Action Plan for Circular Economy

National Plan for Prevention and Management of Waste 2020-2032

July 2021

The Danish Government's Action Plan for Circular Economy constitutes the national plan for the prevention and management of waste for 2020-2032. In a circular economy products and materials stay in use and their value is maintained for as long as possible. The Action Plan for Circular Economy describes the Danish targets, indicators, policies and initiatives in the entire circular value chain, which ranges from design and consumption to waste management, 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 for Circular Economy focuses on three areas with significant environmental and climate impact: biomass, construction and plastics.

The Action plan for circular economy contains a total of 129 initiatives, many of which are also included in Climate plan for a green waste sector and circular economy (2020), Strategy for Green Public Procurement (2020), National Strategy for a Sustainable Built Environment (2021), Strategy for circular economy (2018) and Action Plan on Plastics (2018).

Focus areas of the Action plan for circular economy:

- 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

Three reasons for transitioning to a circular economy

- We consume more natural resources than what is sustainable for our planet. It would require approximately four planets to support humanity's demands on Earth's ecosystems, if everyone were to live as we do in Denmark. According to the think tank Global Footprint Network, Danish overconsumption is approximately twice the global average.

- According to Statistics Denmark, Denmark had a consumption of natural resources of approx. 23 tonnes per capita per year in 2018, when imports and exports are taken into account. The Danish consumption is thereby significantly above the EU average of approx.15 tonnes per capita.

- According to the UN, the extraction and processing of natural resources are responsible for approximately half of the global greenhouse gas emissions and over 90 percent of the global loss of biodiversity.

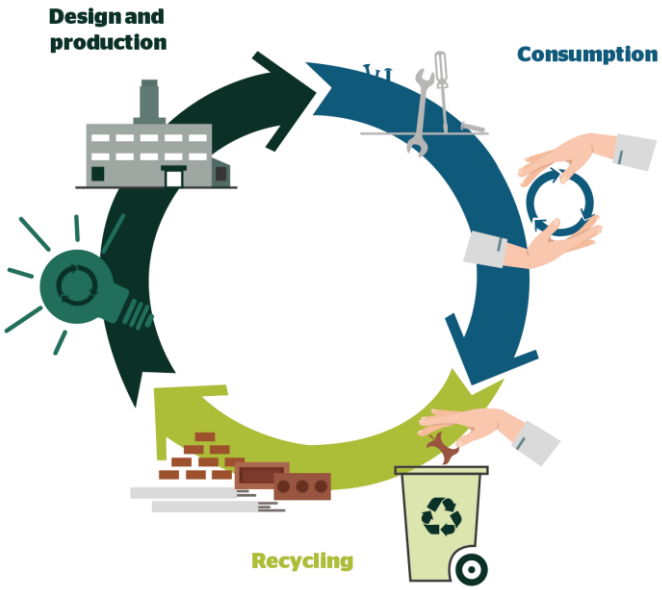
Government visions for circular economy

- The waste curve has to be bend – less waste, higher resource productivity and more reuse. This will i.a. be achieved by setting quantitative targets for waste reduction in Denmark, when similar targets are agreed upon in the EU.

- Climate-neutral waste sector by 2030.

- By 2030, Denmark will reduce the amount of incinerated plastic waste by 80 percent

The circular value chain



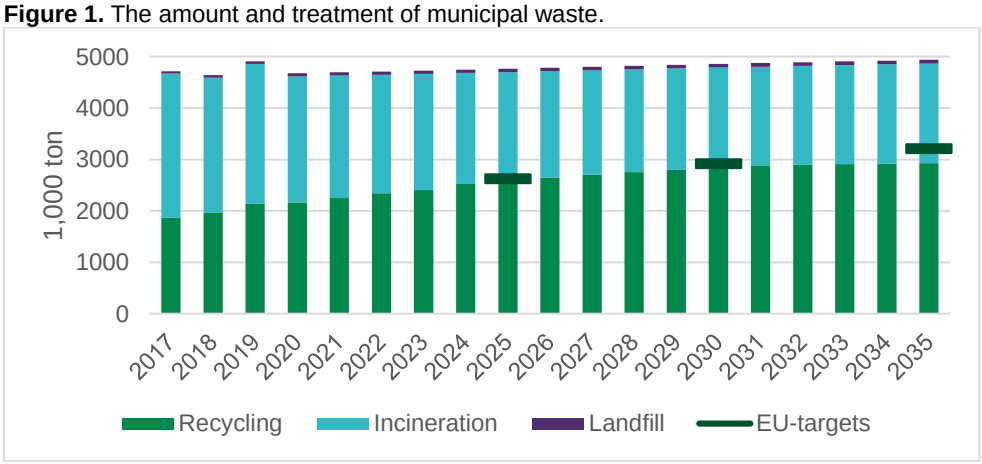
Targets and indicators

July 2021

Action Plan for Circular Economy presents the Danish government's targets and indicators for the transition to a circular economy.

Denmark is committed to the EU targets to increase recycling of municipal waste to 55 percent in 2025, 60 percent in 2030 and 65 percent in 2035. The Danish Environmental Protection Agency projects that Denmark will come close to meeting the targets for the recycling of municipal waste in 2025 and 2030 through already announced policy initiatives, as shown in Figure 1. However, there is insufficient data to quantify the impact of all the planned initiatives. Therefore, the Danish government expects to reach the targets without further policy measures. Further initiatives are likely to be necessary to meet the target of 65 percent recycling of municipal waste in 2035 and the target of 50 percent recycling of plastic packaging waste in 2025.

Figure 1. The amount and treatment of municipal waste.

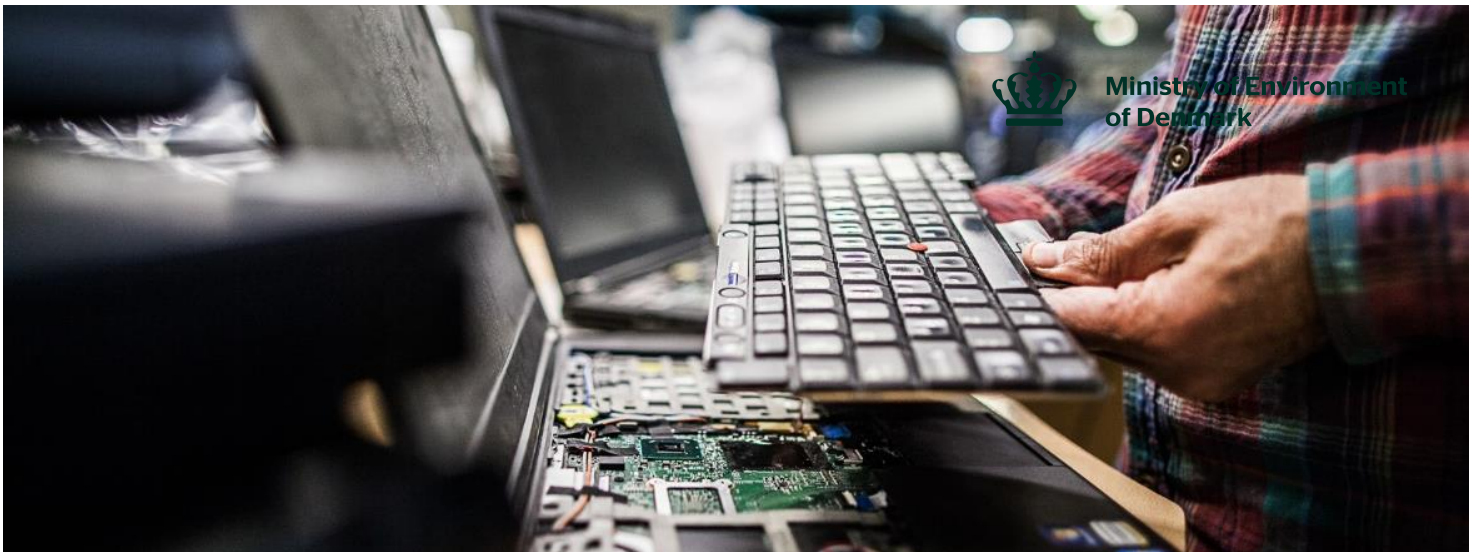


Source: Danish Environmental Protection Agency 2021.

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_2e emission (mil. tonnes)	2,8	2,8	2,8	2,9	2,9	2,9	-
Less waste and better use of natural resources							
Municipal waste per capita (kg)	810	812	820	816	799	842	-
Material footprint (RMC per capita) (tonnes)	21,4	22,3	22,7	23,5	23,1	-	-
Resource productivity (BNP/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 of public procurement (mil. tons CO2e)	-	-	-	-	-	12,0	-
All public procurement must be eco-labeled by 2030							
-							
More and better recycling							
Recycling of municipal waste	-	-	-	-	42 %	44 %	>55 % in 2025 >60 % in 2030 >65 % in 2035
Landfilling of municipal waste	1 %	1 %	1 %	1 %	1 %	1 %	<10 % in 2035
Recycling of packaging waste	-	-	-	62 %	63 %	-	>65 % in 2025 >70 % in 2030
Recycling of glass packaging waste	-	-	-	91 %	79 %	-	>70 % in 2025 >75 % in 2030
Recycling of paper and cardboard packaging waste	-	-	-	80 %	97 %	-	>75 % in 2025 >85 % in 2030
Recycling of iron and metal packaging waste	-	-	-	64 %	70 %	-	>70 % in 2025 >80 % in 2030
Recycling of aluminium packaging waste	-	-	-	64 %	70 %	-	>50 % in 2025 >60 % in 2030
Recycling of wood packaging waste	-	-	-	55 %	42 %	-	>25 % in 2025 >30 % in 2030
Recycling or preparation for reuse of end-of-life vehicles	87 %	86 %	91 %	89 %	92 %	90 %	>85 %
Recycling, preparation for reuse or material recovery of end-of-life vehicles	87 %	86 %	98 %	97 %	99 %	98 %	>95 %
Separate collection of electronic waste (WEEE)	31 %	42 %	59 %	46 %	48 %	56 %	>65 %
Separate collection of battery waste	46 %	46 %	45 %	53 %	49 %	56%	>45 %
Significantly reduce the amount of marine waste							
-							
More value from renewable materials							
Share of biomass of domestic material consumption (DMC)	33 %	29 %	29 %	30 %	29 %	-	-
Amount of recycled biowaste (kg per capita)	146	193	198	199	203	213	-
Recycling of 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)	-	-	-	-	-	99	-
Amount of food waste from the service sector (1000 tonnes)	-	-	-	-	71	-	-
Amount of food waste from 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^3)	28.210	27.808	28.886	30.560	31.051	29.684	-
Proportion of constructions certified with the Nordic Swan Ecolabel, DGNB, LEED or BREEAM	-	-	-	7 %	16 %	23 %	-
Recycling of construction and demolition waste	-	-	-	-	36 %	36 %	-
Material recovery of construction and demolition waste	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 % in 2025 >55 % in 2030
Share of recycled plastic in new plastic bottles	-	-	-	-	-	28 %	>25 % in 2025 >30 % in 2030
Separate collection of plastic bottles	-	-	-	-	-	94 %	>70 % in 2025 >90 % in 2029

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



Less waste and better use of natural resources

July 2021

Denmark holds the European record as regards to municipal waste per capita – approx. 800 kg per year. It is the Danish Government's target to ensure less waste and better use of natural resources.

Up to 80 percent of a product's environmental impact is determined during the design phase. Designing circular solutions aim to maximise value and minimise the environmental impact of materials, products and services by reducing material use and waste generation, increasing durability and making it easier to repair, remanufacture, upgrade and recycle. During the use phase, requirements can be set for products to stimulate more sustainable production and consumption patterns. The official eco-labels ‘the Nordic Swan Ecolabel’ and ‘the EU Flower’ play an important role, and they make it easier to make a credible green choice. By strengthening circular business models such as renting, sharing and reuse of products as well as "product as service"-agreements, the utilisation rate of products and materials can be increased.

In order to ensure less waste and better use of natural resources, the Danish Government will, among other things:

- Strengthen efforts to include circular economy in EU eco-design regulations
- Introduce mandatory use of ecolabels in state procurement
- Introduce mandatory use of total cost of ownership in state procurement
- Provide guidance on reducing limescale in the supply of drinking water
- Create a clear framework for municipal second-hand shops

Facts about circular economy in design, production and consumption

- Denmark's resource productivity has increased by approx. DKK 3 per kg from 2008 to 2018, which corresponds to an increase of approximately 25 percent. Resource productivity is an expression of how much value a country creates from the natural resources that the country consumes.

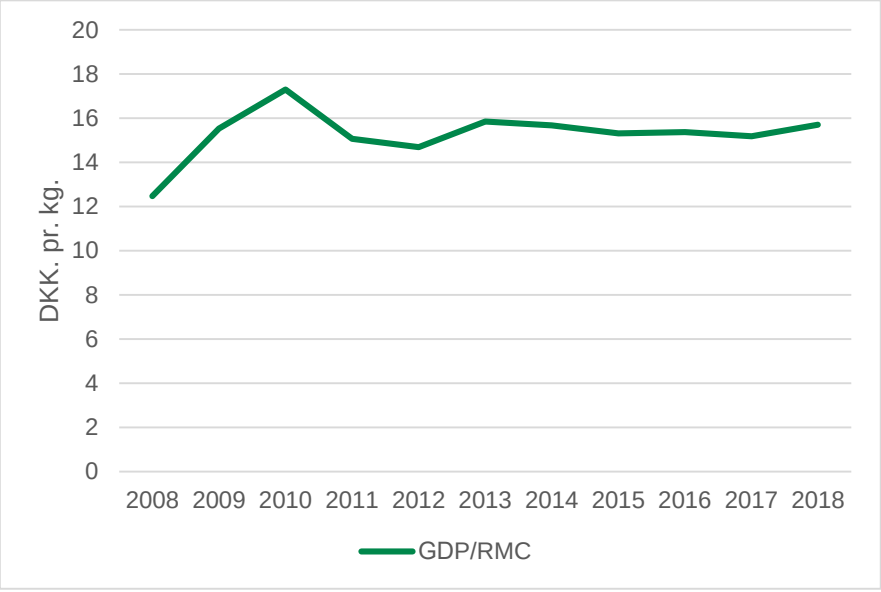
- The number of products and services offered with the Nordic Swan Ecolabel has increased from approximately 7,500 in 2015 to approx. 18,500 in 2020.

- A reduction in the level of limescale in the drinking water in Denmark can lead to a socio-economic gain of up to approx. DKK 1 billion annually through, amongst other factors, extended durability for electronics, lower electricity consumption, reduced consumption of cleaning agents and reduced time for cleaning.

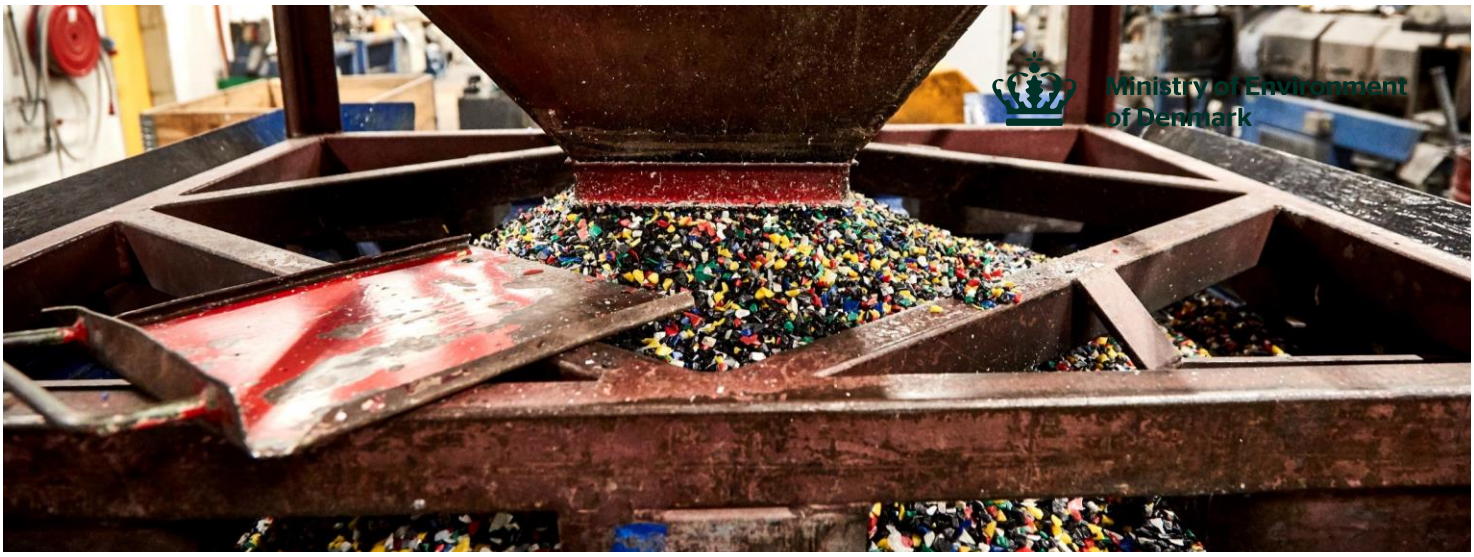
- The proportion of the Danish population who participate in the sharing economy has increased from 14 percent in 2016 to 26 percent in 2018, which is above the EU average of 23 percent.

- According to a population survey, almost 8 out of 10 Danes have either bought or sold reused products in 2019 – that is an increase of 10 percentage points in relation to 2018.

Figure 1. Developments in Denmark's resource productivity (GDP/RMC) 2008-2016.



Source: Statistics Denmark



Ministry of Environment of Denmark

More and better recycling

July 2021

Even if you design, produce and consume according to circular principles, waste will still appear. It is the Danish Government's target to ensure more and better recycling.

In 2019, citizens and companies in Denmark generated approx. 12.7 million tonnes of waste. This includes waste from food, packaging, textiles and electronics and various other types of waste. 44 percent of waste was recycled, 29 percent was incinerated, while 24 percent was used for other forms of recovery and 3 percent was sent to landfill. When the generation of waste cannot be avoided, it should be treated in a way that minimises the environmental impact.

A secondary raw material is of high quality when it can replace virgin raw materials without creating undesired environmental effects or impairing the function and value of the final product. Secondary raw materials in low quality can originate from composite materials that cannot be separated easily. In addition, some waste may be unsuitable for recycling due to harmful chemicals. Recycling such types of waste can be harmful for the environment and human health. A change in design practices, increased traceability and better waste sorting are ways to ensure secondary raw materials of high-quality and without harmful chemicals.

To ensure more and better recycling, the Danish Government will:

- Streamline sorting and collection of municipal waste
- Introduce a strengthened and risk-based audit of businesses' waste practices.
- Set requirements regarding tender of treatment of recyclable waste
- Reduce incineration capacity by 30 percent from 2020 to 2030
- Introduce extended producer responsibility for packaging
- Modernise the extended producer responsibility for electronics

Facts about Denmark's waste mangement

- Approx. 44 percent of municipal waste was recycled in 2019. EU targets have been set to increase this rate to at least 55 percent in 2025, 60 percent in 2030 and 65 percent in 2035 in all member states.

- Approx. 63 percent of the packaging waste from households and businesses was recycled in 2018. EU targets have been set to increase this rate to 65 percent in 2025 and 70 percent in 2030 in all member states.

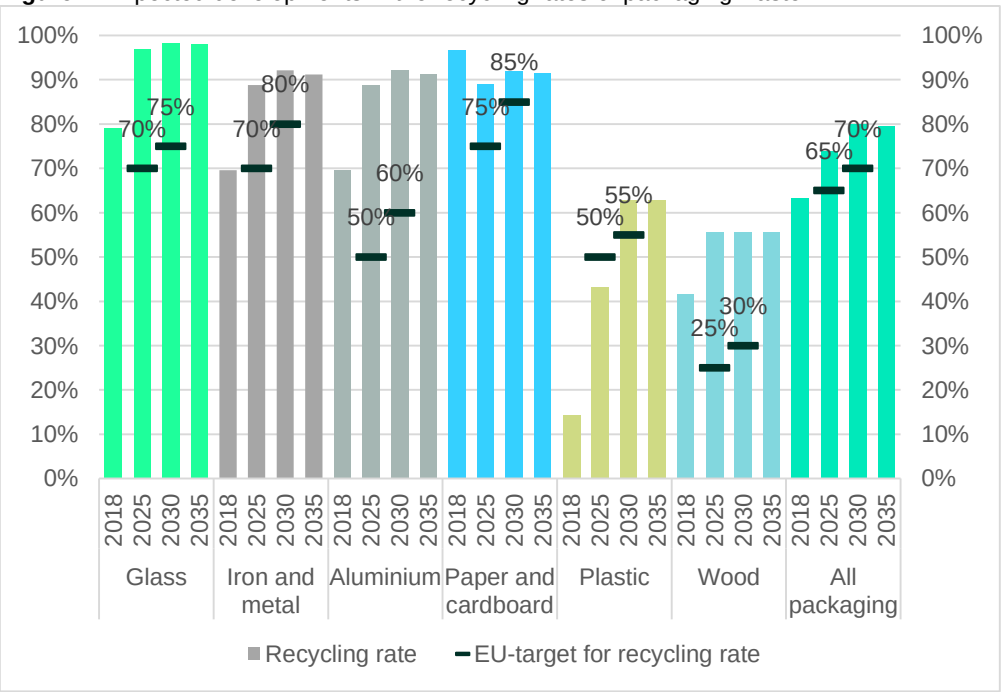
- Denmark generated approx. 12.7 million tonnes of waste (excluding soil) in 2019. Of this, 28 percent originated from households, 40 percent originated from construction and demolition, and 32 percent came from other industries.

- As a share of total waste generated, 44 percent was recycled, 29 percent was incinerated, while 24 percent was used for other forms of recovery and 3 percent was sent to landfill.

- In 2019, waste treatment accounted for approx. 4.9 percent of the total CO_2e emissions in Denmark. The majority of this came from waste incineration.

- There is an overcapacity of approx. 700,000 tonnes at the Danish incineration plants today compared with the amount of waste suitable for incineration generated in Denmark.

Figure 1. Expected developments in the recycling rates of packaging waste.



Source: Eurostat, Danish Environmental Protection Agency.

Better use of biomass

July 2021

The biological part of circular economy is called bioeconomy and includes the production, consumption and recycling of renewable materials. It is the Danish Government's target to generate more value from renewable materials and to reduce the amount of food waste in all parts of the food value chain.

Bioeconomy is a central part of agriculture and the food industry. But bioeconomy is also part of citizens' daily lives when for example carrot peels are recycled. Furthermore, the bioeconomy is part of the industry's production when fossil plastics are replaced by bio-based plastic. Through biorefining, biomass can be converted into biological components that can be rebuilt and then utilised for several purposes. The output of the biorefining process includes sugar, lignin, methane, fat and protein, which can be included in the production of for example medicine, food, feed, materials and energy.

A large part of our food ends up as waste. Avoiding food waste saves money and reduces the environmental and climate impact of consumption.

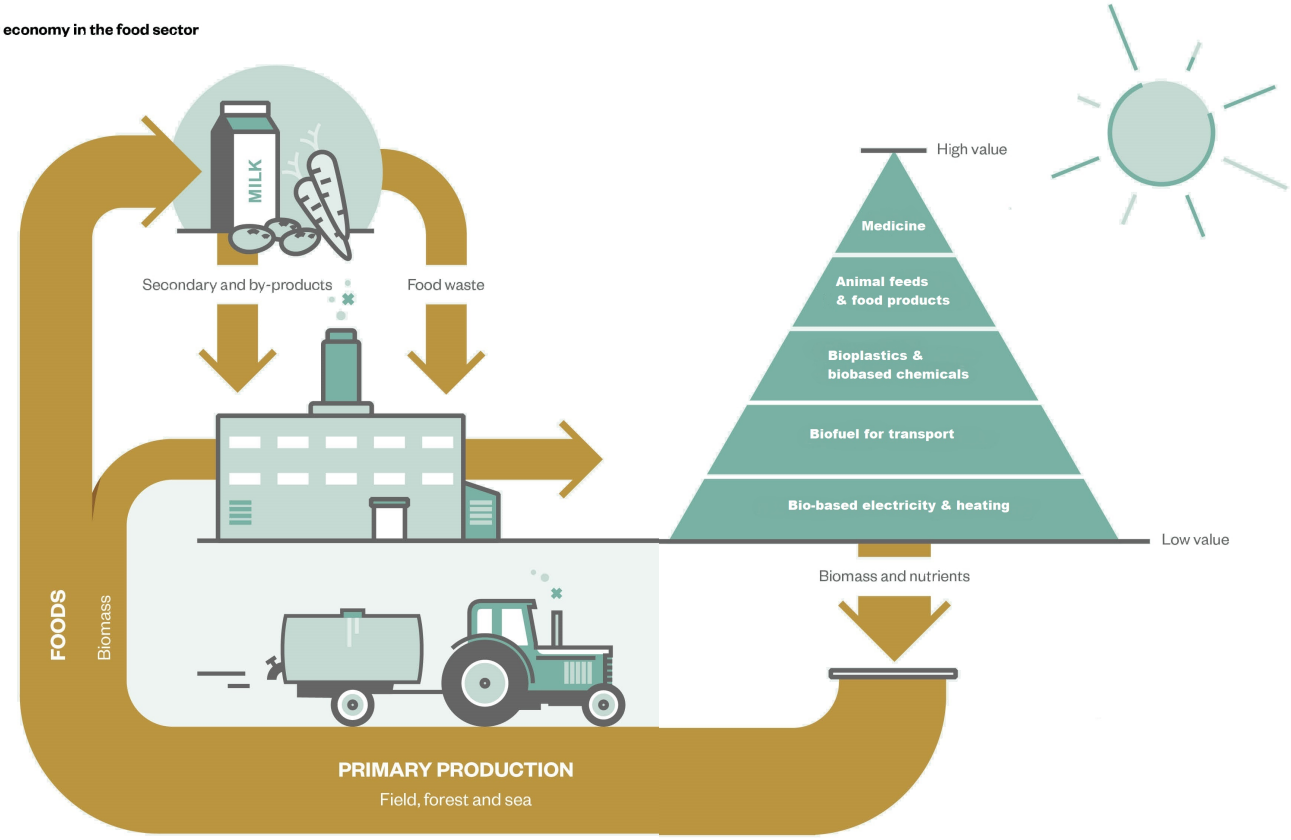
In order to ensure more value from renewable raw materials and to reduce the amount of food waste in all parts of the food value chain, the Danish Government will, among other things:

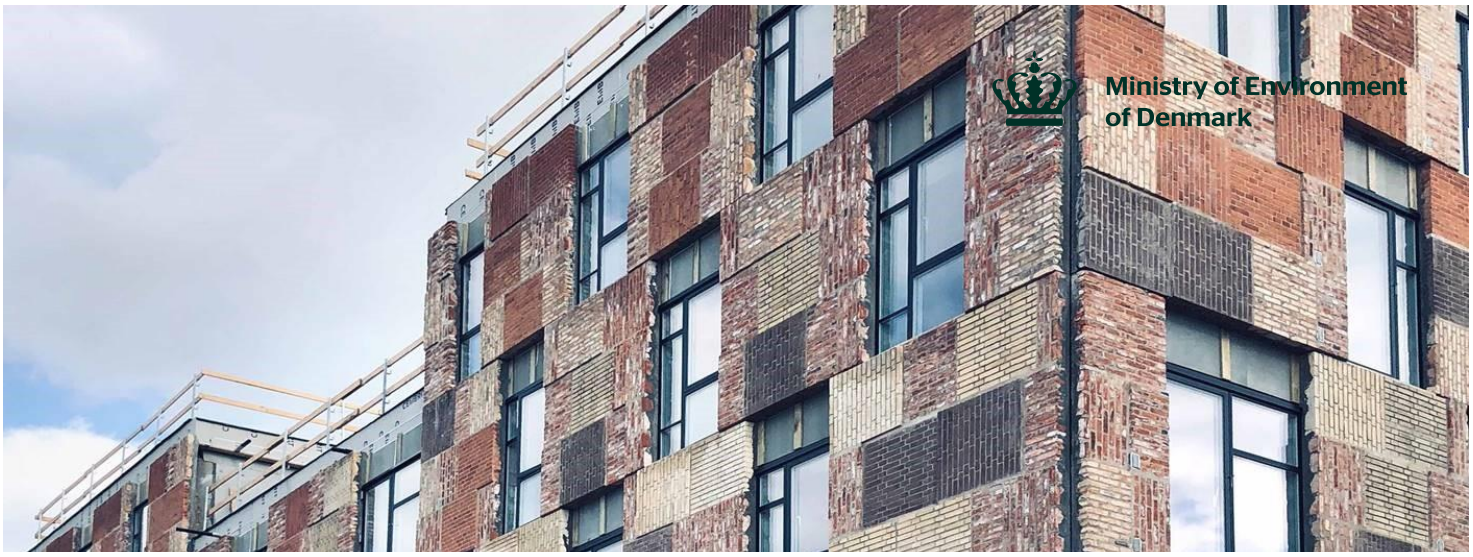
- Provide professional assistance to reduce food waste in retail
- Lower the limit values for heavy metals and physical impurities in food and garden waste used as fertiliser
- Create a financial incentive to recycle phosphorus from sewage sludge
- Analyse and implement measures to ensure a reduction of minimum 20 percent of the greenhouse gas emissions from treatment of garden waste

Facts about the bioeconomy

- In 2018, biomass constituted approximately 21 percent of the Danish material consumption (DMC).
- Denmark produces approximately 1,200,000 tonnes food waste from primary production, processing and manufacturing, retail, restaurants and households annually.
- The amount of food waste from households has decreased by 14,000 tonnes from 2011 to 2017. That is an average decrease in food waste of 8 percent per household per week.
- In 2018, 213 kg biowaste (i.e. food and garden waste) was recycled per capita in Denmark.
- The share of recycling for phosphorus from wastewater and wastewater sludge in 2018 was 76 per cent.

Circular economy in the food sector





A sustainable built environment

July 2021

The construction sector has a large environmental and climate impact: the construction and use of buildings account for 40 percent of the material consumption, 33 percent of water consumption and 40 percent of energy consumption in the EU. This leads to enormous amounts of waste, which in Denmark annually amounts to over 40 percent of total waste generated. It is the Danish Government's target to reduce the environmental impact of construction and demolition.

There are significant potential benefits of a transition to a circular economy for the Danish construction sector. The circular transition of the sector aims to avoid harmful substances that have a negative impact on human health, the environment and nature, as well as optimising the use of natural resources. This requires a focus on quality, flexibility and durability, as well as making use of recycled and bio-based materials in construction, taking into account the requirements for health and safety.

To create a sustainable built environment, it is necessary to focus on all phases of a building life cycle - from material selection, design and production, to construction and use of the building, maintenance, renovation and ultimately demolition.

In order to reduce the environmental impact from construction and demolition, the government will, among other things:

- Update the Building Regulations with elements from the voluntary sustainability class
- Introduce increasing limit values for climate footprint from buildings
- Develop the existing Danish LCA- and LCC-tools for buildings into design-tools
- Introduce requirements for standardised demolition plans
- Establish national limit values for problematic substances in recycled concrete and brick
- Create unambiguous rules and better traceability for construction and demolition waste

Facts about the circular economy in building and construction

- Construction and use of buildings accounts for 40 percent of total material consumption, 33 percent of total water consumption and 40 percent of total energy consumption in the EU. Thus, the building stock accounts for 36 percent of total EU greenhouse gas emissions.

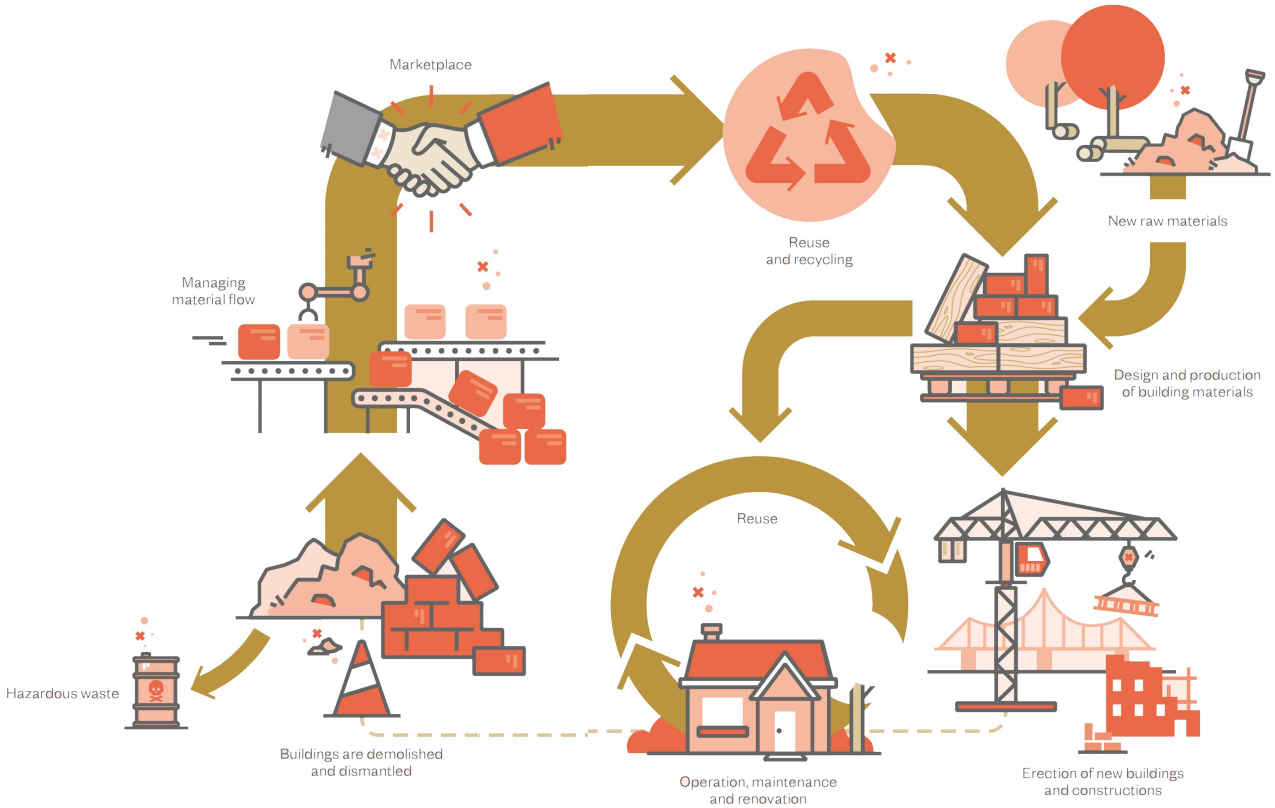
- Based on the total construction cost of active, planned and completed construction projects in 2020, it is expected that the certifications DGNB and the Nordic Ecolabel together will amount to 23 per cent.

- The lifespan of a building is typically between 40 and 100 years.

- Construction and demolition waste is the largest waste stream in Denmark and annually amounts to approximately 5 million tonnes and more than 40 percent of all waste generated in Denmark.

- Approx. 36 percent of construction and demolition waste in Denmark is recycled, while 52 percent of waste is used in other forms of material recovery, for example, crushed and placed under roads where the material is used for the last time as backfilling

Circular economy in the building and construction sector



Plastics in a circular economy

July 2021

Plastic waste is the single largest source of Denmark's CO_2 emissions from waste incineration. Today, large amounts of plastic waste go up in smoke instead of being reused or recycled. It is the government's target to reduce plastic consumption and improve reuse and recycling of plastics.

Plastic is a material that is used in many different contexts, and in many cases it is indispensable. It is a lightweight material, thereby saving fuel in the shipping of goods. Plastic packaging also shields against damage and extends, for example, the shelf life of food, so that food waste is avoided. Plastic makes everyday life easier and is part of virtually every part of our lives – from electronics to clothing and toys.

With the many positive qualities plastic has as a material, the goal is not to avoid using plastic altogether, but to use it in a smarter way. The problems with plastic arise when it is overused, designed inappropriately, ends up as pollution in nature or incinerated rather than reused or recycled.

In order to reduce consumption and improve the reuse and recycling of plastics, the government will, among other things:

- Introduce a ban on certain single-use plastics
- Reduce the amount of specific forms of plastic take-away packaging by 50 %
- Require recycling of a minimum of 60 percent of collected plastic waste
- Establish a research mission on recycling and reduction of i.a. plastic waste

Facts about plastics in a circular economy

- In 2019, approximately 514,000 tonnes of plastic waste was generated in Denmark. Only about 25 percent of this was collected for recycling. It is estimated that only approximately half of the amount of plastic waste collected was actually recycled, while the rest was incinerated.

- Incineration of both Danish and imported waste containing plastic emits approx. 1.3 million tonnes of CO_2 per year.

- The amount of plastic waste collected for recycling has increased from 89,000 tonnes in 2014 to 122,000 tonnes in 2019, which is primarily due to more plastic waste being collected from households.