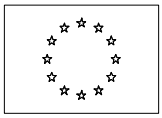
Environmental Pressure Indicators for the EU

SOURCE BOOK

CALL FOR TENDERS

Title: Research, statistical and analytical work in the field of Environmental Indicators



EUROPEAN COMMISSION

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INDICATIVE LIST OF INDICATORS TO BE DEVELOPED IN THE 3RD EDITION

Resource Depletion	**Water consumption**	**Use of energy**	**Increase in territory permanently occupied by urbanisation; infrastructure…**	**Indicator on the resource 'fertile soil' (current indicator = Inputs of phosphate to agricultural land)**	**Electricity production from fossil fuels**	**Timber balance**
Waste	**Waste landfilled**	**Waste incinerated**	**Hazardous waste**	**Municipal waste**	**Industrial waste**	**Waste recycled/material recovered**
Dispersion of Toxic Substances	**Consumption of pesticides by agriculture**	**Emissions of persistent organic pollutants (POPs)**	**Consumption of toxic chemicals**	**Index of heavy metal emissions to water**	**Index of heavy metal emissions to air**	
Water Pollution	**Emissions of nutrients by households**	**Emissions of nutrients by industry**	**Pesticides used per hectare of utilised agriculture area**	**Nitrogen used per hectare of utilised agriculture area**	**Emissions of organic matter by households**	**Emissions of organic matter by industry**
Marine Environment & Coastal Zones	**Eutrophication**	**Fishing pressure**	**Development along shore**	**Discharges of heavy metals**	**Oil pollution at coast & at sea**	**Tourism intensity**
Climate Change	**Emissions of carbon dioxide (CO_2)**	**Emissions of methane (CH_4)**	**Emissions of nitrous oxide (N_2O)**	**Emissions of HFCs, PFCs, and SF_6**		
Air Pollution	**Emissions of nitrogen oxides (NO_x)**	**Emissions of volatile organic compounds (VOCs)**	**Emissions of sulphur dioxide (SO_2)**	**Emissions of particles**	**Consumption of gasoline & diesel oil by road vehicles**	**Primary energy consumption**
Ozone Layer Depletion	**Emissions of bromofluoro-carbons (halons)**	**Emissions of chlorofluoro-carbons (CFCs)**	**Emissions of hydrochloro-fluorocarbons (HCFCs)**	**Emissions of chlorinated carbons**	**Emissions of industrially produced CH_3Br**	
Urban Environmental Problems Total revision of this chapter being considered	**Urban energy consumption**	**Non-recycled municipal waste**	**Non-treated urban wastewater**	**Car share of urban passenger transport**	**People endangered by noise emissions from urban traffic (changed from People endangered by noise emiss.)**	**Urban land-use**
Loss of Biodiversity **This chapter is to be totally revised. This list is given for information only**	**Protected area loss, damage and fragmentation**	**Wetlands loss in the coastal zone**	**Agriculture intensity: area used for intensive arable agriculture**	**Fragmentation of forests & landscapes by roads/ intersections**	**Clearance of natural/ semi-natural forested areas**	**Change in traditional land-use practice**

INDICATORS NEEDING FURTHER METHODOLOGICAL DEVELOPMENT IN THE 3RD EDITION (2002-2003)

Almost half of the indicators in the above list will be treated directly by Eurostat as they make use of Eurostat data and require no specific methodological development. This is the case of all indicators from the policy fields Air Pollution (AP), Climate Change (CC), Waste (WA), and Resource Depletion (RD) except RD4 and RD3 (Increase in territory permanently occupied by urbanisation; infrastructure, waste tipping & quarrying), as well as the indicators TX1, WP3 and WP4 on pesticide and nitrogen use from the policy fields Dispersion of Toxic Substances (TX) and Water Pollution (WP), UP1 Urban energy consumption and UP2 on non-recycled municipal waste from the policy field Urban Environmental Problems (UP)

The remaining indicators are to be dealt with by contractors. Among these indicators, some will require further methodological development improvement via search for new data sources or development of new models, namely:

- The policy field Loss of Biodiversity (LB) has been dropped from the second edition because it has not been possible to improve the indicators presented in the first publication. However, it is intended to revise the indicator set and to make proposals for new, more reliable and repeatable indicators.

- The indicators from the policy field Urban Environmental Problems Share of private car transport, People endangered by noise emissions and UrbanLand-use have been dropped in this edition for lack of good data.

- Some of the indicators in the policy field on Dispersion of Toxic Substances (TX), namely TX2 Emissions of POPs, TX3 Consumption of toxic chemicals, TX4/TX5 Index of heavy metal emissions to water/to air will require further development, in particular TX3 (but see Lot 4).

- The Marine Environment and Coastal zones chapter needs to be improved, in particular ME2 Fishing pressure needs to be further developed, as does ME-3 Development along shore, and ME-6 Tourism intensity.

- RD3 Increase in territory permanently occupied by urbanisation, infrastructure, waste tipping & quarrying: need for harmonisation of definitions and methods used for collection of data; and for RD4 proposals for a new indicator covering the resource fertile soils are needed.

Other indicators are more in need of a better time and/or geographical coverage, such as WP1/2/5/6, all indicators in the Marine Environment (ME) policy field (namely addition of more sea areas where relevant or of regional data), to name, and others.

BACKGROUND INFORMATION RELATIVE TO THE INDICATORS DEVELOPED OR INTENDED TO BE DEVELOPED IN THE 2ND EDITION (2001) – TO BE USED AS A BASIS FOR THE DEVELOPMENT OF THE INDICATORS IN THE 3RD EDITION

The indicators can be said to fall into four groups:

Group 1 - indicators which are clearly defined and for which data is readily available, in Eurostat, the European Environment Agency. These simple indicators are not covered in this contract;

Group 2 - indicators which are based on data from other international organisations, such as OSPAR or HELCOM;

Group 3 - indicators for which some models have been developed to produce meaningful indicators. In most cases the basic input data for the models comes from Eurostat or one of the other international agencies;

Group 4 - indicators which remain unclear in terms of what exactly should be included in the indicator and which data source is suitable for the calculation of the indicator.

POLICY FIELD : LOSS OF BIODIVERSITY

This is the policy field for which it has been most difficult to develop adequate indicators. All the indicators in this chapter belong to Group 4: indicators which remain unclear in terms of what exactly should be included in the indicator and which data source is suitable for the calculation of the indicator.

For this policy field, the role of the contractors shall be to revisit the list of indicators or areas of concern identified as priority by the scientific advisory group, to reanalyse the initial recommendations, taking into account the reports on indicator definition and the so-called 'peer essays', to see if it is possible to reinterpret the recommendations and to come up with a more feasible and more easily quantifiable set of indicators which still covers the concerns of the scientific and environmental community working in this field.

The second step will be to propose and produce concrete, feasible and reproducible indicators, including data sources, models to be applied, etc.

As background information, below details are given of the first, not very successful, attempts to produce adequate indicators for this policy field.

1. LB-1: PROTECTED AREAS LOSS, DAMAGE AND FRAGMENTATION (GROUP 4)

1.2 Ramsar sites with main transport infrastructure located within 5 km from the centre of the protected area

Data	Ramsar sites with main transport infrastructure (road, rail, airports, ports) located within 5 km from their centre
Owner	NATLAN project, EEA
Contact	Mr. Stefan Kleeschulte stefan@gim.lu Mr. Chris Steenmans European Environment Agency Kongens Nytorv 6 DK-1050 K Copenhagen chris.steenmans@eea.eu.int http://natlan.eea.eu.int phone +45 33 36 71 16 / +45 33 36 71 00 fax +45 33 36 71 99
Additional Remarks	Original data is an information derived from NATLAN (NATure/LANd cover) developed by EEA in close collaboration with its European Topic Centres as Land Cover (ETC/LC) and Nature Conservation (ETC/NC). The EEA requires a signed documentation form for specific datasets, subject to the terms and conditions as specified in an agreement form.

1.3 Number of total Ramsar sites by country.

Data	Number of total Ramsar sites by country
Owner	EEA
Contact	Mr. Stefan Kleeschulte stefan@gim.lu Mr. Chris Steenmans chris.steenmans@eea.eu.int European Environment Agency Kongens Nytorv 6 DK-1050 K Copenhagen http://natlan.eea.eu.int phone +45 33 36 71 16 / +45 33 36 71 00 fax +45 33 36 71 99
Additional Remarks	The inventory of nationally designated areas began under CORINE program. The European Topic Centre on Nature Conservation now maintains it for EEA.

1.4 SPAs sites with main transport infrastructure located within 5 km of their centre

Data	SPAs sites with main transport infrastructure (road, rail, airports, ports) located within 5 km from their centre
Owner	EEA
Contact	Mr. Stefan Kleeschulte stefan@gim.lu Mr. Chris Steenmans chris.steenmans@eea.eu.int address: see above phone +45 33 36 71 16 / +45 33 36 71 00 fax +45 33 36 71 99
Additional Remarks	Original data is an information derived from NATLAN (NATure/LANd cover) developed by EEA in close collaboration with its European Topic Centres on Land Cover (ETC/LC).

1.1 Number of total SPAs sites by country

Data	Number of total SPAs sites by country
Owner	EEA Kongens Nytorv 6 DK-1050 K Copenhagen
Contact	Mr. Stefan Kleeschulte stefan@gim.lu Mr. Chris Steenmans chris.steenmans@eea.eu.int
Additional Remarks	The inventory of nationally designated areas began under CORINE program. The ETC on Nature Conservation now maintains it for EEA.

1.2 Data processing

Processing	**Mean number of affections by site and country:** Joining of NATLAN data in one spreadsheet. Sum of total affections (road, rail, airports, ports and canals) on the sites (SPAs + Ramsar) by country. The mean of affections was calculated by dividing the sum of total affections by the total number of sites (SPAs + Ramsar) by country. **Share of affected sites by type of infrastructure:** Sum of the number of Ramsar and the SPAs sites affected by each infrastructure in EU-15, expressed as percentage of total number protected sites.

2. LB-2: WETLAND LOSS IN COASTAL ZONES (GROUP 4)

2.1 Wetlands area at coastal zones in 1975

Data	Area of CLC 4. “wetlands” + area of CLC 5.2.1. “Coastal lagoons.” + area of CLC 5.2.2. “Estuaries” at coastal zone in 1975
Owner	LACOAST project (JRC), European Commission
Contact	Mrs.Vanda Perdigao vanda.perdigao@jrc.it European Commission Joint Research Centre Space Applications Institute Unit: Agricultural and Regional Information Systems (ARIS) I-21020 Ispra (Italy) phone: +39 0 332 785052 fax: +39 0332 789936 http://gi-gis.aris.sai.jrc.it/land-use/lacoast/
Additional Remarks	LACOAST project estimates the change in land use /land cover between 1975 and 1990 in coastal zones of EU. Data not available for the UK, S and FIN (which were not covered by CLC) and for P and GR (which were not validated). The data are estimated by the J.R.C. from LACOAST project, especially for TEPI project.

2.2 Wetlands area at coastal zones in 1990

Data	Area of CLC 4. “wetlands” + area of CLC 5.2.1. “Coastal lagoons.” + area of CLC 5.2.2. “Estuaries” at coastal zones in 1990
Owner	LACOAST project (J.R.C.), European Commission
Contact	Mrs.Vanda Perdigao vanda.perdigao@jrc.it European Commission Joint Research Centre
Additional Remarks	The data are estimated by the J.R.C. from LACOAST project, especially for I project.

2.3 Wetlands loss in coastal zones by urban use

Data	Change from CLC 4. “wetlands” to CLC 1.1. “urban fabric” + change from CLC 5.2.1. “Coastal lagoons” to CLC 1.1. “Urban fabric” + change from CLC 5.2.2. “Estuaries” to CLC 1.1. “Urban fabric”.
Owner	LACOAST project (J.R.C.), European Commission
Contact	Mrs.Vanda Perdigao vanda.perdigao@jrc.it European Commission Joint Research Centre
Additional Remarks	The data are estimated by the J.R.C. from LACOAST project, especially for TEPI project.

2.4 Wetlands loss in coastal zones by industrial use

Data	Change from CLC 4. “wetlands” to CLC 1.2. “Industrial or commercial” + change from CLC 5.2.1. “Coastal lagoons” to CLC 1.2. “Industrial or commercial” + change from CLC 5.2.2. “Estuaries” to CLC 1.2. “Industrial or commercial”.
Owner	LACOAST project (J.R.C.), European Commission
Contact	Mrs.Vanda Perdigao vanda.perdigao@jrc.it European Commission Joint Research Centre
Additional Remarks	The data are estimated by the J.R.C. from LACOAST project, especially for TEPI project.

2.5 Wetlands loss in coastal zones by transport use

Data	Change from CLC 4. “wetlands” to CLC 1.2.2. “Road and rail networks” + to CLC 1.2.3. “Port areas” + CLC 1.2.4. “Airport areas” + change from CLC 5.2.1. “Coastal lagoons” to CLC 1.2.2. “Road and rail networks” + to CLC 1.2.3. “Port areas” + CLC 1.2.4. “Airport areas” + change from CLC 5.2.2. “Estuaries” to CLC 1.2.2. “Road and rail networks” + to CLC 1.2.3. “Port areas” + CLC 1.2.4. “Airport areas”.
Owner	LACOAST project (J.R.C.), European Commission
Contact	Mrs.Vanda Perdigao vanda.perdigao@jrc.it European Commission Joint Research Centre
Additional Remarks	The data are estimated by the J.R.C. from LACOAST project, especially for TEPI project.

2.6 Wetlands loss in coastal zones by agricultural use

Data	Change from CLC 4. “wetlands” to CLC 2. “Agricultural areas” + change from CLC 5.2.1. “Coastal lagoons” to CLC 2. “Agricultural areas” + change from CLC 5.2.2. “Estuaries” to CLC 2. “Agricultural areas”.
Owner	LACOAST project (J.R.C.), European Commission
Contact	Mrs.Vanda Perdigao vanda.perdigao@jrc.it European Commission Joint Research Centre
Additional Remarks	The data are estimated by the J.R.C. from LACOAST project, especially for TEPI project.

2.7 Wetlands loss in coastal zones by natural use

Data	Change from CLC 4. “wetlands” to CLC 3. “Forest and semi-natural areas” + change from CLC 5.2.1. “Coastal lagoons” to CLC 3. “Forest and semi-natural areas” + change from CLC 5.2.2. “Estuaries” to CLC 3. “Forest and semi-natural areas”.
Owner	LACOAST project (J.R.C.), European Commission
Contact	Mrs.Vanda Perdigao vanda.perdigao@jrc.it European Commission Joint Research Centre
Additional Remarks	The data are estimated by the J.R.C. from LACOAST project, especially for TEPI project.

2.8 Total wetlands

Data	Area of CLC 4. “Wetlands” + area of CLC 5.2.1. “Coastal lagoons” + area of CLC 5.2.2. “Estuaries”.
Owner	CORINE Land Cover (EEA)
Contact	Ann-Sofi Jakobsson At Environmental Satellite Data Centre P.O. Box 806 S-981 28 KIRUNA, Sweden phone.: +46 980 671 76 fax.: +46 980 671 80 ann-sofi.jakobsson@mdc.kiruna.se
Additional Remarks	The CLC used was the 250 × 250 size The data is provided by the ETC/LC and the use of the data is restricted to determined conditions established by the EEA. The data are estimated by TAU from CORINE Land Cover size 250.

2.9 Data processing

Processing	Joining the LACOAST data in one spreadsheet. **1975 wetlands area in coastal zones:** Sum of the CORINE Land Cover class CLC 4. 1975 surface + CLC 5.2.1. 1975 surface + CLC 5.2.2. 1975 surface. **1990 wetlands area in coastal zones:** Sum of the CORINE Land Cover class CLC 4. 1990 surface + CLC 5.2.1. 1990 surface + CLC 5.2.2. 1990 surface. **Wetlands loss area in coastal zones:** Sum of the all changes from aggregated group "wetlands + coastal lagoons + estuaries" to all others land use. The wetlands gross loss was calculated by the sum of the total disaggregated changes. This wetlands gross loss was expressed as percentage of wetlands 1975 surface. **Wetlands loss in coastal zones by sectors:** • **Urban sector:** sum of the change from CLC 4. class in 1975 to CLC 1.1. class in 1990 + change from CLC 5.2.1. class in 1975 to CLC 1.1. class in 1990 + change from CLC 5.2.2.class in 1975 to CLC 1.1. class in 1990. • **Industrial sector:** sum of the change from CLC 4. class in 1975 to CLC 1.2. class in 1990 + change from CLC 5.2.1.class in 1975 to CLC 1.2.class in 1990 + change from CLC 5.2.2.class in 1975 to CLC 1.2. class in 1990. • **Agricultural sector:** sum of change from CLC 4. class in 1975 to CLC 2. class in 1990 + change from CLC 5.2.1. class in 1975 to CLC 2. class in 1990 + change from CLC 5.2.2. class in 1975 to CLC 2. class in 1990. • **Transport sector:** sum of the change from CLC 4. class in 1975 to CLC 1.2.2. class in 1990+ change from CLC 4.class in 1975 to CLC 1.2.3. class in 1990 +change from CLC4. class in 1975 to CLC 1.2.4. class in 1990 + change from CLC 5.2.1.class in 1975 to CLC 1.2.2. class in 1990 + to CLC 1.2.3. class in 1990 and to CLC 1.2.4.class in 1990 + change from CLC 5.2.2. class in 1975 to CLC 1.2.2.class in 1975 + to CLC 1.2.3. class in 1990 and to CLC 1.2.4. class in 1990. • **Natural land use/land cover:** sum of the change from CLC 4. class in 1975 to CLC 3. class in 1990 + change from CLC 5.2.1. class in 1975 to CLC 3. class in 1990 + change from CLC 5.2.2. class in 1975 to CLC 3. class in 1990. **Wetlands net change** = 1990 wetlands area - 1975 wetlands area. **Total wetland gains = wetland net change + wetland loss**
Additional Remarks	The total wetlands were calculated as the additional data for the indicator.

3. LB-3: AREA USED FOR INTENSIVE ARABLE AGRICULTURE (GROUP 4)

3.1 Agricultural production surface

Data	Agricultural production surface.
Owner	New Cronos database, ZPA1 domain (crop products statistics) Eurostat
Contact	EUROSTAT European Commission Bâtiment Jean Monnet, rue Alcide De Gasperi, L-2920 Luxembourg-Kirchberg Tel.: (+352) 4301-37292 http://www.europa.eu.int/comm/eurostat/
Additional Remarks	

3.2 Specialised crops

Data	Specialised crops
Owner	New Cronos EUROFARM (Farm Structure Survey)
Contact	EUROSTAT Bâtiment Jean Monnet, rue Alcide De Gasperi, L-2920 Luxembourg-Kirchberg Tel.: (+352) 4301-37292 http://www.europa.eu.int/comm/eurostat/
Additional Remarks	The Farm Structure Survey is carried out every two or three years.

3.3 Data processing

Processing	The calculation process of the area used for intensive agriculture was as follows: Joining of original data in one spreadsheet and sum of the selected crops surfaces by country. The surfaces of the crops that are not always grown intensively were calculated by multiplying their reference surface production (ZPA1 database) by the share of so-called “intensive” crops using the types of farming OTEX 11, 12, 13 or 14 from the EUROFARM. Sum these new intensive crop surfaces to the total crop surfaces. Finally the surface of intensive crops was divided by the total surface of the countries.
Additional Remarks	

4. LB-4: FRAGMENTATION OF FORESTS AND LANDSCAPES (GROUP 4)

4.1 Intensity of fragmentation by strongly artificial features on semi-natural and natural land

Data	Intensity of fragmentation by strongly artificial features on semi-natural and natural land
Owner	NATLAN project, EEA
Contact	Stefan Kleeschulte stefan@gim.lu Mr. Chris Steenmans European Environment Agency chris.steenmans@eea.eu.int Kongens Nytorv 6 DK-1050 K Copenhagen http://natlan.eea.eu.int phone +45 33 36 71 16 / +45 33 36 71 00 fax +45 33 36 71 99
Additional Remarks	Original data is an information derived from NATLAN (NATure/LANd cover) developed by EEA in close collaboration with its European Topic Centres on Land Cover (ETC/LC) and Nature Conservation (ETC/NC). EEA reserves itself the right to require a signed application form for specific datasets, subject to the terms and conditions as specified in an agreement form. The results of this NATALN application are expressed in six classes of fragmentation. The methodology used in NATLAN application does not permit to carry out a sectoral breakdown.

4.2 Data processing

Processing	**Index of fragmentation by country:** Joining of NATLAN data in one spreadsheet. The area of each fragmentation class per country is multiplied by the "pressure value". Then all values by class are summed up. The sum is divided by the total area of the country.
Additional Remarks	

5. LB-5: CLEARANCE OF NATURAL AND SEMI-NATURAL FORESTED AREAS (GROUP 4)

It proved difficult to obtain this data, so an indicator on forest damage has been proposed instead. This is not really satisfactory, as forest damage is a state indicator, not a pressure.

5.1 Percentage of trees with more than 25% of defoliation on the ICP Forest

Data	Percentage of trees with more than 25% of defoliation on the ICP Forest
Owner	ICP-Forest, UN/ECE and EC
Contact	European Commission Directorate General Agriculture F.I.3 Rue de la Loi 130 B-1040 BRUSSELS fax +00 32 2 296 62 55 http://europa.eu.int/comm/dg06/fore/index_en.htm Dr. Martin Lorenz Federal Research Centre for Forestry and Forest Products PCC or ICP Forest Leuschnerstr. 91 D-21031 HAMBURG phone+49-(0)40 739 62 119 fax +49-(0)49 739 62 480 http://www.dainet.de/bfh/inst1/12/struct.htm
Additional Remarks	Original data: UN/ECE-EC, 1999. Forest Condition in Europe, 1999 Executive Report. Annex 3 Defoliation of all species (1988-1998). ISSN 1020-587X

5.2 Data processing

Processing	Joining of EU-ICP Forest data in one spreadsheet and calculation of a mean value by country. The indicator is a mean value calculated as an inter-annual change rate for the time series 1988-1998. $$\text{Inter-annual change } rate = \frac{\sum_{i=1}^{N}(t_{i+1} - t_i)}{N}$$ *N= Data number*
Additional Remarks	The inter-annual change rate permits to obtain comparability between countries and between time data.

6. LB-6: CHANGE IN TRADITIONAL LAND USE PRACTICE (GROUP 4)

The indicator proposed in the past has been changed to number and size of farms. This seems rather far from the pressure to be measured.

6.1 Number of holdings

Data	Number of holdings by countries 1966-67 to 1993
Owner	Eurostat Data published in the Farm Structure Survey (Eurostat)
Contact person	
Additional Remarks	

6.2 Average Agriculture Area

Data	Average Agriculture Area
Owner	Eurostat Data published in the Farm Structure Survey (Eurostat)
Contact	
Additional Remarks	

6.3 Subset description 3 (if applicable)

6.4 Data processing

Processing	The indicator calculation is based on the 1993 Farm Structure Survey (Eurostat)
Additional Remarks	TAU designed another indicator to measure the heterogeneity of land use but it has not been possible to obtain the data

POLICY FIELD : MARINE ENVIRONMENT AND COASTAL ZONES

All of the indicators in this policy field need further improvement.

ME-1 is missing good data for the Mediterranean Sea.

ME-2 is a very rough proxy, and needs rethinking.

ME-3 has no recent data available.

ME-4 No data for the Mediterranean.

ME-5 Methodology to be revised.

ME-6 New suggestions for this indicator wanted.

1. ME-1: EUTROPHICATION (GROUP 2)

1.1 Total direct and riverine inputs of N and P

Data	Total direct and riverine inputs of N and P.
Owner	HELCOM
Contact person	HELCOM Secretariat Katajanokanlaituri 6 B, FIN-00160 Helsinki, Finland Tel: +358-(0)9-6220 220 Fax : +358-(0)9-6220 2239 helcom@helcom.fi
Additional Remarks	Data was extracted from "The third Baltic Sea pollution load compilation (1998)". The data covers 1985, 1990 and 1995 but only data for 1985 were used. Data was broken down into: monitored/unmonitored riverine inputs; direct municipal waste water/industrial discharges and treated/untreated fractions.

1.2 Riverine inputs and direct discharges

Data	Riverine inputs and direct discharges (RID) in 1990-1995 (1998).
Owner	OSPAR
Contact	OSPAR Secretariat New Court 48 Carey Street London WC2A 2JQ / UK Tel: +44 (0) 20 7430 5200 Fax: +44 (0) 20 7430 5225 secretariat@ospar.org
Additional Remarks	Only lower estimates were used, as they are more reliable than the higher ones. Data has been extracted from the Summary Report on the Comprehensive Study.

1.3 Direct inputs of N and P in identified hot spots in the Mediterranean Sea

Data	UNEP Mediterranean Action Plan: identification of priority pollution hot spots and sensitive areas in the Mediterranean Sea (1997).
Owner	UNEP
Contact	United Nations Environment Programme (UNEP) United Nations Avenue, Gigiri PO Box 30552, Nairobi, Kenya Tel: (254-2) 621234 Fax: (254-2) 624489/90 **UNEP Webmaster**
Additional Remarks	Data for EL is based on EEA ETC/ME on the Mediterranean Sea (1998) and UNEP (1997).

1.4 Data processing

Processing	Database to obtain total discharge figures related to individual countries was elaborated, broken down into riverine and direct inputs. Two methods were applied depending on whether countries are ascribed to OSPAR/HELCOM area (North and Baltic Sea, Atlantic Ocean) or to the Mediterranean Sea: OSPAR/HELCOM data: top-down approach to obtain aggregated set of data collected by the different sea commissions. Mediterranean data: bottom-up procedure based on estimates of river flows and point source discharges from large industrial and/or urban areas.
Additional Remarks	Limitations in the database were eliminated: some countries had only reported riverine data and others data series with constant values.

2. ME-2: FISHING PRESSURE (GROUP 4)

2.1 Total catches of marine fish and shellfish

Data	Catches of total fishery, total marine fish and main species, and total shellfish in FAO major fishing regions
Owner	New Cronos database, Eurostat European Commission
Contact	http://www.europa.eu.int/comm/eurostat/
Additional Remarks	

2.2 State of the main fish stocks by species and sea areas

Data	Table providing information on the state 16 main fish stocks by species and sea areas (FE = fully exploited ; OF = overfished ; DR = risk of depletion)
Owner	European Commission
Contact	DG FISH
Additional Remarks	

2.3 2000 classification of stocks

Data	Current fishing mortality and biomass estimates in relation to precautionary reference points and the 2000 classification of stocks.
Owner	European Commission
Contact	http://europa.eu.int/comm/fisheries/doc_et_publ/liste_publi/pubol_en.htm
Additional Remarks	The Scientific, Technical and Economic Committee for Fisheries made a classification of the stocks and assessed annually the Fish stocks of interest for the EU. We are comparing the stocks during the 1994-1998, using the 2000 classification data from the following EC document: “On the stocks of interest for the European Community: analysis of their status regarding the precautionary approach”(FISH/741/00-EN).

2.4 Data processing

Processing	• **Total catches of marine fish and shellfish:** The indicator shows the sum of the total fishery, total catches of marine fish and main marine fish species, and total catches of shellfish in EU-15 and EFTA in 3 main fishing areas (north-east Atlantic, east-central Atlantic and Mediterranean).
Additional Remarks	

3. ME-3: DEVELOPMENT ALONG SHORE (GROUP 4)

3.1 Built up land area

Data	Area of CLC 1.1. “Urban fabric” + area of CLC 1.2. “Industrial or commercial” + area of CLC 1.3.3 “Construction sites”.
Owner	LACOAST project (J.R.C.), European Commission.
Contact	Mrs.Vanda Perdigao European Commission Joint Research Centre Space Applications Institute Unit: Agricultural and Regional Information Systems (ARIS) I-21020 Ispra (Italy) phone: +39 0 332 785052 fax: +39 0332 789936
Additional Remarks	The LACOAST project estimates the land use changes during 1975 and 1990. Data not available for the UK, S and FIN (which were not covered by CLC) and for P and GR (which were not validated). The data are estimated by the J.R.C. from LACOAST project, especially for TEPI project.

3.2 Change from natural land use/land cover to urban use

Data	Area of change from aggregated class group (CLC 2. +CLC 3.+CLC 4. +CLC 5.) in 1975 to CLC 1.1. class in 1990.
Owner	LACOAST project (J.R.C.), European Commission
Contact	Mrs.Vanda Perdigao European Commission Joint Research Centre
Additional Remarks	The data are estimated by the J.R.C. from LACOAST project, especially for TEPI project.

3.3 Change from natural land use /land cover to industrial use

Data	Area of change from aggregated class group in 1975 (CLC 2. +CLC 3.+ CLC 4. + CLC 5.) to CLC 1.2.1. class + CLC 1.3.3. class in 1990.
Owner	LACOAST project (J.R.C.), European Commission
Contact	Mrs.Vanda Perdigao European Commission Joint Research Centre
Additional Remarks	The data are estimated by the J.R.C. from LACOAST project, especially for TEPI project.

3.4 Data processing

Processing	The increase in built up land was calculated as follows: Joining the LACOAST data in one spreadsheet and calculation of the area of change in built up land. The area of change (1975-1990) = Built up area in 1990- built up area in 1975. The change is expressed as percentage of built up area in 1990: % of change = Area of change / Built up area 1990 This change reflects the increase of built up land in 1990 with regard to built up land in 1975. Sectoral breakdown calculation process: the original data in hectares was converted into hectares per 1 000.
Additional Remarks	Data for transport sector not are available because the CLC methodology underestimates the changes due to linear infrastructures.

4. ME-4: DISCHARGES OF HEAVY METALS (GROUP 2/4)

4.1 Total direct and riverine inputs of heavy metals

Data	Total direct and riverine inputs of heavy metals to the marine environment specified by different sea areas.
Owner	HELCOM Secretariat Katajanokanlaituri 6 B, FIN-00160 Helsinki, Finland Telephone: +358-(0)9-6220 220 Fax : +358-(0)9-6220 2239 helcom@helcom.fi
Contact person	
Additional Remarks	Data were extracted from "The third Baltic Sea pollution load compilation (1998)". The data covers 1985, 1990 and 1995 but 1985 data was excluded due to the different analysis methods applied.

4.2 Total direct and riverine inputs of heavy metals

Data	Total direct and riverine inputs of heavy metals to the marine environment specified by different sea areas.
Owner	OSPAR Secretariat New Court 48 Carey Street London WC2A 2JQ / UK Tel: +44 (0) 20 7430 5200 Fax: +44 (0) 20 7430 5225 secretariat@ospar.org
Contact	
Additional Remarks	Data were extracted from the "Summary Report of the Comprehensive Study on riverine inputs and direct discharges in 1990-1995 (1998)".

4.3 Total direct and riverine inputs of heavy metals

Data	Different reports
Owner	WHO UNEP National Environmental Agencies
Contact	
Additional Remarks	Different reports issued by the above mentioned organisms were used to complete data sets from OSPAR and HELCOM.

4.4 Total wet and dry deposition of heavy metals

Data	Deposition of heavy metals in different sea areas.
Owner	Danish Hydraulic Institute (DHI) Agern Allé 11 DK-2970 Hørsholm Tel: +45 4516 9200 Tel: +45 4516 9037 (direct line) Fax: +45 4516 9292 lkx@dhi.dk http://www.dhi.dk/

Contact	
Additional Remarks	Basic data to calculate the deposition of heavy metals for the North and the Mediterranean Sea have been extracted from UNEP, GESAMP, OSPAR and HELCOM.

4.5 Total wet and dry deposition of heavy metals

Data	Deposition of mercury, lead and copper in the Baltic Sea (1990-1995)
Owner	Co-operative programme for monitoring and evaluation of the long range transmission of air pollutants in Europe
Contact	Meteorological Synthesising Centre-East Kedrova str., 8-1, Moscow, 117 292, Russia Phone: 007 (095) 124 - 47 - 58 Fax: 007 (095) 125 - 24 - 09 General email: **msce@msceast.org**
Additional Remarks	Data refers only to the Baltic Sea and was extracted from the EMEP report "Atmospheric supply of nitrogen, lead, cadmium, mercury and lindane to the Baltic Sea".

4.6 Data processing

Processing	In order to develop a common and useful weighting scheme for the metals considered, it is suggested that an index based on a weighting sum of these metals be applied. Furthermore, it is suggested to base the weighting scheme on roughly estimated and tentative reference values for trace metals for sediment and water proposed by OSPAR (1994) for the marine environment. Finally, factors are normalised to arsenic, which is given a weighting factor of 1. In using reference values of both sediments and water it is suggested that equal weighting be applied. Through this approach the weighting factor (WF) of the individual metals can be calculated by the following equation: $$WF = \frac{2}{RV_{wat,i}/RV_{wat,As} + RV_{sed,i}/RV_{sed,As}}$$ Where: RVwat,i Reference value for water for the metal i according to OSPAR RVwat,As Reference value for water for arsenic according to OSPAR RVsed,i Reference value for sediment for the metal i according to OSPAR RVsed,As Reference value for sediment for arsenic according to OSPAR To calculate the sum of the ecotoxicity index for the emissions of the considered metals to the coastal zones and marine environments, the following equation can be used: $$I_{me^+} = \sum E_i \times WF_i$$ Where: Ei The emission in tonnes per year of a metal i WFi The weighting factor of metal i Unit Tonnes Arsenic Ecotoxicity Equivalents (As-EEQ) per year
Additional Remarks	

5. ME-5: OIL POLLUTION AT COAST AND AT SEA (GROUP 2/4)

5.1 Oil spills larger than 7 tonnes per spill

Data	Accidental oil spills larger than 7 tonnes per spill (1989-1998)
Owner	ITOPF International Tanker Owners Pollution Federation, Limited Staple Hall Stonehouse Court 87-90 Houndsditch London EC3A 7AX Tel: +44 (0)20 7621 1255 Fax: +44 (0)20 7621 1783 central@itopf.com
Contact person	Mr. Fion Molloy Fion.Molloy@itopf.com
Additional Remarks	

5.2 Total discharges of oil from refineries

Data	Total oil discharges from refineries (1993 & 1997)
Owner	CONCAWE The Oil companies' European organisation for environment, health and safety
Contact	CONCAWE Madouplein 1 B-1210 Brussels Belgium Tel: 32-2-220 3111 Fax: 32-2-219 4646 Annemie.Hermans@concawe.be
Additional Remarks	Data extracted from the report “Trend in oil discharged with aqueous effluents from oil refineries in Western Europe – 1993 Survey”, 1994 (report no. 3/94). Data used to calculate “Overall emission coefficients from refineries in the EU”

5.3 Total discharges of oil from refineries

Data	Discharges from refineries from 1981 to 1993 (1994)
Owner	OSPAR Secretariat New Court 48 Carey Street London WC2A 2JQ / UK Tel: +44 (0) 20 7430 5200 Fax: +44 (0) 20 7430 5225 secretariat@ospar.org
Contact	

Additional Remarks	Data used to calculate “Overall emission coefficients from refineries in the EU”

5.4 Total discharges of oil from refineries

Data	Crude oil treated in EU refineries (1999)
Owner	SIRENE database EUROSTAT
Contact	EUROSTAT European Commission Bâtiment Jean Monnet, rue Alcide De Gasperi, L-2920 Luxembourg-Kirchberg
Additional Remarks	Data used to calculate “Overall emission coefficients from refineries in the EU”

5.5 Total discharges from offshore installations

Data	Oil discharged by offshore installations from 1984 to 1995 (1997)
Owner	OSPAR
Contact	OSPAR Secretariat New Court 48 Carey Street London WC2A 2JQ / UK Tel: +44 (0) 20 7430 5200 Fax: +44 (0) 20 7430 5225 secretariat@ospar.org
Additional Remarks	Data extracted from the “Report on discharges, waste handling and air emissions from offshore installations for 1984-1995” (1998). Data used to calculate “Emission coefficients from offshore platforms in the EU”

5.6 Total discharges from offshore installations

Data	Oil discharged by offshore installations (1999).
Owner	SIRENE database (Eurostat)
Contact	EUROSTAT European Commission Bâtiment Jean Monnet, rue Alcide De Gasperi, L-2920 Luxembourg-Kirchberg
Additional Remarks	Data used to calculate “Emission coefficients from offshore platforms in the EU”

5.7 Estimates of oil discharges to marine environments in different sectors

Data	Oil pollution in marine areas according to sectors
Owner	Different organisms: North Sea (1987) The Nordic Council (1989) UNEP (1996) IMO (1997) IDC (1987)
Contact	
Additional Remarks	Data was extracted from the “Quality Status Reports” of the above mentioned organisms.

5.8 Data processing

Processing	Development of emission coefficients from offshore activities and refineries based on an EPIS approach (emission per product unit). Calculation of total oil disposal from offshore activities and refineries based on emission coefficients in order to produce time series. Evaluation of obtained calculation results on oil disposal by offshore activities and refineries compared to published and available data. Aggregation of total oil disposal from offshore activities and refineries.
Additional Remarks	

6. ME-6: TOURISM INTENSITY (GROUP 4)

6.1 Nights spent by residents and non-residents by type of accomodation

Data	Nights spent by residents and non-residents by type of accommodation (hotels, campsites, holiday dwellings, other)
Owner	New Cronos database, Theme 1 General Statistics, domain Regio
Contact person	/
Additional Remarks	

6.2 Nights spent in hotels or campsites as a proportion of the population of the region (1998)

Data	Nights spent in hotels or campsites as a proportion of the population of the region (1998)
Owner	Eurostat
Contact person	
Additional Remarks	Presented as a map.

6.3 Regions (NUTS 3)

Data	Regions at NUTS 2 level
Owner	GISCO NUTS, administrative boundaries, version 6, 1 million (NUEC 1MV6)
Contact	Eurostat Bâtiment Jean Monnet European Commission rue Alcide de Gasperi L-2920 Luxembourg-Kirchberg
Additional Remarks	

6.4 Data processing

Processing	Nights spent by residents and non-residents are added up together in order to present country totals by type of accommodation for the most recent years. Moreover, regional data are used for graphics showing 'top'regions by type of accommodation.
Additional Remarks	

POLICY FIELD : OZONE DEPLETION

In most cases the indicator is called "Emissions of ….." but the data shown are for apparent consumption. Several of these indicators are already at or very close to zero. Therefore some reflection is required from the consultants on the usefulness of continuing these indicators, replacing them with other emerging issues for the ozone layer, or dropping the chapter altogether.

1. OD-1: EMISSIONS OF BROMOFLUOROCARBONS (HALONS) (GROUP 4)

1.1 Apparent consumption of halons

Data	Statistical fact sheet-Ozone Depleting Substances
Owner	DG Environment
Contact	Tom Batchelor tom.batchelor@cec.eu.int (+32 2 29 68752) or Peter Horrocks peter.horrocks@cec.eu.int (+32 2 2957384)
Additional Remarks	The data are obtainable online: http://europa.eu.int/comm/environment/ozone/statistics.htm

1.2 Halon stocks

Data	Installed and banked halon stocks
Owner	Eurofeu/Directorate General Environment
Contact	Tom Batchelor tom.batchelor@cec.eu.int (+32 2 29 68752) or Peter Horrocks peter.horrocks@cec.eu.int (+32 2 2957384). Contact for Eurofeu is Brian Ward (KIDDE): Brian.Ward@kidde-hq.com
Additional Remarks	It is not sure whether the data are one-off or if this EUROFEU inventory is scheduled to be repeated.

1.3 Data processing

Processing	Calculate apparent consumption from trade figures.
Additional Remarks	

2. OD-2: EMISSIONS OF CHLOROFLUOROCARBONS (CFCS) (GROUP 4)

2.1 EU emissions of CFCs

Data	EU sales and emissions of CFCs and HCFCs
Owner	McCulloch & Midgley
Contact	Archie McCulloch archie_mcculloch@ici.com archie@marbury.u-net.com phone +44-1928-513835 fax +44-1928-581204 Dr. P. M. Midgley PaulineMidgley@compuserve.com
Additional Remarks	Original data: McCulloch A. and Midgley P.M. (1998) Estimated historic emissions of fluorocarbons from the European Union. Atmospheric environment Vol. 32, No 9, pp. 1571-1580. Data were extrapolated in agreement with Archie McCulloch.

2.2 Data processing

Processing	TEPI-1 data were extrapolated in agreement with Archie McCulloch, as no new data were available.
Additional Remarks	Updating of the McCulloch & Midgley data was envisaged for 2000.

3. OD-3: EMISSIONS OF HYDROCHLOROFLUOROCARBONS (HCFCS) (GROUP 4)

3.1 EU sales and emissions of CFCs and HCFCs

Data	EU sales and emissions of CFCs and HCFCs
Owner	McCulloch & Midgley
Contact	Archie McCulloch archie_mcculloch@ici.com archie@marbury.u-net.com phone +44-1928-513835 fax +44-1928-581204 Dr. P. M. Midgley PaulineMidgley@compuserve.com
Additional Remarks	Original data: McCulloch A. and Midgley P.M. (1998) Estimated historic emissions of fluorocarbons from the European Union. Atmospheric environment Vol. 32, No 9, pp. 1571-1580. Some of the data were reconverted from tonnes to ODP weighted tonnes, using ODP equivalents. 'Sectoral' data is available within 4 market categories: refrigeration, foam blowing, solvents (including 'other uses'), and aerosols.

3.2 EU HCFC sales

Data	HCFC22 sales 1997
Owner	European Commission Directorate General Environment
Contact	http://europa.eu.int/comm/environment/ozone/statistics.htm
Additional Remarks	Questions relating to ozone depleting substances and the European Commission's work in this area: Tom Batchelor tom.batchelor@cec.eu.int (+32 2 29 68752) Peter Horrocks peter.horrocks@cec.eu.int (+32 2 29 57384)

3.3 Data processing

Processing	Joining of data in one spreadsheet. TEPI-1 data were extrapolated in agreement with Archie McCulloch, as no new data were available. The sectoral figures for 1996 could not be replaced by those for 1997, as these were not available.
Additional Remarks	Updating of the McCulloch & Midgley data was envisaged for 2000.

4. OD-4: EMISSIONS OF CHLORINATED CARBONS (GROUP 4)

4.1 Apparent consumption of halons

Data	Statistical fact sheet-Ozone Depleting Substances
Owner	DG Environment
Contact	Tom Batchelor tom.batchelor@cec.eu.int (+32 2 29 68752) or Peter Horrocks peter.horrocks@cec.eu.int (+32 2 2957384)
Additional Remarks	The data are obtainable online: http://europa.eu.int/comm/environment/ozone/statistics.htm

4.2 Data processing

Processing	Convert metric to ODP tonnes
Additional Remarks	

5. OD-5: EMISSIONS OF INDUSTRIALLY PRODUCED METHYL BROMIDE (CH_3BR) (GROUP 4)

5.1 Methyl bromide use – EU

Data	EU-15 use
Owner	DG Environment
Contact	Tom Batchelor tom.batchelor@cec.eu.int (+32 2 29 68752)
Additional Remarks	The data are obtainable online: http://europa.eu.int/comm/environment/ozone/statistics.htm

5.2 Methyl bromide consumption and production – EU

Data	EU-15 consumption, and production.
Owner	UNEP Ozone Secretariat
Contact	K Madhava Sarma, Executive Secretary, UNEP Ozone Secretariat
Additional Remarks	The data are obtainable online: http://www.unep.org/ozone/DataReport99.htm

5.3 MBr use by application

Data	Use for Soil fumigation, Quarantine and Pre-shipment, and Feedstock
Owner	Directorate General Environment
Contact	Tom Batchelor tom.batchelor@cec.eu.int (+32 2 29 68752)
Additional Remarks	

5.4 Targets

Data	To be extracted from recent Commission policy documents.
Owner	Directorate General Environment
Contact	Tom Batchelor tom.batchelor@cec.eu.int (+32 2 29 68752)
Additional Remarks	Documents obtainable from http://europa.eu.int/comm/environment/ozone/index.htm

5.5 Data processing

Processing	
Additional Remarks	Some confusion over differences in the different data sets needs to be clarified

POLICY FIELD : RESOURCE DEPLETION

Only two indicators in this policy field need further work

1. RD-3: INCREASE IN TERRITORY PERMANENTLY OCCUPIED BY URBANISATION (GROUP 3/4)

1.1 Land use

Data	Land use
Owner	Eurostat, European Commission ENVSTAT Database (LUQ 1) Eurostat / OECD Joint Questionnaire
Contact	EUROSTAT - Statistical Office of the European Communities Unit: Environment (F3) L-2920 LUXEMBOURG http://www.europa.eu.int/comm/eurostat/
Additional Remarks	The Land Use questionnaire has to be complemented by data searches in national publications/databases. Also it may be necessary to contact countries directly for clarification of the discrepancies found. By 2002-3 Eurostat's LUCAS project may have produced useable data.

1.2 Territory occupied by urban sector

Data	CLC 1.1.1. class area "Continuous urban fabric" + area of CLC 1.1.2. class "Discontinuous urban fabric" and area of CLC 1.3.3. class “Construction sites”
Owner	EEA
Contact	Mrs. Ann-Sofi Jakobsson At Environmental Satellite Data Centre P.O. Box 806 S-981 28 KIRUNA, Sweden phone.: +46 980 671 76 fax.: +46 980 671 80 ann-sofi.jakobsson@mdc.kiruna.se
Additional Remarks	The CLC used was the 100×100 size, except for A and FIN (CLC 250 size). The data is provided by the ETC/LC and the use of the data is restricted to determined conditions established by the EEA.

1.3 Territory occupied by transport sector

Data	CLC 1.2.2. class “road and rail networks” area + CLC 1.2.3. “port areas ” class and CLC 1.2.4. “Port areas” class.
Owner	EEA
Contact	Mrs. Ann-Sofi Jakobsson At Environmental Satellite Data Centre P.O. Box 806 S-981 28 KIRUNA, Sweden phone.: +46 980 671 76 fax.: +46 980 671 80 e-mail:ann-sofi.jakobsson@mdc.kiruna.se
Additional Remarks	The CLC used was the 100×100 size, except for A and FIN (CLC 250 size). The data is provided by the ETC/LC and the use of the data is restricted to determined conditions established by the EEA.

1.4 Territory occupied by industrial sector

Data	CLC 1.2.1 class “Industrial or commercial units”
Owner	EEA
Contact	Mrs. Ann-Sofi Jakobsson See above
Additional Remarks	The CLC used was the 100 × 100 size, except for A and FIN for which the CLC 250 size was used. The data is provided by the ETC/LC and the use of the data is restricted to determined conditions established by the EEA.

1.5 Administrative boundaries (NUTS)

Data	Administrative Boundaries
Owner	GISCO NUTS, administrative boundaries, version 6, 1 million (NUEC 1MV6), Eurostat
Contact	Mr. Daniel Rase Daniel.RASE@cec.eu.int phone: + 352/4301-34597 Eurostat L-2920 Luxembourg-Kirchberg
Additional Remarks	The demand and use of GISCO data are subject to determined conditions established under the contract.

1.6 Data processing

Processing	**Interannual change rate:** Data provided in km^2 was converted into 1 000 km^2. The indicator is a mean value calculated as an interannual change rate for the time series 1980-1997. $$\text{Interannual change rate} = \frac{\sum_{i=1}^{n} \frac{(t_{i+1} - t_i)}{n}}{N}$$ *n = number year during time period t_{i+1}-t_i* *N = Data number* **Sectoral breakdown:** **1)** ***Identify the urbanised area*** by a) convert to grid GISCO NUTS by country as Corine Land Cover (100 size) databases; b) obtaining the urbanised surface by CLC class from Tabulate areas; c) export table as DBF and working in excel file with the data. **2)** **Obtaining the surface urbanised by sector** as percentage of total urbanised surface. The data in m^2 was converted into km^2 of urbanised surface by CLC. Sum the surface of each CLC class related to the definition of urban, transport and industrial sector. The total by sector was expressed by the total urbanised surface.
Additional Remarks	

2 RD-4: PHOSPHATE BALANCE OF THE SOIL

This should be an indicator reflecting the pressures on the resource 'fertile soil'.

2.1 Soil surface phosphate balance

Data	
Owner	Eurostat European Commission
Contact	
Additional Remarks	

2.2 Agricultural area

Data	Permanent crops and arable land
Owner	Eurostat European Commission New Cronos database
Contact	
Additional Remarks	

2.3 Data processing

Processing	
Additional Remarks	Data is only available at national level while this indicator would require data at regional level.
Result File	

POLICY FIELD : DISPERSION OF TOXICS

The indicators should be updated and refined/improved if possible.

1. TX-2: EMISSIONS OF PERSISTENT ORGANIC POLLUTANTS BY ECONOMIC ACTIVITY (GROUP 3-4)

1.1 Relevant Industrial Sources: Emission Coefficients

Data	Identification of Relevant Industrial Sources of Dioxins and Furans in Europe
Owner	U. Quaß and M. Fehrmann North Rhine Westphalia State Environmental Agency (LUA NRW) Postbox 102363; D-45023 Essen Study on behalf of the European Commission, contract No.: B4-3040/94/884/AO/A3
Contact person	http://www.lua.nrw.de
Additional Remarks	Study published: as LUA-Materials No. 43, Essen 1997, ISSN 0947-5206. The study serves as the basic database for the methodology and data for 1995. Additional data have been compiled by estimates and activity rates

1.2 Use of Air Pollution Control Systems for Waste Incineration

Data	Data on APCS for Waste Incineration
Owner	ISWA Energy from Waste State-of-the-Art-Report 1993-1996 ISBN 87-90402-04-9
Contact	ISWA Tel.: +45 33914491 Fax.: +45 33919188 iswa@inet.uni2.dk
Additional Remarks	The study gives a survey on air pollution abatement systems and their installation in EU countries.

1.3 Activity Rate: Sinter Production

Data (1)	Data sinter production
Owner	Eurostat Yearly IRON and STEEL statistics EUROSTAT ISBN 92-827-9237-4
Contact	Eurostat
Additional Remarks	Activity rates on sinter production in EU countries.

Data (2)	Data sinter production
Owner	Statistisches Bundesamt Eisen und Stahl Statistik Produzierendes Gewerbe, Fachserie 4, Reihe 8.1, various editions

Contact	Statistisches Bundesamt Postfach D-65180 Wiesbaden Tel.: +49-611-752405 Fax: +49-611-753330 http://www.statistik-bund.de
Additional Remarks	Activity rates on sinter production in EU countries for Austria, Sweden and Finland before 1992.

1.4 Activity Rate: BOD Emissions

Data	Data on BOD emissions
Owner	Eurostat Same data as indicator WP-6 in this publication.
Contact	
Additional Remarks	Activity rates on BOD emissions from households.

1.5 Dioxin Emission Coefficient: Landfill

Data	Dioxin emission coefficient for landfills – modelling of 50-years emission
Owner	Oeko-Institut Darmstadt – Germany
Contact	Günter Dehoust Elisabethenstr. 55-57 D-64283 Darmstadt Tel: +49-6151-8191-0 dehoust@oeko.de
Additional Remarks	Modelling of dioxin release to water from landfills by municipal waste.

1.6 Activity Rate: Waste Disposed

Data (1)	Activity rate on waste disposed
Owner	Eurostat Waste statistics
Contact	Eurostat Cees van Bousekom Tel: +352 4301 35176 Cornelis.VAN-BEUSEKOM@cec.eu.int
Additional Remarks	Activity rates on waste disposed in EU countries (see TEPI indicator WA-2).

1.7 Activity Rate: Compost use

Data	Activity rate on compost use
Owner	Eurostat Waste statistics

Contact	Eurostat Cees van Bousekom Tel: +352 4301 35176 Cornelis.VAN-BEUSEKOM@cec.eu.int
Additional Remarks	Only a little data is available. Combination with national / Corinair data in source (1) “Identification of Relevant Industrial Sources of Dioxins and Furans in Europe”

1.8 Activity Rate: Sewage Sludge

Data	Activity rate on sewage sludge
Owner	Eurostat Waste statistics
Contact	Eurostat Cees van Bousekom Tel: +352 4301 35176 Cornelis.VAN-BEUSEKOM@cec.eu.int
Additional Remarks	Data on sewage sludge refer to the production, not to the use in soil fertilisation. The amount is given not as dry matter. Additional data on the use has been taken from source (1) “Identification of Relevant Industrial Sources of Dioxins and Furans in Europe”

1.9 Data Processing

Processing	For the inventory the relevant processes have been taken from the survey in source (1). For TEPI 2, processes leading to water and soil emissions have been added. Data processing has been done for 1985, 1990, 1995 and 1996. The emissions have been calculated according to "activity rate x emission coefficient”. 1995 data could be extracted from source (1). For other years the activity rates are from various statistics. Emission coefficients are estimated by the help of additional information Emission to air, water and soil have been added 1:1:1.
Additional Remarks	The methodological approach has been adapted from (1). Same technologies are characterised by the same emission coefficient independently of their location and independently of national emission reporting. Emissions are counted on release from the technosphere to the environment. Thus only the release from landfills are taken into account, not the waste disposed of in landfills.

2. TX-3: CONSUMPTION OF TOXIC CHEMICALS (GROUP 4)

2.1 Prodcom Data On Production Of Chemicals

Data	EUROSTAT
Owner	Statistical Office Of The European Communities Jean Monnet Building L-2920 Luxembourg
Contact person	Rosemary Montgomery Tel: +352 4301-37292 Fax: +352 4301-37316 Rosemary.MONTGOMERY@cec.eu.int
Additional Remarks	Data contains estimates.

2.2 Data On Production Of High Production Volume Chemicals

Data	APPE
Owner	Association of Petrochemicals Producer in Europe Avenue E. van Nieuwenhuyse 4, bte 1 B- 1160 Bruxelles
Contact person	Association of Petrochemicals Producers in Europe Avenue E. van Nieuwenhuyse 4, bte 1 B- 1160 Bruxelles
Additional Remarks	1990-1995 Data is in Eurostat's database.

2.3 Data On Refinery Products

Data	EUROSTAT Energy Statistics
Owner	Statistical Office Of The European Communities Jean Monnet Building L-2920 Luxembourg
Contact person	Nikolas Roubanis
Additional Remarks	

2.4 Data For Classification of Chemicals (R-phrases)

Data	IUCLID, International Uniform Chemical Information Database, Existing Chemicals 1996
Owner	JRC, European Chemicals Bureau Via E. Fermi 1, I-21020 Ispra (VA), Italy
Contact	Mr. Vollmer Tel: +39-0332-78-9983

	gerald.vollmer@jrc.it
Additional Remarks	CD-ROM

Data	Gefahrstoffe am Arbeitsplatz, Version 3, Mai 1998
Owner	BIA Berufsgenossenschaftliches Institut für Gefahrstoffe am Arbeitsplatz Alte Heerstraße 111 D-53754 Sankt Augustin
Contact	Tel: +49 22 41 2 31-02 Fax: +49 22 41 2 31 22 34 bia@hvbg.de http://www.hvbg.de/d/bia/fac/zesp/zesp.htm
Additional Remarks	Published by Erich Schmidt Verlag, Berlin.

Data	Chemical and Other Safety Information
Owner	Oxford University, Department of Chemistry, Physical and Theoretical Chemistry Laboratory South Parks Road, Oxford OX1 3QT UK
Contact	Tel: +44 1865 275 906 Fax:+44 1865 275 905
Additional Remarks	http://physchem.ox.ac.uk/MSDS/.

Data	Gefahrstoffdatenbank (GUPTA & E. MERCK KGaA)
Owner	UB Media Verlag GmbH Gewerbestr. 10 D-84427 St. Wolfgang
Contact	Mr. J. Boch Tel: +49 8085-93000 Fax: +49 8085 808 sales@ubmedia.de
Additional Remarks	www.ubmedia.de

2.5 Data processing

Processing	The chemicals are classified according to their R-phrases. For each class the mass of the chemicals is summed up. The following classes have been introduced: Class A: R45, R46, R49, R60, R61 (substances classified as carcinogenic, teratogenic, mutagenic, reprotoxic) Class B: R40, R42, R43, R62, R63, R64 (substances classified as probably carcinogenic, teratogenic, reprotoxic or which may cause sensitization). Class C: R26, R27, R28, R32, R48/23, R48/24, R48/25, R35 (substances classified as very toxic, toxic and presenting a danger of serious damage to health or which may cause severe burns.) Class D: R23, R24, R25, R29, R31, R33, R34, R41, R48/20, R48/21, R48/22 (substances classified as toxic, harmful and presenting a danger of serious damage to health, a danger of cumulative effects, or which may cause burns or present a risk of serious damage to the eyes). Class E: R20, R21, R22, R36, R37, R38, R65 (substances classified as harmful, irritating or which may cause damage to lunges when swallowed). For the graph only the toxic ingredients of the products are counted. For refinery products the content of toxic substances (benzene in gasoline, PAH in fuels) have been estimated and only this amount is summed up with the chemicals.
Additional Remarks	Will be developed further in Eurostat's work on Headline indicator for chemicals

3. TX-4: INDEX OF HEAVY METAL EMISSIONS TO WATER (GROUP 3)

3.1 Reference value on ecotoxicology

Data	OSPAR Reference values for trace metals on sediment (mg/kg DW) and water (my g/l).
Owner	OSPAR, 1994
Contact	The Secretary of the Oslo and Paris Commissions New Court 48 Carey Street London WC2A 2JO United Kingdom Tel: +44(0) 171 242 9927 Fax: +44(0) 171 831 7427 secretariat@ospar.org http://www.ospar.org
Additional Remarks	In using reference values of both sediments and water it is suggested that an equal weighting system be applied. The weighting factor (WP) was calculated using this approach.

3.2 Population connected to treatment plants

Data	Percentage of the national population connected to each type of waste water treatment plant (primary, biological and advanced) and the percentage of population without waste water treatment.
Owner	Eurostat European Commission ENVSTAT database
Contact	María Pau Vall maria.pau-vall@cec.eu.int
Additional Remarks	Data from the Eurostat/OECD Joint Questionnaire, filled in by the Member States and compiled by Eurostat.

3.3 Heavy metal emission coefficients from households

Data	Emission coefficients from households for mercury, lead and cadmium expressed as g (Hg, Pb, Cd)/inhabitant.
Owner	DHI, Danish Hydraulic Institute
Contact	Dep. of Wastewater & Process Technology Agern Allé 11 DK-2970 Hørsholm Tel: +45 4516 9200 Tel: +45 4516 9037 (direct line) Fax: +45 4516 9292 lkx@dhi.dk http://www.dhi.dk/

Additional Remarks	To calculate the emission coefficients, around thirty references of European data have been consulted. Only the Emission coefficients from households were considered. Due to the lack of a reliable trend in the data consulted in the literature, a mean value of emission coefficient was calculated for each heavy metal considered, using a semi-logarithmic equation.

3.4 Removal efficiency of heavy metals in waste water treatment plants

Data	Removal efficiency of Mercury, Lead and Cadmium in waste water treatment plants
Owner	VKI, Institute for Water Environment
Contact	Dep. of Wastewater & Process Technology Agern Allé 11 DK-2970 Hørsholm Tel: +45 4516 9200 Tel: +45 4516 9037 (direct line) Fax: +45 4516 9292 lkx@dhi.dk http://www.dhi.dk/
Additional Remarks	As the removal efficiency of heavy metals in waste water treatment plants has large variations, it was proposed that the model be calibrated according to experience in Denmark and Sweden on overall treatment efficiency for the different metals in municipal waste water.

3.5 Total emissions of heavy metals to water from various sources

Data	Total emissions of heavy metal from various sources
Owner	DHI/ VKI, Institute for Water Environment
Contact	Dep. of Wastewater & Process Technology Agern Allé 11 DK-2970 Hørsholm Tel: +45 4516 9200 Tel: +45 4516 9037 (direct line) Fax: +45 4516 9292 lkx@dhi.dk http://www.dhi.dk/
Additional Remarks	Overall aggregated data on total emissions of heavy metals to water from various sources identified for 3 countries: Netherlands, Denmark, and Sweden. The data was collected from 3 reports: • Ministerie van Volkshuisvesting, NL (1996): Emissies in Nederland, Bedrijfsgroepen en regio´s 1994 en raminingen 1995, Nr. 33 Aug. 1996. • Milløstyrelsen, DK (1996): Indikatorer 1996. • Naturvådsverket, S (1997): Kvalitetsbeskrivning av Vatten, updated 04-06-197 (also available on: http://www.scb.se/scbswe/mhtm/miljoutslmet2.htm).

3.6 Data processing

Processing	The indicator is defined as emissions of Hg, Cd, Pb to water from selected sources expressed in Arsenic Toxicity Equivalents (As-EEQ) per annum. • **Weighting factor:** The WF was calculated as the sum of the OSPAR reference values (RV) (lower value) normalised according to arsenic. The weighting factor (WF) of the individual metals can be calculated by the following equation: $$WF = \frac{2}{RV_{wat,i} / RV_{wat,As} + RV_{sed,i} / RV_{sed,As}}$$ Where: RVwat,i Reference value for water for the metal i according to OSPAR RVwat,As Reference value for water for arsenic according to OSPAR RVsed,i Reference value for sediment for the metal i according to OSPAR RVsed,As Reference value for sediment for arsenic according to OSPAR • **Emission coefficients:** The mean value for the emission coefficients were modelled using a semi-logarithmic equation of the following kind: $$EC_{me} = a \cdot \exp(b \cdot Year)$$ Where EC is the emission coefficient of the considered metal while a and b are constants. Emission coefficients from the households and the model of removal efficiency in treatment plants are combined in order to develop estimates on the discharge after treatment or without any treatment. Finally, the calculated results for the three metals are aggregated into an ecotoxicity index using the weighting scheme described above. $$I_{me^+} = \sum E_i \times WF_i$$ Where: Ei The emissions in tonnes per year of a metal i WFi The weighting factor of metal i Unit Tonnes Arsenic Ecotoxicity Equivalents (As-EEQ) per year The aggregated data of the three metals is divided by population in order to produce results expressed per capita. • **Sectoral breakdown:** The collected data after treatment from different sources was used for developing a sectoral breakdown of emissions of heavy metals for Denmark, Netherlands and Sweden.
Additional Remarks	Only the years 1985 and 1990-1995 were included in the model.

4. TX-5: INDEX OF HEAVY METAL EMISSIONS INTO AIR (GROUP 3)

4.1 Emission Coefficients for Heat and Power Plants

Data	Calculation of emission coefficients (hard coal and fuel oil) for heat and power plants
Owner	O., Rentz, et.al. Ermittlung der Schwermetallemissionen aus stationären Anlagen in Baden-Würtemberg und im Elsaß, hier: Feuerungsanlagen Forschungsbericht FZKA-PEF 144, 1996
Contact	
Additional Remarks	The book was used as a database (abatement technologies) for the modelling of emission coefficients in different countries and years.

4.2 SIRENE Energy Database

Data	Energy consumption in different sectors
Owner	Eurostat Energy statistics (New Cronos, SIRENE)
Contact	Eurostat Rosemary Montgomery Tel: +352 4301 37292 Rosemary.MONTGOMERY@cec.eu.int
Additional Remarks	Activity rates of different fuels and years in EU countries.

4.3 Lignite for Power and Heat Generation in Germany

Data	Data on emission coefficients (lignite) for heat and power plants in Germany
Owner	W., Jockel, J., Hartje, TÜV Rheinland Sicherheit und Umweltschutz GmbH Die Entwicklung der Schwermetallemissionen in der Bundesrepublik Deutschland von 1985 bis 1995 Luftreinhaltung Forschungsbericht 94-10403524 im Auftrag des Umweltbundesamtes, Juli 1997
Contact	http://www.tuev-rheinland.de
Additional Remarks	Activity rates and emission coefficients for lignite for the years 1985, 1990 and 1990

4.4 Lead Emissions from Transportation

Data	Lead emissions from petrol-engined vehicles
Owner	Eurostat
Contact	Eurostat Graham Lock graham.lock@cec.eu.int
Additional Remarks	Calculation by Eurostat on the basis of the consumption of leaded petrol

4.5 Activity Rates on Sinter Production and Crude Steel Production

Data (1)	Data on sinter production and crude steel production
Owner	Eurostat Yearly IRON and STEEL statistics EUROSTAT ISBN 92-827-9237-4
Contact	Eurostat
Additional Remarks	Activity rates on sinter production and crude steel production in EU countries.

Data (2)	Data on sinter production and crude steel production
Owner	Statistisches Bundesamt Eisen und Stahl Statistik Produzierendes Gewerbe, Fachserie 4, Reihe 8.1, various editions
Contact	Statistisches Bundesamt Postfach D-65180 Wiesbaden Tel.: +49-611-752405 Fax: +49-611-753330 http://www.statistik-bund.de
Additional Remarks	Activity rates on sinter production and crude steel production in EU countries for Austria, Sweden and Finland.

4.6 Emission Coefficients for the steel sector

Data	Data on emission coefficients for the sinter production and the crude steel production
Owner	W., Jockel, J., Hartje, TÜV Rheinland Sicherheit und Umweltschutz GmbH Die Entwicklung der Schwermetallemissionen in der Bundesrepublik Deutschland von 1985 bis 1995 Luftreinhaltung Forschungsbericht 94-10403524 im Auftrag des Umweltbundesamtes, Juli 1997
Contact	http://www.tuev-rheinland.de
Additional Remarks	German data have been used for all European steel plants

4.7 Emission Coefficients for Residential Heating

Data (1)	Emission coefficients for wood, hard coal and lignite for residential heating
Owner	W., Winiwarter, Österreichisches Forschungszentrum Seibersdorf, M., Schneider, Umweltbundesamt Abschätzung der Schwermetallemissionen in Österreich UBA-95-108 Umweltbundesamt,Wien, 1995
Contact	Umweltbundesamt, Austria
Additional Remarks	Austrian data have been used for all European countries.

Data (2)	Emission coefficients for wood, hard coal and lignite for residential heating
Owner	W., Jockel, J., Hartje, TÜV Rheinland Sicherheit und Umweltschutz GmbH Die Entwicklung der Schwermetallemissionen in der Bundesrepublik Deutschland von 1985 bis 1995 Luftreinhaltung Forschungsbericht 94-10403524 im Auftrag des Umweltbundesamtes, Juli 1997
Contact	http://www.tuev-rheinland.de
Additional Remarks	German data have been used for all European countries.

4.8 Municipal Waste Incineration: Activity Rates and Abatement Technologies

Data (1)	Activity rates on incinerated waste
Owner	Eurostat Waste statistics
Contact	Eurostat Cees van Bousekom Tel: +352 4301 35176 Cornelis.VAN-BEUSEKOM@cec.eu.int
Additional Remarks	Activity rates on incinerated waste in EU countries (see indicator WA-2).

Data (2)	Data on abatement technologies for waste incineration
Owner	ISWA Energy from Waste State-of-the-Art-Report 1993-1996 ISBN 87-90402-04-9
Contact	ISWA Tel.: +45 33914491 Fax.: +45 33919188 iswa@inet.uni2.dk
Additional Remarks	The study gives a survey on air pollution abatement systems and their installation in EU countries.

Data (3)	Data on dioxin emissions from waste incineration
Owner	U. Quaß and M. Fehrmann North Rhine Westphalia State Environmental Agency (LUA NRW) Postbox 102363; D-45023 Essen Study on behalf of the European Commission, contract No.: B4-3040/94/884/AO/A3
Contact person	http://www.lua.nrw.de
Additional Remarks	Study published: as LUA-Materials No. 43, Essen 1997, ISSN 0947-5206. The share of abatement technologies was estimated on the basis of dioxin emissions.

4.9 Data processing

Processing	The most relevant processes have been calculated by using TNO-Database (heavy metals of EU-15 in 1990). For TEPI 2, heavy metal emissions from household (residential heating) and waste incineration have been added. The heavy metal emissions have been calculated as: *activity rate x emission coefficient* Activity rates are taken from the SIRENE database. Emission coefficients are based on various studies and estimated by the help of additional information.
Additional Remarks	Data are given for 1985 up to 1996. Data gaps were filled by interpolation and extrapolation.

POLICY FIELD : URBAN ENVIRONMENT

It has proved very difficult to obtain useful data for this policy field.

Renewed efforts to find data or good proxies needed.

1. UP-1: URBAN ENERGY CONSUMPTION (GROUP 1/4)

1.1 'Urban' energy consumption

Data	Final energy consumption (kt oe) total , and by sectors which are clearly NOT urban: (mining industry, fisheries, agriculture, air transport)
Owner	EUROSTAT
Contact person	Rosemary Montgomery Rosemary.MONTGOMERY@cec.eu.int
Additional Remarks	No source for urban energy consumption exists. This proxy comes closest.

1.2 Data processing

Processing	Subtract sectors that are NOT urban from total; calculate per capita figures; create graphs
Additional Remarks	There is no alternative approach available: there is no division between urban and non-urban use.

2. UP-3: NON-TREATED URBAN WASTE WATER (GROUP 3)

2.1 Population connected to treatment plants

Data	Percentage of the national population connected to each type of waste water treatment plant (primary, secondary and tertiary) and the percentage of population without waste water treatment.
Owner	Eurostat European Commission ENVSTAT database
Contact	María Pau Vall maria.pau-vall@cec.eu.int
Additional Remarks	Data origin is the Eurostat/OECD Joint Questionnaire, completed by Member States and compiled by Eurostat. Some odd trends in data series have been corrected using national data sources and publications.

2.2 Efficiency of the treatment plants

Data	Efficiency of each type of waste water treatment, expressed as percentage of nitrogen, phosphorus and BOD removed (presented separately for P, N and BOD)
Owner	TAU Consultora Ambiental
Contact	Rodrigo Jiliberto Herrera rjiliberto@taugroup.com phone: 34 91 4502093 fax: 34 91 459 43 82
Additional Remarks	Data used in indicator calculation is not the actual efficiency but the theoretical one. These efficiency rates have been obtained by consulting technical publications and national data .

2.3 Data processing

Processing	Data presented in the table are the percentages of population without waste water treatment. Data presented in the graph have been calculated by attributing a weighting factor to the different types of treatment. The weighting factor is based on the removal of nitrogen, phosphorus and BOD of each type of waste water treatment. The weighting factors are applied to the percentage of population connected to each type of treatment plants and the percentage of population without treatment. The result is an index from 0 to 100, where 0 means that all waste water is subject to tertiary treatment and 100 represents no treatment at all.
Additional Remarks	

3. UP-4: CAR SHARE OF URBAN PASSENGER TRANSPORT (GROUP 4)

3.1 National mileage data (all transport modes)

Data	EU transport in figures
Owner	EUROSTAT
Contact person	Graham Lock graham.lock@cec.eu.int
Additional Remarks	Annual publication

Data	Eurostat: TRAINS (Transport information system)
Owner	EUROSTAT
Contact person	Graham Lock graham.lock@cec.eu.int
Additional Remarks	Database

Data	ECMT: Statistical trends in transport
Owner	European Conference of Ministers of Transport
Contact person	
Additional Remarks	Periodic publication

Data	UITP study on transport modes which are not represented in regular statistics
Owner	Union Internationale des Transport Publics
Contact person	Graham Lock graham.lock@cec.eu.int
Additional Remarks	One-off study

Data	National statistics offices and other national sources
Owner	Various

Contact persons	Helena Asp helena.asp@sika-institute.se Drs G.M.E.H. Moritz GMRZ@cbs.nl Ir H.J. Konen RKON@cbs.nl Veijo Kokkarinen "Kokkarinen_Veijo/TIEL_Tk"@utie10.tieh.fi Viren Riitta riitta.viren@lm.vn.fi Marie-Odile GASCON mogascon@certu.fr David Flaxen dflaxen@easynet.co.uk Spencer Broadley dst.dot@gtnet.gov.uk Barbara Noble Barbara_Noble@detr.gsi.gov.uk Ernst Lung Ernst.LUNG@bmv.gv.at Thomas Verhye Thomas.VERHEYE@Cec.eu.int Jean-Loup Madre madre@inrets.fr Amie Lindeberg amie.lindeberg@scb.se Langzaam Verkeer els.heylen@langzaamverkeer.be Mr Ratzenberger ratzenberger@ifo.de Sabine Radke sradke@diw-berlin.de Carl-Elis Boström Carl-Elis.Bostrom@environ.se
Additional Remarks	Use of reports and websites was made also

3.2 Urban percentage (all transport modes)

Data	Urban percentages of all transport modes
Owner	Various
Contact	See above
Additional Remarks	Use of reports and websites was made also

3.3 Data processing

Processing	Data were entered into a draft spreadsheet containing data for all transport modes at national scale. These data were multiplied by the urban percentage figures (by mode by country) and inserted into a new spreadsheet with urban data. This spreadsheet was completed with urban car share data obtained from various sources. Interpolation of data (national or urban level) was implemented where warranted. This urban car share table forms the basis for the indicator.
Additional Remarks	For some countries it was necessary to split data on categories of transport into new categories, e.g. PTW mileage into moped and motorcycle mileage, or Bus/Coach data into buses ('urban') and coaches ('non urban'). The data in the resulting urban car share table are questionable and cannot be compared between countries. The trends indicated are believed to be comparable, though. Several matters are still unresolved, e.g. "what is urban", and which proportion of a given transport mode is actually considered urban (and on what grounds).

4. UP-5: PEOPLE ENDANGERED BY NOISE FROM URBAN TRAFFIC (GROUP 4)

4.1 Noise data

Data (1)	Lambert, J., & Vallet, M. Study Related to the Preparation of a Communication on a Future EC Noise Policy. Bron Cedex, France: INRETS, LEN report no. 9420 (1994).
Owner	INRETS Institut National de Recherche sur les Transports et leur Sécurité
Contact person	Jacques Lambert, Directeur Recherche INRETS lambert@inrets.fr
Additional Remarks	

Data (2)	M+P report: Europe's Environment 1993, Noise Pollution A. von Meier Commission of the European Communities, DG Environment (DGXI), Task Force European Environment Agency, EG.93.1.1, January 1994
Owner	M+P Raadgevende ingenieurs bv, Aalsmeer
Contact	M+P Aalsmeer Visserstraat 50 PO Box 344 NL-1430 AH Aalsmeer tel. +31(0)297-320651 fax +31(0)297-325494 mplusp@am.mp.nl
Additional Remarks	

Data (3)	Data obtained from individual member states, Dobris assessment, OECD compendium, etc.
Owner	IIUE compiled these figures
Contact	IIUE, Tjeerd Deelstra Nickersteeg 5 NL-2611 EK Delft +31.15.2623279
Additional Remarks	

4.2 Data processing

Processing	Copy data into project spreadsheet
Additional Remarks	No new date were obtained for the TEPI 2 publication

5. UP-6: CHANGE FROM NATURAL TO BUILT UP AREA (GROUP 4)

5.1 Commune boundaries

Data	Commune boundaries at NUTS-5 level
Owner	GISCO Database, Eurostat European Commission
Contact	Mr. Torbiörn Carlquist torbioern.carlquist@cec.eu.int Bâtiment Jean Monnet rue Alcide De Gasperi, L-2920 Luxembourg phone: + 352 4301.33411 fax: + 4301.34029
Additional Remarks	The version used was the 1991 version because the commune boundaries are complete with their reference population data.

5.2 Population data

Data	Population data at NUTS- 5 units
Owner	GISCO Database European Commission
Contact	Mr. Torbiörn Carlquist torbioern.carlquist@cec.eu.int Bâtiment Jean Monnet rue Alcide De Gasperi, L-2920 Luxembourg phone: + 352 4301.33411 fax: + 4301.34029
Additional Remarks	Population data available only for 1981 and 1991

5.3 Data processing

Processing	The concentration index of the population tat NUTS-5 level was calculated by the population concentration at NUTS 5 level according to the percentile 25 of the national territory. The original data was put together in one spreadsheet and the NUTS-5 population data put in decreasing order with their respective surface areas by country. Then the population data was summed from where their commune surface areas correspond to the percentile 25 of the national territory. The population NUTS-5 data, which are concentrated in the 25% of the territory, was expressed as percentage of total population data.
Additional Remarks	Not really the indicator requested

POLICY FIELD : WATER POLLUTION

The indicators WP-1, 2, 5 and 6 need more work

1. WP-1: NUTRIENT EMISSIONS FROM HOUSEHOLDS (GROUP 3)

1.1 Population connected to treatment plants

Data	Percentage of the national population connected to each type of waste water treatment plant (primary, secondary and tertiary) and the percentage of population without waste water treatment.
Owner	Eurostat European Commission ENVSTAT database
Contact	María Pau Vall maria.pau-vall@cec.eu.int
Additional Remarks	Data origin is the Eurostat/OECD Joint Questionnaire, completed by Member States and compiled by Eurostat. Some odd trends in data series have been corrected using national data sources and publications.

1.2 Nitrogen emission coefficients

Data	Nitrogen emission coefficients (before treatment) expressed as kg N per inhabitant
Owner	TAU Consultora Ambiental
Contact	Rodrigo Jiliberto Herrera rjiliberto@taugroup.com phone: 34 91 4502093 fax: 34 91 459 43 82
Additional Remarks	A decreasing data series has been obtained by consulting different data sources and publications.

1.3 Phosphorus emission coefficients

Data	Phosphorus emission coefficients (before treatment) expressed as kg P per inhabitant
Owner	TAU Consultora Ambiental
Contact	Rodrigo Jiliberto Herrera rjiliberto@taugroup.com phone: 34 91 4502093 fax: 34 91 459 43 82
Additional Remarks	The nitrogen emission coefficient has been obtained by consulting different data sources and publications.

1.4 Efficiency of the treatment plants

Data	Efficiency of each type of waste water treatment, expressed as percentage of nitrogen and phosphorus removed (presented separately for P and N)
Owner	TAU Consultora Ambiental
Contact	Rodrigo Jiliberto Herrera rjiliberto@taugroup.com phone: 34 91 4502093 fax: 34 91 459 43 82
Additional Remarks	Data used in indicator calculation is not the actual efficiency but the theoretical one. These efficiency rates have been obtained by consulting

	technical publications and national data.

1.5 Data processing

Processing	Total emissions before treatment are obtained by multiplying the national population by the emission coefficient. These emissions are reduced taking into account the percentage of population connected to each type of treatment and the treatment efficiency.
Additional Remarks	

2. WP-2: NUTRIENT EMISSIONS FROM INDUSTRY (GROUP 4)

2.1 Direct emissions of nutrients from industries into aquatic ecosystems

Data	Direct emissions of nutrients from industries into aquatic ecosystems.
Owner	DHI, Institute of Water and Environment
Contact	Dep. of Wastewater & Process Technology Agern Allé 11 DK-2970 Hørsholm Tel: +45 4516 9200 Tel: +45 4516 9037 (direct line) Fax: +45 4516 9292 lkx@dhi.dk http://www.dhi.dk/
Additional Remarks	Some data has been collected through the EUROSTAT/OECD Joint Questionnaire on waste water treatment in Member States. EUROSTAT has collected other data by individual contact in MS and some surveys on different national and international reports on waste water have also provided some data (see final TEPI report 2º Edition)

2.2 Data processing

Processing	Direct emissions of nutrients from industries have been estimated according to the data collected from the different sources divided by the population of each individual Member State. The emissions per capita were presented in two tables: emissions of nitrogen per capita and emissions of phosphorous per capita.
Additional Remarks	In Sweden only industrial discharges to coastal zones were included for 1985 and 1995. In Finland only discharges to coastal zones were included for 1985 and 1990. In France data for 1997 includes 409 industries while data for 1998 includes 415 industries.

3. WP-5: EMISSIONS OF ORGANIC MATTER FROM HOUSEHOLDS (GROUP 3)

3.1 Population connected to treatment plants

Data	Percentage of the national population connected to each type of waste water treatment plants (primary, secondary and tertiary) and the percentage of population without waste water treatment.
Owner	Eurostat European Commission ENVSTAT database
Contact	María Pau Vall maria.pau-vall@cec.eu.int
Additional Remarks	Data origin is the Eurostat/OECD Joint Questionnaire, filled in by the Member States and compiled by Eurostat. Some odd trends in data series have been corrected using national data sources and publications.

3.2 BOD emission coefficients

Data	BOD emission coefficients (before treatment) expressed as kg BOD per inhabitant
Owner	TAU Consultora Ambiental
Contact	Rodrigo Jiliberto Herrera rjiliberto@taugroup.com phone: 34 91 4502093 fax: 34 91 459 43 82
Additional Remarks	The BOD emission coefficient has been obtained by consulting different data sources and publications.

3.3 Efficiency of the treatment plants

Data	Efficiency of each type of waste water treatment, expressed as percentage of BOD removed
Owner	TAU Consultora Ambiental
Contact	Rodrigo Jiliberto Herrera rjiliberto@taugroup.com phone: 34 91 4502093 fax: 34 91 459 43 82
Additional Remarks	Data used in indicator calculation is not the actual efficiency but the theoretical one. These efficiency rates have been obtained by consulting technical publications and national data.

3.4 Data processing

Processing	Total emissions before treatment are obtained by multiplying the national population by the emission coefficient. These emissions are reduced taking into account the percentage of population connected to each type of treatment and the treatment efficiency.
Additional Remarks	

4. WP-6: EMISSIONS OF ORGANIC MATTER FROM INDUSTRY (GROUP 4)

4.1 BOD emissions from industries after treatment

Data	BOD emission coefficients by industrial activities (ISIC codes)
Owner	World Bank NIPR
Contact	Hettige, H. P. Martin, M. Singh and D. Wheeler 1994, "IPPS The Industrial Pollution Projection System", Policy Research Working Paper #1431, NIPR, World Bank. Downloaded from: http://www.worldbank.org/nipr/work_paper/1431/ Hettige, H., M. Mani and D. Wheeler 1997, "Industrial Pollution in Economic Development: Kuznets Revisited", Development Research Group, World Bank. Downloaded from: http://www.worldbank.org/nipr/work_paper/kuznet/
Additional Remarks	Emission coefficients reported are all 1987 US data at the ISIC4-digit level, based on environmental and economic information from approximately 200 000 factories in all regions of the United States.

4.2 BOD emissions from industries after treatment

Data	Employment in the different industrial sub-groups (NACE codes) and countries
Owner	EUROSTAT European Commission Bâtiment Jean Monnet, rue Alcide De Gasperi, L-2920 Luxembourg-Kirchberg
Contact	
Additional Remarks	1993 was used as the reference year for calculations.

4.3 Data processing

Processing	Data was processed in agreement with the methodology developed by the NIPR Group of World Bank. According to the IPPS study by the NIPR Group, BOD emission/labour ratios are approximately constant across countries. Data processing includes the following points: • adoption of World Bank emission coefficients followed by a conversion of ISIC codes into NACE codes; • collection of employment data in different subgroups specified by NACE codes; • aggregation of calculation results from subgroups into appropriate main groups of industrial branches; • division of the final calculation results by the population in each Member State in order to obtain a per capita figure. For a given Member State, the industrial emission in a specific year *IE(y)* will be calculated as: $$IE(y) = \sum_i EMP_{i,y} \cdot EC_i \cdot X_{i,y} \cdot (1 - RCpublic_y) + \sum_i EMP_{i,y} \cdot EC_i \cdot (1 - X_{i,y})$$ $$= \sum_i EMP_{i,y} \cdot EC_i \cdot \left(X_{i,y} \cdot (1 - RCpublic_y) + (1 - X_{i,y})\right)$$ Where: EMPi,y is the number of employees in the selected sector "i" in a given year "y" [1000's]. Data are available from Eurostat.

	ECi,y is the emission coefficient (kg BOD/1000 employees) of the considered industrial sub-group. Data are available from IPPS. Xi,y is the fraction of the total industrial waste water connected to public treatment plants. These data are not available and must be estimated. RC publicy is the removal efficiency of BOD in public treatment plants. An estimate can be developed from data collected on household discharges to waste water treatment (see TEPI 2 indicator WP-5)
Additional Remarks	