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## CONCLUSIONS AND RECOMMENDATIONS\*

This report examines Finland's progress since the previous OECD Environmental Performance Review in 1997, and the extent to which the country has met its domestic objectives and honoured its international commitments. The report also reviews Finland's progress in the context of the OECD Environmental Strategy for the First Decade of the 21<sup>st</sup> Century.\*\* Some 43 recommendations are made that should contribute to further environmental progress in Finland.

Over the review period (1997-2008), Finland has sustained the economic growth initiated just before it acceded to the European Union in 1995; the Finnish economy has grown at a higher rate than the OECD average and Finland now ranks in the first half of OECD member countries in regard to its GDP per capita. The economic activity is expected to fall to 0.6% in 2009, as recession takes hold across OECD, before rising slowly to 1.8% in 2010. The current economic crisis could be seen as an opportunity to promote environmentally-friendly investment (e.g. in energy efficiency and cleaner energy) in the context of Finland's efforts to stimulate its economy. Openness to international trade and foreign direct investment, a high education level of the population, and a strong innovation record also place Finland in a good position to benefit from the opportunities of globalisation.

Finland has promoted sustainable development as part of its diplomacy, including in its relations with the east, with Nordic countries and as part of the European Union. The review period saw consolidation of progress and further alignment with EU environmental acquis. But despite its low population density, Finland has experienced great pressures on its sensitive environment, as expressed by high energy and material intensities. Environmental policy priorities include addressing climate change, fostering co-operation to improve water quality of the Baltic Sea, enhancing biodiversity in forests, and improving waste management and material efficiency.

To meet these challenges, Finland will need to: i) strengthen its environmental management efforts (e.g. for waste and nature protection); ii) further integrate environmental concerns into economic decisions; and iii) reinforce international co-operation on environmental issues.

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\* Conclusions and Recommendations reviewed and approved by the Working Party on Environmental Performance at its meeting on 18 February 2009.

\*\* The objectives of the OECD Environmental Strategy are covered in the following sections of these Conclusions and Recommendations: maintaining the integrity of ecosystems (Section 1), decoupling of environmental pressures from economic growth (Sections 2.1 and 2.2) and global environmental interdependence (Section 3).

## 1. Environmental Management

### *Strengthening the implementation of environmental policies*

Environmental legislation has been significantly enhanced over the review period: the 2000 Land Use and Building Act, the 2000 Environmental Protection Act, including subsequent amendments, and media specific legislation are consistent with the EU acquis. Introduced in 2000 and covering a larger number of installations than required by the EU IPPC Directive, integrated permitting has resulted in increased compliance rates. Better compliance monitoring, through regular inspections, advanced information database (Hertta) and inspection database (Vahti), has helped to swiftly prosecute non-compliance cases. A wide range of economic instruments, introduced over the review period, have provided incentives to industry and consumers to reduce environmental impacts. The PPP and UPP have been implemented further and cost recovery of waste and wastewater services has increased. Industry has entered into energy efficiency agreements and increasingly relies on environmental management certification. Finland has set up an efficient financing scheme for eco-innovation. Active involvement of municipalities (staff arrangements, funding, policy instruments) has strengthened the implementation of environmental policies. The 1995 National environmental policy programme (with the 2005 horizon) established consensus-based targets and stimulated the preparation of various environmental policies and programmes.

However, nationally established environmental targets have often a guiding nature and are not sufficiently taken into account in sectoral programming (e.g. transport, agriculture) and at the municipal level to balance short-term economic considerations. Cost-effectiveness of plans and policy instruments is rarely assessed. Integrated permitting has not been accompanied by sufficient efforts to ensure consistency of enforcement across the country. There is a need to streamline environmental permitting and reduce related administrative burden, further using notifications and General Binding Rules for regulating industrial operations. The institutional reform of the permitting system should be accompanied by a strengthened enforcement capacity. Meeting environmental objectives in land use planning is hampered by lax enforcement of construction permits. This has led to an increasing urban sprawl that raises energy consumption and generates various forms of pollution. Reducing material intensities should require more attention from industry and public authorities and be part of public procurement policies. Overall, environmental expenditure have decreased as a share of GDP over the review period from some 1.2% to less than 0.9%.

#### Recommendations:

- strengthen environmental efforts (e.g. investments, technological innovation), in the context of Finland's efforts to stimulate its economy;
- review the linkages and possible synergies among environmental policy programmes, including time-bound targets and objectives, within the framework of Finland's sustainable development strategy;
- pursue the reform of environmental permitting to streamline and simplify procedures while enhancing the consistency and effectiveness of enforcement actions;
- review the use of economic instruments to increase their environmental effectiveness and economic efficiency;
- further promote eco-innovation through green procurement, environmental labelling and the active involvement of businesses and other stakeholders, and consider how environmental policy instruments could be designed to better promote innovation;
- extend the scope of energy efficiency agreements to include material efficiency;
- strengthen coordination of land use planning between municipalities and state authorities; ensure effective enforcement of land use plans in coastal areas.

## *Air*

Finland has met its policy objectives to reduce emissions of traditional air pollutants (for SO<sub>2</sub>, heavy metals, POPs) or is on track to meet them (for VOCs, NH<sub>3</sub>). Emissions of many heavy metals (arsenic, chrome, lead and nickel) have decreased in recent years as well as emissions of most persistent organic pollutants (POPs). Finnish incinerators for hazardous waste all comply with the EU air emission limit values. Integrated assessment models are being developed to find cost-effective solutions for reducing air pollutant emissions, including fine particles. Urban air quality is generally high. For example, urban population exposures to air pollution by ozone and PM<sub>10</sub> have remained low by EU standards. Finnish lakes are recovering well from serious acidification problems. Concerning transport, emissions have decreased and are expected to further decrease, despite an increase in road traffic volume. Tax differentiation was successfully used to have only sulphur-free diesel and gasoline used on the Finnish market in 2005, ahead of the EU deadline. Efforts have been made to increase the market share of public transport in major urban areas, including through targeted subsidies and tax concessions. Transport system plans have been drawn up to better manage urban traffic congestion. Transport operators have entered into voluntary agreements to improve energy efficiency.

However, curbing NO<sub>x</sub> and particle emissions remains challenging for Finland, which has not met its policy objective of reducing NO<sub>x</sub> emissions. There is also no target for reducing particulates emissions, which fluctuate from year to year. Increased use of wood in domestic combustion remains a challenge for particle pollution. Emissions of copper, mercury and zinc have increased in recent years, as well as emissions of hexachlorobenzene (HCB). Fine particles remain a serious urban air quality problem. Daily PM<sub>10</sub> concentrations exceed the limit values in the most polluted areas, and it may be difficult for Finland to comply in time (by 2010) with EU's annual limit value for NO<sub>2</sub>. The exceedance of critical loads of eutrophication affects nearly half of the ecosystems. Not enough has been made to improve the situation in the Kola peninsula in north-west Russia, close to the Finnish border, where emissions from industrial complexes comprise extremely high levels of SO<sub>2</sub>, dust copper and nickel. While road transport is increasing for both passengers and freight, there is no road pricing per se in Finland and the end-use price of diesel is lower than the OECD-Europe average. There is a tax incentive to promote the use of biofuels (as allowed by the EU energy tax directive) for which blending with road fuels has become mandatory in 2008.

### Recommendations:

- pursue efforts to reduce NO<sub>x</sub> emissions, to meet the NO<sub>x</sub> reduction objectives for large combustion plants, and be prepared to respond to more stringent limit values by 2020, as part of the forthcoming EU Emissions Ceilings Directive;
- explore the potential of economic instruments, such as emission trading, nitrogen emission taxation and road pricing; ensure that they are consistent with existing instruments, such as road fuel taxes and vehicle taxes, so as to improve economic efficiency and environmental effectiveness;
- explore the potential ancillary benefits of the new climate and energy policies, particularly on NO<sub>x</sub> and particles;
- ensure coherence of recent and forthcoming transport system plans with land use plans, at regional and local levels, with a view to improving traffic management and promoting environment-friendly transport;
- implement EU environmental sustainability criteria for the production of biofuels; carry out a cost-benefit analysis to determine the relative value of biofuels, fossil and other alternative fuels.

## *Noise*

Efforts to reduce noise have a long history in Finland, as a low-noise environment is considered part of healthy and pleasant living conditions. Attention given to noise problems by Parliament and Government has led to quantitative objectives in the 2004 Noise Abatement Action Plan and the 2006 Government Resolution on Noise Abatement. Regulations (e.g. speed limit in city centres, noise emission and immission thresholds, regulations of aircraft take-off and landing) and investments (e.g. low-noise pavements, noise barriers, renewal of rail fleet and rail maintenance) have been implemented. The first economic incentives (air traffic noise charge, introduction of noise criteria in public procurement) have been recently introduced. Their objective is to reduce exposure to noise from city traffic and from night-time air traffic. In response to the 2002 EU Directive on Environmental Noise, national road and railway authorities, and the City of Helsinki, started producing noise maps and noise action plans. Municipalities also started to integrate noise issues in their air pollution reduction, public transport and green procurement programmes. A noise abatement database is currently being established.

Even though large areas of Finland are still free from noise problems, one sixth of the population is exposed to daytime noise levels exceeding 55dB from motorways, railways and industry, and this share is likely to increase. The increase of traffic volumes has offset progress made in reducing exposure to excessive noise by noise abatement measures. Daytime noise levels of 65 dB are common in urban areas; noise levels up to 70 dB, with potential significant adverse effects on human health, are reached in the busiest urban areas. Noise maps and noise abatement action plans, as required by the European Union, are still to be drawn up for many municipalities. Implementation of national land use objectives is not sufficient, and land use planners should work to prevent the harmful effects of noise and to reduce annoyance and disruption of activities from noise. Efforts to reduce noise at source (e.g. low noise road pavements, low-noise equipment) have been limited; focus has been on (less cost-effective) noise mitigation through noise barriers. Noise thresholds are not binding and noise peak levels for industry are not sufficiently regulated. Financial resources devoted to noise management (including by the road administration and municipalities) are not commensurate with the quantitative objectives adopted. The use of studded tyres should be restricted to reduce both noise levels and small particulate emissions. An up-to-date and comprehensive information programme is to be developed to help monitor noise levels.

### Recommendations:

- further specify noise regulations (e.g. obligatory excessive noise thresholds, thresholds for peak levels, thresholds in urban areas) and enforce their application by national, regional and local authorities; designate and manage quiet areas;
- fund noise abatement projects with priority given to reducing noise at source and to areas with daytime noise exceeding 65 dB, areas with large numbers of people exposed, recreational areas, and areas with educational and healthcare institutions;
- integrate noise concerns within other policies (e.g. zoning in land use planning, road and congestion pricing, “green” procurement in public transport, tourism policies, nature conservation);
- develop further noise monitoring (e.g. along rail and roads, combined with air quality monitoring in the Helsinki area, for hotspots action programmes according to the EU Environmental Noise Directive);
- further expand research on the adverse effects of noise on human health and well-being; including the economic assessment of noise measures.

## *Waste*

Waste generation from the manufacturing industry has been decoupled from economic growth, with waste minimisation targets being met by oil, chemical, and base metals industries. Waste recovery is high in pulp and paper, wood and food industries. Municipal waste generation has decreased more rapidly than planned under the National Waste Plan (NWP) and is low compared to OECD average. Recovery rates for glass, plastic, paper, fibreboard, metal and end-of-life vehicles exceed the targets set in Extended Producer Responsibility schemes. Progress has been supported by a number of laws adopted or amended during the review period, which promoted waste reduction and aligned Finland waste regulatory framework with that of the EU. Several instruments are now in place to curb waste generation and to stimulate waste recovery; these include a tax for waste landfilling, municipal waste charges, and Extended Producer Responsibility schemes for several waste streams. Municipal waste services have been reorganised at the regional level and are self-financed. Instruments and facilities have been developed for the management of construction and hazardous waste and to address land contamination. A new National Waste Plan to 2016, adopted in 2008 after wide consultation with stakeholders, sets ambitious and innovative targets and promotes increased material efficiency in consumption and production.

However, the 1998 National Waste Plan (NWP) objectives have only been partly achieved. Waste volumes have increased in some manufacturing sectors, in particular in pulp and paper, as waste prevention is not sufficiently integrated in environmental permitting. The total volume of waste generated by manufacturing industries per unit of GDP is still more than twice the OECD average. Waste recovery remains below targets in oil, chemical and base metal industries, as well as in the construction and energy sectors. Hazardous waste generation has increased, partly reflecting changes in waste classification and better reporting, and far exceeds the NWP target. Recovery targets have not been met and most hazardous waste is still landfilled. Municipal waste recovery rate is low; it represents only half of the set target. Sorting at source is insufficient to ensure proper recycling. Recovery of biowaste is particularly lagging, as alternatives to landfilling are underdeveloped and waste disposal in landfills remains prevalent. Even though several waste landfill sites were closed in 2007, one currently operating landfill does not fully comply with the 1999 EU Landfill Directive. Waste-related infrastructures and capacities are lacking to ensure adequate recovery of waste (sorting at source, combined heat and power recovery). Waste monitoring remains a concern. Specific waste streams (e.g. hazardous waste disposed of in private landfills, hazardous waste produced by households) are not adequately monitored.

### Recommendations:

- ensure proper implementation of the new National Waste Plan to 2016; measure progress through improved waste statistics, at national, local and firm levels;
- fully use environmental permitting procedures to promote waste prevention, including better definitions of waste prevention measures and the development of guidelines for site inspections;
- promote market mechanisms for waste sorting and recovery; in particular, adjust the waste tax to respond to the National Waste Plan priorities; extend the tax to cover private industrial landfills;
- further reduce material intensity through “cradle to cradle” and 3R approaches, and systematically promote Extended Producer Responsibility schemes for separate waste collection and recovery;
- improve waste management infrastructure; in particular, develop the capacity for recovery of biowaste, carry out further studies and build consensus on waste incineration with combined heat and power recovery.

### *Nature and biodiversity*

A new National Biodiversity Strategy covers the period 2006-16. The integration of nature and biodiversity conservation concerns in national legislation has been strengthened. Finland has ratified most international agreements in the field of nature and biodiversity conservation. Concerning species, the third Red List of threatened species was published in 2000. There have been positive developments in the protection of species including for migratory species and aquatic wildlife. Management plans have been established for several game species. A national strategy on invasive alien species is under preparation to prevent their spread. Concerning habitats, the first Red List of habitat types in Finland was published in 2008. Nearly all Finnish forests are certified. Wood harvesting is below maximum sustainable removal. Some 300 000 hectares of private land have been protected for nature conservation purposes. The Forest Biodiversity Programme for Southern Finland for the period 2008-16 (METSO) was launched, including targets to extend protected forests. Site selection criteria to protect the most valuable forest sites were improved. Nature tourism accounts for a quarter of the overall tourism activity and is rapidly growing; an Action Programme for Developing Recreational Use of Nature and Nature Travel was adopted.

However, the National Biodiversity Strategy 2006-16 does not set quantitative targets. Biodiversity continues to decline; for instance, five new species of birds have become threatened since the previous Red List evaluation in the early 1990s. Little progress has been achieved in expanding the protected areas since the OECD Environmental Performance Review of 1997. There are gaps in the national protected areas network, particularly in regard to forests and shore habitats in the South, and ecological connectivity. Drafting a proposal for the Natura 2000 network proved to be a difficult task. Most of the Natura 2000 sites were already included in protected national areas or programmes. Many peatlands have been degraded over time; only 13% of remaining Finnish mires are protected. A national strategy on mires and peatlands is under preparation. Eutrophication remains a significant challenge in the Gulf of Finland and in the Archipelago Sea. Many rare Finnish forest habitats are threatened and not sufficiently protected. Support to private forest owners under the 1997 Act on Financing of Sustainable Forestry is based on expected timber sale revenues instead of environmental outcomes. Though increasing, government support to environmental management is a small part of total government support to private forestry. There is a need to streamline the institutional framework for nature and biodiversity conservation.

#### Recommendations:

- set up long and short-term, quantitative and outcome-oriented, national and regional targets to guide implementation of the National Biodiversity Strategy and Action Plan; periodically assess achievements;
- set up a national peatland strategy to guide efforts for their conservation and management, including peatland exploitation for energy use; complete management plans for all Ramsar sites;
- enhance protection of marine areas in the Baltic Sea; finalise the ongoing inventory of marine biodiversity, develop EIA, and conduct risk assessments for ship routes in the Baltic Sea;
- enhance protection of rare and threatened forest habitats; link any support to private forest owners to otherwise unremunerated but beneficial public services;
- increase the financial contribution of the tourism industry towards nature conservation, for example through public private partnerships and user fees on recreation services.

## 2. Towards Sustainable Development

### *Integrating environmental concerns into economic decisions*

Finland made progress over the review period in decoupling environmental pressures from economic growth for some conventional pollutants (e.g. SO<sub>x</sub> and NO<sub>x</sub> emissions) and for water abstractions. Sustainable development has been brought into mainstream policies with the Finnish National Commission on Sustainable Development working continuously since 1993 and led by the Prime Minister for 14 years, now presided over by the Minister of Labour in the Ministry of Employment and the Economy. National sustainable development strategies have been developed and followed up with evaluation and monitoring procedures; links have been established with the regional level. In the field of taxation, the restructuring of the car registration tax and annual circulation tax on the basis of CO<sub>2</sub> emissions is a very positive step. SEA has been introduced and implemented in sectoral strategies.

However, there is still a need to decouple CO<sub>2</sub> emissions from energy production and consumption, and pesticide use has increased. Finland should redouble efforts to reduce its high energy and material intensity indicators, in line with its domestic and international general policy orientations. The lack of quantitative targets in the Finnish national strategy for sustainable development, together with the search for a consensual approach among all stakeholders, makes the delivery of concrete or tangible results uncertain. There is a need to further integrate environmental concerns and sustainable development principles into sectoral policies and practices (e.g. industry, energy, agriculture, transport), particularly at the implementation level. There is scope to eliminate environmentally harmful subsidies (e.g. various energy tax exemptions, tax exemptions for industrial landfills). Although energy intensity (total primary energy supply per unit of GDP) has declined over the review period, it remains quite high in comparison with other European and OECD countries. Improvements in energy efficiency (e.g. in the building, transport and industry sectors) should bring multiple benefits (in economic efficiency, security of supply, GHG emissions, and air pollution and related health costs). This is appropriate in the context of Finland's efforts to stimulate its economy. Energy and transport taxes, prices and related subsidies may usefully be reviewed.

#### Recommendations:

- undertake an “ecological tax reform”, as indicated in the government 2003-07 policy documents, to review and revise prices, taxes and subsidies in the relevant sectors (e.g. energy, transport, agriculture, industry);
- continue to aim at internalising externalities and implementing the polluter pays and user pays principles to integrate further environmental concerns into energy, agriculture, industry and transport policies;
- give special attention to the use of specific economic instruments (e.g. green certificates to promote renewable energy, tax on NO<sub>x</sub> emissions, road pricing);
- strengthen energy efficiency efforts with particular emphasis on the building sector, and capture the multiple related benefits.

### *Integration of environmental and social decisions*

Progress in reducing health effects of traditional pollutants (e.g. heavy metals, dioxins) has been supported by policy and institutional actions by environment and health authorities. Reducing children's exposure to pollution has become a priority. Concerning environmental democracy, state of the environment reports, based on comprehensive databases, are published regularly. Environment and national sustainable development indicators have been used to report on progress to the public. Emergency situation warning systems have also been developed. Provisions of the Aarhus Convention and the EU related Directive have been integrated into the Finnish legal framework, including the EIA and land use planning frameworks. Access to courts has been freely exercised by individual citizens and NGOs, backed by well developed environmental damage liability and compensation schemes. Environmental education has been extended through new learning curricula, teachers' training, and networking. It has been supplemented by teaching in nature and environmental schools.

However, health impact of particulate emission from wood burning, especially in combination with traffic pollution, is still a concern. Greater emphasis needs also to be placed on addressing incidents of waterborne diseases from insufficient drinking water treatment, as well as health impacts from noise and non-conventional pollutants, such as radon. A wider and better use of analysis of the health impact of pollution would help set targets at regional and local levels. Environmental information systems, especially environmental compliance information, should be made more accessible to the public on a sectoral and geographical basis. Environmental education could be further developed. Employment in environmental goods and services has not been growing; a wider application of "green" public procurements can provide new business opportunities, especially for SMEs. Tourism, associated with nature and biodiversity in rural areas, should be promoted, thus offering multiple benefits, such as health, employment and environmental awareness.

#### Recommendations:

- further integrate environmental health issues into policy making in other sectors, focusing on sectors where the most important health benefits can be achieved, and on the most cost-effective measures;
- reduce the health impact of particulate emissions from road transport and small-scale wood combustion in urban areas; strengthen water supply management of small water companies, co-operatives and private wells to reduce incidents of waterborne diseases; promote further efforts to reduce exposure to radon;
- promote corporate environmental reporting, including from small and medium-sized enterprises;
- further improve access of the general public to pollution and compliance information on a geographical and sectoral basis;
- further develop high quality teaching material and learning methods in environmental education; establish specialised courses on the environment and sustainable development at all education levels with stronger links to environmental research and innovation; enhance co-operation between different actors in formal and non-formal education for the coherent implementation of national strategies on education for sustainable development;
- promote policies that enhance employment opportunities associated to environmental goods and services, including "green" procurement, nature conservation and environment-related tourism.

### 3. International Co-operation

Finland attaches importance to environmental and sustainable development issues in its overall diplomacy. It has been a proactive partner in multilateral environmental co-operation and has contributed to raising international awareness concerning responses to climate change, biodiversity degradation, and material intensity issues associated with consumption and production patterns. Finland considers that environment and trade should be at an equal level in international law. It continues to encourage regional environmental co-operation within Nordic, Baltic, Arctic and European frameworks. As a member of the European Union since 1995, Finland has implemented or is implementing EU directives and is involved in the EU environmental action (particularly in the Baltic region and in co-operation with Russia). Finland has done its part to reduce the pollution load of the Baltic Sea, and to help control industrial and municipal point sources of pollution in the Gulf of Finland. Prosecution has been strengthened to address deliberate illegal discharges of bilge oil associated with the increase of shipping in the Baltic Sea. Bilateral co-operation with Russia has focused on specific environmental issues and tangible results (e.g. creation of a Green Belt of protected natural areas on both sides of the border, wastewater treatment in Saint Petersburg).

However, there is a need to strengthen efforts to address climate change mitigation concerns. A new, long-term, climate and energy strategy has been submitted to Parliament (following those of 2001 and 2005) in the framework of the new EU energy and climate change package. In 2006 Finland's GHG emissions had increased by 13% compared to 1990, well above the Kyoto commitment of 0%. The CO<sub>2</sub> emission per unit of GDP and the energy intensity of Finland are high among OECD countries. Meeting the Kyoto target will have to be achieved with the aid of further national measures, emission trading and the Kyoto mechanisms. Concerning the Baltic Sea, domestic measures are needed to further reduce nutrient loading from Finnish agriculture. The heavy presence of dioxine in the Baltic has led to an exception to EU directives for Finland (and Sweden). There is also a need to strengthen pollution prevention from ships (e.g. oil pollution, pollution from hazardous and noxious substances, waste dumping). Finland should further promote bilateral co-operation on sustainable forest management in north-west Russia so as to facilitate timber trade (Russia recently imposed an export tariff on its timber) while addressing illegal logging, in the EU and WTO contexts. Although identified as a key horizontal issue in Finland's development co-operation, environmental concerns should be better addressed and monitored in Finland's official development assistance.

#### Recommendations:

- review and revise the taxation of energy products, as part of the preparation and implementation of the new Climate Strategy;
- take measures in the farming sector to reduce nutrient loading in coastal waters in the context of the Common Agricultural Policy reform, the Nitrates Directive and the HELCOM Baltic Sea Action Plan; in particular, consider introducing more targeted agri-environmental measures;
- extend to hazardous and noxious substances the measures taken to prevent, control and respond to oil pollution from ships ;
- strengthen efforts to develop sustainable forest management in north-west Russia in the context of EU-Russia environment dialogue;
- increase the level of official development assistance (with UN target of 0.7% of GNI in mind) and its share devoted to environment; contribute to strengthening the capacity of recipient countries to absorb possible increases in financial flows (e.g. through CDM projects);
- ratify and implement global and regional environmental agreements; continue to promote synergies between Multilateral Environmental Agreements; in particular, pursue efforts towards setting up an international chemical strategy.