

Technical annex: Quality of information

Key:
Overall quality of information score:
☆☆☆☆ 'high', ☆☆☆ 'medium' or ☆☆☆ 'low'

Chapter 3: Households

Indicator	Overall score	Comments
3.1. Some indicators of household eco-efficiency	☆☆	Data for carbon dioxide emissions is based on emissions from fossil fuel use by households which provide a relatively low estimate of total greenhouse gas emissions from households (due to the fact that emissions from private transport are excluded).
3.2. Water and energy consumption	☆☆	Consistency of definitions and information over countries, data sources and over time is not guaranteed.
3.3 Purchase of eco-labelled products	☆☆☆☆	Based on precise figures collected by the European Commission.

Chapter 4: Transport

Indicator	Overall score	Comments
4.1. Passenger and freight transport volumes	☆☆	Data on passenger-km and tonne-km are calculated rather than directly measured. Some modes are excluded due to a lack of historical data. Passenger and freight transport intensity: country breakdowns for short sea shipping and intra and extra European flights are missing. Vehicle-kilometre would be a more suitable indicator to monitor decoupling, but statistics are very incomplete.
4.2. Modal split in passenger and freight transport	☆☆	Passenger modal split: motorcycle and waterborne modes are excluded due to a lack of data; country breakdown of intra and extra European flights missing. Freight modal split: country breakdown of short-sea shipping statistics is missing.
4.3. Transport eco-efficiency	☆☆	Carbon dioxide and air pollutant emissions from international air and ship traffic are excluded in line with international agreements. Energy and emission data lack a breakdown in passenger and freight transport.
4.4. Uptake of cleaner technologies and fuels	☆☆	Data on the share of the fleet complying with certain emissions standards have been modelled.
4.5. Differentiation of transport taxes and charges	☆☆	Miscellaneous sources.
4.6. Real changes in fuel prices	☆☆☆☆	Based on quarterly statistics from European Commission Oil Bulletin: http://europa.eu.int/comm/energy/en/oil/bulletin_en.html

Chapter 5: Energy

Indicator	Overall score	Comments
5.1. Energy intensity of the economy	☆☆☆☆	Data from Eurostat
5.2. Eco-efficiency of the energy industry	☆☆	Data values for transformation output are provisional for 1998 and 1999. Officially reported emissions data following agreed procedures. Weighting factors have been used so that emissions can be combined in terms of their polluting effects.

5.3. Emissions from electricity production	☆☆	Officially reported emissions data following agreed procedures. Data and analysis are the preliminary results of ongoing work to refine and improve associated statistics and methodology. The results must not be regarded as accurate estimates of absolute values.
5.4. Total energy consumption by fuel	☆☆☆	Data from Eurostat
5.5. Share of total energy and electricity obtained from renewables	☆☆☆	Data for individual biomass and waste energies are only available for 1990, 1996-1999. Biomass data for Germany and Italy suggest a large increase in wood use for households between 1996 and 1999. This is due to improved data collection methods which result in more accurate data collection than in previous years.
5.6. Share of combined heat and power in gross electricity production	☆☆☆	1998 data for combined heat and power electricity generation in Greece is an estimate, and data for Germany for 1994 is from 1995 and there is no data for Luxembourg in 1994.
5.7. Real energy prices	☆☆☆	Note that changes in data sources and methodologies used have resulted in some changes in prices presented here compared with Environmental signals 2000.
5.8. Energy tax levels	☆☆☆	There are some differences in the level of the prices shown here to those in Environmental Signals 2000 due to a change of data sources and the use of different methodologies to calculate average EU prices.

Chapter 6: Agriculture

Indicator	Overall score	Comment
6.1. Agriculture eco-efficiency	☆☆	There are some concerns regarding the reliability and consistency of some of the data which is collected by Member States using different types of survey for the various eco-efficiency parameters. The use of gross value added may under-represent the increase in agricultural eco-efficiency since the ratio of output to input prices may be declining more strongly in agriculture than in other sectors.
6.2. Bird population trends in relation to farming intensity	☆☆	FAO and RSPB data are generally reliable. Historical bird census data in different countries may show inconsistencies and are only partly sufficiently quantified.
6.3. Areas vulnerable to nitrates	☆☆	The adequacy scores for the Member State measures under the Nitrates Directive are based on semi-quantitative criteria that are subject to interpretation.
6.4. Structure of Common Agricultural Policy support	☆☆☆	Financial information provided by the European Commission on the EU budget is considered reliable.
6.5. Developments in organic farming	☆☆	The data on organic farming area come from one source even though accuracy still varies between countries and is not complete over the whole time series.

Chapter 7: Fisheries

Indicator	Overall score	Comments
7.1. Size of the fishing fleet	☆☆	The datasets are fragmented both temporally and spatially.

7.2. Status of fish stocks	☆☆	The datasets are based on time series that can give a good account of the state of a stock, but different approaches are being used in the Mediterranean and the NE Atlantic to determine if a stock is outside safe biological limits.
7.3. North Sea cod stock	☆☆☆	The most serious cause of uncertainty lies within information and types of data not being reported (discard, unrecorded landings, fraudulent reporting).
7.4. Aquaculture production	☆☆	The data are provided by official national data sources and have had some initial validation.

Chapter 9: Climate change

Indicator	Overall score	Comment
9.1. Total emissions of greenhouse gases	☆☆☆	Officially reported data following agreed procedures but fluorinated gas emissions not yet reported by all Member States and the quality of emissions estimates for nitrous oxide and methane should be further improved by Member States.
9.2. Emissions of greenhouse gases by sector and gas	☆☆☆	Officially reported data following agreed procedures but fluorinated gas emissions not yet reported by all Member States and the quality of emissions estimates for nitrous oxide and methane should be further improved by Member States.
9.3. Global and European mean temperature	☆☆☆	Reliable data with low uncertainty.

Chapter 10: Air pollution

Indicator	Overall score	Comments
10.2 Urban air quality exceedances for ozone	☆☆☆	Improvement in coverage over space and time and extrapolation to the total urban and rural population is required for the future.
10.3 Urban air quality exceedances for particulates	☆☆☆	Improvement in coverage over space and time and extrapolation to the total urban and rural population is required for the future.
10.4 Urban air quality exceedances for sulphur dioxide	☆☆☆	Improvement in coverage over space and time and extrapolation to the total urban and rural population is required for the future.
10.5 Urban air quality exceedances for nitrogen dioxide	☆☆☆	Improvement in coverage over space and time and extrapolation to the total urban and rural population is required for the future.
10.6 Exposure of agricultural crops and forests to ozone	☆☆☆	Improvement of coverage in space and time is required for the future.
10.8 Aggregated emissions of acidifying substances	☆☆	Countries need to fill some data gaps to improve the completeness of the time series of their estimates.
10.9 Aggregated emissions of ground-level ozone precursors	☆☆	Countries need to fill some data gaps to improve the completeness of the time series of their estimates.
10.10 Particle emissions	☆☆	The emission data for primary PM ₁₀ is not as robust as that for other air pollutants and the factors used in the estimation of secondary PM ₁₀ emission are based on assumptions about the deposition and reactions of the precursor pollutants.

Chapter 11: Inland and coastal waters

Indicator	Overall score	Comments
11.1. Water use versus resources	☆☆	Consistency of definitions and information over countries, data sources and over time is not guaranteed. Comparisons should be made with some precaution.
11.2. Organic pollution in rivers	☆☆☆	Generally good, some data still requires validation
11.3. Waste water treatment	☆☆	There are some variations in the definitions of different classes of treatment between countries and not all countries provide data for all years.
11.4. Nutrients in rivers	☆☆☆	Generally good data although some data still requires validation
11.5. Nutrients in coastal waters	☆☆☆	The test for trend at sampling points is a robust and accepted approach, accuracy partly influenced by the number of sampling points for which data are available.
11.6. Chlorophyll-a in marine and coastal waters	☆☆	This assessment only allows the analysis of trends. The accuracy on country level is largely influenced by the number of stations for which data are available. The trend detector is a robust and accepted approach.
11.7. Bathing water quality	☆☆☆	Generally high quality information, note that no data is yet available for EU accession or EFTA countries.
11.8. Oil pollution from offshore installations and illegal discharges	☆☆	Not all countries report data on organic-phase drilling fluids. Data calculations for discharges from refineries need to be checked. Coverage of the Mediterranean and the Black Sea is missing from the offshore installations discharges.

Chapter 12: Waste and material flows

Indicator	Overall score	Comments
12.1. Total material requirement	☆☆	Data sources for indirect flows associated with imports have to be internationally improved.
12.2. Total waste generation	☆	Data provision and statistical improvements are needed in all Member States, the proposed waste statistic regulation will when implemented make countries provide the necessary information.
12.3. Municipal waste generated and landfilled/incinerated	☆☆	The proposed Council Regulation on Waste Management Statistics will provide some of the necessary statistical improvement for this indicator.
12.4. Packaging waste	☆☆	To ensure data comparability clarification is needed on the methods used to estimate the quantities of packaging put on the market and recycling and recovery rates.
12.5. Hazardous waste	☆	Adequate information on hazardous waste management is not available, so a reliable assessment of the current situation in Europe cannot be made.

Chapter 13: Land

Indicator	Overall score	Comments
13.1. Land take due to urban development	☆☆☆	Corine land cover: exhaustive but coarse scale. Moland/Murbandy: good scale but 24 cities only.
13.2. Soil sealing	☆	Statistical data based on national surveys with different methodologies and results may vary across countries.
13.3. Fragmentation and partitioning of habitats by transport infrastructure	☆☆	Roads of GISCO database not consistent over countries; frequent updating needed.

Chapter 14: Forest

Indicator	Overall score	Comments
14.1. Total forest area and "naturalness"	☆☆	Certain differences in data accuracy still remain between countries because of different methodologies and reference periods upon which estimate of annual change is based vary somewhat between countries. Interpretation of 'plantations' still varies between countries due to difficulties to apply FAOs global definition for European planted forests which are subject to diverse management regimes.
14.2. Annual fellings and increment of growing stock	☆☆	Comparison of data from different time periods — comparing countries should be made with caution.
14.3. Origin and impacts of tree planting material	☆☆	Dataset incomplete, some missing countries may plant non-native species to a large extent.
14.4. Forest condition	☆☆☆	Data set provided by ICP Forest, running one of the biggest biomonitoring networks worldwide.
14.5. Threatened forest species and protection of forest habitats and species	☆☆☆	Data reported in the framework of the EC Habitats Directive
14.6. Level of protection of forests	☆☆	There are some uncertainty associated with the assessment of the surface area covered by habitats and differences in interpretation of 'protected forests' by countries.

Chapter 15: Environmental taxes

Indicator	Overall score	Comments
15.1. Revenue from environmental taxes	☆☆	Provisional data from Eurostat
15.2. Ratio of revenue from environmental taxes to revenue from other taxes	☆☆	Structures of the Taxation Systems in the European Union 1990-1997 (DG TAXUD & Eurostat). The data for 1997 have been extrapolated to 1998 and 1999, using the short-term economic forecasts from the Commission Services
15.3. Introduction of environmental taxes and some indications of effectiveness	☆☆	EEA (2000) Environmental taxes — Recent developments in tools for integration; OECD/EU database for environmental taxes

Technical annex:

Key references and further reading

Chapter 1: Introduction

Key references

EEA, 1999. *Environmental indicators: typology and overview*, Technical report No 25, European Environment Agency. Office for Official Publications of the European Communities, Luxembourg.

EEA, 2001. *Indicators tracking transport and environment integration in the European Union*. Environmental issues series No 23, European Environment Agency, Copenhagen. Office for Official Publications of the European Communities, Luxembourg.

European Commission, 2001. *A Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development*, COM (2001) 264 final. Commission of the European Communities, Brussels.

European Commission, 2001. *Structural Indicators*, COM (2001) 619 final. Commission of the European Communities, Brussels.

European Commission, 2001. *Environment 2010: Our future, Our choice, The Sixth Environment Action Programme*, COM (2001) 31 final. Commission of the European Communities, Brussels.

European Commission, 2002. *The Lisbon Strategy — Making change happen*, COM (2002) 14 final. Commission of the European Communities, Brussels.

European Commission, 2002. *Commission staff working paper in support of the report from the Commission to the Spring European Council in Barcelona, The Lisbon Strategy — Making change happen*, COM (2002) 14 final, SEC (2002) 29. Commission of the European Communities, Brussels.

European Council, 2001. *Council conclusions on environment-related headline indicators for sustainable development with a view to monitoring progress in the implementation of the EU Sustainable Development Strategy*, No 14589/01.

Further reading

EEA, 2000. *Environmental signals 2000*, Environmental assessment report No 6, European Environment Agency. Office for Official Publications of the European Communities, Luxembourg.

EEA, 2001. *Environmental signals 2001*, Environmental assessment report No 8. European Environment Agency. Office for Official Publications of the European Communities, Luxembourg.

Chapter 2: Progress in the integration of sectors and the environment

Key references

EEA, 2000. *Environmental taxation: recent developments in tools for integration*, Environmental issue report No 18, European Environment Agency. Office for Official Publications of the European Communities, Luxembourg.

EEA, 2001. *Reporting on environmental measures: Are we being effective?*, Environmental issue report No 25. European Environment Agency. Office for Official Publications of the European Communities, Luxembourg.

European Commission, 2001. *A Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development*, COM (2001) 264 final. Commission of the European Communities, Brussels.

European Commission, 2001. *Environment 2010: Our future, Our choice, The Sixth Environment Action Programme*, COM (2001) 31 final. Commission of the European Communities, Brussels.

Chapter 3: Households

Key references

DEPA, 2001. *Evaluation of the Eco-label Promotional Campaign 2001*. Danish Environmental Protection Agency, Copenhagen.

EEA, 1999. *Sustainable water use in Europe — Part 1: Sectoral use of water*, Environmental assessment report No 1. European Environment Agency. Office for Official Publications of the European Communities, Luxembourg.

EEA, 2000. *Household and municipal waste: Comparability of data in EEA member countries*, Topic report No 3/2000. European Environment Agency, Copenhagen.

European Commission, 2001. *Green Paper on Integrated Product Policy*, COM (2001) 68. Commission of the European Communities, Brussels.

European Commission, 2002. *Investigation of the market impacts and penetration of the European Eco-label over the years 1992-2000 and 2001-2004*. Commission of the European Communities, Brussels.

OECD, 1998. *Towards more sustainable consumption: revised work plan*, ENV/EPOC/1998. Organisation Economic Cooperation and Development, Paris.

OECD, 1999. *Towards more Sustainable Household Consumption Patterns - Indicators to Measure Progress*, ENV/EPOC/SE(98)2/Final. Organisation for Economic Cooperation and Development, Paris.

Further reading

EEA, 2000. *Sustainable use of Europe's water? State, prospects and issues*, Environmental assessment series No 7. European Environment Agency. Office for Official Publications of the European Communities, Luxembourg.

EEA, 2001. *Sustainable water use in Europe — Part 2: Demand management*. Environmental issue report No 19. European Environment Agency. Office for Official Publications of the European Communities, Luxembourg.

ICWS, 1996. *Long range study on water supply and demand in Europe*. International Centre for Water Studies, The Netherlands.

RIVM/CBS, 2001. *Dutch Environmental Data Compendium, 2001*. Rijksinstituut voor Volksgezondheid en Milieu (RIVM), Bilthoven, The Netherlands and Centraal Bureau voor de Statistiek (CBS), Heerlen, The Netherlands.

Chapter 4: Transport

Key references

EEA, 2001. *TERM 2001 — Indicators Tracking Transport and Environment Integration in the European Union*. European Environment Agency. Office for Official Publications of the European Communities, Luxembourg.

European Commission, 2000. *Green Paper Towards a European strategy for the security of energy supply*, COM (2000) 769 final. Commission of the European Communities, Brussels.

European Commission, 2001a. *White Paper — European transport policy for 2010: time to decide*, COM (2001) 370. Commission of the European Communities, Brussels.

European Commission, 2001b. *EU energy and transport in figures — Statistical pocketbook 2001*. Office for Official Publications of the European Communities, Luxembourg.

European Commission, 2002. *Towards an integrated European railway area*, COM (2002) 18 final. Commission of the European Communities, Brussels.

Eurostat, 2002. *Transport and Environment: Statistics for the Transport and Environment Reporting Mechanism (TERM) for the European Union, data 1980-2000*. Unpublished electronic update, January 2002.

INFRAS/IWW, 2000. *External costs of transport (accidents, environmental and congestion costs) in western Europe*. Study on behalf of the International Railway Union. Paris. INFRAS, Zurich, IWW, University of Karlsruhe.

Further reading

ECMT, 1999. *Investments in Infrastructure 1985-1997*, European Conference of Ministers of Transport, Paris. Organisation for Economic Cooperation and Development, Paris.

ECMT, 2000. *Efficient transport taxes and charges*. Organisation for Economic Cooperation and Development, Paris.

European Commission, 2000. *Study on the economic, legal, environmental and practical implications of a European Union system to reduce ship emissions of SO_x and NO_x*, report by BMT for the European Commission. Commission of the European Communities, Brussels.

European Commission, 2001. *Economic Evaluation of Sectoral Emission Reduction Objectives for Climate Change — Economic Evaluation of Emissions Reductions in the Transport Sector of the EU*. Contribution from AEA Technology Environment to a Study for the European Commission by Ecofys Energy and Environment, AEA Technology Environment and the National Technical University of Athens (Final report - updated version, March 2001) Commission of the European Communities, Brussels.

International Energy Agency, 2001. *Saving oil and reducing CO₂ emissions in transport*. Organisation for Economic Cooperation and Development, Paris.

IVM, 1998. *Eastward expansion of free trade: A green prospect? Environmental implications of trade liberalisation between the European Union and countries of Central and Eastern Europe*. Final report. Onno Kuik, Frans Oosterhuis, Institute for Environmental Studies, Vrije Universiteit Amsterdam (IVM). Amsterdam, the Netherlands, 21 August 1998.

OECD, 2001. *Environmentally related taxes in OECD countries - Issues and strategies*. Organisation for Economic Cooperation and Development, Paris.

REC, 1998. *Use of Economic Instruments for Environmental Policy in Central and Eastern Europe*. Prepared by the Regional Environmental Centre for Central and Eastern Europe for the fourth Ministerial Conference "Environment for Europe" in Aarhus, Denmark, June 23-25 1998.

UNECE, 2001. *Annual Bulletin of Transport Statistics for Europe and North America*. United Nations Economic Commission for Europe, Geneva. Data received electronically, July 2001.

Chapter 5: Energy

Key references

Cogen Europe, 2001. Web pages of COGEN, the European Association for the Promotion of Cogeneration.

EEA, 2001. *Renewable energies: success stories*, Environmental issues report no. 27. European Environment Agency. Office for Official Publications of the European Communities, Luxembourg.

EEA (in press). *Energy and Environment in the European Union*. European Environment Agency, Copenhagen.

NTUA, 2000. *Top-down analysis of emission reduction possibilities in the energy demand sectors, 'Economic evaluation of sector targets for climate change'*, report for the European Commission, prepared by Professor P. Capros and Dr. L. Mantzos, 27 March 2000.

Further reading

European Commission, 2000. *Green Paper Towards a European strategy for the security of energy supply*, COM (2000) 769 final. Commission of the European Communities, Brussels.

European Commission, 2000. *Action Plan to Improve Energy Efficiency in the European Community*, COM (2000) 247 final. Commission of the European Communities, Brussels.

European Commission, 2000. *EU policies and measures to reduce greenhouse gas emissions: Towards a European Climate Change Programme (ECCP)*, COM (2000) 88 final. Commission of the European Communities, Brussels.

European Commission, 2001. *Economic Evaluation of Sectoral Emission Reduction Objectives for Climate Change — Economic Evaluation of Emissions Reductions in the Transport Sector of the EU*. Contribution from AEA Technology Environment to a Study for the European Commission by Ecofys Energy and Environment, AEA Technology Environment and the National Technical University of Athens (Final report - updated version, March 2001). Commission for the European Communities, Brussels.

European Commission, 2001. *Energy in Europe. 2000 — Annual Energy Review*, Special Issue — January 2001. Commission of the European Communities, Brussels.
European Commission, 2001. Alternative fuels for road transportation and a set of measures to promote the use of biofuels. COM (2001) 547 final. Commission of the European Communities, Brussels.

European Parliament and Council (2001a) *Directive on the promotion of electricity produced from renewable energy sources in the internal electricity market*. Directive 2001/77/EC. European Parliament, Luxembourg.

Chapter 6: Agriculture

Key references

Codex Alimentarius Commission, 1999. *Guidelines for the Production, Processing, Labelling and Marketing of Organically Produced Foods*. GAC/GL 32.1999.Point 7.

Donald, P.F., Green, R.E. and Heath, M.F., 2001. Agricultural intensification and the collapse of Europe's farmland bird populations. *Proceedings of the Royal Society of London* 268: 25-29.

European Commission, 2001a. *Implementation of elements of the Nitrates Directive*. Commission of the European Communities, Brussels.

European Commission, 2001b. *Protection of Nature and Biodiversity - Biodiversity Action Plan for Agriculture*, COM (2001) 162 final. Commission of the European Communities, Brussels.

European Commission, 2002a. *30th financial report on the European Guidance and Guarantee Fund (EAGGF) — Guarantee Section — 2000 financial year; Annex 9*, COM (2002) 552 final. Commission of the European Communities, Brussels.

European Commission, 2002b. *The Agricultural Situation in the European Union 2000 Report (in conjunction with the General Report on the Activities of the European Union — 2000)*, COM (2002) 67 final. Commission of the European Communities, Brussels.

European Commission, 2002c. *Overview of EU Agri-environment scheme expenditure in the periods 1994-1999 and 2000-2006*, personal communication Rob Peters, DG Agriculture.

Eurostat, 2000. *Farm structure. Historical results — Surveys from 1966/67 to 1997*. Final version, October 2000.

Gregory, R.D., Noble, D.G., Cranswyck, P.A. Campbell, L.H., Rehfisch, M.M. and Baillie, S.R., 2001. *The state of the UK's birds 2000*. Royal Society for the Protection of Birds, British Trust for Ornithology, Wildfowl and Wetlands Trust, Sandy, UK.

Lampkin, N. 2002. *Personal communication*. Welsh Institute of Rural Studies, University of Wales, Aberystwyth.

van Strien, J. Pannekoek, J. and Gibbons, D.W., 2001. Indexing European bird populations trends using results of national monitoring schemes: a trial of a new method. *Bird Study* 48: 200-213.

Further reading

Danish Ministry of Food, Agriculture and Fisheries, 2001. *Organic Food and Farming. Towards Partnership and Action in Europe*. Proceedings from conference held in Copenhagen, Denmark 10-11 May 2001.

European Commission, 1998. Working Document VI/7655/98: *Evaluation of Agri-environment Programmes. State of Application of Regulation (EEC) No. 2078/92*. Commission of the European Communities, Brussels.

Chapter 7: Fisheries

Key references

European Commission, 2001. *Green Paper: The future of the common fisheries policy*. Commission of the European Communities, Brussels.

European Commission, 2001. *Elements of a Strategy for the integration of environmental protection requirements for the Common Fisheries Policy*, COM (2001) 143. Commission of the European Communities, Brussels.

ICES/ACFM, 2001. *Report on the state of the resources and their expected development*. International Council for the Exploration of the Sea, Copenhagen.

OSPAR, 2000a. *Nutrient discharges from fish farming in the OSPAR Convention area*. OSPAR Commission, London.

OSPAR, 2000b. *Quality Status Report 2000*. OSPAR Commission, London.

Further reading

Aquaflow, 2001. *Guidelines for Best Environmental Practice*. Technical Leaflet: 2001-007, European Network for the Dissemination of Aquaculture RTD Information (Q5CA-200-30105) and previously FAIR-3837.

Chamberlain, G.W., 2000. Fishmeal — an article submitted to the journal *Nature* in response to the publication's June 29 2000 article entitled 'Effect of aquaculture on world fish supplies', in the Aquaissues index page of the website: www.gaalliance.org.

European Commission, 2001. *Biodiversity Action Plan for Fisheries*. COM (2001) 143 final. Commission of the European Communities, Brussels.

Costello, Grant, Davies, Cecchini, Papoutsoglou, Quigley and Saroglia, 2001. The control of chemicals used in aquaculture in Europe. *Journal of Applied Ichthyology* 17(4): 173.

Cross, D., 2001. *Statistics in Focus. EEA Fishing fleet in 2000*. Eurostat, Luxembourg

Garrod, D.J. and Jones, B.W., 1974. Stock and recruitment relationship in the north east atlantic cod stock and the implications for management of the stock. *J. Cons. Int. Explor. Mer* 36:35-41.

Papaconstantinou, C., and Farrugio, H., 2000. Fisheries in the Mediterranean. *Mediterranean Marine Science* 1: 15-18.

Naylor, R., Goldberg, R.J., Primavera, J.H., Kautsky, N., Beveridge, M.C.M., Clay, J., Folke, C., Lubchenco, J., Mooney, H. and Troell, M., 2000. Effect of aquaculture on world fish supplies. *Nature*. 405, 29 June 2000.

Chapter 8: Progress in some key Environment issues

OECD, 2001. *OECD Environmental Outlook*. Organisation for Economic Cooperation and Development, Paris.

Chapter 9: Climate change

Key references

EEA, 2001. *European Community and Member State greenhouse gas emission trends 1990-1999*, Topic report 10/2001. European Environment Agency, Copenhagen.

European Commission, 2001a. *Proposal for a Council Decision concerning the approval, on behalf of the European Community, of the Kyoto Protocol to the United Nations Framework Convention on Climate Change and the joint fulfilment of commitments there under*, COM (2001) 579 final. Commission of the European Communities, Brussels.

European Commission, 2001b. *Communication on the Implementation of the First Phase of the European Climate Change Programme*, COM (2001) 580 final. Commission of the European Communities, Brussels.

European Commission, 2001c. *Proposal for a Directive Establishing a Scheme for Greenhouse Gas Emission Allowance Trading Within the Community and Amending Council Directive 96/61/EC*, COM (2001) 581 final. Commission of the European Communities, Brussels.

European Commission, 2001d. *Economic Evaluation of Sectoral Emission Reduction Objectives for Climate Change: Summary Report for Policy Makers*. Commission of the European Communities, Brussels.

European Commission, 2001e. *Implementing the Community Strategy to Reduce CO₂ Emissions from Cars. Second Annual Report on the Effectiveness of the Strategy (reporting year 2000)*, COM (2001) 643 final. Commission of the European Communities, Brussels.

IPCC, 2001. *Climate Change, Third Assessment Report*. World Meteorological Organisation/United Nations Environment Programme/Intergovernmental Panel on Climate Change, Geneva.

UNFCCC, 2002. *Report of the Conference of the Parties on its Seventh Session, held at Marrakesh from 29 October to 10 November 2001, Part 2 "Action taken by the Conference of the Parties at its Seventh Session, "The Marrakesh Accords"*. FCCC/CP/2001/13, Addendum 1,2 and 3, 21 January 2002.

Further reading

DIW, 2001. *CO₂-Emissionen: Trendwende noch nicht in Sicht*, DIW-Wochenbericht 45/01, Deutsche Institut für Wirtschaftsforschung (German Institute for Economic Research), Berlin.

Jones, P.D., New, M., Parker, D.E., Martin, S. and Rigor, I.G., 1999. Surface Air Temperature and its Changes over the Past 150 years. *Reviews Geophysics* 37: 173-199.

Leemans, R., 1998. *Ecosystem Vulnerability and Climate Protection Goals*. Rijksinstituut voor Volksgezondheid en Milieu (RIVM), Bilthoven, The Netherlands.

Chapter 10: Air pollution

Key references

European Commission, 2001. *The Clean Air for Europe (CAFE) Programme: Towards a Thematic Strategy for Air Quality*, COM (2001) 245. Commission of the European Communities, Brussels.

De Leeuw, F., 2002. A set of emission indicators for long range transboundary air pollution. *Environmental Science and Policy* (in press).

EEA, 2001. *Air Pollution by Ozone in Europe in Summer 2001*, Topic report 13/2001. European Environment Agency, Copenhagen.

EEA, 2002. *Air quality in the Phare countries*, Topic report 16/2001. European Environment Agency, Copenhagen.

EMEP, 2001. *Transboundary acidification and eutrophication and ground level ozone in Europe. EMEP Summary Report 2001*. EMEP.

Chapter 11: Water stress

Key references

Bonn Agreement, 2000. *Bonn Agreement Annual report on aerial surveillance 1999*. Bonn Agreement Secretariat, London.

EEA, 1995. *Europe's Environment, The Dobris Assessment*. European Environment Agency. Office for Official Publications of the European Communities, Luxembourg.

EEA, 1999. *Sustainable water use in Europe — Part 1: Sectoral use of water*, Environmental assessment report No 1. European Environment Agency. Office for Official Publications of the European Communities, Luxembourg.

EEA, 1999. *Groundwater quality and quantity in Europe*, Technical report No 22. European Environment Agency, Copenhagen.

EEA, 2001. *Eutrophication in Europe's coastal waters*, Topic report 7/2001. European Environmental Agency, Copenhagen.

Eurostat, 2001. *Water resources, abstraction and use in European countries*. Statistics in Focus. Theme 8. Eurostat, Luxembourg.

German Oceanographic Data Centre, 2000. *Aerial surveillance of the Baltic Sea Area*.

Chapter 12: Waste and material flows

Key references

EEA, 2001. *Total material requirement of the European Union*, Technical report No 55. European Environment Agency, Copenhagen.

European Commission, 2001. *Environment 2010: Our future, Our choice, The Sixth Environment Action Programme*, COM (2001) 31 final. Commission of the European Communities, Brussels.

European Commission, 2001. *Proposal for a directive of the European Parliament and of the Council, amending Directive 94/62/EC on packaging and packaging waste*, COM (2001) 729 final. Commission of the European Communities, Brussels.

Eurostat, 2001. *Economy-wide Material Flow Accounts and Derived Indicators — A Methodological Guide*. Eurostat, Luxembourg.

Chapter 13: Land

Key references

EEA, 2000. *Down to earth: soil degradation and sustainable development in Europe*, Environmental issues series No 16. European Environment Agency, Copenhagen.

EEA, 2001. *Environmental signals 2001 — Chapter Agriculture and transport*, Environmental assessment report No 8, European Environment Agency . Official Publications of the European Communities, Luxembourg.

European Commission, 1999. *Towards a balanced territory*. The European Spatial Development Perspective. Office for Official Publications of the European Communities, Luxembourg.

European Commission, 2001. *The Soil Protection Communication DG Environment Draft October 2001*. Commission of the European Communities, Brussels.

Further reading

UNEP, 2001. C. Nellemann et al, GLOBIO: *Global methodology for mapping human impacts on the biosphere*. UNEP/DEWA/TR.01-3. [Division of Early Warning and Assessment/ Technical Report]. Environment Information and Assessment Technical Report.

Le Bras, H., 1996. *Le peuplement de l'Europe*. DATAR and Documentation Française.

M. Lacaze et al. Corilis, *Lissage de Corine land cover pour l'Europe*. Methodological report, Ifen-EEA 1999. Institut français de l'environnement, Orléans. <http://www.ifen.fr/pages/4territ.htm#51>

Umweltbundesamt, 2001. *Versiegelt Österreich? Der Flächenverbrauch und seine Eignung als Indikator für Umweltbeeinträchtigungen*.

Dosch, F. and Beckmann, G., 2000. *Der Flächenverbrauch in Deutschland hat sich intensiviert*. In: *Bundesamt für Bauwesen und Raumordnung*.

Chapter 14: Forest

Key references

European Commission, 1999. *Interpretation Manual of European Union Habitats*. Commission of the European Communities, Brussels.

Ministerial Conference on the Protection of Forest in Europe, 1998. *General declarations and resolutions adopted at the Ministerial Conferences on the Protection of Forests in Europe*. Intergovernmental process, Strasbourg, Helsinki meetings.

UNECE/FAO, 2000. *Forest Resources of Europe, CIS, North America, Australia, Japan and New-Zealand*. United Nations Economic Commission for Europe, Geneva, Food and Agricultural Organisation, Rome.

UN-ECE/FAO, 2000. *Contribution to the Global Forest Resources Assessment*. Geneva Timber and Forest Study papers, N°17, United Nations, New York and Geneva.

UN/ECE and European Commission, 2001. *Forest Condition in Europe. 2001 Executive report*. United Nations Economic Commission for Europe, Geneva and Commission of the European Communities, Brussels.

Further reading

European Commission, 2002. *Commission Decision of 28 December 2001 adopting the list of sites of Community importance for the Macaronesian biogeographical region, pursuant to Council Directive 92/43/EEC*. Commission of the European Communities, Brussels.

Council of Europe, 2001. *Trees between Nature and Culture*. Naturopa, No 96. Council of Europe, Strasbourg.

Deharveng, L., 1996. Soil Collembola diversity, endemism and reforestation: a case study in the Pyrenees (France). *Conservation Biology* 10 (1): 74-84.

Dias S., Moreira, F. and Rego, F., 2000. *Breeding bird communities of the Portuguese forest - preliminary analysis*. MEDECOS 2000 Ninth International Conference on Mediterranean-type Ecosystems 11-15 September 2000 Stellenbosch, South Africa.

European Committee for conservation of Bryophytes, 1995. *Red data book of European Bryophytes*, ECBC, Trondheim.

Kuusela, K., 1994. *Forest resources in Europe 1950-1990*. European Forest Institute. Research Report 1. University of Cambridge Press.

Ministerial Conference on the Protection of Forest in Europe, 1998. *General declarations and resolutions adopted at the Ministerial Conferences on the Protection of Forests in Europe*.

O'Halloran, J., Walsh, P.M., Giller, P.S., Kelly, T.K. and Duffy, B., 1998. *An assessment of avian biodiversity and opportunities for enhancement in Ireland's forest: preliminary results*. Irish Forestry 55: 2-14.

Rego, F. (coord.), 2001. *Monitoring biodiversity in Portuguese forest. Final report project PAMAF*. Estacao Florestal Nacional, 161 pp.

Sjoberg, K., Pettersson, R. and Atlegrim, O., 1993. *Differences in bird habitat quality between plantations of Scots and Lodgepole Pine measured in terms of Pied Flycatcher *Ficedula hypoleuca* breeding success*. *Ornis Svecica* 3:59-68.

Tucker, G.M. and Evans, M.I., 1997. *Habitats for birds in Europe: a conservation strategy for the wider environment*. BirdLife Conservation series n°6. Cambridge, U.K: Bird Life International.

WWF, 2001. *Insight into Europe's forest protection*. Gland.

Chapter 15: Environmental taxes

Key references

EEA, 2000. *Environmental taxation: recent developments in tools for integration*, Environmental issue report No 18. European Environment Agency. Office for Official Publications of the European Communities, Luxembourg.

EEA, 2001. *Reporting on environmental measures: Are we being effective?*, Environmental issue report No 25. European Environment Agency. Office for Official Publications of the European Communities, Luxembourg.

Eurostat, 2000. *Environmental taxes in the EU*. Statistics in Focus 2/20. Eurostat, Luxembourg.

Nordic Council, 2001. *An evaluation of the impact of green taxes in the Nordic countries*. TemaNord 2001:566.

OECD, 2001. *Environmentally related taxes in OECD countries*. Organisation for Economic Cooperation and Development, Paris.

Further reading

European Commission and Eurostat, 2001. *Structures of the Taxation Systems in the European Union 1990-1997*. Commission of the European Communities, Brussels and Eurostat, Luxembourg.

Ministry of environment and Economic Affairs, France, 2000. *Green tax reforms in Europe - Principles, assessments and perspectives*. Conference, 10 and 11 October 2000, Paris.

Hoerner, J.A. and Bosquet, B., 2001. *Environmental tax reform: the European experience*. Centre for a Sustainable Economy, Washington D.C.

REC, 2001. *Environmental taxes in an enlarged Europe*. Regional Environmental Centre, Budapest.

Technical annex:

Acronyms, abbreviations and symbols

AC	Accession countries
ACFM	ICES Advisory Committee on Fishery Management
BOD	Biological oxygen demand
CAFE	Clean Air for Europe Programme
CAP	Common Agricultural Policy (EU)
CEC	Commission of the European Communities
CFCs	Chlorofluorocarbons
CFP	Common Fisheries Policy
CHP	Combined heat and power
CLRTAP	Convention on Long Range Transboundary Air Pollution (UNECE)
CO ₂	Carbon dioxide
DEPA	Danish Environmental Protection Agency
DG	Directorates General (of the European Commission)
DPSIR	Driving forces, pressures, state, impacts, responses
EAGGF	European Agricultural Guarantee and Guidance Fund
EC	European Community
ECCP	European Climate Change Programme
ECMT	European Conference of Ministers of Transport
ECPA	European Crop Protection Association
EEA	European Environment Agency
EFTA	European Free Trade Association
EIA	Environmental Impact Assessment
EMAS	EU Eco-Management and Audit Scheme
EMEP	Cooperative Programme for Monitoring and Evaluation of the Long Range Transmission of Air Pollution in Europe
ESDP	European Spatial Development Perspective (EU intergovernmental initiative)
ETR	Ecological tax reform
EU	European Union
Eurostat	Statistical Office of the European Union
FAO	UN Food and Agriculture Organisation
FGD	Flue gas desulphurisation
FIFG	EU Fisheries Instrument for Fisheries Guidance
FYROM	Former Yugoslav Republic of Macedonia
5EAP	Fifth Environmental Action Programme
6EAP	Sixth Environmental Action Programme
GDP	Gross domestic product
GIEC	Gross inland energy consumption
GMES	Global Monitoring for Environment and Security
GVA	Gross value added
HELCOM	Helsinki Commission
HFCs	Hydrofluorocarbons
ICCAT	International Commission for Conservation of Atlantic Tuna
ICES	International Council for the Exploration of the Sea
ICWS	International Centre for Water Studies
IEA	International Energy Association
IMW	Industrial and municipal waste
INSPIRE	Infrastructure for Spatial Information in Europe (European Commission)
IPM	Integrated pest management
IPP	Integrated product policy (European Commission)
IPCC	Intergovernmental Panel on Climate Change
IPPC	Integrated Pollution Prevention and Control (EU Directive)

IVM	Institute for Environmental Studies (Vrije University, Amsterdam)
MAGPs	EU Multi Annual Guidance Programmes
MCPFE	Ministerial Conference for Protection of Forests in Europe
NECD	National Emissions Ceilings Directive (European Union)
NH ₃	Ammonia
NMVOCS	Non-methane volatile organic compounds
NOx	Nitrogen oxides (including nitric oxide, NO and nitrogen dioxide, NO ₂)
NTUA	National Technical University of Athens
NVZs	Nitrate vulnerable zones (European Union)
OECD	Organisation for Economic Cooperation and Development
OPEC	Organisation of Petroleum Exporting Countries
OSPAR	Joint Oslo and Paris Commissions
PEFC	Pan-European Forest Certification
PM ₁₀	Particulate matter < 10 microns in size
REC	Regional Environmental Centre (Budapest, Hungary)
RIVM	National Institute of Public Health and Environmental Protection, The Netherlands
SACs	Special Areas of Conservation
SBL	Safe biological limits
SHOM	Service Hydrographique et Océanographique de la Marine, France
SO ₂	Sulphur dioxide
SPAs	Special Protection Areas
TAC	Total allowable catch (EU Fisheries policy)
TENs	Trans-European (transport) Networks
TERM	Transport and Environment Reporting Mechanism (EU)
TMR	Total material requirement
TOFP	Tropospheric ozone forming potentials
UK	United Kingdom
UKHO	United Kingdom Hydrographic Office
UNECE	United Nations Economic Commission for Europe
UNECE ICP	UNECE International Co-operation Programme on Assessment and Monitoring of Air Pollution Effects on Forests
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
VAT	Value added tax
WCMC	World Conservation Monitoring Centre
WHO	World Health Organisation

Symbols and units

d	day
°C	degrees celsius
g	grammes
h	hour
ha	hectare
Hkg/ha	one hundred kilogrammes per hectare
kg	kilogrammes
km	kilometre
km ²	square kilometre
kt	kilotonnes
kW	kilowatts
l	litre
µg/m ³	microgrammes per cubic metre
µgN/l	microgrammes of nitrogen per litre

$\mu\text{gP/l}$	microgrammes of phosphorus per litre
m^2	square kilometres
m^3	cubic metres
mg	milligrammes
mg/m^3	milligrammes per cubic metre
ML	megalitre
ML/day	megalitres per day
ppb	parts per billion (parts per 1000 million)

European Environment Agency

Environmental signals 2002, Benchmarking the millennium
Environmental assessment report No 9

Luxembourg: Office for Official Publications of the European Communities

2002 — 148 pp. — 21 x 29.7 cm

ISBN 92-9167-

Price (excluding VAT) in Luxembourg: EUR