Assessment of climate change policies in the context of the European Semester

Country Report: Denmark

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The report provides an overview of current emission trends and progress towards targets as well as policy developments that took place over the period from February 2013 to November 2013.

Please feel free to provide any comments or suggestions to the authors through the contacts listed above.

Short summary

Background: Denmark puts an emphasis on the importance of green growth as part of its economic strategy and brands itself as a “green lab”. Over the last decades, Denmark has been increasingly substituting oil and coal with natural gas and renewable energy, first and foremost wind energy. A number of strategic policy documents were published in the past years, addressing all relevant areas with respect to greenhouse gas (GHG) emission reductions such as energy generation, energy efficiency in different sectors, transport, agriculture, and waste.

Non-ETS emission reduction target: The Danish 2020 target is -20% (compared to 2005). Between 2005 and 2011 emissions were reduced by 7%. According to the latest national projections submitted to the Commission and when existing measures are taken into account, the target is expected to be met with a margin of 2 percentage points: -22 % in 2020 compared to 2005.

Key indicators 2011:

GHG emissions	DK	EU
ESD EU 2020 GHG target (comp. 2005)	-20%	
ESD GHG emissions in 2011 (comp.2005)	-7%	-9%
Total GHG emissions 2012 (comp.2005)	-20%	-12%
GHG emissions/capita (tCO_2eq)	10.1	9.0

→ **12% higher** per capita emissions than EU average

GHG emissions per sector	DK	EU
Energy/power industry sector	36%	33%
Transport	23%	20%
Industry (incl. industrial processes)	11%	20%
Agriculture (incl. forestry & fishery)	21%	12%
Residential & Commercial	6%	12%
Waste & others	2%	3%

→ **Energy/power industry** sector followed by Transport and Agriculture

Energy	DK	EU
EU 2020 RES target	+30%	
Primary energy consumption/capita (toe)	3.4	3.4
Energy intensity (kgoe/1000 €)	91	144
Energy to trade balance (% of GDP)	0.7%	-3.2%

→ **Same** per capita consumption; **37% lower** energy intensity than EU average. Denmark is **exporting** energy

Taxes	DK	EU
Share of environmental taxes (% of GDP)	4.1%	2.4%
Implicit tax rate on energy (€/toe)	313	184

→ **Nearly double** the share of environmental taxes and **70% higher** implicit tax rate on energy than EU average.

Key policy development in 2013: Denmark published its new Climate Plan, which complements the 2012 Energy Agreement and stipulates a 40% reduction target by 2020 compared to 1990. A new Growth Plan for Energy and Climate focuses on the creation of green growth as part of the energy transition. Other important policy developments comprised a new funding scheme for energy-efficient transport, and the publication of a new smart grid strategy.

Key challenges: Emissions from transport have been increasing since 1990 by around 20% and they make up almost a quarter (23%) of total emissions in Denmark (as of 2011). Some slight reductions could be realised since 2007, mainly due to the economic recession and the implementation of the 2009 Green Transport Policy agreement. As part of the initiatives outlined in the new Climate Plan, the government is currently working on a roadmap to phase out fossil fuel use in transport by 2050. But next to this ambitious long-term target, Denmark needs to tackle transport emissions also in the short run, especially with respect to road transport. As in many EU Member States, diesel is taxed at much lower rates than petrol creating misleading incentives with respect to emission reductions.

Although Denmark has a long history of energy labelling of buildings with standards being regularly tightened, energy consumption in buildings is still quite high when compared to other EU Member States, accounting for almost 40% of all energy consumption. This is partly due to the fact that a large share of the buildings was constructed before the first energy performance standards were introduced in the 1970s. Hence, retrofitting of existing building is an important area Denmark needs to focus on, also in the context of its target to reduce gross energy consumption by 7.6% by 2020 compared to 2010.

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1 Background on climate and energy policies

Climate change plays an important role in Danish policy. In August 2013, the Danish government presented the "Government's Climate Plan. Towards a society without greenhouse gases" (Regeringes klimaplan. På vej mod et samfund uden drivhusgasser), which aims at reducing greenhouse gas emissions by 40% in 2020 compared to 1990. Apart from the Plan, an inter-ministerial working group developed an instrument catalogue containing 78 measures which address emissions from transport, agriculture, buildings and waste. The catalogue includes, for example, measures such as the reduction of speed limits on highways from 130 to 110 km/h, reduced nitrogen standards in agriculture or a tax on nitrous oxide from waste water. On basis of the climate plan, the government plans to introduce a climate change bill to Parliament in the coming parliamentary year (ENS 2013d).

In 2012, the Danish parliament had already passed a broad climate and energy strategy in the form of an *Energy Agreement 2012−2020* (ENS 2012d). The agreement sets policies and goals intended to reach Denmark's long-term domestic target of 100% renewable energy in both the energy and transport sectors by 2050, and several other benchmarks by 2020. The latter includes obtaining 35% of final energy consumption from renewables, 50% wind power in electricity consumption, and a 7.6% reduction in gross energy consumption compared to 2010. The measures in the agreement are expected to reduce GHG emissions by 34% by 2020 compared to 1990.

Moreover, the Danish Government announced the Growth Plan for Energy and Climate (Vækstplanen for energi og klima), which will help create growth, jobs, and better export opportunities for Danish companies in the energy technology and solutions industries. The Growth Plan for Energy and Climate focuses on how the government's goal of transforming the Danish energy system and energy consumption can contribute to continued economic growth and increased employment in Denmark (KEBMIN 2013c).

The Danish parliament also forged a broad consensus on the future of Danish transport policies. Seven parties in the Danish parliament agreed upon a broad transportation package, allocating 130 million DKK (approx. €17.43 million) for new initiatives to promote energy efficient transport solutions, noise control, and traffic safety (TRM 2013d).

"Green Growth" is a priority in Denmark and one of the Energy Agreement's main objectives. In 2009 the government published a strategy paper on Green Growth (Grøn Vækst) and a government analysis of "green" products and services in the economy, concluding that in 2010, "green production" (ranging from photovoltaic installations to wastewater management to environmental consulting services) accounted for more than DKK 250 billion (€33.5 billion) in revenue, equivalent to 9.2% of the total turnover in Danish companies with at least one employee. So-called "green exports," such as wind turbine technologies, amounted to DKK 80 billion (€10.7 billion), equivalent to 10.4% of total Danish exports. The Danish government expects that the investment foreseen in the Energy Agreement 2012–2020 (DKK 90–150 billion until 2020) will create 4,000 additional jobs in 2013 and 2014, and 6,000 to 8,000 jobs between 2015 and 2018 (Danish Ministry of Environment 2012a).

In August 2013, the Danish Ministry of Climate, Energy and Building announced that the government plans to allocate DKK 800 million (€107 million) from its 2014 budget for "green transition" measures (KEBMIN 2013a).

Denmark brands itself as a “green lab” where international companies can test green technologies at a large scale. For example, the Energy Agreement dedicates DKK 9.5 million (€1.3 million) between 2012 and 2014 for efforts to make the island of Samso independent of fossil fuels (Danish Ministry of Climate, Energy and Building 2012b). Danish environmental technology companies currently employ 40,000 employees (Danish Ministry of Environment 2012b).

2 GHG projections

Background information

In 2011, Denmark emitted 56.2 Mt CO_2e (UNFCCC inventory 2011), an 18% reduction of emissions compared to 1990 levels. About 36% of the emissions in 2011 came from energy supply. However, emissions from this sector decreased by 24% between 1990 and 2011, reflecting a switch from coal to natural gas and an increased share of renewable energy. Emissions from energy use decreased by more than 30% due to the growing use of district heating. Almost 50% of heating demand is met by district heating. In contrast, emissions from transport increased from 1990 to 2010 by over 20% despite high taxes on cars and fuel. However, transport emissions fell from 2010 to 2011. Emissions from industrial processes have remained at a relatively constant level, while agricultural emissions decreased slightly due to reduced use of synthetic fertilizer, nitrogen leaching, and enteric fermentation (UNFCCC inventory 2011, EEA 2012, UNFCCC 2012). From 2011 to 2012, total GHG emissions continued falling due to progress in all sectors (EEA 2013c).

Progress on GHG target

There are two sets of targets to evaluate: 1) the Kyoto Protocol targets for the period 2008-12 (which has just ended) and 2) the 2020 targets for emissions not covered by the EU ETS.

Under the Kyoto-Protocol the emission reduction target for Denmark for the period 2008-2012 is minus 21% based on 1990 for CO_2, CH_4 and N_2O and on 1995 for F-gases. An evaluation of the latest complete set of greenhouse gas data (for the year 2011; there is only preliminary data for 2012) shows that Denmark’s emissions have decreased on average by 18.9% compared to the Kyoto base year (EEA 2013a). It is therefore not sure if Denmark can meet its commitment through domestic reductions only.

By 2020, Denmark needs to reduce its emissions not covered by the EU ETS by 20% compared to 2005, according to the Effort Sharing Decision (ESD) ([1]).The latest data for 2012 suggests that Denmark is on track at present to meet the Annual Emissions Allocation ([2]) for the year 2013. By 2020, national projections (EEA 2013b) show that the

[1] Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community’s greenhouse gas emission reduction commitments up to 2020.

[2] Commission decision of 26 March 2013 on determining Member States’ annual emission allocations for the period from 2013 to 2020 pursuant to Decision No 406/2009/EC of the European Parliament and of the

country will meet its 2020 target with a margin of 2 percentage points under the scenario with existing measures, as emissions are expected to be reduced by 22% from 2005 to 2020 (see **Fehler! Verweisquelle konnte nicht gefunden werden.**).

Table 1: GHG emission developments, ESD-targets and projections (in Mt CO_2eq)

						ESD target**		2020 Projections***	
	1990	2005	2010	2011	2012*	2013	2020	WEM	WAM
Total	68.7	63.9	61.2	56.2	51.4				
Non-ETS		37.2	36.0	34.8	33.1	35.9	29.7	29	29
(% from 2005)					-11%	-3%	-20%	-22%	-22%
Energy supply	26.2	23.1	23.9	20.0					
(% share of total)	38%	36%	39%	36%					
Energy use (w/o transport)	14.6	13.0	11.0	10.1					
(% share of total)	21%	20%	18%	18%					
Transport	10.8	13.3	13.2	12.9					
(% share of total)	16%	21%	22%	23%					
Industrial processes	2.2	2.4	1.7	1.9					
(% share of total)	3%	4%	3%	3%					
Agriculture	12.5	9.9	9.6	9.7					
(% share of total)	18%	15%	16%	17%					

Source: UNFCCC inventories; EEA (2013b); Calculations provided by the EEA and own calculations.

** proxies for 2012*

*** The ESD target for 2013 and for 2020 refer to different scopes of the ETS: the 2013 target is compared with 2012 data and is therefore consistent with the scope of the ETS from 2008-2012; the 2020 target is compared to 2020 projections and is therefore consistent with the adjusted scope of the ETS from 2013-2020. 2005 non-ETS emissions for the scope of the ETS from 2013-2020 amounted to 37 Mt CO_2eq.*

**** Projections with existing measures (WEM) or with additional measures (WAM).*

Legend for colour coding: green = target is being (over)achieved; orange = not on track to meet the target

Total greenhouse gas emissions (GHG) and shares of GHG do not include emissions and removals from LULUCF (carbon sinks) and emissions from international aviation and international maritime transport.

National projections of GHG emissions up to 2020 need to be prepared by the Member States in accordance with the EU Monitoring Mechanism ([3]) every two years, and the latest submission was due in 2013. The projections need to be prepared reflecting a scenario that estimates total GHG emissions reductions in line with policies and measures that have already been implemented (with existing measures, WEM), and an additional scenario that reflects developments with measures and policies that are in the planning phase (with additional measures, WAM) may also be submitted.

In the following two tables, these measures have been summarised with a focus on national measures and those EU instruments expected to reduce emissions the most. Please note that the table includes also measures that address GHG emissions covered

Council. Online available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:090:0106:0110:EN:PDF

[3] Decision No 280/2004/EC of the European Parliament and of the Council of 11 February 2004 concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol.

under the ETS such as measures reducing emissions from electricity generation (e.g. feed-in tariffs). An update on the status of the policies and measures is included in order to assess the validity of the scenarios.

Table 2: Existing and additional measures as stated in the 2013 GHG projections

Existing Measures (only important national measures)		Status of policy in November 2013
Energy	Energy development and demonstration. EUDP, under the responsibility of the EUDP Secretariat c/o the Danish Energy Authority, support energy development and demonstration projects. Directly related research projects may also be supported as well as other activities such as public/private partnerships.	EUDP (Energy Technological Development and Demonstration Programme) promotes new climate-friendly energy technologies. Budget for 2013: DKK 375 million (€ 50.3 million) with DKK 25 million (€ 3.35 million) for research, development and demonstration of energy-efficient transportation (ENS 2013i).
	Price supplement and subsidies for environmentally friendly electricity: all renewable energy production plants receive subsidies incl. biomass-based electricity production, wind turbines, bio gas plants and small RE technologies (i.e., solar cells and wave power).	Implemented. During the period between February and November 2013, the law was amended 3 times, changing the amount of support for wind power plants, PV-installations and biogas plants. There were no other significant changes (Retsinformation 2013a).
	Electricity Tax Act (Elafgiftsloven - Lovbekendtgørelse nr. 310 af 1. april 2011 om afgift af elektricitet)	Implemented since 1977. Consumption of electricity in excess of 4,000 kWh per year in second homes that are heated by electricity for 2013: 34.1 øre/kWh, other electricity for 2013: 75,5 øre/kWh (Retsinformation 2013b)
	Gas Tax Act (Gasafgiftsloven - Lovbekendtgørelse nr. 312 af 1. april 2011 om afgift af naturgas og bygas)	Implemented since 1996. Natural gas and city gas with a calorific value of 39.6 MJ for the period 02.2013-12.2013: 279.5 øre/Nm3, Gas with a calorific value of 39.6 MJ used or intended for use as fuel for the period 02.2013-12.2013: 287.2 øre/Nm3 (Retsinformation 2013c)
	Coal Tax Act (Lov om afgift af stenkul, brunkul og koks m.v.): Tax rated after the calorific value of coal, coke, furnace coke, coke gravel, crude coke, lignite briquettes and lignite, tall oil, wood tar, vegetable pitch, etc.	Implemented. The law was amended in July and December 2013, but there were no significant changes (Retsinformation 2013d).
	Carbon dioxide tax on energy products (Bekendtgørelse af lov om kuldioxidafgift af visse energiprodukter): Tax on energy products depending on their contribution to CO_2 emissions	Implemented. The law was amended in July and December 2013, but there were no significant changes (Retsinformation 2013e).
Transport	Registration Tax Act (Registreringsafgiftsloven - Bekendtgørelse af lov om registreringsafgift af motorkøretøjer m.v.): Tax is differentiated according to energy efficiency of the vehicle (km per litre).	Implemented. The law was amended in June 2013, but there were no significant changes (Retsinformation 2013f).

	Mineral Oil Tax Act (Bekendtgørelse af lov om energiafgift af mineralolieprodukter m.v.): Tax on mineral oil products such as gas oil, diesel oil, fuel oil, heating tar, petroleum.	Implemented. The law was amended in July and December 2013, but there were no significant changes (Retsinformation 2013g).

Source: Reporting of MS in accordance with Decision No 280/2004/EC about their GHG emission projections up to 2020, May 2013

According to the current state of implementation, most measures listed under the WEM scenario are already in place and are being implemented while no measures are outlined for the scenario with additional measures. Overall, the assessment of the implemented measures indicates that Denmark is expected to achieve its reduction target as stated in the national projections.

3 Evaluation of National Reform Programme 2013 (NRP)

In April of each year, Member States are required to prepare their National Reform Programmes (NRPs), which outline the country's progress regarding the targets of the EU 2020 Strategy. The NRPs describe the country's national targets under the Strategy and contain a description of how the country intends to meet these targets. For climate change and energy, three headline targets exist: 1) the reduction of GHG emissions, 2) the increase of renewable energy generation, and 3) an increase in energy efficiency.

The NRP focuses on measures as envisaged in the Energy Agreement of March 2012. Additionally the NRP mentions the Climate Plan, which the Danish government presented in August 2013. In the following table, the main policies and measures as outlined in the NRP of April 2013 have been summarised, and their current status (implemented, amended, abolished, or expired) is given, with specifics on latest developments.

Table 3: Main policies and measures as outlined in the NRP, April 2013

Climate Plan	
Status as stated in the NRP	To be presented by the Government in 2013.
Status as per Nov 2013	On 14 August 2013, the Danish government presented the "Government's Climate Plan. Towards a society without greenhouse gases" (Regeringes klimaplan. På vej mod et samfund uden drivhusgasser).
Description of policy or measure	The plan aims at reducing greenhouse gas emissions by 40% in 2020 compared to 1990 levels. Additional to the plan, an inter-ministerial working group developed an instrument catalogue containing 78 measures which address emissions from transport, agriculture, buildings, and waste. On basis of the Climate Plan, the government plans to introduce a climate change bill to Parliament in the coming parliamentary year (NRP Denmark 2013).

Preparation of a strategy for the establishment of smart electricity grids in Denmark	
Status as stated in the NRP	Measure envisaged in Energy Agreement.
Status as per Nov 2013	In April 2013, the Danish government unveiled a national Smart Grid Strategy.
Description of policy or measure	The document describes intended future opportunities for consumers to manage their energy consumption, including individual electricity meters in each household, variable electricity rates, and a data hub at which consumers can see when electricity is cheapest (NRP Denmark 2013).

Annual pool of DKK 42 million to support the conversion from oil and natural gas installations to renewable energy in existing buildings for the period 2012-2015	
Status as stated in the NRP	Measure envisaged in Energy Agreement.
Status as per Nov 2013	The Danish Energy Agency announced on 5 April 2013 that DKK 42 million (€5.6 million) shall be allocated to support the shift from oil and natural gas boilers to alternatives based on renewables.
Description of policy or measure	1st part of the call (9.4 million DKK in 2013-2015, approx. €1.26 million) is reserved for providers of advice and information regarding heating installation in various building types. 2nd part of the call (8.6 million DKK in 2013-2015, approx. €1.15 million) supports demonstration projects showcasing new heating methods (NRP Denmark 2013).

New funding schemes for alternatives uses of biogas	
Status as stated in the NRP	No timeline specified.
Status as per Nov 2013	The RES Law has been amended in July and December 2012, changing premium tariff for electricity from biogas and introducing premium tariff for biogas used for transport and processing purposes in industries. The amendment of the RES Law of July 2013 changed the amount of the support scheme. There were no changes in the structure of funding.
Description of policy or measure	The goal is to make use of biogas more financially attractive (e.g., in the natural gas grid, industrial processes, and the transport sector) (NRP Denmark 2013).

Ban installation of oil and natural gas boilers in new buildings	
Status as stated in the NRP	Ban to start as of 2013
Status as per Nov 2013	Implemented. There were no changes during the period between February and November 2013.
Description of policy or measure	Building regulations have been amended: since 2013 the installation of oil and natural gas boilers in new buildings is not allowed. The Energy Agreement foresees a further ban on oil and gas boilers in *existing* buildings from 2016, and sets aside a funding pool of DKK 42 million annually from 2012–2015 to support the substitution in existing buildings with renewable energy based heating (NRP Denmark 2013).

4 Policy development

This section covers significant developments made in key policy areas between February 2013 and November 2013. It does not attempt to describe every instrument in the given thematic area.

Horizontal Measures

In October 2013, the Danish Government announced the Growth Plan for Energy and Climate (Vækstplanen for energi og klima), which will help create growth, jobs, and better export opportunities for Danish companies in the energy technology and solutions industries. The Growth Plan for Energy and Climate focuses on how the government's goal of transforming the Danish energy system and energy consumption can contribute to continued economic growth and increased employment in Denmark.

The Growth Plan includes a total of 30 initiatives in five focus areas (KEBMIN 2013c):

- More flexible and coherent energy system;
- Promotion of export potential to global markets;
- Energy efficient and sustainable buildings;
- Research, development, maturing markets, and education;
- Efficient extraction of fossil energy resources in the North Sea.

Environmental Taxation

The share of environmental tax revenues in total tax revenues was at 8.5% in 2011. While this value was already well above the EU average, Denmark ranks even higher when these revenues are compared with its GDP. In this case, the value amounts to 4.05%, which is the highest in the EU. Since 1992, Denmark has an explicit carbon tax in place that applies to all energy used in business. Sectors which are subject to the EU ETS are exempt from the tax. Denmark has an implicit tax rate that was about €312 per tonne of oil equivalent (toe) in 2011. With regard to the energy intensity of its economy, Denmark is also in an excellent position: it had the 2nd least energy intense economy in the EU in 2010. The share of energy tax revenues in total tax revenues is thus relatively low, although Denmark has the highest implicit tax rate of all MS (Eurostat 2013a).

The Act on the Carbon Dioxide Tax on Certain Energy Products (first version from 1991, current version from 2011) and the Act on the Energy Tax on Mineral Oil Products (first version from 1992, current version from 2011) oblige companies producing, processing, receiving, or dispatching energy products to pay pre-defined taxes on these goods. The tax rate increases each year (RES LEGAL Europe 2013).

Energy Efficiency

As mentioned above, the energy intensity of the Danish economy was the second-lowest among EU MS in 2011, having declined by 5% since 2005. Total final energy consumption had also decreased by 5% in 2011 compared to 2005, mainly due to decreases in industrial and transport energy consumption. The reduction rate of the final energy consumption remained constant over the years and is higher than the EU average (Eurostat, 2013a).

The energy efficiency of Danish industry has improved by 16% between 2000 and 2010. Most of the success has been achieved by the chemical industry, with an improvement of

36%. However, since 2009 the energy intensive industries (chemicals, steel, and paper) have been negatively affected by the economic crisis. The household sector also increased its efficiency between 2000 and 2010 by 10%. Most improvements have been achieved in space heating and large electric appliances (Odyssee 2012).

The Energy Agreement 2012–2020 sets the ambitious goal of reducing gross energy consumption by 7.6% by 2020 compared to 2010. Existing schemes continue to promote energy savings in buildings and industry, as well as energy-efficient appliances. These include mandatory energy labelling for large and small buildings as well as for appliances and lighting (ENS 2012d). However, in order to reach the target for 2020, Denmark needs to speed up renovation of existing buildings which make up an important share of buildings.

In October 2013, the Danish Energy Agency launched an open tender for conducting a technical and economic analysis and evaluation of potential collective and individual solutions to meet the national cooling demand. The EU Energy Efficiency Directive (2012/27/EU) obligates all Member States to carry out a national analysis of the heating and cooling sector by 31 December 2015 (ENS 2013g).

Renewable Energy

Denmark's share of renewable sources in total energy consumption increased from 16% to 23.1% between 2005 and 2011, putting the country in a good position to meet its 2020 goal of 30%. Meanwhile, the electricity sector is a leader within the country in terms of renewable energy integration, providing 35.9% of electricity consumption from renewable generation, which reflects a 46% increase since 2005 (Eurostat, 2013b).

Denmark is strongly encouraging the production of renewable energy. In 2011, the share of renewable energy in total electricity supply exceeded 40% for the first time. Denmark has long been the world leader in wind power and wind farms, accounting for 28% of total electricity supply in 2011 (REUTERS 2012).

Since 2008, Denmark supports generation of electricity from renewable sources through a premium tariff system based on bonus payments as well as net metering. The operators of renewable energy plants receive a variable bonus which is paid on top of the market price. The sum of the market price and the bonus shall not exceed a statutory maximum per kWh, which depends on the source of energy used and the date of connection of a given plant. The RES Law is normally amended a few times a year, when the amount of premium tariff is newly adapted to the current state of the given technology. In 2013, the RES Law was amended 3 times, e.g. lowering the tariff for PV-installations (Retsinformation 2013a).

In September 2013, the parties behind the Energy Agreement from March 2012, decided to conduct an analysis to determine whether the support schemes for renewable energy in place provide the right incentives to ensure a green transformation of the energy system. An inter-ministerial committee will investigate if there is a need for adjustments of measures that may make this transition more cost effective. The working group will complete its work by the end of 2014.

Amendments to Denmark's building regulation came into effect on 1 January 2013 which prohibits now the installation of oil- or gas-fired boilers in new buildings. The ban will be extended to existing buildings in 2016. This provides a strong incentive to use renewable heating technology in buildings, and the Energy Agreement 2012–2020 sets aside a

funding pool of DKK 42 million annually from 2012–2015 to support conversion from oil and natural gas installations to renewable energy. One part of the fund's budget (9.4 million DKK in 2013-2015, approx. €1.26 million) is reserved for providers of advice and information regarding heating installation in various building types. The other part of the budget (8.6 million in 2013-2015, approx. €1.15 million) supports demonstration projects showcasing new heating methods (ENS 2012d).

Moreover, the Danish government agreed on a scheme to provide financial support for renewable energy in industry ("VE til process") totalling 3.75 billion DKK (approx. € 0.5 billion) to companies that switch to renewable energy or district heating in their production processes, make energy efficiency improvements, or use biomass combined heat and power (CHP). The scheme is estimated to achieve conversion to renewable energy at a rate of 16 PJ per year and to reduce CO_2 emissions by a total of 1 million tonnes per year (ENS 2013j).

In November 2013, new rules on reduced support for both onshore and offshore wind turbines came into effect. The rules apply to certain onshore and offshore wind turbines connected to the grid on or after 1 January 2014. The new rules contained in the Renewable Energy Act (VE-Lov) state that the overall price paid, which consists of a surcharge of 25 øre (approx. 3 ct€) and the market price, will not exceed 58 øre/kWh (approx. 7.7 ct€/kWh). The surcharge will be reduced if the market price exceeds 33 øre per kWh (approx. 4.4 ct€/kWh) (ENS 2013h).

Energy Networks

Denmark nationalised its power grids in 2005. The two interconnected power grids are respectively synchronized with the Nordic system and linked with continental Europe. The networks are quickly expanding, relying on underground cables for all 119 kV lines. Denmark is also testing the implementation of smart grids: supported by the EU Eco-Grid project, the installation of an intelligent power system on the island of Bornholm started in 2011 to test the viability of a smart gird concept. By the end of 2012 more than 1,000 households had registered for the project (EcoGrid 2013).

In April 2013, the Danish government unveiled a national *Smart Grid Strategy*. The document describes intended future opportunities for consumers to manage their energy consumption, including individual electricity meters in each household, variable electricity rates, and a data hub at which consumers can see when electricity is cheapest (Ministry of Foreign Affairs of Denmark 2013).

Transport

Emissions from transport have increased between 1990 and 2011 and decreased only slightly since 2005. Also, their proportion among Denmark's total emissions has increased step by step to 23%. This development indicates that these emissions need further attention in the future (Table 1).

Average emissions for newly registered cars are very low in Denmark with a level of 117.0 g CO_2/km. The level is the lowest in the EU and has decreased at a higher rate than the EU average between 2005 and 2012 (Eurostat 2013a). Denmark has the highest registration tax in the EU, and it is based on value, fuel consumption, and safety equipment. Also, an environmental ownership tax applies to passenger cars. The tax is based on CO_2 emissions and fuel type. HGVs are taxed according to their weight (ACEA 2012). However, only HVGs are committed to pay a tax for road use according to their

number of axles (CE Delft 2012). The tax for petrol is well above average but below the rate applied in neighbouring Germany. As in most MS, the tax rate for diesel in transport is much lower, at around €150/1000 litres less than petrol. This puts Denmark near the EU average (European Commission 2013).

The Danish Ministry of Transport together with the Danish Ministry of Climate, Energy and Building will work on a roadmap for phasing out fossil fuels in the transport sector by 2050. This initiative is one of the measures outlines by the Danish government in the "Government's Climate Plan" of 14 August 2013. The roadmap is expected to be published in spring 2014 (TRM 2013b).

In September 2013, the Ministry of Transport announced the establishment of a Centre for Transport, Environment and Climate, which will work on the development of the ministry's green transport solutions. The Centre for Transport, Environment and Climate will have a number of responsibilities, including the development of a roadmap of how to achieve the goal of a low carbon society in 2050 in the transport sector. There is no information yet on when the Centre will start work (TRM 2013c).

To cut transport sector emissions further, Denmark's Act on Sustainable Biofuels requires importers and producers of petrol and diesel to meet a defined biofuel quota. Providers of petrol or diesel fuels have to ensure that biofuels make up at least 5.75% of the company's total annual fuel sales. The obligation must be fulfilled by the end of each calendar year. Petrol and diesel fuel sold for transportation to end users must contain at least 1% of biofuels. This obligation does not apply to petrol with 98 octane or higher (RES LEGAL Europe 2013).

In March 2013, the Danish government announced allocation of 25 million DKK (approx. € 3.35 million) for research and demonstration projects in energy efficient transport in the country's 2013 budget. The programme is a collaboration between the Danish Council for Strategic Research (Det Strategiske Forskningsråd – DSF – a part of Danish Ministry of Science, Innovation and Higher Education) and the Energy Technology Development and Demonstration Programme (Energiteknologisk Udviklings- og Demonstrationsprogram – EUDP – governed by the Transport and Energy Ministry in cooperation with representatives from other Ministries) (ENS 2013a).

In November 2013, the Danish parliament forged a broad consensus on the future of Danish transport policies. Seven parties in the Danish parliament (Socialdemokraterne, Det Radikale Venstre, Socialistisk Folkeparti, Venstre - Danmarks liberale parti, Dansk Folkeparti, Liberal Alliance, and Det Konservative Folkeparti) agreed upon a broad transportation package, allocating 130 million DKK (approx. €17.43 million) for new initiatives to promote energy efficient transport solutions, noise control, and traffic safety. Of that total, 48 million DKK (approx. €6.43 million) will be channelled towards more energy efficient transport solutions (TRM 2013d).

Agriculture

In March 2012, the government established an independent Commission on Nature and Agriculture which, among other tasks, was asked to investigate how the agriculture sector can contribute to climate change mitigation. The results of the Commission's work were presented to the government in April 2013 (MIM 2013).

The report includes 44 recommendations with 144 proposals for specific actions. These recommendations and actions would change Danish agriculture and food production by

providing improvements to nature, the environment, and climate efforts in Denmark (Commission on Nature and Agriculture 2013).

Land Use, Land Use Change and Forestry

Denmark has numerous support programmes aimed at protection of forest habitats and, nature-friendly forest management. These are: Natura 2000 - Forest Nature (Natura 2000 – Skovnatur), Green Operational Plan (Grøn driftsplan), Special Operation (Særlig drift), Private Afforestation (Privat skovrejsning), and Natural Forestry (Naturnær skovdrift). All of these programmes are managed by the Danish Nature Agency (Naturstyrelsen) under the Danish Ministry of Environment. Most of these programmes had their last application deadline in September 2013 (Naturstyrelsen 2013a, b, c, d).

in 2002, the Danish Ministry of the Environment published "The Danish national forest programme in an international perspective". The main objective of the National Forest Programme is full implementation of sustainable forest management, which incorporates economic, ecological as well as social considerations.

The specific key objectives include:

- Nature and environment: Long-term conversion to near-to-nature forest management principles and 10% of the national forest area having biodiversity.
- Economy: Development of sustainable economic framework conditions for the forest sector.
- Social concern: Maintain and develop the forests as a benefit for public welfare.
- Afforestation: Forest landscapes should cover 20-25% of Denmark after 80 – 100 years (currently around 14% of Denmark).
- Knowledge: Effective information sharing through research, education, awareness raising and dissemination of information.
- International objective: Promotion of sustainable forest management at global and regional levels (Naturstyrelsen 2002).

Especially the afforestation objective is rather challenging for Denmark. As one of the implementing measures, Denmark has established a grant scheme for afforestation on private agricultural land. Denmark plans to update the National Forest Programme in the course of the next two years (Danish Ministry of Climate, Energy and Building 2013).

The Forestry Act (Lov om Skove) came into force in 2009. The aim of the act is to preserve and protect the country's forests, increase the forest area, promote the sustainable management of forests (Retsinformation 2013h).

5 Policy progress on past CSRs

As part of the European Semester, Country Specific Recommendations (CSRs) for each MS are provided by the EU Commission in June of each year for consideration and endorsement by the European Council). The recommendations are designed to address the major challenges facing each country in relation to the targets outlined in the EU 2020 Strategy.

No CSRs related to climate change and energy were issued for Denmark in 2013.

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