Contribution to Part III: National reporting for CSD 14 /15 thematic areas: Atmosphere/Air pollution

Extract of a questionnaire from the UNECE regarding restrictions on emission of air polluting substances, April 2004

1: The 1985 Protocol on the Reduction of Sulphur Emissions or their Transboundary Fluxes by at least 30 per cent

Stabilising the total energy consumption, reinforcing combined heat and power and replacing coal- and oil-based production by renewable energy and natural gas are expected to reduce the emissions of sulphur. Four specific measures have been introduced to reduce sulphur emissions (sulphur tax; limit values for the sulphur content of fossil fuels; limit values for emissions from large combustion plants; a quota system for large combustion plants). Supplementary to this, the Directive on Large Combustion Plants, 2001/80/EC is fully implemented.

2: National strategies, policies and programmes addressing the control and reduction of emissions

The reduction of nitrogen oxides is a major goal of energy policy (through energy consumption and stationary sources). For mobile sources, catalytic converters on cars and emission standards (according to the EU directives) are implemented. Large combustion plants comply with the EU-LCP Directive. NOx emissions from other combustion plants are regulated by national guidelines, see answer to Q3.

3: Progress in applying national emission standards

The emission standards for new and substantially modified combustion plants smaller than 50 MW thermal are given in Table 03. For installations bigger than 50 MW thermal, Denmark has implemented EU directive 2001/80/EC.

Major stationary source categories for NOx

National emission standards for NOx from new and substantially modified stationary sources

Units & statistical treatment

Pollution control measures and year applied or to be applied

Combustion plants smaller than 50 MW thermal

Natural gas: 65 mg/m3

one hour average

Combustion plants smaller than 50 MW thermal
Light fuel oil: 110 mg/m3
one hour average

Combustion plants smaller than 50 MW thermal
Heavy fuel oil: 300 mg/m3
one hour average
only for plants bigger than 2 MW

Combustion plants smaller than 50 MW thermal
Biofuels: 300 mg/m3
one hour average

Combustion plants smaller than 50 MW thermal
Hard coal: 200 mg/m3
one hour average
Only for plants bigger than 5 MW

Engines for natural gas
550 mg/m3
one hour average

Turbines for natural gas
200 mg/m3
one hour average

4: Progress made in applying national emission standards to new mobile sources

Denmark applies the valid versions of EU directives for motor vehicles (70/220), diesel driven engines (88/77), tractors (2000/25), non-road mobile machinery (97/68) and 2- and 3-wheeled motor vehicles (97/24).

5: Progress made in introducing pollution control measures for the existing sources in the major stationary source categories

The limit values for combustion plants smaller than 50 MW thermal are given in Table l05. For installations bigger than 50 MW thermal input, Denmark has implemented the EU directive for Large Combustion Plants 2001/80/EC

Major existing stationary source categories for NOx

Pollution control measures applied

If national emission standards are applicable-Limit values for NOx

If national emission standards are applicable-Units & statistical treatment

Combustion Plants smaller than 50 MW thermal, Natural gas

125 mg/Nm3
hourly average, by 10% O2

Combustion plants smaller than 50 MW Thermal, Light fuel oil

250 mg/Nm3
hourly average, by 10% O2

Combustion Plants smaller than 50 MW thermal, heavy fuel oil

The limit value to be applied is assessed individually

Combustion Plants smaller than 50 MW thermal, biofuels

300 mg/Nm3
hourly average, by 10 % O2

Combustion Plants smaller than 50 MW thermal, Hard coal

The limit value to be applied is assessed individually

Engines on natural gas

650 mg/Nm3
hourly average, by 10% O2

Turbines on natural gas

650 mg/Nm3
hourly average, by 10% O2

6: Progress made in making unleaded petrol available. Has your country phased out the use of leaded petrol for on-road vehicles?
Leaded petrol has not been marketed since 1994 and has been banned since 2000.

7: Measures taken to facilitate the exchange of technology related to the reduction and control of emissions of nitrogen oxides.
Since 1991 Denmark has operated an environmental assistance programme to countries in transition. However, only a limited number of projects have been targeted towards NOx reductions only.

9: National strategies, policies and programmes developed that specifically address the control and reduction of VOC emissions or their transboundary fluxes
A voluntary agreement with the Confederation of Danish Industries (1995) aimed at reducing VOC emissions (40% by 1999 compared to 1988) from all important industrial sources. Its target has been met. Concerning tail pipe emissions from motor vehicles, see Q4. Denmark has reduced the total annual VOC emissions for the period 1985 to 1999 by 30% in accordance with its commitments.

10: Application of appropriate national or international emission standards to control and reduce VOC emissions from new sources

EU Directive 1999/13/EC is implemented by Statutory Order No. 350 of 29 May 2002. All significant stationary sources apply emission standards and pollution control measures. Motor vehicle emissions are reported under Q4.

11: Progress made in applying measures to control and reduce VOC emissions from the existing stationary sources

EU Directive 1999/13/EC is implemented by Statutory Order No. 350 of 29 May 2002. All significant stationary sources apply emission standards and pollution control measures. Motor vehicle emissions are reported under Q4.

12: Progress in introducing techniques to reduce VOC emissions from petrol distribution and motor vehicle refuelling operations and to reduce the volatility of petrol

VOC emission during refilling operations of motor vehicles has been regulated since 2000. Vapour recovery systems are required on stations with throughput of more than 500 m3/year. Fiscal incentives have been in force since 1995 to promote the installation of vapour recovery systems. Vapour pressure of petrol follows EU directive 98/70.

18: National strategies, policies, programmes and measures that specifically address the control and reduction of sulphur emissions

As stated in the answer to Q1, the general energy strategy is expected to reduce emissions of sulphur. Furthermore, specific measures addressing sulphur emissions have been implemented: a sulphur tax; limit values for the sulphur content in fossil fuels and emissions from large combustion plants; a quota system for large combustion plants capping yearly emissions.

20: Progress made in applying stringent emission limit values to the major new stationary combustion sources

Emission Limit Values for new stationary combustion sources are in accordance with Annex V to the Protocol.

21: Progress in applying emission limit values such as those specified in annex V to existing stationary combustion sources with a thermal input above 500 MWth

For all existing stationary combustion sources with thermal input above 500 MW (i.e. power plants in Denmark), the Emission Limit Values in Annex V are applied using low-sulphur coal and flue gas desulphurization. Since the mid-1980s, total emissions of SO2 from the 19 largest power plants have been regulated through a Statutory Order. The emissions of sulphur dioxide from these power plants are expected to be reduced from 35,000 tonnes in 2004 to 20,000 tonnes in 2011.

22: Progress in applying emission limit values or emission limitations to the major existing stationary combustion sources whose thermal input is between 50 and 500 MWth

For existing stationary combustion sources with a thermal input between 50 and 500 MW (power plants in Denmark), the emission limit values in Annex V are applied aand implemented by Statutory Order No. 808 of 25 September 2003. The technologies used are coal with low sulphur content and flue gas desulphurization.

23: Progress in applying national standards for the sulphur content of gas oil which are at least as stringent as those specified in annex V to the Protocol

Denmark has implemented EU Directive 99/32/EC, reducing the sulphur content from 0.2% to 0.1% by 2008. Tax incentives have resulted in market penetration for all diesel with 0.005% Sulphur(50 ppm). Furthermore, the EU Directive 98/70EC as amended by Directive 2003/17/EC is implemented in Denmark by Statutory Order No. 884 of 3 November 2003. The Directive contains limit values for sulphur content in gas, diesel oil and gas oil.

28: National strategies, policies and programmes to implement the Protocol on POPs to control, reduce or eliminate discharges, emissions and losses of persistent organic pollutants

Denmark applies various prohibitions and regulations for the substances in Annexes I, II and III: The use of Annex I substances has been banned since December 1995.The use of HCH and DDT has been banned since December 1995. Sale and import of PCB have been banned since October 1986, and since December 1998 the prohibition also includes instruments etc. containing PCB.The emissions from waste incineration plants â€“ the only significant source of dioxins/furans in Denmark â€“ are regulated by Air Pollution Control Guidelines for waste incineration plants. Before 2004 all Danish waste incineration plants are to be equipped with flue gas treatment

installations which will retain all emissions of dioxins/furans. For HCB's the main source is assumed to be incineration plants. The HCB emissions are estimated to be negligible. The Industrial Air Pollution Control Guidelines regulate PAH compounds. It also has specific prohibitions relating to PCPs.

35: Progress made towards applying best available techniques (BAT)

For emissions af PCB, Dioxins and PAH, see the limit values in Table 35.

Major stationary source categories for POPs

Limit values for POPs from new and existing stationary sources

Units & statistical treatment

Pollution control measures and year applied or to be applied

Installations emitting PCB
0.0001 mg PCB/Nm3
hourly average

incineration of non-hazardous waste
0.1 ng TEQ-PCDD-F/Nm3
hourly average

industrial installations with an annual mass flow of dioxins greater than 0.01 g I-TEQ
0.1 ng I-TEQ/Nm3
hourly average

Incineration of dangerous and hazardous waste
0.1 ng TEQ-PCDD-F/Nm3
hourly average

Installations with an annual mass flow greater than 25 mg BaP-equivalents/hour
0.005 mg BaP EQ/ Nm3
hourly average

36: Measures to control emissions from mobile sources

Periodic control of motor vehicles following directives 96/96 and 2000/30.

41: National strategies, policies and programmes to implement the Protocol and control and reduce emissions of the heavy metals listed in annex I to the Protocol

Denmark's primary goal is to limit, to the greatest extent possible, the exposure of the environment and humans to heavy metals. This goal will guide efforts relating to cadmium, lead and mercury (Hg) as well as efforts directed towards other heavy metals (arsenic, chromium, copper, nickel, etc.) which deserve attention. The strategy aims at limiting the release and use of heavy metals by substitution, and, secondly, at promoting recycling and treatment. In 2001 a new guideline regulating the emissions to the air from all significant sources was introduced. This includes limit values. See answer to Q44.

42: Measures to reduce emissions of the heavy metals listed in annex I from their level in the reference year

The use of cadmium as surface treatment, as a pigment and as a stabilizer in plastics has been banned (with some delays) since 1983. The content of cadmium in phosphorous fertilizers has been limited since 1989. A general ban (with delays and exemptions) on lead compounds in products and bans on specific uses of metallic lead in products were introduced in 2000. A general ban on mercury in products (with delays and exemptions) was introduced in 1994.

43: Progress made towards applying best available techniques to existing stationary sources

The emissions of heavy metals from major stationary sources are regulated by the national guidelines to be used when the responsible authorities are issuing licences to firms. The guidelines can be found at the homepage of the Danish Environmental Protection Agency, "www.mst.dk". The applied limit values are given in the answer to Q44.

44: Progress towards applying the limit values specified in annex V to existing stationary sources

The Environmental GuidelinesnNo. 1, 2002: Guidelines for Air Emissions, Regulation contains limit values for the emissions of many heavy metals for all major installation. The Limit Values are given in table 44. Supplementary to the Guidelines Denmark has implemented EU Directive

2000/76/EC of 4. December 2000 on incineration of waste by Statutory Order No. 162 of 11th November 2003. Also these limit values on heavy metals are given in the table.

Major stationary source categories for HMs

Limit values for HMs from stationary sources

Units & statistical treatment

Pollution control measures and year applied or to be applied

Municipal waste incineration
Cadmium: 0.05 mg/Nm3
avearge over Â½ to 8 hours
Not specified

Minicipal waste incineration
As+Pb+Sb+Cr+Co+Cu+Mn+Ni+V: 0.5 mg/Nm3
avearge over Â½ to 8 hours
Not specified

Combustion plants, heavy fuel oil, Thermal input bigger than 2 MW
Ni+V+Cr+Cu+Pb: 5 mg/Nm3
hourly average, dry flue gas at 10% O2

Combustion plants, heavy fuel oil, Thermal input bigger than 2 MW
Ni+V+Cr+Cu+Pb: 5 mg/Nm3
hourly average, dry flue gas at 10% O2

Combustion plants, Hard coal, Thermal input bigger than 5 MW
Mercury: 0.1 mg/Nm3
hourly average, dry flue gas at 10% O2

Combustion plants, Hard coal, Thermal input bigger than 5 MW
Cadmium: 0.1 mg/Nm3
hourly average, dry flue gas at 10% O2

Combustion plants, Hard coal, Thermal input bigger than 5 MW
NI+V+CR+Cu+Pb; 5 mg/Nm3
hourly average, dry flue gas at 10% O2

Industrial installations with a mass-flow bigger than 1 g Hg per hr.
0.1 mg Hg/Nm3
hourly average

Industrial installations with a mass-flow bigger than 5 g Pb per hr.
1 mg Pb/Nm3
hourly average

Minicipal waste incineration
Mercury: 0.05 mg/Nm3
average over Â½ to 8 hours
Not specified

Combustion plants, heavy fuel oil, Thermal input bigger than 2 MW
Hg: 0.1 mg/Nm3
dry flue gas at 10% O2, hourly average

45: Product control measures in accordance with the conditions specified in annex VI (answers may refer to question 6 concerning lead in petrol)
As to unleaded petrol see answer to Q 6

46: Additional product management measures
Most mercury-containing electrical components are banned and most mercury-containing measuring devices are banned. The Danish EPA strongly supports Eco-labelling to promote the application of flourecent lamps with low or no mercury content, and subsidises the acquisition. ercury dental amalgam is banned except for molars with wear on the filling. Mercury pesticides have been banned in Denmark - and in the EU - since 1989 and Mercury in paint is banned.