Country profile

More from less — material resource efficiency in Europe

2015 overview of policies, instruments and targets in 32 countries

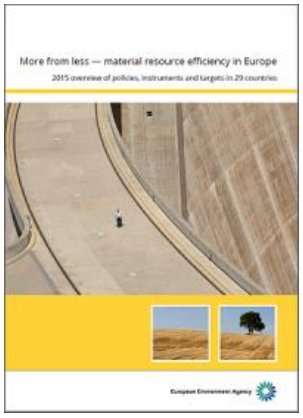
Denmark

May 2016

European Environment Agency

This country profile is based on information collected by the Eionet network in Denmark. This document should not be seen as an official list of government priorities and is not necessarily an exhaustive list of all national material resource efficiency policies, objectives, targets or activities in place. The information is current as of December 2015.

This country profile was prepared as part of the 2015 EEA review of material resource efficiency policies, that aimed to collect, analyse and disseminate information about the development and implementation of material resource efficiency policies in EEA member and cooperating countries. The work resulted in the following outcomes:



32 short country profiles (this document) – self assessments prepared by countries, describing the current status of material resource efficiency policies including key strategies and action plans, policy objectives, instruments, targets and indicators, and the institutional setup. Countries were also invited to share reflections on the future direction of resource efficiency policies.

EEA report *More From Less – material resource efficiency in Europe* – prepared by the EEA and ETC/WMGE, the report analyses trends, similarities and differences in policy responses, showcases selected policy initiatives from the countries, and offers some considerations for the development of future policies.

The EEA report *More from less – material resource efficiency in Europe* and the 32 country profiles are available at: http://www.eea.europa.eu/resource-efficiency

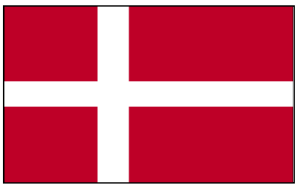
For information about trends and policies on municipal waste management in the participating countries, please visit: http://www.eea.europa.eu/publications/managing-municipal-solid-waste

Information about EU Member States' waste prevention programmes can be found at: http://www.eea.europa.eu/publications/waste-prevention-in-europe-2015

For information on climate- and energy-related policies, including those on energy efficiency, in the participating countries, please visit: http://www.eea.europa.eu/themes/climate/ghg-country-profiles

Denmark, facts and figures

Source: Eurostat



GDP: EUR 261 billion (1.9 % of EU-28 total in 2014)

Per person GDP: EUR 34,200 (in purchasing power standard)
(125 % of EU-28 average per person in 2014)

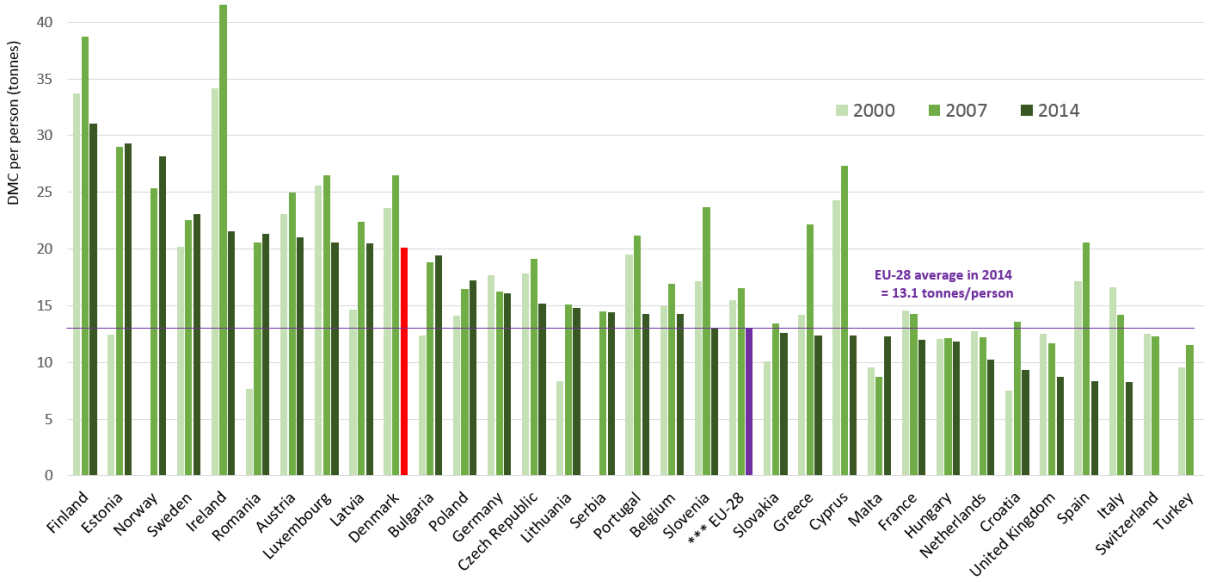
Use of materials:
113 million tonnes DMC (1.7 % of EU-28 total in 2014)
20.1 tonnes DMC/person (154 % of EU-28 average per person in 2014)
Resource productivity 2.18 EUR/kg (110 % of EU-28 average in 2014)

Structure of the economy:
agriculture: 1.3 %
industry: 21.2 %
services: 77.5 % (2014 est.)

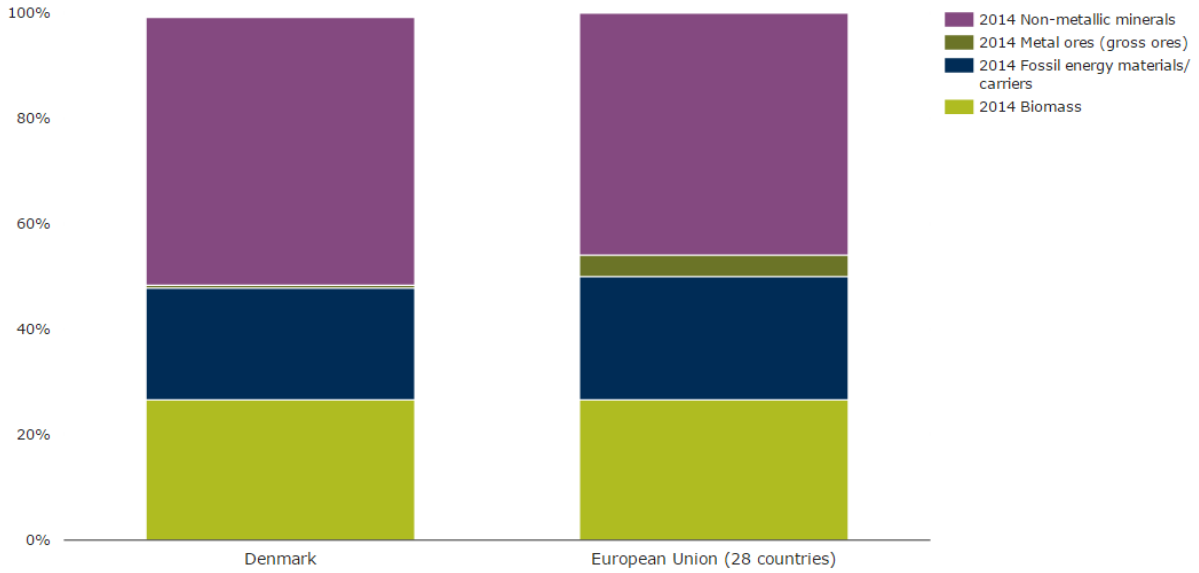
Surface area: 42,900 square kilometres (1.0 % of EU-28 total)

Population: 5.6 million (1.1 % of EU-28 total)

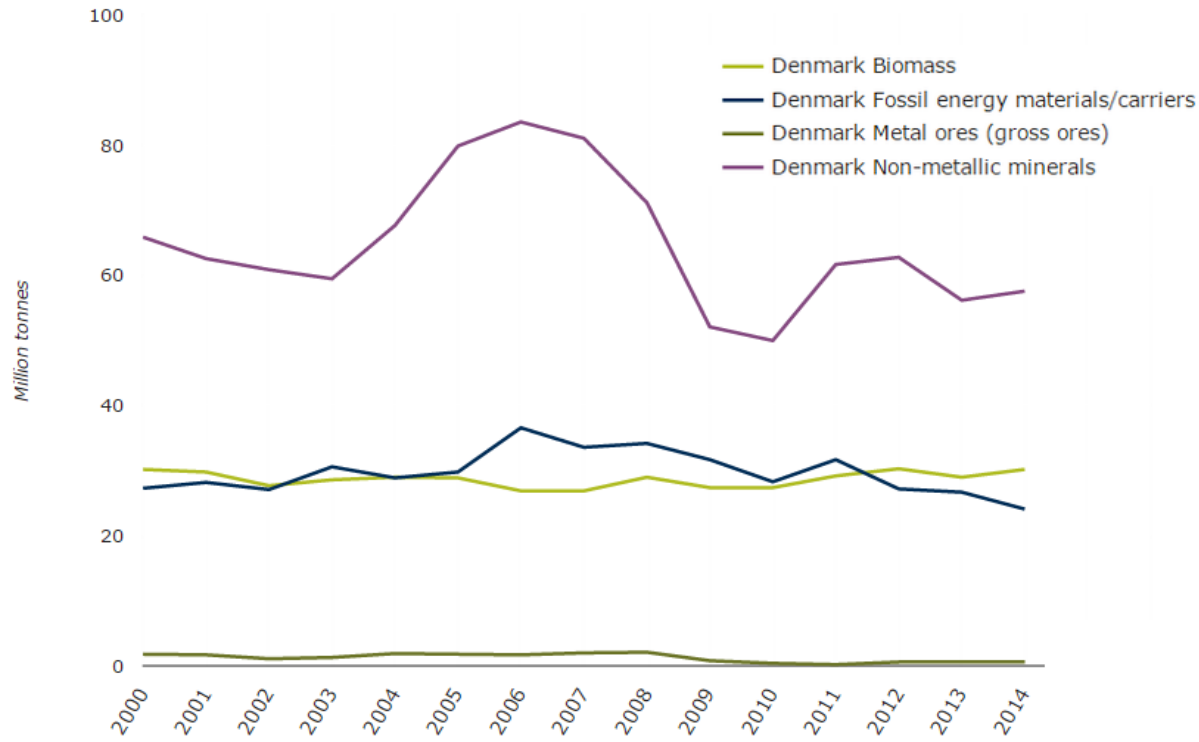
Use of materials (DMC) per person, participating countries and EU-28
(2000, 2007 and 2014)



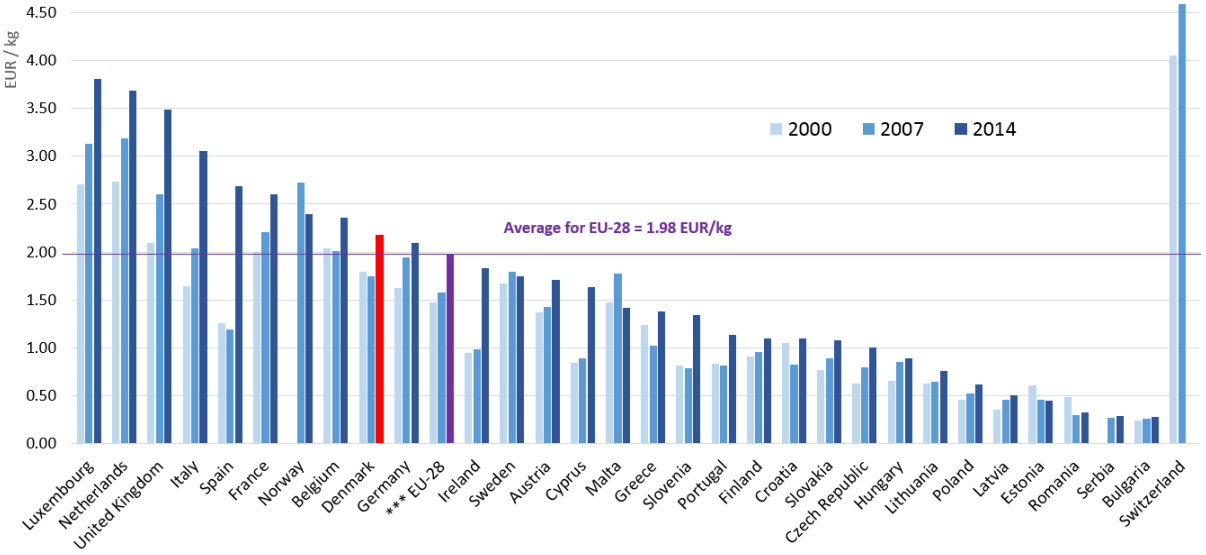
Domestic material consumption by category, EU-28 average and Denmark (2014)



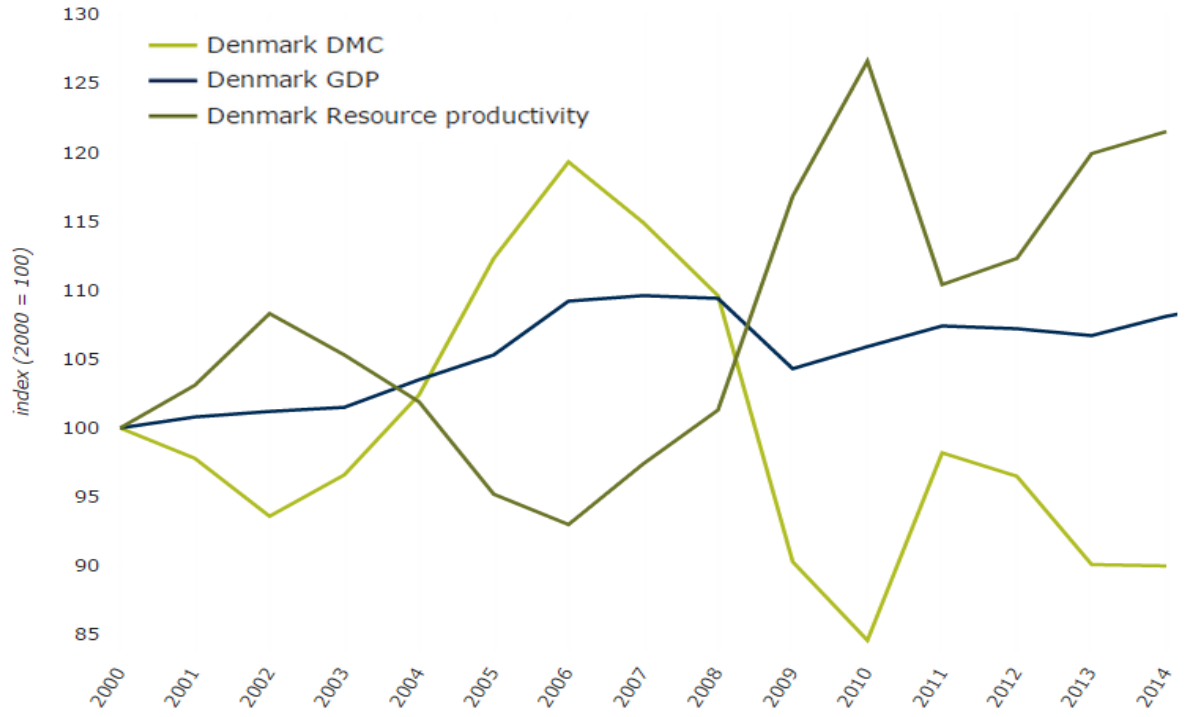
Trends in material consumption, Denmark by category (2000–2014)



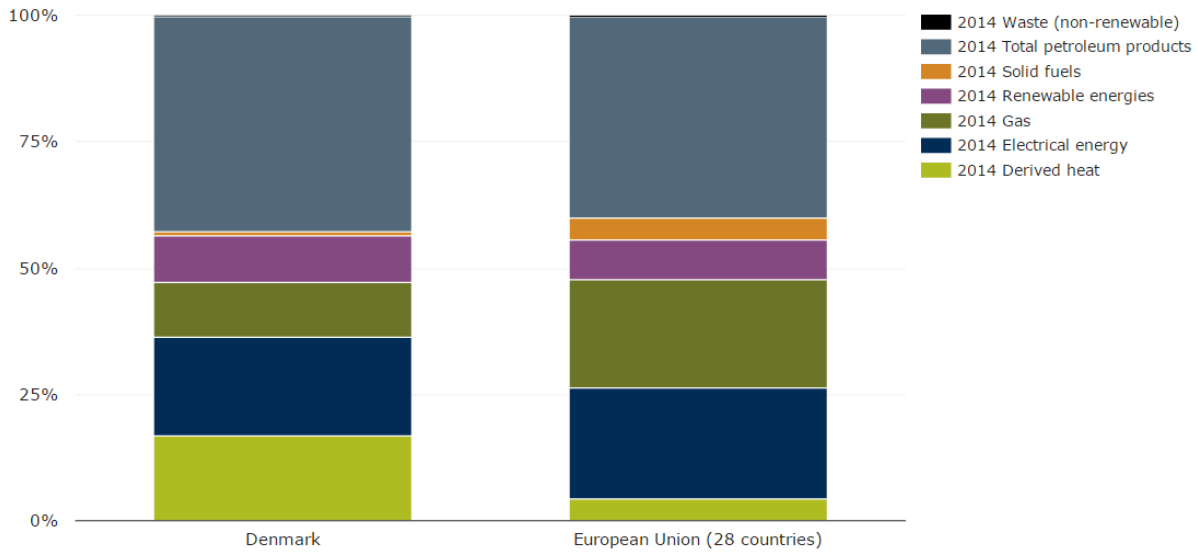
Resource productivity (GDP/DMC), participating countries and EU-28
(2000, 2007 and 2014)



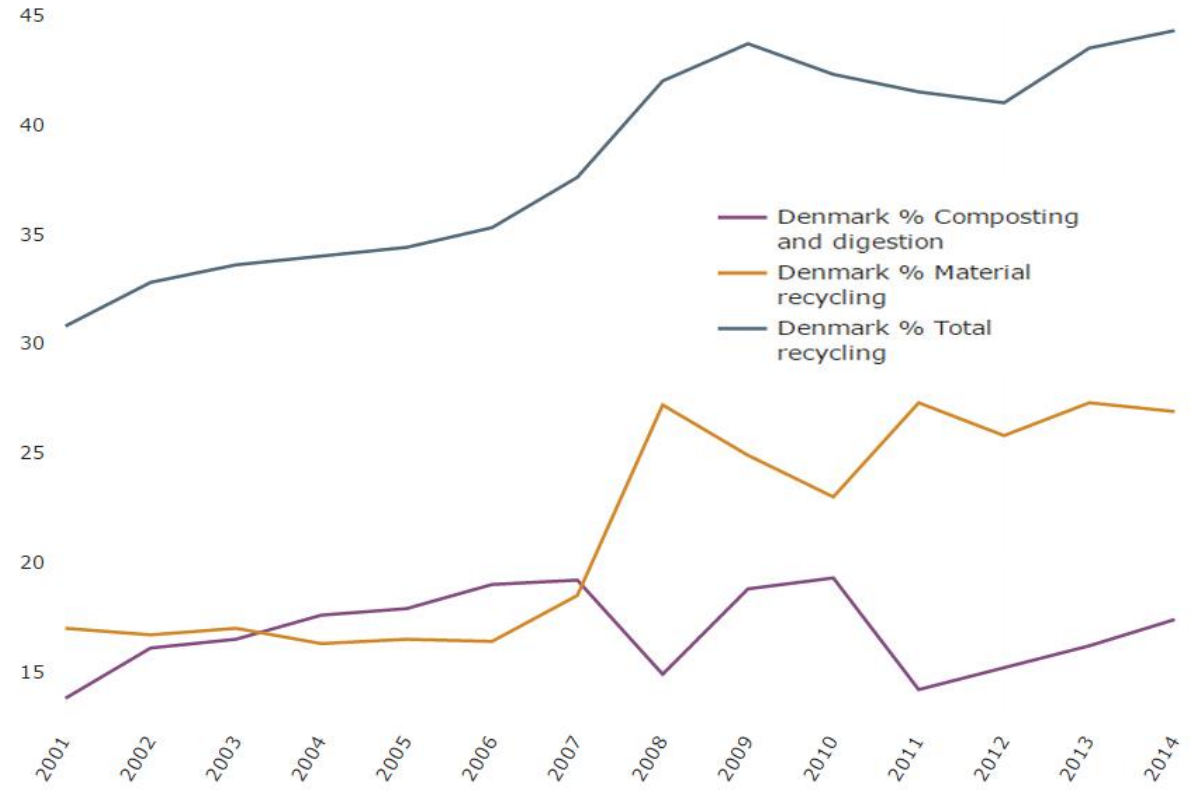
GDP, DMC and resource productivity trends, Denmark (2000–2014)



Share of final energy consumption by fuel type, EU-28 and Denmark (2014)



Recycling of municipal waste, Denmark (2001–2014)



Introduction

Denmark does not have a dedicated national resource efficiency strategy or action plan.

Instead, a resource strategy and plan for waste management (**Denmark Without Waste, Recycle more – Incinerate less**) as well as a waste prevention strategy (**Denmark Without Waste II, Strategy for Waste Prevention**) have been adopted. Both strategies partly cover the theme of more efficient use of resources.

Scope of material resource efficiency

The term 'resource efficiency' and the scope (i.e., which resources are addressed) are not explicitly defined in the strategies.

The focus of the Danish resource strategy (Denmark Without Waste) is on waste management with emphasis on increased recycling.

The waste prevention strategy (Denmark Without Waste II) focus on increased resource efficiency in companies in general and with specific focus on five waste streams – avoidable food waste, construction and demolition, textiles, electronics and packaging.

Driving forces for material resource efficiency

Material resource efficiency policies and strategies in Denmark are closely related to considerations regarding job creation/employment, competitiveness as well as ensuring sustainable use of natural resources and reducing environmental impacts.

A specific driver for the Denmark without waste strategies was and is the uncertainty of access to and price fluctuations on raw materials.

Material resource efficiency in companies is foremost driven by cost savings (Southern Danish University 2015). Other possible drivers for companies are less dependency on volatile prices on materials and fuels, export of resource efficient solutions (e.g.in water and food production) and less environmental impacts due to regulation.

Priority material resources and sectors

Priority materials

Denmark has not identified prioritized materials as such. Several types of materials are addressed in the strategies and policies mentioned below. Among these construction materials (e.g. bricks), wood, WEEE, textiles, packaging and food waste. The drivers for focusing on these materials have been a mixture of economic, environmental and social priorities.

Priority industries and economic sectors

The Denmark without waste II – Strategy for waste prevention pays specific attention to increased resource efficiency in construction & demolition, food, electronics, textiles and packaging.

Manufacturing has the highest share of production cost related to material use and material resource efficiency in these productions streams. They are therefore of high importance for the Danish competitiveness. In Manufacturing the sectors with the highest relative production cost for use of materials are Food and beverages (58 %), Machinery (10 %) and Manufacturing of metals (7 %) (Copenhagen Economics 2013 - http://www.copenhageneconomics.com/dyn/resources/Publication/publicationPDF/7/267/0/Ressourceproduktivitet%20og%20konkurrenceevne%20i%20dansk%20industri.pdf).

Also, the construction sector has the largest volume in material use in Denmark (Denmark without waste – recycle more, incinerate less".) and is another area of high priority for material efficiency in Denmark.

Priority consumption categories

Focus is on housing, mobility and food. More recently focus has also been on textiles, packaging and EEE as well.

Policy framework

National strategies or action plans for (material) resource efficiency

Although Denmark does not have a dedicated material resource efficiency strategy or action plan, several strategies and policies are in place which address material resource efficiency among other topics. Below is listed a number of these:

1) "Denmark without waste – recycle more, incinerate less". (November 2013). Resources Strategy for waste management, which e.g. focus on more recycling and more efficient use of raw materials. Link (English): http://eng.mim.dk/media/mim/67848/Ressourcestrategi_UK_web.pdf
2) "Denmark without waste II – Strategy for Waste Prevention". (April 2015). Focus on waste prevention. Contain 72 initiatives aiming at getting companies and consumers to prevent the production of waste. Link (presently only in Danish): http://mst.dk/media/131357/danmark_uden_affald_ii_web_29042015.pdf
3) Strategi for intelligent offentligt indkøb (National strategy for intelligent public procurement – October 2013). The strategy focuses among other aspects on increased use of tools for total cost of ownership and sustainability criteria in public procurement. Link (in Danish): http://www.fm.dk/nyheder/pressemeddelelser/2013/10/ny-regeringsstrategi-vi-skal-spare-penge-og-fremme-innovation-og-baeredygtighed-ved-at-koebe-klogere-ind/
4) Task-Force for Increased Resource Efficiency: The task-force is an inter-ministerial initiative to identify and overcome regulatory barriers to increased resource efficiency. The work will be based on anthropological studies of the experiences of companies. Studies will look into both material flows, value-chains and regulatory regimes. For each selected barrier, a solution team will be established to find the most effective way in which it can be overcome. A "barrier" in this context means regulations (broadly understood as the rules themselves, the way they are carried out, and the service-level around them) that inhibit companies in Denmark from acting in more resource efficient ways. https://groenomstilling.erhvervsstyrelsen.dk/danish-task-force-resource-efficiency

5) Fund for Green Business Development. The fund invests in the development of new green business models, innovative green products and services in the circular economy. The fund invests in enterprises and partnerships through application rounds and thematic programs. In 2013 – 2014, the fund has given almost € 8 million in grants to 117 innovative projects.
https://groenomstilling.erhvervsstyrelsen.dk/fund-green-business-development

6) Træningsforløb i ressourceeffektivitet (Training programme for employees on resource efficiency).
http://regionalt.erhvervsstyrelsen.dk/traeningsforloeb-i-ressourceeffektivitet

7) Vækstprogram for små og mellemstore virksomheder (Growth programme for SMEs) with focus on automation, digitalization and resource efficiency.
https://regionalt.erhvervsstyrelsen.dk/vaekstprogram-smaa-og-mellemstore-virksomheder

8) A sustainable Denmark – balanced development. Sustainability Strategy

   (October 2014): In 2014, the Government presented a Sustainability Strategy with 23 targets for the economic, social, green and international areas. The Strategy describes the Government's vision for a sustainable Denmark and the Government's policy on the economic, social and green areas.
   http://www.fm.dk/publikationer/2014/et-baeredygtigt-danmark-udvikling-i-balance

9) Growth Plan for Water, Bio and Environmental Solutions

   (March 2013): In November 2012, the Growth Team for Water, Bio and Environmental Solutions presented its recommendations, and in the wake of this a Growth Plan for these areas was developed in early 2013. The Growth Plan contains a total of 40 main initiatives. As many of the main initiatives consist of several sub-components, in practice 88 initiatives will have to be followed up. Almost all these initiatives were either implemented in 2013 as described in the Growth Plan or are currently being implemented.

   http://www.evm.dk/publikationer/2013/12-03-13-danmark-i-arbejde-vaekstplan-for-vand-bio-og-miljoe

10) Green industrial symbiosis. Green industrial symbiosis is an initiative at the Fund for Green Business Development. The initiative encourages and facilitates that more Danish companies explore the benefits of symbiosis partnerships by helping companies to recognize the value of their byproducts and assisting them to make connections

across traditional value chains. The initiative has a website where inspiration for initiating industrial symbiosis and case stories are published: https://groenomstilling.erhvervsstyrelsen.dk/green-industrial-symbiosis

General policy objectives for material resource efficiency

"Denmark without waste – recycle more, incinerate less".

http://eng.mst.dk/topics/waste/denmark-without-waste/

1) incinerate less waste and be better at exploiting the value and resources it contains,

2) reduce environmental impacts from waste,

3) high quality recycling,

4) stronger public-private collaboration in regards to waste management.

"Denmark without waste II – Strategy for Waste Prevention".
Prevention of production of waste among companies and consumers.
http://mst.dk/media/131357/danmark_uden_affald_ii_web_29042015.pdf

The strategy contains 72 specific initiatives to help prevent waste, spread across two cross-cutting themes and five focus areas: 1) Food waste, 2) Construction and demolition, 3) Clothes and textiles, 4) Electronics, 5) Packaging.

The key objective of the first cross-cutting theme; "Transition in Danish Businesses - Effective use of materials" is that Danish businesses become better at producing more with less (material) input, contributing to an increased resource efficiency. This work area focuses on helping Danish businesses become more resource efficient. It will achieve this through a series of different initiatives focusing on: financing for a transition to more sustainable production, innovation and partnerships, resource efficiency and environmental leadership, and building and sharing knowledge on resource efficiency in businesses of all sizes and across sectors.

The key objective of the second cross-cutting theme; "Green Consumption - Wise purchasing" is to make it is easier for consumers to buy products and services that have reduced resource footprints, have fewer hazardous

substances, and generate less waste. This work will help consumers buy products and services that are more resource efficient, healthier and better for the environment. This will be achieved through a collection of specific initiatives that will help citizens avoid waste, support better public procurement toward a green transition, and integrate waste prevention into consumer product design.

Specific objectives for the five focus areas are:

Food waste:
-To reduce food waste in all parts of the value chain for food

Construction and Demolition:
-To ease the possibilities to act resource efficient within the construction and demolition sector, and that problematic substances are to be handled in a health- and environmentally sound way, and to ensure better knowledge sharing across the sector.

Clothes and Textiles:
-To ease the possibilities for textile companies to reduce the environmental impact in the production phase, and to make it easier to reuse and recycle textiles, among other things by reducing the problematic substances within textiles.

Electronics:
-To ease reuse and recycling of electronics and electronic waste, in order to enhance the longevity of the products, and to support that they, to a greater extend, can be part of circular loops.

Packaging:
-To reduce environmental impact from packaging.

Resource efficiency and the circular economy

Circular economy is high on the political agenda, but there is no official policy on closing the material loops. Denmark without waste II, Strategy for Waste Prevention points to the fact that companies can design products in a way where they can enter back into new production. In combination the Strategy for Waste Prevention (Denmark without waste II and the Strategy for Waste Management (Denmark without waste) aims at better use of valuable resources throughout production and in waste streams, e.g. from electronic and electrical products, construction materials, packaging, textiles and organic waste, including the food sector.

The Danish Environmental Protection Agency (EPA) as well as the Danish Business Authority (DBA) joined the Ellen MacArthur Foundation's Circular Economy 100 initiative in 2014. EPA and DBA have also contributed to the Ellen MacArthur Foundation's Circular Economy Policy Toolkit report launched in June 2015:
http://www.ellenmacarthurfoundation.org/publications/delivering-the-circular-economy-a-toolkit-for-policymakers

As part of this work, a case study in the potential for Denmark in the circular economy was published:
https://groenomstilling.erhvervsstyrelsen.dk/sites/default/files/media/20151113_denmarkcasestudy_finalv02.pdf

A number of the initiatives that are focused on resource efficiency and green business models also cover circular economy business development, including as examples: the fund for green business development; the training programme for employees on resource efficiency, and the growth program for SME's.

Targets and indicators

Targets for material resource efficiency policies

The Denmark without waste strategy contain a 2022 goal for household waste (number 1) and a number of expected effects for the service sector and all waste streams:

1) Recycling of organic waste, paper, cardboard, glass, wood, plastic and metal waste from households: 50 % by 2022,
2) Collection of waste electronic equipment from the service sector: 75 % by 2018,
3) Recycling of paper, cardboard, glass, metal and plastic packaging from the service sector: 70 % by 2018,
4) Recycling of organic waste from the service sector: 60 % by 2018,
5) Energy recovery from garden waste from all waste streams: 25 % by 2018,
6) Collection of waste electronic equipment from all waste streams: 65 % by 2018,

7) Collection of batteries from all waste streams: 55 % by 2018,
8) Recovery of shredder waste from all waste streams: 70 % by 2018,
9) Recycling of phosphorus in sewage sludge from all waste streams: 80 % by 2018.

Indicators to monitor use of materials and resource efficiency:

Denmark compiles an annual growth and competitiveness publication which in recent years, among other aspects, include an indicator on creation of value compared to material costs in industry. This is compared across countries. Data based on WIOD. Link to latest publication from 2014: http://www.evm.dk/publikationer/2014/09-09-14-redegoerelse-om-vaekst-og-konkurrenceenve-2014

Recently, Statistic Denmark supported by the Danish Business Authority and The Danish EPA has developed a number of indicators to assess resource efficiency at sector levels. The indicators include among others GVA/input (DKK), purchase of input materials (DKK) as percentage of turnover (DKK), intensity of energy use (GJ) and waste production (kg) per GVA. These gives detailed information for the different sectors.

At national level Denmark also use DMC to measure material resource use in tonnes.

http://www.statistikbanken.dk/statbank5a/default.asp?w=1280

Policy instruments

Most important policy instruments for material resource efficiency.

Denmark use a mix of policy instruments. Examples include:

- Taxes and charges in order to for example prevent production of waste, e.g. charge on plastic bags, charge on nickel-cadmium batteries. Tax on deposits.
- Mind the Trash: An online learning portal on waste and resources for 4th-6th grade in the Danish elementary school. http://mindthetrash.dk/

- Eco-labeling – The EU Eco label and the Nordic Swan Eco-label: Revenue from Nordic Ecolabel products and services was greater than DKK 6 bn. in 2013 (wholesale prices excluding taxes and charges), corresponding to an increase of more than 400% from DKK 1.2 bn. in 2008. In 2014, there were more than 10000 different products and services with the Nordic Ecolabel in Denmark. In 2014, additional initiatives were launched to increase the number of ecolabelled products available in Danish supermarkets. http://www.ecolabel.dk/da/in-english
- Green Public Procurement, including the specific initiatives below:
    - The Forum for Sustainable Procurement was established in 2011 as a "knowledge hub" and a networking organisation for greening procurement. In 2015, the Forum develops actions and communications across three thematic groups: circular economy, total cost of ownership and market dialogue. http://www.ansvarligeindkob.dk/
    - The Danish EPA and the Capital Region are engaged in a Horizon2020 project on greening public procurement in regions via developing regional networks focusing on capacity building, training and pilot projects. As a part of the project, the Danish EPA is responsible for developing a tool on circular economy in a public procurement context.

The Danish EPA has developed tools for Total Cost of Ownership within five product areas (published January 2015): office equipment, toilets, lightning, self-service machines and fridges and freezers. The focus is to assist public procurers in assessing the total cost of the product including maintenance costs, water and waste costs etc. http://mst.dk/virksomhed-myndighed/groen-strategi/groenne-indkoeb/totalomkostninger/

Examples of good practice

Raising awareness of advantages of resource efficiency and best practices

In 2015, the Danish EPA published Stærkere uden spild (Stronger without waste) http://mst.dk/media/130580/staerkere-uden-spil_web-enkel.pdf

Case studies on resource efficiency in SME's. The 14 case studies provide inspiration and advice for companies aiming to improve both their economic performance and environmental profile.

SME's can save money by becoming more resource efficient. The companies are from different industries and service industries, and they are motivated to make a difference for the environment. By means of recycling one of the companies has saved over 15 per cent of their spending on the purchase of new materials and a further 15 per cent on the cost of waste management.

The case studies aims to do away with the prejudice that SMEs do not have the ability to engage in environmentally friendly initiatives.

Policy instruments to enable resource efficiency:

- **Green21** (November 2012): Green21.dk comprises 11 green tools to help especially small and medium-sized enterprises with their voluntary strategic environmental initiatives. The portal offers enterprises advice and guidance with regard to designing more green products, it has a quick guide to ecolabelling, tools to calculate total costs of purchases and inspiration to strengthen enterprises' green competitiveness. The portal is the result of a collaboration between the Confederation of Danish Industries, the Danish EPA, Aalborg University and Green Cross Denmark. A new tool to help enterprises reduce their waste has just been added, and, finally, training seminars for enterprises, business incubators and consultants have also been conducted recently. http://www.green21.dk/
- **Fund for Green Business Development**. The fund invests in the development of new green business models, innovative green products and services in the circular economy. The fund invests in enterprises and partnerships through application rounds and thematic programs. In 2013 – 2014, the fund has given almost € 8 million in grants to 117 innovative projects. https://groenomstilling.erhvervsstyrelsen.dk/fund-green-business-development
- **The Danish Eco-innovation Program** The Danish Eco-innovation Program (MUDP) supports development of better solutions for Danish as well as global environmental challenges within the areas of responsibility of the Danish Ministry of the Environment and Food, including water, climate-change adaptation, air pollution, waste and resources, chemicals and noise. During the period 2008-2014, 357 development and demonstration projects received funding from the Programme. The total budget for the projects is DKK 875 mill.; the Danish Ministry of the Environment and Food provided DKK 359 mill. of this funding. The Programme was evaluated in 2013. A total of 47% of the participating enterprises had achieved increased employment or expected to do so, while 27% of enterprises had either already achieved increased exports or expected to do so. http://eng.ecoinnovation.dk/the-danish-eco-innovation-program/
- **Danish Green Investment Fund**: As part of the "Making Denmark Greener" agreement, a new Danish Green Investment Fund has been established. The objective of the Fund is to accelerate Denmark's green transition by offering loans at reasonable terms

for investments in e.g. energy savings, renewable energy plans and improving resource-efficiency. The Fund's total loans amount to up to DKK 5 bn. http://gronfond.dk/en/om-fonden/

- **Task Force for Increased Resource Efficiency** (June 2014): With the "Growth Package Agreement, June 2014", the Government 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 regulatory barriers to increasing resource-efficiency. The Task Force aims to identify any barriers for enterprises to increasing their resource-efficiency, thereby benefiting the environment, innovation and productivity. Moreover the Task Force is to promote more efficient and up-to-date regulation and propose simplification of rules and regulations. Finally, the Task Force will also propose changes and modifications to existing regulations with a view to promoting resource-efficiency, innovation and green transition. The work will be based on anthropological studies of the experiences of companies. Studies will look into both material flows, value-chains and regulatory regimes. For each identified barrier a solution team will be established to find the most effective way in can be overcome. A "barrier" in this context means regulations (broadly understood as the rules themselves, the way they are carried out, and the service-level around them) that inhibit companies in Denmark from acting in more resource efficient ways. The Task Force will be active until the end of 2017.
https://groenomstilling.erhvervsstyrelsen.dk/danish-task-force-resource-efficiency
- **Green industrial symbiosis.** Green industrial symbiosis is an initiative at the Fund for Green Business Development. The initiative encourages and facilitates that more Danish companies explore the benefits of symbiosis partnerships by helping companies to recognise the value of their byproducts and assisting them to make connections across traditional value chains.
https://groenomstilling.erhvervsstyrelsen.dk/green-industrial-symbiosis

Institutional setup and stakeholder involvement

Institutional set up for material resource efficiency policies

Material resource efficiency policies are addressed by a number of different ministries in Denmark: Ministry of the Environment and Food; Ministry of Business and Growth; Ministry of Transport and Buildings; Ministry of Energy, Supply and Climate; Ministry of Taxation; Ministry of Finance. These ministries work closely together on developing policies and regulation on material resource efficiency.

Process to ensure stakeholder participation

In Denmark, public consultations are an integrated part of the process when policies and regulations are being developed or revised. A number of partnerships between stakeholders in value chains are being set up to increase resource efficiency. Among others, these include partnerships on food waste, recycling and prevention of construction waste and packaging waste.

Suggestions for international support mechanism to exchange experiences and share lessons from the implementation of material resource efficiency policies

Regular meetings between national experts and with the EU Commission, would provide value and insight in regards to experiences and future EU policy and regulation. Further development of useful indicators for resource efficiency at EU and international level, e.g. in relation to the Sustainable Development Goals.