

Environmental protection expenditure by industry in the European Union

Statistics in focus

ENVIRONMENT AND ENERGY

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Environment

Author

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The level of investments and current expenditures for environmental protection in the EU-15 has decreased between 1999 and 2002 in industry sector (Mining & Quarrying, Manufacturing and Electricity & Water). The new Member States add about 11percent to the total spending on environmental protection but have a considerable higher share of environmental protection expenditure in gross value added. In 2002 the share of GVA was more than 3 percent compared with EU-15 countries with a share of almost 1.4 percent.

The purpose of environmental protection expenditure is to distinguish how much is spent on deliberate environmental protection activities. Between 1999 and 2002 the EU countries have focused their total environmental protection expenditures on wastewater and waste treatment activities (see table 1). There is however a difference between EU-15 and the new Member States. In 2000 the focus for the new Member States lay with combating air pollution while in the old Member States the focus lay with waste and wastewater treatments. In 2002 the focus in the new Member States shifted towards wastewater treatment. Current expenditure stands for over half of total expenditure in the EU-25 countries, in 2002 its share stood at 75 percent. The investments can be broken down in pollution treatment and pollution prevention investments. Pollution treatment investments stand for 16 percent of total expenditure. These types of investments aim at treating pollution that is raised from the production process.

Table 1: Environmental protection expenditure in industry in the EU, 1999-2002 (Eurostat estimate)

	Air	Waste	waste water	Other	Total (million euro)	% of GVA	% of GDP
EU-15 1999	23%	29%	29%	19%	33360	2.00%	0.41%
of which							
capital expenditure	42%	12%	27%	20%	8724	0.52%	0.11%
current expenditure	17%	35%	30%	18%	24636	1.48%	0.31%
EU-25 2000	28%	28%	29%	14%	31559	1.69%	0.35%
of which							
<i>EU-15</i>	26%	29%	30%	14%	28443	1.60%	0.33%
<i>NMS10</i>	41%	19%	25%	14%	3116	3.53%	0.83%
of which							
capital expenditure	47%	13%	23%	17%	8668	0.47%	0.10%
current expenditure	19%	35%	31%	13%	22038	1.18%	0.25%
EU-25 2001	25%	28%	30%	16%	38094	2.01%	0.41%
of which							
<i>EU-15</i>	24%	29%	30%	16%	34399	1.91%	0.39%
<i>NMS10</i>	32%	20%	34%	13%	3696	3.89%	0.87%
of which							
capital expenditure	37%	15%	24%	23%	13743	0.73%	0.15%
current expenditure	18%	35%	33%	13%	24332	1.29%	0.26%
EU-25 2002	20%	27%	30%	17%	28483	1.49%	0.30%
of which							
<i>EU-15</i>	18%	28%	29%	17%	25116	1.39%	0.27%
<i>NMS10</i>	30%	20%	36%	13%	3367	3.36%	0.75%
of which							
capital expenditure	37%	13%	28%	21%	7182	0.38%	0.07%
current expenditure	14%	32%	31%	15%	21296	1.11%	0.23%

Country spending on environmental protection

Total expenditures on environmental protection in the Mining & quarrying, Manufacturing and Electricity & Water industries are quite stable in most Member States, but not in percent of GVA where it is slowly decreasing. In 2002 Slovakia had the highest share of environmental protection expenditures in GVA with 5.41 percent (see table 2).

Spain increased the expenditure on environment protection between 1997 and 2002 with over 250 percent. The gross value added, that is, the contribution of each sector to the gross domestic product, increased slightly with 24 percent in Spain during the same time

period in total industry. Estonia has since 1997 steadily increased its shares of environmental protection expenditures in GVA. Environmental protection expenditures have however only increased with 16% over the same time period. Both countries are despite their different industrial structure above the GVA for the EU-25.

Between 1999 and 2002 decreased environmental protection expenditures in Hungary with almost 50 percent. The decrease went from almost 5 percent in 1999 to below 2.5 percent in 2002 as a share of GVA.

Table 2: Environmental protection expenditure in Industry and respective share of GVA, 1997-2002, Million Euros

country	Environmental protection expenditure						% of GVA					
	1997	1998	1999	2000	2001	2002	1997	1998	1999	2000	2001	2002
BE ¹⁾	:	:	1165	:	1022	1170	:	:	2.44%	:	2.05%	2.33%
CZ ²⁾	666	556	440	245	175	191	4.38%	:	:	:	:	:
DE ³⁾	11082	8974	10730	8800	8920	:	2.54%	1.98%	2.37%	1.90%	1.90%	:
EE	57	57	48	44	53	66	6.83%	5.97%	5.17%	3.94%	4.17%	4.60%
ES	681	824	1000	1455	1483	1891	0.65%	0.76%	0.90%	1.23%	1.20%	1.50%
FR ⁴⁾	950	950	925	877	2790	:	0.40%	0.38%	0.37%	0.33%	1.03%	:
IE	:	166	:	:	:	:	:	:	:	:	:	:
IT ⁵⁾	645	:	:	:	5731	:	0.28%	:	:	:	2.22%	:
CY	:	:	:	:	19	34	:	:	:	:	1.51%	:
LV	:	:	:	:	16	23	:	:	:	:	1.11%	1.55%
LT	40	31	34	45	65	69	2.19%	1.52%	1.66%	1.71%	2.15%	2.17%
HU	:	:	524	527	311	351	:	:	4.81%	4.28%	2.34%	2.31%
NL ⁶⁾	776	483	1662	1740	1814	:	1.17%	0.71%	2.44%	2.33%	2.32%	:
AT	1317	1208	1142	1108	:	:	3.52%	3.13%	2.80%	2.55%	:	:
PL	:	:	:	:	2306	2016	:	:	:	:	5.35%	4.82%
PT	180	261	340	444	397	373	0.92%	1.29%	1.62%	2.04%	1.77%	1.63%
SI ⁷⁾	78	64	64	85	198	184	1.74%	1.29%	1.25%	1.56%	3.39%	2.99%
SK	:	505	249	204	275	327	:	10.44%	4.97%	3.66%	4.67%	5.41%
FI	554	525	490	610	:	:	2.14%	1.83%	1.71%	1.88%	:	:
SE ⁸⁾	975	:	843	343	1051	967	1.96%	:	1.61%	0.60%	2.03%	1.82%
UK	6159	:	5931	6935	5871	3996	2.29%	:	2.10%	2.16%	1.88%	:

1) Excluding investments 2001-2002

2) Excluding current expenditures 1997-2002

3) Excluding pollution prevention investments and current expenditure for Energy and Water industry 1997-2002

4) Excluding current expenditures 1997-2000

5) Excluding investments 1997

6) Excluding current expenditures 1997-1998

7) Change in methodology in 2001

8) Excluding current expenditure 2000

General decline of investments for environment protection but a steady increase of current expenditures between 1997-2002

The majority of the EU-25 countries have had a decrease of investments in environmental protection between 1997 and 2002. Current expenditure on the other hand has increased in the same time-period.

See table 3. Looking at table 2 the majority of the EU countries saw a decrease of total environmental protection expenditures share of GVA. However, during the same time-period increased GDP with 22 percent.

Table 3: Total investments and total current expenditures 1997-2002, Million Euros

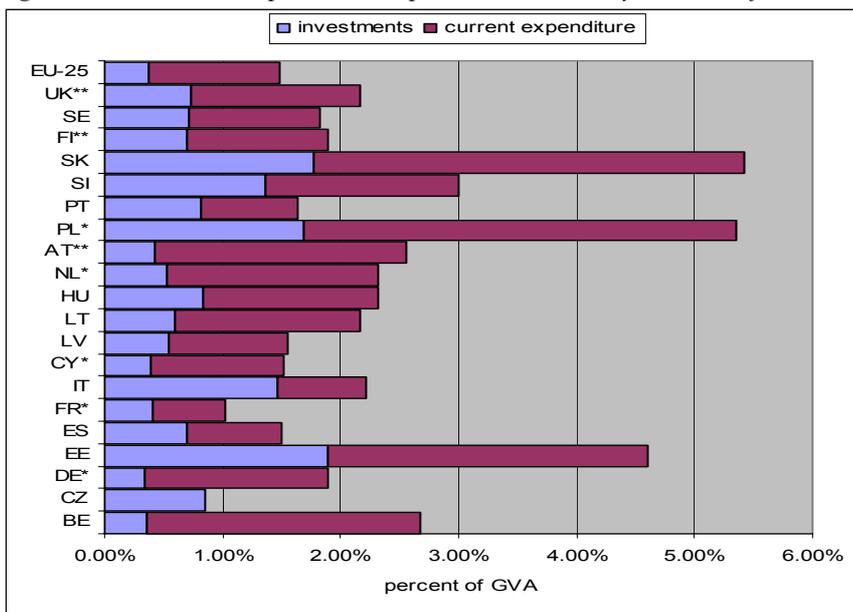
Country	Total investments						Total current expenditures					
	1997	1998	1999	2000	2001	2002	1997	1998	1999	2000	2001	2002
BE	309	315	240	:	:	:	:	:	925	:	1022	1170
CZ	666	556	440	245	175	191	:	:	:	:	:	:
DE ¹⁾	1807	1620	1760	1560	1570	:	9275	:	8970	7240	7350	:
EE	28	25	24	27	22	27	29	32	24	17	31	39
ES	440	538	647	878	715	890	240	286	353	577	768	1001
FR	950	950	925	877	1116	1030	:	:	:	:	1673	:
IE	:	104	:	:	:	:	:	62	:	:	:	:
IT	:	:	:	:	3810	:	645	:	:	:	1921	:
CY	:	:	:	:	5	15	:	:	:	:	14	18
LV	:	:	:	:	2	8	:	:	:	8	13	15
LT	16	7	12	15	19	19	24	24	23	30	46	50
HU	60	81	162	207	121	126	:	:	362	320	191	225
NL	776	483	477	417	418	:	:	:	1185	1323	1396	:
AT	438	318	252	186	:	:	879	890	890	922	:	:
PL	1130	1407	1110	729	729	523	:	:	:	:	1577	1493
PT	104	167	168	244	217	188	76	95	172	200	180	185
SI ²⁾	48	34	35	60	105	84	30	30	29	25	92	100
SK	:	374	142	66	76	107	:	130	107	138	199	219
FI	238	186	140	225	:	:	317	339	350	385	:	:
SE	515	:	323	343	386	382	460	:	520	:	665	585
UK	1677	:	1975	2332	1790	785	4482	:	3956	4604	4081	3211

1) only pollution treatment investments, excluding total current expenditure for energy & water
2) Change in methodology in 2001

The importance of investments and current expenditure for environment protection in relation to GVA can be seen in figure 1. For the majority of EU countries it is the

current expenditure that dominates the spending. In 2002 it was only in Italy and Slovenia where the investments were larger than the current expenditure.

Figure 1: Environmental protection expenditure in industry as share of GVA, 2002



* Data refers to 2001, ** data refers to 2000, Germany: Only pollution treatment investments, excluding current expenditure for Energy & water

The environmental areas of which investments and current expenditure are being invested into are different for investments and for current expenditure. In 2002, the main domain for investments is air for almost all countries in table 4 except for Spain and Slovakia where the majority of investments go into the domain of Other. It is mainly pollution treatment equipment that is installed for treating air pollution in the industry such as

different types of air filters, purifiers and other equipment for the separation of gases.

For current expenditure the prioritised areas differs greatly. Most countries have the larger expenditures for the domain of waste treatment, but there is also large amounts spent on wastewater treatment. See table 4.

Table 4: Investments and current expenditures by domain 2002 (% of total domain)

Country	Total investments %				Total current expenditures %			
	Air	Waste	Waste water	Other	Air	Waste	Waste water	Other
BE	:	:	:	:	16	39	28	17
CZ	42	6	42	11	:	:	:	:
EE	57	27	9	7	20	44	30	6
ES	27	14	24	35	:	:	:	:
FR	30	12	38	20	14	25	56	5
IT*	32	19	21	28	12	36	18	34
CY	57	5	6	31	37	24	26	13
LV	51	28	6	15	13	25	49	14
LT	65	15	14	6	31	10	56	2
HU	42	9	13	36	6	40	38	16
NL*	53	6	20	21	25	28	24	23
PL	59	13	24	4	21	23	47	9
PT	52	9	19	2	15	38	32	1
SI	37	12	33	15	15	38	19	28
SK	27	4	17	52	37	13	19	31
SE	45	9	37	9	12	31	27	30
UK	38	17	21	23	11	41	32	17

Data refers to 2001

Manufacturing industry main investors in environmental protection

The manufacturing industry is the main spender of environmental protection in the majority of the EU countries. In 2001 the manufacturing industry employed about 34 million people in the EU and stood for 94

percent of employed persons of the total industry sector¹. Its share of GVA has been stable at 87 percent of total industry's GVA as shown in table 5.

Table 5: Share of Gross value added, total industry, EU-25

	1997	1998	1999	2000	2001	2002
Mining and Quarrying	3%	3%	3%	4%	4%	4%
Manufacturing	87%	87%	87%	87%	87%	87%
Electricity, gas and water	10%	10%	10%	9%	9%	9%

In table 6 it is seen that it is only in Slovakia where the manufacturing industry has a share below 50% of total industry's expenditure. The manufacturing industry in Slovakia employs below one percent compared to the overall EU share of employed persons. There has been

an increase of expenditures in the energy and water industry in Italy (between 1999 and 2001) and in France (between 2000 and 2001) which evens out the distribution of environmental expenditure with the manufacturing industry in these two countries.

¹ SIF 41/2004 "Specialisation in the manufacturing industry in the EU". Theme Industry, trade and services

Table 6: Distribution of total industry environmental protection expenditure by industry (%)

Country	Year	Mining & quarrying	Energy & water	Manufacturing
BE	99	0.00	0.00	1.00
DE	02	0.02	0.02	0.96
EE	02	0.04	0.46	0.50
ES	02	0.03	0.07	0.90
FR	01	0.01	0.36	0.63
IT	01	0.05	0.37	0.58
CY	02	0.06	0.02	0.92
LV	02	0.00	0.21	0.79
LT	02	0.01	0.31	0.68
HU	02	0.00	0.17	0.83
NL	01	0.08	0.07	0.85
AT	00	0.04	0.06	0.89
PL	02	0.07	0.29	0.64
PT	02	0.02	0.13	0.85
SI	02	0.02	0.22	0.76
SK	02	0.00	0.57	0.43
FI	00	0.02	0.08	0.90
SE	02	0.02	0.22	0.76
UK	02	0.05	0.17	0.78

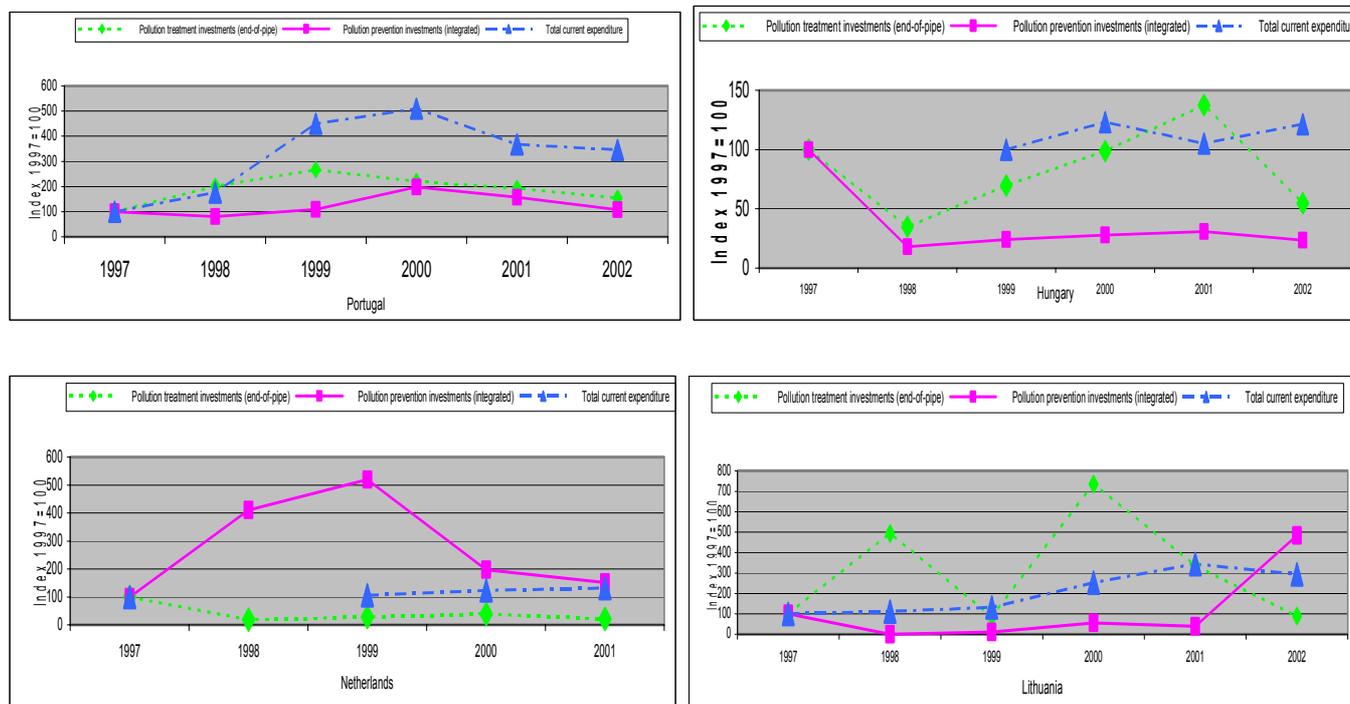
Germany: Only pollution treatment investments, excluding current expenditure for Energy & water

Current expenditures on waste management on increase in manufacturing industry

In the four countries shown below in figure 2, current expenditures for waste management have increased. Most significantly is the increase in Portugal and Lithuania. In Portugal, the implementation of the Society Green Point and the directive of Integrated Pollution Prevention and Control are seen as two of the major

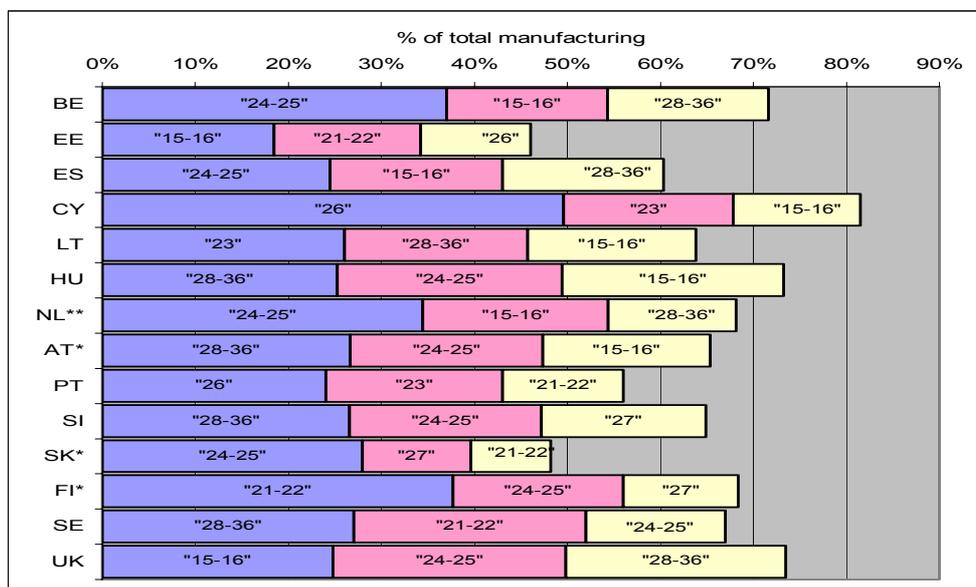
causes. The investment patterns are very individual to each country. Investments for the reduction and treatment of waste include containers and tanks for waste collection, installations and equipment for incineration of waste and treatment of biological and chemical products.

Figure 2: Changes in investments, current expenditures for waste management, manufacturing industry, 1997-2002



Chemical and Rubber industry spend among the most in manufacturing industry

Figure 3: Three highest spending manufacturing industries by country, 2002



15-16 food products, beverages and tobacco;
 17-19 textiles and textile products; leather and leather products;
 20 wood and wood products;
 21-22 pulp, paper and paper products; publishing and printing;
 23 refineries; coke, refined petroleum products and nuclear fuel;
 24-25 chemicals, chemical products and man-made fibres; Rubber and plastic products;
 26 other non-metallic mineral products;
 27 basic metals;
 28-36 metal products and other manufacturing

** Data refers to 2001, * data refers to 2000

Within the manufacturing industry the “Chemical and Rubber” industry, which can be grouped as a capital-intensive industry with a high –to medium high technology standard, stands as the number one spender for environmental protection expenditure for a number of countries such as Spain, the Netherlands, Belgium and Slovakia. See figure 3. In these countries the two industries stand for 25-37 percent of total manufacturing’s environmental protection expenditures. The contribution to GDP from the “Chemical and Rubber” industry in EU-25 accounted for 15 percent of EU-25 total GVA for the manufacturing industry, but it is only in the Netherlands and in Belgium where the share in GVA is higher than the average for EU-25 (17 and 23 percent respectively).

Investments in the UK done in the “Chemical and rubber” industry have decreased between 1997 and 2002. Instead, the “Food and tobacco” industry have increased their environmental expenditures so that they now stand for one fourth of total environmental expenditures in the manufacturing industry in the UK. In terms of GVA the “Chemical and Rubber” industry stands for a marginally higher share of 16 percent than “Food and tobacco” with its share of 14 percent of total manufacturing’s contribution to GDP. Considering employment in the “Food and tobacco” industry United Kingdom employs about 12 percent of totally employed persons in the “Food and tobacco” industry in the EU².

2 SIF 41/2004 “Specialisation in the manufacturing industry in the EU”. Theme Industry, trade and services

➤ ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

DEFINITIONS

Environmental protection expenditures (EPE) is the money spent on all purposeful activities directly aimed at the prevention, reduction and elimination of pollution or any other degradation of the environment.

Environmental protection expenditure does not include:

- Activities that, while beneficial to the environment, primarily satisfy technical needs or health and safety requirements.
- Expenditure linked to mobilisation of natural resources (e.g. water supply).
- Calculated cost items such as depreciation (consumption of fixed capital) or the cost of capital.
- Payments of interest, fines and penalties for non-compliance with environmental regulations or compensations to third parties.

Activities such as energy and material saving are only included to the extent that they mainly aim at environmental protection. One example is recycling which is included to the extent that it constitutes a substitute for waste management.

ENVIRONMENTAL DOMAINS

Environmental protection expenditure is further defined by the Classification of environmental protection expenditure and activities (CEPA). CEPA is also used to classify expenditure items into different environmental domains according to the environmental media or type of pollution/degradation concerned. The domains presented in this publication include the following activities:

Air

Protection of Ambient Air and Climate.

Wastewater

Emission to water, wastewater management

Waste

Waste collection, treatment and prevention

Other

Protection of soil and groundwater, Noise, Biodiversity and Landscape, Radiation, Research and development, General administration and multifunctional activities.

ECONOMIC VARIABLES

Total environmental protection expenditure presented in this publication is the sum of investments and current expenditure

EP investments

All outlays in a given year for machinery, equipment and land used for environmental protection purposes. Total investments are the sum of two categories:

Pollution treatment investments

Investments that do not affect the production process itself and the amount of pollution generated. Instead they serve to collect and remove, measure the level, treat and dispose of pollution and pollutants generated by the activities of the enterprise.

Pollution prevention investments

Investments that lead to a modified or adapted production process. They serve to reduce the amount of pollution generated. When a new production process is introduced, the environmental protection expenditure consists of the outlays over and above what would have been paid for cheaper, viable, but less environmentally benign equipment. Where an existing plant is modified, the environmental investment is equal to the total outlays for the environmental adaptation.

Current expenditure on EP

The money spent during the year for the execution of environmental protection activities (excluding investments expenditure) it is the sum of two categories:

In-house expenditure

Own production of environmental services for own use: wages and salaries, rents, energy, maintenance expenditure and other intermediate inputs used for environmental protection purposes.

Fees and purchases

All purchases of environmental protection services bought from the market (e.g. a firm has its waste collected by a specialised enterprise), both from public and private producers. These payments are clearly linked with an environmental protection activity done outside the enterprise and exclude e.g. fines and penalties.

Sectors

This publication covers only expenditure by industry. The industry sector includes enterprises and other units whose main activity is in the following groups of industries according to NACE Rev. 1.1:

10-14 MINING AND QUARRYING

15-36 MANUFACTURING

15-16 food products, beverages and tobacco;

17-19 textiles and textile products; leather and leather products;

20 wood and wood products;

21-22 pulp, paper and paper products; publishing and printing;

23 refineries; coke, refined petroleum products and nuclear fuel;

24-25 chemicals, chemical products and man-made fibres; Rubber and plastic products;

26 other non-metallic mineral products;

27 basic metals;

28-36 metal products and other manufacturing;

40-41 ELECTRICITY, GAS AND WATER SUPPLY

Indicators

Comparisons have been made with GDP at current prices, Gross value added and amount of hazardous and non-hazardous waste in tonnes, derived from the Eurostat database NewCronos. The ECU/euro exchange rates are averages for the year.

DATA QUALITY

The data presented in this publication is a selection of the data reported by the Statistical services in the countries through the Joint Eurostat/OECD Questionnaire 2004. More detailed information is available in the Eurostat database NewCronos.

Environmental protection expenditure are under development and the coverage and quality of the data still vary between countries, limiting data comparability and effective interpretation. The data presented here are those reported by the countries. No estimates have been made to compensate for variations in coverage or possible underestimations. For more information see footnotes to tables and graphs and the Eurostat database NewCronos.

Environmental protection expenditure is an indicator of the response from society to reduce environmental pressure and move towards sustainability. However, improvements are also made as part of day-to-day activities, where no specific expenditure to protect the environment can be identified. In addition, high levels of spending could be a result of new, stricter policies in a country where much already has been done to reduce pollution and where the marginal cost is high, or could be a result of long periods of no spending. As a complementary exercise, a further analysis focused on the links to physical data (size of emissions, amounts of waste, etc) is recommended.

EU-25 ESTIMATES

An estimate of total spending on environmental protection in the EU-25 2000-2001 has been made based on the data reported in the Joint Questionnaire taking into account other data available at Eurostat. In this estimate, compensations have been made for clear data gaps in the data reported by the countries but not for possible inherent underestimation. The results should be seen as a low-end-estimate.

Further information:

Databases

[EUROSTAT Website/Environment and energy/Environment/Environmental expenditure and environmental taxes/Environmental protection expenditure in Europe - detailed data](#)

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