

## Circular economy country profile – Denmark



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## Introduction

The European Commission requested the EEA to produce EU country profiles that offer an updated view of the following elements:

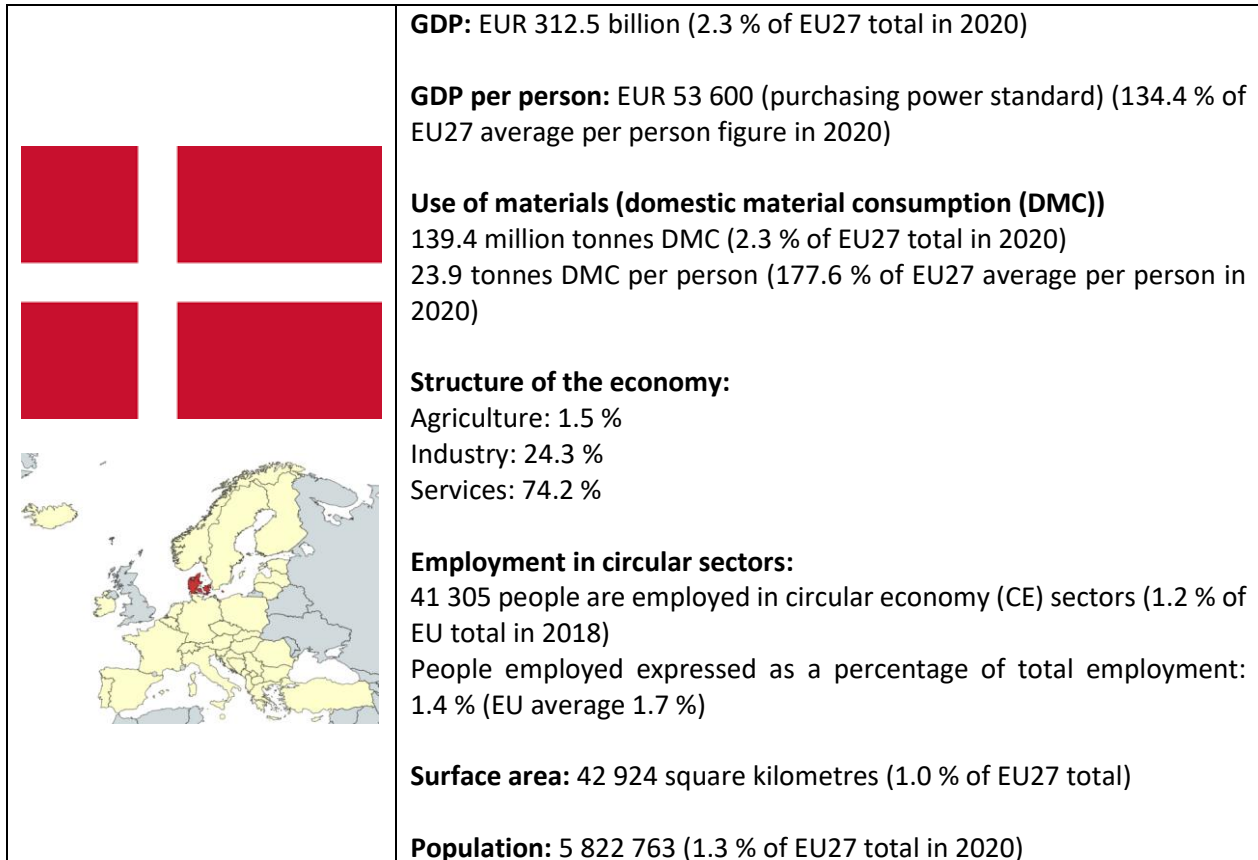
- circular economy policies being implemented at a national level with a particular focus on elements that go beyond EU mandatory elements; and
- best practice with a focus on policy innovation.

While implementing the EU Circular Economy Action Plan (CEAP 2020), Member States are encouraged to advance circularity at a national level by adopting policies and initiatives that go beyond EU regulations, while preserving the Single Market.

This circular economy country profile is based on information reported by the Eionet network and, in particular, the Eionet Group on Circular Economy and Resource Use in the second quarter of 2022. The information was reviewed and edited by the European Topic Centre on Circular economy and resource use (ETC CE). A selection of Eurostat data was made to further complement this country profile.

The information is current as of 28 September 2022 (final review), when members of Eionet verified the content of this profile.

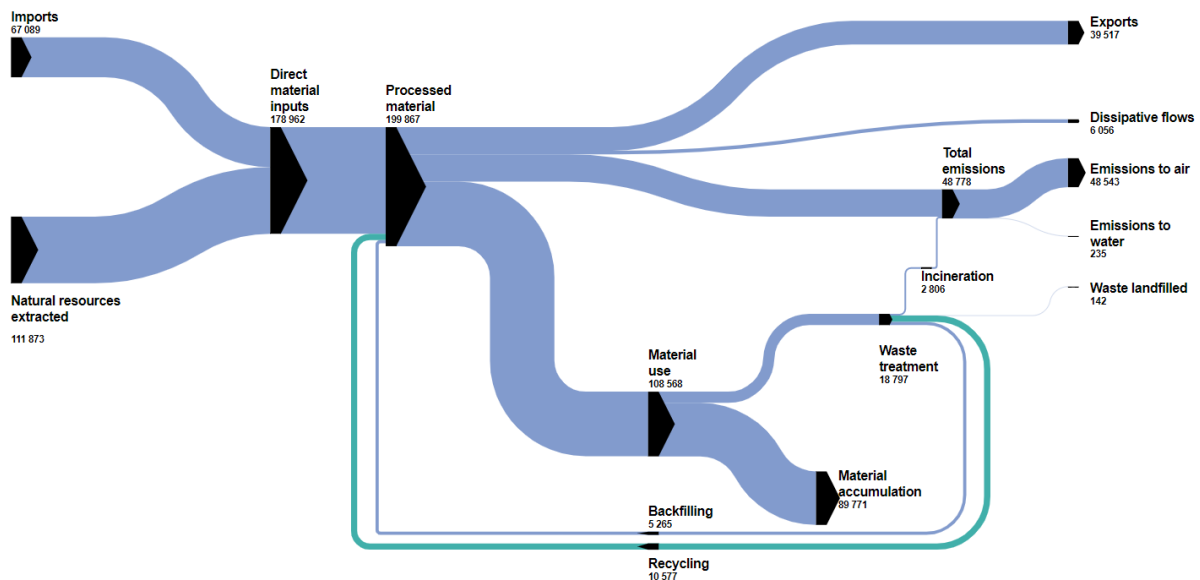
## Denmark – facts and figures



Note: all definitions and metadata used in this profile are taken, as shown, from Eurostat

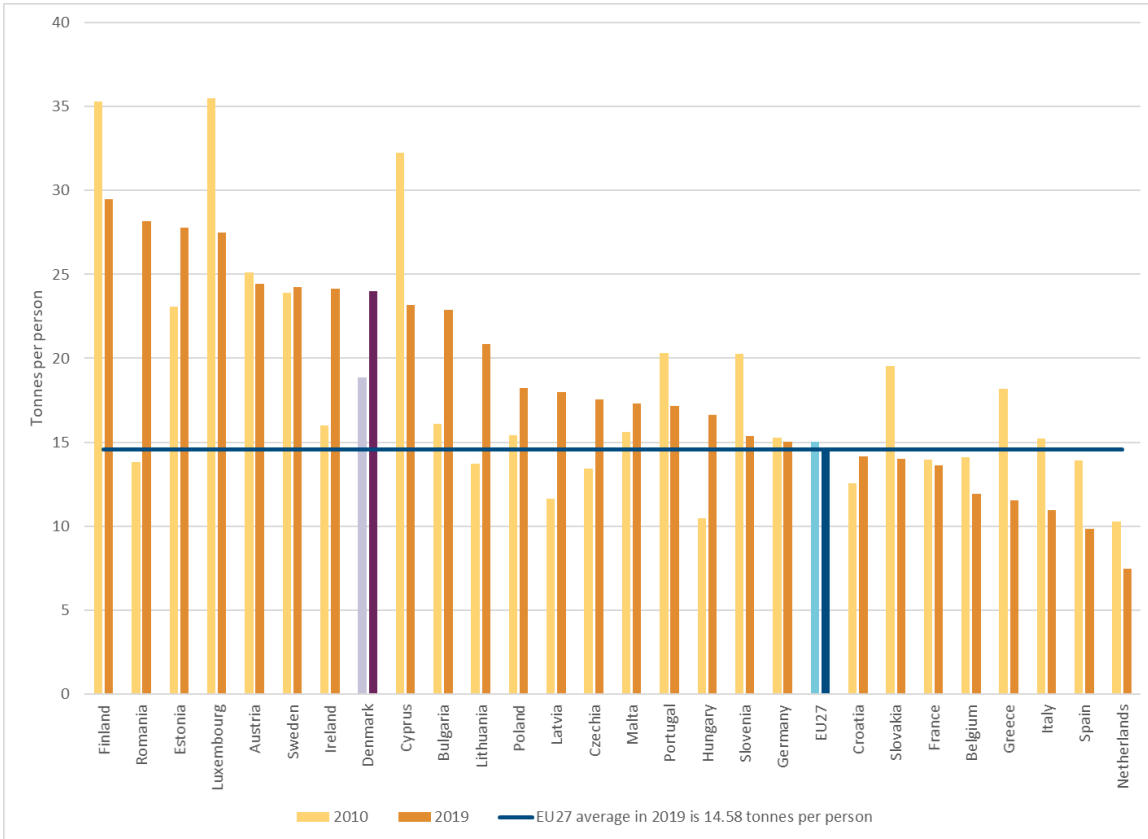
Source: Eurostat datasets, EU27 2020 (accessed 20 June 2022)

Figure 1 Material flow diagram for Denmark in 2020, '000 tonnes



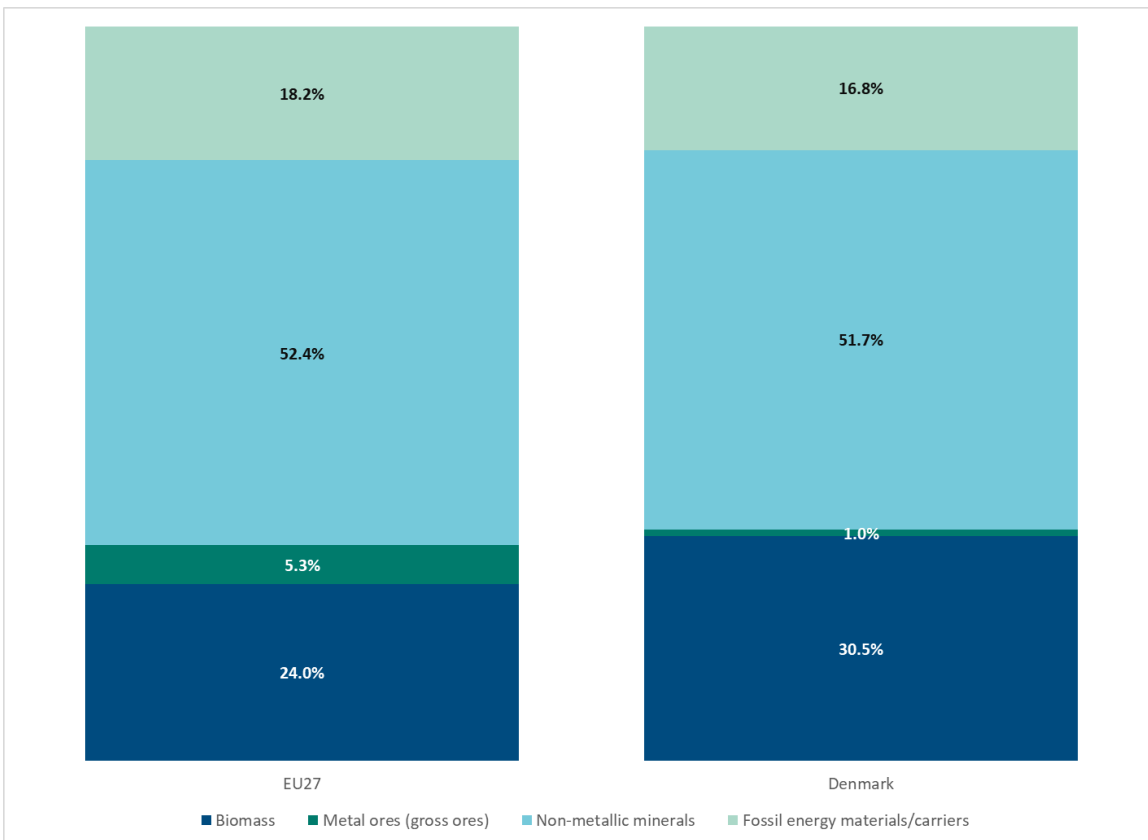
Source: Eurostat (2022) [env\_ac\_mfa], [en\_ac\_sd], [env\_wassd] (accessed 20 June 2022)

**Figure 2 Material footprint (raw material consumption), EU27, 2010 and 2019, tonnes per person**



Source: Eurostat (2020) [env\_ac\_rme] (accessed 4 July 2020)

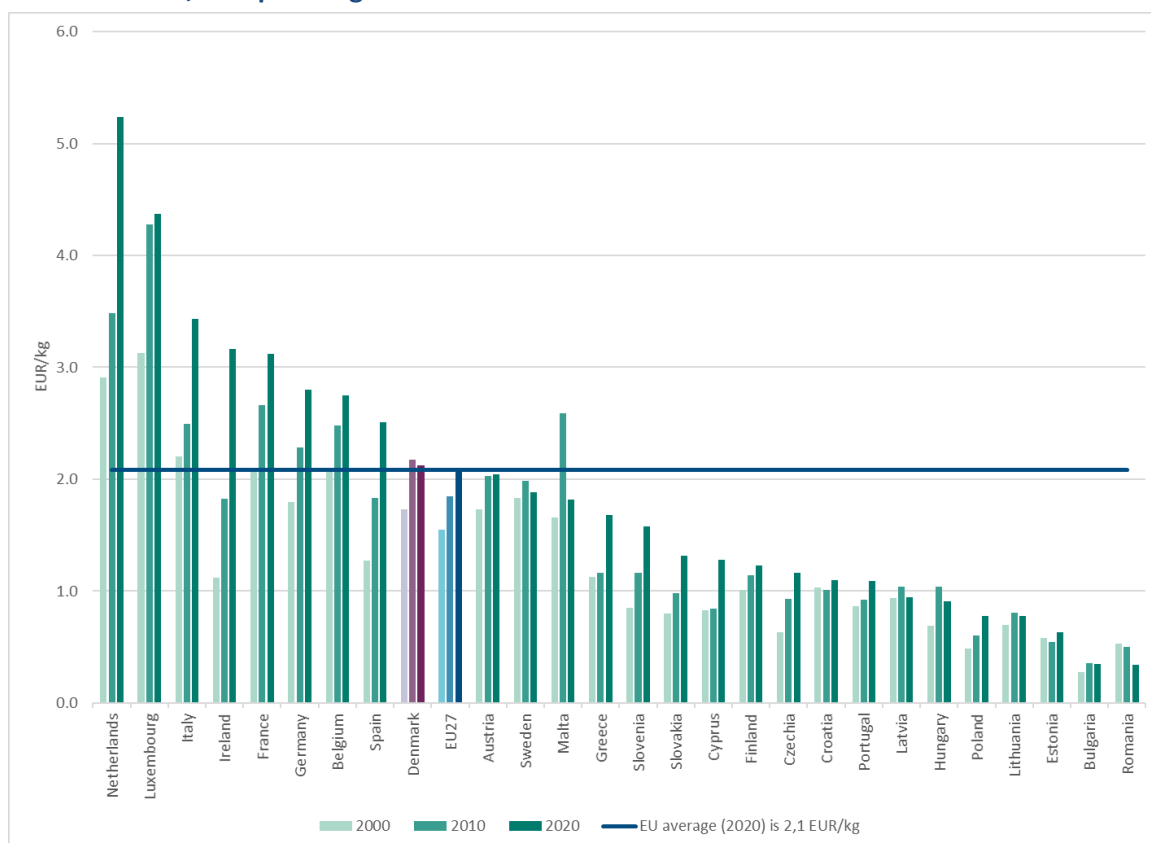
**Figure 3 Domestic material consumption by selected material category, EU27 and Denmark, 2020, per cent**



Note: totals may not sum to 100 % due to rounding

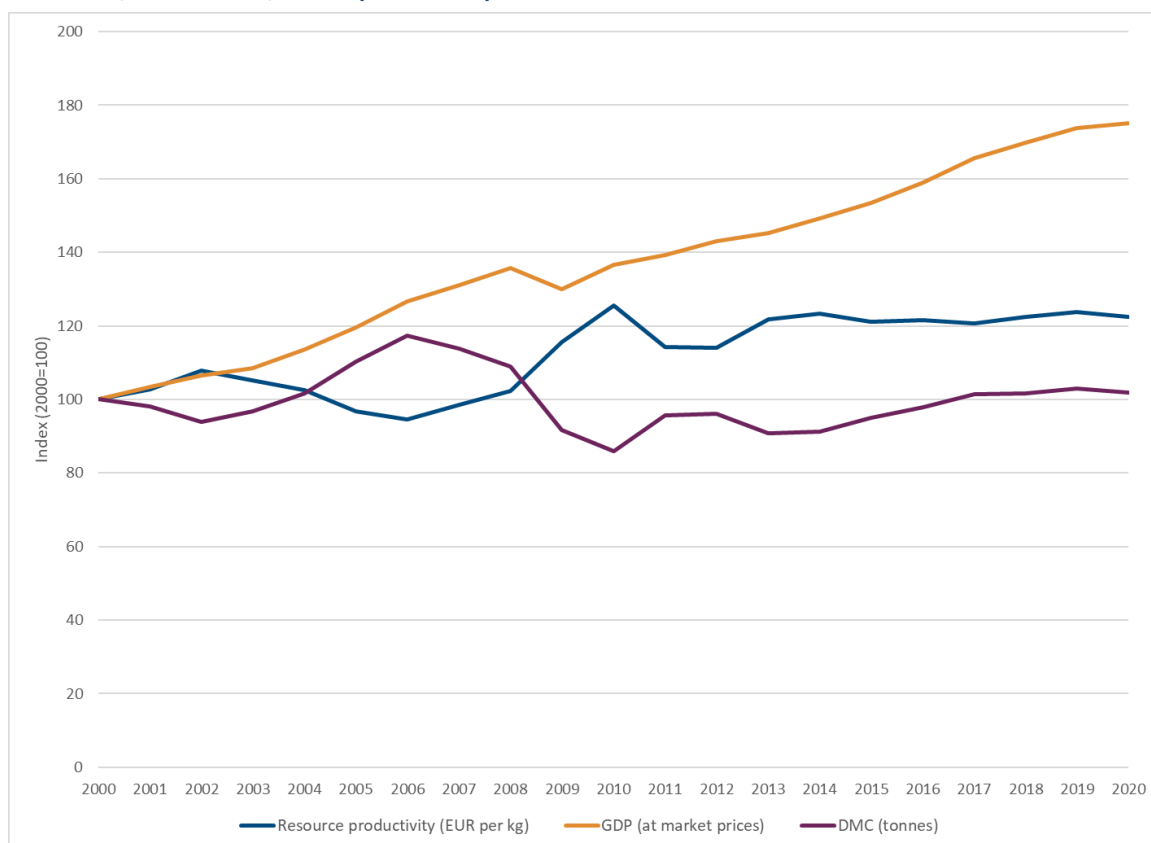
Source: Eurostat (2022) [env\_ac\_mfa] (accessed 20 June 2022)

**Figure 4 Resource productivity (gross domestic product/domestic material consumption), EU27, 2000, 2010 and 2020, EUR per kilogram**



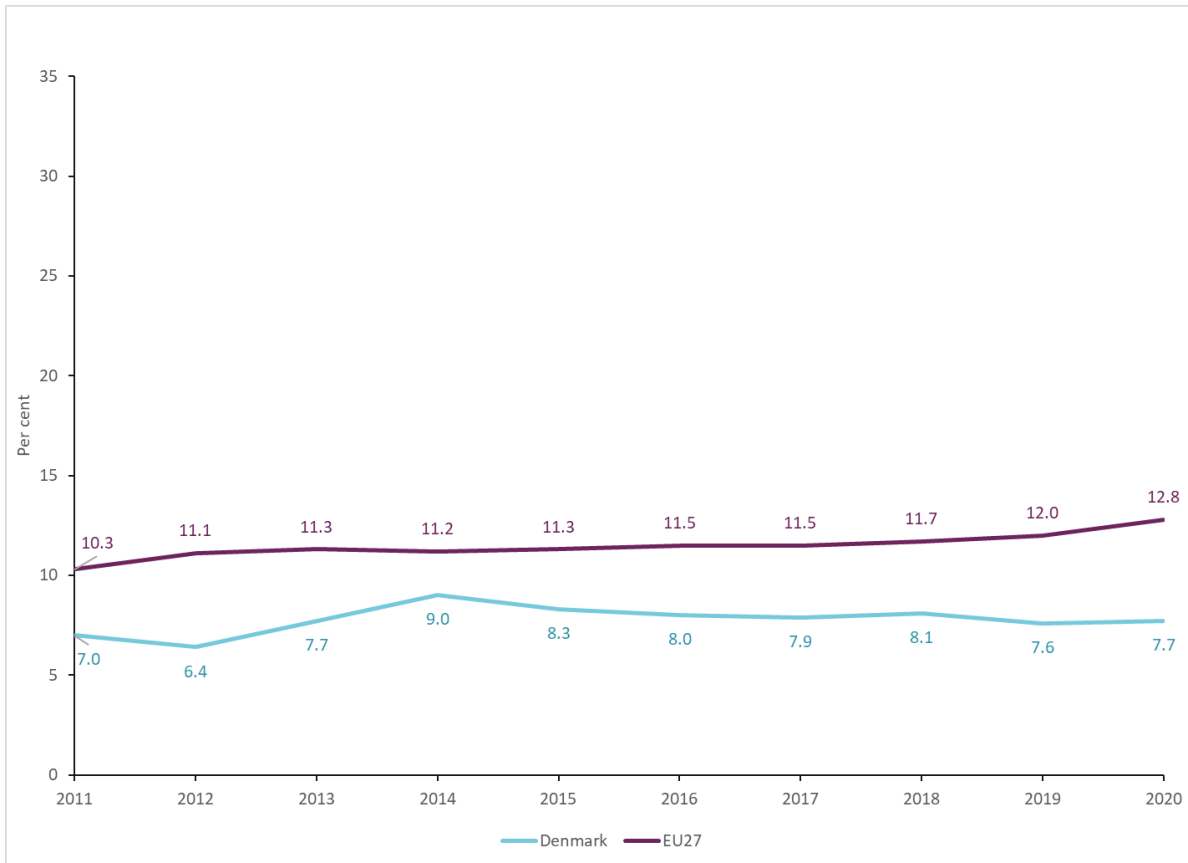
Source: Eurostat (2022) [env\_ac\_rp] (accessed 20 June 2022)

**Figure 5 Gross domestic product, domestic material consumption and resource productivity trends, Denmark, 2000–2020, index (2000=100)**



Source: Eurostat [env\_ac\_mfa], [env\_ac\_rp] & [nama\_10\_gdp] (accessed 4 July 2022)

Figure 6 Circular material use rate in Denmark, 2011–2020, per cent



Source: Eurostat (2022) [env\_ac\_cur] (accessed 20 June 2022)



## Existing policy framework

### Dedicated strategy, roadmap or action plan for circular economy

The Action Plan for Circular Economy <sup>(1)</sup> (from July 2021) is the dedicated national CE strategy and roadmap, which also functions as the national plan for the prevention and management of waste for 2020–2032. The Action Plan describes the Danish targets, indicators, policies and initiatives along the entire circular value chain, from design through consumption to waste from which natural resources are recycled into new products and materials. In addition to several initiatives along the value chain in general, the Action Plan focusses on three areas with significant environmental and climate impact: biomass, construction and plastics. The Plan contains 129 national initiatives – many of which are currently in implementation. Most of these are also included in the Strategy for Circular Economy (2018), the Action Plan on Plastics (2018), the Climate Plan for a Green Waste Sector and a Circular Economy (2020), the Strategy for Green Public Procurement (2020) and the National Strategy for a Sustainable Built Environment (2021).

Focus areas of the Action Plan for Circular Economy are:

- less waste and better use of natural resources;
- more and better recycling;
- better use of biomass;
- a sustainable built environment;
- plastics in a circular economy.

The Action Plan also contains the government's three visions for circular economy:

1. bending the waste curve – less waste, more resource efficiency and more reuse;
2. a climate-neutral waste sector by 2030;
3. reduce the amount of incinerated Danish plastic waste by 80 %, relative to 2020 by 2030.

The Action Plan follows a previous CE strategy which was launched in 2018, with a budget of DKK 116 million to implement 15 initiatives. The aim of the strategy was to catalyze the transition to a more sustainable society, in which materials and products are recycled, their value fully utilised and waste minimised through such initiatives as co-financing of the circular transition of businesses, supporting the commercial use of data to underpin digital circular opportunities and increasing Danish engagement in the setting circular standards at the EU level.

### Circular economy policy elements included in other policies

Circular economy policy element	Included in policy
<ul style="list-style-type: none"><li>• Mandatory use of ecolabels in state procurement for specific product groups entailing compliance with several CE-related criteria.</li><li>• - Mandatory use of total cost of ownership in state procurement for specific product groups.</li></ul>	National Strategy for green public procurement 2020. <a href="https://oes.dk/media/39012/strategi-for-groenne-indkoeb-engelsk.pdf">https://oes.dk/media/39012/strategi-for-groenne-indkoeb-engelsk.pdf</a>
<ul style="list-style-type: none"><li>• Update the building regulations with elements from the voluntary sustainability standard.</li><li>• Introduce decreasing limit values for LCA-based <sup>(2)</sup> climate footprint from buildings.</li><li>• - Develop the existing Danish LCA- and LCC <sup>(3)</sup> - tools for buildings into design tools.</li></ul>	The National Strategy for Sustainable Construction 2021. <a href="https://im.dk/National_Strategy_for_Sustainable_Construktion.pdf">National Strategy for Sustainable Konstruktion.pdf (im.dk)</a>

<sup>1</sup> <https://en.mim.dk/media/223008/action-plan-for-circular-economy-danish.pdf> (in Danish)

<sup>2</sup> LCA – lifecycle analysis

<sup>3</sup> LCC – lifecycle cost

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A new environmental and climate economic model, GreenREFORM, is being developed. The model will be used to assess the environmental impact of economic activity as well as the economic effects of environmental and climate policies. Underpinning the impact assessments in GreenREFORM is an LCA based model, which will enable projections on the CE under different policy and technology scenarios.

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Green national accounts (modelling of environment-economy links) (project financed by the Annual Budget Law 2019 and 2020)

<https://dreamgroup.dk/greenreform/>

<https://fm.dk/arbejdsomraader/klima-og-groen-oekonomi/> (in Danish)

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## Monitoring and targets

### Assessment of circular economy performance

On one hand, the recycling of municipal waste has been steadily rising and this is expected to continue as circular policies are implemented. On the other hand, the generation of municipal waste per person remains high relative to the EU average and has slightly increased over the past five years.

High recycling rates relative to the EU average may be linked to increasing curbside collection of more fractions of household waste by municipalities. The high levels of waste generation may be linked, among other factors, to high income levels and associated high consumption levels, and relatively high generation of garden waste from the many single-family housing units. It may also be linked to rigorous registration and reporting of municipal waste data to the Danish Environmental Agency, which may not be the case in other EU Member States.

### Circular economy monitoring frameworks and their indicators beyond the ones from Eurostat

Denmark has a monitoring framework and indicators which is presented in Table 1 <sup>(4)</sup>.

**Table 1. Targets and indicators in the Action Plan for Circular Economy**

Targets and indicators	2014	2015	2016	2017	2018	2019	EU-target
Total waste sector CO <sub>2</sub> e emission (mil. tonnes)	2.8	2.8	2.8	2.9	2.9	2.9	-
<b>Mindre affald og bedre udnyttelse af naturressourcerne</b>							
Municipal waste per capita (kg)	810	812	820	816	799	842	-
Material footprint (RMC per capita) (ton)	21.4	22.3	22.7	23.5	23.1	-	-
Resource productivity (GDP/RMC) (DKK per kg)	15.67	15.31	15.36	-15.17	-15.70	-	-
Number of products and services with Nordic Swan Ecolabel	>7.500	>9.000	>11.000	>12.500	>16.500	>18.000	
Turnover of products and services with Nordic Swan Ecolabel (bil. DKK)	7.3	8.0	8.3	8.3	8.7	-	-
Circular material use rate (recycling and material recovery compared to DMC)	9.1 %	8.4 %	8.1 %	8.0 %	8.2%	7.8 %	-
Climate footprint from public procurement (mil. tonnes CO <sub>2</sub> e)						12.0	
<b>All public procurement shall be eco-labelled by 2030</b>							
-							
<b>More and better recycling</b>							
Recycling of municipal waste					42 %	44 %	>55 % i 2025 >60 % i 2030 >65 % i 2035
Landfilling of municipal waste	1 %	1 %	1 %	1 %	1 %	1 %	<10 % i 2035
Recycling of packaging				62 %	63 %	-	>65 % i 2025 >70 % i 2030
Recycling of glass packaging				91 %	79%	-	>70 % i 2025 >75 % i 2030
Recycling of paper and cardboard packaging				80 %	97 %	-	>75 % i 2025 >85 % i 2030
Recycling of iron and metal packaging				64 %	70 %	-	>70 % i 2025 >80 % i 2030
Recycling of aluminium packaging				64 %	70 %	-	>50 % i 2025 >60 % i 2030
Recycling of wood packaging				55 %	42 %	-	>25 % i 2025 >30 % i 2030

<sup>4</sup> <https://en.mim.dk/media/224197/alle-faktaark-engelsk-nyeste.pdf>

Targets and indicators	2014	2015	2016	2017	2018	2019	EU-target
Recycling or preparation for reuse of used vehicles	87 %	86 %	91 %	89 %	92 %	90 %	>85 %
Recycling, preparation for reuse or material recovery of used vehicles	87 %	86 %	98 %	97 %	99 %	98 %	>95 %
Separate collection of electronic waste	31 %	42 %	45 %	46 %	48 %	56 %	>65 %
Separate collection of battery waste	45 %	46 %	45 %	53 %	49 %	56 %	>45 %
Significantly reduce the amount of marine waste	-	-	-	-	-	-	-
More value from renewable resources	-	-	-	-	-	-	-
Share of biomass of domestic material consumption (DMC)	33 %	29 %	29 %	30 %	29 %	-	-
Amount of recycled biowaste (kg per capita)	146	193	198	199	1203	213	-
Proportion of recycled phosphorus from sewage and sewage sludge	74 %	71 %	73 %	73 %	76 %	-	-
Reduce the amount of food waste in all parts of the food value chain	-	-	-	-	-	-	-
Amount of food waste from primary production (1000 tonnes)	-	-	-	-	59	-	-
Amount of food waste from food industry (1000 tonnes)	-	-	-	-	529	-	-
Amount of food waste from retail and wholesale (1000 tonnes)	1-	-	-	-	-	99	-
Amount of food waste in the service sector (1000 tonnes)	1-	-	-	-	71	-	-
Amount of food waste at the households (1000 tonnes)	*-	-	-	456	-	-	-
Reduce the environmental impact from construction and demolition	-	-	-	-	-	-	-
Amount of minerals extracted on land and from the ocean incl. recovered materials (1000 m <sup>3</sup> )	28.210	327.808	328.886	330.560	331.051	29.684	-
Proportion of constructions certified with the Nordic Swan Ecolabel, DGNB, LEED or BREEAM	-	-	-	7 %	16 %	23 %	-
Proportion of construction waste that is prepared for reuse or recycled	-	-	-	-	36 %	36 %	-
Proportion of construction waste that is prepared for reuse or material recovery or recycled	88 %	88 %	87 %	85 %	88 %	87 %	>70 %
Reduce consumption and improve reuse and recycling of plastics	-	-	-	-	-	-	-
Amount of marketed plastic packaging (1000 tonnes)	187	197	215	201	248	-	-
Amount of certain types of single-use products (tonnes)	-	-	-	-	6.272	-	-
Recycling of plastic packaging waste	-	-	-	19 %	14 %	-	>50 % i 2025 >55 % i 2030
Share of recycled plastic in new plastic bottles	-	-	-	-	*	28 %	>25 % i 2025 >30 % i 2030
Separate collection of plastic bottles	-	-	-	-	*	94 %	>70 % i 2025 >90 % i 2029

Source: The Danish Environmental Protection Agency, Ecolabelling Denmark, Eurostat, Statistics Denmark, Danish Brewers' Association, Dansk Retursystem, Byggefakta

**Key:**

bil.	billion (10 <sup>9</sup> )
mil.	million (10 <sup>6</sup> )
kg	kilogram
DMC	domestic material consumption
WEEE	waste electrical and electronic equipment
m <sup>3</sup>	cubic metres
DGNB	Deutsche Gesellschaft für Nachhaltiges Bauen
LEED	Leadership in Energy and Environmental Design
BREEAM	Building Research Establishment Environmental Assessment Method

The results of the monitoring are also published once a year in the Waste Statistics of the Environmental Protection Agency (Chapter 6) <sup>(5)</sup>.

### **Circular economy targets**

Denmark works to ensure compliance with quantitative targets set by the EU. There are no legally binding national quantitative targets.

The political agreement for a green waste sector and the CE contains three visions for the CE:

1. bending the waste curve – less waste, more resource efficiency and more reuse;
2. a climate-neutral waste sector by 2030;
3. reduce the amount of incinerated Danish plastic waste by 80 % relative to 2020 by 2030.

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<sup>5</sup> <https://www2.mst.dk/Udgiv/publikationer/2020/12/978-87-7038-249-6.pdf> (in Danish)

## Innovative approaches and good practice

### Examples of public policy initiatives (national, regional or local)

→ *Good practice example: institutional and regulatory arrangement*

#### **Streamlined pictograms, sorting criteria and collection schemes for household waste**

Until recently, Denmark had an unharmonised waste management system in which every local authority designed its own pictograms and collection schemes for household waste, and set up its own sorting criteria. This meant that private waste collectors and waste treatment operators had to adapt to different local solutions, which created a fragmented market. This resulted in lack of economies of scale when waste was treated, limited competition and also sub-optimal solutions in waste collection and communication with citizens.

Since July 2021 pictograms, sorting criteria and collection schemes for household waste have been streamlined nationally <sup>(6)</sup>. The Statutory Order of Waste includes mandatory waste pictograms for collection bins and mandatory sorting criteria for ten fractions of household waste. Public and private companies are also obliged to use the same pictograms and sorting criteria for general waste. Door-to-door collections have become mandatory for ten waste fractions – food, paper, cardboard, glass, metal, plastics, food and drink cartons, textiles, hazardous waste and residual waste. If door-to-door collection is not possible, collection points must be placed within a short walking distance of households.

Co-mingling of waste is only allowed in the following combinations:

- paper/cardboard;
- metal/glass;
- metal/plastics;
- metal/plastics/food and drink cartons;
- plastics/food and drink cartons.

→ *Good practice example: public procurement*

#### **Mandatory use of ecolabels and total cost of ownership in public procurement**

For state procurement, from the end of 2022 it will be mandatory to purchase ecolabelled products or those that meet similar requirements for product groups for which the government assesses that there is adequate competition and no significant price difference. This is expected to apply to 14 product groups including paper and printed matter, cleaning and cleaning agents, soap and some hygiene products, standard batteries and indoor paints. The list of product groups will be updated once a year and expanded on an ongoing basis.

Furthermore, the government is making it mandatory to use total cost of ownership (TCO) as the economic price parameter where possible and appropriate for state procurement. In this way, the focus will **shift from the acquisition price to costs throughout a product's lifecycle**. The requirement will initially apply to the 25 product groups for which official tools are available to assess the total cost of ownership. In addition, the government is strengthening its efforts to develop TCO tools for even more procurement areas and to make existing tools ever more user-friendly.

The two initiatives are implemented through an existing circular on environmental and energy considerations in public procurement, which is planned to enter into force at the end of 2022. The initiatives aim to reduce the environmental impact of the state's consumption and to contribute to the development and marketing of less environmentally harmful products through the conscious involvement of environmental aspects in procurement <sup>(7)</sup>.

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<sup>6</sup> <https://mst.dk/affald-jord/affald/affaldsfraktioner/de-ti-affaldsfraktioner/> (in Danish)

<sup>7</sup> [Strategy for green public procurement \(oes.dk\)](#)

→ *Research and innovation - modelling of environmental and economic linkages*

**Green national accounts (research and innovation – modelling of environmental and economic links)**

The Danish government is developing **GreenREFORM**, a new environmental and climate-economic model for the Danish economy. The modelling framework will supplement existing macro-economic models to provide an integrated and consistent assessment of the environmental and climate effects of economic policies, as well as the socioeconomic effects of environmental, energy and climate policies. The development of GreenREFORM is focused on developing sub-models, which, among other things, describe the energy, transport, agriculture and waste management sectors. This innovative approach to modelling is being followed closely internationally <sup>(8)</sup>.

→ *Institutional and regulatory arrangements*

**Decreasing threshold limit values for climate footprint from buildings**

Through the National Strategy for Sustainable Construction, the government introduced a decreasing mandatory threshold limit value for LCA-based climate footprints for new buildings in the Building Code. A mandatory threshold limit value applies to buildings of more than 1 000 square metres from 2023. From here, the limit value will be introduced gradually <sup>(9)</sup>:

- mandatory for new buildings above 1 000 square metres from 2023: maximum 12.0 kilograms of carbon dioxide equivalent per square metre per year (kg CO<sub>2</sub>e/m<sup>2</sup>/year);
- from 2025 for all new buildings: maximum 10.5 kg CO<sub>2</sub>e/m<sup>2</sup>/year;
- from 2027 for all new buildings: maximum 9.0 kg CO<sub>2</sub>e/m<sup>2</sup>/year;
- From 2029 for all new buildings: maximum 7.5 kg CO<sub>2</sub>e/m<sup>2</sup>/year.

**Examples of private policy initiatives (sectoral)**

**Climate Partnership on waste, water and the circular economy**

Climate Partnerships for 13 specific sectors were established by the Danish government and business organisations in November 2019. The overall aim is to strengthen the private sector's green transition and their contribution to the Climate Act and its target to reduce Denmark's greenhouse gas emissions by 70 % between 1990 and 2030 <sup>(10)</sup>.

The Climate Partnership on waste, water and the circular economy suggests several initiatives that companies, the public sector and consumers can take to ensure more sustainable and climate-friendly consumption and production.

The partnership has three chairs and a number of private sector partners which represent companies operating in the waste and water sectors as well as companies working towards more circular business models across the value chain. The overall vision of the Climate Partnership is:

- **CE:** in 2030, Denmark will be the leading CE in the world – leading the way to climate neutrality in 2050;
- **waste:** recycling 90 % of total waste in 2030;
- **water:** the water sector will be climate and energy neutral in 2030;
- **93 recommendations:** mostly directed to the government but some to the sector itself.

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<sup>8</sup> <https://fm.dk/nyheder/nyhedsarkiv/2020/oktober/danmark-i-spidsen-for-internationalt-samarbejde-om-groenne-regnemodeller/> (in Danish)

<sup>9</sup> [https://im.dk/Media/637602217765946554/National\\_Strategy\\_for\\_Sustainable\\_Construktion.pdf](https://im.dk/Media/637602217765946554/National_Strategy_for_Sustainable_Construktion.pdf)

<sup>10</sup> <https://climatepartnerships2030.com/>

## The way forward

### Addressing barriers and challenges

According to the European Commission's Joint Research Centre, Denmark's consumption footprint is not within planetary boundaries and its material footprint is much higher than the European average. This is mainly explained by patterns of consumption of food, cars and buildings <sup>(11)</sup>.

These challenges are best overcome by ambitious policies at a European level such as:

- The Ecodesign for Sustainable Products Regulation (ESPR) (2022);
- using the ESPR approach when revising 1) the Packaging and Packaging Waste Directive (2022); 2) the End-of-life Vehicles Directive (2022); and 3) the Construction Products Regulation (2022);
- binding waste reduction targets in the revised Waste Framework Directive (2023);
- binding recycling targets for construction and demolition waste in the revised Waste Framework Directive (2024);
- limiting values for global warming potential in the revised Energy performance of Buildings Directive (2022);
- a legislative framework for sustainable food systems (2023).

### Future policy plans

Denmark's National Reform Programme 2022 <sup>(12)</sup> makes mention of a number CE-related initiatives which are explained in greater detail in the Danish government's Action Plan for Circular Economy <sup>(13)</sup>.

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<sup>11</sup> [Consumption footprint platform](#)

<sup>12</sup> [National Reform Programme 2022](#)

<sup>13</sup> [Danish Government's Action Plan for Circular Economy](#).



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