



## Denmark

### Highlights in 2008

Climate change was a very significant environment policy issue in Denmark in 2008 - not least because Denmark is hosting the climate summit in December 2009, where a successor to the Kyoto Protocol is to be agreed.

Although Denmark is launching a multitude of new initiatives in this field, the latest data on greenhouse gas emissions reveal that Denmark continues to be short of its ambitious Kyoto target of reducing overall emissions by 21%. In February it adopted a new energy policy for 2008-2011 with targets for energy consumption and renewable energy.

In June, the government launched a new strategy for clean air in the cities which seeks to tackle air pollution from traffic and from domestic wood-burning stoves. Key indicators on pollution have shown increasing trends in major Danish cities over the last few years.

### Climate change and energy

	Denmark				EU-27 total	rank in EU-27
	2000	2005	2006	target		
Total Kyoto GHG emissions						
– million tonnes (Mt) CO <sub>2</sub> eq.	68.0	63.6	70.5	54.7 (by 2008-2012)	5142.8	
– from energy supply and use, including transport (Mt CO <sub>2</sub> eq.)	52.4	49.6	56.9		4098.7	
– from transport (Mt CO <sub>2</sub> eq.)	12.2	13.2	13.6		992.3	
					EU-27 average	rank in EU-27
– per capita (tonnes CO <sub>2</sub> eq.)	12.7	11.7	13.0		10.4	20
– per GDP (tonnes CO <sub>2</sub> eq. per 1000€ GDP)	391.4	344.0	369.1		495.7	4
– trend (% change compared to base year*)	-2.0%	-8.3%	+1.7 %	-21.0% (by 2008-12)	-10.8%	18
– Projected 2010 emissions trend compared to base year*						
– with existing measures, Kyoto mechanisms and carbon sinks		-11.6%		-21.0%	-13.4%	
– with existing and additional measures, Kyoto mechanisms and carbon sinks		-11.6%		(by 2008-12)	-16.3%	

\* Base year for CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub> is 1990 and for F-gases is 1995.

	Denmark				EU-27 average	rank in EU-27
	2000	2005	2006	target		
Average CO <sub>2</sub> emissions from new passenger cars sold (grams CO <sub>2</sub> /km)	174.4	161.3 (2006)	158.6 (2007)	130 by 2012-15 for EU-27	157.5	13
Electricity produced from renewable energy sources (% gross electricity consumption)	16.4%	(2006) 25.9%	(2007) 29.0 %	29.0% (by 2010)	(2007) 15.6%	5
– from wind	11.6%	15.8%	18.8%		3.1%	
– from biomass	5.1%	10.1%	10.1%		3.0%	
– from hydropower	0.1%	0.1%			9.2%	
Combined heat and power generation (% gross electricity generation)	52.6%	52.1%	40.7%	18% by 2010 for EU-15	10.9%	2
Energy consumption per capita (kg oil eq.)	3 657	3 636	3 846		3 694	17
Energy intensity - Energy consumption per 1000€ GDP (kg oil eq.)	122	116	118		202	1

In 2006, Denmark's greenhouse gas emissions were 2 % higher than the base year level, far above its Kyoto target of -21 % for the period 2008-2012. The latest data show that Denmark is not expected to achieve its target, even if it uses additional measures.

In February, the Danish government agreed on Denmark's energy policy for 2008-2011, which meets EU environmental goals in several areas. The new energy policy commits Denmark to reducing overall energy consumption: the target is a 2% reduction by 2011 compared to 2006 and a 4% reduction by 2020 compared to 2006. By 2011, the renewable energy should provide 20% of the country's total energy needs. The policy measures combine further investment in windmills, improving the energy performance of new buildings, campaigns on energy saving in buildings, support for a new knowledge centre for energy efficiency in buildings, and support for biomass-based electricity and wind generation of electricity.

As part of the new energy policy package, it was decided in August that Denmark's largest wind park should be in the sea between Anholt and Djursland. When the turbines are ready in 2012, they will have a capacity of 400 MW electricity, corresponding to the annual consumption of 400 000 Danish households.

In March, the government launched its new strategy for climate change adaptation. The strategy outlines a set of guidelines for authorities, enterprises and citizens in order to prepare them for timely responses to climate change. The government also appointed a Commission on Climate Change Policy. The purpose of this Commission is to realise the government's vision for making Denmark fully independent of fossil fuels in the long term. It will report on its work in 2010.

Following the adoption of the climate and energy package in December 2008, Denmark agreed to reduce greenhouse gas emissions by 2020 by 20% compared to 2005 levels for the sectors not covered by the EU Emissions

Trading System. Furthermore, the country has committed to achieving by 2020 a share of energy from renewable sources in gross final energy consumption of 30% (up from 17% in 2005).

## Nature and biodiversity

	2000	2006	Denmark		target	EU-27 average	rank in EU-27
			2007	2008			
Natura 2000 area (sites designated under Habitats and Birds Directives) as % of terrestrial area *		8.8%	9.0%	8.9%		17.0%	
Sufficiency of site designation under the Habitats Directive	99.1% (2004)		100%	100%	100%		
Area occupied by organic farming (% of Utilised Agricultural Area)	6%	5.1%	5.5%		**	4.2%	12
Freight transport (billion tkm)	26.1	23.1	22.7			EU total 2505.0	
– % road	92.1%	91.9%	92.2%			76.9%	20 of 26
– % rail	7.9%	8.1%	7.8%			17.4%	19 of 26

\* Denmark has also an important Natura 2000 marine area, consisting of around 12.8 thousands km<sup>2</sup> in 2008

\*\* Denmark had fixed an indicative target of 12% by 2003 according to the Action Plan II Development in organic farming.

In June, the government started designing a new “green strategy” involving both nature and agriculture and aiming at “green growth”. The final strategy is expected to be launched in 2009. The aim is to design a comprehensive new plan which takes as its point of departure commitments related to the Water

Framework Directive and the Birds and Habitats Directives. The strategy will also suggest ways of using the Common Agricultural Policy to support this vision of green growth.

## Environment and health

	Denmark				EU-27 average	rank in EU-27
	2000	2005	2006	Ceiling		
Urban population exposure to air pollution by particles (annual mean concentration, $\mu\text{g}/\text{m}^3$ )	24.1 (2002)	23.4	27.1	30.0	30.0	9 out of 23
Urban population exposure to air pollution by ozone (SOMO35 level, $\mu\text{g}/\text{m}^3 \cdot \text{day}$ )	1 716 (2001)	1 467	3 507	2 224	4 417	8 out of 23
Air pollutant emissions (thousand tonnes)				(by 2010)	EU27 total	
– sulphur dioxides ( $\text{SO}_2$ )	29	22	25	55	7946	
– nitrogen oxides ( $\text{NO}_x$ )	205	184	185	127	11198	
– non-methane volatile organic compounds (NMVOCs)	129	116	110	85	9391	
– ammonia ( $\text{NH}_3$ )	106	93	90	69	4006	
	1990	Latest available year (2004)				
Water exploitation index	7.7%		4.2%		n.a.	9

In June, the government launched a new strategy for clean air in cities, which seeks to tackle problems with air pollutants from wood burning stoves in households as well as emissions from traffic. Key indicators on  $\text{NO}_x$ , VOC, PAH, and  $\text{PM}_{10}$  have shown increasing trends in cities in recent years. Measures include incentives for the use of particle filters in diesel vehicles, support for wood stoves of superior quality, extending “environmental zones” in big cities and tax-exempting electric cars.

The Danish Environmental Protection Agency (DEPA) and the municipalities of greater Copenhagen introduced new “environmental zones” in September. In these zones, older diesel trucks and buses above 3.5 tonnes must be equipped with a particle filter and a special sticker (unless they meet the Euro 3 norm). It is expected that some 12 000 diesel vehicles will be affected by this new law. Calculations by DEPA show that these vehicles cause about 50% of the air pollution in the two municipalities, and the new zones are expected to reduce the level of ultrafine particles by 20% in two years’ time.



## Natural resources and waste

	Denmark				EU-27 average	rank in EU-27
	2000	2006	2007	Target		
Municipal waste generated (kg per capita)	665	741	801		522	27
- % landfilled	10.1%	5.0%	5.1%		41.0%	5
- % incinerated	52.9%	53.2%	53.3%		19.9%	
	2000	2005	2006			
Recycling of packaging waste (as % total packaging waste)	56%	52.5%	56.2%	55%-80% (by 2008)	56.5 %	8

Since 2002 work has been going on a major reform of the waste sector in Denmark. A major legislation package was prepared in autumn 2008, and the draft legislation will be presented to the Parliament in 2009. There is to be administrative reform of the waste sector to make it more efficient, and to liberalise some aspects of waste handling. The reform will enter into force in January 2010.

A bill introducing producer liability for used batteries was approved in June. Producers and distributors of batteries now have the responsibility for collecting used batteries from consumers. Moreover, producers and distributors are to be responsible for the correct disposal of used batteries in an environmentally acceptable way. The bill will implement the European Directive on Batteries and Accumulators and Waste.

In May, the government launched an overall plan for green public procurement for 2008 and 2009. It focuses on campaigning, the development of guidelines on green procurement, and partnerships for green procurement in the public sector. As a good example, the Ministry of Environment, the Ministry of Climate and Energy, and the municipalities of Copenhagen, Frederiksberg and Gladsaxe, together with the company DONG Energy, agreed in September 2008 to put their combined consumption of taxis up for "green tender". The tender can only be won if a taxi firm can meet certain environment and energy-related criteria (i.e. NO<sub>x</sub>, particles, CO<sub>2</sub> emissions). The parties to the agreement pay 31 million DKK (approximately €4.2 million<sup>2</sup>) per year for taxi services.

<sup>2</sup> Exchange rate April 2009: 1 € = 7.4486 DKK

## Better regulation and implementation

	Denmark			EU-27 total
	31/12/2006	31/12/2007	31/12/2008	
Infringements of EU environmental legislation	8	10	17	481

Most of the infringement cases open in 2008 related to waste and nature. The law on environmental protection was tightened in February 2008 and raised the level of fines for littering and improper waste disposal for both households and enterprises.

## Use of market-based instruments

	Denmark			EU-27 average
	2000	2005	2006	
Share of environmental taxes in total tax revenue	10.5%	11.5%	12.2%	6.4%

For the sectors not covered by the EU Emissions Trading System, the tax on CO<sub>2</sub> was increased in 2008 by between DKK 3/tonne (€0,4 per tonne) and DKK 90 / tonne (€12 per tonne) to reach DKK 150/tonne (€20 per tonne). The Government's Tax Commission will make suggestions in 2009 on future increases or decreases of taxes on labour and energy.

## Environmental technologies

The Energy Development and Demonstration Programme supports demonstration projects of energy technologies (e.g. biofuels). An amount of 200 million DKK (€27 million) will be contributed as soon as possible according to plans by the government published in June.

As regards pollution prevention and control, an important incentive for the dissemination of best practices is the process for authorising industrial installations. Competent authorities have to set conditions for issuing operating permits for installations in line with the Directive on Integrated Pollution Prevention and Control (IPPC). This requires that all industrial permits be issued by 30 October 2007. Denmark reported that by April 2008, 1425 authorisations had been issued or reconsidered and, where necessary, updated out of a total of 1719.

## Outlook for 2009

By far the most prominent environment policy issue for Denmark in 2009 will be hosting the COP-15 climate summit in December. The Ministry of Climate and Energy is already putting a considerable amount of effort into activities leading up to the summit, and in 2009 this work will intensify.

Concerning implementation of the Water Framework Directive, the government will send a draft set of water plans for public hearing in December 2008. After a six-month hearing period, the plans are to be compiled and completed by December 2009. In relation to this, a revised surveillance programme for water and nature will be launched in December 2009 aiming to fulfil obligations under the Water Framework Directive and the Habitats Directive.

The government intends to launch a policy initiative on the sustainable future of Danish cities that will contain an action plan outlining overall policy in this area.