OECD KEY ENVIRONMENTAL INDICATORS

2004

OECD Environment Directorate
Paris, France

OECD

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ORGANISATION FOR ECONOMIC DEVELOPMENT AND CO-OPERATION

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Pursuant to Article 1 of the Convention signed in Paris on 14th December 1960, and which came into force on 30th September 1961, the Organisation for Economic Co-operation and Development (OECD) shall promote policies designed:

- to achieve the highest sustainable economic growth and employment and a rising standard of living in member countries, while maintaining financial stability, and thus to contribute to the development of the world economy;
- to contribute to sound economic expansion in member as well as non-member countries in the process of economic development; and
- to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.

The original member countries of the OECD are Austria, Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The following countries became members subsequently through accession at the dates indicated hereafter: Japan (28th April 1964), Finland (28th January 1969), Australia (7th June 1971), New Zealand (29th May 1973), Mexico (18th May 1994), the Czech Republic (21st December 1995), Hungary (7th May 1996), Poland (22nd November 1996), Korea (12th December 1996) and the Slovak Republic (14th December 2000). The Commission of the European Communities takes part in the work of the OECD (Article 13 of the OECD Convention).

FOREWORD

Environmental indicators are essential tools for tracking environmental progress, supporting policy evaluation and informing the public. Since the early 1990s, such indicators have gained in importance in many countries and in international fora. As part of their commitment to transparency and to better information of the public, OECD countries increasingly use a reduced number of indicators, so-called “key indicators”, selected from larger sets to report on major environmental issues. The OECD pioneered the development of international environmental indicators and has long supported its member countries' efforts in this field. Its work has led to several sets of environmental indicators, each responding to a specific purpose.

The present report is one of the products of the OECD programme on environmental indicators. It includes key environmental indicators endorsed by OECD Environment Ministers in May 2001 for public information and communication by OECD. These indicators give a broad overview of environmental issues in OECD countries and are updated every year.

This report was prepared by the OECD Secretariat, but its successful completion depended on the work and support of the OECD Working Group on Environmental Information and Outlooks. It is published on the responsibility of the OECD Secretary-General at the occasion of the OECD meeting of Environment Ministers in April 2004.

Lorents G. Lorentsen
Director, OECD Environment Directorate

The indicators in this report largely build on data published in the biennial OECD Compendium of Environmental Data and available to the OECD Secretariat before March 2004. These data come from the OECD SIREN database, which is regularly updated with information provided by Member countries authorities, from internal OECD sources and from other international sources. The data are harmonised through the work of the OECD Working Group on Environmental Information and Outlooks (WGEIO) and benefit from continued data quality efforts in OECD member countries, the OECD itself and other international organisations.

The data generally refer to the most recent year available at international level. For further details and comments on basic data sets and on reference years, the reader is referred to "OECD Environmental Data - Compendium 2004" (available in May 2004). A list of OECD and other international data sources used in this report can be found under "References and bibliography".

When reading this report, one should keep in mind that definitions and measurement methods vary among countries, and that inter-country comparisons require careful interpretation. One should also note that indicators presented in this report refer to the national level and may conceal major sub-national differences.

OECD KEY ENVIRONMENTAL INDICATORS

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INTRODUCTION

KEY ENVIRONMENTAL INDICATORS

BACKGROUND

The OECD, with the support of its Member countries, has long been a pioneer in the field of environmental indicators. It has developed and published the first international sets of environmental indicators and uses them regularly in its country environmental performance reviews and other policy analysis work.

Central to the OECD work are core environmental indicators included in the OECD Core Set, to measure environmental progress, complemented with several sets of sectoral environmental indicators to help integrate environmental concerns in sectoral policies. Indicators are further derived from environmental accounting and work is done on indicators to measure the decoupling of environmental pressure from economic growth.

During the 1990s, environmental indicators gained significant importance and are now widely used in OECD countries. They are used in reporting, planning, clarifying policy objectives and priorities, budgeting, and assessing performance.

WHY KEY INDICATORS?

Many OECD countries are also increasingly interested in using a reduced number of indicators selected from existing larger sets, to inform civil society and to support wider communication with the public.

To support such initiatives, the OECD identified in 2001 a shortlist of environmental indicators building on previous work and on experience gained in using environmental indicators in its policy work.

SELECTION CRITERIA

These key indicators have been selected from the core indicators included in the OECD Core Set of environmental indicators and are closely related to other environmental indicators sets developed and used by the OECD. Their selection took into account: their policy relevance with respect to major challenges for the first decade of the 21st century, including pollution issues and issues related to natural resources and assets; their analytical soundness; and their measurability.

OECD set of key environmental indicators

		Available indicators*	Medium term indicators**
POLLUTION ISSUES			
Climate change	1.	CO2 emission intensities Index of greenhouse gas emissions	Index of greenhouse gas emissions
Ozone layer	2.	Indices of apparent consumption of ozone depleting substances (ODS)	Same, plus aggregation into one index of apparent consumption of ODS
Air quality	3.	SOx and NOx emission intensities	Population exposure to air pollution
Waste generation	4.	Municipal waste generation intensities	Total waste generation intensities, Indicators derived from material flow accounting
Freshwater quality	5.	Waste water treatment connection rates	Pollution loads to water bodies
NATURAL RESOURCES & ASSETS			
Freshwater resources	6.	Intensity of use of water resources	Same plus sub-national breakdown
Forest resources	7.	Intensity of use of forest resources	Same
Fish resources	8.	Intensity of use of fish resources	Same plus closer link to available resources
Energy resources	9.	Intensity of energy use	Energy efficiency index
Biodiversity	10.	Threatened species	Species and habitat or ecosystem diversity Area of key ecosystems

** indicators for which data are available for a majority of OECD countries and that are presented in this report*

*** indicators that require further specification and development (availability of basic data sets, underlying concepts and definitions).*

INTRODUCTION

A DYNAMIC PROCESS

The list of indicators hence is neither final, nor exhaustive; it will evolve as knowledge and data availability improve. Ultimately, the list is expected to also include key indicators for issues such as toxic contamination, land and soil resources, and urban environmental quality.

INTERPRETATION

It has to be noted that the indicators correspond to varying degrees of policy relevance and policy priority for different countries. Like other indicators they have to be interpreted in context and be complemented with country specific information to acquire their full meaning.

THIS PUBLICATION

CONTENT AND PURPOSE

The present report is a product of the OECD work programme on environmental indicators and is published at the occasion of the OECD meeting of Environment Ministers (Paris, 20-21 April 2004).

It presents key environmental indicators endorsed by OECD Environment Ministers in 2001 as a tool for use by OECD. These indicators give a broad overview of environmental issues of common concern in OECD countries, and inform policy makers and the public about progress made and to be made.

DATA

The key indicators are updated every year and are available for free. They build on data from the OECD SIREN database that is updated with information provided by Member countries authorities, from internal OECD sources and from other international sources, and published in the biennial OECD Environmental Data Compendium.

PROSPECTS AND FUTURE WORK

Experience shows that environmental indicators are powerful and cost-effective tools for tracking environmental progress, providing policy feedback and measuring environmental performance. However, important lags remain between the demand for environmental indicators, related conceptual work and the actual capacity to mobilise underlying data sets.

GENERAL PROGRESS

Continued efforts are being done by the OECD to assist in further development and use of environmental indicators in OECD work and in OECD member countries, and promote the exchange of related experience with non-OECD countries and other international organisations. The aim is to:

- Improve the availability and quality of basic data sets, with a focus on comparability among countries, timeliness and coherence over time, and interpretability.
- Link environmental data and indicators more closely to economic and social information systems.
- Link the indicators more closely to domestic goals and international commitments.
- Link the indicators more closely to sustainability issues.

SPECIFIC PROGRESS

More specifically, it is planned to:

- Further develop concepts for medium term indicators and fill related data gaps paying particular attention to biodiversity and to indicators derived from environmental accounting;.
- Complement the indicators with information reflecting sub-national differences;
- Further monitor indicator aggregation methods in use at national and international level, and produce aggregated indices when feasible and policy relevant.

KEY INDICATORS

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 CO_2 and other GHG emissions are still growing in many countries, despite some progress achieved in de-coupling CO_2 emissions from GDP growth (weak de-coupling).

The main challenges are to limit emissions of CO_2 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 has been ratified by 120 parties, including all but three OECD countries, but is not yet in force.

The indicators presented here relate to GHG emissions and to CO_2 emissions from energy use. They show emission intensities per unit of GDP and per capita for 2001, 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 (CO_2, CH_4, N_2O, PFCs, HFCs and SF_6) expressed in CO_2 equivalents. [Data sources: OECD-IEA, UNFCCC].

When interpreting these indicators it should be noted that CO_2 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.

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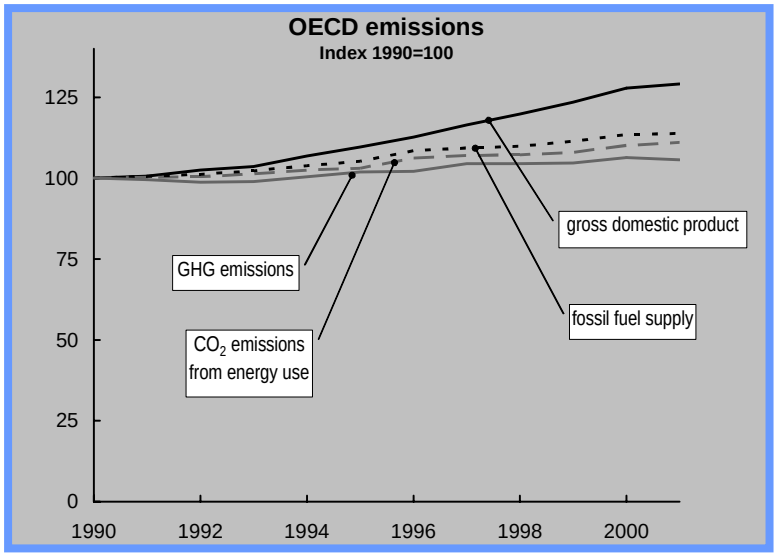
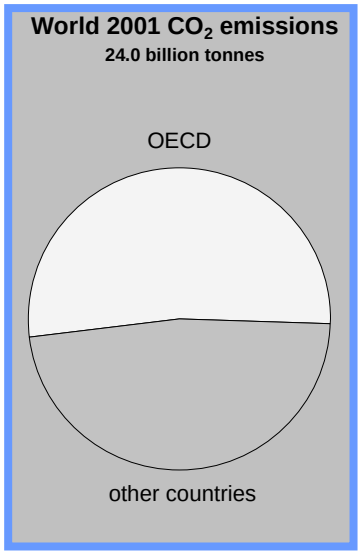
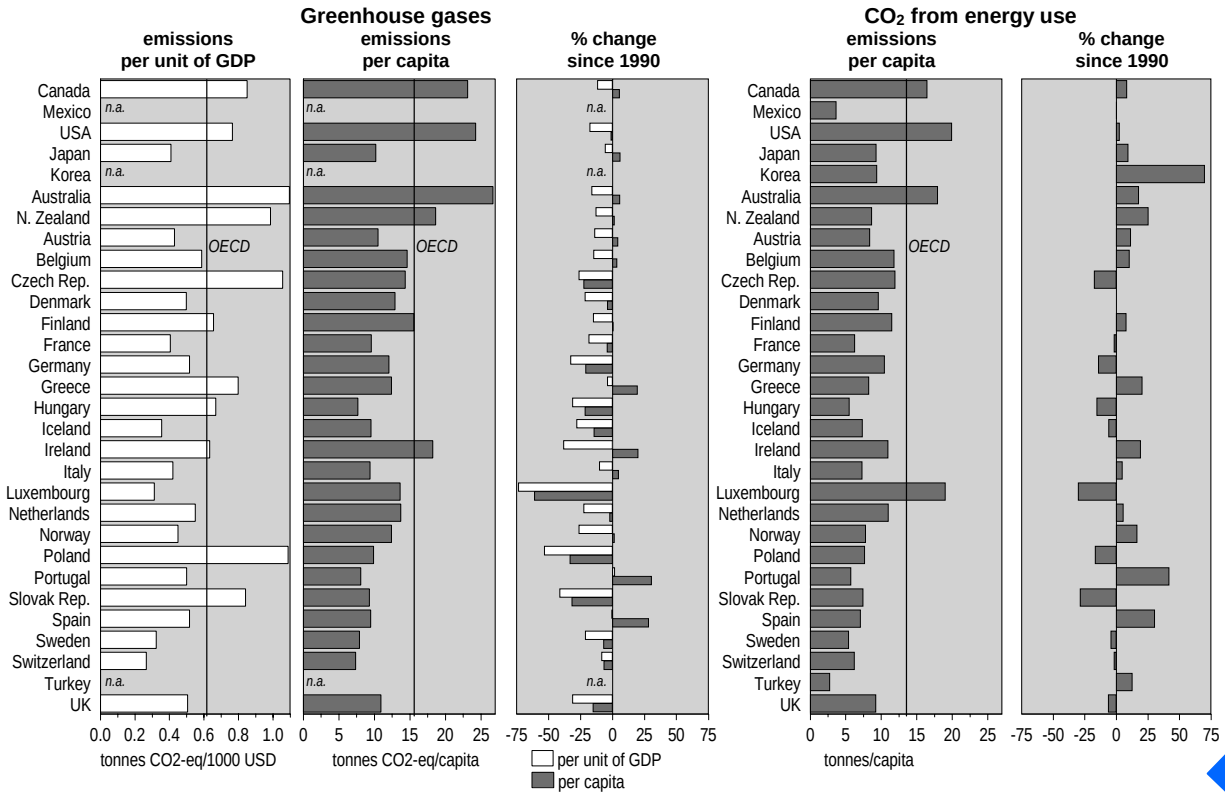
MONITORING TRENDS





While a number of OECD countries have de-coupled their CO_2 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, CO_2 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.

CO_2 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, CO_2 emissions from energy use have fallen between 1980 and the mid 1990s, as a result of changes in economic structures and energy supply mix, energy savings and, in some countries, of decreases in economic activity over a few years. Since the mid 1990s, these emissions have been more or less stable in the region as a whole, with however very wide variations in emission trends among countries.

THE BASIS: THE OECD CORE SET OF ENVIRONMENTAL INDICATORS

Core set indicators	
ISSUE – CLIMATE CHANGE	
Pressures	♦ **Index of greenhouse gas emissions** – CO_2 emissions – CH_4 emissions – N_2O emissions – PFC, HFC, SF_6 emissions
Conditions	♦ **Atmospheric concentrations of GHG** ♦ **Global mean temperature**
Responses	♦ **Energy efficiency** – Energy intensity – Economic and fiscal instruments

Measurability

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 CO_2 emissions from energy use.

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.

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.

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 supply of methyl bromide and HCFCs (by 2005 and 2020 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 186 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

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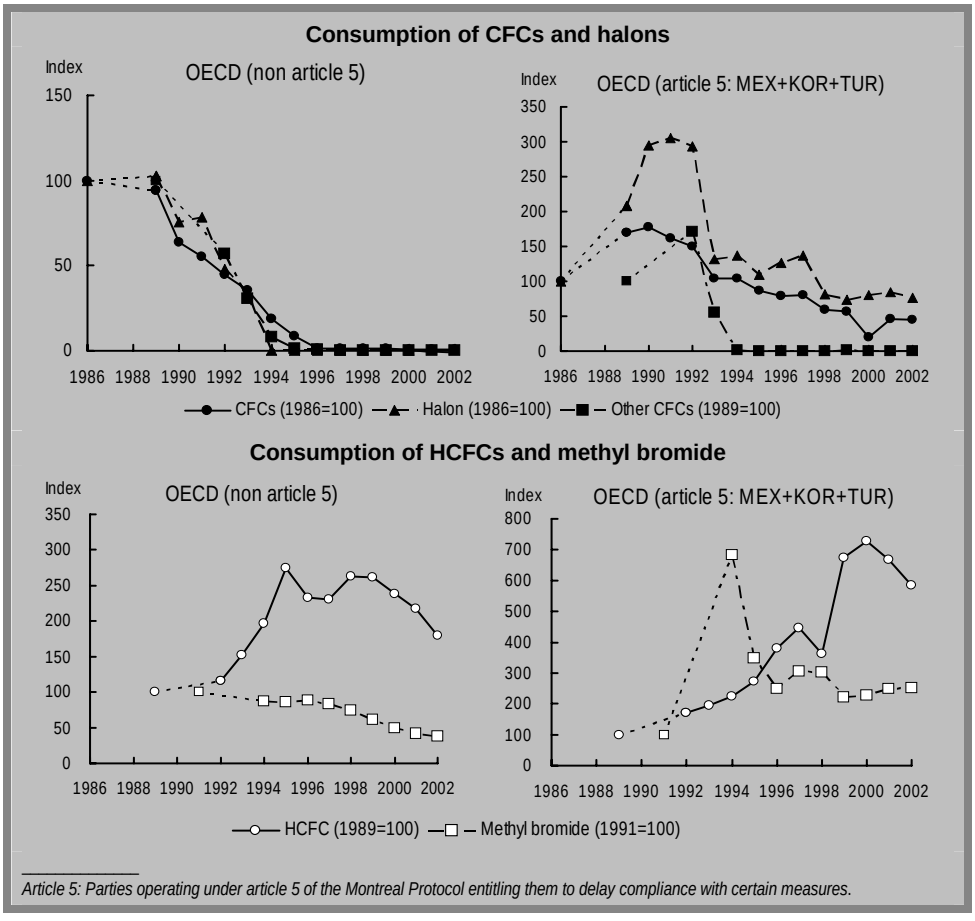
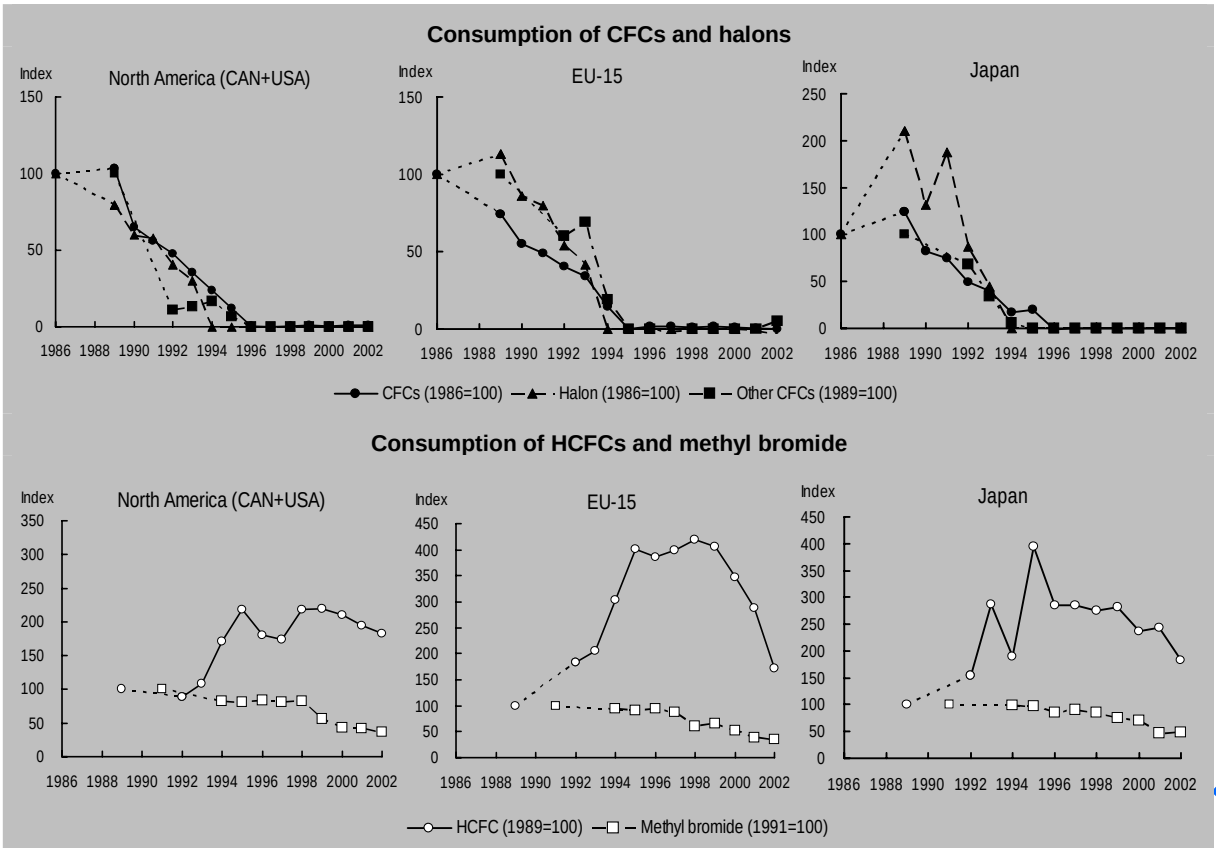


Article 5: Parties operating under article 5 of the Montreal Protocol entitling them to delay compliance with certain measures.

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 5 % 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 15 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		Measurability
ISSUE – OZONE LAYER DEPLETION		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.
Pressures	♦ **Index of apparent consumption of ozone depleting substances (ODS)** ♦ Apparent consumption of CFCs and halons	
Conditions	♦ **Atmospheric concentrations of ODS** ♦ **Ground level UV-B radiation** ♦ Stratospheric ozone levels	
Responses	♦ **CFC recovery rate**	

AIR QUALITY

MAIN POLICY CHALLENGES

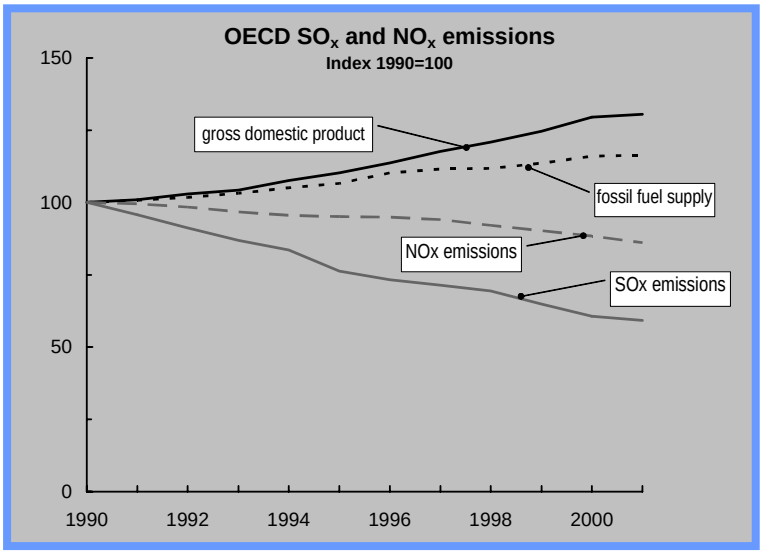
- *Main concerns relate to the effects of air pollution on human health, ecosystems, and buildings, and to their economic and social consequences. Human exposure is particularly high in urban areas where economic activities and road traffic are concentrated. Causes of growing concern are concentrations of fine particulates, NO_2, 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.*

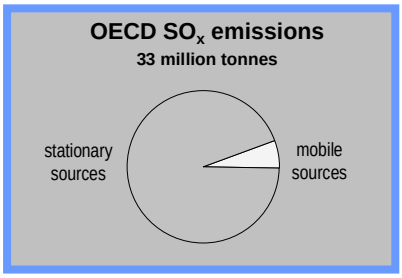
MEASURING PERFORMANCE

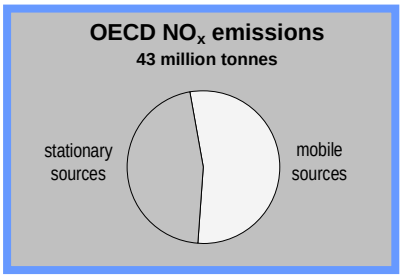
- *Environmental performance can be assessed against domestic objectives and international commitments. In Europe and North America, acidification has led to several international agreements among which the Convention on Long-Range Transboundary Air Pollution (1979), and its protocols to reduce emissions 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 SO_2 and NO_2 respectively. They show emission intensities per unit of GDP and per capita for 2001, 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.*

3

MONITORING TRENDS

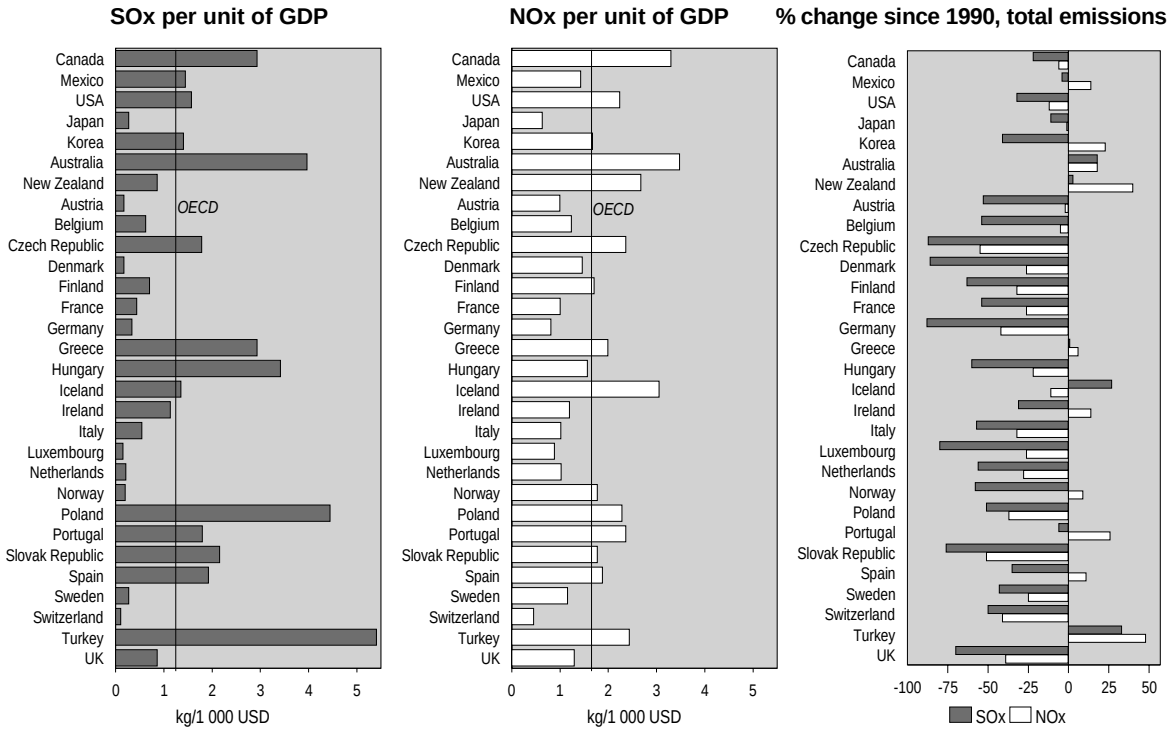






- *Over the past 10 years, emissions of acidifying substances and related transboundary air pollution have continued to fall throughout the OECD. Compared to 1990 levels, SOx emissions have decreased significantly for the OECD as a whole, showing a strong de-coupling from GDP. NOx emissions have been 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. European countries' early commitments to reduce SOx emissions have been achieved, and new agreements have been adopted in Europe and North America to reduce acid precipitation even further (Gothenburg Protocol).

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. In some European countries however, the commitment to stabilise NO_x emissions by the end of 1994 to their 1987 levels (Sofia Protocol) has not been met, and the achievement of further reductions (Gothenburg Protocol) will require additional efforts.

3

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 (PM_{10}, $PM_{2.5}$, 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

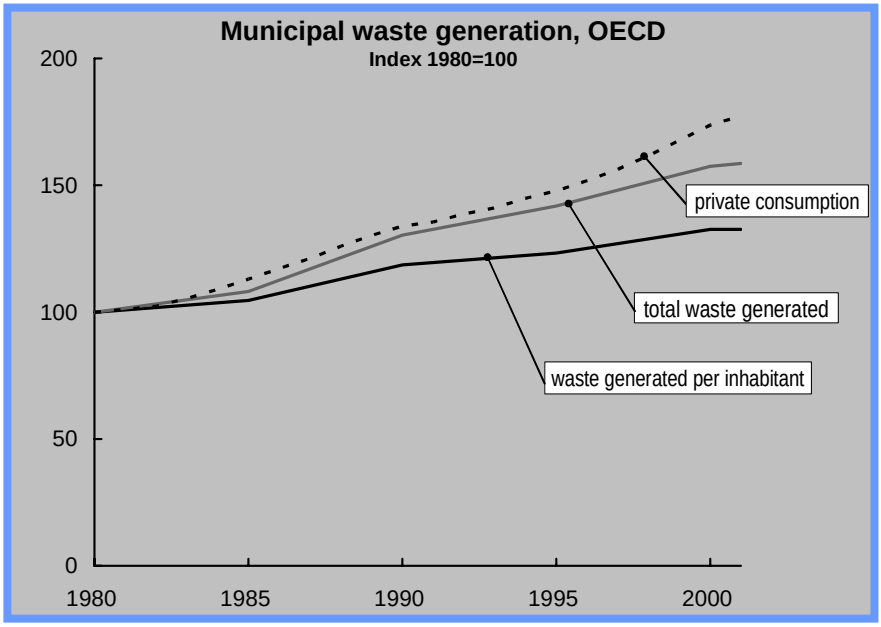
Environmental performance can be assessed against national objectives and international agreements such as OECD Decisions and Recommendations and the Basel Convention (1989).

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. [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.

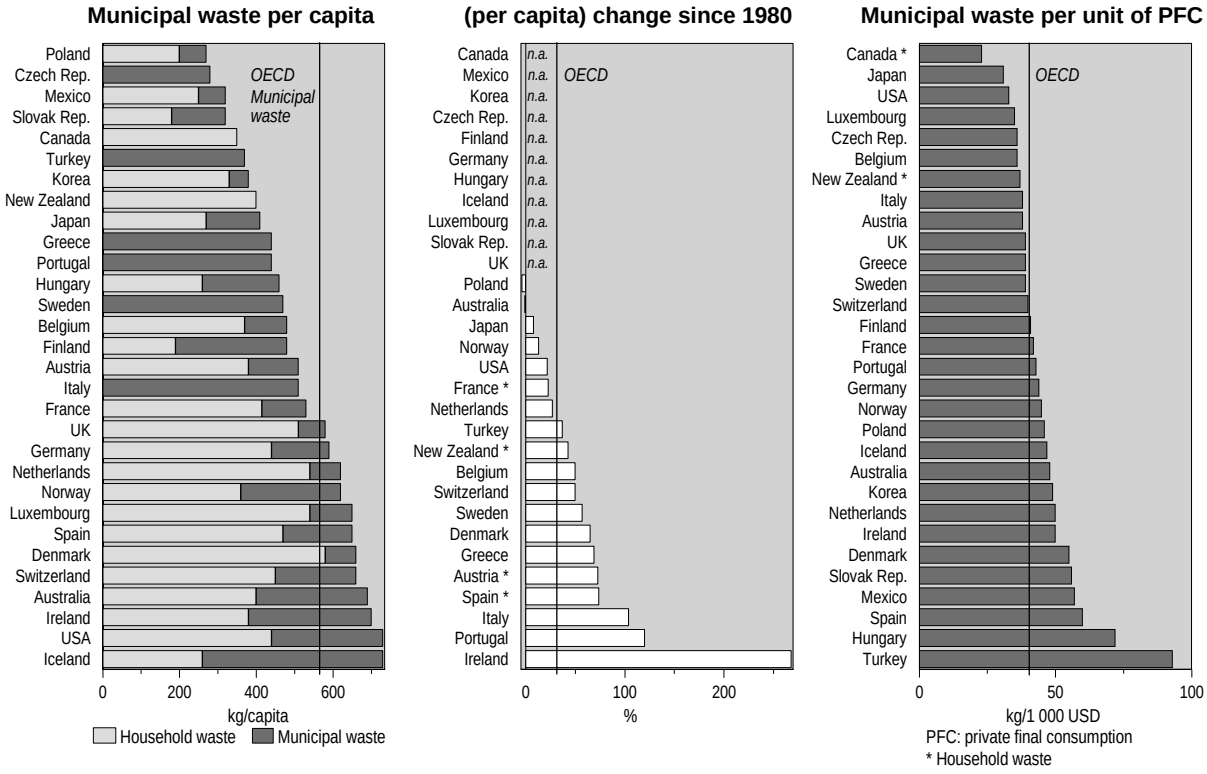
4

MONITORING TRENDS



The quantity of municipal waste generated in the OECD area has risen from 1980 and reached 585 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.

CURRENT STATE – GENERATION INTENSITIES



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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	
ISSUE – WASTE	
Pressures	♦ **Generation of:** – **municipal waste** – **industrial waste** – **hazardous waste** – **nuclear waste** ♦ Movements of hazardous waste
Conditions	Effects on water and air quality; effects on land use and soil quality; toxic contamination
Responses	♦ **Waste minimisation** – Recycling rates ♦ **Economic and fiscal instruments, expenditures**

Measurability

Despite considerable progress, data on waste generation and disposal remains weak in many countries. Further efforts are needed to:

- ♦ 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.

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.

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

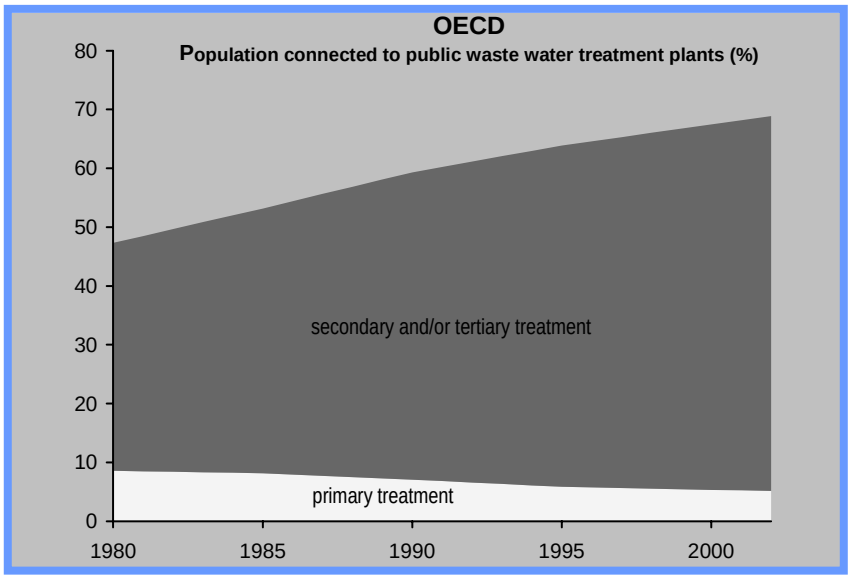
Environmental performance can be assessed against domestic objectives (e.g. receiving water standards, effluent limits, pollution load reduction targets) and international commitments. Main international agreements and legislation include the OSPAR Convention on the Protection of the North-East Atlantic 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 indicators presented here relate to waste water treatment. They show 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.

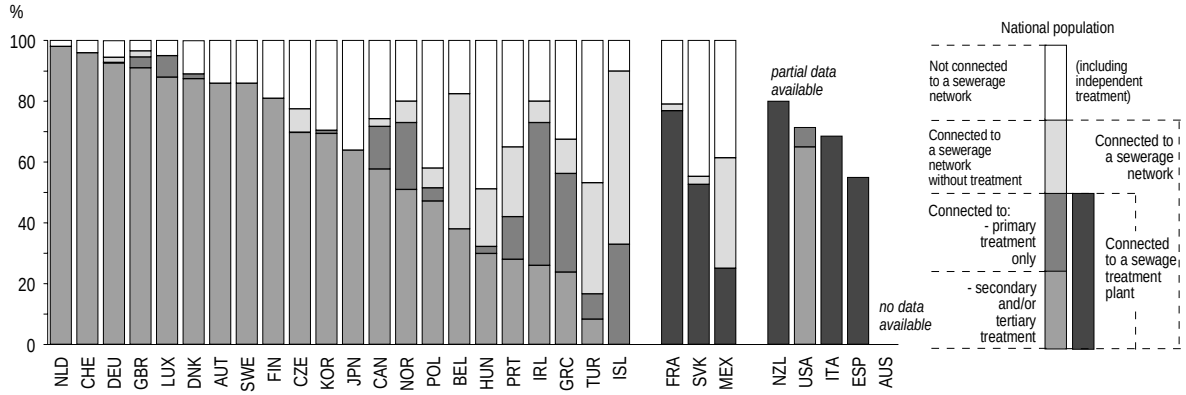
5

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.

5

THE BASIS: THE OECD CORE SET OF ENVIRONMENTAL INDICATORS

Core set indicators		Measurability
ISSUE: EUTROPHICATION		
Pressures	♦ Emissions of N and P in water and soil **➔ Nutrient balance** – N and P from fertiliser use & livestock	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.
Conditions	♦ **BOD/DO in inland waters** ♦ **Concentration of N & P in inland waters**	
Responses	♦ **Population connected to secondary and/or tertiary sewage treatment plants** – User charges for waste water treatment – Market share of phosphate-free detergents	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.
ISSUE: TOXIC CONTAMINATION		
Pressures	♦ **Emissions of heavy metals** ♦ **Emissions of organic compounds** – Consumption of pesticides	International data on emissions of toxic compounds (heavy metals, organic compounds) are partial and often lack comparability.
Conditions	♦ **Concentrations of heavy metals and organic compounds in env. Media**	
ISSUE: ACIDIFICATION		
Conditions	♦ **Exceedance of critical loads of PH in water**	

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

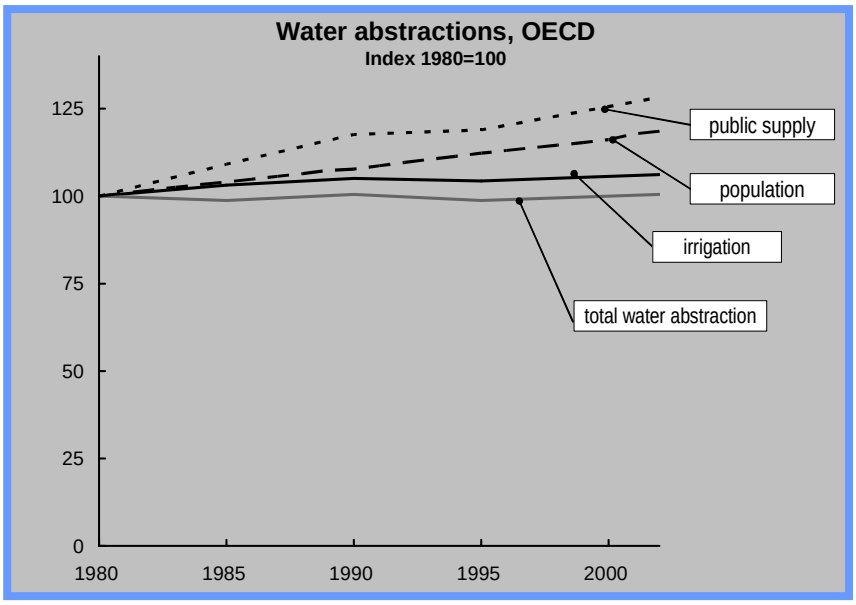
Environmental performance can be assessed against domestic objectives and international commitments. Agenda 21, adopted at UNCED (Rio de Janeiro, 1992), explicitly considers items such as the protection and preservation of freshwater resources. This was reaffirmed at the WSSD (Johannesburg, 2002).

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.

6

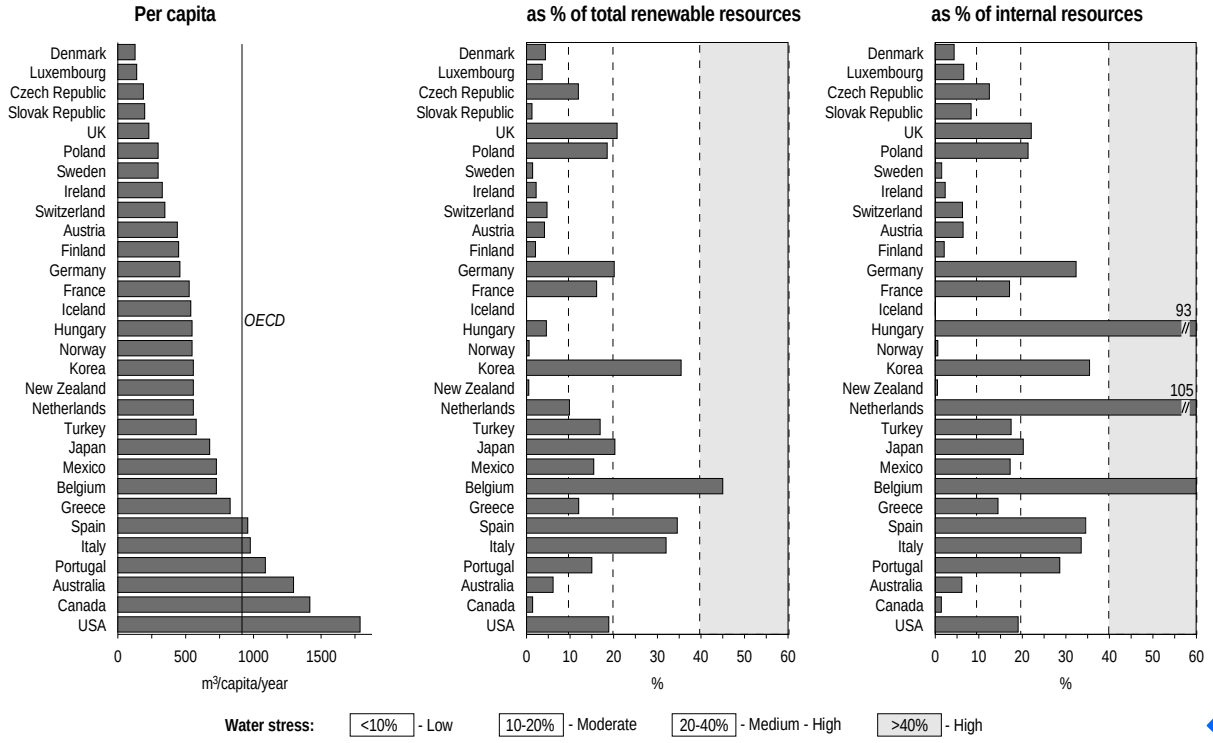
MONITORING TRENDS



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

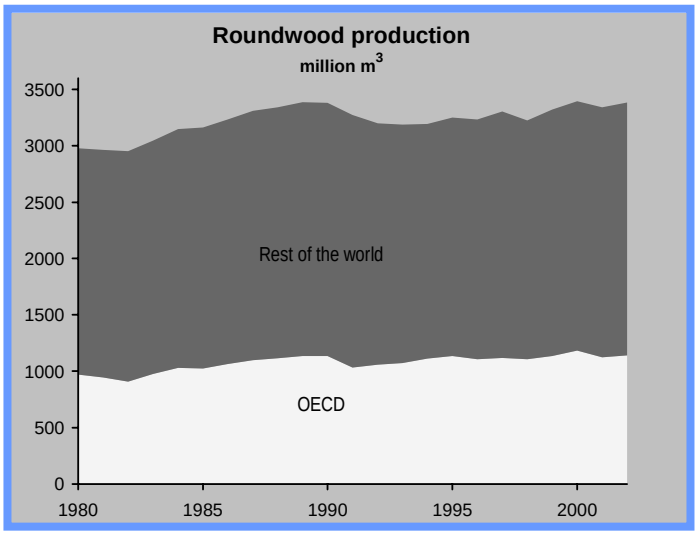
Environmental performance can be assessed against national objectives and international principles on sustainable forest management adopted at UNCED (Rio de Janeiro, 1992) and reaffirmed at the WSSD (Johannesburg, 2002). Other international initiatives are the Ministerial Conferences for the Protection 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.

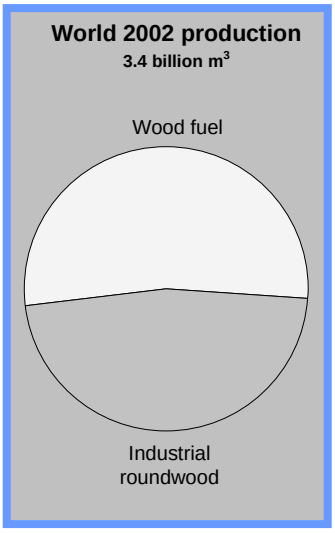
The indicator presented here relates to the intensity of use of forest resources (timber), relating actual harvest to annual productive capacity for the late 1990s. Trends in roundwood production are provided as a complement. [Data sources: FAO, UN-ECE, OECD].

When interpreting these indicators, 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.

7

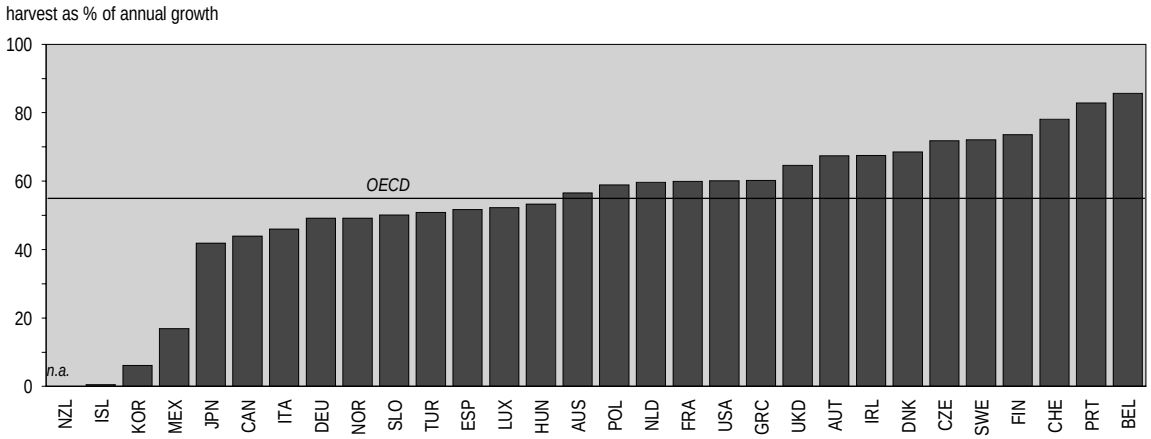
MONITORING TRENDS





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



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.

7

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

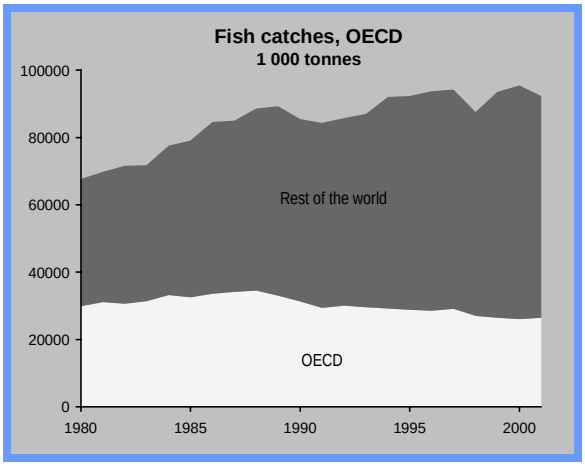
Environmental performance can be assessed against domestic objectives and bilateral and multilateral agreements such as those on conservation and use of fish resources (Atlantic Ocean, Pacific Ocean, Baltic Sea, etc.), the Rome Consensus on world fisheries, the Code of Conduct for Responsible Fishing (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.

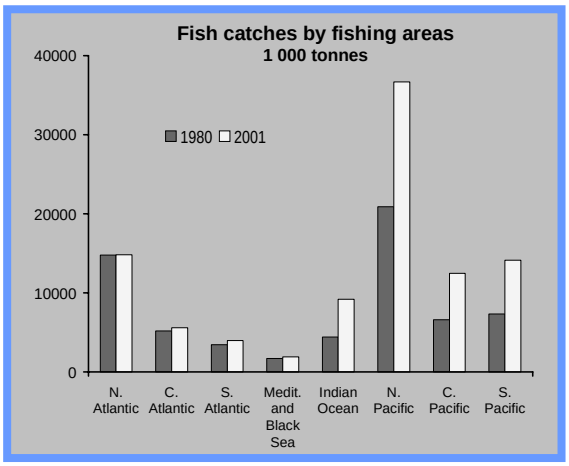
The indicator presented here relates to fish catches expressed as % of world captures and changes in total catches since 1980. Fish production from aquaculture is not included. The data cover catches in both fresh and marine waters. [Data source: FAO].

When interpreting these indicators it should be kept in mind that they give insights into quantitative aspects of fish resources. They 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. They can further be related to data on national fish consumption.

8

MONITORING TRENDS

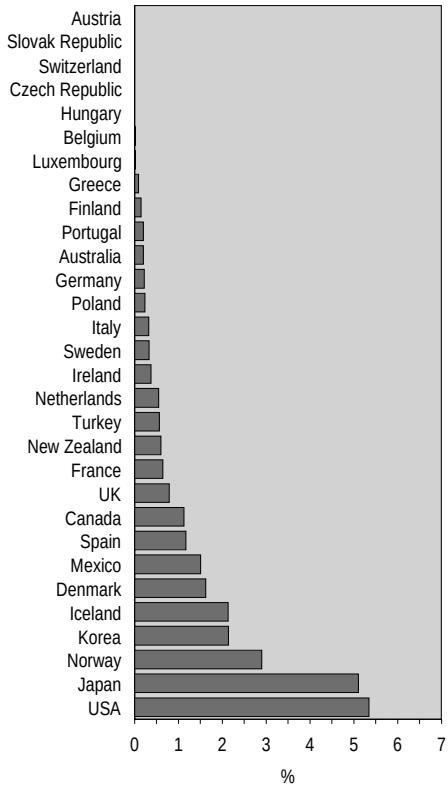




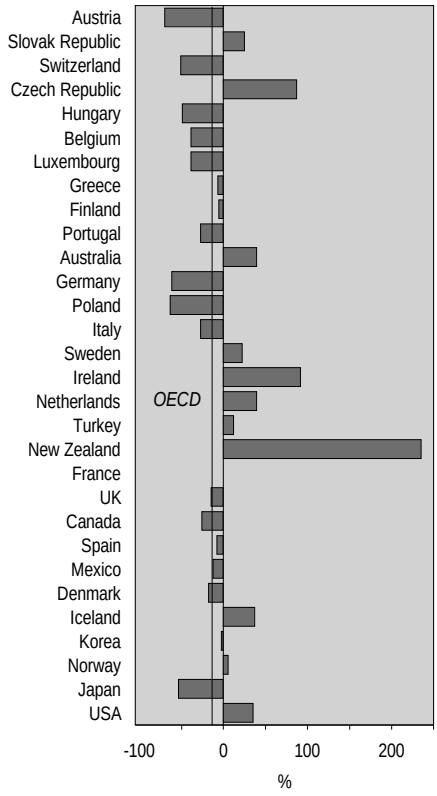
Of the major marine stocks fished world-wide, more than 28 % are estimated to be overexploited (18%), and depleted or recovering (10%), while about 47 % are fully exploited. Trend analysis shows large differences among OECD countries and among fishing areas, with high increases in some areas (e.g. the Pacific and Indian Oceans) and relatively stable trends in others (e.g. the North Atlantic). 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

Share of world catches



Total catches: change since 1980



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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		
Pressures	♦ **Fish catches**	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.
Conditions	♦ **Size of spawning stocks** – Overfished areas	Data on the size of major fish populations exist but are scattered across national and international sources.
Responses	♦ **Fishing quotas** (Number of stocks regulated by quotas) – Expenditure for fish stock monitoring	More work needs to be done to better reflect the status of fish stocks, and to relate fish captures to available resources.

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

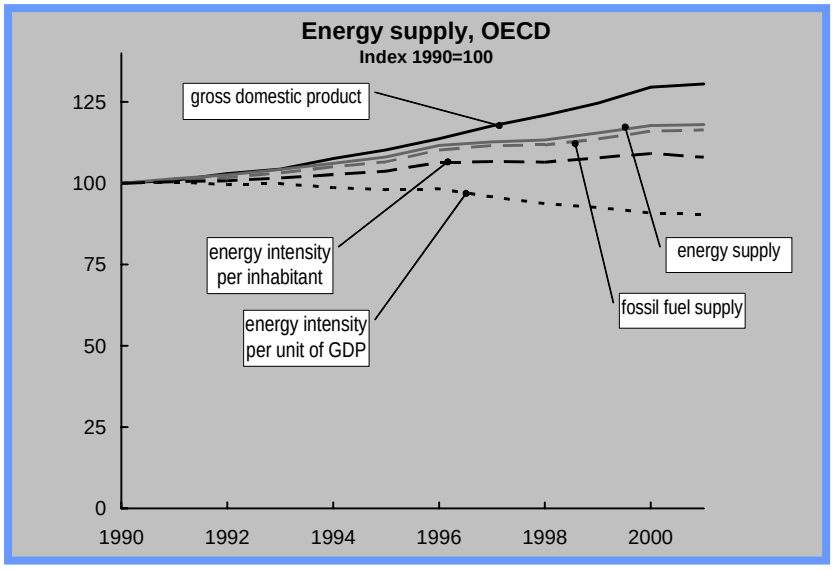
Environmental performance can be assessed against domestic objectives such as energy efficiency targets, and targets concerning the share of renewable energy sources; and against international environmental commitments that have direct implications for domestic energy policies and strategies. Examples 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 2001, 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.

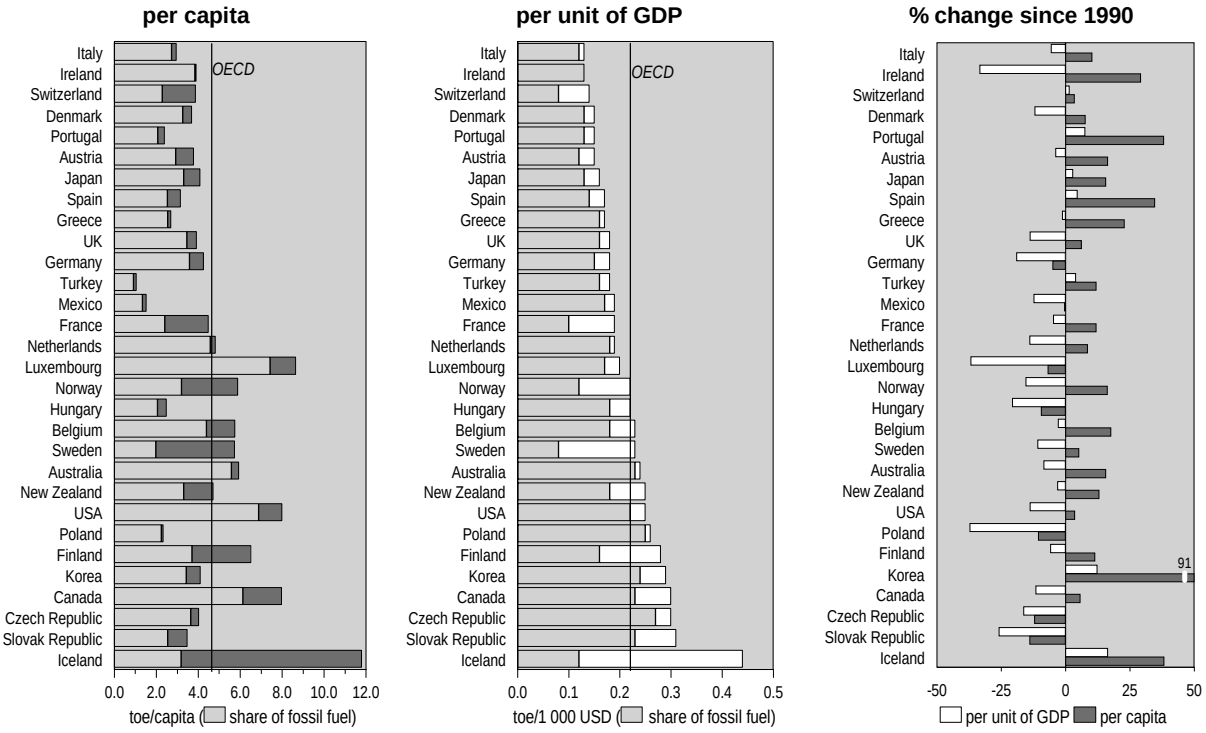
9

MONITORING TRENDS



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	Measurability
ISSUE – CLIMATE CHANGE	
Responses ♦ **Energy efficiency** – Energy intensity – Economic and fiscal instruments (energy prices and taxes, expenditures)	Data on energy supply and consumption are available from international sources for all OECD countries.
SOCIO-ECONOMIC AND GENERAL INDICATORS ♦ **Structure of energy supply**	More work needs to be done to further develop appropriate measures of energy efficiency (ref. IEA work).
To be further supplemented with: **The OECD set of indicators for the integration of environmental concerns into energy policies**	

BIODIVERSITY

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

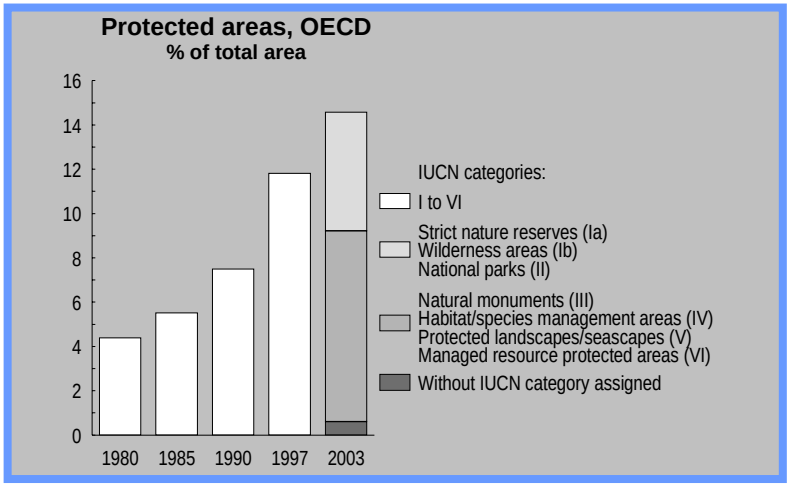
Environmental performance can be assessed against domestic objectives and international agreements such as: the Convention on Biological Diversity (1992), the Convention on the Conservation of Migratory Species of Wild Animals (1979), the Convention on International Trade in Endangered Species of Wild 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.

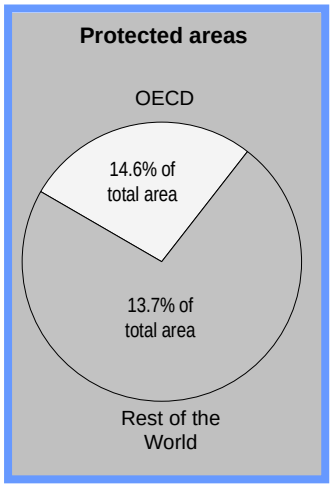
The indicators presented here relate to the number of threatened or extinct species compared to the number of known or assessed species. "Threatened" refers to species in danger of extinction and species likely to soon be in danger of extinction. Trends in protected areas are provided as a complement. [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.

10

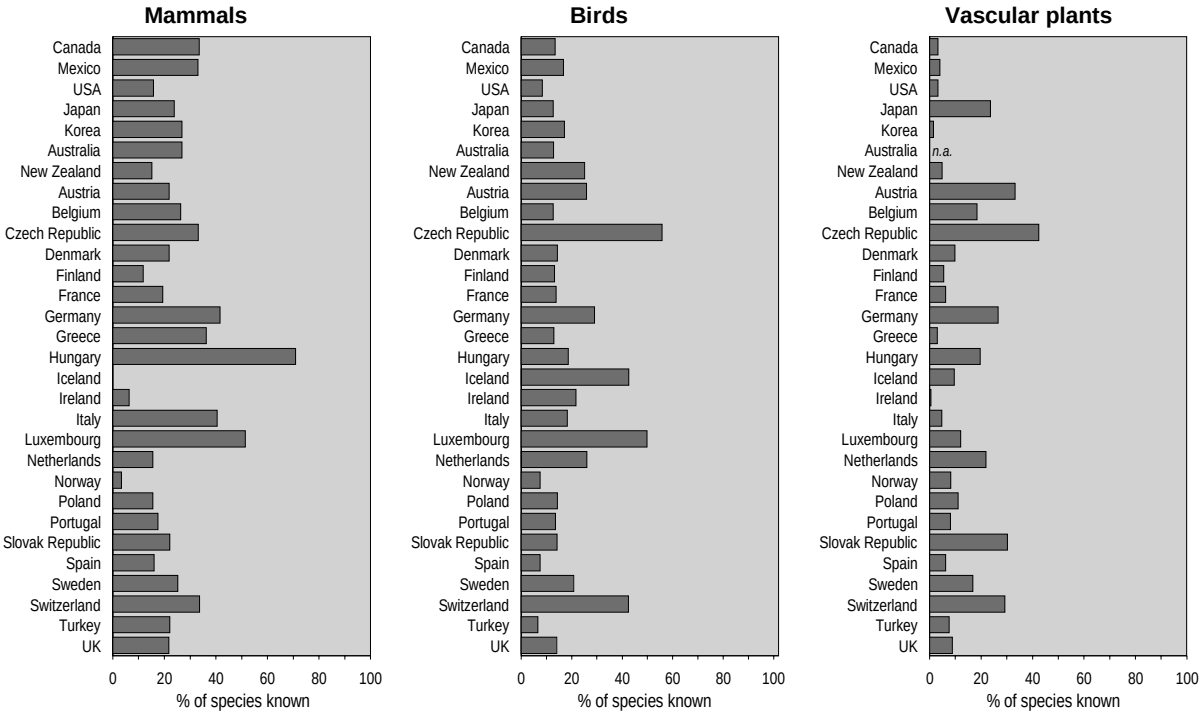
MONITORING TRENDS





The number and extent of protected areas has increased significantly since 1990 in almost all countries, reaching 14.6% 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.

ANNEX:
OECD FRAMEWORK FOR ENVIRONMENTAL INDICATORS

Annex

THE OECD PROGRAMME ON ENVIRONMENTAL INDICATORS

PURPOSES

The OECD programme on environmental indicators, initiated in 1989, contributes to three major purposes:

- Measure environmental progress and performance;
- Monitor and promote policy integration, and in particular ensure that environmental concerns are taken into account when policies are formulated and implemented for various sectors, such as transport, energy, agriculture;
- Ensure a similar integration of environmental concerns into economic policies.

APPROACH AND RESULTS[1]

Work of the OECD on environmental indicators, carried out in close co-operation with OECD member countries, has led to the development of several sets of indicators using harmonised concepts and definitions. It builds on the assumption that:

- There is no unique set of indicators; whether a given set is appropriate depends on its use;
- indicators are only one tool among others and have to be interpreted in context.

It builds on the agreement by OECD member countries to:

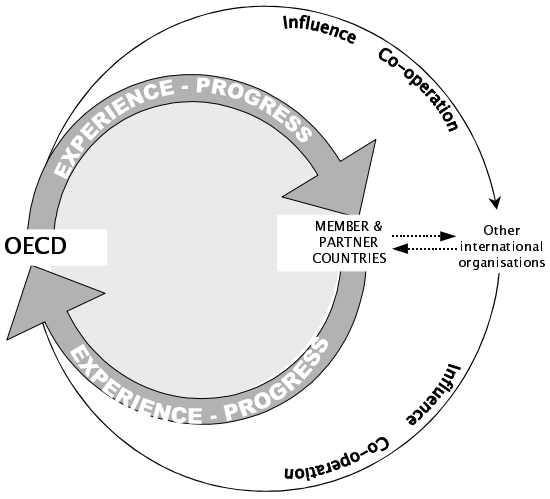
- use the pressure-state-response (PSR) model as a common reference framework;
- to identify indicators on the basis of their policy relevance, analytical soundness and measurability;
- to use the OECD approach at national level by adapting it to national circumstances

USE IN POLICY ANALYSIS

OECD environmental indicators are regularly published and used in the OECD's work. They are used in reviewing countries' environmental performance and in monitoring the implementation of the OECD Environmental Strategy. This is done by relating them to: explicit quantitative objectives (targets, standards, commitments), or to broad qualitative objectives linked to the efficiency of human activities or to the sustainability of natural resource use; and by complementing them with specific national indicators and data to ease interpretation.

This systematic use in analytical work provides valuable feedback on the indicators' actual policy relevance and analytical soundness.

LINKS WITH NATIONAL AND OTHER INTERNATIONAL INITIATIVES



The development of environmental indicators has built on OECD experience in environmental information and reporting and has benefited from strong support from Member countries, and their representatives in the OECD Working Group on Environmental Information and Outlooks (formerly Working Group on the State of the Environment).

Results of OECD work, and in particular its conceptual framework, have in turn influenced similar activities by a number of countries and international organisations. Continued co-operation is taking place in particular with: UNSD, UNCSD and UN regional offices; UNEP, and the World Bank, the European Union (Commission of the European Communities, Eurostat, EEA) and with a number of international institutes. Co-operation is also taking place with non OECD countries, and in particular with Russia and China.

1. *For further details on the OECD work for environmental indicators, see:*
   📖 *"OECD Environmental Indicators – Development, Measurement and Use", Reference Paper (http://www.oecd.org/env/)*

THE OECD SETS OF ENVIRONMENTAL INDICATORS

Work carried out so far includes several categories of indicators, each corresponding to a specific purpose and framework:

TRACKING ENVIRONMENTAL PROGRESS AND PERFORMANCE

CORE ENVIRONMENTAL INDICATORS (CEI) are designed to help track environmental progress and the factors involved in it, and analyse environmental policies. They are included in the OECD Core Set of environmental indicators, commonly agreed upon by OECD countries for OECD use, and published regularly. The Core Set, of about 50 indicators, covers issues that reflect the main environmental concerns in OECD countries. It incorporates core indicators derived from sectoral sets and from environmental accounting. Indicators are classified following the PSR model: indicators of environmental pressures, both direct and indirect; indicators of environmental conditions; indicators of society's responses.

INFORMING THE PUBLIC

KEY ENVIRONMENTAL INDICATORS (KEI), endorsed by OECD Environment Ministers, are a reduced set of core indicators, selected from the OECD Core Set, that serve communication purposes. They inform the general public and provide key signals to policy-makers.

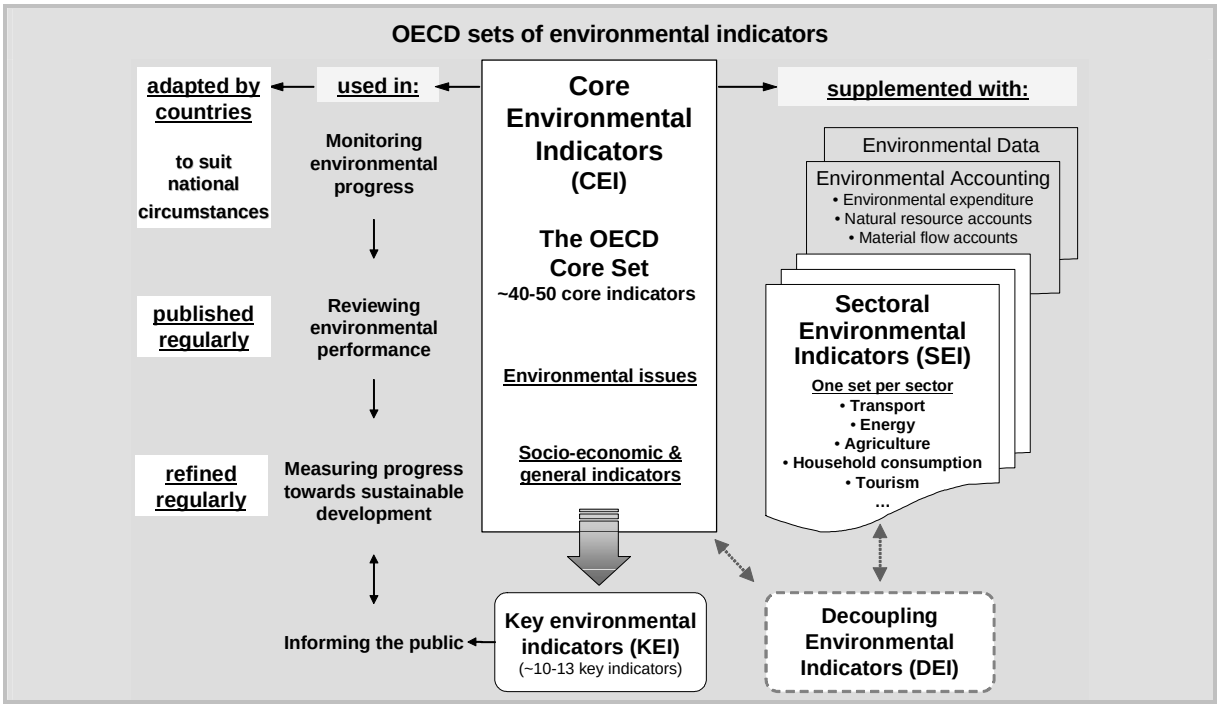
PROMOTING INTEGRATION

SECTORAL ENVIRONMENTAL INDICATORS (SEI) are designed to help integrate environmental concerns into sectoral policies. Each set focuses on a specific sector (transport, energy, household consumption, tourism, agriculture). Indicators are classified following an adjusted PSR model reflecting: sectoral trends of environmental significance; their interactions with the environment (including positive and negative effects); and related economic and policy considerations.

INDICATORS DERIVED FROM ENVIRONMENTAL ACCOUNTING are designed to help integrate environmental concerns into economic and resource management policies. Focus is on: environmental expenditure accounts; physical natural resource accounts related to sustainable management of natural resources; and physical material flow accounts, related to the efficiency and productivity of material resource use.

MONITORING PROGRESS TOWARDS SUSTAINABLE DEVELOPMENT

DECOUPLING ENVIRONMENTAL INDICATORS (DEI) measure the level of decoupling of environmental pressure from economic growth. In conjunction with other indicators used in OECD country reviews, they are valuable tools for determining whether countries are on track towards sustainable development. Most DEIs are derived from other indicator sets and further broken down to reflect underlying drivers and structural changes.



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