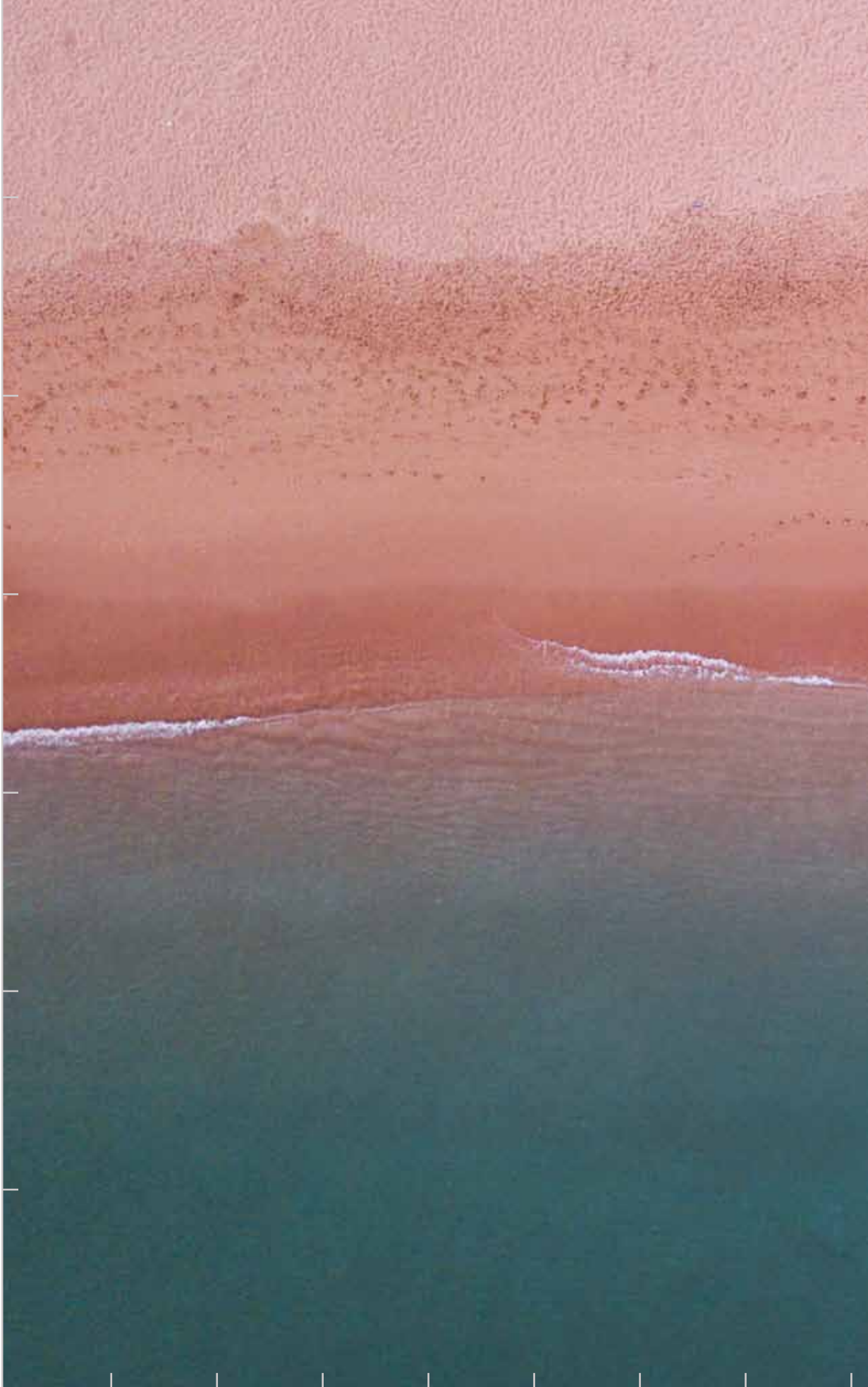


The background of the page is an aerial photograph of a landscape. On the right side, there is a large, dark blue body of water, likely a lake or a wide river. To the left of the water, there is a sandy beach area, followed by a strip of green grass and some small trees. Further to the left, there is a dense forest with green trees. The image is divided into a grid of vertical and horizontal sections. At the bottom of the page, there is a color calibration bar with several colored squares: blue, yellow, cyan, magenta, red, green, and black. The text is overlaid on the right side of the image, over the water and the beach area.

# Key Waste Policy Issues in Eight Selected EU Countries

Annex to the Report: Review of Current Priorities  
and Emerging Issues in European Waste Policy





An aerial photograph of a beach and ocean. The top half of the image shows a sandy beach with some people walking. The bottom half shows the ocean with several people swimming. The water is a deep blue-green color, and the beach is a light tan color. The overall tone is serene and natural.

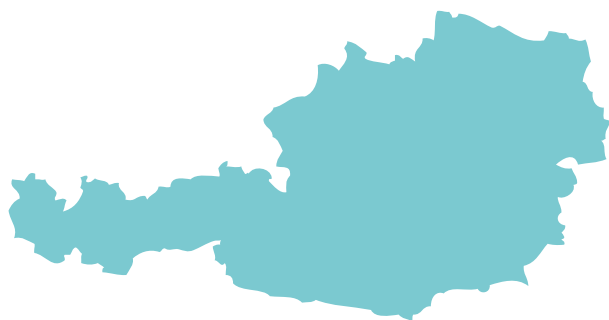
## **Key Waste Policy Issues in Eight Selected EU Countries**

### **Annex to the Report: Review of Current Priorities and Emerging Issues in European Waste Policy**

This annex should be read in conjunction with the main report 'Review of current priorities and emerging issues in European Waste Policy'. The document contains brief factsheets on waste and related policy issues for Austria, Denmark, Finland, Belgium (Flanders), France, Germany, the Netherlands, and Sweden.

# Austria

## Waste/Materials Factsheet



### Summary

Austria is an advanced country with a very mature waste management structure and a steady performance of recovery – the second highest rate in the EU, at 58%.

Austria is exceptional in that it has in place a National Resource Efficiency Plan and a Raw Materials Plan, as well as a Waste Prevention Plan. Austria has many worthwhile waste prevention initiatives and the administrative structure to ensure their successful implementation.

The ambitious targets of Austria in terms of material consumption (50% reduction by 2020 compared to 2008; and a factor of 4 to 10 by 2050) gives the country a head start over many others and facilitates initiatives to reduce waste significantly and to boost efficiencies with many economic benefits accruing as a result.

Austria's focus on specific material streams provides it with a competitive edge as well as ensuring reduced environmental impact, locally and globally.



### Municipal Waste Per Person:

560 kg (2015) (higher than EU average of 477 kg).



### Recycling:

58% in 2015, relatively stable since 2010 – higher than the EU average of 46%. A decrease in the rate of composting and digestion from 40% (2010) to about 32% (2015) – but still very high. Very low landfill rate of about 3%.



### Domestic Material Consumption:

21.7 tonnes per person in 2016, much higher than EU average of 13 tonnes. Consumption of biomass, metal ores and fossil energy carriers stable since 2000.



### Resource Productivity:

€1.86/kg – 83% of EU average (2016). Growth in GDP since 2000, hence an increase in resource productivity.



### Hazardous Waste:

149 kg per capita (2014), less than the EU average of 187 kg (2014). 8 kg per capita collected from households (2014) – the same as the EU average.



### Population:

8.6 million.

## Policy Framework

**National Resource Efficiency Programme 2012:** Austria was one of the first countries in Europe to put in place a resource efficiency programme. This has also put ambitious resource efficiency targets in place – this is almost unique in the EU (see below in Targets section). The Resource Efficiency Action Plan (REAP) includes measures on recycling of materials critical to the Austrian economy, on urban mining from construction materials and on wood. Specific focus is on food and construction materials, but also agricultural and energy efficiency plans using biomass. A potential focus on the recycling of critical materials is being considered. Priority industries and economic sectors for REAP include:

- Resource efficient production
- Public procurement
- The circular economy
- Awareness raising

**Waste Prevention Programme (WPP) 2011 and Federal Waste Management Plan (2011).** Both of these focus on the specific areas of: construction waste prevention, waste prevention in industry, waste prevention in households, prevention of food waste and reuse.

**Action Plan on Sustainable Procurement.** This plan includes public purchasing criteria on the use of recycled materials in building construction, recycled paper, ecologically produced products and the use of products with low hazardous substance concentrations.

### Masterplan on Green Jobs:

This aims to further develop the environmental protection industries and technologies through:

- The promotion of resource-efficient products, techniques and services
- The replacement of the consumption of primary non-renewable resources with renewable resources and recycled materials
- The efficient management of energy resources;
- Research in resource management
- The promotion of low-resource consuming buildings and infrastructure in tourism



## Taxes, Levies, and Fiscal Measures

Austria has had a landfill tax in place since 1989 with significant effect. An incineration tax is also in place.

## Regulation Measures

The Landfill Tax was reinforced in 2009 when waste containing more than 5% TOC was banned from landfill (with some exceptions) along with untreated waste and waste with a calorific value greater than 6MJ/kg. Separate mandatory collection of different types of packaging and paper, and take-back systems for used cars, batteries and electric/electronic equipment as means of achieving high recycling rates are well established in Austria.

## Major Initiatives

The **Food is Precious initiative** began mainly as an information and education campaign for households and students but now targets the whole food value chain. The initiative includes a stakeholder dialogue platform to share experiences and identify waste prevention solutions. In addition, it serves as a platform for networking.

The **Eco-Business Plan Vienna initiative** and other regional initiatives provide and co-finance consultancy for production industries. While particularly targeting small industries, it is also open to bigger industries. The process comprises eight steps which lead from application and a first resource efficiency check through the selection of an in-depth consultation programme, on-site consultation and the selection of implementation measures, to the monitoring and evaluation of achievements. If the achievements are in line with the objectives of the programme, the company receives an award.





### Best Practice Examples

Two major reuse programmes are in place in Austria:

**REPANET** is an association of 26 reuse organisations which has established a major Austrian repair and reuse network through cooperation between waste management associations, repair companies and reuse shops. The network employs socially disadvantaged people, and support the public administration in defining rules for the collection and quality assurance of used products.

**REVITAL** is a regional initiative to establish a province-wide network of collection points, refurbishment centres and reuse shops under a common logo and quality assurance system.

### Targets for Waste, Resource Efficiency, and Related Areas

Austria is one of the few EU countries with resource efficiency targets. These were set in REAP and are, in GDP/DMC:

- 50% reduction by 2020 compared to 2008
- Factor 4–10 by 2050

### Priority Waste Streams

The priority waste streams as identified by the actions of REAP and the National Waste Prevention Plan are:

- Food waste
- Construction waste

The programme for food waste prevention is outlined above.

A large amount of research, as well as support programmes and, more recently, legislation, has been put in place with regard to construction waste. This legislation refers to end-of-life criteria for C&D waste and criteria for recycling wood.

### Perceived Challenges in Addressing the Circular Economy Policy Ambitions

The REAP from 2012 identifies resource efficient production, green public procurement (GPP), the circular economy and awareness raising as its major fields of action.

Current areas of focus and measures for circular economy improvements as defined by REAP include:

- A pilot project to investigate which materials are highly critical for the Austrian economy, which will provide the basis for developing a corresponding strategy.
- The Ordinance on recycling of construction materials which specifies end-of-waste criteria for different materials as a precondition for their recycling.
- The Ordinance on recycling wood became effective in 2012, defining quality criteria for recycling wood.



### Drivers – Positive and Negative Influencing Factors

Austria has a high resource consumption rate (due to a cold climate, low population density, well-insulated buildings) and is industry dependent on raw material imports. A high volatility of raw material prices is an influencing factor along with the perceived potential for improvement and the opportunity for benefits in competitiveness and green jobs.

### Materials of Concern

REAP includes measures on the recycling of **materials which are critical for the Austrian economy**, on urban mining from **construction materials** and on **wood**.

Further strategies/policies address different material types, particularly on **food** and on **construction materials**.

Agricultural and energy efficiency plans focus on the efficient use of **biomass**, energy efficiency and climate activities and also on **fossil fuels**. The raw material plan primarily aims to secure primary non-metal mineral resources.

The recycling system for **packaging material** and **mass metals** is well established. There is much interest in developing a policy on the **recycling of critical materials** but this is at an early stage.

### Emerging Issues

Austria wants to create markets for the recycling of new secondary raw materials and these need to be established by harmonised initiatives.

Austria is looking at the optimal recycling rate for different materials and waste and what can realistically and economically be achieved.

Austria is researching how a material resource and life-cycle environmental impact tax can be introduced.

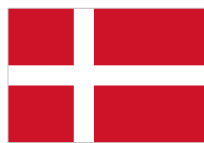
Austria is concerned with the long-term method of dealing with transfrontier shipments of secondary raw materials.

Price volatility has forced Austria to consider long-term availability of materials and the environmental impacts of extraction and processing.

Future focus should be on locally sourced materials, as well as material-efficient products and services.

# Denmark

## Waste Factsheet



### Summary

Denmark has long been seen as a leading country in the development and implementation of good environmental practice and policy. Denmark, for example, has developed a range of environmental levies since the 1970s including those on single-use beverage containers, packaging, plastic bags, tableware, etc. Denmark has also put in place a strict regulatory regime for business and has instituted a very detailed and research-driven regime of hazardous waste and chemical policies and regulations.

Denmark has identified the possibility of regressive regulation with regard to resource efficiency in businesses in different sectors. A cross-departmental Task Force has been set up to investigate this issue and make progressive recommendations.

Denmark sees the role of voluntary agreements as a way forward with regard to waste prevention and environmental improvements and is implementing research, studies and pilot programmes in several sectors and for several material streams.

A major concern of the country is the high amount of municipal waste being produced – the highest in Europe. With its previous waste prevention plan, Denmark had focused on increasing the level of recycling. However, with its most recent 2015 plan, it is now focusing on gearing the country up for a move towards a circular economy, looking at prevention at source, product life cycles, and material reuse. It is also targeting waste prevention for specific streams such as food and sectors such as construction and textiles.



#### **Municipal Waste Per Person:**

799.3 kg per person (2015) – highest in Europe, significantly higher than, for example, Sweden's 447 kg or the EU average of 476 kg.



#### **Recycling:**

46% (2015), very close to the EU average of 45%. Relatively stable since 2008. 54% incineration (highest in EU), 1% landfill (EU average is 28%).



#### **Domestic Material Consumption:**

20.2 tonnes per person (2015), higher than the EU average of 13 tonnes.



#### **Resource Productivity:**

Just higher than the EU average of €1.98/kg.



#### **Hazardous Waste Data:**

304 kg per person (2014), much higher than the EU average of 187 kg.

#### **Population:**

5.7 million.





### Policy Framework

**Denmark Without Waste – Recycle More, Incinerate Less, 2013:** this strategy focused mainly on recycling and how to achieve more efficient use of raw materials

**Denmark Without Waste II – Strategy for Waste Prevention, April 2015:** this waste prevention strategy has 72 action points covering two general cross-cutting topics and five main focus areas.

Cross-cutting topics:

1. Support for Danish businesses in becoming better at producing more for less
2. Stimulation of demand for green goods and services through central and local government procurement from retailers, and for the individual consumer through information campaigns

Five Main Focus Area Objectives in relation to food, the construction sector, textile companies, electronic products and packaging.

Other Policy Initiatives include:

- National strategy for intelligent public procurement – 2013
- Sustainability Strategy for Denmark – 2014
- Growth Plan for Water, Bio and Environmental Solutions – 2013

### Taxes, Levies, and Fiscal Measures

Economic Instruments have been deployed in Denmark for the purpose of waste prevention for many years.

The tax on raw materials covers raw materials which are extracted or imported – impacts especially on the C&D sector.

The waste tax implements a levy on waste for incineration and landfilling.

Denmark first introduced taxes on packaging in 1978. The packaging-waste tax comprises a volume-based tax on packaging for different types of beverage containers (1978); a tax on carrier bags (1994); a tax on disposable tableware (1982); and a tax on PVC food wrap film (1998). The objective of these levies is to contribute to reducing waste volumes and to establish an incentive to use less packaging.

## Regulation Measures

Denmark has implemented all the requirements of waste regulation under the Waste Framework Directive.

Hazardous materials are heavily regulated in Denmark under the Danish Chemicals Act and a wide array of advice and assistance is available from the Danish EPA.

## Major Initiatives

With the Growth Package Agreement, 2014, Denmark established a cross-institutional Task Force between the Ministry of the Environment and Food and the Ministry of Business and Growth to identify and overcome barriers to increasing resource-efficiency.

The Task Force is identifying barriers for enterprises to increasing their resource-efficiency, thereby benefiting the environment, innovation and productivity. The Task Force is specifically identifying regulations that are acting as barriers to resource efficiency and coming up with methods to prevent this regressive effect.

In 2017 the Task Force will propose changes and modifications to existing regulations with a view to promoting resource-efficiency, innovation and green transition. The work is being based on anthropological studies of the experiences of companies.

Studies are examining material flows, value-chains and regulatory regimes. For each identified barrier a solution team will be established to find the most effective way in which it can be overcome.

The work of the Task Force is an iterative process that alternates between business studies, data analysis and other analyses and the development of solutions in dialogue with businesses and the various regulatory and other authorities.

## Best Practice Examples

Denmark has been using voluntary agreements to reduce environmental impact for many years. In 2011 a working party to reduce avoidable food waste was set up. It is comprising of 19 partners from all links in the food product value chain from 'farm to fork'. The task force prepared and signed a charter on reduction of avoidable food waste, obliging them to spearhead and contribute to significant Danish measures to reduce avoidable food waste. An additional 18 stakeholders have since joined up as partners to the charter.

Denmark aims to substantially increase its use of voluntary agreements including:

- The Chemicals Initiative focusing on resource cycles and covering a new substitution partnership towards more sustainable use of chemicals in products and processes, including in buildings and building materials.
- A partnership for the reduction of avoidable food waste, which will foster voluntary and binding collaboration between all links in the food product value chain, relevant authorities, and stakeholder organisations.
- A partnership on plastic packaging, to foster voluntary and binding collaboration between all links in the plastic packaging value chain, relevant authorities, and stakeholder organisations.
- A partnership for sustainable construction, which will foster voluntary and binding collaboration between all links in the building and construction value chain, relevant authorities, and stakeholder organisations. The partnership will identify barriers and common solutions; also for DIY. Funding has been earmarked for nudging campaigns, demonstration projects, and other specific solutions under the partnership.
- The LAUNCH Nordic innovation platform, a collaboration between a number of major Nordic businesses, governments and organisations, will identify and scale up innovative solutions to minimise the environmental impact of textile manufacturing in a global perspective.
- A voluntary agreement with industry on the promotion of ecodesign of EEE in relation to producer responsibility.
- Implementation of an agreement on responsible textile and clothing manufacture in Bangladesh. This agreement will focus on improving employee rights, safety and environmental standards.



### Targets for Waste, Resource Efficiency, and Related Areas

The Denmark Without Waste Strategy I contains a 2022 goal for household waste, the service sector, and overall for several waste streams:

- Recycling of organic waste, paper, cardboard, glass, wood, plastic and metal waste from households: 50% by 2022
- Collection of waste electronic equipment from the service sector: 75% by 2018
- Recycling of paper, cardboard, glass, metal and plastic packaging from the service sector: 70% by 2018
- Recycling of organic waste from the service sector: 60% by 2018
- Energy recovery from garden waste from all waste streams: 25% by 2018
- Collection of waste electronic equipment from all waste streams: 65% by 2018
- Collection of batteries from all waste streams: 55% by 2018
- Recovery of shredder waste from all waste streams: 70% by 2018
- Recycling of phosphorus in sewage sludge from all waste streams: 80% by 2018

### Priority Waste Streams

Denmark has not officially identified or targeted specific waste streams or sectors. However, construction materials (e.g. bricks), wood, WEEE, textiles, packaging and food waste are a high priority in the policies and instruments that are in place.

The Denmark Without Waste II – Strategy for Waste Prevention focuses specifically on resource efficiency in the construction & demolition, food, electronics, textiles and packaging sectors.

Manufacturing has the highest share of production cost related to material use and material resource efficiency in those productions streams. Denmark has identified the following sectors with the highest relative production cost for use of materials as: food and beverages (58%), machinery (10%) and manufacturing of metals (7%).

The construction sector has the largest volume in material use in Denmark and is of specific interest.

### Drivers – Positive and Negative Influencing Factors

Material resource efficiency policies and strategies in Denmark are driven by economic factors such as: job creation/employment and competitiveness and environmental factors such as the reduction of environmental impacts.

A specific driver for the Denmark Without Waste strategies is the uncertainty of access to raw materials and price fluctuations.

In business, material resource efficiency in companies is driven by cost savings, price volatility for materials and fuels, the export of resource efficient solutions (e.g. consultancy, wind energy, water and food production) and a reduction in environmental regulation.



# Finland

## Waste Factsheet



### Summary

Like other Nordic countries, Finland has an established, mature environmental regime.

In recent years, a number of plans and strategies have been introduced, targeting recycling, the circular economy, and natural resources.

Landfilling is relatively low (17%) and below the EU average (28%). Finland fulfilled the 35% requirement for the year 2016 in 2014.

Finland also has a very high eco-innovation index (40% greater than EU average in 2015)

Current priority streams include building waste, biodegradable waste, municipal waste, and WEEE. Previous plans examined several sectors, including: mining; raw material processing; construction and infrastructure; manufacturing; sale, retail, transport; households; private service activities/hospitality and public services.

They also had objectives for prevention of waste types specifically C&D waste, hazardous waste, household/municipal waste, packaging, WEEE/batteries, and industrial waste.

Finland also has a set of targets for food waste, recycling of municipal bio-waste, construction waste, and total municipal recycling.



#### Domestic Material Consumption:

Municipal Waste Per Person is 500 kg (2015).



#### Recycling:

40.6% (2015).



#### Domestic Material Consumption:

DMC per person – 33 tonnes (2016) – 254% of EU average. Highest DMC per person in EU-28. Caused by large mining and forestry sectors (paper for 100 million people worldwide), and large infrastructure/construction sectors.



#### Resource Productivity:

€1.18/kg (2016).



#### Hazardous Waste Data:

361 kg per capita (2014).



#### Population:

5.5 million.

## Policy Framework

### From Recycling to a Circular Economy – National Waste Plan to 2023 (draft)

A new national waste plan to be adopted, Autumn 2017, draft issued May 2017. The plan presents a vision for waste management in Finland in 2030:

- Waste management is part of the Finnish circular economy
- Material-efficient production and consumption saves natural resources and creates jobs
- Volumes of waste have decreased and recycling has risen to a new level
- Markets for recycled materials and products work well.
- Valuable raw materials present at low levels are recovered from recycled materials
- Hazardous substances are safely eliminated from the cycle and less hazardous substances are used in production
- In the waste sector there is high-quality research and experimentation, and citizens and companies are highly competent in waste issues

For the plan, Finland forecasted future waste volumes and undertook a study into what policy instruments could increase recycling to meet EU targets. They propose:

- A tax on waste incineration
- The introduction of weight-based waste management systems
- Tightening municipal waste management obligations and efficiency of household sorting advice

Actions within the draft waste plan:

- On food and bio-waste: establish a food waste reduction strategy, national advice/communication on sustainable food choices and reduced loss; education in grocery industry and in schools; Swan eco-label for retailers and hospitality; animal feed measures; improve home bio-waste segregation and composting; incentivise waste costs to promote commercial bio-waste segregation; increase use of, and research into, fertilisers from recycled raw materials, and a voluntary quality system.
- Voluntary agreements on promoting material efficiency and recycling – including with the construction sector and in the food sector.
- To increase use of C&D waste as a material, voluntary contract procedures for the sector are proposed; demo projects; guidance on public procurement; electronic transfer documents for building waste statistics; material efficiency in construction education; construction end-of-waste criteria.
- Develop recycling centres for construction products. Increase networking and sales for such centre operators via a digital marketplace. Interim storage facilities. Municipal coordinators.

- Increase public procurement looking at use of recycled materials, amount of waste produced, product quality/durability, recyclability of products/parts. Network-based competence centre of advisory organisations. Guide for green buildings procurement.
- Establish a nationwide waste information system to improve traceability and statistics.
- Ministry of Environment investigating setting up a waste market.
- Increase use of Motiva Oy's material review tool for companies for efficient choice and use of raw materials and reduction of waste.
- Implement national waste management consulting services for companies.
- Teaching of 'circular economics' across all levels of education.
- Experiments to investigate the impact of waste disposal costs on waste amounts and recycling rate.
- Exploration of a ban on energy recovery from segregated recyclables.
- Increased WEEE collection; sufficient resources for customs/police to improve control on WEEE exports; an inspection fee for exporters; inspections targeted at likely illegal sources of WEEE export.
- Litter reduction (land and marine).

### Towards a recycling society: the national waste plan for 2016

The existing plan dates from 2008 and covers management and prevention. In the plan industrial sectors would set targets for reducing specific waste volumes and increasing recycling rates in their sector material-efficiency agreements. These voluntary Green Deals included plastic bags.

Aims within the current plan:

- Improve material efficiency in products, industry and mineral extraction
- Extend the useful life of buildings
- Eco-efficient products and services, and reduce household waste
- Reduce use of certain hazardous chemicals and replace with less hazardous alternatives

Specific actions include:

- Plans for sustainable production and consumption in daycare centres and educational institutions
- Support pilot projects on sustainable construction and waste prevention
- Draw up practical indicators measuring material efficiency, production and consumption that illustrate trends in waste volumes

- Include harmful impacts caused by chemicals during their waste phase when drawing up guidelines for environmental permit authorities.
- Promote material efficiency criteria in product standards; promote material efficiency in new construction using an environmental classification system for building; for new buildings, emphasis placed on convertibility, durability, and updatability of automation.
- Reduce use of certain hazardous substances and replace with alternatives.
- Issue guidelines for manufacturers to reduce harmfulness and waste from products.
- Develop services for improving waste management and material efficiency in SMEs.
- Make better use of non-governmental organisations (NGOs) to enhance information campaigns.
- Broaden consumer rights to obtain information about products' durability.
- Revise requirements on labelling and warranties in consumer protection legislation.
- Companies to add information on eco-efficiency to product labels.
- Incorporate minimum requirements for product durability, updatability, reparability into public procurement.
- Clarify obligations concerning improvements in material efficiency and the powers of the authorities to issue permit conditions. A guide has been prepared for licensing authorities (also included in new waste plan - training on this).
- Promote the reduction of hazardous waste in industry by improving source separation and giving priority to reusable chemical packages.

The 2012 Programme to Promote Sustainable Consumption and Production, "More from Less – Wisely" aims to reduce environmental impacts and carbon emissions from households and the public sector, including food waste.

The Material Efficiency Programme (2014) includes measures to clarify the waste and environmental permit system and to use waste and industrial secondary flows in a sustainable way. Also proposes a trial of a material-efficiency contract with companies as a way of spurring such efficiency. The Material Efficiency Centre is the national coordinator for material efficiency with many projects.

A circular economy focus area introduced into the Finnish Innovation Fund (SITRA) in 2016. Key opportunities are paper industry side streams; opportunities in the food industry to reduce loss of value; business potential of private consumption; and opportunities in construction and manufacture of machinery. Tests of different business models e.g. in textiles and in nutrient cycling.

The Nordic Council Platform "Green Growth the Nordic Way" has activities on textile waste as a resource, and reducing food waste.

## **Taxes, Levies, and Fiscal Measures**

- Plans for a lower VAT rate for repair services for bicycles, shoes, leather goods, clothing and home textiles. Examining a more extensive 'household deduction' for maintenance and repair services aimed at extending the useful life of household appliances, furniture and other durables, and the purchase of renovation design services
- Drinks packaging tax and bring-back scheme. The tax of €0.51 per litre applies to packaging outside the approved returnable-deposit systems that collect packaging for refilling or material recycling
- Environmental taxation – waste taxes have been gradually increased
- Plans to look at an incineration tax
- Under the new waste plan, municipalities are to promote small repair service businesses by offering them low-cost premises and publicity
- Looking at subsidies to encourage recycled fertilisers
- Considering a 'land-based tax' for builders to use virgin material effectively and to increase the use of recycled material in construction
- Carrying out studies as to which natural resources should be subject to economic instruments
- Measures to promote uptake of resource efficiency audits in companies – companies may receive economic incentives for audits
- The circular economy is one of the key projects of the Prime Minister's 2015 government programme, with an investment of €40 million

## **Regulation Measures**

Finland's compliance promotion measures include regular dialogue with the regulated community and co-financing of environmental management studies with business associations. National-level negotiations with representatives of specific industrial sectors are also regularly organised.

Finland has police officers and prosecutors specialised in combating environmental crime and a specialised administrative court in Vaasa. Advanced training programmes for environmental inspectors and police officers are in place.

Legislation on the promotion of sustainable environmental and energy solutions (clean-tech solutions) in public procurement. In particular in relation to waste:

- Waste management procurements to be aimed at implementing clean-tech solutions for waste; lifecycle cost accounting to be used.
- In institutional food services, an effort to systematically reduce food waste.
- A sustainable procurement advisory service, which offers all procurement units free assistance in procurement planning.



### Best Practice Examples

Ekokoti - tools for households to estimate environmental effects and make choosing sustainable services and products easier.

The EcoSairila growth centre for green industry to develop and pilot new techniques and concepts for the circular economy and eco-efficient treatment.

Under the SITRA innovation fund, the Helsinki Metropolitan Smart & Clean Foundation to turn Helsinki into a reference area for ecological and smart solutions. Fields of action include construction, waste and consumer clean-tech.

Save the Food pilot scheme sharing left-over food and groceries between inhabitants of a housing cooperative.

The website [commitment2050.fi](https://commitment2050.fi) records commitments from members of Finnish society to UN Sustainable Development goals, including to a resource-wise economy.

### Targets for Waste, Resource Efficiency, and Related Areas

#### Draft waste plan targets:

- Food waste is halved by 2030
- 60% of all bio-waste from municipal waste is recycled
- Develop targets for public purchasing of recycled fertilisers for landscaping
- Municipal waste: 55% recycling by 2023
- Increase recovery of nutrients (especially Baltic areas)
  - 50% of manure and wastewater sludge undergo advanced treatment processes by 2025
- Increase recovery of construction waste to 70% (in line with EU targets)
- Public sector to promote waste prevention in its operations by setting targets

Existing waste plan: ensure a downward trend by 2016 for municipal waste levels.

Public catering facilities to reduce food waste and increase organic food to 20% by 2020.

Fisu network of municipalities to become carbon neutral and waste-free by 2050, as well as institute sustainable consumption. Waste goals are on food consumption and production as well as material cycles.

#### Priority Waste Streams

Draft waste plan: building waste, food and bio-waste, municipal waste, and WEEE.

Previous plan up to 2016: C&D waste; hazardous waste; household/municipal waste; packaging; WEEE/batteries; and industrial waste.

### Perceived Challenges in Addressing the Circular Economy

Since the majority of products are imported to Finland (and the EU), the draft waste plan notes the difficulties in establishing lists of the material content of products.

#### Emerging Issues

The draft waste plan aims to identify opportunities and obstacles for the sharing economy (including rules and taxation) and support pilot projects like local lending projects.

A SITRA (innovation fund) report estimates the circular economy represents a €1.5-2.5 billion opportunity for Finland.



# Flanders

## Waste/Materials Factsheet



### Summary

The region of Flanders is highly advanced in many aspects of waste policy. OVAM, the Public Waste Agency of Flanders, was established in 1981 and has long been a leading light of research and development in this field.

Flanders has achieved a recycling rate of 70%, one of the highest, if not the highest of any region in Europe. Several measures are in place to achieve this and new streams are being targeted such as an EPR from January 2018 on mattresses focusing on eco-design, selective collection, recycling (including targets), and marketing. Flanders also seeks to maximise the (local) reuse of furniture and the possibility of an EPR and is looking at an instrument on textiles in 2018 - may be an EPR or a Code of Practice.

Flanders is also working at a federal level with the Ministries of Environment and Economy on resource efficiency and the circular economy. On the federal level, priorities are the chemical and building sectors; in particular, plastics, building, and non-ferrous metals and critical metals (as defined by EU). In Flanders the focus is on construction sector life-cycle approaches (largest consumer of materials) and the bio-economy - a shift from petroleum-based materials to renewable.



#### Municipal Waste Per Person:

Flanders: 522 kg per person (2014),  
EU average: 476 kg.



#### Recycling:

Belgium already reached EU 2020 50% target; at 55% in 2014, with Flanders performing higher at 70% in 2014. Already eliminated landfilling of biodegradable waste.



#### Domestic Material Consumption:

DMC per person in Belgium – 14.3 tonnes  
– 109% of EU average (2014).



#### Resource Productivity:

€2.36/kg (Belgium, 2014),  
EU average: €2.1/kg.



#### Hazardous Waste:

262 kg per person (Belgium, 2016), EU average: 187 kg.



#### Population:

Flanders: 6.4 million, Belgium total:  
11.4 million.



## Policy Framework

The areas of Flanders' Environmental Policy Plan (MINA) that relate to waste are:

- Materials and waste: moving to a circular economy
- Executive plan on management of municipal waste
- Policy plan for primary raw materials
- Food
- Land and soil
- Buildings

## 2016 municipal waste plan

Under the revised 2016 municipal waste plan, measures include:

- Landfill levies, landfill bans, and a ban on new landfill sites for non-hazardous waste.
- Mandatory source-separated collection for other plastics like EPS, films, and hard plastics (e.g. toys); targets planned.
- An EPR from January 2018 on mattresses. Focuses on eco-design, selective collection, recycling (including targets), and marketing.
- Looking at maximising the (local) reuse of furniture and the possibility of an EPR.
- Looking at an instrument on textiles in 2018 - may be an EPR or a Code of Practice. Bringing together textile chain actors to examine this. Looking at the sorting message for reusable textiles versus worn textiles, both of which are source separated.

## Circular economy

The 2014 federal roadmap on the circular economy, was followed in March 2016 by the Flanders 'Vision 2050' with the circular economy as one of the seven transitions. The policy is further shaped through the continuation of the Flanders' Materials Programme as a circular economy platform focusing on innovation. Extensive activities at federal and regional levels in promoting the circular economy. Using European Regional Development Fund (ERDF) monies to promote the circular economy.

## Resource efficiency

A working group has been set up at federal level with the Ministries of Environment and Economy on resource efficiency and the circular economy. Priorities for 2014–2019 in the Flemish Materials Programme:

- Federal: chemical and building sectors; in particular, plastics, building, and non-ferrous metals and critical metals (as defined by EU).
- Flanders: construction sector life-cycle approaches (largest consumer of materials).
- Bio-economy - a shift from petroleum-based materials to renewable – main aim is to give biomass residues a second life. Are systematically listing available biomass, and determining which are suitable for high-value applications or energy recovery. An inter-departmental working group on the bio-economy is also involved in the updates of the Flemish renewable energy action plan and the agricultural policy.

The policy programme on construction addresses five domains: 1) selective demolition and dismantling; 2) stony fraction; 3) non-stony fraction; 4) materials performance of buildings; and 5) dynamic (re)construction. It looks at the whole life cycle of buildings and also at future use of their component materials over time. It starts from an integrated environmental assessment of the use of materials in buildings at the level of materials, building elements, buildings and the built environment.

## A materials decree on the sustainable management of material cycles and waste

Flanders transposed the Waste Framework Directive into a new materials decree, rather than simply revising the waste decree. The scope of action was extended from the end-of-life phase to the entire materials cycle. Thus, now also looking at things like the impact of design on the waste phase and at shared use of products.

The 2012 Materials Programme has three pillars:

- A long-term vision, together with an open network and transition experiments
- Policy-relevant research
- 45 actions under 'Agenda 2020' across 9 areas

Innovative examples from the 45 actions include:

- Examine the rules for earthworks to prevent recycled materials from being used for low-grade applications; promote the use of recycled granulates in road construction.
- Intensify the use of EPR as an instrument to close material loops.
- Increase consideration for sustainable materials management in issuing permits.
- Government purchases must take sustainable materials management into consideration.
- Teach tomorrow's citizens the skills to manage materials more efficiently, through higher education and umbrella organisations.
- Develop and promote Flanders Plastic Vision quality label for recycled plastics to reduce bias; remove legal obstructions in closing plastics cycles; catalogue plastics that are/can be recycled; develop indicators to track closing plastics cycles.
- List biomass streams and possible applications; valorise and market recuperated nutrients; identify and stimulate the demand for bio-based products.
- Supply quality second-hand electric and electronic devices to developing countries and establish local collection and processing facilities for discarded EEE.
- Restrict illegal networks for metal containing waste products; collect even more metals; increase research and development for closing metal cycles.



The previous municipal waste plan included innovative actions such as:

- Examining the role of subsidies for product reuse
- Actions to stimulate collection and sale of reusable goods through optimal logistics and housing, reduced VAT, and reduced environmental taxes
- Aims to further align with the social economy policy area
- Investigate what potential for product reuse and employment exists
- Evaluate collection methods for reusable goods and investigate integrating reuse into current acceptance obligations
- Actions to stimulate circular green waste management in vocational training (e.g. landscaping)

Other measures on plastics at the federal level include analyses of the sources of micro-plastics in water, with a view to possibly setting product standards; analysis of REACH and the recycling of plastics.

The Policy Research Centre on Sustainable Materials Management collects knowledge about dismantling of waste products in the chemical industry, as a basis for smarter product legislation that further stimulates the closing of material cycles.

**Food:** agreement on combating food loss. Roadmap for 2015–2020 covers the whole chain. It gives incentives for more sustainable food production and consumption and contributes to a reduction in the food chain's inputs.

The policy plan for primary raw materials 2014, analyses the demand and supply in Flanders of mineral resources (clay, sand, loam and gravel). Includes indicators for use of alternatives.

### **Taxes, Levies, and Fiscal Measures**

Flanders has taxes on landfill and incineration along with various Extended Producer Responsibility (EPR) schemes.

### **Regulation Measures**

Flanders policy instruments:

- Landfill ban on recyclable waste
- Incineration ban on recyclable waste
- Pay-as-you-throw schemes – electronic weight-based systems on residual and bio-waste
- EPR schemes
- Various ecodesign tools

Steps have been taken against illegal exports of metal containing waste. Criteria defined for determining whether electronic devices can be reused have made checks easier. OVAM is conducting a study to map the quantity, cost price, composition, locations, and perpetrators of illegal dumping in Flanders, with a view to an action plan.

### **Best Practice Examples**

Various EPRs. Mattresses from January 2018.

Investigation of a system to collect windowpanes (flat glass) that are being replaced to meet Flemish/EU energy efficiency targets, in order to produce new glass.

Progress made in dedicated collection of small EEE containing precious and rare earth metals. Refinement of legislation provides for new collection methods for small WEEE.

SIS toolkit and Ecolizer - ecodesign toolkits. Ecodesign in Higher Education kit – guidance to integrate eco-design into training programmes.

Materials Scan tool gives insight on quantities of materials used by SMEs and advice on becoming more smart and efficient in their use. OVAM e-resources tool helps companies make a distinction between waste materials and raw materials.

OVAM is investigating whether a quality management system (QMS) for collectors of industrial waste would be useful.

The 2016 revised municipal waste plan encourages pilot projects for the collective collection of source-separated fractions on industrial premises.

A materials methodology for building components being developed as a measurement tool for architects, contractors, etc. to make conscious material choices. Pilot projects on flexible construction being initiated in social housing - allows buildings to be adapted to changing societal needs.

ERDF money being used for contaminated land rehabilitation and examining the reuse of old landfills (recycling of materials, recovery of energy, reclaiming of land, and preserving drinking water supplies. At the stage of ranking landfill sites by potential).

Demo projects on phosphorus recovery from waste water, sewage sludge, and manure.



### **Targets for Waste, Resource Efficiency, and Related Areas**

The 2016 waste plan abandons one single residual waste target for all Flanders; instead, it adopts tailor-made targets ranging from 116 to 258 kg per inhabitant depending on location, decided on socio-economic and other grounds.

The plan aims to give more furniture and belongings a second life. The previous plan's 5 kg reuse per resident target has been achieved. By 2022, Flanders accredited reuse centres have to ensure that each Flemish person reuses 7 kg of goods.

Other targets for Flanders relating to waste and materials:

- By 2022, 15% less industrial residual waste compared to 2013, taking into account employment rate.
- By 2020, the amount of food waste will have decreased by 15% (30% by 2025).
- By 2020, the share of alternatives in the total amount of mineral resources required will have increased relative to 2013.

### **Priority Waste Streams**

- Plastics
- Building materials
- Food
- Textiles
- Furniture and mattresses

### **Perceived Challenges in Addressing the Circular Economy Policy Ambitions**

Existing indicators do not sufficiently monitor if consumption and production patterns are on the right track towards a circular economy. OVAM developed a model for material flows including their losses from the material stock in the economy.

Learning by doing and room for experiment is needed in the development of the circular economy since it is complex.

In recent years, high-rise buildings and the number of smaller homes are increasing again. Residents there have less space to store their waste for a long period of time.

To further reduce the quantity of residual waste, OVAM is developing a tool to stimulate the reduction of waste treatment facilities (incineration) over the next few years.

### **Emerging Issues**

A shift in thinking in terms of waste towards materials; 'non-disappearance' of materials – export, burial, incineration; and materials should be treated at a high-quality level.

Europe should remain a front-runner in product standardisation, reuse, recycling, separation – this creates jobs and exports of knowledge and expertise.

# France

## Waste Factsheet



### Summary

Several initiatives are in place to improve resource efficiency and reduce waste in business, the public sector and households.

A wide range of EPRs are in place and regulations have been imposed, for example in relation to food waste from supermarkets.

A very wide and ambitious range of targets has been declared, through EPR programmes and generally, and many initiatives have been initiated through the NWPP.

The construction sector has been specifically targeted with several voluntary agreements, network development, training schemes and other incentives. France is also trying to increase the lifetime of products and move towards a more circular economy through support for reuse and repair initiatives.



### Municipal Waste Per Person:

501 kg (2015). Higher than EU average 447 kg.



### Recycling:

39.5% (2015). Lower than EU average of 45% and much lower than Germany (64%).



### Domestic Material Consumption:

DMC per person: 10.9 tonnes (2016) – lower than the EU average of 13 tonnes.



### Resource Productivity:

€3.06/kg (2016). Much higher than the EU average of €2.1/kg. DMC down since 2007, GDP up, therefore resource productivity up.



### Hazardous Waste Data:

166 kg per capita (2014). EU average is 187 kg.



### Population:

65 million.





## Policy Framework

### National Waste Prevention Programme (NWPP) 2014-2020

The plan includes regulatory tools, voluntary agreements with sectors to increase waste prevention, awareness-raising and information-sharing, public procurement, and subsidies and incentives.

In particular, it includes various EPR schemes – see Targets section. Some of the targets set in the plan have been revised by the Energy Transition for Green Growth Act 2015.

Information initiatives to raise consumers' awareness of waste prevention in EPR schemes, including actions to increase the role of producer responsibility organisations in promoting the concept of eco-design and the practice of reuse.

Actions for specific themes and specific waste streams are detailed below.

### Construction Waste

Measures under the construction sector include a voluntary agreement (see Targets section). Other initiatives include:

- 'Regional quarry schemes' must now also take into account use of waste materials and the capacity/equipment of such locations to recycle materials.
- Setting up a network of waste facilities welcoming waste from construction.
- Training programmes on C&D waste prevention for those responsible for worksites' construction phase
- Promotion of a management system in the flow of C&D waste.
- Specific projects including:
  - The BAZED initiative to design buildings to reduce waste generation at all stages of their life cycle.
  - The ReQualif project on the technical and regulatory feasibility of the reuse of products through demonstration works.

### Reuse and Repair

Promotion of the practice of reuse and repair. Initiatives include:

- Promoting reuse/repair centres and monitoring the number of such centres
- Training and certification of repairers; Répar'Acteurs® is a brand to promote repair professionals
- Facilitation of collection and access to reusable products
- Facilitation of access and availability of spare parts to repair products
- Deposit and return schemes – looking into the development of returnable package systems, where relevant, with the aim of reuse

### The Public Sector:

Initiatives in the public sector include:

- Training and awareness programmes for public agencies
- Strengthening consideration of waste prevention in tenders in order to procure goods and services with reduced environmental impacts throughout the products' life cycles
- Continuation of the reduction of the consumption of paper by introducing paperless procedures
- A help guide for the drafting of waste management tenders
- Actions to reduce the use of toxic products (cleaning services, maintenance of green spaces, print cartridges, etc.)

Other major initiatives not outlined here include several measures tackling food waste and marine litter.

The National Ecological Transition Council is a system involving all ministries and stakeholders in society and provides coherence and integration at national level.

The Energy for Green Growth Act, 2015 sets emissions goals and measures on waste and resource efficiency. A circular economy strategy is in the process of being set up.



## **Taxes, Levies, and Fiscal Measures**

Various EPR initiatives.

'Incentive pricing' for domestic waste collection is being rolled out. This has resulted in a decrease of 20-50% in collected residual waste and an increase in the collection of separate streams. The roll-out is happening gradually – aiming for 15 million people covered by 2020 and 25 million by 2025.

The NWPP includes measures for increased application of environmental tax and subsidies. Analysis has also been carried out of the incentive effect of environmental taxes.

The PIA finances RDI programmes, infrastructure and institutes as well as financial instruments (mainly equity and loans) for innovative projects that target different eco-industry related issues, with the objective of supporting companies' growth. By 2015, the PIA had dedicated €2,850 million to clean energy and the circular economy.

## **Regulation Measures**

An obligation by law for food retailers and distributors to donate unsold goods.

Mandatory demolition diagnostic assessment of buildings and audit of the materials to be deconstructed.

Since March 2016 businesses are required to sort at source five types of waste: paper, metal, plastic, glass and wood. A law requiring vehicle repair professionals to use spare parts instead of new ones.

## **Best Practice Examples**

The 'Territoire Zéro Déchet, Zéro Gaspillage' (TZDZG) programme is a scheme for zero waste communities working locally on waste prevention and material efficiency for an integrated approach to a local circular economy. This voluntary scheme is based on mobilising companies, citizens, administrations, businesses, and associations/chambers with the aim to reduce all sources of waste, extend the life of products, and maximise the exploitation of waste products (material recycling, organic and energy recovery). In 2015 there were 153 such communities provided with technical and economic assistance, with €55 million grant aid. A network of 550 facilitators assists this.

Business programme: 49 companies selected from 329 candidates have put in place an action plan to demonstrate that financial savings are possible by reducing consumption of materials and energy and by making better use of waste. Each was assisted over one year to carry out the most relevant and cost-effective options identified. A related ADEME study notes that external management costs represent <7% of the full cost of waste for companies.

## Targets for Waste, Resource Efficiency, and Related Areas

France has put in place several and ambitious targets in several areas including, under the Energy Transition for Green Growth Act:

- A waste prevention target to reduce municipal waste production per inhabitant by 10% by 2020 (versus 2010)
- 55% recycling target (including organic waste) of non-hazardous, non-inert waste by 2020, and 65% by 2025
- 70% recycling target for C&D waste by 2020, in line with targets set by the Waste Framework Directive
- 30% reduction in non-hazardous, non-inert waste sent to landfill by 2020 and 50% by 2025 (versus 2010)
- The waste prevention plan's target was stabilisation of industrial waste (excluding C&D waste) by 2020 compared to 2010. This act requires a reduction by 2020 compared to 2010
- The waste prevention plan's target was stabilisation of C&D waste. This act revised this target, requiring a reduction by 2020 compared to 2010
- A resource/material productivity target – a 30% increase between 2010 and 2030, as well as a decrease in DMC per person

The 2013 Covenant on food waste: halving food waste by 2025. France has also put in place several targets for public bodies as well as EPR objectives for household paper, textiles, clothing, furniture and shoes. Other targets include (again in a voluntary EPR scheme): waste packaging and plastic products for agricultural supplies, printer cartridges, as well as for the agriculture and agri-food sectors, and in relation to batteries, automotive waste, tyres and WEEE.

### Qualitative indicators:

- Decoupling the production of municipal waste and expenses from household consumption
- Decoupling the production of non-hazardous, non-mineral waste from economic activity and GDP
- Decoupling material consumption from economic wealth (GDP)
- Awareness of waste prevention in France

## Priority Waste Streams

The waste streams of highest priority are: food waste, C&D waste, chemicals, batteries, EEE, furniture, and paper. The second highest priority level: household packaging, plastics, metals, vehicles, and textiles. Nutrients in organic waste is also relevant.

## Perceived Challenges in Addressing the Circular Economy Policy Ambitions

France is in the process of transitioning to 'incentive pricing' in relation to household waste collection. Some difficulties remain because it requires a thorough review of the organisation of the service and has the potential to give rise to negative reactions. However, a survey carried out showed some concerns but also showed that 7 out of 10 are in favour of incentive pricing.

## Emerging Issues

Among critical raw materials identified at the European level, France has so far selected 16 potentially strategic metals for study.

An upcoming national strategy on biomass resources and the bio-economy.



# Germany

## Waste Factsheet



### Summary

Germany is among the top performers in the EU regarding waste management with a very high recycling of municipal solid waste (64%) and very low landfilling (0.3%). However, it now seeks to move beyond considerations of waste and the distinction between waste and raw materials.

In 2016 Germany put into place its second German Resource Efficiency Programme (ProgRess II), for the years 2016-2019. This replaces and supports the previous ProgRess (I) (2012 – 2015).

As far back as 2002, the German Federal Government set the goal in its sustainable development strategy to double the German resource productivity by 2020 compared to 1994. This concern for a reduction of waste and for valuing raw materials is primarily economic and is a major element in Germany's move towards a circular economy. A key element of policies and programmes is also the necessity to secure raw material supply.

The two main focus areas in ProgRess II are sustainable construction and urban development, along with increased resource efficiency of ICT products.



#### **Municipal Waste Per Person:**

629 kg (in 2015), the EU average is 476 kg.



#### **Recycling:**

64%, the highest in Europe (2015). The EU average is 45%.



#### **Incineration and Landfill:**

Incineration at 35%. 0.3% landfill in Germany.



#### **Domestic Material Consumption:**

15.56 tonnes per person (2016). (EU average is 13 tonnes).



#### **Resource Productivity**

of €2.2/kg, EU average is €2.1/kg.



#### **Hazardous Waste:**

269 kg per person (2014), EU average is 187 kg.

#### **Population:**

80.6 million.

## Policy Framework

In 2010 Germany was one of the first countries in Europe to develop a Raw Materials Strategy.

This led to the German Resource Efficiency Programme (ProgRess) in 2012, covering the years 2012-2015. The main aim of the programme was to decouple economic growth from the use of resources in Germany. The programme contained a set of concrete actions. A coordinated implementation programme was followed which included representatives from business, environmental and consumer organisations as well as trade unions.

ProgRess II (2016-2019), encompasses a total of 123 different resource efficiency measures with the primary aim of decisively contributing to the transition towards a circular economy. Two of the main focus areas are:

- Sustainable building and sustainable urban development
- Resource efficiency of ICT products

This approach to resource efficiency at the national level is supported by additional programmes, measures and actions at regional level.

## Regulation Measures

Germany's first uniform National Waste Disposal Act was adopted in 1972. The Waste Management Act (KrWG) 2012, is today Germany's main waste disposal statute. Disposal of specific types of product waste (ELVs, used batteries and end-of-life electronic and electrical devices) governed by the ELV Regulation, the Battery Regulation, and the WEEE Regulation.

The Waste Management Act contains a new provision concerning the distinction between waste on one hand, and by-products on the other hand, setting in place criteria for by-products.

From January 2015 sorting became mandatory for organic waste, as well as for paper, metal, plastic and glass. Recovery rates will become mandatory in 2020.

Since July 2013, Germany has made it an obligatory feature on building products with CE markings whether they contain Substances of Very High Concern in concentrations of more than 0.1%.

## Major Initiatives

A national strategy on GPP establishes mandatory targets for all authorities at federal level to use life-cycle costing in their procurement procedures.

## Best Practice Examples

In 2001, the German Federal Building Ministry published a Guideline for Sustainable Building. This was a practical aid for the planning, the construction, the structural maintenance, the operation and the utilisation of federally owned properties.

This guideline was made obligatory for all Federal Government new buildings and renovations.

In order to show its commitment both to the concept of GPP, and also to further the reduction of raw material consumption in the construction industry, the Guideline for Sustainable Building from 2001 was reworked and reintroduced at the beginning of 2011 by means of decree in the revised form. The Assessment System for Sustainable Building (BNB) has been developed for the compulsory integrated assessment of federal buildings.

These guidelines take the form of a detailed point-by-point set of guidance actions over three main dimensions: ecological, economical and social/cultural.





### **Targets for Waste, Resource Efficiency, and Related Areas**

As far back as 2002, the German Federal Government set a goal to double the German resource productivity by 2020 compared to 1994 in its sustainable development strategy.

With regard to waste, some recent targets have been published in ProgRes II for specific streams, including:

- Municipal waste: more than 65% recycling by 2020
- Plastic waste: significant increase in recycling by 2020
- Building materials waste (concretes, etc.): significant increase in recycling by 2030
- Gypsum/plasterboard in construction: significant increase in recycling by 2030
- ELV electronics: extensive disassembly by 2020
- Electrical appliances: continuous increase, 65% by 2019
- Bio-waste: 50% increase, from 2010 to 2020
- Phosphorus from secondary sources: significant increase after new sewage sludge ordinance

In ProgRes II Germany has developed a new indicator for use, along with resource productivity. This is called commodity (or raw material) productivity and measures (in euros per tonne) the full biotic and abiotic resource consumption for good and processes, including imported goods. The aim is to prevent 'false' outcomes of increased resource productivity due to economic changes only.

### **Priority Waste Streams**

As mentioned above, sustainable building/urban development and resource efficiency of ICT products are two key focal points of the 2nd German Resource Efficiency Programme (ProgRes II) of 2016. Specific targets for plastics waste, biomass and the electronics in used vehicles are also worth mentioning.

The National Biomass Action Plan (2009) and the Action Plan for the Industrial Use of Biomass (2009) both aim to increase the energy production and industrial use of biomass as a significant contribution to reducing the use of fossil raw materials and to combat climate change. In both action plans the efficient use of biomass is a major goal and the increase in resource efficiency is addressed in several spheres of activity.

The Forest Strategy 2020, launched in 2012, focused on sustainable forest management and efficient use of wood in German forest-based industry. The Policy Strategy Bio-Economy focused on the efficient and sustainable use of biomass through innovative technologies and production processes, especially in the chemical industry.

In 2013, the German government commissioned the German Raw Material Agency to implement a monitoring scheme on critical raw materials. Monitoring includes an evaluation of emerging supply risks for important raw materials and intermediate products that have to be imported to Germany for industrial production. Criteria for the declaration of a critical raw material are country concentration, company concentration and country risk.

Two other areas of concern with supportive initiatives are the types and amounts of consumption with regard to public procurement (mentioned above) and in relation to food.





### **Drivers – Positive and Negative Influencing Factors**

The major factor in Germany's resource efficiency policy is the understanding that resource efficiency is a strategic topic for innovation, growth and improving the competitiveness of the German economy. A key element of policies and programmes is also the necessity to secure raw material supply, making the German economy more independent of raw material imports. Improved resource efficiency also reduces the environmental and social impacts of Germany's production and consumption.

# Netherlands

## Waste Factsheet



### Summary

The Netherlands has long been a forerunner in environmental policy, both in terms of tackling environmental pressures and in organising effective environmental governance in partnership with regional and local administrations, with business and civil society.

Several policy documents are in place – such as on waste management, waste prevention, the circular economy and green growth.

The Netherlands performs very well in waste recycling – the country reached the EU 2020 target of 50% in 2014, and for 2015 had a municipal waste recycling rate (including composting) of 51.7%. Incineration (energy recovery) represents 48% and landfilling 1%.

All policy efforts in the Netherlands related to the circular economy are captured in the action plan 'From waste to resource' (VANG programme). The VANG programme has nine overall operational goals and 54 actions in total. VANG's focus is on adapting the current waste policy into a transition to a circular economy.



### Domestic Material Consumption:

Municipal waste per person: 523 kg (2015); this is an 8% decrease since 2010 (571 kg), but still above the EU average of 476 kg.



### Recycling:

Very good performance in waste recycling – the Netherlands reached the EU 2020 target of 50% in 2014, and for 2015 had a municipal waste recycling rate (including composting) of 51.7%; incineration (energy recovery) represents 48% and landfilling 1%.



### Domestic Material Consumption:

DMC per person – 9.43 tonnes – 72% of EU average (2016). The respective values for 2015 were 11.05 kg (88.1% of EU average).



### Resource Productivity:

€4.3542/kg in 2016 (€3.614/kg in 2015). This is a very high value and is almost twice the EU average. The high value reflects the low DMC.



### Hazardous Waste:

286 kg per person in 2014, which is 153% of EU average (187 kg/person in 2014).



### Population:

17 million.

## Policy Framework

A number of key policies have been enacted over recent years. Some important examples, include:

- 2009 Waste Management Plan 2
- 2011 Raw Materials Memorandum
- 2012 Programme on the Bio-based Economy
- 2013 Waste Prevention Plan
- 2016 Waste Management Plan 3
- GPP – several measures

## Waste Management Plans

In the Netherlands the entire policy for waste can be found in Landelijk Afvalbeheerplan (LAP), the National Waste Management Plan. There have been two waste management plans to date. LAP2 will expire in December 2017. LAP3 covers the period 2017-2023, and looks ahead to the period up to 2029. A consultative process for LAP3 has been undertaken. The policy framework sets out the main points of waste policy. For example, it covers the national objectives for the separate collection of waste and general principles for the use of instruments such as licensing and enforcement. The sector plans flesh out the policy framework for specific categories of waste.

## Review of the Dutch National Waste Management Plans

In a review of the Dutch Waste Management Plans, it has been declared that most of the quantitative targets of LAP1/ LAP2 have been achieved. The volume of combustible waste going to landfill has been reduced, energy output from incineration plants has risen, and useful application of waste has increased in percentage terms in various sectors. That three targets for useful application were secured, however, is a result of waste incinerators being assigned the so-called R1 status in 2010 and 2011. The target for useful application of industrial waste was not achieved.

The waste sector's carbon emissions have declined by 60%. The total waste volume has also been decoupled from economic growth, as scheduled.

## Afvalpreventieprogramma Nederland (Waste Prevention Programme Netherlands)

There is also a waste prevention programme, the objective of which is a shift towards a circular economy handling natural resources as efficiently as possible and ensuring the lowest possible environmental impact.

The circular economy entails:

- Optimal use of resources
- No waste, no emissions
- Sustainable resource use

Three forms of practical action are proposed:

- Better design (less material usage, less harmful substances, more recycled material, longer life)
- Less waste in the production phase (less material usage/ material loss, less harmful substances, closed material cycles)
- Conscious consuming (increase awareness of prevention by informing consumers and encouraging careful choices, less waste and more reuse)

## Circular economy

The Netherlands can be considered as a frontrunner in this field and was one of the first to present a circular economy programme (2014), followed in September 2016 by the government-wide programme "Circular Economy by 2050".

Dutch policy-makers recognise the strong linkages between waste and material use. As an example, they state: "Due to their clarity and distinct liability distribution, waste-related policies display higher success rates than more general circular economy policies. To ensure such policies are successful, however, an increasing awareness of the circular economy and its benefits is essential."

## 'From waste to resource' (VANG programme)

All policy efforts in the Netherlands related to the circular economy are captured in the action plan 'From waste to resource' (VANG programme). The VANG programme has nine overall operational goals and 54 actions in total. VANG's focus is on adapting the current waste policy into a transition to a circular economy, developing behavioural incentives for consumers, facilitating information sharing between municipalities, stimulating recycling in specific waste flows, developing market incentives for producers, connecting education to the circular economy and simplifying methods, indicators and labels. By adopting such an integral programme, the Dutch government is aiming to minimise resource use and to close the resource loop. The nine operational goals and some of their key activities will be presented briefly below.

- Identify, sustainably manage and utilise natural capital
- Focus the design and development of products on circularity
- Increase and disseminate knowledge about the circular economy and make it practicable
- Encourage resource-free business operations
- Turn chains into cycles
- Develop financial and other market incentives
- Make consumption and procurement circular
- Gear waste policy to the circular economy, and improve waste collection and recycling
- Develop indicators and metrics that quantify the transition to a circular economy



## A circular economy in the Netherlands by 2050

This document, published in 2016, further outlines Dutch priorities and plans for the circular economy. Some important extracts are, as follows:

- By 2050 raw materials will be used and reused efficiently without any harmful emissions into the environment. If new raw materials are needed, they will be obtained in a sustainable manner and further damage to social and physical living environments and public health will be prevented. Products and materials will be designed in such a way that they can be reused with a minimum loss of value and without harmful emissions entering the environment.
- The necessity to strive for a circular economy comes from a concurrence of three developments.
  1. Explosive demand for raw materials, this growth is not sustainable.
  2. Dependency on other countries: the Netherlands and Europe are dependent on third countries to a high degree for raw materials. Of the 54 materials that are critical for Europe, 90% must be imported, primarily from China.
  3. Interconnectivity with the climate (CO<sub>2</sub> emissions): the extraction and use of raw materials has an additional negative effect by making a considerable contribution to the consumption of energy and the emission of CO<sub>2</sub>.

**Vision:** the transition involves a shift from “take, make and waste” to a system that uses as few new raw materials as possible.

**Priorities:** the programme is focused on five priorities that are important for the Dutch economy, that have a large impact on the environment, and that fit in with the priorities of the European Commission. The five priorities are:

**Biomass and food:** biomass is an indispensable raw material in the circular economy. By its nature, biomass is a circular raw material, which distinguishes it from other raw materials.

**Plastics:** the use of plastics has increased twentyfold over the past fifty years. Expectations are that plastic use will double once again in the twenty years ahead.

**Manufacturing industry:** sectors such as electronics, machinery and systems industry, automotive industry, electric transport, aerospace, and sustainable energy technologies use increasingly more raw materials due to a growing demand for products and services.

**Construction sector:** the construction industry is estimated to account for 50% of the raw materials used, 40% of total energy consumption, and 30% of total water consumption in the Netherlands.

**Consumer goods:** consumer goods (things or stuff) rank first in the environmental impact top ten of average annual consumption per capita.

## Taxes, Levies, and Fiscal Measures

In terms of environmental taxes, the Netherlands has levies on water, energy, waste disposal, and coal.

### Waste disposal taxes

On 1 January 2016 the waste disposal charge was fixed at €13.07 per 1,000 kg. This rate applies to waste that goes to landfill or is incinerated. There is no charge on waste that is recycled. Waste processors pay the charges to the Tax and Customs Administration and may recharge them customers who use their landfill sites. This is below the EU average of €28/tonne.

### Regulation Measures

The programme “From Waste to Resource” is part of the Dutch move towards a circular economy. It promotes the reuse of waste as a valuable raw material. However, a range of regulatory instruments is also available with respect to waste. These include, for example:

**Landfill bans:** Ban on landfill of all recyclables and products/materials that can be incinerated. Producer responsibility legislation: for example on packaging, WEEE, ELVs, batteries, tyres, and a generally binding declaration-of-waste management fee on flat glass.

**End-of-waste/by-products:** In cooperation with the Ministry of Economic Affairs, a taskforce has been established to look at the barriers and problems companies experience with legislation or rules that may influence opportunities for moving to a circular economy.

## Best Practice Examples

### Promoting circular revenue models

Current regulations are not always geared to new relationships between those who supply and those who buy products and services. This can be seen in initiatives involving the provision of services rather than products. The Dutch Cabinet intends to provide greater clarity on related tax and liability aspects.

### National government sets a good example

The National Government itself wants to set a good example in the area of socially responsible and circular purchasing. Economic circularity in the operations of the National Government provides opportunities to profit from the economic perspective of a circular economy, to combat wastage of raw materials, to expand the scope for innovation, and create opportunities for new business models. The government is launching pilot projects involving circular and bio-based operations in the categories of furniture, confidential paper, work wear, IT hardware, waste and raw materials, and catering. The goal is for the government to halve the volume of non-recyclable waste (comparable to household waste) by 2020, compared to the volume produced in 2012.

## Targets for Waste, Resource Efficiency, and Related Areas

- By 2020, at least 75% of household waste (including bulky waste) collected separately, and at least 75% of the waste produced by small companies, offices, stores and services should be collected separately
- By 2021, at least 51% of plastic packaging waste should be recycled, and at least 43% of wood packaging waste should be recycled
- By 2022, < 5 million tonnes of residual waste is allowed to be incinerated or sent to landfill (in 2012 the figure was 10 million tonnes)
- By 2025, residual household waste: < 100 kg per person/per year
- By 2030, recycling of metal packaging should reach 85%

## Priority Waste Streams/Streams of Concern/Challenging Waste Streams

Rather than priority waste streams the Netherlands has identified priority material resources, sectors and consumption categories.

### Priority materials

In keeping with the materials and circular economy ethos, the Netherlands policy evolved from a waste stream approach into a value-chain or sector-based approach. In 2014 the Ministry of Economic Affairs carried out research on the 22 non-organic (abiotic) materials considered critical for Dutch companies, and 13 materials/products are currently subject to the value-chain approach (see Table 1).

Table 1

Priority materials	Priority industries and economic sectors	Priority product groups
Plastics	Plastics and rubber used in the construction of infrastructure	plastics (plastic bags)
Biomass	Machinery and installations – for example for air conditioning and	biomass
Textiles	Refrigeration – used in hospitality and offices	textiles
Food (waste)	Kisposable and single-use products used in health care	food (waste)
Phosphorus	Chemical products and chemical leasing	packaging
Construction and demolition waste (concrete)	Electrical and electronic waste from households in waste management	electronics
Packaging	Organic waste from hospitality and health care	diapers
Electronics	Automotive remanufacturing and component harvesting from recycling and	
Wood	Waste treatment	
Diapers	The Dutch maritime industry, covering the design and manufacture of ships	
Waste in social services	And off-shore facilities;	
Underground infrastructure materials like cables, wires and pipes	Office furniture assembly	
Mechanical installations in the built environment	Plastic and paper packaging used in food production	



### Priority industries and economic sectors

In the programme Nederland Circulair!, a value-chain selection method has been developed on the basis of economic impact, environmental impact, value preservation potential and transition potential. Ten key value chains have thus been prioritised (see Table 1).

Although the concentration in the Netherlands is on materials and sectors, as outlined above, priority waste streams are still outlined in the EEA Waste Prevention Programme Netherlands fact sheet, October 2016. These are given as: C&D waste, food waste, textile and carpets, metals, paper and cardboard, packaging, electrical appliances and hazardous waste.

## Perceived Challenges in Addressing the Circular Economy Policy Ambitions

A number of challenges have been outlined in the Dutch Circular Economy by 2050 document. Important among these are the following:

### • Shared use and providing a product as a service

There are challenges to face with respect to legislation, incentive arrangements, and tax frameworks. Uncertainty about the application of legislation may hamper the development of such business cases.

### • Precision farming

A next step in closing the nutrient cycles is the development of precision farming, in which nutrients are used in the right place, in the right quantities, and at the right time, thus ensuring that fewer nutrients are wasted.

The cross-sectoral Smart Industry roadmap, published in May 2016, focuses on the technological challenges and opportunities that are conducive to the development of a circular economy.

## Emerging Issues

- A shift in thinking from waste towards materials.
- New business models that provide a fully closed loop circular economy rather than a linear economy approach need to be designed, i.e., models that reduce, reuse, remanufacture, recover, recycle and redesign.

# Sweden

## Waste Factsheet



### Summary

Sweden has a mature and effective suite of waste management policies and programmes in place.

Swedes have been segregating and recycling household waste effectively for decades. Sweden is committed to optimising this recovery of materials with an ambitious range of targets for food waste, C&D waste, textiles, and chemicals.

A major instrument for improved performance is the use of economic levies. Repairs in Sweden apply a lower VAT rate – 12% instead of 25% – for a wide range of products. Individuals can also claim back half of the labour cost for repairs carried out on their own goods from their income tax. There has also been a major shift in taxation from labour to environmentally harmful behaviour in relation, for example, to climate change, waste, etc. Sweden also applies a bring-back scheme for polyethylene terephthalate (PET) bottles and metal cans.

Sweden is also implementing EPR programmes on a range of materials including: paper, packaging, newspapers, tyres, cars, WEEE, batteries, and pharmaceutical products as well as banning from landfill sorted burnable materials since 2002 and organics since 2005.

Sweden has prioritised food, C&D, WEEE and textiles wastes for specific measures.

Future Swedish plans and programmes include tackling challenges in addressing the Circular Economy Policy – in particular tackling the country's overcapacity in incineration and the fact that it imports waste from a number of EU countries. It also seeks to address the extensive use of 'unnecessary' plastics in the upcoming EU strategy on plastics and will soon introduce a ban on micro-plastics in rinse-off cosmetic products as well as providing financial support for domestic actions on marine litter, as well as a state investigation on plastics.



#### **Municipal Waste Per Person:**

447 kg per person (2015) (close to the EU average of 476 kg).



#### **Recycling:**

48% (2015) (slightly more than the EU average of 45%).



#### **Domestic Material Consumption:**

24.1 tonnes per person (2016) – (much higher than the EU average (13 tonnes) – due to mining and being a net importer of waste.



#### **Resource Productivity:**

€1.95/kg (2016) (EU average of €2.1/kg) – large increase in DMC since 2009, giving a decrease in resource productivity.



#### **Hazardous Waste:**

265 kg per person (2016) (EU average is 187 kg). 7.2 kg per capita collected from households.



#### **Population:**

9.9 million (2017).



## Policy Framework

**The Swedish Generational Goal** is “to pass on to the next generation a society in which the major environmental problems have been solved, without increasing environmental and health problems beyond Sweden’s borders”.

A set of environmental quality objectives (EQO): these set the priorities and work under the generational goal. An All Party Committee on Environmental Objectives aims to secure political consensus. It is made up of Members of Parliament, advisers and experts from NGOs and government ministries. The Environmental Objectives Associated Council is a platform for heads of agencies strategically important for achieving EQOs, to strengthen implementation.

For waste, it is required that policy will ensure that: materials cycles are resource efficient and as far as possible free from dangerous substances; natural resources are managed sustainably; and patterns of consumption of goods and services cause the least possible problems for the environment and human health.

**Swedish waste management and waste prevention plans:** the main purpose is to steer waste management towards greater resource efficiency. Priority areas: construction, engineering, household waste and food chain waste. New plans by 2018.

## Taxes, Levies, and Fiscal Measures

**Taxation measures to stimulate a repair culture:** Repairs apply a lower VAT rate – 12% instead of 25%. Includes repair of household appliances like dishwashers, fridges, etc.; and personal items like bicycles, clothes, textiles, etc.. Individuals can claim back half of the labour cost for repairs carried out on their own goods from their income tax. Aim to boost the economy and encourage purchase of high quality goods. In effect since January 2017.

**A Green Tax Shift Reform Programme:** This was undertaken 2001–2006 to reallocate taxes from labour to environmentally harmful activities. Mainly the carbon tax was increased, but other taxes were adjusted too, including those for waste. Revenues from environmentally-related taxes have not kept pace with increases in GDP, partly due to intended behavioural impact.

**Natural Gravel Tax:** in place since 1996. In 2016 generated SEK 157 million (~ €17 million).

**Landfill Tax:** Landfill tax since 2000 has decreased landfill amounts and help implement bans. In 2016 taxes on waste generated SEK 302 million (~ €32 million).

## Regulation Measures

**EPR:** on paper, packaging, newspapers, tyres, cars, WEEE, batteries, and pharmaceutical products.

**Landfill bans:** on sorted burnable materials since 2002; on organics since 2005.

**Swedish Environmental Code:** this is Sweden’s environmental laws. Includes general consideration of resources, the waste hierarchy, and maintaining natural cycles.





### Best Practice Examples

- Deposit–refund system for PET bottles and metal cans
- Campaign to promote sharing, repair and reuse with an ecolabel scheme (Miljönär) for organisations getting the public to repair, share, reuse or reduce waste
- Companies that produce compost or digestate from clean source-separated substrate can quality label their products through a certified recovery system
- The fuel used in waste collection vehicles can be controlled by procurement requirements. A growing number use biogas and other alternatives

### Targets for Waste, Resource Efficiency, and Related Areas

There are 24 Milestone Targets under the Environmental Objectives. Those for waste are:

- By 2018: at least 50% of food waste from households and commercial sources to be treated biologically to recover plant nutrients and at least 40% treated to recover both nutrients and energy
- By 2020: 70% of non-hazardous C&D waste prepared for reuse, recycling and recovery
- 2018: EU regulations on waste, chemicals and goods so that dangerous substances are phased out

Under the waste prevention plan 2014-2017, targets include:

- Reduce food waste by at least 20% by 2020 compared to 2010 throughout the food chain (except primary production)
- Reduce textile waste generated by households compared to 2010
- Increase second-hand goods textiles sales compared with 2014
- Increase knowledge in the textile sector about the use and content of hazardous substances compared with 2014
- By 2020, reduce waste generation per m<sup>2</sup> built compared with 2014
- By 2020, WEEE pre-processors and recyclers to have better access to information on composition of products and hazardous substances than in 2014



### **Priority Waste Streams**

**Food waste:** a campaign to reduce food waste is run by the EPA, the National Food Agency and the Board of Agriculture. AD is the most common treatment method for food waste. The Swedish Waste Management Association estimates that if all household food waste was used for plant nutrients this would replace 7% of the phosphorus imported in mineral fertilisers.

**Textiles:** actions on better collection and treatment of waste textiles and on sustainable consumption. Half of civic amenity sites accept material for reuse including clothes and furniture.

**WEEE:** since 2015 large shops that sell electronics collect all types of consumer electronics smaller than 25 cm, even if the consumer does not buy anything.

**C&D and mining: mineral strategy:** analysis of the extraction and recycling potential of metal and mineral assets and an aim to increase the recycling rate of end-of-life metallic and mineral products and of process waste. Measures to use crushed rock by-products in place of natural gravel. Identifies economically critical minerals and metals.

### **Perceived Challenges in Addressing the Circular Economy Policy Ambitions**

Sweden has an overcapacity in incineration, importing waste from a number of EU countries, including Ireland.

### **Emerging Issues**

The Swedish Government has stressed the need to address the extensive use of “unnecessary” plastics in the upcoming EU strategy on plastics.

Sweden is joining the Clean Seas Campaign, a UN initiative on marine litter. Sweden will soon introduce a ban on micro-plastics in rinse-off cosmetic products. New financial support for domestic actions on marine litter, as well as a state investigation on plastics.





# Key Waste Policy Issues in Eight Selected EU Countries

**Annex to the Report: Review of Current Priorities  
and Emerging Issues in European Waste Policy**

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