

KEY INDICATORS

1. CLIMATE CHANGE – CO ₂ and greenhouse gas emission intensities	12
2. OZONE LAYER - ozone depleting substances	14
3. AIR QUALITY – SO _x and NO _x emission intensities	16
4. WASTE GENERATION – municipal waste generation intensities	18
5. FRESHWATER QUALITY – waste water treatment connection rates.....	20
6. FRESHWATER RESOURCES – intensity of use of water resources	22
7. FOREST RESOURCES – intensity of use of forest resources	24
8. FISH RESOURCES – intensity of use of fish resources	26
9. ENERGY RESOURCES – intensity of energy use.....	28
10. BIODIVERSITY – threatened species	30

CLIMATE CHANGE

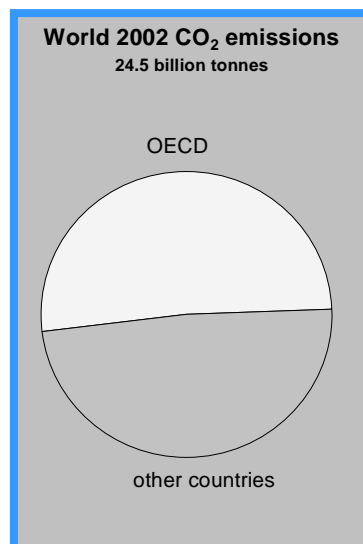
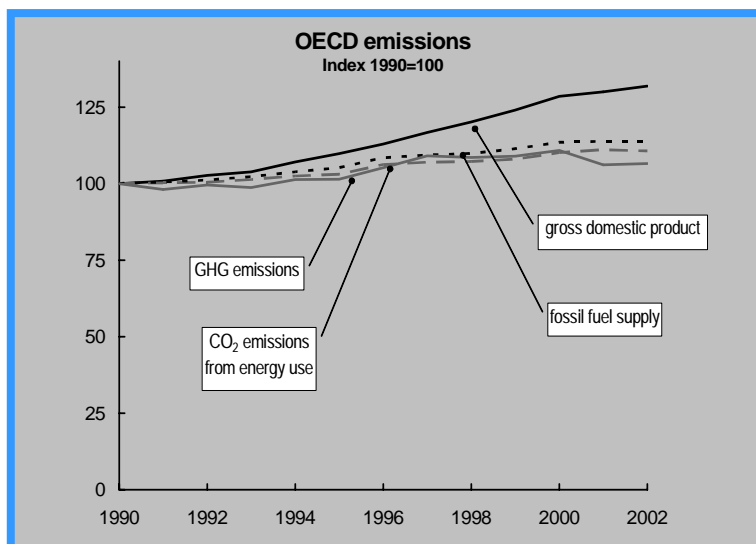
MAIN POLICY CHALLENGES

- Main concerns relate to effects of increasing atmospheric greenhouse gas (GHG) concentrations on global temperatures and the earth's climate, and potential consequences for ecosystems, human settlements, agriculture and other socio-economic activities. This is because CO₂ and other GHG emissions are still growing in many countries, despite some progress achieved in de-coupling CO₂ emissions from GDP growth (weak de-coupling).
- The main challenges are to limit emissions of CO₂ and other GHG and to stabilise the concentration of GHG in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. This implies strengthening efforts to implement related national and international strategies and to further de-couple GHG emissions from economic growth.

MEASURING PERFORMANCE

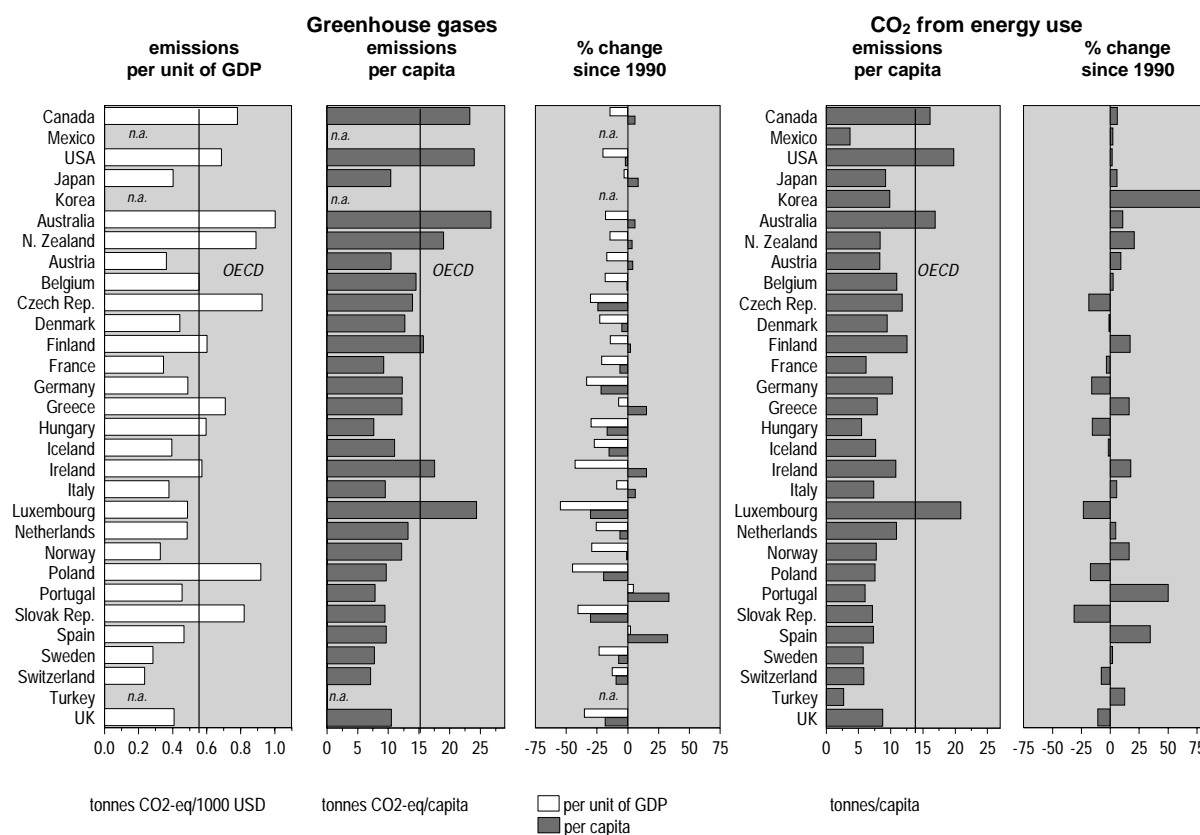
- Environmental performance can be assessed against domestic objectives and international commitments: The main international agreement is the United Nations Framework Convention on Climate Change (1992). Its 1997 Kyoto Protocol, establishes differentiated national or regional emission reduction or limitation targets for six GHG for 2008-12 and for the base year 1990. The Kyoto Protocol which has been ratified by 141 parties, including all but three OECD countries, is in force since the 16th February 2005.
- The indicators presented here relate to GHG emissions and to CO₂ emissions from energy use. They show emission intensities per unit of GDP and per capita for 2002, and related changes since 1990. All emissions presented here are gross direct emissions, emitted within the national territory and excluding sinks and indirect effects. GHG emissions refer to the sum of the 6 gases of the Kyoto Protocol (CO₂, CH₄, N₂O, PFCs, HFCs and SF₆) expressed in CO₂ equivalents. [Data sources: OECD-IEA, UNFCCC].
- When interpreting these indicators it should be noted that CO₂ is a major contributor to the greenhouse effect. They should be read in connection with other indicators from the OECD Core Set and in particular with indicators on global atmospheric concentrations of GHG, on energy efficiency and on energy prices and taxes. Their interpretation should take into account the structure of countries' energy supply, the relative importance of fossil fuels and of renewable energy, as well as climatic factors.

MONITORING TRENDS



- While a number of OECD countries have de-coupled their CO₂ and other GHG emissions from GDP growth, most countries have not succeeded in meeting their own national commitments. Their emissions continued to increase throughout the 1990s, despite gains in energy efficiency (i.e. weak de-coupling). Overall, since 1980, CO₂ emissions from energy use have grown more slowly in OECD countries as a group than they have world-wide. However, recent data suggest that OECD growth rates are now on par with those world-wide.

CURRENT STATE – EMISSION INTENSITIES



- Individual OECD countries' contributions to the greenhouse effect, and rates of progress towards stabilisation, vary significantly.
- CO₂ emissions from energy use and other GHG emissions continue to grow, particularly in the OECD Asia-Pacific region and North America. This can be partly attributed to energy production and consumption patterns and trends, often combined with overall low energy prices.
- In OECD Europe, CO₂ emissions from energy use stay more or less stable due to changes in economic structures and energy supply mix, energy savings and, in some countries, of decreases in economic activity over a few years.

THE BASIS: THE OECD CORE SET OF ENVIRONMENTAL INDICATORS

Core set indicators		Measurability
ISSUE – CLIMATE CHANGE		
Pressures	<ul style="list-style-type: none"> ♦ Index of greenhouse gas emissions <ul style="list-style-type: none"> – CO₂ emissions – CH₄ emissions – N₂O emissions – PFC, HFC, SF₆ emissions 	<p>Data on GHG emissions are reported annually to the Secretariat of the UNFCCC. Significant progress has been made with national GHG inventories, even though data availability remains best for CO₂ emissions from energy use.</p> <p>Continued efforts are needed to further improve the completeness of national GHG inventories and their coherence over time, and in particular to better evaluate sinks and indirect effects and to calculate comparable net GHG emissions for all countries.</p> <p>More needs also to be done to monitor the effects of the use of international transactions and flexible mechanisms of the Kyoto protocol on emissions outside the national territory.</p>
Conditions	<ul style="list-style-type: none"> ♦ Atmospheric concentrations of GHG ♦ Global mean temperature 	
Responses	<ul style="list-style-type: none"> ♦ Energy efficiency <ul style="list-style-type: none"> – Energy intensity – Economic and fiscal instruments 	

OZONE LAYER

MAIN POLICY CHALLENGES

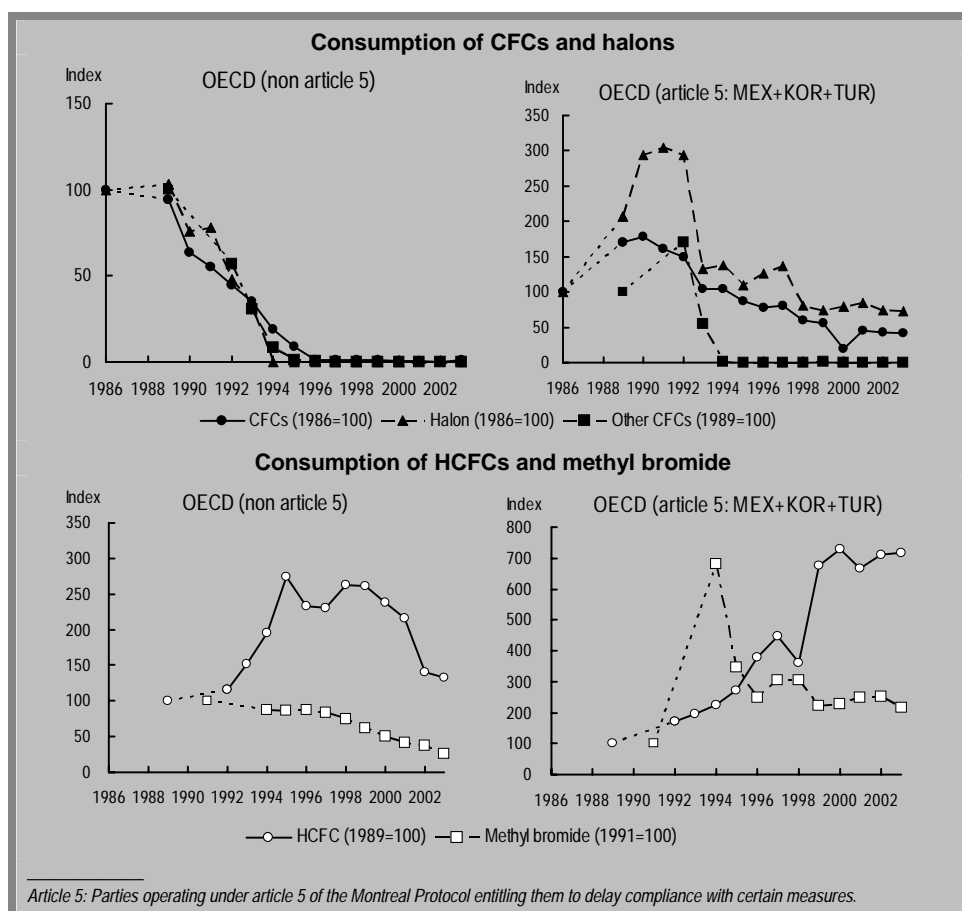
- Stratospheric ozone depletion (e.g. over the Antarctic and the Arctic oceans) remains a source of concern due to the impacts of increased ultraviolet B radiation on human health, crop yields and the natural environment. This is because of the long time lag between the release of ozone depleting substances (ODS) and their arrival in the stratosphere and despite a considerable decrease in CFC and halon production and consumption as a result of international agreements.
- The main challenges are to phase out the production and consumption of methyl bromide and HCFCs (by 2005 and 2030 respectively) in industrialised countries, and to reduce international movements of existing CFCs, including illegal trade.

MEASURING PERFORMANCE

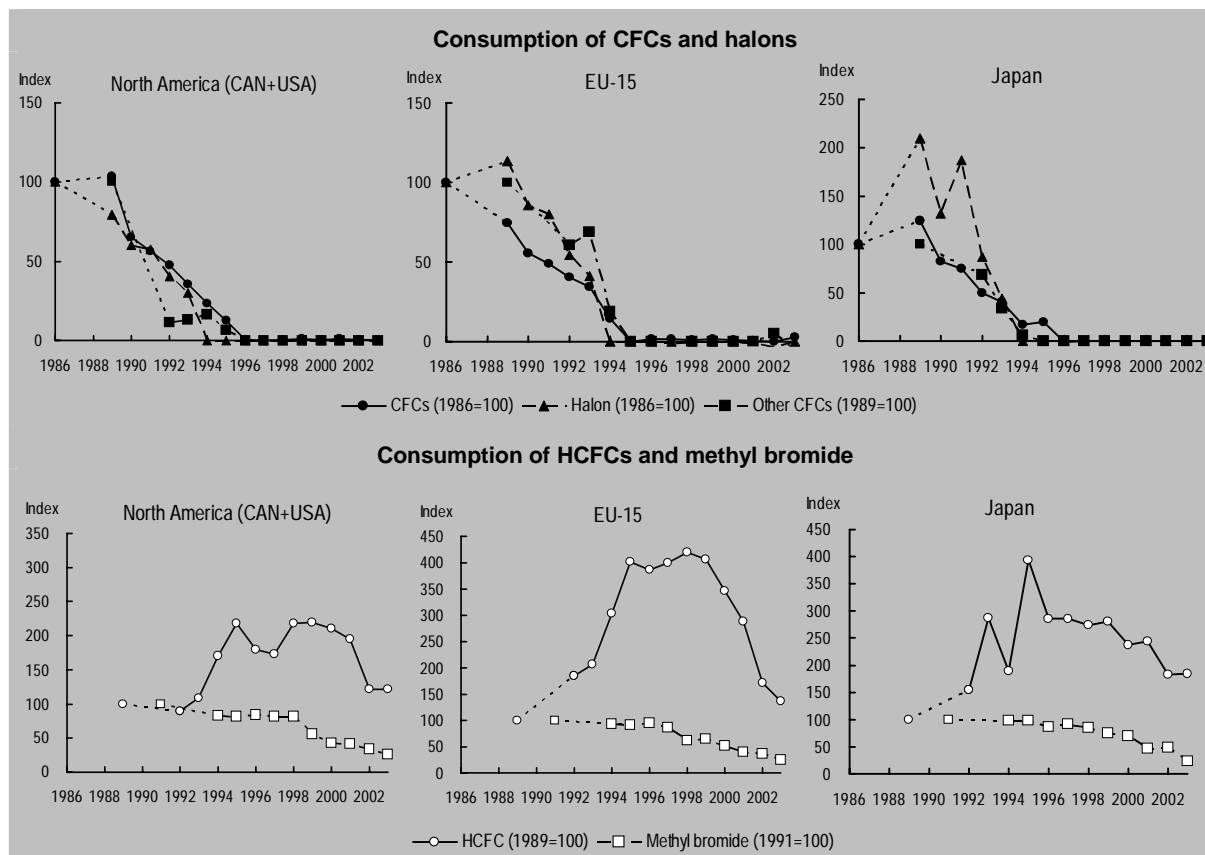
- Environmental performance can be assessed against domestic objectives and international commitments. The major international agreements are the Vienna Convention for the Protection of the Ozone Layer (1985), the Montreal Protocol on substances that deplete the ozone layer (1987) and its amendments London (1990), Copenhagen (1992), Montreal (1997) and Beijing (1999). The Montreal Protocol has been ratified by 188 parties, including all OECD countries.
- The indicators presented here relate to the consumption (i.e. production + imports - exports) of CFCs, halons, HCFCs, and methyl bromide, as listed in Annex A, B, C and E of the Montreal protocol. Basic data are weighted with the ozone depleting potentials (ODP) of the individual substances. [Data source: UNEP Ozone Secretariat].
- When interpreting these indicators it should be kept in mind that they do not reflect actual releases to the atmosphere and that individual substances vary considerably in their ozone-depleting capacity. These indicators should be read in connection with other indicators of the OECD Core Set and in particular with indicators on ground-level UV-B radiation and on atmospheric concentrations of ODS over cities.

MONITORING TRENDS

2



REGIONAL TRENDS



- As a result of the Montreal Protocol, industrialised countries have rapidly decreased their consumption of CFCs (CFC 11, 12, 113, 114, 115) and halons (halon 1211, 1301 and 2402). The targets set have been reached earlier than originally called for, and new and more stringent targets have been adopted.
- Many countries reduced consumption to zero by 1994 for halons and by end of 1995 for CFCs, HBFCs, carbon tetrachloride and methyl chloroform. As of 1996, there has been no production or consumption of these substances in industrialised countries except for certain essential uses, but there are still releases to the atmosphere for example from previous production or consumption in industrialised countries, and from production or consumption in countries that were given longer phase out schedules.
- Growth rates of HCFC consumption and related concentrations in the atmosphere are still increasing. HCFCs have only 2 to 12% of the ozone depleting potential of CFCs, but have a large global warming potential. Under current international agreements they will not be phased out completely for at least 25 years in industrialised countries and will remain in the stratosphere for a long time thereafter.

THE BASIS: THE OECD CORE SET OF ENVIRONMENTAL INDICATORS

Core set indicators	
ISSUE – OZONE LAYER DEPLETION	
Pressures	<ul style="list-style-type: none"> ♦ Index of apparent consumption of ozone depleting substances (ODS) ♦ Apparent consumption of CFCs and halons
Conditions	<ul style="list-style-type: none"> ♦ Atmospheric concentrations of ODS ♦ Ground level UV-B radiation ♦ Stratospheric ozone levels
Responses	<ul style="list-style-type: none"> ♦ CFC recovery rate

Measurability
Actual emissions of ODS are difficult to measure and related data are weak. Production or apparent consumption are used as a proxy. Such data are available from the Secretariat of the Montreal Protocol.
To reflect the combined depletion capacity, the apparent consumption of each individual substance, weighted in proportion to its ozone-depleting potential relative to CFC11, can further be aggregated into a consumption index.

MAIN POLICY CHALLENGES

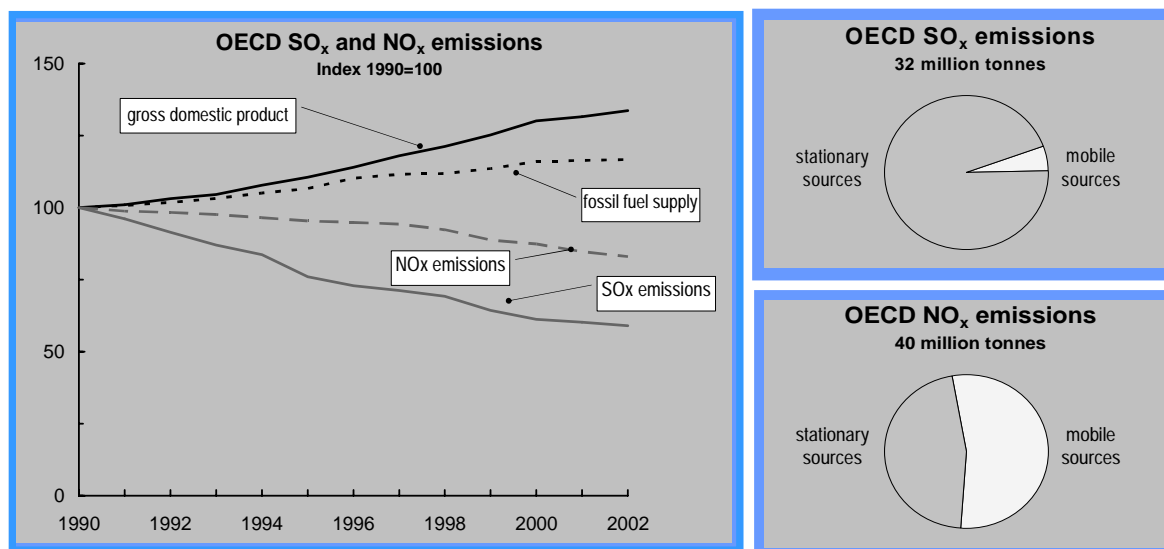
- Main concerns relate to the effects of air pollution on human health, ecosystems, and buildings, and to their economic and social consequences. Human exposure is particularly high in urban areas where economic activities and road traffic are concentrated. Causes of growing concern are concentrations of fine particulates, NO₂, toxic air pollutants, and acute ground-level ozone pollution episodes in both urban and rural areas. SO_x emissions have decreased significantly in many countries and have often been successfully de-coupled from fossil fuel use and economic growth (strong de-coupling).
- The main challenges are to further reduce emissions of NO_x and other local and regional air pollutants in order to achieve a strong de-coupling of emissions from GDP and to limit the exposure of the population to air pollution. This implies implementing appropriate pollution control policies, technological progress, energy savings and environmentally sustainable transport policies.

MEASURING PERFORMANCE

- Environmental performance can be assessed against domestic objectives and international commitments. In Europe and North America, acidification has led to several international agreements among which the Convention on Long-Range Transboundary Air Pollution (1979), and its protocols to reduce emissions of sulphur (Helsinki 1985, Oslo 1994, Gothenburg 1999), nitrogen oxides (Sofia 1988, Gothenburg 1999), VOCs (Geneva 1991, Gothenburg 1999), and ammonia (Gothenburg 1999). Two other protocols aim at reducing emissions of heavy metals (Aarhus 1998) and persistent organic pollutants (Aarhus 1998).
- The indicators presented here relate to SO_x and NO_x emissions, expressed as SO₂ and NO₂ respectively. They show emission intensities per unit of GDP for 2002, and related changes since 1990. [Data sources: UN-ECE EMEP, UNFCCC].
- When interpreting these indicators it should be kept in mind that SO_x and NO_x emissions only provide a partial view of air pollution problems. They should be read in connection with other indicators of the OECD Core Set and in particular with urban air quality indicators and with information on population exposure to air pollution.

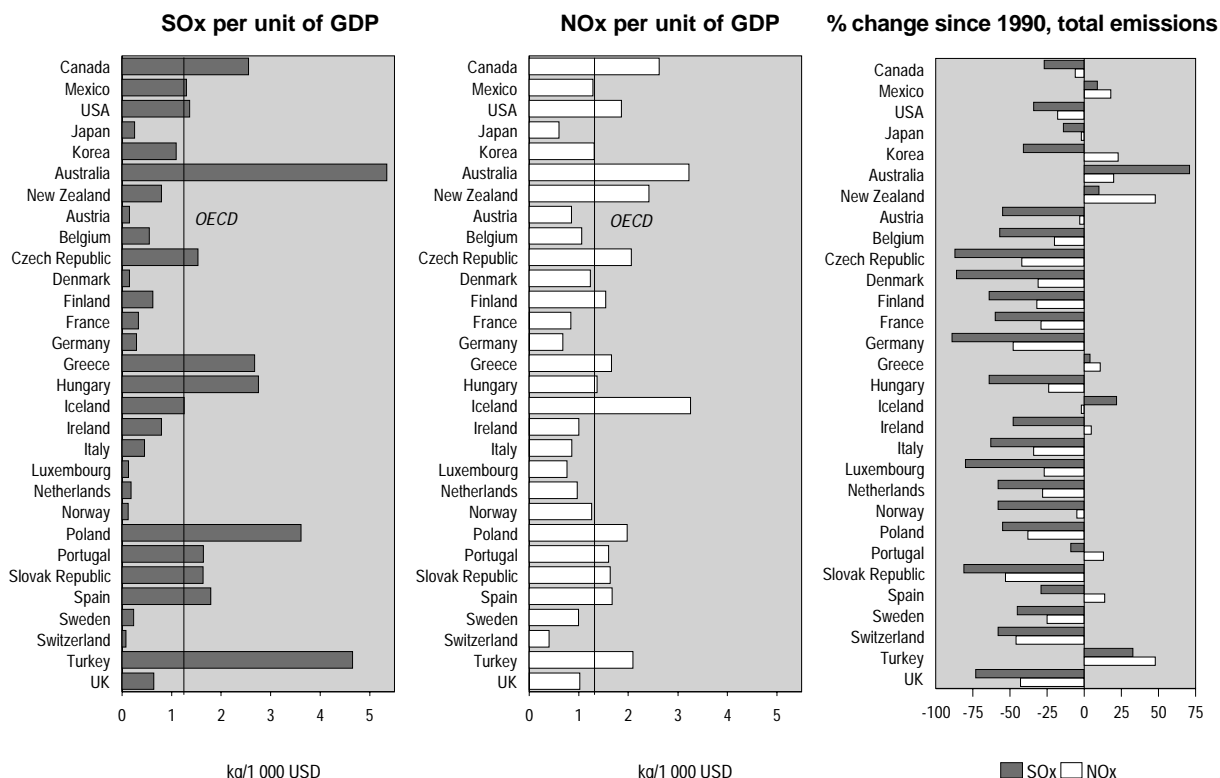
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MONITORING TRENDS



- Over the past 10 years, emissions of acidifying substances and related transboundary air pollution have continued to fall throughout the OECD. Compared to 1990 levels, SO_x emissions have decreased significantly for the OECD as a whole, showing a strong de-coupling from GDP. NO_x emissions have been stabilised or reduced more recently, showing only a weak de-coupling from GDP compared to 1990.

CURRENT STATE – EMISSION INTENSITIES



Emission intensities for SOx show significant variations among OECD countries, depending among others on the countries' economic structure and energy consumption patterns. Total emissions have decreased significantly in a majority of the countries and European countries' early commitments to reduce SOx emissions have been achieved. Some of the countries have already reached the goal they fixed for 2010 in the Gothenburg Protocol but further reductions are necessary for others.

Emission intensities for NOx and related changes over time show important variations among OECD countries. NOx emissions have been reduced in several countries over the 1990s, particularly in OECD Europe. However, with the steady growth of road traffic, the emissions ceilings of the Gothenburg protocol for 2010 may be difficult to attain.

THE BASIS: THE OECD CORE SET OF ENVIRONMENTAL INDICATORS

Core set indicators	
ISSUE: ACIDIFICATION	
Pressures	♦ Index of acidifying substances – Emissions of NOx and SOx
Conditions	♦ Exceedance of critical loads of pH – Concentrations in acid precipitation
Responses	♦ Car fleet equipped with catalytic converters ♦ Capacity of SOx and NOx abatement equipment of stationary sources
ISSUE: URBAN ENVIRONMENTAL QUALITY	
Pressures	♦ Urban air emissions – Urban traffic density and car ownership
Conditions	♦ Population exposure to air pollution – Concentrations of air pollutants
Responses	♦ Economic, fiscal, regulatory instruments

Measurability
International data on SOx and NOx emissions are available for all OECD countries and can be obtained from the Secretariats of the UN-ECE CLRTAP and of the UNFCCC. Additional efforts are however needed to further improve timeliness and historical consistency of the data, and to improve the availability, completeness and comparability of data on other air pollutant emissions (PM10, PM2.5, VOCs, heavy metals, POPs).
Information on population exposure to air pollution is scattered. Efforts are needed to monitor and/or estimate overall population exposure, and exposure of sensitive groups of the population. Data on concentrations of major air pollutants are available for major cities in OECD countries, but more work is needed to improve international comparability, and to link these data to national standards and to human health issues.

WASTE GENERATION

MAIN POLICY CHALLENGES

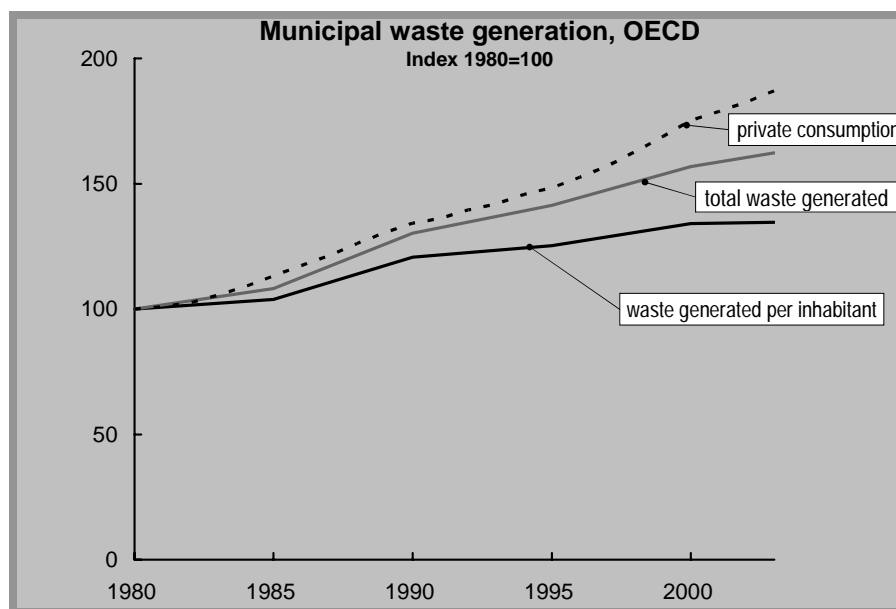
- Main concerns relate to the potential impact from inappropriate waste management on human health and on ecosystems (soil and water contamination, air quality, land use and landscape). Despite achievements in waste recycling, amounts of solid waste going to final disposal are on the increase as are overall trends in waste generation. This raises important questions as to the capacities of existing facilities for final treatment and disposal and as to the location and social acceptance of new facilities (e.g. NIMBY for controlled landfill and incineration plants).
- The main challenge is to strengthen measures for waste minimisation, especially for waste prevention and recycling, and to move further towards life cycle management of products and extended producer responsibility. This implies internalising the costs of waste management into prices of consumer goods and of waste management services; and ensuring greater cost-effectiveness and full public involvement in designing measures.

MEASURING PERFORMANCE

- Environmental performance can be assessed against national objectives and international agreements such as OECD Decisions and Recommendations and the Basel Convention (1989).
- The indicators presented here relate to amounts of municipal waste generated. They show waste generation intensities expressed per capita and per unit of private final consumption expenditure for the early 2000s, and related changes since 1980 and 1990. [Data source: OECD].
- When interpreting these indicators, it should be noted that while municipal waste is only one part of total waste generated, its management and treatment represents more than one third of the public sector's financial efforts to abate and control pollution. It should be kept in mind that waste generation intensities are first approximations of potential environmental pressure; more information is needed to describe the actual pressure. These indicators should be read in connection with other indicators of the OECD Core Set. They should be complemented with information on waste management practices and costs, and on consumption levels and patterns.

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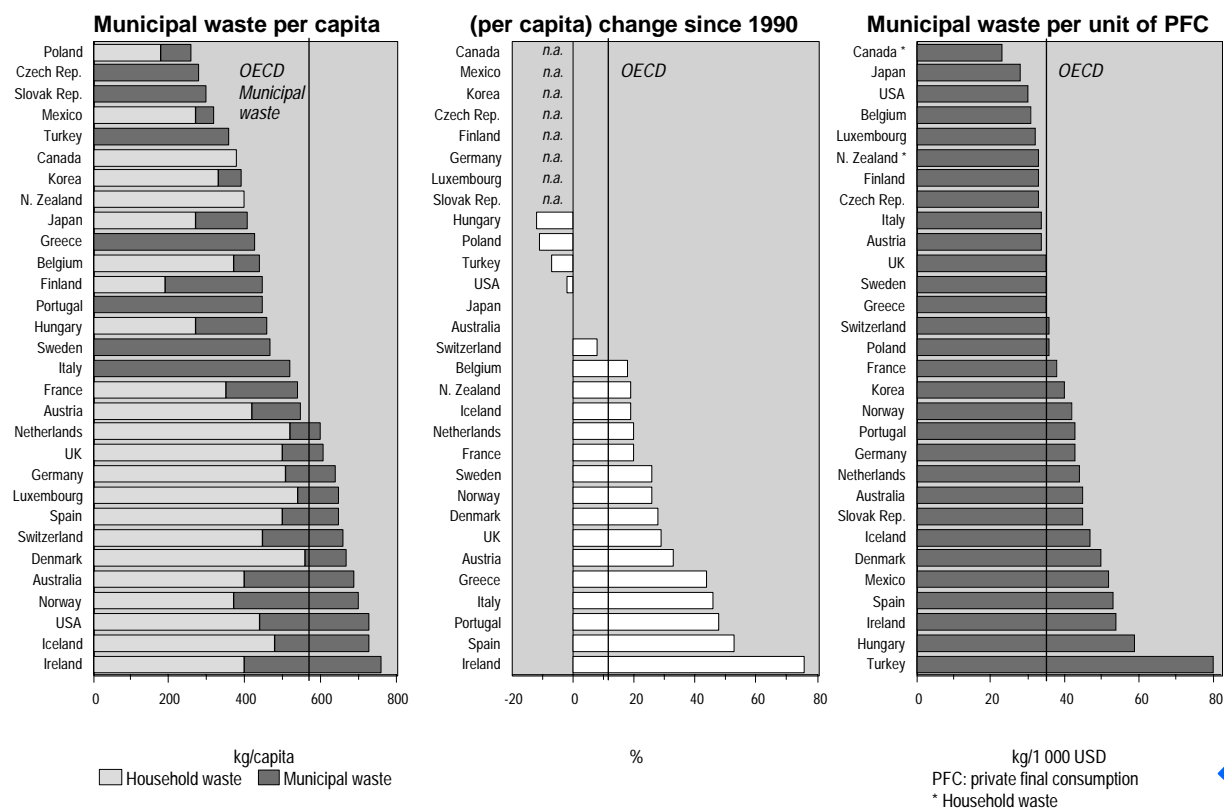
MONITORING TRENDS



- The quantity of municipal waste generated in the OECD area has risen from 1980 and reached 590 million tonnes in the early 2000s (570 kg per inhabitant). Generation intensity per capita has risen mostly in line with private final consumption expenditure and GDP, with however a slight slowdown in recent years.

WASTE GENERATION

CURRENT STATE – GENERATION INTENSITIES



- The amount and the composition of municipal waste vary widely among OECD countries, being directly related to levels and patterns of consumption and also depending on national waste management practices.
- Only a few countries have succeeded in reducing the quantity of solid waste to be disposed of. In most countries for which data are available, increased affluence, associated with economic growth and changes in consumption patterns, tends to generate higher rates of waste per capita.

THE BASIS: THE OECD CORE SET OF ENVIRONMENTAL INDICATORS

Core set indicators		Measurability
ISSUE – WASTE		
Pressures	<ul style="list-style-type: none"> ♦ Generation of: <ul style="list-style-type: none"> – municipal waste – industrial waste – hazardous waste – nuclear waste ♦ Movements of hazardous waste 	<p>Despite considerable progress, data on waste generation and disposal remains weak in many countries. Further efforts are needed to:</p> <ul style="list-style-type: none"> ♦ ensure an appropriate monitoring of waste flows and of related management practices, and their changes over time; ♦ improve the completeness and international comparability of the data, as well as their timeliness.
Conditions	Effects on water and air quality; effects on land use and soil quality; toxic contamination	More work needs to be done to improve data on industrial and hazardous wastes, and to develop indicators that better reflect waste minimisation efforts, and in particular waste prevention measures.
Responses	<ul style="list-style-type: none"> ♦ Waste minimisation <ul style="list-style-type: none"> – Recycling rates ♦ Economic and fiscal instruments, expenditures 	The usefulness of indicators derived from material flow accounting should be further explored.

FRESHWATER QUALITY

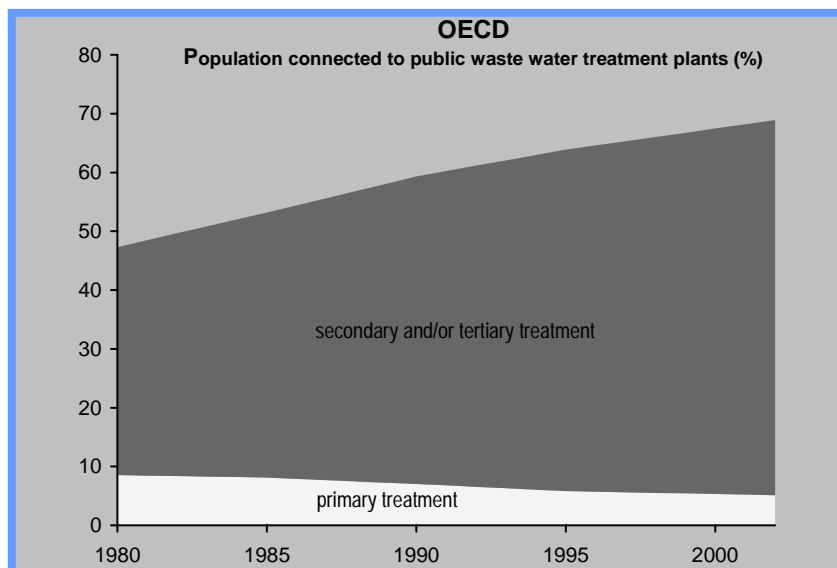
MAIN POLICY CHALLENGES

- Main concerns relate to the impacts of water pollution (eutrophication, acidification, toxic contamination) on human health, on the cost of drinking water treatment and on aquatic ecosystems. Despite significant progress in reducing pollution loads from municipal and industrial point sources through installation of appropriate waste water treatment plants, improvements in freshwater quality are not always easy to discern, except for organic pollution. Pollution loads from diffuse agricultural sources are an issue in many countries, as is the supply of permanently safe drinking water to the entire population.
- The main challenge is to protect and restore all bodies of surface and ground water to ensure the achievement of water quality objectives. This implies further reducing pollution discharges, through appropriate treatment of waste water and a more systematic integration of water quality considerations in agricultural and other sectoral policies. It also implies an integrated management of water resources based on the ecosystem approach.

MEASURING PERFORMANCE

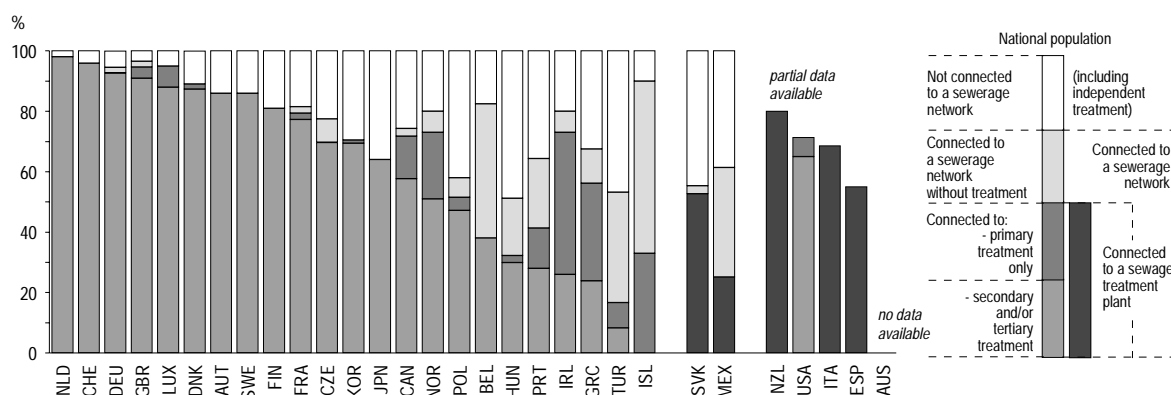
- Environmental performance can be assessed against domestic objectives (e.g. receiving water standards, effluent limits, pollution load reduction targets) and international commitments. Main international agreements and legislation include the OSPAR Convention on the Protection of the North-East Atlantic Marine Environment, the International Joint Commission Agreement on Great Lakes Water Quality in North America and the EU water directives. Protection of freshwater quality is an important part of Agenda 21, adopted at UNCED (1992) and of the Plan of Implementation adopted at the WSSD in Johannesburg (2002).
- The indicator presented here relates to waste water treatment. It shows the percentage of the national population actually connected to public waste water treatment plants in the early 2000s. The extent of secondary (biological) and/or tertiary (chemical) treatment provides an indication of efforts to reduce pollution loads. [Data source: OECD]
- When interpreting this indicator it should be noted that waste water treatment is at the centre of countries' financial efforts to abate water pollution. It should be related to an optimal national connection rate taking into account national specificities such as population in remote areas. It should be read in connection with other indicators of the OECD Core Set, including public waste water treatment expenditure and the quality of rivers and lakes.

MONITORING TRENDS



- OECD countries continue to progress with basic domestic water pollution abatement. The OECD-wide share of the population connected to a municipal waste water treatment plant rose from about 50% in the early 1980s to almost 70% today. For the OECD as a whole, more than half of public pollution abatement and control expenditure relates to water (sewerage and waste water treatment) representing up to 1% of GDP.

CURRENT STATE – WASTE WATER TREATMENT CONNECTION RATES



Due to varying settlement patterns, economic and environmental conditions, starting dates, and the rate at which the work was done, the share of population connected to waste water treatment plants and the level of treatment varies significantly among OECD countries: secondary and tertiary treatment has progressed in some, while others are still completing sewerage networks or the installation of first generation treatment plants. Some countries have reached the economic limit in terms of sewerage connection and use other ways of treating waste water from small, isolated settlements.

Those countries that completed their sewer systems long ago, now face considerable investment to renew pipe networks. Other countries may recently have finished an expansion of waste water treatment capacity and their expenditure has shifted to operating costs. Yet other countries must still complete their sewerage networks even as they build waste water treatment stations.

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THE BASIS: THE OECD CORE SET OF ENVIRONMENTAL INDICATORS

Core set indicators	
ISSUE: EUTROPHICATION	
Pressures	<ul style="list-style-type: none"> Emissions of N and P in water and soil → Nutrient balance <ul style="list-style-type: none"> N and P from fertiliser use & livestock
Conditions	<ul style="list-style-type: none"> BOD/DO in inland waters Concentration of N & P in inland waters
Responses	<ul style="list-style-type: none"> Population connected to secondary and/or tertiary sewage treatment plants <ul style="list-style-type: none"> User charges for waste water treatment Market share of phosphate-free detergents
ISSUE: TOXIC CONTAMINATION	
Pressures	<ul style="list-style-type: none"> Emissions of heavy metals Emissions of organic compounds <ul style="list-style-type: none"> Consumption of pesticides
Conditions	<ul style="list-style-type: none"> Concentrations of heavy metals and organic compounds in env. Media
ISSUE: ACIDIFICATION	
Conditions	<ul style="list-style-type: none"> Exceedance of critical loads of PH in water

Measurability
Data on the share of the population connected to waste water treatment plants are available for almost all OECD countries. Information on the level of treatment and on treatment charges remains partial.
More work needs to be done to produce better data on overall pollution generated covering the entire range of emission sources, on related treatment rates, and final discharges to water bodies.
International data on emissions of toxic compounds (heavy metals, organic compounds) are partial and often lack comparability.

FRESHWATER RESOURCES

MAIN POLICY CHALLENGES

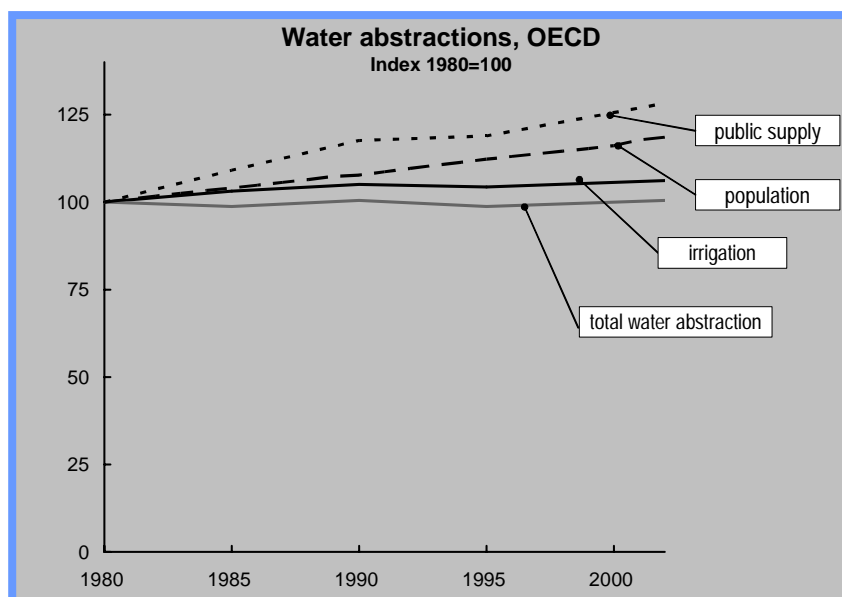
- Main concerns relate to the inefficient use of water and to its environmental and socio-economic consequences: low river flows, water shortages, salinisation of freshwater bodies in coastal areas, human health problems, loss of wetlands, desertification and reduced food production. Although at the national level most OECD countries show sustainable use of water resource, most still face at least seasonal or local water quantity problems and several have extensive arid or semi-arid regions where water is a constraint to sustainable development and to the sustainability of agriculture.
- The main challenge is to ensure a sustainable management of water resources, avoiding overexploitation and degradation, so as to maintain adequate supply of freshwater of suitable quality for human use and to support aquatic and other ecosystems. This implies reducing losses, using more efficient technologies and increase recycling, and applying an integrated approach to the management of freshwater resources by river basin. It further requires applying the user pays principle to all types of uses.

MEASURING PERFORMANCE

- Environmental performance can be assessed against domestic objectives and international commitments. Agenda 21, adopted at UNCED (Rio de Janeiro, 1992), explicitly considers items such as the protection and preservation of freshwater resources. This was reaffirmed at the WSSD (Johannesburg, 2002).
- The indicators presented here relate to the intensity of use of freshwater resources, expressed as gross abstractions per capita, as % of total available renewable freshwater resources (including inflows from neighbouring countries) and as % of internal resources (i.e. precipitations – evapotranspiration) for the early 2000s. [Data source: OECD].
- When interpreting this indicator, it should be noted that relating resource abstraction to renewal of stocks is a central question concerning sustainable water resource management. It should however be kept in mind that it only gives insights into quantitative aspects of water resources and that a national level indicator may hide significant territorial differences and should be complemented with information at sub-national level. This indicator should be read in connection with other indicators of the OECD Core Set and in particular with indicators on water supply prices and on water quality.

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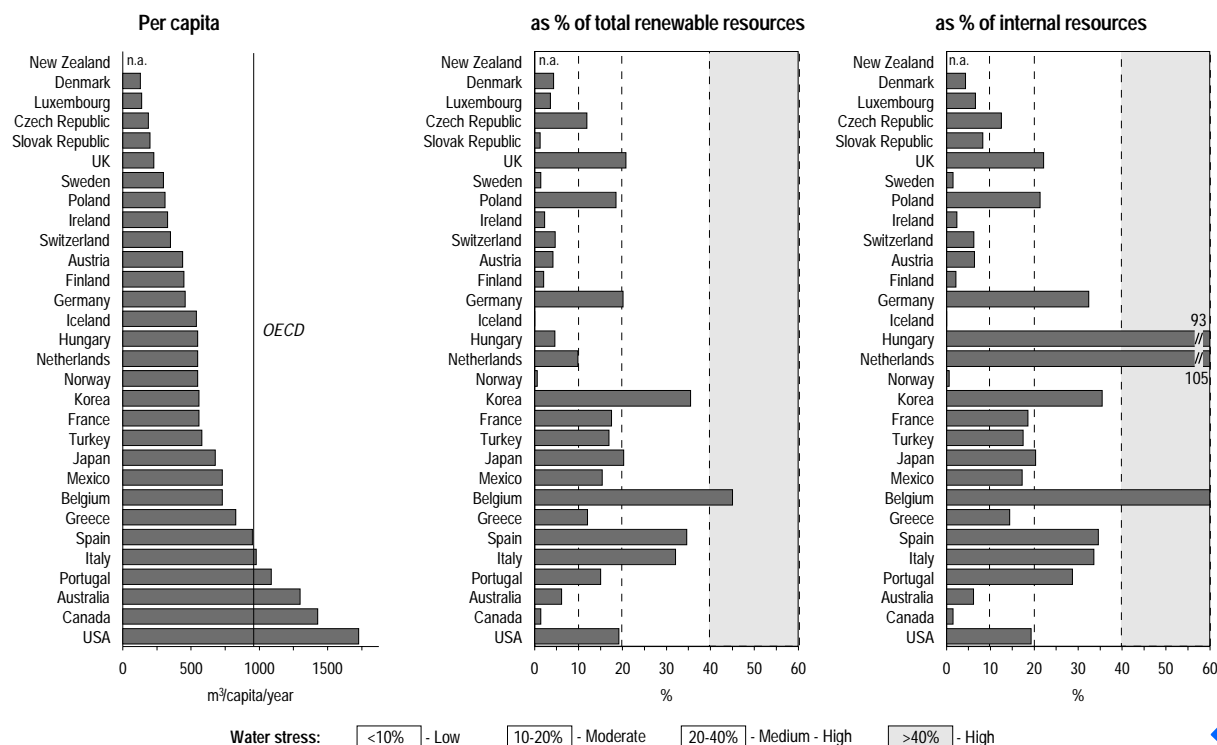
MONITORING TRENDS



- Most OECD countries increased their water abstractions over the 1970s in response to demand by the agricultural and energy sectors. Since the 1980s, some countries have stabilised their abstractions through more efficient irrigation techniques, the decline of water intensive industries (e.g. mining, steel), increased use of cleaner production technologies and reduced losses in pipe networks. However, the effects of population growth have led to increases in total abstractions, in particular for public supply.

CURRENT STATE – INTENSITY OF USE OF WATER RESOURCES

Gross freshwater abstractions, early 2000s



6

Indicators of water resource use intensity show great variations among and within individual countries. The national indicator may thus conceal unsustainable use in some regions and periods, and high dependence on water from other basins. In arid regions, freshwater resources may at times be limited to the extent that demand for water can be met only by going beyond sustainable use in terms of quantity.

At world level, it is estimated that water demand has risen by more than double the rate of population growth in the last century. Agriculture is the largest user of water world-wide; global abstractions for irrigation are estimated to have increased by over 60 % since 1960.

THE BASIS: THE OECD CORE SET OF ENVIRONMENTAL INDICATORS

Core set indicators	
ISSUE – WATER RESOURCES	
Pressures	♦ Intensity of use of water resources (abstractions/available resources)
Conditions	♦ Frequency, duration and extent of water shortages
Responses	♦ Water prices and user charges for sewage treatment

Measurability
Information on the intensity of the use of water resources can be derived from water resource accounts and is available for most OECD countries.
More work is however needed to improve the completeness and historical consistency of the data, and to further improve estimation methods.
More work is also needed to mobilise data at sub-national level, and to reflect the spatial distribution of resource use intensity. This is particularly important for countries with larger territories where resources are unevenly distributed.

FOREST RESOURCES

MAIN POLICY CHALLENGES

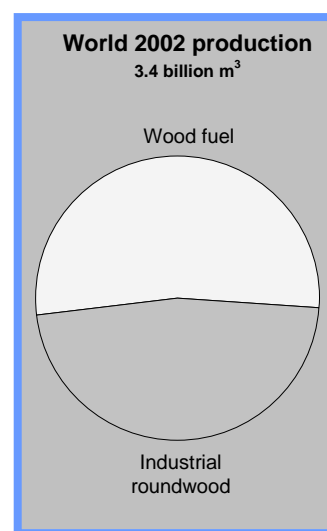
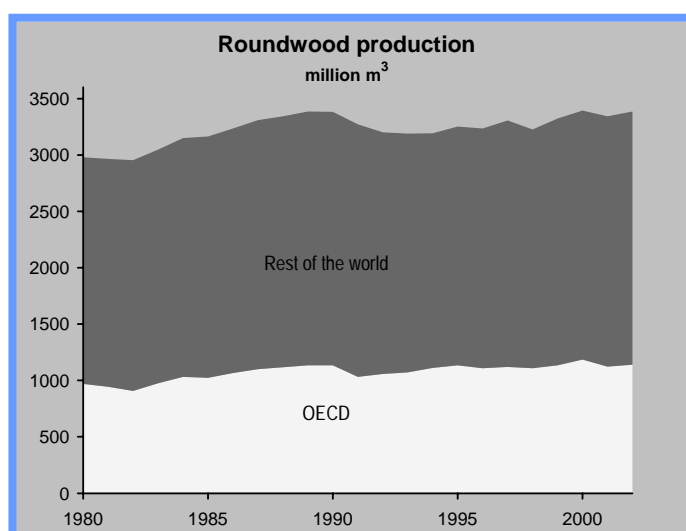
- Main concerns relate to the impacts of human activities on forest diversity and health, on natural forest growth and regeneration, and to their consequences for the provision of economic, environmental and social forest services. The main pressures from human activities include agriculture expansion, transport infrastructure development, unsustainable forestry, air pollution and intentional burning of forests. Many forest resources are threatened by degradation, fragmentation and conversion to other types of land uses.
- The main challenge is to ensure a sustainable management of forest resources, avoiding overexploitation and degradation, so as to maintain adequate supply of wood for production activities, and to ensure the provision of essential environmental services, including biodiversity and carbon sinks. This implies integrating environmental concerns into forestry policies, including eco-certification and carbon sequestration schemes.

MEASURING PERFORMANCE

- Environmental performance can be assessed against national objectives and international principles on sustainable forest management adopted at UNCED (Rio de Janeiro, 1992) and reaffirmed at the WSSD (Johannesburg, 2002). Other international initiatives are the Ministerial Conferences for the Protection of Forests in Europe (Strasbourg, 1990; Helsinki, 1993; Lisbon, 1998), which led to the Pan-European Criteria and Indicators for Sustainable Forest Management, the Montreal Process on Sustainable Development of Temperate and Boreal Forests; and the UN Forum on Forests.
- The indicator presented here relates to the intensity of use of forest resources (timber), relating actual harvest to annual productive capacity for the late 1990s. Trends in roundwood production are provided as a complement. [Data sources: FAO, UN-ECE, OECD].
- When interpreting this indicator, it should be noted that relating resource abstraction to renewal of stocks is a central question concerning sustainable forest resource management. It should however be kept in mind that they only give insights into quantitative aspects of forest resources and that a national average can conceal important variations among forests. They should be read in connection with other indicators of the OECD Core Set, in particular with indicators on land use changes and forest quality (species diversity, forest degradation), and be complemented with data on forest management practices and protection measures.

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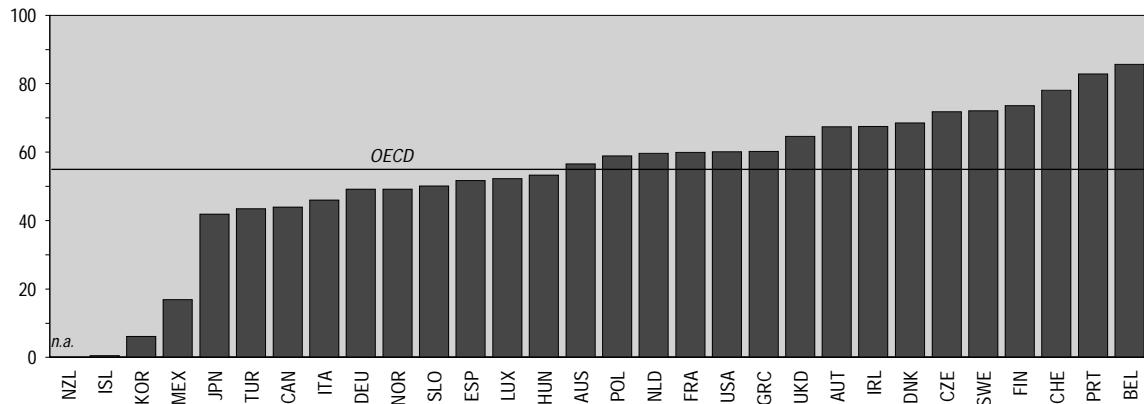
MONITORING TRENDS



- Commercial exploitation of forests and related roundwood production has been increasing over the past two decades, with some stabilisation over the 1990s, in particular in the OECD region. Over half of the roundwood produced in the world is used as a fuel, the rest for industrial production.

CURRENT STATE - INTENSITY OF USE OF FOREST RESOURCES

harvest as % of annual growth



- At national levels most OECD countries present a picture of sustainable use of their forest resources in quantitative terms, but with significant variations within countries. For those countries for which trends over a longer period are available, intensity of forest resource use does not generally show an increase and has even decreased in most countries from the 1950s.
- Over the same period, the area of forests and wooded land has remained stable or has slightly increased in most OECD countries, but has been decreasing at world level due in part to continued deforestation in tropical countries.

THE BASIS: THE OECD CORE SET OF ENVIRONMENTAL INDICATORS

Core set indicators	
ISSUE: FOREST RESOURCES	
Pressures	♦ Intensity of forest resource use (actual harvest/productive capacity)
Conditions	♦ Area and volume distribution of forests (by biome) (e.g. volume distribution by major tree species group within each biome, share of disturbed/deteriorated forests in total forest area)
Responses	♦ Forest area management and protection (e.g. % of protected forest area in total forest area; % of harvest area successfully regenerated or afforested)

Measurability
Data on the intensity of use of forest resources can be derived from forest accounts and from international forest statistics and Forest Resource Assessments (e.g. from FAO and UN-ECE) for most OECD countries. Historical data however often lack comparability or are not available.
Data on the area of forests and wooded land are available for all countries with varying degrees of completeness. Trends over longer periods are available but lack comparability due to continued improvements in international definitions.
More work needs to be done to monitor state and trends in the quality of forest resources and in related management and protection measures.

FISH RESOURCES

MAIN POLICY CHALLENGES

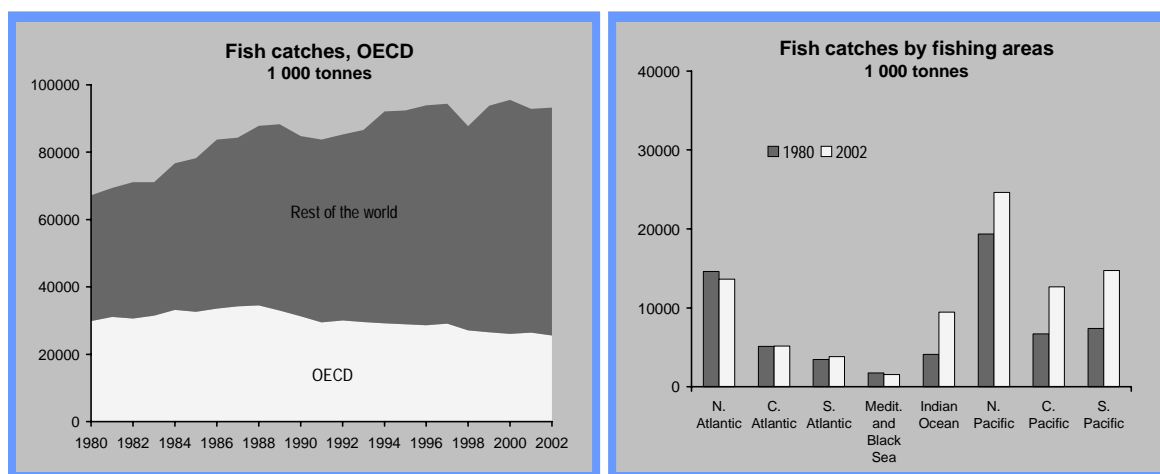
- Main concerns relate to the impacts of human activities on fish stocks and habitats in marine but also in fresh waters, and to their consequences for biodiversity and for the supply of fish for consumption and other uses. Main pressures include fisheries, coastal development and pollution loads from land-based sources, maritime transport, and maritime dumping. Many of the more valuable fish stocks are overfished, and the steady trend towards increased global fish landings is achieved partly through exploitation of new and/or less valuable species. Unauthorised fishing is widespread and hinders the achievement of sustainable fishery management objectives.
- The main challenge is to ensure a sustainable management of fish resources so that resource abstraction in the various catchment areas does not exceed the renewal of the stocks over an extended period. This implies setting and enforcing limits on total catch types, levels and fishing seasons; and strengthening international co-operation.

MEASURING PERFORMANCE

- Environmental performance can be assessed against domestic objectives and bilateral and multilateral agreements such as those on conservation and use of fish resources (Atlantic Ocean, Pacific Ocean, Baltic Sea, etc.), the Rome Consensus on world fisheries, the Code of Conduct for Responsible Fishing (FAO, November 1995), the UN Convention on the Law of the Sea and its implementation agreement on straddling and highly migratory fish stocks. Within the framework of the FAO Code of Conduct for Responsible Fishing, international efforts are being made to address the issue of illegal, unreported and unregulated (IUU) fishing.
- The indicator presented here relates to fish catches expressed as % of world captures and changes in total catches since 1980. Fish production from aquaculture is not included. The data cover catches in both fresh and marine waters. [Data source: FAO].
- When interpreting this indicator it should be kept in mind that it gives insights into quantitative aspects of fish resources. It should be read in connection with other indicators of the OECD Core Set, and in particular be complemented with information on the status of fish stocks and the proportion of fish resources under various phases of fishery development. It can further be related to data on national fish consumption.

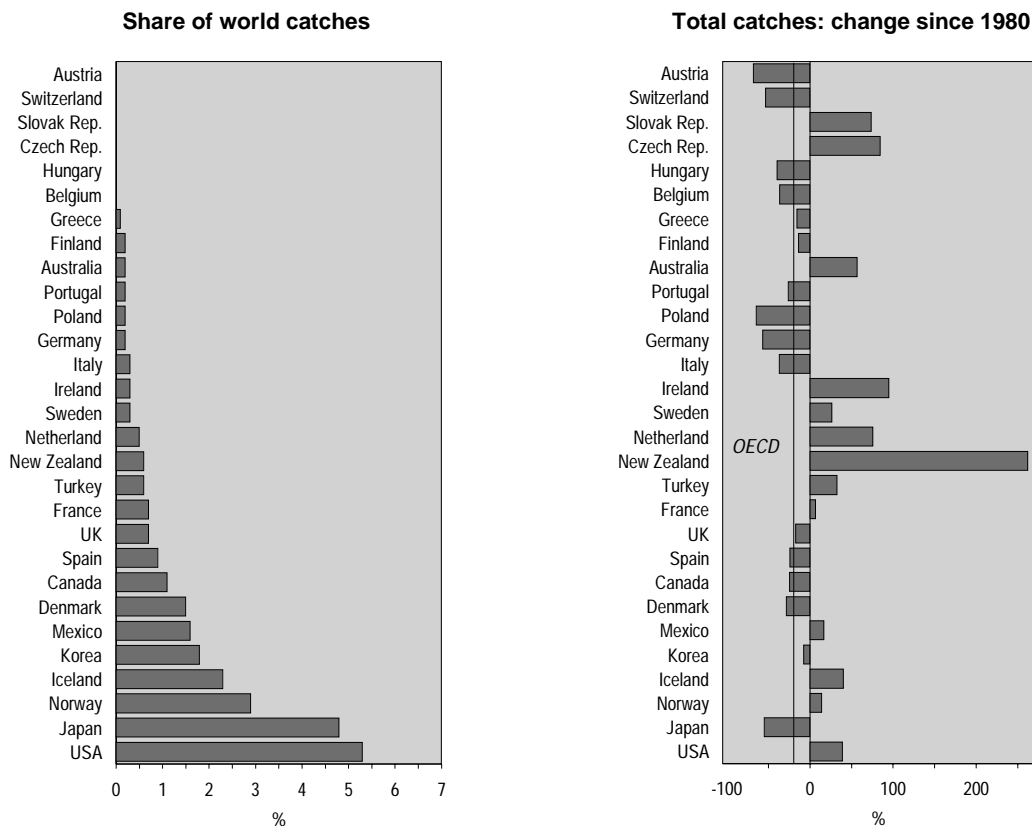
8

MONITORING TRENDS



- Of the major marine stocks fished world-wide, 25 % are estimated to be under or moderately exploited, 47% fully exploited, 18% overexploited and 10 % depleted or recovering. Consequently, nearly half of world marine stock is very close to its maximum sustainable limit. Trend analysis shows large differences among OECD countries and among fishing areas, with high increases in some areas (e.g. the Pacific and Indian Oceans) and relatively stable trends in others (e.g. the Mediterranean and Black Sea). Only a few of the fish stocks in areas closest to OECD countries have significant potential for additional exploitation; the North Atlantic and parts of the Pacific areas are already being overfished.

CURRENT STATE - FISH CATCHES



- The intensity of national catches per capita varies widely among OECD countries, reflecting the share of fisheries and associated industries in the economy.
- Catches from capture fisheries are generally growing at a slower rate than 30 years ago; they are even in decline in a number of countries, whereas aquaculture has gained considerable importance. Aquaculture helps to alleviate some of the stress from capture fisheries, but it also has negative effects on local ecosystems and its dependence on fishmeal products adds to the demand for catches from capture fisheries.

THE BASIS: THE OECD CORE SET OF ENVIRONMENTAL INDICATORS

Core set indicators		Measurability
ISSUE – FISH RESOURCES		<p>Fish catches and production data are available from international sources (FAO) at significant detail and for most OECD countries. More work needs to be done to better reflect the composition of the landings and its trophic structure.</p> <p>Data on the size of major fish populations exist but are scattered across national and international sources.</p> <p>More work needs to be done to better reflect the status of fish stocks, and to relate fish captures to available resources.</p>
Pressures	♦ Fish catches	
Conditions	♦ Size of spawning stocks – Overfished areas	
Responses	♦ Fishing quotas (Number of stocks regulated by quotas) – Expenditure for fish stock monitoring	

ENERGY RESOURCES

MAIN POLICY CHALLENGES

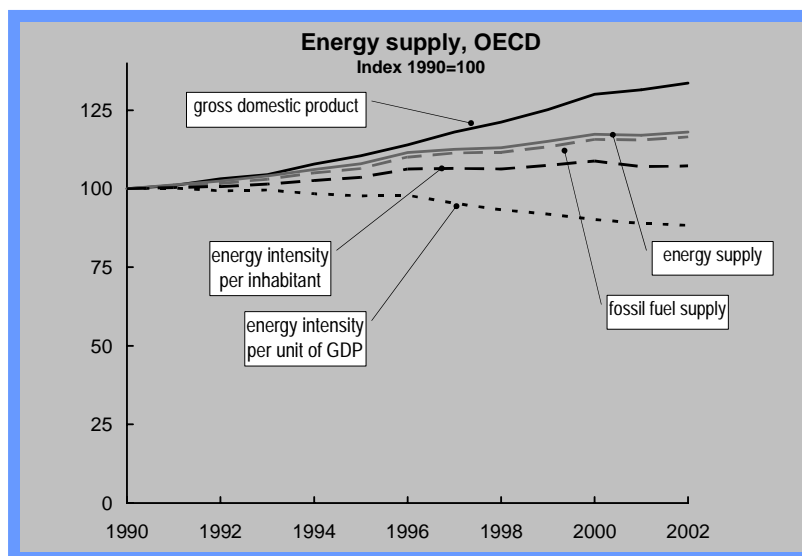
- Main concerns relate to the effects of energy production and use on greenhouse gas emissions and on local and regional air pollution; other effects involve water quality, land use, risks related to the nuclear fuel cycle and risks related to the extraction, transport and use of fossil fuels. While some de-coupling of environmental effects from growth in energy use has been achieved, results to date are insufficient and the environmental implications of increasing energy use remain a major issue in most OECD countries.
- The main challenge is to further de-couple energy use and related air emissions from economic growth, through improvements in energy efficiency and through the development and use of cleaner fuels. This requires the use of a mix of instruments including extended reliance on economic instruments.

MEASURING PERFORMANCE

- Environmental performance can be assessed against domestic objectives such as energy efficiency targets, and targets concerning the share of renewable energy sources; and against international environmental commitments that have direct implications for domestic energy policies and strategies. Examples include the United Nations Framework Convention on Climate Change (1992), the Convention on Long-Range Transboundary Air Pollution (1979).
- The indicators presented here relate to the intensity of use of energy. They show energy supply intensities for 2002, expressed per unit of GDP and per capita, and related changes since 1990. They reflect, at least partly, changes in energy efficiency and efforts to reduce atmospheric emissions. [Data source: OECD-IEA].
- When interpreting these indicators, it should be kept in mind that energy intensities reflect structural and climatic factors as well as changes in energy efficiency. They should be read in connection with other indicators of the OECD Core Set and with other energy-related indicators such as energy prices and taxes for households and industry, and the structure of and changes in energy supply. They should further be complemented with information on energy-related air and water emissions and waste generation.

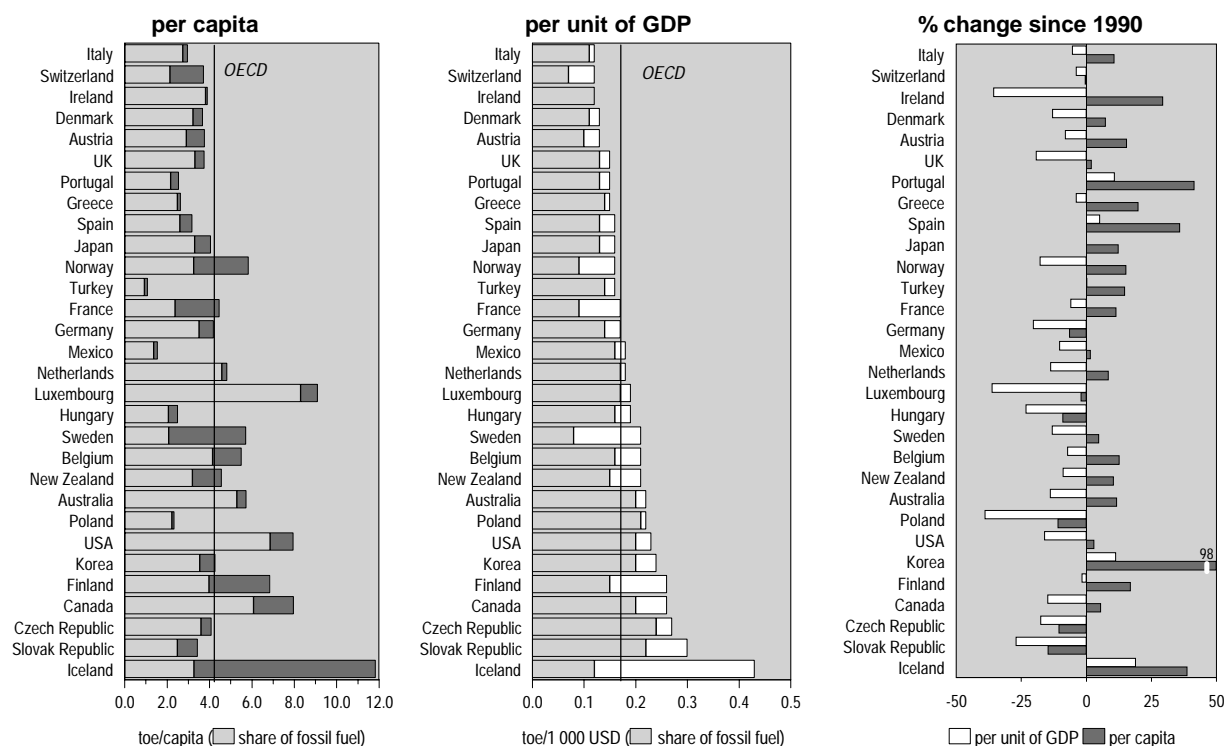
MONITORING TRENDS

9



- During the 1990s, energy intensity per unit of GDP has generally decreased in the OECD, but at a slower pace than during the 1980s. While in the first half of the 1990s, energy intensity did not improve in most countries, due to decreasing prices for energy resources (oil, gas, etc.), it improved slightly in the second half of the 1990s as a consequence of structural changes in the economy, energy conservation measures, and in some countries decreases in economic activity. Progress in per capita terms has even been slower, reflecting an overall increase in energy supply and increasing energy demands for transport activities.

CURRENT STATE - ENERGY SUPPLY INTENSITIES



Variations in energy intensity among OECD countries are wide and depend on national economic structure, geography (e.g. climate), energy policies and prices, and countries' endowment in different types of energy resources.

During the 1990s, growth in total primary energy supply was accompanied by changes in the fuel mix: the shares of solid fuels and oil fell, while those of gas and other sources, including renewable energy sources, rose. This trend is however less marked than between 1980 and the early 1990s, and is particularly visible in OECD Europe.

THE BASIS: THE OECD CORE SET OF ENVIRONMENTAL INDICATORS

Core set indicators	
ISSUE – CLIMATE CHANGE	
Responses	<ul style="list-style-type: none"> ♦ Energy efficiency <ul style="list-style-type: none"> – Energy intensity – Economic and fiscal instruments (energy prices and taxes, expenditures)
SOCIO-ECONOMIC AND GENERAL INDICATORS	
	<ul style="list-style-type: none"> ♦ Structure of energy supply
To be further supplemented with:	
The OECD set of indicators for the integration of environmental concerns into energy policies	

Measurability
Data on energy supply and consumption are available from international sources for all OECD countries.
More work needs to be done to further develop appropriate measures of energy efficiency (ref. IEA work).

MAIN POLICY CHALLENGES

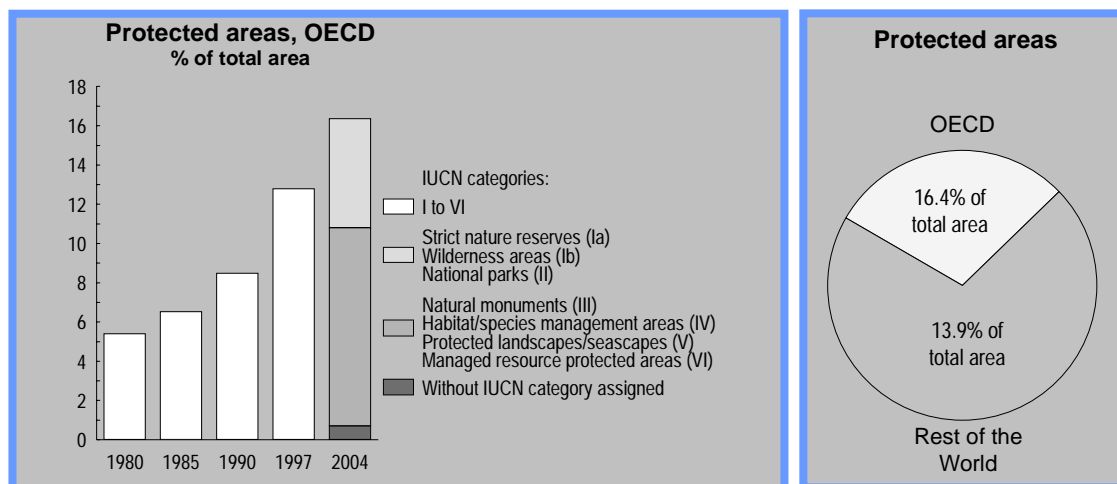
- Main concerns relate to the impacts of human activities on biodiversity. Pressures can be physical (habitat alteration and fragmentation through changes in land use and cover), chemical (toxic contamination, acidification, oil spills, other pollution) or biological (alteration of population dynamics and species structure through the release of exotic species or the commercial use of wildlife resources). While protected areas have grown in most OECD countries, pressures on biodiversity and threats to global ecosystems and their species are increasing. Many natural ecosystems have been degraded, limiting the ecosystem services they provide.
- The main challenge is to maintain or restore the diversity and integrity of ecosystems, species and genetic material and to ensure a sustainable use of biodiversity. This implies strengthening the actual degree of protection of habitats and species, eliminating illegal exploitation and trade, integrating biodiversity concerns into economic and sectoral policies, and raising public awareness.

MEASURING PERFORMANCE

- Environmental performance can be assessed against domestic objectives and international agreements such as: the Convention on Biological Diversity (1992), the Convention on the Conservation of Migratory Species of Wild Animals (1979), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 1973), the Convention on Wetlands of International Importance (1971) and the Convention on the Conservation of European Wildlife and Natural Habitats (1979). A target endorsed at the WSSD (Johannesburg, 2002) aims to significantly reduce the rate of loss of biodiversity by 2010 at the global, regional and national levels.
- The indicator presented here relates to the number of threatened species compared to the number of known or assessed species. "Threatened" refers to endangered species, critically endangered species and vulnerable species. Trends in protected areas are provided as a complement. [Data sources: OECD, IUCN].
- When interpreting this indicator, it should be kept in mind that it only provides a partial picture of the status of biodiversity. It should be read in connection with other indicators of the OECD Core set and in particular with indicators on the sustainable use of biodiversity as a resource (e.g. forest, fish) and on habitat alteration. It should further be complemented with information on the density of population and of human activities.

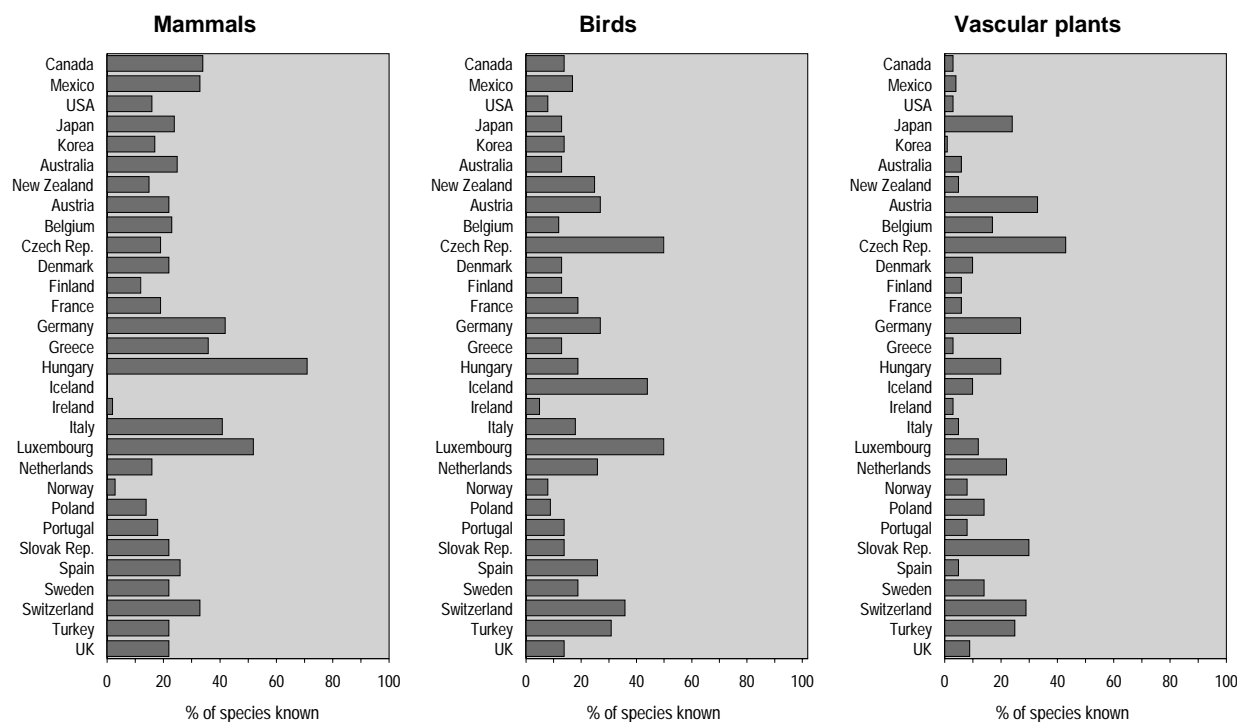
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MONITORING TRENDS



- The number and extent of protected areas has increased significantly since 1990 in almost all countries, reaching 16.4% of total area for the OECD as a whole. Actual protection levels, management effectiveness and related trends are more difficult to evaluate, as protected areas change over time: new areas are designated, boundaries are revised and some sites may be destroyed or changed by pressures from economic development or natural processes.

CURRENT STATE – THREATENED SPECIES



➡ This indicator still shows a high percentage of species threatened, particularly in countries with a high population density, and a high level of concentration of human activities.

➡ In most countries, a significant share of species are threatened not only by habitat loss or alteration inside protected areas, but also by changes in land use categories and intensity outside protected areas (e.g. agriculture, forestry, etc.). In general, little progress is being made to slow habitat loss and fragmentation outside protected areas.

10

THE BASIS: THE OECD CORE SET OF ENVIRONMENTAL INDICATORS

Core set indicators	
ISSUE: BIODIVERSITY	
Pressures	♦ Habitat alteration and land conversion from natural state to be further developed (e.g. road network density, change in land cover, etc.)
Conditions	♦ Threatened or extinct species as a share of total species assessed ♦ Area of key ecosystems
Responses	♦ Protected areas as % of national territory and by type of ecosystem – Protected species

Measurability
Data on threatened species are available for all OECD countries with varying degrees of completeness. The number of species known or assessed does not always accurately reflect the number of species in existence, and the definitions that should follow IUCN standards are applied with varying degrees of rigour in Member countries. Historical data are generally not comparable.
On key ecosystems, no OECD-wide data are available.
Data on protected areas are available, but not by type of ecosystem. Also, a distinction between areas protected mainly for "biological" reasons and areas protected for aesthetic or cultural reasons is not always easy.
More generally, accurate, comprehensive and comparable time-series data on wildlife populations still need to be fully developed. More needs also to be done to monitor ecosystem integrity and to develop indicators that better reflect the state of and changes in biodiversity at the habitat/ecosystem level.

