

Implementation of the OECD Environmental Strategy for the First Decade of the 21st Century : 2008 Review of Progress for Ministers



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For a better world economy

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**IMPLEMENTATION OF THE OECD ENVIRONMENTAL STRATEGY
FOR THE FIRST DECADE OF THE 21ST CENTURY:
2008 REVIEW OF PROGRESS FOR MINISTERS
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Highlights

- OECD countries have made good progress in improving information for decision-making and addressing the social-environmental interface (objectives 3 and 4 of the OECD Environmental Strategy), but their track record in maintaining ecosystem integrity, decoupling environmental pressures from economic growth and improving international environmental governance and co-operation (objectives 1, 2 and 5 of the Strategy) is uneven. Overall, OECD countries have only begun to assess and address the full range of these challenges.
- The OECD Environmental Performance Reviews show that several domestic and international commitments are not being met, largely because environmental protection efforts are too modest, compared with the pressures on the environment resulting from economic activities.
- OECD countries need more efficient and effective policy measures to fully implement the Strategy by 2010. They need to:
 - implement their environmental policies more effectively, in other words address the implementation gap;
 - better integrate environmental concerns in energy, transport and agricultural policies as well as in their fiscal policies, in other words reduce the integration gap; and
 - intensify their efforts to implement existing global, regional and bilateral agreements, and increase their interaction with developing countries to help them solve their environmental problems.

Executive Summary

This report reviews progress in implementing the OECD Environmental Strategy for the First Decade of the 21st Century¹. The OECD Environment Ministers and Council adopted the Strategy in 2001, agreed to implement it by 2010 and decided to use the OECD Environmental Performance Reviews² and Environmental Indicators to track progress. While the reviews are country-tailored and recognise the wide diversity in country conditions, it is nevertheless possible to draw important lessons from the collective experience of OECD countries.

OECD countries have made progress during the decade...

Overall, OECD countries have moved, or are moving, from process- to result-oriented environmental policies. Many have introduced a mix of regulatory, economic and other instruments to address priority environmental problems more effectively. With total environmental expenditure amounting to 1-2% of GDP, the reviews suggest that environmental policies have brought very significant benefits at a reasonable cost to the economies. These benefits include, for example, reduced health damages which imply reduced health expenditure, increased labour productivity and increased well-being. While environmental policies

¹ The Strategy highlights priority areas under five objectives: 1. maintaining ecosystem integrity (climate change, freshwater and biodiversity); 2. decoupling environmental pressures from economic growth (e.g. agriculture, energy and transport); 3. improving information for decision-making; 4. addressing the social-environmental interface; and 5. improving international environmental governance and co-operation.

² Annex 1.

have not caused significant trade distortions or negative effects on employment, they have often provided the needed push for economic restructuring and technological innovation.

Environment Ministers and their administrations have seen the importance and breadth of their political, economic and administrative roles grow. Almost all OECD countries now have an environment ministry, and have national and sub-national capacities to design, implement and assess environmental policies. This development has been accompanied by a general “greening” of the operations of public authorities, private companies and international institutions. Following a phase of strong environmental commitment in the 1990s, environmental administrations are now having to implement policies in a setting characterised by short-term time horizons, concerns about budgets cuts and cumulated public deficits, structural economic changes, limited internalisation of pollution damage in market mechanisms, environmentally harmful subsidies, and increased global and regional economic interdependencies. While climate change currently dominates the environmental agenda, other environmental issues have also been given high priority (e.g. water, biodiversity, natural disasters, public health and resource efficiency).

...but challenges remain in their policies and results.

While good progress has been made regarding objectives 3 and 4 of the OECD Strategy (improving information for decision-making and addressing the social-environmental interface), the progress has been uneven for objectives 1 (maintaining ecosystem integrity), 2 (decoupling environmental pressures from economic growth) and 5 (improving international environmental governance and co-operation). A number of domestic and international commitments are not being met because environmental protection efforts are too modest, compared with the pressures on the environment resulting from economic activities. More efficient and effective policy measures are needed to fully implement the OECD Strategy by 2010. The Environmental Performance Reviews suggest that countries need to address both implementation and integration of their environmental policies.

Most OECD countries need to implement their environmental policies more forcefully. This includes putting greater emphasis on pollution prevention, on enforcement of regulations and promotion of compliance, and on the use of economic instruments to promote environmentally friendly behaviour (e.g. charges, taxes, trading mechanism). A majority of OECD countries have yet to complete their environmental infrastructure (e.g. water supply, waste water treatment, solid waste treatment facilities). The Environmental Performance Reviews highlight the need for policies to focus on ecosystem management and performance standards instead of uniform command-and-control approaches. They call on countries to improve accountability, access to information and broader stakeholder participation.

Countries also need to better integrate environmental, economic and social concerns, in other words address the “integration gap”. Environmental objectives are generally not sufficiently integrated into energy, transport and agricultural policies; they should also be addressed in trade, development aid, investment, science and technology policies. The Environmental Performance Reviews stress the importance of strengthening both institutional integration and market-based integration. Broader application of market-based mechanisms would also increase the cost-effectiveness of environmental policies. Countries should eliminate the distortion of price signals by reducing environmentally harmful subsidies and adjusting prices to take account of environmental damages. Fiscal policies have an important role to play and should be used more broadly. Countries also need to adopt integrated approaches to natural resource and materials management that consider the full resource cycle and contribute to resource efficiency.

Countries also need to intensify their efforts to implement existing international, regional and bilateral environmental agreements, and they need to increase their engagement with developing countries to help solve their environmental problems.

Overall, OECD countries have only begun to assess and address the challenges of maintaining ecosystem integrity, decoupling environmental pressures from economic growth, and improving international environmental governance and co-operation.

Objective 1 Maintaining Ecosystem Integrity³

Achievements and Challenges

Climate change. Most OECD countries have improved their energy efficiency, and their greenhouse gas emissions are growing at a slower pace than GDP. CO₂ emissions from energy use are now growing more slowly in the OECD area than world-wide. The use of emission trading schemes is expanding quickly; such schemes are now used or under consideration in several countries, including the European Union countries, Australia, Canada and parts of the United States. Carbon or carbon/energy taxes are in place in about half of the OECD countries, and a similar number have established formal voluntary agreements with industry to reduce emissions. Use of the Clean Development Mechanism is growing very rapidly and is now expected to fill more than half of the commitment “gap”. Joint Implementation is also increasing, but at a slow pace.

Although OECD countries’ progress in reducing greenhouse gas emissions varies considerably, most countries are not on track to meet their national commitments under the UNFCCC and the Kyoto Protocol without using the flexibility mechanisms (e.g. to buy additional credits). Countries vary widely in their use of emission trading schemes, carbon-related taxes and project-based flexibility mechanisms to address climate change in a cost-efficient way. OECD countries subsidise their energy production and transport sectors either directly or implicitly; reducing those subsidies could decrease greenhouse gas emissions. Countries also have different views on the extent to which technology and changes in consumption and production patterns can contribute to a lower carbon future.

Water. Most OECD countries manage their freshwater resources in a way that ensures an adequate service for human needs. For about half of the OECD population, this is done efficiently. The OECD Environmental Performance Reviews show that countries have expanded the use of proper water pricing mechanisms to cover costs and influence demand while addressing social concerns about access to and affordability of water services. At the same time, affordability of water supply and sanitation services has become an issue for part of the population in a number of countries. Countries have tackled the most pressing surface water pollution problems while also regulating discharges from large point sources, improving implementation of existing legislation, charging for water services and working towards introducing integrated water management. About 70% of the population in the OECD area is connected to a municipal waste water treatment plant. OECD countries spend on average 1% of GDP on water supply, sewerage and waste water treatment.

OECD reviews show major concerns with floods (damages amounting to more than 1% GDP for each flood episode in the decade) and droughts (e.g. in Australia, the United States, Southern Europe). Unsustainable water use occurs in some regions and periods. Water is often scarce, particularly in agriculture which uses up to 70% of the water supply in many OECD countries. Ground water quality is getting worse in most OECD countries; this is often caused by pesticides and nitrates from agriculture or, in some countries, by salinisation. Pollution of water bodies by new substances is a growing concern (e.g. endocrine disruptors). Designing and implementing water management policies that better reflect ecosystem needs is a major challenge and OECD countries need to give high priority to implementing integrated or basin-based management of water resources. Financing and local governance issues remain unresolved in a number of OECD countries.

Biodiversity. Good progress has been made in establishing protected areas (which amount to nearly 17% of total area in OECD countries, up from 14% at the beginning of the decade) and in creating ecological networks with connecting corridors. The assignment of well-defined property rights (e.g. individual transferable quotas in fisheries, development rights for wetlands conservation) is increasing. The use of market-based instruments (e.g. fees, charges and environmental taxes) to reduce pressures on natural areas (e.g. urban development) has remained limited. A major impediment to more rapid expansion

³ Objective 1 of the Strategy highlights three priority areas: climate change, freshwater and biodiversity.

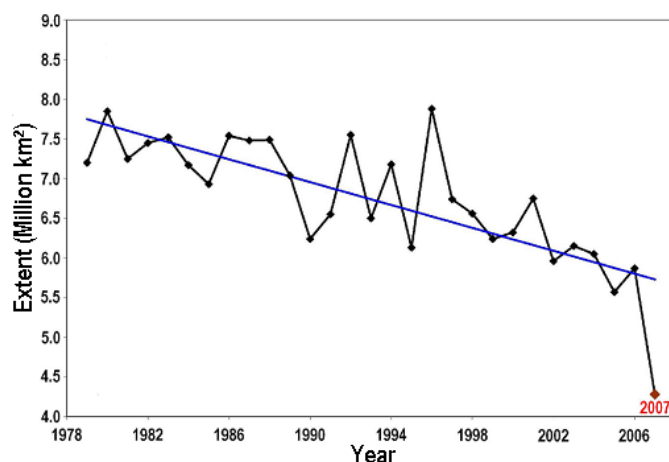
of biodiversity and nature protection on private land has been the low level of payments to landowners (e.g. forest owners) to compensate for related income loss.

However, the percentage of plants and animals classified as endangered species continues to increase, and total numbers of vertebrates in the wild continue to decline in almost all OECD countries. In most countries, a significant share of species is threatened by habitat loss or alteration inside protected areas and by changes in land use outside protected areas. The OECD Environmental Performance Reviews call on countries to better integrate biodiversity concerns into their sectoral policies, to do more to slow habitat loss and fragmentation outside of protected areas, and to apply the ecosystem approach to natural resource management, ideally in connection with water management at the river basin level. The recent international agreements to support sustainable fisheries management have not yet managed to slow the over-exploitation of fish stocks. Improving management of existing protected areas and establishing additional protected marine areas are among the challenges. The Environmental Performance Reviews call on further action to protect marine and coastal environments, especially against eutrophication and pollution from ships. Further efforts to regulate fish catch are also needed in marine areas where fish stocks (e.g. cod) are threatened. Only a small fraction of OECD countries' environmental expenditure is targeted at nature protection.

1. The Arctic

Sensitive ecosystems and communities in the Arctic⁴ are affected by climate change, long-range transboundary pollution and ozone depletion. The Arctic is particularly vulnerable to climate change, with temperatures increasing at almost twice the global rate and accelerating the decline in sea ice extent (Figure 1.1).⁵ Biodiversity changes in the Arctic may also affect biodiversity elsewhere in the world.

Figure 1.1 Trend in Arctic Sea Ice Extent – a record low in 2007



Source: National Snow and Ice Data Center, October 2007.

⁴ Around the North Pole, the Arctic Region is mainly covered by the Arctic Ocean, and is the homeland of about four million people living in eight countries. The Arctic Ocean is surrounded by Canada, Denmark, Norway, the Russian Federation and the United States.

⁵ The Arctic sea ice and permafrost may disappear during the summer around the middle of this century or even earlier (Stroeve et al., 2007).

The entire Arctic ecosystem is under very high stress...

The state and trends in several species and populations (e.g. polar bears and eiders) suggest that the entire Arctic ecosystem is under very high stress, mainly due to climate change and other human influences. In 2006 the polar bear⁶ was put on the IUCN threatened species Red List, which also includes 22 other mammals⁷, 12 bird, 10 fish and 20 plant species living in the Arctic. Although Arctic fisheries are among the most productive in the world, at least half of its 22 commercial fish stocks are declining, mainly due to over-fishing (CAFF, 2001). By-catch mortality of non-target fish, seabirds, and marine mammals is still high in some fisheries. Similarly, overgrazing has historically contributed to extensive degradation and loss of vegetated areas and affected different animal species; it still raises concerns today in parts of the Arctic (CAFF, 2001). Climate change has led to ecosystem changes in the Arctic, a consequent reduction of habitat for wildlife, including birds and mammals (e.g. caribou, reindeer, seals, walrus, polar bears and whales), and may lead to an increase in invasive species, parasites and diseases to which Arctic species are not adapted (IPCC, 2007b). This may threaten the survival of some Arctic species and populations, which may have a wider impact on world biodiversity⁸.

The Arctic is also affected by long-range transboundary pollution despite its remote location. Volatile chemicals and heavy metals present a serious risk to Arctic wildlife and people (AMAP, 2003, 2004a, 2004b; OECD, 2004).⁹ Recent international agreements ban or severely restrict the use of the most hazardous chemicals present in the Arctic (e.g. 2004 Stockholm Convention and EC 2007 Reach Regulation). But new challenges call for further co-operation among countries on specific issues, such as mercury.¹⁰ For example, the Arctic Contaminants Action Programme has recently begun to develop recommendations with regard to additional contaminants making their way into the Arctic food chain, such as brominated flame retardants (Arctic Council, 2007).

The use of ozone-depleting substances has caused a steady decline in global stratospheric ozone, reducing ozone level to about 3.5% below their pre-1980 level (WMO, 2007). Although the ozone "hole" is much larger over the Antarctic, the seasonal decrease in stratospheric ozone over the Arctic also raises concerns. Implementation of the 1987 Montreal Protocol has brought about a significant reduction in use of ozone depleting substances, and the global average extent of ozone depletion has almost stabilised.¹¹ Nevertheless, the ozone layer is projected to remain depleted for several decades and annual ozone levels in the poles are expected to vary widely (IPCC, 2005). The earliest timeframe projected for the ozone layer to recover, 2050-2075, may be complicated by climate change.

Indigenous Arctic peoples are already forced to adapt their way of life (e.g. travelling, harvesting¹²) to the changing climate. In addition, severe coastal erosion and permafrost thawing are forcing or threatening to force industrial facilities and communities to relocate. Land-based transportation and industry (e.g. oil and gas extraction and forestry) are increasingly disrupted by the shortened travelling period on ice roads and tundra (ACIA, 2005).

⁶ Five of the 19 polar bear subpopulations – accounting for about one fifth of the remaining 20 000-25 000 polar bears in the world – are in decline (IUCN 2005). A population decline of at least 30% over the next 45 years is expected to occur as a result of the ongoing reduction of sea-ice.

⁷ 10 whales, 6 marine and 6 terrestrial species.

⁸ Several species of whales, dolphins, birds and other animals found in warmer latitudes depend on their migratory success in the Arctic. A number of bird species, including several globally endangered seabirds, are projected to lose more than 50% of their breeding area during this century (ACIA 2005).

⁹ Due to accumulation in the food chain, high levels of chemicals and heavy metals are found in top predators (e.g. indigenous people, polar bears) as well as in seals, sea lions and whales and in bird embryos. In some areas of the Arctic, levels of mercury in ringed seals and belugas have increased two to four times over the past 25 years (UNEP 2002). Even though PCB levels in some polar bear populations are now declining, their levels remain excessive a quarter-century after the compounds were banned in most developed countries, and new contaminants are being detected (Cone 2005).

¹⁰ In February 2007, UNEP concluded that additional long-term international action to reduce risks from mercury is required.

¹¹ By the end of 2006, the 191 Parties to the Montreal Protocol had together phased out over 95% of ozone depleting substances (UNEP 2007b).

¹² Many northern indigenous people depend on frozen rivers and lakes for access to subsistence resource (e.g. hunting, reindeer herding, trapping and fishing). Current physical and ecological changes present serious challenges to their livelihood. Further changes would threaten the survival of millennia-old traditional cultures (UNEP 2007a, ACIA 2005).

The diminishing sea ice cover could open major new commercial shipping passages (e.g. the Northwest passage) and facilitate access to significant resources (e.g. oil, gas, minerals)¹³ raising concerns about oil spills and industrial accidents, although the seasonal variability of ice cover and density, difficult weather conditions and absence of infrastructure currently preclude such routes being commercially viable. Issues of jurisdiction and regulatory regimes may also cause concerns (UNEP, 2007a; ACIA, 2005).

...making concerted international environmental efforts increasingly important.

The international regime covering the Arctic Ocean (and related claims) adds complexity to international co-operation. Developing and implementing strong international agreements on climate change, hazardous chemicals, ozone depletion and conservation efforts will be crucial to saving the Arctic environment.¹⁴

The OECD and other countries have shown a will to protect the Arctic and have made some progress in monitoring and assessing climate change, air pollution and ecosystem degradation; in promoting sustainable resource use and emergency preparedness and prevention; and in improving the living conditions of the Arctic population. But much more is needed and important challenges remain, including implementation of agreed international commitments (e.g. UNFCCC) and development of new co-operation agreements.

The eight Arctic countries (of which seven are OECD Members) adopted the Arctic Environmental Protection Strategy in Rovaniemi in 1991 and created the Arctic Council in Ottawa in 1996. They also established the Circumpolar Protected Areas Network (CPAN) in 1998. However, some key biomes, such as boreal forest, freshwater ecosystems and coastal marine areas (of which only 1% is currently protected) appear to be underrepresented in this network¹⁵ (CAFF, 2005; WWF, 2007). In 2004, the eight Arctic countries adopted the Reykjavik Declaration, whose implementation should help strengthen the resilience of Arctic ecosystems to climate change by minimising other environmental pressures. Other recent initiatives include the "Greenland Dialogue" promoted by Denmark, which enables ministers of 22 major economies to enrich their understanding of the climate change problems in the Arctic through on-site visits (OECD, 2007). The focus of the "International Polar Year" 2007-2008 is on research and on improving our understanding of the Polar Regions.

2. River basin¹⁶ management

Significant progress has been made with legislation required to achieve integrated river basin management and many other positive developments have taken place in recent years. Integration of upstream and downstream interests of transboundary water bodies is also receiving increasing attention in the OECD area.¹⁷ Integrated Water Resources Management (IWRM) consists of integrated land, water and ecosystem management.¹⁸ It requires an understanding of water-related needs for the ecosystems within

¹³ According to the USGS, the Arctic would account for 25% or more of the Earth's untapped reserves of oil and gas (UNEP 2007).

¹⁴ See OECD Environmental Performance Reviews of Canada, Denmark, Finland, Iceland, Norway, Sweden, the Russian Federation, and the United States.

¹⁵ This excludes some areas placed under interim protection, like the Dehcho territory in Canada. Data from Russia may be partial.

¹⁶ A river basin is the area of land from which all surface run-off flows through a sequence of streams, rivers, and in some cases lakes into the sea at a single river mouth, estuary or delta.

¹⁷ This is pursuant to the OECD Environmental Strategy that requires Member countries to "ensure co-operation for the environmentally sound management and efficient use of transboundary water resources to reduce flood risks and to minimise potential conflicts from the use or pollution of transboundary water resources".

¹⁸ According to the OECD Environmental Strategy, OECD countries should "apply the ecosystem approach to the management of freshwater resources and associated watersheds, based on integrated river basin management". The International Conference on Water and the Environment: Development Issues for the 21st Century (Dublin, 1992), which the water sector organised to prepare for the UN Earth Summit, advocated a new/holistic approach of integrated water management that goes much beyond co-ordination among water management agencies (Snellen and Schrevel, 2004). The resulting "Dublin Guiding Principles" prescribe that effective management of water resources be based on the carrying capacity of the natural environment. Effective management must also link land and water uses across the whole of a catchment area. Managing water as an economic good is key to encouraging conservation and protection of water resources. The Dublin Principles were officially endorsed by the Earth Summit, in Chapter 18 of Agenda 21, "Application of Integrated Approaches to the Development, Management and Use of Water Resources".

specific catchments, identifying human activities that have important implications for these ecosystems, and exploring ways of redirecting human activities to provide a more desirable overall balance of human and ecosystem needs.

Integrated river basin management requires institutional arrangements that provide: i) a functioning platform for stakeholders involved in decision-making, ii) water resources management based on hydrological boundaries; iii) an organisational set-up in river basin and sub-basin authorities with their respective by-laws to incorporate decision-making at the lowest appropriate level; iv) a planning system oriented towards producing integrated river basin plans; and v) a system of water pricing and cost recovery (Jaspers, 2003).

OECD countries are increasingly applying an integrated approach to water management...

OECD countries have made important progress towards a more integrated approach to water management in the past decade (OECD, 2006a). These include cases of water quantity and quality management at river basin level, greater consideration of interactions between urban and rural activities, and greater recognition of the need for rivers and lakes (and their beds and banks) to support aquatic life, as well as to meet human health and recreational criteria.

Some EU countries (e.g. France, Spain) have had river basin agencies for a long time, and many others are now establishing such institutions. The 2000 EU Water Framework Directive (WFD) is a milestone in water legislation. For the first time in history, 27 countries are committed to jointly manage all of their freshwater resources on a basin scale, in an integrated way. The WFD today forms the basis of many of the water policy developments in Europe. Even though it focuses on water quality and ecology (e.g. ecological status of rivers), it includes many of the important elements of integrated water resources management, such as holistic management on a river-basin scale, public participation and consultation, cost recovery, and use of the polluter pays principle (Donzier, 2006). The WFD is binding¹⁹, sets time-bound measurable targets, and allows for transboundary water management. Steps are being taken to include other elements of integrated water resources management, such as flood and drought management.

Some OECD countries, while not making the river basin approach a fundamental institutional feature, are improving integration by creating *ad hoc* entities to protect specific water bodies, with representation by all stakeholders. In Australia, the 1992 Murray-Darling Basin Agreement between south-eastern states heralded the beginning of a more comprehensive approach that widened the initial concern about water volumes to water quality, salinity and ecological aspects. The Living Murray Initiative, aimed at restoring the Murray River to good ecological health, followed.

Some OECD countries could consider anchoring the whole-basin approach in their water laws, preferably by consolidating the separate acts dealing with individual issues into coherent legislation. Japan, for example, has adopted a “sound water cycle” approach, and five ministries (Environment; Land, Infrastructure and Transport; Health, Labour and Welfare; Agriculture, Forestry and Fisheries; Economy, Trade and Industry) are taking steps to formulate objectives and plans for the major river basins, involving local authorities, residents and public enterprises (OECD, 2002).

Innovative basin-based management approaches to water quality have also been adopted in the United States in recent years. One such programme offers incentives for stakeholders upstream of New York City to protect the city’s water supply sources from pollution. The U.S. Environmental Protection Agency actively supports watershed-based trading in water pollution credits, modelled on the air pollution credit trading developed in the past decade. A few states and organisations have already applied trading programmes to meet total maximum daily load requirements for watersheds. However, little has been done to enhance basin-based management of water resources. Some compacts in the East involve the federal government and have strong commissions that can help settle disputes and set new allocations; compacts in the western half of the country could benefit from these examples. Little has been done to integrate flood

¹⁹ The WFD provides some discretion for the implementation of key concepts, including cost recovery and the polluter pays principle.

plain management, land use and water policies (OECD, 2006b). Wetland mitigation banking, practised for more than 25 years, has been recently growing in popularity but makes little allowance for the role of wetlands in river basin management.

...which has implications for international co-operation.

Where natural watersheds of river basins do not coincide with national borders, cross-border co-operation has to be an integral part of integrated river basin management. Global²⁰ and regional²¹ efforts have encouraged collaboration among basin states, but the most significant developments in co-operative water management are found at the basin-scale. Approximately 61 treaties referring to 200 shared river basins have been signed over the last 50 years. Although the need to share transboundary water resources can generate hostility, the record of co-operation is much greater than that of conflict, and water has generally proved to be a vector of co-operation rather than a source of conflict (Wolf, Yoffe and Giordano, 2003). However, according to the UNESCO World Water Assessment Programme, the 1 831 interactions (both conflictual and co-operative) recorded over the last 50 years have included 507 conflicts, with 7 disputes that involved violence. Climate change could exacerbate the current water scarcity crises (WBGU, 2008).

The 2002 Johannesburg Plan of Implementation (JPol) called for countries to “develop Integrated Water Resource Management and Water Efficiency Plans by 2005”, in recognition of the strategic importance of improved water resource management in achieving the Millennium Development Goals (MDGs). All countries are required to report their progress to the Commission on Sustainable Development (CSD-16) in 2008.

Objective 2 Decoupling Environmental Pressures from Economic Growth

Achievements and Challenges

OECD countries have made some progress in reducing agriculture’s negative environmental impacts, but they need to do much more. The intensity of fertiliser and pesticide use has decreased and some countries have managed to reduce their greenhouse gas emissions from agriculture. Many OECD countries are increasingly using agri-environmental and cross-compliance measures, whereby farmers must meet environmental conditions to be eligible for support. However, cross-compliance cannot be expected to achieve as much as could be achieved by the combination of separate policies on farm income support and environmental management. Agriculture has historically been the dominant water user and, and water use continues to rise in many OECD countries. At the same time, the decrease in on-farm biodiversity has not slowed down. OECD countries provide about USD 200 billion per year in production-linked support to agriculture. This type of support is potentially the most harmful to the environment, and although it has decreased, it still accounts for 64% of support to farmers in the OECD area.

OECD countries have made progress in addressing the negative environmental impacts of transport, but they need to do much more about greenhouse gas emissions, traditional air pollutants, and the impacts of transport infrastructure on nature and biodiversity. Regulation of toxic pollutants in car exhaust has been strengthened. While CO₂ emissions from transport continue to increase overall, voluntary initiatives have been taken to reduce emissions from new cars to an average of 140 g/km, by 2008 for European manufacturers and 2009 for Japanese and Korean manufacturers. Binding timetables for meeting air quality goals and emission ceilings have been established through 2008 in all OECD regions. Innovative transportation taxes and charges have been introduced in some countries to better target environmental externalities and congestion. Investments have been introduced to shift to less

²⁰ The 1997 Convention on the Law of the Non-Navigational Uses of International Watercourses seeks protection and preservation of shared water bodies, the creation of joint management mechanisms, and the settlement of disputes. To date, only 12 countries have ratified or consented to be bound (acceptance, approval or accession) by the Convention.

²¹ Such as the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes.

environmentally harmful transport modes: the development of tram and light rail systems has increased, as has the capacity of inter-city high-speed rail in some countries.

However, total emissions from transport remain high and air quality standards have not been met. While some improvements have been made in transport technologies, the efficiency gains have been outweighed by increases in transportation volumes. A number of practices (e.g. exemptions on company cars, income tax deductions for commuting by car, differential fiscal treatment of different transport modes) undermine environmental policy objectives. Countries continue to face a major challenge in dealing with freight transport by road and motor vehicle use in urban areas. Air pollution from shipping and air transport is increasingly important and have received little attention nationally or internationally. Progress in reducing noise, habitat fragmentation and run-off from transport is hampered by the expansion of road networks and transport activity. Urban sprawl continues in many OECD countries. Countries need to use strategic environmental assessments of transport policies and plans, to review the taxation and pricing of both passenger and freight transport, and to ensure fair competition and synergies among transport modes. They also need urgently to address the environmental impacts of shipping and air transport.

Real end-use energy prices have been increasing since 2002, due mainly to higher crude oil prices. While total primary energy supply has grown, the fuel mix has changed, especially in OECD-Europe where there has been a shift to less polluting fuels. Fiscal policies, tradable renewable energy certificates and other policy measures have led to investments in energy efficiency and some growth in the research and development of renewable energy sources. Greater use of combined heat and power and greater use of natural gas have reduced the carbon intensity of energy production and further reduced emissions of sulphur dioxide, particulate matter and other air pollutants. Countries have launched research initiatives on the viability and cost-effectiveness of carbon capture and storage.

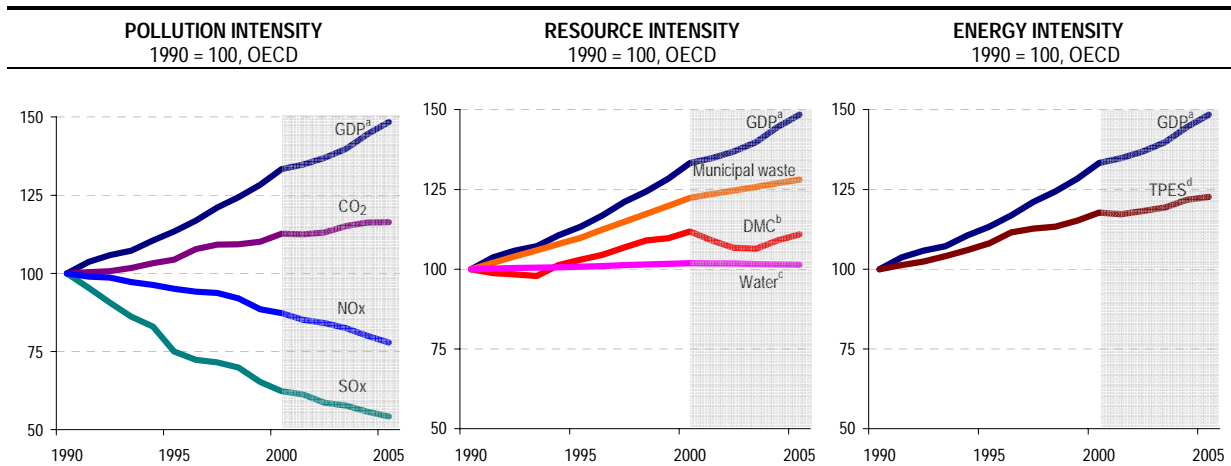
Although structural change and improvements in energy efficiency have led to some decoupling of energy use from economic growth, further improvements are unlikely without far more ambitious policies to better internalise environmental costs in energy prices. Much of the potential for further improving energy efficiency, including low- and no-cost options, remains untapped. Energy consumption per capita has increased in most OECD countries, reflecting an increase in transport activities that has more than offset the decrease in energy use by industry. Energy intensity varies greatly among OECD countries, influenced by the structure of the economy, population density, building and transport infrastructures, and factors such as climate, energy policies and prices, and countries' endowment in energy resources. OECD countries subsidise energy producers by about USD 20-30 billion a year. Most of these subsidies go to fossil fuels. A large share of public R&D goes to nuclear power and a small share to development of renewable resources. Coal subsidies decreased in all OECD countries between 2000 and 2008.

3. Decoupling pollution, resource use and energy use from economic growth

Absolute decoupling is not widespread

Environmental pressures are generally increasing at a lower rate than economic growth but are still rising as shown in Figure 3.1, which compares recent trends in GDP with trends in air pollution, resource use, municipal waste and energy use.

Figure 3.1 Decoupling indicators, 1990-2005, OECD



Notes: a) GDP in 2000 prices and purchasing power parities; b) domestic material consumption (DMC) excluding fossil fuels; c) water abstraction; d) total primary energy supply.

Source: OECD MF pilot database and OECD Key Environmental Indicators 2007.

Regarding pollution, OECD countries have achieved absolute decoupling for SO_x and NO_x emissions and for phosphorous discharges from households. In other words these environmental pressures have remained stable or decreased. More countries have achieved absolute decoupling for nitrogen discharges from households than have achieved relative decoupling, i.e. with emissions continuing to grow but at a lower rate than the economy. CO₂ and other greenhouse gas emissions in OECD countries are growing, but at a lower rate than the economy. Air emissions from road transport have been growing more slowly than GDP. The reduction in pesticide use and fertiliser intensity have decreased environmental pollution from agriculture in most OECD countries.

A relative decoupling of domestic material consumption (DMC) from economic growth has occurred in OECD countries. While OECD countries have achieved decoupling for all broad groups of materials, absolute decoupling has been observed for metals and industrial minerals and only relative decoupling for construction minerals and biomass (e.g. food and wood). Material intensity (i.e. DMC per unit of GDP) has decreased in all OECD regions, especially in Asia, where absolute decoupling of DMC from GDP has occurred since 1990. This progress is due to the application of integrated products policy and more efficient technologies (achieved through innovation, eco-design, and better management approaches), changes in consumption patterns, a move toward service economy, and an associated increase in material-intensive imports. Regarding water use, overall abstraction in OECD countries has almost stabilised, increasing by just 1.5% since 1990. However, this partly reflects efficiency gains in the use of water and partly the consequences of droughts, and may hide significant territorial differences, among and within OECD countries.

Regarding energy use, energy intensity (i.e. energy consumption per unit of GDP) in OECD countries has decreased by more than 6% since 2000 with the largest drop taking place in North America and the Pacific. While this decade's decrease was larger than in the 1990s, much greater improvements in energy intensity were achieved in the 1970s and 1980s as a result of structural change where the shares of agriculture and industry decreased and services increased. Energy consumption per capita has increased in most OECD countries, reflecting an increase in energy supply and demand for transport activities that has more than offset the decrease in energy use by industry. Energy intensity varies greatly among OECD countries, influenced by the structure of their economy, climate, energy policies and prices, and endowment in energy resources. Overall, only relative decoupling has been achieved.

4. Environmentally friendly agriculture

The environmental performance of agriculture improved across the OECD during the decade, though with significant variations among and within countries depending on how policy makers, farmers and agro-industry responded to public concerns about the environment (OECD, 2007a). Overall, the decade saw a shift toward policies with less potential to distort production and trade, but the extent to which agricultural policy reforms have affected environmental performance is not clear.

Environmental performance of agriculture is improving...

More than two-thirds of OECD countries have recorded a nationwide decrease in nutrient surplus²² over the past 15 years. However, this concerns mainly those countries with the highest intensity of nutrient use, indicating there is still room for improvement (Figure 4.1). Rising or large nitrogen surpluses are generally caused by the intensification of livestock production, as the use of inorganic nitrogen fertilisers has had limited growth in most countries. Pesticide use has also declined in two-thirds of OECD countries (in quantities of active ingredients). Many of the pesticides used today are less environmentally harmful and are applied in lower doses than before. Areas of moderate to severe soil erosion risk decreased overall with the growing adoption of soil conservation practices (e.g. low or no tillage, green cover during winter), reduced cultivation of fragile soils (land set aside) and the conversion of agricultural land to forestry. Progress was also made in reducing air emissions and climate change.²³ Aggregate OECD greenhouse gas emissions from agriculture decreased. Most OECD countries²⁴ have met the 70% reduction target for methyl bromide use, but “critical use exemptions” give farmers additional time (beyond the original 2005 deadline) to develop substitutes before complete phase-out. Agricultural ammonia emissions decreased in more than two-thirds of OECD countries, but some countries will need to further reduce their emissions if they are to meet the 2010 targets of the Gothenburg Protocol. Farmers’ adoption of nutrient management plans is widespread.

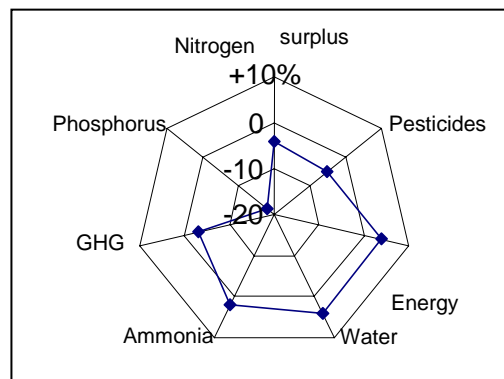
In contrast to these positive points, however, on-farm energy consumption rose in half of the OECD countries, due mainly to the increase in production, mechanisation and machinery power. Energy subsidies, mainly for on-farm fuel use, are widespread. Agricultural water use increased in half of the OECD countries, driven mainly by an expansion in the irrigated area. Government support for irrigation is widespread, exacerbated by energy subsidies for groundwater pumping in some countries. Despite support, there is a low uptake of water-efficient irrigation technologies (e.g. drip emitters) and poor maintenance of irrigation infrastructure (e.g. canals) in many OECD countries. Farmland bird populations decreased in half of the OECD countries that monitor them. There has been a net loss of wetlands converted to agricultural use, although the rate of conversion has declined. Certified organic farming is rapidly expanding, but still accounts for less than 2% of the OECD agricultural land area. Uptake of integrated pest management practices across OECD countries, though progressing, is modest. The area of farmland under soil management practices has remained stable. Identifying the extent of adoption of environmental farm management practices is made difficult as less than half of OECD countries regularly monitor the use of such practices. Identifying agricultural impacts on biodiversity is difficult as relatively few countries regularly monitor agri-biodiversity. The share of agricultural land under biodiversity management plans is under 10% for most OECD countries.

²² Defined as the balance between nitrogen and phosphorus *inputs*, largely fertilisers and livestock manure, and *outputs*, the uptake of nutrients by crops and pasture, and expressed as kg nutrient surplus/hectare of farmland.

²³ Agriculture accounts for 8% of OECD greenhouse gas emissions, 8% of the use of ozone depleting substances and 2% of total acidifying emissions (SO_x, NO_x and NH₃).

²⁴ All OECD countries but Korea, Mexico and Turkey, for which the Montreal Protocol commitment does not apply.

Figure 4.1 Environmental performance of agriculture, OECD area trends early 90s to mid-decade 2000



Source: OECD.

...as countries make progress in agricultural policy reform...

Over the past 20 years, OECD countries have reduced the level of support and the share of support that is more directly linked to production (Figure 4.2). The level of support as measured by the percentage producer support estimate (PSE)²⁵ fell from 38% in 1986-88 to 29% in 2004-06, while the use of payments not linked to production²⁶ (which give farmers greater flexibility in their production choices) increased from 1% to 15% of the PSE (OECD, 2007b). The sharp increase in the use of payments not requiring production registered in the OECD after 2004 was due almost entirely to the introduction of the “single payment scheme” in the European Union. However, payments based on non-commodity criteria account for only 1% of the PSE, and are more than 5% of the PSE in the United States only. The trend towards policies that give more flexibility to producers has become particularly apparent in Australia and the United States (over 30% of the PSE) and in Switzerland and Mexico (over 20%). In Iceland, Korea and Japan less than 5% of the support consists of payments not requiring production.

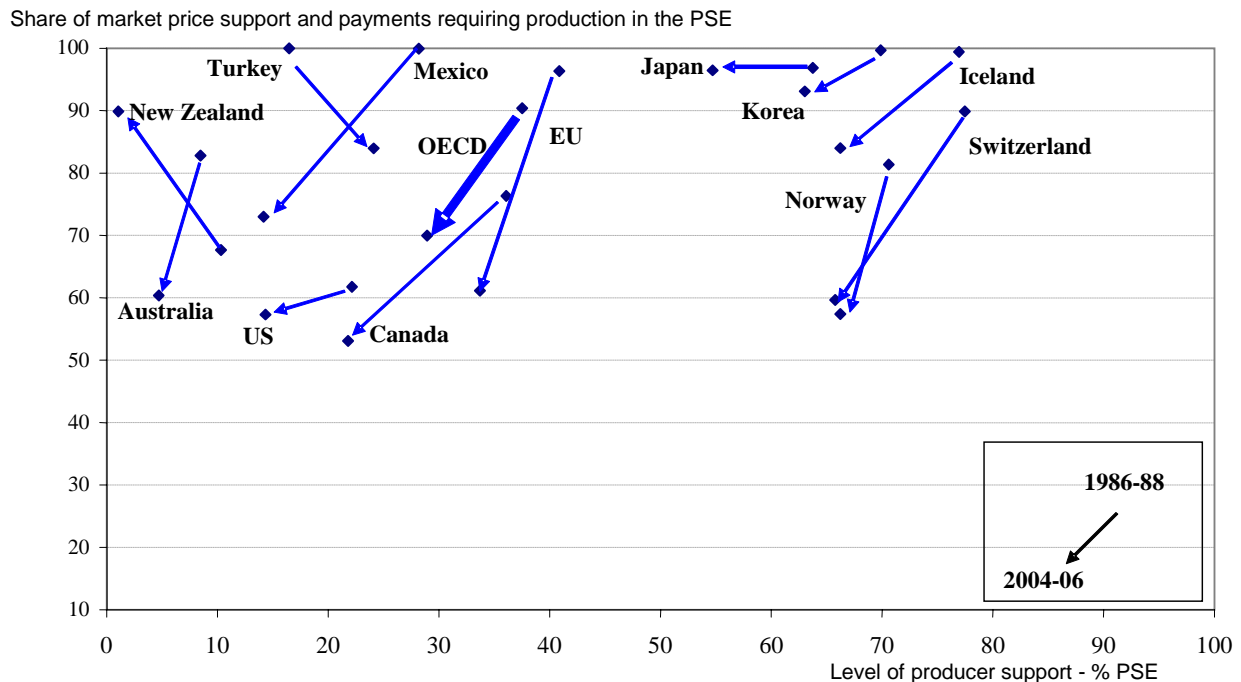
Despite this progress in policy reform, there is still room for improvement. Meeting the OECD Ministers’ vision for agricultural policies to be targeted and tailored to specific objectives will require greater emphasis on policies that set clearly defined goals (OECD, 2007b).

Cross-compliance conditions, especially requirements for environmental protection, are increasingly being attached to payments. Environmental cross-compliance (ECC) was first introduced in the United States in the mid-1980s, with the principal aim of controlling soil erosion. In the European Union, ECC became compulsory with the 2003 Common Agricultural Policy (CAP) reform. This looks like a positive step as ECC can recognise the role of farmers as custodians of the countryside. However, cross-compliance is a second-best approach that cannot be expected to achieve as much as could be achieved by separate policies targeted at farm income support and environmental outcomes (OECD, 2007c).

²⁵ The Producer Support Estimate (PSE) estimates the annual monetary transfers from consumers and taxpayers to farmers, measured at the farm gate level, arising from policy measures that support agriculture, regardless of their nature, objectives or impacts on farm production or income. The %PSE is the PSE expressed as a share of gross farm receipts.

²⁶ Payments based on non-commodity criteria and payments based on historical or fixed area/animal numbers/revenue/income.

Figure 4.2 Changes in the level and composition of producer support^a



a) The level of support is measured by the Producer Support Estimate (%PSE). The composition of support is measured by the share of market price support and payments requiring production in gross farm receipts. The level of producer support (% PSE) is shown on the X-axis and the composition of support on the Y-axis.

Source: OECD, PSE database, 2007.

Many countries are developing policies to stimulate biofuels production, for three main reasons: concern about future energy supplies, concern about the environment (notably climate change), and a desire to develop new markets for agricultural products and increased income for farmers. However, few first generation biofuels seem to offer much in the way of climate protection or energy security, despite being a very expensive way to address these concerns (International Transport Forum, 2007). The net reduction of greenhouse gas emissions from producing and consuming biofuels instead of gasoline or diesel seems marginal, and the impacts on land fertility, soil erosion, water abstraction, water pollution and biodiversity can be severe.

...but it is still difficult to assess the impact of policy reform on the environment.

Relating agricultural policy reforms to changes in agri-environmental indicators can help to assess whether important policy reforms lead to better environmental performance. In the OECD, where the level and composition of agricultural support have moved in the right direction, environmental performance shows a rather encouraging evolution. But the story is not that simple.

The environmental performance of countries like Japan and Switzerland has improved remarkably in spite of their maintaining high agricultural support. Conversely, in low-support countries like Australia and New Zealand and modest-support countries like the United States and Canada, agricultural pressures on the environment have increased due to increased production and adverse environmental conditions such as drought.

The reason is that environmental performance depends heavily on the level of agricultural production (decoupling), which increased significantly in Australia, New-Zealand, the United States and Canada (up to + 30% in New Zealand) and decreased in Japan and Switzerland (-12% in Japan). It also depends on country-specific environmental protection measures (including regulations), on the marginal

cost of pollution abatement and control in agriculture and on efforts in sectors other than agriculture (cost-efficiency). Moreover, producer support policies are classified according to the basis on which support is delivered and not on policy objectives or impacts.

Objective 3 Improving Information for Decision-making

Achievements and Challenges

Many OECD countries use indicators to inform the public about the environmental situation and to inform decision-making. All OECD countries collect and disseminate environmental data, and many are undertaking efforts to increase the thematic scope and quality of the data. More than half of the OECD countries regularly compile air emission inventories and have established operational pollutant release and transfer registers (PRTRs). Many large municipalities provide real-time information about the quality of the environment. Countries are increasingly using web-based environmental information reporting and exchange. Impact assessments, cost-effectiveness studies and cost-benefit analysis are also becoming more prevalent. However, reliable, up-to-date, policy-relevant data and sectoral information are still scarce in some areas (e.g. biodiversity, economic aspects of environmental performance, and risks related to toxic contamination). The timeliness and comparability of data among countries and over time also need considerable improvement. OECD work on environmental indicators has contributed to the harmonisation of individual countries' initiatives, *inter alia*, by developing a common approach and supporting policy analysis.

Most OECD countries have adopted explicit environmental protection objectives in their strategic, planning and programming processes, and use indicators and other tools to evaluate progress in meeting these objectives. Increased emphasis is put on defining objectives that reflect scientific, economic and democratic processes. A particular challenge nationally and internationally is to anticipate decoupling needs and the "cost of inaction".

Policy reforms tend to be more successful if supported by comprehensive consultative and awareness-raising efforts. To succeed, environmental strategies must have open and transparent decision-making accompanied by a high-quality monitoring and assessment process. This means that all players should have full access to environmental information and better access to justice; there should also be a meaningful consultation with and participation by the public and an on-going dialogue with stakeholders (e.g. industry, trade unions, non-governmental organisations, local communities).

The availability of reliable indicators and information promotes greater accountability and democratic debate. The use of environmental data and indicators to track progress will become more important as countries want to assess policy outcomes, identify shortcomings at different government levels, and monitor policy implementation by stakeholders. Some countries are still focusing on quantifying the cost of environmental protection rather than the cost of pollution and the savings gained from avoiding it.

5. Environmental expenditure: getting value for money

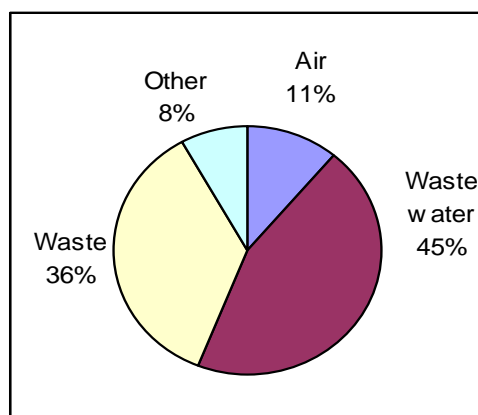
OECD countries spend 1 to 2% of GDP on environmental protection ...

Public and private expenditure for environmental protection²⁷ together amount to about 1-2% of GDP in the European Union, Japan and the United States. This is just a fraction of what is spent on health (on average 9% of GDP). The level of environmental expenditure has remained reasonably stable over the past ten years, although the share targeted at nature protection expenditure – which now represents 5-10% of environmental expenditure in most OECD countries – has risen slightly. Private sector expenditure on nature protection is very small in most OECD countries.

²⁷ Environmental protection expenditure consists of investments and operating expenditure (i) to prevent or cure pollution and (ii) to supply water and protect nature. It does not cover measures such as agro-environmental subsidies, sustainable forestry measures, etc., of environmental damage. The interpretation of a country's must be done within each country's specific environmental context.

Most OECD countries spend 0.8-1.6% of GDP on pollution abatement and control (OECD, 2007) (Figure 5.1). Expenditure on waste water dominates the public sector expenditure, whereas private sector expenditure is more equally distributed among air, waste and waste water. Municipalities are increasingly seeking efficiency gains in the provision of water and waste services, through arrangements with public or private enterprises, public-private partnerships or inter-communal co-operation. The result is that waste water and waste treatment service providers are changing and users (rather than local tax payers) are increasingly paying for the service.

Figure 5.1 Pollution abatement and control expenditure, OECD countries, 2005^a



Notes: a) 2005 or latest year available.

Source: OECD, Environment Directorate.

...but focus is shifting from investment to operation and from treatment to pollution prevention...

The second cycle of Environmental Performance Reviews reveals a shift from investment to maintenance and operating expenditure, as investment in environmental infrastructure accumulates. While a number of countries are advanced in their large environmental investment programmes for water supply, waste water and waste infrastructure, others (e.g. Korea, Mexico, Poland, Czech Republic, Hungary, Slovenia Portugal, Spain, Greece, Ireland and Turkey) are just mid-way into investing in environmental infrastructure. A major shift in the private sector has been from end-of-pipe investments (pollution treatment) to investments in integrated technology (pollution prevention).

The relationship between environmental expenditure and the state of the environment has to be analysed in a country-specific context or the figures can be misleading. High environmental expenditure can be associated with poor environmental quality (indicating that such levels of expenditure are necessary), good environmental quality (indicating improvement as a result of high expenditure) or even with low efficiency of environmental efforts.

Countries are increasingly reviewing their environmental expenditure against the obtained benefits

In the United States, a cost-benefit analysis of the Clean Air Act for 1990-2010 estimated that the direct costs of implementation (around USD 20-30 billion per year, or 0.2-0.3% of the U.S. GDP) would be one-fourth of the value of the benefits (e.g. avoided premature mortality and health costs). A 2003 report by the Office of Management and Budget found that this act had by far the highest ratio of benefits to costs of all economically significant legislation since 1994.

A number of studies have addressed the health effects of environmental degradation and estimated the number of premature deaths and/or life years lost due to traffic or overall air pollution. In the EU-25, premature deaths related to air pollution (PM₁₀ and O₃) are estimated to account for about 8% of all deaths. In the United States, the disease burden related to pollution is estimated at 20% of the total disease

burden. The costs associated with the health effects of environmental degradation are quite important. In the EU-25, the health costs from air pollution are estimated to be 3-10% of GDP per year. These estimates include costs related to 369 000 premature deaths and the loss of 347 million working days per year (European Commission, 2007). The current expenditure for prevention and treatment of air pollution in the EU-25 corresponds to 0.3-1% of the estimated health costs. In the United States, total gross annual damage associated with air pollution from the 10 000 major sources is estimated to equal 0.7-2.8 % of GDP (Muller and Mendelsohn, 2007). Health damages comprise 94% of this total.

In Japan, the right to compensation for pollution-related health damage is written into the law and includes compensation for diseases caused by air pollution. In 1988 the law became more prevention-oriented. The total amount paid in compensation between 1974 and 2006 has been around JPY 2 400 billion, a figure equal to 0.5% of Japan's GDP (as of 2005). Recently, a Tokyo High Court case recognised that both the government and car manufacturers could be held liable for the asthma of some of the plaintiffs. The car manufacturers will contribute JPY 3.3 billion, the national government JPY 6 billion and the Tokyo Metropolitan government JPY 6 billion for compensation, medical programmes and a 5-year health plan. The plaintiffs will get JPY 1.2 billion in direct compensation.

6. Environmentally harmful subsidies

Subsidies distort prices and affect resource allocation, production and consumption decisions. OECD governments transfer well over USD 400 billion/year to different economic sectors, and much of this support encourages practices that are potentially harmful to the environment. Countries are moving towards full cost-recovery for the provision of basic utilities, especially energy, but they have so far been largely unable to phase out environmentally harmful subsidies, despite progress in some sectors.

Agriculture. Support in OECD countries remains high, at over USD 380 billion/year. However, this support as a share of OECD GDP has gone down to 1.1%, compared with 2.5% in the late 1980s. In addition, the share of the most production distorting and potentially most environmentally harmful forms of support (i.e. those linked to outputs or variable inputs) has dropped from 86% in the late 1980s to 64% today. Payments not requiring any production have become more important in recent years and environmental cross-compliance conditions are increasingly being attached to support payments. Yet the most distorting forms of support continue to dominate, amounting to about USD 200 billion/year (OECD, 2007a, OECD, 2008).

Energy. OECD countries subsidise production at the rate of USD 20-30 billion/year. Most of the subsidies go to fossil fuels, followed by nuclear power (mainly for R&D). Coal subsidies still account for about 25% of OECD energy subsidies although they have decreased by 50% in the past decade. Energy subsidies in OECD countries are provided in the form of direct grants to cover losses in coal production, tax allowances for fuel producers, and price support and cheap loans to domestic producers. Subsidies for renewable resources may be seen as transitional during a "technology forcing" period. The debate is open regarding biofuels subsidies due to questions about their net contribution to reducing greenhouse gases and their impact on natural habitats and food prices (IEA, 1999, UNEP/OECD/IEA, 2002).

Fisheries. Support in OECD countries is about USD 6.2 billion/year. Two thirds of the support is for fisheries research, management, enforcement and infrastructure, and the remaining third is support for catching fish. The latter can be considered to be potentially harmful to the environment. The composition of support has changed over time and the share of environmentally harmful support has decreased. While support to fisheries appears small in nominal terms, it corresponds to about 20% of the value of landings (OECD, 2007b, 2008b).

Transport. Direct environmentally harmful subsidies are difficult to assess, due to features of this sector (e.g. large infrastructure costs). Exemptions and rebates from fuel taxes and VAT on international flights are estimated to amount to USD 40-50 billion/year in Europe. Yet transport is one of the main causes of environmental damage, thus generating significant negative externalities (an implicit subsidy). For instance, the difference between total revenues and total social costs for road and rail transport in Europe is conservatively estimated to be about USD 40 billion/year.

OECD work on environmentally harmful subsidies shows that subsidy reform will succeed only if the economic, social and environmental impacts are understood and the obstacles to reform adequately addressed. Lessons from successful reforms highlight the importance of: i) strong political leadership and a broad coalition; ii) high-quality information and transparency; iii) “opportunity windows” (i.e. implement reforms when the economy is growing); and iv) treating subsidy reform as part of broader reform package with clear stages and a well-managed process.

Work on environmentally harmful subsidies at the OECD and elsewhere reveals a general tendency to underestimate the amount of subsidies, even in the case of government transfers for which data are available. Furthermore, under-pricing of natural resources is generally not included as harmful subsidy in the work on environmentally harmful subsidies (OECD, 2005).

Objective 4 Addressing the Social-Environmental Interface

Achievements and Challenges

OECD countries have reduced emissions of the pollutants that are most harmful to health in the past decade, but they will need to do much more in the years ahead. Some countries have taken steps in the right direction by introducing measures to limit exposure to hazardous chemicals and air pollution, paying specific attention to the most vulnerable groups. Progress has been made in assessing the safety of existing industrial chemicals, and OECD countries have together developed an efficient harmonised chemical review framework. Yet there is still not enough information to fully assess the health and environmental risks of many chemicals, and further progress is likely to require a very long time. The EU Reach Regulation, the OECD High Production Volume Chemicals Programme, and the UN Strategic Approach to International Chemicals Management (SAICM) are further steps in the right direction.

OECD countries today spend 6-15% of GDP on health. A significant share of this is for treatment of birth defects, cancer, respiratory diseases and asthma, all of which can result, at least in part, from environmental exposures. Pollution reduces well-being and causes premature death in OECD countries (e.g. on the order of 3 to 5 deaths per 10 000 people due to air pollution), pointing to a need for stronger measures and precautionary action to meet environmental and public health objectives. Remaining challenges include reducing exposure to air pollutants, chemicals and noise, and increasing access to green spaces in urban areas. Improving communication with and education of the public concerning perceived health risks is an additional challenge.

Relative poverty in OECD countries increased overall during the decade, though with quite significant differences among countries, reflecting the allocation of the costs and benefits of economic growth among and within countries. The affordability of environmental services to households (e.g. water supply, sanitation, waste services) has become an important issue in a number of countries. The transition towards full cost pricing is thus to be designed, with proper transitional financial mechanisms and attention to social conditions.

Many countries are increasingly concerned about the distributional effects of environmental policies, i.e. the unequal distribution of clean air, water, access to green spaces and proximity to contaminated sites. Most OECD countries use a range of measures including differentiated tariff structures, direct income support and service vouchers to ensure access to and affordability of water, energy and waste disposal services for low-income households, while maintaining incentives for environmental improvements. Some countries have introduced water pricing that includes a social component to keep water affordable for low-income groups and a progressive component to encourage lower consumption overall. An alternative that might be more efficient is to keep the marginal incentives unchanged for all and to pay a lump sum to low-income households. A few countries have used some of the proceeds from environmentally-related taxes to reduce labour costs, although the employment effects of this “double dividend” approach are unclear and need to be assessed.

Most OECD countries have made progress with “environmental democracy” (i.e. provision of and access to environmental information, participation in environmental decision-making, and access to justice in environmental matters) as well as environmental education. However, in some cases, efforts to provide environmental information have been significantly cut. Access to environmental information has been uneven, particularly when held by ministries other than environment or by semi-public bodies. Access to courts has progressed, some countries making it possible for third parties to access courts on environmental cases.

7. Environmental democracy

The four components of environmental democracy – provision of information, access to information, public participation and access to justice – are also the pillars of the Aarhus Convention. OECD countries have made significant progress in the first two areas, with access to environmental information becoming a basic right for citizens in most OECD countries. The right of access to information and justice is embodied not only in the Aarhus Convention but also in national laws and administrative procedures and in international agreements and directives including the OECD Council Recommendation on Environmental Information, the Environmental Side-Agreement to the North American Free Trade Agreement, and the European Union Directive on freedom of access to information on the environment. Public scrutiny of government policies is making governments more careful. Access to justice is lagging behind in some countries, primarily due to financial barriers, lengthy court proceedings and misuse of access to justice.

Access to environmental information has become a basic right in most OECD countries...

OECD countries have made significant progress in the provision of and access to environmental information. Countries are also increasingly using environmental indicators to raise public awareness. Public authorities and private companies are co-operating to better inform citizens of the risks and measures related to accident prevention and preparedness. A number of countries have established information centres and education and training programmes for the public.

However, there are practical difficulties in providing and obtaining environmental information, and great variability in its quality and coverage. Ensuring that information systems keep pace with changing demands and policies, while maintaining continuity and regularity in core activities, is a challenge for all OECD countries. Continued efforts are needed to further improve the quality and timeliness of core environmental data and to fill remaining data gaps (e.g. biodiversity, marine issues, toxic contamination, and the economic and territorial dimensions of environmental performance). Countries need to strengthen their institutional capacity to respond to environmental information requests and clarify responsibilities, especially in non-environmental administrations and semi-public bodies.

It is necessary but not always easy to strike a balance between the public’s right to know and the private sector’s right to protect confidential business information. When conflicts arise, a facilitator or mediator can be useful to avoid costly and time-consuming judicial and other procedures. Full implementation of laws on integrated pollution control will help. But more could be done to raise citizens’ awareness of their information rights, to help people who use environmental information to identify the best sources, and to help the public obtain information efficiently.

...public scrutiny of government policies is making governments more careful...

Significant progress has been achieved in international frameworks on public participation. In the EU, Directive 2003/35/EC provides for public participation in drawing up certain plans and programmes relating to the environment. In the EU countries, national laws on environmental impact assessment (EIA) are in line with Directive 2001/42/EC on the assessment of environmental effects of certain plans and programmes. This directive came into force in 2004 and has been modified²⁸ to integrate the Aarhus Convention’s provisions on public participation.

²⁸ By Directive 2003/35/EC.

In the United States, broad mechanisms engage private individuals and organisations in decision-making processes. The concept of “maximum feasible participation” is applied at all government levels. In 2003, the Environmental Protection Agency issued a revised public involvement policy reflecting the changing needs of the public as well as the evolution of public participation techniques and technological options for information access. It outlines “effective and reasonable” ways to involve the public in the agency decisions on regulations and programme implementation, with focus on assuring compliance and strengthening partnerships. Environmental NGOs in the United States sometimes enter into partnerships with government agencies to enhance their influence and resources. Some smaller NGOs and local community groups are partners in regional and local initiatives (e.g. watershed management committees). Partnerships between industry and larger environmental NGOs on environmental issues are rarer²⁹ (OECD, 2005).

The Convention on Environmental Impact Assessment in a Transboundary Context (the Espoo Convention) entered into force in 1997. The convention obliges parties to notify and consult each other on all major projects that are likely to have a significant adverse environmental impact across boundaries. A Protocol on Strategic Environmental Assessment, adopted in 2003, also provides for extensive public participation in government decision-making in development sectors; however, it has yet to be enforced. The 2005 Paris Declaration on Aid Effectiveness calls upon all countries to intensify their efforts towards harmonising environment impact assessment approaches in development co-operation, “including addressing implications of global environmental issues, such as climate change, desertification and loss of biodiversity”.

Challenges include the lack of uniform regulations on EIA and a culture of resistance to public participation generally. Some countries have had difficulty enforcing legislative provisions that involve the public in environmental decisions, plans, programmes and policies. In countries where the involvement of the public is not sufficient, increasing the public's involvement in decision-making processes puts more pressure on governments.

...but access to justice remains a challenge in several OECD countries.

In OECD countries, the public has a constitutional right to seek protection of their rights and freedoms in a court of law, and both individuals and organisations have several options regarding access to justice. These include: i) a constitutional right to test cases in court, ii) extensive access to administrative procedures at special administrative boards for environmental issues, and iii) going to the Ombudsman. Practical measures include the provision of training for judges and NGOs, and the preparation of various publications and handbooks on access to justice. Sharing experiences in providing efficient access to justice may help to improve their practices in this area.

Providing access to justice appears to present the main challenge for parties to the Aarhus Convention. Although many European countries did not identify particular problems with access to justice³⁰, some countries mentioned that financial barriers, lengthy court proceedings, and misuse of the right of access to justice by NGOs were obstacles to implementation (UNECE, 2005). Requiring individuals to demonstrate a sufficient interest is an additional hurdle in several countries.

In Denmark, the Public Administration Act allows the public to demand a written statement for a decision reported verbally³¹. Decisions made by courts and special administrative boards for environmental issues are binding and can be enforced. The decisions of the Ombudsman are not binding, but in practice the administration generally follows the Ombudsman's recommendations. Bringing a case to court involves a fee for instituting legal proceedings and usually costs for legal and expert assistance. The Danish Administration of Justice Act does however provide for the possibility of free trials. There is also a certain

²⁹ Mainly because of industry perceptions that such efforts might fuel NGOs' expectations, and NGO perceptions that collaboration could undermine their independence.

³⁰ Directives 2003/4/EC and 2003/35/EC contain provisions on access to justice.

³¹ Decisions are normally announced in writing, in accordance with the principle of good administrative practice under which significant decisions must be announced in writing.

amount of public legal aid. Reviews by special administrative boards are essentially free in Denmark; however, in matters for the Nature Protection Board a charge has been set at DKK 500 per case (OECD, 2007).

In the United States, NGOs and citizens often turn to the federal courts to redress perceived environmental violations. For example, between 2001 and 2005, approximately 140 cases annually were brought against federal agencies alleging misapplication of the 1969 National Environmental Policy Act. Litigation continues to remain an integral part of environmental protection in the United States, where it is used as a tool to help shape the scope of government action. Recently, however, increasing emphasis has been placed on finding solutions without litigating, including through partnership approaches and compliance assistance (OECD, 2005).

8. Access to water for the poor

Water is an economic commodity with both environmental and social dimensions. OECD experience suggests that appropriate water pricing can contribute simultaneously to economic efficiency, resource conservation, and equity goals. The levels of water supply and sanitation have implications on human health and environment. In most OECD countries, water policies targeted at the poor have negligible impact on the water price of most consumers, as the aid provided is relatively small and poverty is relatively limited. More weight is given to social considerations in water pricing in less advanced OECD countries, where water sold at real cost would represent a larger fraction of household budgets and where income inequality is greater. In particular, the price of water sold by private water vendors to users not connected to public networks can be very high.

Access to water is a human right...

The right of access to water supply and sanitation is increasingly reflected in national laws. The right to water, which applies to the amount of drinking water required for essential human needs,³² is upheld in several OECD countries' laws³³ and in the constitutions of several non OECD countries.³⁴ In Belgium, for example, every person has a right to a minimum supply of drinking water (under an Arbitration Court decision), water pricing includes social considerations, and all regions have laws establishing the right of access to water³⁵ (OECD, 2007). In France, the new law on water and the aquatic environment (December 2006) includes a provision establishing the right to water. Most OECD and developing countries support the "right of access to water" and consider implementing this right to be a useful step towards meeting the Millennium Development Goals.³⁶

Public water supply infrastructure in OECD countries, is generally well-developed, serving at least 85% of the population (and often more than 90%).³⁷ Thus, the social and public health requirements for universal access have largely been fulfilled. However, in a few OECD countries or regions, the extent of coverage of water services is still suboptimal due to incomplete infrastructure and/or uneven water availability. Filling these "service gaps", including installing water service infrastructure for the first time, typically occurs over a transitional period. "Differentiated" approaches are possible (e.g. private wells, water trucks, septic tanks, community-managed systems). Mexico is an example of an OECD country where gaps still exist in the "first-time" provision of water and sanitation services, particularly in rural areas, where widely dispersed and marginalised communities lack access to basic water services, and peri-urban

³² Approximately 50 litres of water a day, or just over 18 m³ a year according to WHO standards.

³³ Including Belgium, France, Finland, Greece, Luxembourg, Spain and Portugal.

³⁴ E.g. Colombia, Ecuador, Gambia, Panama, Philippines, South Africa, Uganda, Uruguay, Venezuela, Zambia.

³⁵ Belgium can be considered as fully implementing the right to water in its internal legislation. The Belgian Parliament has supported changing the Constitution to strengthen social features of water supply. People in need will not be disconnected and the price of water will be affordable to poor households. VAT is at a reduced rate for water supply and does not apply to sanitation.

³⁶ Under the Convention on the Rights of the Child, 193 countries undertook to "take appropriate measures...to combat diseases and malnutrition...through the provision of clean drinking water".

³⁷ Except Turkey where 74% of the population is connected to public water supply.

areas, where informal settlements surround rapidly growing cities. The existing conditions, and therefore the transitional solutions, will differ between rural and urban settings.

...OECD countries are increasing household water charges...

Water prices vary widely among and within countries. The cost of delivering clean water to urban areas depends, among other things, on the proximity of water sources, the degree of purification needed and the settlement density of the area served. Prices charged to domestic and industrial users also include waste water treatment and may include additional charges (e.g. pollution and abstraction charges). Many countries have significantly increased their household water charges in recent years, to fulfil higher standards of waste water treatment³⁸ (OECD, 2003b) and to cover more of the full investment and operating costs. This trend is likely to continue and will require attention to affordability issues.

...while introducing policies to ensure affordability.

Affordability is the social aspect of water service provision that is most closely linked to pricing policies. Affordability of water services affects lower income groups and neighbourhoods, as individual households spend proportionally more on water services than wealthier households. Water affordability indicators suggest that in about half of the OECD countries, water charges for low-income households are already a significant affordability issue or will be in the future.

OECD countries address the water affordability issue through income support and tariff adjustment. All OECD countries provide some form of income support to help the poor afford water and sanitation. At the same time, most countries have introduced measures (Table 8.1) to make water more affordable to the population at large and to selected groups of people (e.g. large families, pensioners, poor people). These measures include reducing the VAT or waste water tax, using progressive social tariffs, providing targeted assistance for water to poor people (free first block, grants, forgiveness of arrears), avoiding water disconnection and abolishing annual fixed fees.

Income support to poorer households is sometimes channelled through social welfare systems or linked to housing benefit programmes, and there are also numerous examples of local authority assistance arrangements. Some countries have established funds to help write off water debt (France, Hungary), social funds for poor households financed by a small levy on water charges (Belgium's Wallonia and Brussels regions), and charitable trusts by privatised water companies to pay off water debts (England and Wales). Various tariff rebate and discount programmes, usually involving an amount for individual households fixed in advance (and thus like an income assistance measure in effect) exist in Australia, the Flanders region of Belgium, the United Kingdom and the United States. Other forms of assistance include flexible payment and debt recovery programmes, water vouchers, and assessment of needs by external welfare agencies (OECD, 2003b).

³⁸ In 1999, it was shown that for various periods up to the mid- to late 1990s, real household water charges in most OECD countries had been increasing by 2% to 6% per year. In 2003, most recent annual increases ranged between 0% and 4 %, with the mean annual increase having fallen from 3.7% to 1.6%.

Table 8.1 Measures to make drinking water more affordable

	Large subsidies ^a	Reduced VAT ^b	Reduced WWT ^c	Progressive tariff ^d	Social tariff ^e	Targeted assistance ^f	No dis-connection ^g	Free block ^h	Un-metered ⁱ	No fixed fee ^j	Income support ^k
Australia				Yes	Yes				Yes		Yes
Austria					Yes		Yes			Yes	Yes
Belgium		Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes
Canada	Yes								Yes		Yes
Czech Rep.	Yes	Yes								Yes	Yes
Denmark							Yes		Yes		Yes
Finland						Yes					Yes
France		Yes		Yes/No ^l		Yes	Yes				Yes
Germany		Yes					Yes				Yes
Greece	Yes			Yes	Yes						Yes
Hungary	Yes				Yes	Yes				Yes	Yes
Iceland							Yes	Yes			Yes
Ireland	Yes						Yes	Yes	Yes	Yes	Yes
Italy	Yes	Yes		Yes	Yes						Yes
Japan		Yes	Yes	Yes							Yes
Korea				Yes			Yes			Yes/No ^l	Yes
Luxembourg				Yes	Yes	Yes	Yes				Yes
Mexico	Yes			Yes	Yes	Yes	Yes		Yes		Yes
Netherlands		Yes	Yes								Yes
N. Zealand									Yes		Yes
Norway							Yes	Yes			Yes
Poland	Yes				Yes					Yes	Yes
Portugal	Yes	Yes		Yes	Yes						Yes
Slovak Rep.	Yes										Yes
Spain	Yes	Yes		Yes	Yes						Yes
Sweden							Yes				Yes
Switzerland	Yes	Yes					Yes				Yes
Turkey	Yes			Yes							Yes
UK		Yes			Yes	Yes	Yes		Yes		Yes
US				Yes/No ^l	Yes	Yes					Yes

a) Subsidies for water supply and/or sanitation over 30% of service cost.

b) VAT on water below normal rate.

c) Reduced waste water tax or other water charges for the poor (in many cases the WWT for households is a flat rate and indirectly linked to property size or value).

d) Progressive water tariff in general use.

e) Social water tariff (reduced price for certain groups of users).

f) Targeted assistance, i.e. grants or forgiveness of arrears for water provided to poor people.

g) No disconnection of water supply of poor people with arrears for water or for municipal tax.

h) Provision of a first block at zero price for poor people or all people.

i) Provision of water to individual dwellings is unmetered in most cases (flat rate tariff for households).

j) Only proportional fee.

k) Income support of poor people.

l) Yes/No: used but not in most cases.

Source: OECD Environmental Performance Reviews: Water, the Experience in OECD Countries, Paris, 2006.

Water tariff-related measures have clear potential benefits. For instance, they provide free or inexpensive first block for the household and use progressive pricing to reflect the transition from “basic” to “discretionary” water use, approaching a level close to marginal social cost. In Lisbon, for example, the first block (5 m³ per month) costs a quarter of the price of the second block. Progressive pricing is financed by cross-subsidies from large users, helping to discourage excessive water consumption. This approach is used in Australia, Belgium, Greece, Italy, Japan, Korea, Luxembourg, Mexico, Portugal, Spain, Turkey and the United States, as well as in many non-OECD countries. As long as the first block is not too large, this arrangement is better for equity and environment than other tariff structures. A separate fixed charge for each household (perhaps varying by property type) is acceptable, but there are strong arguments for limiting its coverage to customer-specific costs (e.g. metering, billing and collection fees). Such tariff structure may result in significant cross-subsidisation among households.

Achievements and Challenges

OECD countries have made significant progress in international co-operation by implementing global, regional and bilateral agreements (Annex 5) and through ministerial declarations and other commitments. Notable progress includes the reduction of emissions of ozone depleting substances, abatement of SO_x emissions, imposition of severe restrictions on dumping of waste at sea, control of maritime transport to prevent pollution from ships, and protection of certain species (e.g. cetaceans, migratory birds). Transboundary movements of hazardous waste are now well controlled. Pollutant loads to the Baltic Sea, the North Sea and other regional seas have decreased, as have emissions of traditional pollutants to international lakes and rivers. New regional co-operation agreements have been established and considerable progress has been made in bilateral co-operation. A wide-ranging set of international agreements is in place.

However, global environmental problems need to be addressed more effectively, and the OECD countries and developing countries could do more to solve them. In particular, countries should increase their climate change mitigation and adaptation efforts. OECD countries could also scale up their environmental assistance in the context of development co-operation, which remains significantly below the 0.7% GNP target for most OECD countries. Further progress is needed to protect marine and coastal environments, especially against eutrophication and ship-based pollution. In line with the MARPOL Convention, ships with an oil fuel capacity of over 600 m³ have been obliged to have a double hull from 2007 onwards. Environmentally and socially responsible scrapping of end-of-life ships is needed. Special co-operation efforts are needed in marine areas where fish stocks (e.g. cod) are threatened. Similarly, OECD countries could make further progress in reconciling trade and environmental policies and ensuring that foreign direct investment and export credits meet environmental requirements.

OECD countries should also strengthen their co-operation on transfrontier and regional issues to define joint strategies and common policies that are at least as effective as those used to address domestic issues. Close integration and interdependence of the economies of regional groups of countries (e.g. the European Union, North America, Northeast Asia) are likely to lead to novel approaches in environmental co-operation. Some OECD countries need to go further to support regional, economic and environmental convergence. Including environmental considerations in regional trade agreements offers many potential benefits (e.g. accelerating implementation, strengthening enforcement and standards). Obtaining these benefits should not be hindered by the increasing complexity of managing a variety of environmental arrangements.

Countries can also strengthen international co-operation at low cost through, for example, promoting environmental capacity-building in developing countries (e.g. cleaner-technology centres), further developing international environmental law, and taking a more open-minded approach to addressing responsibility and liability issues. However, progress in the efficiency of international environmental governance is still needed. A number of OECD countries support the creation of United Nations Environment Organisation. Substantial efforts will be required to implement important international commitments (e.g. climate change, other multilateral environmental agreements, Millennium Development Goals) and to find solutions to such problems as sustainable resource management and risk prevention.

9. The marine environment

OECD countries have made some progress in addressing pollution from land-based sources...

Marine ecosystems are affected by excessive nutrient loading, which causes eutrophication in estuaries, bays and large areas of semi-enclosed seas (e.g. the Baltic Sea in Europe, the Gulf of Mexico and the Seto Inland Sea in Japan). Most of the nutrients come from land-based activities; their sources include atmospheric deposition from fossil fuel combustion (around half of river nitrogen exports to coastal

waters), agricultural runoff (around a third) and municipal sewage and industrial discharges (the remainder). Global river nitrogen exports to the oceans are expected to decrease.³⁹

The marine environment is addressed under various international frameworks. The 2002 Johannesburg Plan of Implementation encourages further implementation of the Global Programme of Action and Montreal Declaration on the protection of marine environment from land-based activities, with particular emphasis on municipal waste water, physical alteration and destruction of habitats, and nutrients in 2002-2006. A key element of the 2005 EU Strategy for the Protection and Conservation of the Marine Environment is a proposed Marine Framework Directive to achieve "good ecological status" in the European Seas. Another example of an international framework is 1974 Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area. While OECD countries have made progress in domestic waste water treatment, nutrient over-enrichment from agricultural runoff remains a serious problem in many rural areas. Efforts directed at curtailing phosphorus and nitrogen inputs from point sources have been relatively successful; diffuse inputs have proven more difficult to control. Most OECD countries have taken adequate steps to deal with heavy metals. Disposal of electronic waste is an emerging problem. Concentrations of PCBs, dioxins and DDT remain much higher in the Baltic than in the North Sea and the open Atlantic. Bans on discharging radioactive or industrial waste to the sea have succeeded in reducing marine pollution.

...in reducing pollution from ships...

Ocean shipping is the most important transport mode in international trade, and volumes are growing rapidly. Its share of CO₂ emissions, NO₂ and particulate matter are increasing. While oil spills have significantly decreased in volume over the last two decades, oil discharges continue to occur as a result of shipping accidents and operations (e.g. deballasting, tank washing, dry-docking, fuel and discharge oil). It is estimated that about 220 000 vessels of more than 100 tonnes each cross the Mediterranean each year discharging 250 000 tonnes of oil. In addition, over the 1990–2005 period, about 80 000 tonnes of oil were spilled in the Mediterranean Sea because of shipping accidents (EEA, 2006). The amount of oil spills into U.S. waters has decreased markedly in line with a worldwide trend attributed to better regulatory enforcement (OECD, 2005b).

The MARPOL 1973/78 Convention for the Prevention of Pollution from Ships covers all technical aspects of preventing pollution from ships⁴⁰. Since August 2007, the oil fuel tanks in all ships with an aggregate oil fuel capacity of 600m³ and above are obliged to be located inside the double hull. Under the Safety of Life At Sea (SOLAS) Convention, double hulls have been required in all passenger ships. To reduce air pollution from ships, MARPOL Annex VI sets limits on SO_x and NO_x emissions from ship exhaust and prohibits deliberate emissions of ozone-depleting substances. Ships must either install an exhaust gas cleaning system or limit SO_x emissions. The Baltic and North Seas have been designated as a SO_x Emission Control Area (SECA). MARPOL Annex VI is currently under review by the member countries of the International Maritime Organization (IMO) with the view to enhancing its provisions. The IMO is also developing options to address greenhouse gas emissions from ships and is updating its greenhouse gas inventory from ships with a view to contributing to the development of a carbon indexing system. Also under review is MARPOL Annex V, which sets rules on how ships manage garbage (including crews' trash, cargo associated wastes, and maintenance wastes).

The 1972 London Convention on the Prevention of Dumping of Wastes and other Matter limits the discharge of wastes generated on land and disposed of at sea. The 1996 Protocol, which entered into force in March 2006, is a separate agreement to modernise and update the London Convention. The 1996 Protocol incorporates both "precautionary" and "polluter pays" principles. Contracting parties must take effective measures to prevent, reduce, and, where practicable, eliminate marine pollution caused by dumping or incineration at sea.

³⁹ OECD projections for 2030 show a decrease of 5% compared to 2000.

⁴⁰ Except waste dumping, covered by the London Convention.

The risks of maritime accidents along several coastal areas are high, due to the heavy shipping traffic and fishing activity. In the Baltic Sea area, over the decade, the annual number of shipping accidents doubled over the decade. An average of 7% of all reported accidents resulted in small-scale pollution during this period (Helsinki Commission, 2006).

The International Convention on Oil Spill Preparedness, Response, and Cooperation (OPRC Convention) requires the establishment of measures for pollution incidents. Liability and compensation regimes for oil pollution incidents are covered by the 1992 Protocols to the International Convention on Civil Liability for Oil Pollution Damage 1969 and International Convention on Civil Liability for Bunker Oil Pollution Damage 2001. Also in 2005, the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage 1992 entered into force. A Protocol to extend the Convention to cover hazardous and noxious substances (HNS), adopted in 2000, entered into force in June 2007. The International Convention on Liability and Compensation for Damage in Connection with the Carriage of HNS by Sea, adopted in 1996, has not yet entered into force.

The goals of the Paris Memorandum of Understanding on Port State Control (1980) include inspecting at least 25% of foreign merchant ships each year. In 2005, the 22 member countries carried out 21 302 inspections. Progress was observed in the decreased number of detentions, which reached an all-time low of 994, compared to 1 699 in 2001. On the other hand, a higher number of ships have been refused access to ports. In 2005 a total of 28 ships were refused entry to a port, bringing the total number of refused ships between 2003 and 2005 to 96.⁴¹ Considering the probable expansion of the signatories of the Memorandum from 20 to 27 countries in 2007, port state control will build more on a risk based approach.

The OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic prohibits ocean dumping of waste or other matter with the exception of dredged material, waste from fish processing and natural inert material. In 2004, 12 OSPAR contracting countries dumped a total of 112.7 million tonnes of waste (mostly dredged materials) into the North-East Atlantic (OSPAR Commission, 2006a). The OSPAR Commission reports that 2004 saw 171 accidental chemical spillages (1 067 tonnes) and 678 accidental oil spillages (200 tonnes) in the North-East Atlantic. Since 2001, the use and discharge of chemicals have also been regulated by OSPAR. Both the total quantity of chemicals used offshore and the amount discharged into the sea both decreased. OSPAR also reports that the amount of chemicals on the List of Chemicals for Priority Action (LCPA) discharged into the sea has decreased (OSPAR, 2005, 2006b). OSPAR Contracting Parties have continued with the implementation of OSPAR Recommendation 2001/1, which has the 15% reduction target for 2006 in the absolute amount of oil contained in produced water discharged by Contracting Parties' offshore installations. Contracting Parties are making efforts to reach the 15% reduction target, although some of them have indicated difficulty in reaching that target.

...and in contributing to establish an international regime for scrapping of end-of-life ships

Between 400 and 700 sea-going ships of over 2 000 dead weight tonnes (dwt) are dismantled for recycling worldwide each year, mostly in India, Bangladesh, Pakistan, Turkey and China. While vessels are mostly composed of steel and other metals (which is sought for recycling), they also contain hazardous materials such as asbestos, oils and oil sludge, heavy metals and persistent organic pollutants (POPs). Increased international attention is being devoted to the impacts of the ship-breaking and vessel demolition industry on worker health and safety. Since the 1980s, ship-breaking has increasingly moved to Asian countries, driven by the demand for scrap steel and the higher price of steel in those countries, the low labour costs in some Asian countries and the tighter environmental regulations in Europe and North America.⁴²

⁴¹ Research has indicated that most of these unwanted ships are still in operation in other areas, mostly in the Black Sea.

⁴² The scrapping of ships in Bangladesh, India and Pakistan takes place on sandy beaches without any containment to prevent water and soil pollution. It has been reported that vegetation and fish have disappeared from the dismantling sites at Alang (India) and Chittagong (Bangladesh) (EC Commission, 2007). In the South Asian scrap yards there is a high risk of dangerous accidents, due to the lack of heavy machinery and safety equipment. However, the governments of the South Asian states seem reluctant to enforce a change in practices as ship dismantling is an important economic activity. For example, Bangladesh derives 80-90% of its steel from end-of-life ships. (EC Commission, 2007).

Notable recent progress includes: the development of Technical Guidelines for the Environmentally Sound Management of the Full and Partial Dismantling of Ships, by Basel Convention parties, in 2002; the adoption of Waste-Specific Guidelines for Vessels Proposed for Disposal at Sea, by the Parties to the London Convention, in 2000; and the development of, and work to implement, guidelines for Asian countries and Turkey on safety and health in ship-breaking, by the International Labour Organisation. In 2003, the International Maritime Organization (IMO) developed Guidelines on Ship Recycling which recommend that vessels carry a “green passport”, documentation that can be updated throughout a ship’s life cycle. IMO is currently seeking contributions for a Ship Recycling Fund established in 2006, and is working toward a binding international regime for clean ship dismantling⁴³. This regime would provide regulations for: the design, construction, operation and preparation of ships to facilitate safe and environmentally sound recycling; the appropriate operation of ship recycling facilities; and the establishment of an appropriate enforcement mechanism (certification/reporting). In the meantime, the EU is drawing up a strategy for environmentally and socially responsible scrapping of end-of-life ships which could include requirements for a minimum level of ship recycling capacity in Europe. The United States government has established inter-agency committees to review and co-ordinate ship recycling and scrapping policies and activities in that country to ensure that health and environmental regulations⁴⁴ are followed.

10. Financing for the environment

While developing countries themselves hold the principal responsibility for their development paths, OECD countries can help them to establish good governance, to build human and institutional capacities and to mobilise internal and external resources. For many developing countries, official development assistance (ODA) has been the largest source of funds for environmental protection (e.g. projects relating to water supply and sanitation or water resource management). The total absolute levels of ODA for the environment have decreased, but the OECD countries have tried to increase the effectiveness of their assistance. Private international capital flows, particularly foreign direct investment also contribute to national and international development. The decade has witnessed an increasing private sector participation in environmental improvement in developing countries, both in providing environmental services, and in decreasing negative environmental impacts from foreign direct investment and private finance.

Official development assistance often remains far from targets...

ODA from members of the OECD’s Development Assistance Committee (DAC) grew steadily over the decade, recovering from its lowest level (USD 60 billion in 1997) to USD 103.7 billion in 2007.⁴⁵ Despite the increase, however, ODA represents only 0.3% of the members’ combined gross national income. This is well below the United Nations target of 0.7% of national income. Currently, five countries (Denmark, Luxembourg, the Netherlands, Norway and Sweden) meet or exceed this target, and six more (Belgium, Finland, France, Ireland, Spain and the United Kingdom) have pledged to do so before 2015 (United Nations, 2007).

The upward trends in the total ODA financial flows have been stimulated by the adoption of the Millennium Development Goals at the UN World Summit in 2000 and agreements at the 2002 Monterrey Conference on Financing for Development. In 2006, 16 of the DAC’s 22 member countries met the targets established at the 2002 Monterrey Conference. Several countries set additional targets⁴⁶ (OECD, 2006a), and the year 2005 saw a particular level of attention given to Africa.⁴⁷

⁴³ A draft convention on the safe and environmentally sound recycling of ships is being negotiated for adoption by a conference in 2008/2009, to enter into force a few years later (EMSA, 2007).

⁴⁴ For example, under the Toxic Substances Control Act and Resource Conservation and Recovery Act.

⁴⁵ In 2005, ODA reached an exceptionally high level of USD 106.8 billion due to large Paris Club debt relief operations (notably for Iraq and Nigeria).

⁴⁶ For example, the EU agreed in 2005 to further scale up its aid to provide 0.56% of its members’ combined GNI by 2010, or a minimum target of 0.51% for DAC EU members. Australia has announced that it would double its ODA to about AUD 4 billion

However, even if all new commitments are honoured, this falls short of the amounts widely considered necessary to achieve the Millennium Development Goals. Considering that the aid to sub-Saharan Africa, excluding debt relief, was static in 2006, it is question whether the Gleneagles G8 summit commitment to double aid to Africa by 2010 will be honoured.

...and ODA for the environment has declined

OECD Environmental Performance Reviews show that, the environment sector as a whole in developing countries has not benefited from the increased availability of aid money. When defined in broad terms, aid for the environment has been relatively stable over the last 15 years; but when defined narrowly, it has declined to 10% of total ODA. The decline in “core” environmental aid reflects a 17% reduction in support from bilateral donors (who have traditionally provided over 80% of this aid). There is a progressive shift from project support to structural adjustment lending, and more upstream mechanisms are used (e.g. general budget support, poverty reduction strategies, aid for debt relief). These new aid approaches aim to align donor actions with developing country priorities and implement them through national and local systems and institutions.

The middle of the decade has witnessed an upsurge in “extended” environmental aid, following a much stronger support of bilateral donors for water-related programmes (OECD, 2006c). The water sub-sector accounts for the lion’s share of “extended” environmental aid at a level of approximately 40% of total environmental aid. Donor support for biodiversity and solid waste has increased, but remains relatively small, at less than 2% of total environmental aid for each sub-sector. Aid for renewable energy (mostly hydro power projects) decreased significantly until 2003 but is picking up. Despite its importance for agricultural productivity, aid for land management has also decreased (OECD, 2007).

International environmental financing has also been provided in the context of the implementation of multilateral environmental agreements through the centralised funds, such as Global Environment Facility or the Multilateral Fund for the Implementation of the Montreal Protocol on ozone-depleting substances, or through mechanisms that engage both public and private entities, such as Joint Implementation and Clean Development Mechanism in the context of the Kyoto Protocol to the UN Framework Convention on Climate Change (Box 10.1).

dollars by 2010. Japan has indicated it will increase its ODA volume by USD 10 billion in aggregate over 2005-2009, compared to its ODA levels in 2004. Switzerland is to determine a new goal for 2009 and thereafter.

⁴⁷ The 2005 G8 Summit in Gleneagles agreed to a package of measures including commitments to double aid by 2010 for Africa. The G8 members also agreed to provide 100% debt cancellation for up to 38 heavily indebted poor countries (HIPC) countries worth USD 50 billion.

Box 10.1 Multilateral Environmental Financing Mechanisms

The Global Environmental Facility (GEF) is an independent financial organisation that provides grants to developing countries for projects that benefit the global environment and promote sustainable livelihoods in local communities. GEF projects address six global environmental issues: biodiversity, climate change, international waters, land degradation, the ozone layer, persistent organic pollutants (POPs). GEF projects are managed by GEF Implementing Agencies: UNEP, UNDP and the World Bank. Seven other international organisations, known as GEF Executing Agencies, contribute to the management and execution of GEF projects.

Since 1991, the Global Environment Facility has provided USD 6.8 billion in grants and generated over USD 24 billion in co-financing from other sources to support over 1 900 projects that produce global environmental benefits in more than 160 developing countries and countries with economies in transition. GEF funds are contributed by donor countries. After the 1994 restructuring, the GEF is replenished every four years. In 2006, 32 donor countries pledged USD 3.13 billion to fund operations for the following four years.

The Multilateral Fund for the Implementation of the Montreal Protocol assists developing country parties to the Montreal Protocol whose annual per capita consumption and production of ozone depleting substances is less than 0.3 kg to comply with the control measures of the Protocol. Currently, 146 of the 191 Parties to the Montreal Protocol meet these criteria.

Contributions to the Multilateral Fund from the industrialised countries (or non-Article 5 countries) are assessed according to the UN scale of assessment and the Fund has been replenished six times and most recently: USD 440 million (2000-02), USD 474 million (2003-05) and USD 400.4 (2006-08). The total budget for the 2006-08 triennium is USD 470 million.

Since the establishment of the Multilateral Fund in 1990 expenditures of USD 2.2 billion have been approved to support about 5 500 projects and activities in 144 developing countries. The implementation of these projects is expected to result in the phase-out of the consumption of more than 235 000 ODP tonnes and the production of about 173 000 tonnes of ozone depleting substances. Of this total, about 190 000 ODP tonnes of consumption and 116 000 of production have already been phased out from projects approved as of December 2005.

The Joint Implementation and Clean Development Mechanism are mechanisms under the Kyoto Protocol. The Protocol offers Parties to the UN Framework Convention on Climate Change the opportunity to meet their obligations to reduce greenhouse gas emissions by providing two flexible mechanisms in addition to the emission reduction efforts they pursue in their own countries: Joint Implementation (JI) projects and the Clean Development Mechanism (CDM). The current market size amounts to about USD 0.9 billion for both JI and CDM. Even though these flows of CDM related funds are likely to be only a small fraction of FDI and ODA flows, the funds may have the potential to leverage six to eight times the amount as investment capital towards GHG mitigation activities. To ensure successful JI and CDM projects, co-operation is needed between both public and private entities.

As August 2007, 762 projects had been registered by the CDM Executive Board as CDM projects. These projects reduce greenhouse gas emissions by an estimated 162 million ton CO₂ equivalent per year. All 2 100 projects under preparation (most of which not yet registered) would until the end of 2012 produce over 2.2 billion tonnes CO₂ equivalent reductions.

Private sector participation is an important complement for environmental improvement

As ODA and greater market access alone are unlikely to meet developing countries' sustainability needs in the medium-term, the 2002 UN Monterrey Consensus highlighted the need to mobilise private investment, both domestic and foreign, to achieve the Millennium Development Goals (United Nations, 2003). Foreign direct investment, because of its magnitude, is an important driver for the scale, structure and technology effects that affect environmental performance. New technologies and practices associated with FDI can improve the environmental performance of the host countries.

FDI flows to developing countries have grown in the decade and have reached more than USD 250 billion a year, more than double the flow of ODA (UNCTAD, 2005). However, the flow of private sector resources to developing countries has been very uneven and, in the case of portfolio investments, highly volatile. The majority of FDI (some 75%) has gone to just ten middle-income countries. Furthermore, FDI is heavily concentrated in just a few sectors, notably the automotive, chemicals, electronics, energy, petroleum and petrochemicals, and pharmaceuticals sectors.

Efforts have been made to decrease FDI's negative environmental effect...

Developing countries need to build up their national capacities to manage incoming flows and their impacts (e.g. target definition, regulation, rules of enforcement and compliance and stakeholder engagement). This need has been reinforced by the changing role of ODA from financing of projects to facilitating of private investment. Development co-operation agencies have supported this process by, among other things, helping countries develop the necessary investment climate to attract private investment in financially risky areas, such as energy or water sectors through public-private partnerships.

Multinational enterprises operating in developing countries have been encouraged to take responsibility for the environment. Among the currently available instruments, the OECD Guidelines for Multinational Enterprises stand out as the only instrument that a large number of governments are committed to support. The Environment Chapter of the Guidelines encourages multilateral enterprises to raise their environmental performance through improved internal environmental management and better contingency planning for environmental impacts (OECD, 2005a).

The decade also witnessed an increasing business contribution to the implementation of Multilateral Environmental Agreements. Business action that contributes to addressing the goals of the UN Framework Convention on Climate Change has increased significantly, especially since the entry into force of the Kyoto Protocol in 2005. Private sector action in addressing the goals of the UN Convention on Biological Diversity is much lower, but nevertheless increasing (OECD, 2005b). There is also a growing involvement of the financial sector, especially in the area of climate change.

...and increase the role of private finance

Private finance is provided through three main channels, all of which may influence the environmental outcomes of financial flows: lending, risk management, and asset gathering and management. By providing project loans, private financiers facilitate technology transfer to developing countries and may lend support to activities with high environmental impacts (positive or negative). The financial sector has developed standards to incorporate social and environmental criteria in lending practices, investing in clean technology (e.g. renewable energy), and offering metrics and benchmarks to assess the effect of environmental issues on risk management.

Considerable progress has been made in recent years in ensuring that projects benefiting from officially supported export credits through export credit agencies and investment insurance agencies are subject to environmental reviews and comply with certain environmental standards. After years of virtually ignoring the environmental impacts of projects supported by export credit agencies, OECD countries agreed in late 2003 on a Council Recommendation on Common Approaches on Environment and Officially Supported Export Credits. Since then, a number of OECD countries have strengthened the EIA requirements for projects benefiting from credit guarantees, and have taken other steps to ensure transparency in integrating environmental objectives into project planning and financing decisions. Recently, international co-operation among the export credit agencies focused on flexible payment terms for project financing and structured finance, and for export transactions for renewable energies and water projects.⁴⁸

⁴⁸ With regard to maximum repayment terms for export credits falling within the scope of the OECD Arrangement on Officially Supported Export Credits ("Consensus"), a decision was adopted in 2005. The decision grants maximum repayment terms of up to 15 years for renewable energies and water projects.

ANNEXES

1. OECD Programme on Environmental Performance Reviews
2. Selected Environmental Data
3. Selected Economic Data
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5. Selected Multilateral Environmental Agreements
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ANNEX 1. OECD PROGRAMME ON ENVIRONMENTAL PERFORMANCE REVIEWS

1. Programme roots

The Environmental Performance Reviews programme was initiated by OECD Environment Ministers in 1991 and subsequently endorsed by the OECD Council and the Heads of States and Governments of the G7. The reviews help countries improve their individual and collective performance in environmental management. Environmental performance is interpreted to encompass international and domestic environmental commitments and objectives, covering the hierarchy of intentions, actions and results.

These "peer" reviews use the pressure-state-response model, which evaluates the state of environment as a result of pressures from human activities, and of responses by governments (policies), enterprises and households. They examined for each country: i) environmental management in pollution control and nature conservation;⁴⁹ ii) sustainable development and integration of environmental concerns in other policies and sectors;⁵⁰ and iii) international environmental commitments.⁵¹ Material in this report draws on: i) the country reviews in 2002-2008; ii) environmental data collected and published by the OECD; and iii) environmental indicators developed by the OECD. Since its inception, this OECD programme has carried out 60 performance reviews of OECD countries and in addition the reviews of Chile, China and the Russian Federation.

2. Meeting international and domestic commitments

Environmental policies in OECD countries have evolved over time. Initially, policies focused on cleaning up existing pollution (curative policies) and on reducing point source pollution at the point of discharge (i.e. end-of-pipe measures). Later, they moved towards modifying production processes (preventive policies) in order to minimise pollution generated (i.e. cleaner production). While much remains to be done to eliminate long-standing environmental problems in OECD countries, and to "stay the course" with regard to many earlier management strategies, the sustainable development perspective adopted at the 1992 Rio Conference stimulated a further move towards integrated policies taking environmental concerns into account in economic and sectoral decisions.

Domestic and international environmental issues are at the forefront of the policy agenda. This has led to an unprecedented range of international and domestic commitments implying:

- increased environmental expenditure and, as an indispensable corollary, increased and innovative efforts towards cost effectiveness in achieving commitments;
- increased efforts to integrate environmental policies and other government policies, and to integrate initiatives from all levels of government with those of enterprises and citizens;
- increased and more effective international co-operation.

3. Recognising a wide diversity in country conditions

Although OECD countries share a commitment to democratic ideals, pluralistic institutions and market-oriented economies, they have very diverse physical, economic, social, cultural and environmental conditions that need to be taken into account when evaluating their environmental performance. There are marked differences among OECD countries in, for example, demographic conditions (population growth ranging from -3% to +18% in the review period), economic conditions ("most developed" versus "converging"), density of pressures from economic activities and population, endowment in natural resources, environmental institutions (federalist versus decentralised), and environmental administrative culture (mature versus young, co-operative versus confrontational, result-oriented versus process-driven). Ten OECD countries (with a total population of 330 million) have GDP per capita well below the OECD average and face issues of environmental convergence, in parallel to those of economic and social convergence.

⁴⁹ Corresponding to Objective 1 of the Strategy.

⁵⁰ Corresponding to Objectives 2, 3 and 4 of the Strategy.

⁵¹ Corresponding to Objective 5 of the Strategy.

ANNEX 2. SELECTED ENVIRONMENTAL DATA

I.A.: SELECTED ENVIRONMENTAL DATA (1)	OECD EPR / SECOND CYCLE																															
	CAN	MEX	USA	JPN	KOR	AUS	NZL	AUT	BEL	CZE	DNK	FIN	FRA	DEU	GRC	HUN	ISL	IRL	ITA	LUX	MLD	NOR	POL	PRT	SLO	ESP	SWE	CHE	TUR	UKD*	OECD*	
LAND	9971	1958	9629	378	100	7713	270	84	31	79	43	338	549	357	132	93	103	70	301	3	42	324	313	92	49	506	450	41	779	245	35042	
Total area (1000 km ²)	8.7	9.2	25.1	17.0	9.6	18.5	32.4	28.0	3.4	15.8	11.1	9.1	13.3	31.5	5.2	8.9	9.5	1.2	19.0	17.1	18.9	6.4	29.0	8.5	25.2	9.5	9.5	28.7	4.3	30.1	16.4	
Major protected areas (% of total area)	2.5	1.2	2.7	9.0	20.1	0.2	2.6	2.9	10.7	6.9	7.8	5.9	7.6	10.4	2.9	5.8	0.7	7.9	5.2	-	13.8	10.1	4.8	2.3	3.7	3.5	5.2	3.6	3.6	6.3	2.2	
Nitrogenous fertiliser use (t/km ² of agricultural land)	0.06	0.04	0.08	1.24	1.20	-	0.02	0.09	0.69	0.10	0.11	0.06	0.27	0.17	0.12	0.17	-	0.05	0.58	0.33	0.41	0.08	0.06	0.40	0.16	0.14	0.05	0.10	0.06	0.21	0.07	
Pesticide use (t/km ² of agricultural land)	192	256	191	1011	1560	62	685	492	1790	287	912	290	514	689	245	207	65	1139	488	4351	2142	845	315	498	226	339	409	794	290	674	208	
Livestock densities (head of sheep eq./km ² of agr. land)																																
FOREST	45.3	33.9	32.6	68.9	63.8	21.4	34.7	41.6	22.4	34.1	12.7	75.5	31.6	30.2	22.8	19.5	1.3	9.4	23.3	34.5	9.5	39.2	30.0	36.9	41.6	33.3	73.5	30.8	27.0	11.6	34.4	
Forest area (% of land area)	0.4	0.2	0.6	0.4	0.1	0.6	...	0.7	0.9	0.7	0.7	0.7	0.6	0.5	0.6	0.5	-	0.7	0.5	0.5	0.6	0.5	0.6	0.8	0.5	0.5	0.7	0.8	0.5	0.6	0.6	
Use of forest resources (harvest/growth)	1.6	0.2	2.1	10.7	6.1	4.0	3.4	0.4	24.2	0.3	3.8	1.4	6.8	1.8	2.7	0.1	2.8	11.2	7.2	-	15.6	3.6	0.3	17.6	0.1	6.2	2.2	0.6	0.5	2.7	4.0	
Tropical wood imports (USD/cap.)																																
THREATENED SPECIES	20.3	31.8	16.8	23.3	11.4	23.8	18.0	22.0	30.5	20.0	22.0	10.8	19.0	37.9	37.8	37.8	-	1.8	40.7	51.6	18.6	13.7	13.5	26.2	21.7	13.3	18.3	32.9	14.3	15.8	...	
Mammals (% of species known)	9.8	16.2	11.7	13.1	6.3	13.0	21.0	27.7	28.1	50.0	16.3	13.3	19.2	27.3	1.9	14.5	44.0	5.4	18.4	23.1	21.6	16.1	7.8	38.1	14.0	26.9	17.5	36.4	3.7	16.2	...	
Birds (% of species known)	29.6	27.6	31.7	36.0	8.9	1.0	10.0	50.6	23.8	41.5	15.8	11.8	36.1	68.2	26.2	43.2	-	23.1	35.1	27.9	22.1	9.4	21.0	62.9	24.1	51.4	10.9	38.9	11.1	11.1	...	
Fish (% of species known)																																
WATER	1.5	15.9	19.2	20.4	36.2	4.8	1.7	5.0	32.5	12.7	4.1	2.1	17.5	18.9	12.1	4.8	0.1	2.3	44.0	3.3	10.0	0.9	18.3	12.0	1.3	33.3	1.5	4.7	19.1	22.4	11.5	
Water withdrawal (% of gross annual availability)	72	35	71	67	79	...	80	86	46	71	88	81	79	93	56	60	50	70	69	95	99	76	59	60	52	55	85	97	36	98	68	
Public waste water treatment (% of population served)	1.2	1.4	5.3	4.7	1.7	0.2	0.6	-	-	-	1.1	0.1	0.7	0.3	0.1	-	1.9	0.3	0.3	-	0.6	2.7	0.2	0.2	-	0.9	0.3	-	0.5	0.7	26.2	
Fish catches (% of world catches)																																
AIR	64.0	25.9	44.8	5.9	8.5	123.6	20.4	3.2	13.8	21.4	4.0	13.0	7.6	6.8	49.1	12.8	27.5	17.0	7.1	6.3	3.8	5.2	33.2	20.7	16.5	28.9	4.4	2.3	26.9	11.8	25.7	
Emissions of sulphur oxides (kg/cap.)	2.1	2.9	1.2	0.2	0.4	4.2	0.9	0.1	0.5	1.2	0.1	0.4	0.3	0.3	2.2	0.8	0.8	0.5	0.3	0.1	0.1	0.1	0.1	2.7	1.1	1.2	1.3	0.1	0.1	3.4	0.4	
(kg/1000 USD GDP)	-34	-3	-37	-24	-50	58	54	-64	-60	-88	-88	-73	-65	-90	16	-87	12	-62	-77	-80	-67	-54	-61	-31	-84	-42	-63	-59	28	-81	-45	
% change (1990-2005)	73.6	14.0	57.3	15.0	27.1	78.0	39.6	27.3	25.6	27.2	34.3	33.5	19.8	17.5	29.9	20.1	94.0	28.0	19.0	30.3	21.1	42.6	21.3	24.6	18.1	35.1	22.7	11.5	15.0	27.1	32.1	
Emissions of nitrogen oxides (kg/cap.)	2.4	1.6	1.5	0.6	1.4	2.7	1.7	0.9	0.9	1.5	1.1	1.1	0.7	0.7	1.3	1.3	2.8	0.8	0.7	0.5	0.7	1.1	1.7	1.3	1.3	1.5	0.8	0.4	1.9	1.0	1.2	
(kg/1000 USD GDP)	-1	14	-26	-6	50	25	58	7	-26	-63	-32	-40	-34	-50	19	-15	1	-5	-43	-39	-38	-7	-49	4	-55	22	-35	-47	66	-45	-22	
% change (1990-2005)	17.0	3.7	19.6	9.5	9.3	18.5	8.5	9.4	10.7	11.6	8.8	10.6	6.4	9.9	8.6	5.7	7.5	10.6	7.7	24.9	11.2	8.0	7.8	6.0	7.1	7.9	5.6	6.0	3.0	8.8	11.0	
Emissions of carbon dioxide (t/cap.)	0.55	0.40	0.53	0.35	0.47	0.63	0.37	0.31	0.38	0.64	0.29	0.36	0.23	0.38	0.39	0.37	0.22	0.31	0.30	0.42	0.38	0.20	0.62	0.32	0.52	0.34	0.19	0.19	0.39	0.31	0.43	
(t/1000 USD GDP)	28	33	20	15	98	45	63	34	3	-23	-6	1	9	-16	36	-18	16	42	14	8	16	29	-15	59	-33	65	-4	9	70	-5	16	
% change (1990-2005)																																
WASTE GENERATED																																
Industrial waste (kg/1000 USD GDP)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Municipal waste (kg/cap.)	420	340	750	400	380	690	400	560	460	290	740	470	540	600	440	470	520	740	540	710	620	760	250	470	270	650	480	650	430	580	560	
Nuclear waste (t/Mtoe of TPES)	6.2	0.1	1.0	1.5	3.2	-	-	-	-	2.2	1.7	-	1.9	4.2	1.2	-	1.7	-	-	-	0.1	-	-	-	-	3.0	1.2	4.1	1.9	-	1.5	

.. not available. - nil or negligible.

UKD: pesticides and threatened species; Great Britain: water withdrawal and public waste water treatment plants; England and Wales.

1) Data refer to the latest available year. They include provisional figures and Secretariat estimates. Partial totals are underlined. Varying definitions can limit comparability across countries.

2) IUCN management categories I-VI and protected areas without IUCN category assignment; national classifications may differ.

3) Total imports of cork and wood from non-OECD tropical countries.

4) GDP at 2000 prices and purchasing power parities.

Source: OECD Environmental Data Compendium.

ANNEX 3. SELECTED ECONOMIC DATA

	CAN	MEX	USA	JPN	KOR	AUS	NZL	AUT	BEL	CZE	DNK	FIN	FRA	DEU	GRC	HUN	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SLO	ESP	SWE	CHE	TUR	UKD	OECD	
GROSS DOMESTIC PRODUCT																																
GDP, 2006 (billion USD at 2000 prices and PPPs)	1017	1028	11319	3537	1008	611	96	255	304	195	170	161	1743	2225	257	162	11	151	1556	28	494	188	505	198	79	1036	282	245	603	1760	31225	
% change (1990-2006)	55.4	60.9	59.1	23.3	136.7	68.4	62.4	42.6	37.6	31.5	43.0	44.5	34.9	30.1	62.5	38.6	64.7	174.6	23.5	108.2	49.4	65.0	79.2	40.2	46.5	60.7	42.1	22.2	86.3	47.7	48.7	
per capita, 2006 (1000 USD/cap.)	31.2	9.8	37.8	27.7	20.9	29.7	23.3	30.8	29.0	19.1	31.3	30.5	28.5	27.0	23.1	16.1	34.6	35.6	26.4	61.7	30.2	40.4	13.3	18.7	14.7	23.5	31.1	32.7	8.2	29.2	26.6	
Exports, 2006 (% of GDP)	36.3	31.9	11.1	16.1	43.2	20.9	29.3	56.3	87.5	76.3	52.0	44.5	26.9	45.1	18.6	77.8	32.2	79.8	27.9	166.4	73.2	46.6	40.3	31.1	85.7	26.0	51.3	52.5	28.2	28.4	26.0	
INDUSTRY																																
Value added in industry (% of GDP)	32	27	23	31	43	26	25	32	27	40	27	32	25	30	23	31	27	42	29	20	26	38	30	29	32	30	28	27	31	26	29	
Industrial production: % change (1990-2005)	46.7	51.3	55.9	32	210.9	30.5	29.5	70.1	21.0	11.8	38.3	75.6	18.2	16.9	19.5	92.2	..	312.8	10.5	57.6	20.8	35.5	113.0	15.1	19.5	27.0	55.3	27.6	78.3	8.6	34.6	
AGRICULTURE																																
Value added in agriculture (% of GDP)	3	4	2	1	4	4	7	2	1	4	3	4	3	1	7	4	9	3	3	1	3	2	3	4	5	3	2	1	12	1	3	
Agricultural production: % change (1990-2005)	25.6	41.5	27.6	-12.3	19.3	25.4	47.9	9.9	13.0	..	0.7	-3.9	0.9	-4.7	10.1	-10.5	5.4	2.6	10.7	13	-9.2	-9.4	-15.8	1.1	..	7.4	-10.2	-4.3	18.2	-8.0	..	
Livestock population, 2005 (millon head of sheep eq.)	118	275	787	53	30	283	99	17	25	12	24	8	156	117	21	12	1	50	64	6	42	9	58	19	6	100	13	12	111	113	2639	
ENERGY																																
Total supply, 2005 (Mtoe)	272	177	2340	530	214	122	17	34	57	45	20	35	276	345	31	28	4	15	185	5	82	32	93	27	19	145	52	27	85	234	5548	
% change (1990-2005)	29.9	42.0	21.4	19.3	128.9	39.3	22.9	37.1	15.2	-7.7	9.6	19.8	21.1	-3.2	39.7	-2.8	66.9	47.5	25.2	33.7	22.6	49.3	-6.9	53.1	-11.7	59.4	9.7	8.6	60.9	10.3	22.6	
Energy intensity, 2005 (toe/1000 USD GDP)	0.27	0.18	0.21	0.15	0.22	0.20	0.18	0.14	0.19	0.25	0.12	0.23	0.16	0.16	0.13	0.18	0.36	0.11	0.12	0.18	0.17	0.18	0.20	0.14	0.26	0.15	0.19	0.11	0.15	0.14	0.18	
% change (1990-2005)	-14.1	-7.5	-21.5	-1.2	1.5	-15.3	-22.9	-0.8	-13.8	-25.3	-20.7	-13.0	-8.2	-23.3	-10.4	-27.1	5.7	-43.2	3.3	-31.9	-15.5	-6.9	-44.8	10.6	-34.7	3.0	-19.3	-8.2	-8.4	-23.2	-15.1	
Structure of energy supply, 2005 (%)																																
Solid fuels	10.2	4.9	23.8	21.1	23.1	44.5	11.9	11.9	9.1	43.6	19.1	14.8	5.1	23.7	29.2	11.3	2.7	17.8	9.1	1.8	10.2	2.3	58.1	12.6	22.2	14.1	5.0	0.6	26.3	16.2	20.4	
Oil	35.5	58.8	40.8	47.4	45.0	31.1	40.4	42.5	40.7	21.6	42.1	32.0	32.5	35.8	57.7	26.5	24.5	56.7	45.2	70.3	41.0	42.8	23.6	59.8	18.1	49.1	28.3	48.1	35.0	36.3	40.6	
Gas	29.4	25.0	21.8	13.3	12.8	18.9	18.9	24.2	25.2	16.6	22.6	10.8	14.6	23.4	7.7	44.4	..	23.0	39.0	26.2	44.0	15.6	13.0	14.1	30.8	20.5	1.6	10.5	26.7	36.4	21.8	
Nuclear	8.8	1.6	9.0	15.0	17.9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydro, etc.	16.1	9.7	4.7	3.2	1.2	5.5	28.9	21.4	2.9	4.2	16.3	24.3	5.9	4.8	5.4	4.5	72.7	2.6	6.7	1.7	3.6	39.3	5.3	13.5	4.5	6.0	29.2	17.9	11.9	2.0	6.2	
ROAD TRANSPORT																																
Road traffic volumes per capita, 2004 (1000 veh.-km/cap.)	9.8	0.7	16.2	6.5	3.2	9.8	12.3	9.3	9.0	4.6	7.8	9.7	8.6	7.1	8.7	2.3	10.2	9.5	8.9	8.9	8.0	7.8	3.9	7.4	2.7	4.8	8.2	8.0	0.8	8.2	8.4	
Road vehicle stock, 2005 (10 000 vehicles)	1883	2205	24119	7404	1540	1348	271	502	559	439	245	282	3617	4803	552	333	21	198	3894	34	806	252	1472	552	150	2516	463	419	843	3217	64939	
% change (1990-2005)	13.8	129.3	27.8	31.1	353.5	37.9	47.0	36.0	31.2	69.4	29.5	26.2	27.1	28.8	118.7	49.4	59.8	108.5	30.2	68.0	40.7	29.9	126.8	151.3	44.4	74.2	17.9	28.9	257.1	35.0	38.7	
per capita (veh./100 inh.)	58	21	81	58	32	66	66	61	54	43	45	54	59	58	50	33	72	48	66	74	49	55	39	52	28	58	51	56	12	54	56	

.. not available. - nil or negligible.

1) Data may include provisional figures and Secretariat estimates. Partial totals are undefined.

2) Value added: includes mining and quarrying, manufacturing, gas, electricity and water and construction;

production: excludes construction.

3) Agriculture, forestry, hunting, fishery, etc.

4) Breakdown excludes electricity trade.

5) Refers to motor vehicles with four or more wheels, except for Italy, which include three-wheeled goods vehicles.

Source: OECD Environmental Data Compendium.

ANNEX 5. SELECTED MULTILATERAL ENVIRONMENT AGREEMENTS

SELECTED MULTILATERAL AGREEMENTS (WORLDWIDE) OECD EPR / SECOND CYCLE
 Y = in force S = signed R = ratified D = denounced
 Y = in force S = signed R = ratified D = denounced

	CAN	MEX	USA	JPN	ROA	AUS	NZL	AUT	BEL	CZE	DNK	FIN	FRA	DEU	GRC	HUN	ISL	IRL	ITA	LUX	LID	NOR	PRT	SVK	ESP	SWE	CHE	TUR	UKD	EU	
1946. Washington Conv. - Regulation of whaling Protocol	Y	D	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
1956. Washington Conv. - Road traffic	Y	D	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
1949. Geneva Conv. - Prevention of pollution of the sea by oil	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
1971. London Amendments to convention (Protection of the Great Barrier Reef)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
1957. Brussels Conv. - Limitation of the liability of owners of seagoing ships	Y	S																													
1979. Brussels Protocol	Y	S																													
1979. Geneva Conv. - Fishing and conservation of the living resources of the high seas	Y	S	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
1979. Washington Treaty - Antarctic Protocol to the Antarctic Treaty (environmental protection)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
1991. Madrid Conv. - Protection of workers against ionising radiations (ILO 115)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
1960. Geneva Conv. - Liability of operators of nuclear ships	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
1962. Brussels Conv. - Civil liability for nuclear damage	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
1963. Vienna Conv. - Civil liability for nuclear damage	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
1988. Vienna Joint protocol relating to the application of the Vienna Convention and the Paris Convention Protocol to amend the Vienna convention	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
1997. Vienna Treaty - Banning nuclear weapon tests in the atmosphere, in outer space and under water	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
1963. Moscow Conv. - International council for the exploration of the sea	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
1964. Copenhagen Protocol	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
1970. Copenhagen Conv. - Intentional liability for oil pollution casualties (INTERVENTION)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
1969. Brussels Protocol (pollution by substances other than oil)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
1973. London Conv. - Intentional liability for oil pollution damage (CLC)	Y	D	S	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
1969. Brussels Protocol	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1976. London Protocol	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1970. Bonn Conv. - Transport of goods by rail (CIM)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1971. Brussels Conv. - International fund for compensation for oil pollution damage (FUND)	Y	D	S	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
1976. London Protocol	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1976. London Protocol (replaces the 1971 Convention)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
2000. London Amendment to protocol (limits of compensation)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
2003. London Protocol (supplementary fund)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1971. Brussels Conv. - Civil liability in maritime carriage of nuclear material	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1971. London, Moscow, Conv. - Prohib. employment of nuclear and mass destruct. weapons on sea-bed, ocean floor and subsoil	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1971. Ramsar Conv. - Wetlands of International Importance especially as waterfowl habitat	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1982. Paris Protocol	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1987. Regina Regina amendment	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1971. Geneva Conv. - Protection against hazards of poisoning arising from benzene (ILO 134)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1972. London, Mexico, Moscow, Conv. - Prevention of marine pollution by dumping of wastes and other matter (LC)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1978. Amendments to Annexes (incineration at sea)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1978. Amendments to convention (settlement of disputes)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1980. Amendments to Annexes (list of substances)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1986. London Protocol to the Conv. - Prevention of marine poll. by dumping of wastes and other matter	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1972. Geneva Conv. - Protection of new varieties of plants (revISED)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1978. Geneva Amendments	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1991. Geneva Amendments	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1972. Geneva Conv. - Safe container (CSC)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1972. London, Moscow, Conv. - International liability for damage caused by space objects	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1972. Paris Conv. - Protection of the world cultural and natural heritage	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1973. Washington Conv. - International trade in endangered species of wild fauna and flora (CITES)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1974. Geneva Conv. - Prev. and control of occup. hazards caused by electrog. subst. and agents (ILO 139)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1976. London Conv. - Limitation of liability for maritime claims (LLMC)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1996. London Amendment to convention	Y	S																													
1977. Geneva Conv. - Protection of workers against occupational hazards in the working environment due to air pollution, noise and vibration (ILO 148)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1978. London Protocol - Prevention of pollution from ships (MARPOL-PROT)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1978. London Annex III	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1978. London Annex IV	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1978. London Annex V	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1978. London Annex VI	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1979. Bonn Conv. - Conservation of migratory species of wild animals	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1991. London Agreem. - Conservation of bats in Europe	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1992. New York Agreem. - Conservation of Sinal catademics of the Baltic and the North Seas (ASCOBANS)	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R

ANNEX 6. SELECTED SOURCES

Objective 1 Maintaining Ecosystem Integrity

1. The Arctic

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