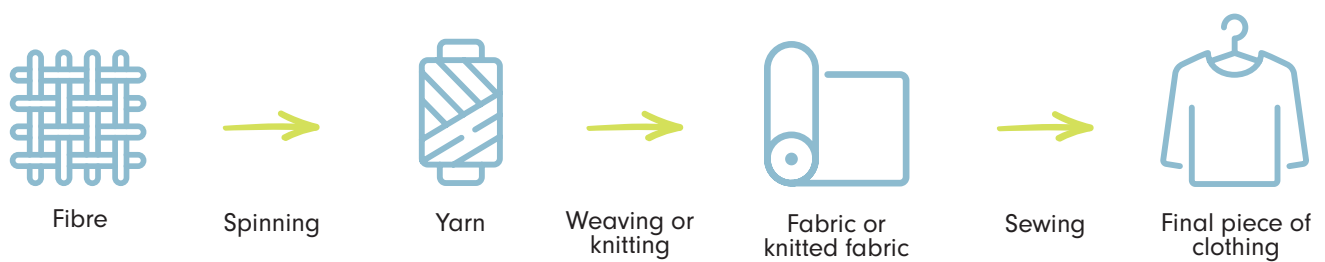


Figure 2. The manufacture of textiles is often based on a complex global value chain which, even in its simplest form, requires the involvement of a wide range of actors.

### Many faces of recycled fibres

The textile recycling ecosystem needs companies that utilise recycled fibres for recycling to matter. However, in many cases recycled fibres are more expensive, which affects the choices made by many. Focusing primarily on the recycling of textile fibres with the largest carbon footprint would be beneficial. These are usually synthetic fibres. It is advisable to use recycled fibres to manufacture products that last as long as possible, thus replacing as much virgin materials as possible. At the design stage, it should also be considered how the material can be made to circulate several times instead of only once.

Taking into account the impact of chemicals on recycling is also advisable. At present, it is possible to recycle ten-year-old textiles containing chemicals that are currently banned. It is also good to understand when it is wise to use textiles in the production of recycled fibres and when they should be utilised as energy waste.

The easiest and most common way is to use recycled fibres to make non-woven fabrics, as the requirements for yarn manufacture are more critical in terms of the length of the fibres, for example. The best materials for recycling are textiles that only contain one raw material (mono-materials). By purchasing these and avoiding textiles containing several different materials, it is possible to support the product's superior recycling possibilities.

Recycled textiles have countless good effects. Firstly, they reduce the volume of virgin materials used, which means that the environmental and social impact from the production of the virgin material will not occur. For example, water pollution will decrease when fertilisers and pesticides used during cultivation and chemicals used in dyeing do not end up in a body of water. Less non-renewable natural resources are needed because when recycled materials are used, the production of artificial fibres from fossil fuels is reduced. The recycling of textiles reduces textile waste and thus its export-related challenges. Furthermore, more land to produce food and plant forests will be freed up from the cultivation of natural fibres.

Source: [Kuituus podcast](#).





## **PART III**

**Recycled fibres made  
from end-of-life textiles  
– opportunities and  
challenges in public  
procurement of textile  
products**



# Recycled fibres made from end-of-life textiles – opportunities and challenges in public procurement of textile products

## STRENGTHS

- EU legislation requiring separate collection of textile waste.
- Finland having the necessary infrastructure and supporting structures (e.g. identification methods, baling machines, dust management and the management of reject).
- Finland having competence and pilot projects related to the recycling of textiles.
- Rising motivation in the public sector to promote the use of recycled fibres made from end-of-life textiles in public textile procurement.
- More information about recycled fibres made from end-of-life textiles being available through different sustainability and influencer groups, projects and workshops.

## WEAKNESSES

### Demand

- Motivation in the public sector to require recycled fibres made from end-of-life textiles as part of textile procurement is not yet concretely reflected in the invitations to tenders, which reduces the pressure on companies to start product development and investments, and to add recycled fibres in their products.
- The market for fabrics made from end-of-life textiles is still small. There are not many tenderers or products.

### Infrastructure and availability

- The textile recycling infrastructure is not yet fully in operation. More actors and investments are needed. Currently, the value chain networks for the recycling of end-of-life textiles (e.g. the manufacture of yarn) extend to the other side of the world.
- Mechanical recycling is still small in scale.
- Finland does not have an industrial-scale chemical recycling plant yet.
- Fabrics made from end-of-life textiles are not available from fabric suppliers to a sufficient extent.
- The quality of the end-of-life textiles from consumers (also, post-consumer waste) is partly poor and the characteristics vary, which makes sorting and recycling more difficult. The current recycling solutions will eventually only be able to absorb a certain proportion of textile waste.
- Recycled fibres made from end-of-life textiles are not always suited for the current production processes as such, as the quality (e.g. fibre length) may vary.
- It seems that more recycled polyester made from PET bottles (rPET) is available than polyester made from recycled end-of-life textiles.



## WEAKNESSES

### Quality and harmful substances

- The origins of end-of-life textiles, i.e. what the material was before it was recycled, is not always known. Also, it is not always known whether the material contains any harmful substances.
- Recycled fibres made from end-of-life textiles are currently used more in products of lower added value such as insulation materials or felt.
- Public procurement units cannot be certain of the lifecycle and uniform quality of recycled textile products.

### Tendering

- The product made from a recycled material should have been developed already before the public tendering process, as the development work takes time.
- The public sector may not understand the entire value chain, which is why the requirements may be targeted at the wrong actor in the value chain.
- If price is the decisive factor, it is difficult for recycled fibres to compete with virgin materials.
- Adding recycled fibres to certified products forces manufacturers to re-certify the products, which is very expensive.

## OPPORTUNITIES

### Demand

- Timely communication of the public sector about future procurement projects and requirements on recycled fibres would ensure that the companies have time to react.
- Even if the public procurement unit only demanded that 15% of fibres (percentage by weight) in high volume procurement projects were recycled fibres made from end-of-life textiles, a huge amount of virgin raw materials could be replaced. Therefore, there is high potential in textile procurement in the welfare sector to change the market and support new products containing recycled fibres made from end-of-life textiles.
- It could be possible to add recycled fibres made from end-of-life textiles to certain textile categories, even if it affected the quality of the textiles (e.g. single-use operating theatre textiles).

### Infrastructure

- The start of separate collection of textile waste enables the development of recycling.
- Both mechanical and chemical recycling methods will develop rapidly as the pilot lines switch to industrial-scale production. An industrial scale chemical recycling plant will be opened in Kemi in 2026.

## OPPORTUNITIES

### Security of supply

- The national recycled textile ecosystem improves the security of supply, as the country is not dependent on materials imported from far away.

### Dialogue

- Product development and dialogue can be used to understand which factors affect recycling and which products can be designed to be recycled.

### Price vs. quality as part of tendering

- It would be easier for recycled fibres to compete with virgin materials in terms of price if all the related social and environmental effects, i.e. external costs, could be added to the price of virgin materials.

## THREATS

- The textile industry in its entirety moving to Asia.
- If nobody in Finland demands the use of recycled fibres, pilot projects in mechanical or chemical recycling will move their production elsewhere.







## **PART IV**

**Tips for public  
procurement units**

## Tips for public procurement units

### TIP 1

#### Identify the most common types of recycled fibres that you can require in products.

- **Recycled polyester (rPET)** is made from used PET bottles, which means that it is a recycled material but difficult to recycle further once turned into a textile, whereas the beverage industry would be able to recycle the bottles several times.
- **A textile production side stream** such as cutting waste is completely virgin but is not being used for its original purpose.
- **Recycled fibres made from end-of life textiles** have been obtained from **end-of-life textiles** by means of mechanical or chemical recycling. Finland has the necessary infrastructure and supporting structures (e.g. identification methods, baling machines, dust management and the management of reject) as well as competence and pilot projects related to the recycling of textiles.
- **End-of-life textiles** are unusable clothes and other textiles that can be used as materials.

### TIP 2

#### Know the textile recycling sector and the actors operating there. Engage in extensive dialogue with actors in the ecosystem.

- Familiarise yourself with the textile recycling sector and identify the actors operating there. Take into account the long production chains and the entire value chain.
- Engage in early discussions with companies and identify what you will require from each actor in the value chain.

### TIP 3

#### Determine the market situation for products containing recycled fibres made from end-of-life textiles.

- Find out whether there are products available on the market where recycled fibres made from end-of-life textiles have been used. If you find such products, find out how much recycled fibres they contain (percentage by weight).
- Follow tendering processes of other procurement units where one of the requirements is the use of recycled fibres made from end-of-life textiles in the products to be acquired.
- Do not require something that is not available on the market, but remember to challenge the suppliers.
- One option is to include in the procurement a requirement on recycled fibres made from end-of-life textiles, for example: "The product must contain 5/10/15% (percentage by weight) of recycled fibres made from end-of-life textiles." Even a requirement of 15% will replace a large volume of virgin raw materials if the procurement volumes are high. Don't forget ensure that the market is capable of responding to the requirement.
- Consider the impact of your procurement: in the case of some high-volume products, a smaller required percentage may already have a significant impact!



“Even with a 15% requirement, in the case of high-volume products you can replace a huge volume of virgin raw materials and keep materials in circulation. Use a lower percentage requirement for large volume products rather than a 60–70% requirement for some individual products.”

#### TIP 4

##### **Give the market a signal of the changed intent.**

- Public procurement units must give a strong signal of their intent to require the utilisation of recycled fibres made from end-of-life textiles in the products they acquire.
- Persistently act according to the signal you have given.
- Suppliers should be given enough time to build a new value chain and make the necessary investments and changes to their production processes.
- Remember to investigate how much the changes will require from the suppliers.

#### TIP 5

##### **Collaborate with other procurement units and suppliers to find your role and impact on the development of the industry.**

- Market dialogue is extremely important when planning public procurement.
- Network and learn from others.
- Listen to the suppliers and make plans with them.
- Consider whether the invitation to tender could be prepared with the suppliers.
- Consider whether experiments and pilot projects could be realised as part of the procurement process.
- Consider whether tenderers that are willing and able to develop have been identified.

#### TIP 6

##### **Take the circular economy extensively into account.**

- Cheap low-quality products can be expensive in the long term.
- Take into account the needs of the end user: the products must be suitable for the customers.
- A product made from recycled textiles must also last for a long time to be in line with the principle of the circular economy.
- Invest in high-quality products that will last a long time.
- Take into account factors related to the maintenance of the product: the products acquired must be suitable for industrial maintenance processes, i.e. it must be possible to wash them properly and tidy them up for use.
- Try to ensure that the products containing recycled textiles you acquire are also recyclable.

“Materials for mechanical recycling must also be of high quality.  
You can only make products of good quality from materials of good quality.”

#### TIP 7

**In addition to the tendering phase, remember the measures during the contract period.**

- The circular economy of the entire ecosystem can also be developed by requiring companies to provide recycling solutions for products to be disposed of. Request and require plans on where the products are to be delivered at the end of their useful life.
- You can require reports on how much the solutions used by the company reduce the use of virgin materials. Don't forget to keep the report content requirements at a reasonable level, however.

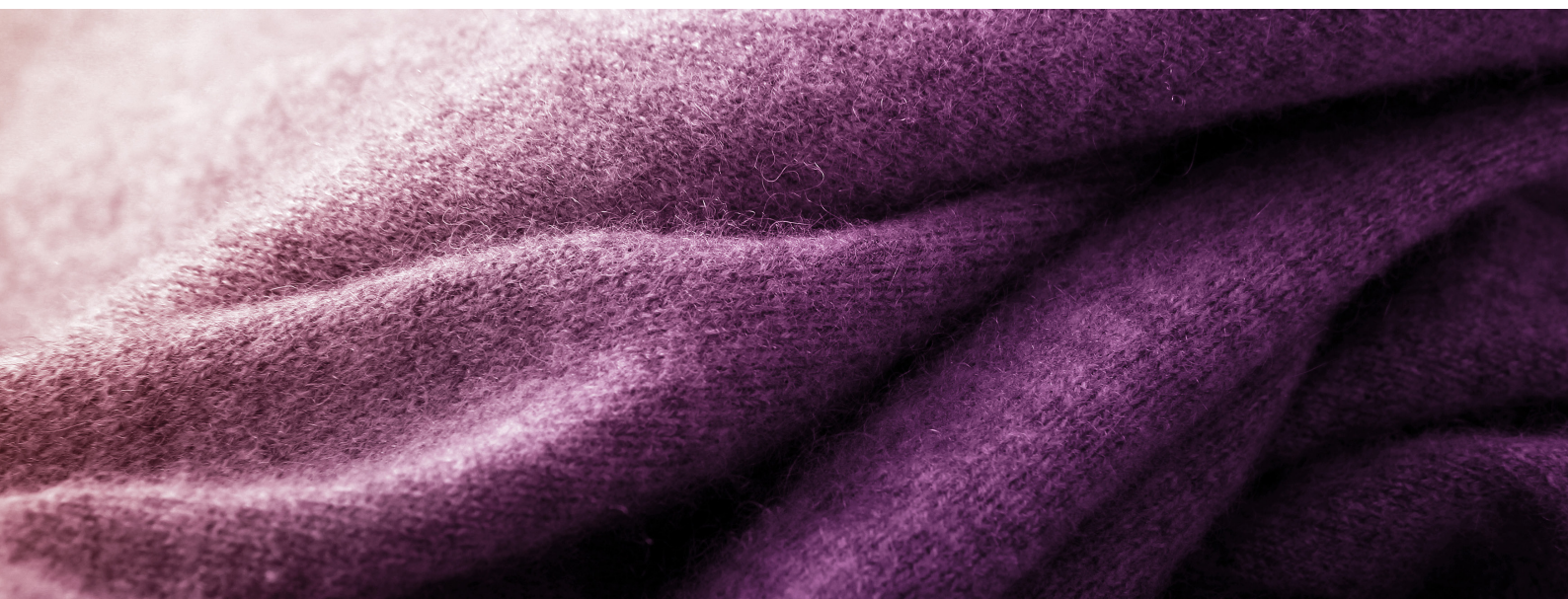
#### TIP 8

**Traceability will be easier when the subcontracting network is closer.**

- Many procurement units want to know where the products come from, i.e. monitor their traceability. From this perspective, the textile industry faces challenges because its value chains consist of long subcontracting chains – even global supply networks. By using recycled textiles in products, part of the subcontracting network can be brought closer.

#### SEE THE FOLLOWING

- The [Kriteeripankki.fi](https://www.kriteeripankki.fi) portal includes sustainability criteria applicable to procurement based on the product or service to be acquired and the sustainability target to be taken into account in the procurement. You can also search for criteria using your own keywords.
- Motiva Services and Suomen Tekstiili ja Muoti ry: *Opas vastuullisiin ja laadukkaisiin tekstiilihankintoihin* (A guide on sustainable high-quality textile procurement).







# **PART V**

**Through collaboration  
towards the circular  
economy of textiles**



When the report was being prepared in 2022 and 2023, several events on sustainable public textile procurement were arranged. Supporting the Finnish textile recycling industry through public procurement was also discussed at these events.

## **Textile procurement developer group and topical forum bring together key actors in the sector**

In spring 2023, KEINO, the Competence Centre for Sustainable and Innovative Public Procurement, launched a developer group focusing on textile procurement of the future. KEINO is an expert network formed by VTT Technical Research Centre of Finland, Motiva Ltd, Business Finland, Hansel Oy and the Finnish Environment Institute (Syke). The purpose of the developer group is to identify the development needs of municipalities, wellbeing services counties and central government organisations, and to support procurement units in acquiring textiles in a sustainable and innovative manner that supports the circular economy.

The developer group was launched in spring 2023. The aim of the KEINO developer group on textile procurement of the future is to promote collaboration between procurement units, disseminate knowledge to procurement units and companies, identify development needs, carry out proactive work, boost competence and also indirectly enable new investments in textile industry production facilities. Possible methods include proactive market dialogue, a strategic roadmap prepared in cooperation by actors in the sector, pilot projects and experiments, the development of procurement criteria and the identification of procurement ideas. Suomen Tekstiili ja Muoti ry, on the other hand, organises an annual topical forum on public textile procurement for procurement units and companies.

Both the developer group on textile procurement of the future and the topical forum on textile procurement discuss recycled fibres and the utilisation of end-of-life textiles as part of public textile procurement. Discussions have revealed that Finnish textile companies have developed new materials and the market is developing at a rapid pace. The procurement units should therefore familiarise themselves with the products available on the market and monitor their situation.

## **Green Deal operating model boosts cooperation between procurement units**

A Green Deal agreement for reducing hazardous substances in kindergartens and pre-school environment was concluded in autumn 2020 by the Ministry of Social Affairs and Health, the Ministry of the Environment, the cities of Helsinki, Tampere and Vantaa, and the procurement organisations Monetra Oulu Oy and Tuomi Logistiikka Oy. The aim of the agreement is to reduce harmful substances in the early childhood education and care environment and to increase the procurement of products and services with a Nordic ecolabel. This will reduce the overall exposure of children to chemicals. The agreement is valid until the end of 2025. Even though the main theme of the agreement was harmful substances, the use of recycled fibres and the recycling of textiles to be disposed of were also some of the themes to be worked on during the procurement of textiles.





In the Green Deal operating model, procurement units, together with KEINO which coordinates the agreement, prepare joint procurement criteria for selected product groups. The procurement units also train their own procurement experts, early childhood education and care staff and the staff of day-care centres to be aware of harmful substances. ([Commitment 2050](#))

At the beginning of 2022, a decision was made to start working on common procurement criteria for textiles. The preliminary discussions highlighted the fact that textiles as a product group required not only the consideration of chemicals but also a circular economy perspective. It was understood that the consideration of chemicals and the circular economy perspective required market dialogue, and a decision was made to organise a proactive market dialogue in September 2022 (Ennakoiva markkinavuoropuhelu: Vastuulliset työvaatteet ja varhaiskasvatuksen tekstiilit, 6 September 2022). The Circwaste project was involved in the planning of the event and related brainstorming. A second market dialogue on textile criteria was arranged in November 2023.

The market dialogues were used to examine, among other things, what kind of sustainability perspectives companies would like to see taken into account in procurement. Companies highlighted the use of recycled fibres and the recycling of textiles to be disposed of. Other themes included the use of repair services, reuse, rental textiles, Finnish products and various ecolabels.

The market dialogue clearly highlighted the fact that companies wish for closer cooperation and long-term development with the clients. The companies' perspective was that instead of setting individual criteria, the entire lifecycle of textiles should be managed.

The following observations were made on the basis of the market dialogue on textile criteria and the work on the criteria:

1. Working on procurement criteria related to textiles with the procurement units and companies will help to find a suitable level of requirements. Time and resources can be saved by involving a wide range of actors in the market dialogue and the development of the criteria.
2. Small (Finnish) companies may not be able to obtain ecolabels for their products. It should therefore be considered whether the tenderer should be asked to describe the use and management of chemicals in the production process, in which case small companies would be able to draw attention to their short production chains.
3. As a procurement object, textiles require a comprehensive approach that takes into account not only harmful chemicals but also climate, the circular economy and social sustainability.
4. Cooperation between customers, suppliers and the different actors in the production of textiles is absolutely necessary to ensure sustainable textile procurement.





## **PART VI**

**Ecosystem related to  
the utilisation of Finnish  
end-of-life textiles  
and its strengths and  
weaknesses**





## Finnish textile industry

### Strengths

- The Finnish textile and fashion industry consists of manufacturers of clothing, accessories, interior decoration items, technical textiles and non-woven fabrics. The actors include textile and clothing manufacturers, parties maintaining textiles and clothes, and shops.
- There are plenty of knitted fabric manufacturers in Finland.
- There are innovative Finnish textile recyclers. Finland has good competence in textiles for working clothes and special textiles, and the capabilities for these are considerably better than in the case of consumer textiles.

### Weaknesses

- There are no yarn manufacturers in Finland, and this can be seen as a bottleneck for the spread of various recycled textile innovations. There are not many sewing companies either.

### Potential

- Development and cooperation. Different types of networks of textile sector actors such as Telaketju (short for Tekstiilin keräys, lajittelu ja hyödyntämisketju or textile collection, sorting and utilisation chain), a cooperation network aimed at promoting the sustainable production, use and circulation of textiles. The research carried out by Telaketju lays the foundation for circular economy business and builds Finland into a trailblazer in the circular economy of textiles.
- The projects carried out under the Telaketju network have surveyed the value chain of textile sector operators, including the processing and recycling of end-of-life textiles, which can help public procurement units and Finnish companies in finding interesting textile sector partners. The network includes, among others, parties collecting and processing end-of-life textiles, parties developing automated sorting and companies that utilise the end products. Information about events, webinars, news and reports of the field is available on the Telaketju website.



## In conclusion

This publication was completed as part of the Circwaste – Towards the circular economy project, which examined the opportunities and challenges of the public sector in supporting the development of the market for innovative textile products made from end-of-life textiles.

According to the results, textile procurement in the public sector has significant potential to support the development of the market for textile products made from end-of-life textiles. The textile procurement volumes in the public sector are high, and there is textile recycling competence and the necessary infrastructure in Finland. EU legislation on separate collection of textile waste and strategies for the development of the sector will accelerate the reuse of end-of-life textiles as textile fibres.

However, the results of the study indicate that public sector textile procurement projects rarely include requirements related to the utilisation of end-of-life textiles. For the market for products containing end-of-life textiles to develop, public procurement units must demand textile products made from end-of-life textiles from their suppliers. A signal from the public sector is absolutely necessary for companies to start to include end-of-life textiles in their products. Companies must be given time to make the necessary changes to their production processes. Dialogue between the public sector and the market plays an important role in increasing mutual understanding.

Supporting the utilisation of end-of-life textiles would help to bring the textile product value chain closer so that it would be easier to manage and trace. This would reduce the use of virgin materials, improve the security of supply and reduce the economic, social and environmental impact of textile production. Knowledge of the circular economy of textiles in the public sector should therefore be improved to increase the volume of textile products made from end-of-life textiles through public sector procurement.





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### EVENTS

#### **Ennakoiva markkinavuoropuhelu: Vastuulliset työvaatteet ja varhaiskasvatuksen tekstiilit**

Time: 6 September 2022 9:00–11:00

Place: Teams webinar

Circwaste involved in ideating the circular economy perspective

#### **Varhaiskasvatuksen tekstiilien hankintakriteereitä koskeva markkinavuoropuhelu**

Time: 8 November 2023 9:00–11:00

Place: Teams webinar

Circwaste involved in ideating the circular economy perspective

#### **Ajankohtaisfoorumi: Innovatiiviset julkiset hankinnat tekstiilissä**

Time: 24 November 2022 10:00–13:00

Place: Helsinki

#### **Tulevaisuuden tekstiilihankinnat -kehittäjäryhmän käynnistystilaisuus**

Time: 24 April 2023

Place: Webinar

Speakers: Ville Valovirta (Competence Centre for Sustainable and Innovative Public Procurement, KEINO), Ali Harlin (VTT Technical Research Centre of Finland), Mika Hänninen (Hansel Ltd), Ulla Lappalainen (Sakupe Oy)

[Tulevaisuuden tekstiilihankinnat -kehittäjäryhmän käynnistystilaisuuden aineistot | Hankintakeino.fi](#)

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