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TRANSBOUNDARY AIR POLLUTION**

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**DRAFT 2006 REVIEW OF STRATEGIES AND POLICIES FOR
AIR POLLUTION ABATEMENT**

Note from the Secretariat*

Addendum

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VI. IMPLEMENTATION OF AND PROGRESS IN NATIONAL STRATEGIES AND POLICIES FOR THE 1999 GOTHENBURG PROTOCOL

A. The 1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone

Twenty Parties (as of 22 June 2006):

Bulgaria, the Czech Republic, Denmark, Finland, Germany, Latvia, Lithuania, Luxembourg, the Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, the United Kingdom, the United States and the European Community.

1. Overview

1. The 1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone is an innovative multi-effect, multi-pollutant protocol that aims to simultaneously address the three effects it describes through controlling the pollutants causing them. It promotes action within the UNECE region and sets an example for action worldwide.

2. The Protocol entered into force in May 2005 and sets out to abate acidification, eutrophication and ground-level ozone by controlling and reducing emissions of sulphur, NO_x, ammonia and VOCs from anthropogenic sources. It is the first Protocol under the Convention to tackle more than one pollutant.

3. The Protocol sets emission ceilings for 2010 for the four pollutants, the ceilings being negotiated on the basis of scientific assessments of pollution effects and abatement options. Parties whose emissions have a more severe environmental or health impact and whose emission reductions are relatively inexpensive would have to make the biggest cuts. Once the Protocol is fully implemented, Europe's emissions should be cut significantly for sulphur (63%), NO_x (41%), VOCs (40%) and ammonia (17%), compared to 1990.

4. The Protocol also sets stringent limits for specific emission sources (e.g. combustion plant, electricity production, dry cleaning, cars and lorries) and requires BAT to keep emissions down. VOC emissions from products such as paints or aerosols will have to be cut and farmers will have to take specific measures to control ammonia emissions. Parties are obligated to either apply the ELVs or to apply alternative reduction strategies that achieve equivalent emission levels. Guidance documents, adopted at the time of adoption of the Protocol, provide a wide range of abatement techniques and economic instruments for the reduction of emissions in the relevant sectors.

5. At the time of adoption of the Protocol, it was anticipated that the area in Europe with excessive levels of acidification would shrink from 93 million hectares in 1990 to 15 million hectares. Excessive levels of eutrophication were expected to fall from 165 million hectares in 1990 to 108 million hectares. The number of days with excessive ozone levels would be halved, thereby reducing life-years lost as a result of the chronic effects of ozone exposure by 2,300,000 in 2010 from 1990. By 2010, it was predicted that there would be approximately 47,500 fewer premature deaths resulting from ozone and particulate matter in the air. Finally, the exposure of vegetation to excessive ozone levels would be 44% less than in 1990.

6. At this early stage in the implementation of the Protocol, Parties should be in a position to provide information on ELVs for SO₂, NO_x and VOCs applied to new stationary and mobile sources, as well as information on measures used to reduce ammonia emissions from agriculture.

2. Progress in reducing emissions from new stationary sources

7. For new stationary sources, Parties are committed to applying the ELVs set in annexes IV, V and VI of the Protocol, within the timeframe specified in annex VII. Parties that also ratified the 1994 Protocol on Further Reduction of Sulphur Emissions, such as *Germany* and *Slovenia*, referred to their progress in meeting the ELVs in that Protocol.

8. The following countries reported ELVs of 0.2% for sulphur content in gas oil from stationary sources before January 2008 and of 0.1% thereafter: *the Czech Republic, Denmark, Finland* (which was already at 0.1% since 2004), *Germany, Italy, Lithuania, the Netherlands, Norway, Slovakia, Slovenia, and Switzerland*. Some Parties noted that these figures were consistent with the EU Council Directive 1999/32/EC on the sulphur content of certain liquid fuels, which both *Spain* and *the United Kingdom* indicated they were implementing.

9. For NO_x emissions, Parties that had ratified the Protocol on Nitrogen Oxides, such as *Denmark, Germany* and *Slovenia* referred back to their implementation of that Protocol. The emission ceilings set in the Gothenburg Protocol built on the implementation of the Protocol on Nitrogen Oxides. For instance, while in *Germany*, emissions of NO₂ decreased from 3,350 kilotonnes in 1987 to 2,055 kilotonnes in 1994, the target year of the Protocol, its new ceiling under the Gothenburg Protocol was 1,081 kilotonnes of NO₂ by 2010.

10. For VOC emissions, the Gothenburg Protocol sets ELVs for several sources, such as solvents used in the car, the printing and the dry cleaning industries. In *the United States*, top coat operations in the automobile and light duty truck sector set the VOC discharge limit at 1.47kg/litre of applied coating solids for those vehicles which construction, reconstruction, or

modification commenced after 5 October 1979. In *the Netherlands* and *Slovakia*, this value was 45 g NMVOC/m² or 1.3 kg/item.

11. *Cyprus, Denmark, Slovakia, Slovenia* and *Spain* referred to the Council Directive 1999/13/EC of 11 March 1999 on the limitation of emissions of VOCs due to the use of organic solvents in certain activities and installations. They indicated they had used this Directive as a basis to obtain ELVs of 50mg carbon/m³ for adhesive coating. These same countries together with Norway have transposed into their respective national legislation EC Directive 94/63/EC on the control of VOC emissions resulting from the storage of petrol and its distribution from terminals to service stations.

12. Some Parties indicated that the EC Directive on national emission ceilings for certain atmospheric pollutants (2001/81/EC) and the Directive on the limitation of emissions of certain pollutants into the air from large combustion plants (2001/80/EC) are both relevant to the Gothenburg Protocol. *Cyprus, Denmark, Finland, Norway* and *Spain* all indicated that they had implemented the EC directive 2001/80/EC on Large Combustion Plants while *the United Kingdom* noted that it was implementing the National Emission Ceilings Directive 2001/81/EC.

3. Progress in reducing emissions from mobile sources

13. Annex VIII of the Protocol describes ELVs for passenger cars and light duty vehicles, heavy duty-vehicles, motorcycles and mopeds and non-road vehicles and machines. Concerning the quality of diesel fuel used in vehicles, the annex indicates maximum limits of 300 mg/kg by 2000 and 50 mg/kg by 2005. In complying with these limits, *the Czech Republic, Finland, Slovenia* and *Switzerland* reported a maximum sulphur content of 50 mg/kg, while *Slovakia* reported a maximum sulphur content of 300 mg/kg.

14. Some Parties drew attention to the following EC Directives, which refer to emission limits from vehicles or machinery: 98/69/EC, 97/68/EC, 2002/88/EC, 2004/26/EC, 70/220/EC and 1999/102/EC. Several Parties, such as *Denmark, Finland, Norway, Slovenia, Spain* and *Switzerland* indicated that they followed one or more of these directives.

4. Alternative emission reduction strategies

15. As noted above, the Protocol specifies that Parties that do not wish to apply the ELVs for new stationary sources specified in annexes IV, V and VI may, as an alternative, apply different emission reduction strategies that achieve equivalent overall emission levels for all source categories together (article 3, paragraph 2). *The Netherlands* noted it had developed a NO_x emission trading scheme that was applied to all relevant sectors and set a ceiling of 55

kilotonnes by 2010. This scheme set performance standard rates (PSRs) for certain specified processes, by sector (in g/tonne of product), annually decreasing until 2010. For combustion processes *the Netherlands* planned to reduce the PSR from 68 g/GJ in 2005 to 40 g/GJ in 2010. *Norway* also reported it would apply emissions permits to its new stationary sources.

16. *Finland* noted that it would use alternative emission reduction strategies for NO_x emissions released from new stationary engines rather than introduce into national legislation the ELVs in annex V of the Protocol.

5. Strategies for reducing ammonia emissions from agriculture

17. While emissions of NO_x, SO₂ and VOCs were addressed in previous protocols to the Convention, the Gothenburg Protocol was the first Protocol to address ammonia emissions.

18. *The Czech Republic, Denmark, Finland, Germany, Lithuania, the Netherlands, Slovenia, Spain, and the United Kingdom* noted that they had established codes of agricultural practice aimed at reducing ammonia emissions, while national codes were currently being prepared by *Cyprus, Norway, Switzerland and Ukraine*. A system of air emission permits was used in *Cyprus* to help control ammonia emissions from pig and poultry installations.

19. *Denmark* published an Action Plan for Reducing Ammonia Volatilization from Agriculture in 2001 that was expected to cut ammonia emissions by approximately 9500 tonnes per year. Measures included: covers on stores of solid manure that were not in daily use, covers on slurry containers on livestock holdings, a ban on surface spreading, a reduction in the time that applied manure was allowed to remain on the ground surface, a ban on ammonia treatment of straw and limiting local ammonia volatilization from livestock in the vicinity of vulnerable natural habitat types.

20. Two of the most important measures applied in *Finland* under its 1993 code of good agricultural production were that manure or other organic fertilizers spread in autumn must be incorporated within 24 hours after spreading and that manure stored in heaps on fields must be covered with, for example, a tight cover or a 10 cm layer of peat. *Finland* also included a range of voluntary measures including covering manure stores, incorporating manure within 4 hours after spreading, using injection techniques for slurry and urine spreading or using band spreaders.

21. *Lithuania's* advisory code of good agricultural practice, published in 2000, included specific measures to minimize ammonia emissions, such as: livestock density corresponding to manure application, regulated use of organic fertilisers (organic fertilisers must not be spread

from 1 December to 1 April on soils that were frozen, water logged or covered with snow); solid and liquid manure shall be incorporated into the soil within 12 hours after application; and urine and slurry stores shall be covered or handled by a method that efficiently reduced ammonia emissions.

22. In order to inform target audiences better and disseminate guidance and best practices on reducing ammonia emissions, Parties reported on their public information materials. For instance, *Slovenia* published and disseminated 65,000 copies of its advisory code on good agricultural practice in manure management, which included provisions on nitrogen, low emission manure-spreading techniques and possibilities for limiting ammonia emissions from mineral fertilizers. *Spain's* guidelines on BAT for intensive pig rearing and poultry, covered improvements in liquid manure management and slurry storage. *The United Kingdom* published guidance on "Managing Livestock Manures, booklets 1 to 4" and "Ammonia emissions in the United Kingdom (2003)" which summarized research on ammonia emissions, their effects and means to reduce them.

23. *Finland, the Netherlands and Slovenia* indicated that they had transposed into their respective legislations EC Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources.

24. *Finland, the Netherlands, Norway, Slovenia, Switzerland and the United Kingdom* noted that the use of solid fertilisers based on urea was limited. Ammonium carbonate fertilisers were either banned or not employed in *Cyprus, the Czech Republic, Finland, Germany, Lithuania, Netherlands, Norway, Slovenia, Spain, Switzerland and the United Kingdom*.

VII. STRATEGIES AND POLICIES FOR CONTROLLING LONG-RANGE TRANSBOUNDARY AIR POLLUTION IN THE UNECE REGION

A. General trends and priorities in combating air pollution

25. The translation of the Convention and its protocols into practice is demonstrating that air pollution in the UNECE region is being tackled across a number of sectors, particularly the agricultural, energy and transport sectors. In many cases, abatement measures have been targeted at more than one pollutant. Such measures as a consequence often have an impact on the reduction of greenhouse gases, including those covered under the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) and reflect synergies between reduction in emissions causing air pollution and climate change.

26. Many Parties noted they had long-term strategies and targets in place for addressing long-range air pollution at the national level. For example: *the Netherlands* noted it expected its measures on particulates to result in a decrease of 15% dust emissions (PM10) by 2010 and 20% by 2020. In 2020, harmful soot particles from diesel engines should be reduced by 50%. It also noted that its NO₂ emissions at congestion points should go down by 90% by 2020. *The Russian Federation* noted it had devised a strategy in 2001 to reduce the negative impact of vehicle emissions, with a target for 90% of vehicles to meet technical emission standards by 2005 and 95% by 2010. *Slovenia* had set a target to increase the share of renewable energy up to 12% of total primary energy supply and up to 33.6% of final electricity consumption. *Spain's* Renewable Energies Plan 2005–2010 had set a target for biofuels to increase by 2010, from 500 to almost 2000 millions of tons equivalent of petroleum.

27. Increasingly, the public was being asked to contribute actively to issues of air quality both through **public information campaigns** and through **voluntary schemes**. For example, *Canada's* voluntary accelerated on-road vehicle scrappage programmes were designed to improve air quality and help reduce smog-forming and greenhouse gas emissions by permanently removing older vehicles from the roads. *The Czech Republic* promoted voluntary agreements with operators that extended beyond the requirements of current legislation on air protection.

28. While dissuasive taxes and fines were widespread, many positive **incentives** were applied to encourage the use of renewable energy and cleaner vehicles. In *the Czech Republic*, in order to encourage the public contribution to the supply of green electricity, producers of electricity from renewable sources could choose between support through a minimum purchase price for electricity or a “green bonus” on the market price of electricity. *Denmark* subsidised wind turbines while *Slovenia* had a favourable taxation policy for the use of biofuels in transport.

A number of **Funds** supported air quality projects, such as *Canada's* Green Municipal Fund, the *Lithuanian* Environmental Investment Fund and *Slovenia's* Environmental Fund.

29. The promotion of **alternative fuels** was evident across the region. *Armenia* reported that it gave priority to renewable energies as indicated by its law on energy saving and renewable energy (2004) as well as a fund for renewable energy (2005). Under *Canada's* Wind Power Production Incentive, companies were eligible for payments of up to 1.2 cents/kilowatt-hour produced. *Cyprus*, which had identified electricity production as the main source of SO₂ emissions (69% of national total) intended to secure liquefied natural gas from neighbouring countries by 2009. *The Czech Republic* aimed to have 8% of its electricity needs covered by renewable sources by 2010. *Lithuania* set a goal to ensure that biofuels (biodiesel, bioethanol) comprised at least 15% of fuel used in road transport by 2020.

30. There were clear trends in all responding countries to **retrofit** old vehicles (e.g. *Canada*, *the Netherlands*, *Switzerland*, *Ukraine* and *the United Kingdom*). This generally involved retrofitting soot filters on all categories of vehicles and mobile machinery. *Canada* had provided funding to retrofit approximately 350 pre-1994 buses nation-wide, nearly 500 school buses in British Columbia and 70 municipal vehicles in the Vancouver area. *Ukraine* had developed an action plan (2004–2010) targeting the road transport sector, which included retrofitting old vehicles as well as improving fuel quality and expanded the use of alternative fuels.

31. **Environmental impact assessments** (EIAs) were increasingly required for major new projects in an attempt to reduce their negative environmental impact. In *the Netherlands*, EIAs were mandatory for the construction of new oil refineries, nuclear power stations, chemical installations, motorways, railways, airports, oil and gas pipelines and dams. In *Slovenia*, EIAs were required for certain programmes in the fields of, *inter alia*, spatial planning, agriculture, energy, industry, transport, waste and waste water management.

32. Several **directives** that make up EU legislation cover air pollution and many European Parties, including EU accession countries, reported that they were incorporating these into their own legal frameworks. Some of the most relevant directives included: the National Emission Ceilings (NEC) Directive (2001/81/EC), the Large Combustion Plants (LCP) Directive (2001/80/EC), the Integrated Pollution and Prevention Control (IPPC) Directive (96/61/EC) as well as more specific directives, such as those covering sulphur content of gas oils (93/12/EC), fuel standards (98/70/EC) and waste incineration (2000/76/EC).

33. The Convention has emphasized the need for focused **scientific research** since its adoption. To study effects of pollution, six International Cooperative Programmes (ICPs) as well as a Task Force on Health were established to develop research in key areas on the impacts of air

pollution as well as on monitoring and modelling effects across the region (please refer to ECE/EB.AIR/2006/4, section II.B.2, Activities of the Working Group on Effects). Research has continued at the national level in an effort to reduce the impact of energy use and to reduce emissions and depositions of pollutants covered by the Convention. *Canada* noted it had researched the relationship between air pollution sources and the resulting ambient levels to better define the environmental benefits of emission reductions. Health Canada was conducting scientific research on acute and chronic health effects of ambient and indoor air pollution, focused particularly on vulnerable groups such as the elderly, children and those with respiratory and cardiovascular disorders. *The Russian Federation* had increased the effectiveness of power production by either reconstructing or re-equipping power plants and by developing non-traditional power engineering. *Switzerland* was researching the effects of ozone on vegetation and of eutrophication in surface waters.

B. Innovative approaches and emerging technologies

34. Many Parties reported they were investing in new technologies to reduce air pollution or to mitigate its impact. *Canada, Cyprus, the Czech Republic, Denmark, Finland, Germany, Hungary, Italy, Lithuania, the Netherlands, Slovenia, Spain, Switzerland* and *the United Kingdom* reported that they were investing in alternative and renewable energy sources such as biofuels, wind and solar power. *The Netherlands'* "MEP" scheme (Environmental Quality of Power Production), had allocated €3.9 billion for renewable power production for the years 2005–2010. Many Parties were identifying ways to reduce overall fuel consumption. A number of Parties, such as *Switzerland*, promoted low consumption vehicles, while others, such as *the Netherlands* encouraged a modal shift from road to rail for both passenger and goods transport.

35. New technologies were being developed and tested in different countries, notably through grants such as those awarded by *Norway's* Research Council and Innovation Norway to support the development of new environmental technologies. In *Cyprus*, a Research Promotion Foundation (RPF) supported and funded environmental projects. Energy efficiency was promoted through a grants scheme, which subsidized energy savings in existing industrial installations, heat insulation of houses as well as co-production of electricity for heating/cooling systems. The grants scheme also covered the promotion of renewable energy sources such as wind parks, solar energy, biomass, photovoltaic systems and desalination plants operating with renewable energy sources.

36. *Estonia* used computer modelling to develop interactive air quality management systems where all significant stationary sources were mapped and models could predict dispersion from each source. The Environmental Technology Programme of *the Netherlands* was set up with a budget of 5 million euros for 2006 to promote innovative sustainable technologies

in the environmental field with a specific focus in the areas of sustainable energy, agriculture and mobility. Twenty million euros were allocated up to 2008 for the Air Quality Innovation Programme, which is aiming to identify “smart” solutions for improving air quality around highways. It was also seeking to reduce truck-based pollution in cities through zoning.

37. Since 2002, in an effort to support consumers and companies making optimal decisions concerning their choice of energy, all of *Sweden’s* 290 municipalities have set up some form of energy advisory service. To stimulate innovation, *Sweden* has been promoting technology for energy efficient products and services in the fields of heating and control systems, domestic hot water and sanitary systems, ventilation, white goods, lighting and industry.

38. *Switzerland* reported it was developing a new device to reduce particle emissions for small-scale wood burning based on an electrofilter system; the device would be tested in 2006. It had also invested in developing particle filter traps combined with a de-NO_x system, which it was planning to fit to buses.

39. *Ukraine* reported that it had identified a sulphur removal technique that used chemical binding, which it would implement over the period 2011–2020 during the renovation of its thermal power plants.

40. *The Netherlands* noted it had promoted **green investment** since 1995, as another innovative approach to deal with air quality and environmental problems. Since the interest on these funds was not always as attractive as that for traditional funds, the Government provided a tax compensation that would improve the rate of return. Environmentally friendly projects that qualified for green financing included, sustainably built apartments, windmills and bio-agricultural companies, as well as nature and forest projects.

C. Cross-sectoral and multi-pollutant approaches

41. For most Parties, air quality control extended to other media such as soil and water. These were often addressed within national environmental action plans and policies that reached across sectors, as in the case of *the Czech Republic, Estonia and Slovenia*. In *Cyprus*, decisions on important environmental issues were taken by the Council of Ministers, not by the competent Ministry alone. In *the Netherlands*, many measures were also part of the integrated responsibilities of other ministries. At a European level, the 1998 EU Cardiff process encouraged the integration of environmental protection into sectoral policies, particularly energy, transport and agricultural policy.

1. Transport planning and traffic management

42. Parties' replies showed that significant efforts were directed toward the transport sector to reduce emissions, as it was generally recognised as the sector accounting for a significant proportion of air emissions.

43. Measures to reduce transport-related air pollution included **retrofitting** of old vehicles or encouraging their **scrappage**. These approaches were generally promoted through voluntary schemes and tax reductions. Moreover, incentives were often offered to promote the adoption of better and more environmentally friendly transport (e.g. walking, cycling, car-pooling, public transport etc.) or in the case of private vehicles, to encourage the use of smaller engines, hybrid engines, or electric vehicles. These changes were promoted through grants, tax breaks and public awareness campaigns. For instance the *Cyprus* Institute of Energy operated a grant scheme, providing financial support for the purchase of electric or hybrid vehicles. *The United Kingdom*, "The Future of Transport White Paper", (July 2004) encouraged the development, introduction and uptake of new vehicle technologies and fuels and investment in public transport. Planning authorities emphasized accessibility for public transport, park-and-ride schemes and walking and cycling paths. For example, *the Czech Republic* had adopted a National Cycling Strategy.

44. **Traffic management measures** were used by several Parties to reduce urban air pollution. These measures included reducing speed limits, alternating traffic and closing off certain areas to traffic. *The United Kingdom* promoted schemes that restricted or excluded less clean vehicles from certain roads or areas, such as low emission zones, and land-use and transport planning that helped reduce road congestion.

45. **Emission-related taxes and fees** were another way that Parties discouraged the use of larger or less fuel-efficient vehicles. *Germany* introduced emission-related landing fees at its airports and imposed a road toll on heavy goods transported by truck. In *Slovenia*, a voluntary agreement aimed to encourage European, Japanese and Korean car producers to increase their energy efficiency. The majority of cars sold in *Slovenia* came from producers that were taking part in this scheme.

46. In *the Netherlands*, a Decree on Petrol stations prescribed measures to prevent evaporation to the air (e.g. vapour return systems) and also measures to prevent leakages of fuels to groundwater and soil (e.g. using liquid tight floors and leak proof underground storage). *Cyprus*, *Finland* and *Italy* had similar measures.

2. Health policies to mitigate the effects of air pollution

47. Air pollution affects not only our ecosystems, but also human health. *Canada, Finland, Lithuania, the Russian Federation and Slovakia* indicated that their Environment and Health Ministries work closely together to assess whether substances in commerce posed a risk to either the environment or the population. In *Canada*, for example, all chemical, polymer and biotechnology substances new to Canadian commerce must undergo environmental and health risk assessments prior to manufacture, importation or sale.

3. Energy policy

48. Many Parties indicated they were exploring and applying alternatives to fossil fuels with an emphasis on **renewable energy sources**, such as biofuels, solar energy and wind generators.

49. *Lithuania's* energy strategy was focused on energy saving and efficiency and the expansion and promotion of alternative energy sources. The aim was to ensure that up to 12% of its total primary energy was obtained from renewable sources by 2010 (including 10.5% derived from biofuel produced from raw material originating within the country). *Slovenia's* energy policy promoted renewable energy and energy efficiency. In *Switzerland*, a programme called SwissEnergy was launched in 2000, aimed to improve **energy efficiency**, to promote the use of renewable energy and biomass and to facilitate compliance with the Kyoto protocol.

4. Agricultural policy and organic farming

50. Many Parties were promoting **organic farming** as part of their agricultural policy. This is important for air pollution abatement, both because of the limited use of pesticides, like DDT and other POPs, as well as through the benefit of more energy efficient agricultural practices. *Canada* had developed a set of agri-environmental indicators (AEIs) specific to the agriculture and agri-food sectors to assess how well agriculture and agri-food systems managed to conserve natural resources. In *Cyprus*, a grant scheme supported organic agriculture, leading, in 2005, to the proportion of organically produced goods reaching 1% of agricultural production. In *the Czech Republic* subsidies supported organic agriculture. *Germany* promoted organic farming through public information and education campaigns, financial assistance for investment costs and facilitated credit. In *Lithuania*, financial assistance for organic farming was foreseen in its rural development plan for 2003–2006. *The Netherlands* aimed to have 10% of its agriculture converted to organic production by 2010, while *Norway* aimed to ensure that 15% of agricultural production and consumption came from organic sources by 2015. *Slovenia*, through its rural development funds, allocated significant resources to support organic farming.

5. Multi-pollutant strategies

51. Pollution abatement measures and monitoring programmes were often applied to more than one pollutant. For example, where air emission permits were used, Parties set values across a number of pollutants, such as SO₂, NO_x, particulate matter, heavy metals and POPs. In *Canada* a multi-pollutant approach was taken where fuel quality and all conventional pollutants from internal combustion engines for vehicles, engines and fuels were covered by regulations. *Canada* also developed multimedia Environmental Codes of Practice for selected sectors (e.g. iron and steel manufacturing, base metal smelting). Legislation in *the Netherlands* set ELVs for multiple pollutants per category of stationary source, e.g. for waste incinerators ELVs were set for NO_x, SO₂, VOC, fine dust, heavy metals and POPs.

D. Market-oriented policies and economic instruments

52. **Market-based policies and economic instruments** include negative incentives such as the levying of taxes, and positive incentives such as tax breaks and subsidies. Most Parties reported using a combination of both. In some cases, for example, tax breaks were applied to new, cleaner vehicles that functioned on a hybrid engine or with green electricity, such as in *Cyprus*. In other cases, higher taxes were levied on vehicles with bigger engines and higher emissions, as in *Germany*.

1. Positive incentives

53. Positive incentives include: grants, subsidies, tax rebates, tax incentives, credit guarantees, soft loans and tradable permits. All of these aim to have an impact on individual **patterns of consumption** and to minimize air pollution and its effects. In *Canada*, under the Wind Power Production Incentive, companies opting for wind generators were eligible for payments of up to 1.2 cents/kilowatt-hour produced. In *Cyprus*, since 2004, the owners of vehicles equipped with catalytic converters paid less tax than owners of non-catalytic vehicles. Additionally, the following tax incentives were introduced in November 2003: a 15% discount on the excise duty for cars with CO₂ emissions of 150g/km or less and a 10% penalty on cars with CO₂ emissions of 275g/km or more. From January 2006 the purchase of a hybrid car was subsidised by the Government by an amount of €800 CYP (about Euro 1,350) and incentives were offered for scrapping of vehicles over 15 years old. In *Lithuania* the Environmental Protection Investment Fund provided subsidies for environmental protection projects of up to 350,000 litas (approximately 101,000 euros) over a three-year period. The Fund financed 26 environmental protection projects, 18 of which (70%) were related to pollution reduction, conversion to cleaner fuels, renovation of home boilers, installation of air-treatment filters or other energy-saving measures.

54. Many Parties used subsidies and other financial incentives to promote the use of renewable energy such as **solar power** or **wind turbines**, including in *Austria, Canada, the Czech Republic, Germany, Italy and the Netherlands*. *The Czech Republic* reported that it offered financial support for pilot projects for the supply of alternative energy, especially **thermal energy**. Subsidies could be obtained for the preparation of project documents and for the implementation of projects with a maximum of 100,000 euros over three years. Since July 2005, the *Netherlands* has stimulated the use of sulphur-free diesel by reducing the tax charged; since June 2005, the purchase of new diesel-powered cars equipped with soot filters was encouraged through a 600-euro discount on the tax for personal motor vehicles. Starting in mid-2006, a subsidy for retrofitting a soot filter into existing, trucks, vans, buses, personal cars, diesel powered locomotives and inland ships would come into force. A subsidy scheme was also in force since 2006 for catalytic converters for inland shipping. More than 100 techniques for the reduction of air pollution (e.g. wet scrubbers, desulphurisation processes, low NO_x burners, catalytic reduction system, low emission animal housing systems, etc.) were eligible for fiscal benefits intended to stimulate environmentally friendly technologies.

55. In *Slovenia*, **subsidies and soft loans** were available for energy efficiency measures and for the use of renewable energy sources for households (e.g. solar heating technologies, energy efficient windows, biomass heating, heat pumps) and for companies (e.g. biomass technologies). *The United Kingdom* has allocated over £500 million (approximately 740 million euros) between 2002 and 2008 to support the development of **renewable and low-carbon technologies**.

56. *Austria* noted it offered subsidies for the rehabilitation of old residential buildings in order to reduce their impact on air pollution. Positive incentives in *Germany* included tax incentives for the use of low sulphur fuels and for renewable energies and federal grants to promote public transport in municipalities.

57. **Tradable permits** were also being increasingly utilized to minimise emissions. *Canada* reported it had implemented tradable unit systems to reduce two toxic substances, tetrachloroethylene and trichloroethylene. At the provincial level, Ontario's cap and trade system for NO and SO₂ emissions from power plants and British Columbia's differentiated fees for industrial polluters were noteworthy. At the federal level, a cap and trade system to phase out methyl bromide and HCFCs had been introduced. In *the Netherlands*, a NO_x emission trading system, started in July 2005, was based on performance standard rates. It focused on extra overall reductions in addition to those resulting from the ELVs set forth in national legislation. *Slovakia* also had an emissions trading act for SO₂ and CO₂.

2. Negative incentives

58. Negative incentives include taxes, fees, and various charges. In *the Czech Republic*, the Air Protection Act imposed fees for air pollution for the operators of very large, large and medium-sized sources and small stationary sources. For large sources fees were paid into the State Environmental Fund, which then promoted projects intended primarily to reduce emissions. For small sources, the fees went directly to the municipality and were earmarked for environmental protection. *Germany* applied a range of dissuasive market measures including road user charges for heavy goods transport and emission-based vehicle taxes. Further planned measures included the reduction of the distance-related tax refund for commuters and the equalisation of fuel tax on petrol and diesel. In *Estonia*, a plant that emitted more than was stipulated in its permit was subject to higher taxes.

59. In *Lithuania*, **charges on pollutants** discharged to the atmosphere from stationary and mobile pollution sources were introduced through the 1991 Law on Pollution Charge. Energy plants with a capacity exceeding 1MW (0.5 MW if solid fuel was used) must possess an environmental permit. Charges on pollution from stationary sources were paid according to the amount of pollutants actually emitted during a reporting period. If the polluter implemented measures to reduce pollutant emissions by at least 5 per cent from the maximum allowable, it would be exempted from the charge on the pollutants. Exemptions were valid for the period of implementation of the air pollution abatement measures, but not more than 3 years.

60. In *Switzerland*, two taxes were introduced in 2000. One was applied to VOCs whereby CHF 3 (approximately 2 euros) per kg of VOC was to be paid on imports of solvents. The second was on fuel with a sulphur content higher than 0.1%. Another dissuasive economic tool applied in *Switzerland* was the distance-related heavy-duty fee introduced in 2000. This followed the European norms (EURO 1, 2 or 3) according to the emission category. In *Slovenia*, taxes were applied to waste, depending on the level of methane emissions.

3. Public awareness and engagement

61. National campaigns and programmes to raise public awareness on energy efficiency and the need to reduce air pollution were an important component of air pollution abatement strategies for many Parties. Parties were also increasingly seeking civil society's active engagement. In *Armenia*, representatives of non-governmental organizations (NGOs) were asked to participate in impact assessments for new infrastructure projects. *The Czech Republic* reported that it had established regional energy information centres that aimed to increase consumers' confidence in alternative forms of energy. *Germany* noted it was stepping up its campaign "New Ways of Driving" to reduce pollution exacerbated by unsuitable driving practices. *The*

Netherlands had a similar scheme called “The New Driving Force” which targeted car drivers, as well as driving schools and lorry drivers and aimed to improve both purchasing behaviour and driving styles with the intention to reduce fuel consumption, emissions and traffic accidents.

62. *The Netherlands* reported it was implementing a plan that foresaw financial assistance to stimulate consumer demand and spread information on organic farming and products. The Ministry of Agriculture, Nature and Food Quality gave financial support for such publicity campaigns.

63. In *Canada*, public outreach and education programmes targeted residential wood combustion. These programmes focused on describing good burning practices, including the need to use clean wood fuel only and advocated the use of wood burning appliances, which had lower emissions of particulate matter. It also used a national health-based Air Quality Index (AQI) as a tool to help citizens understand the links between human health and air quality, and to empower them to take individual action to protect their health and that of their children. Having identified uncontrolled burning of waste as the main source of dioxin emissions, *Cyprus* was preparing an action plan to raise public awareness regarding emissions from uncontrolled combustion.

64. In *Switzerland*, information campaigns targeted the general public and consumers to promote products containing low VOC levels and alkylate fuel for small engines and machinery. Campaigns were organised to ensure the proper collection of waste that contained mercury or cadmium.

65. In an effort to engage the public in improving the use of better quality fuel, *the Russian Federation* noted it had conducting advertising campaigns, including information materials concerning different suppliers and sellers of fuel. The scheme also awarded petrol stations offering good quality fuels with a “quality sign” that buyers could recognize.

Eco-labelling and promotion of environmentally friendly consumption

Eco-labelling “clean” products provides a stamp or seal of approval to products guaranteeing that their production has minimized impacts on air pollution or on the environment more broadly. These schemes draw on the power of consumers to choose products that are considered relatively eco-friendly. Such schemes are becoming more widespread across the UNECE region.

Canada reported it had a scheme EcoLogo that provided consumers with information on the impact that products had on the environment, including air quality.

The EU ECO-labelling launched in 2004 in *Cyprus* awarded a recognisable flower logo to goods or services that met tough environmental standards.

In the *Czech Republic*, an Eco-label scheme was managed by the Agency for Environmentally Sound Products, which received and processed applications for use of an “Environmentally Sound Product” label. The Agency also controlled compliance with the criteria and conditions for holders of these labels, in accordance with EU ecolabelling regulations.

Germany used the eco-label “Blue Angel” which specified the VOC content for a number of products, such as: low-pollutant paints and varnishes, low-emission wall paints, low-emission wood products and wood-base products.

In the *Netherlands*, products could be assigned a “Netherlands Environmental Hallmark” which covered, amongst others, the VOC content of the product.

A voluntary Nordic environmental labelling system for products was introduced in 1989. The label helps consumers to identify the products that cause the least damage to the environment.

Slovenia noted that energy labels for household appliances (wet appliances, light bulbs, electric ovens, air-conditioners) were in force. Also minimum standards for energy efficiency of household freezers and refrigerators were introduced. *Slovenia* also had a Renewable Energy Certificate System that labelled the origin of electricity (the certifying agency was the Energy Agency of the Republic of Slovenia).

The *United Kingdom* reported it had implemented the EU Energy Labelling Scheme, which made it mandatory for manufactures to provide information on the energy efficiency of their products.

Annex

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