

Environmental Protection Expenditure in Europe

Highest spending in the Candidate Countries

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The total amount of money spent on environmental protection by the public sector and by industry (mining, manufacturing, energy and water supply) varies considerably between countries — from half a percent of GDP in Lithuania to over two percent in Poland. The Central and East European Candidate Countries spend on average two percent of GDP on environmental protection, twice the estimated EU average. Many of the Candidate Countries are now in a process of improving the infrastructure e.g. for waste and wastewater treatment and it is predicted that future spending will continue to be high in order to reach the standards set for accession. The total cost for compliance with EU environmental regulations has been estimated at 100 bn euro by the Environment DG. In some of the Candidate Countries, a considerable part of the spending is financed by international institutions, environmental funds, or foreign-owned enterprises. However, per capita spending on environmental protection in the Candidate Countries is low compared to the EU. The size of the share of GDP and per capita spending are both affected by the size of GDP per capita, which is considerably lower in the Candidate Countries than in the EU.

Statistics on environmental protection expenditure are under development and the coverage and quality of the data still vary between countries. The country data presented here have not been adjusted for possible differences in coverage. However, this has been done in order to estimate the total spending on environmental protection in the EU. This is estimated to be around 80 bn euro in 1998, or one percent of GDP. If expenditure by enterprises which specialise in providing environmental services is also taken into account (mainly waste management or sewage treatment), the total money spent on environmental protection would be around 120 bn euro.

Environmental protection expenditure indicates the response from society to combat pollution. The data are the basis for analysis of the appliance of the polluter-pays principle, the effects on enterprise competitiveness, and for cost-effective analysis of proposed new regulations and policies.

Figure 2: Environmental protection expenditure as a percent of GDP, latest available year

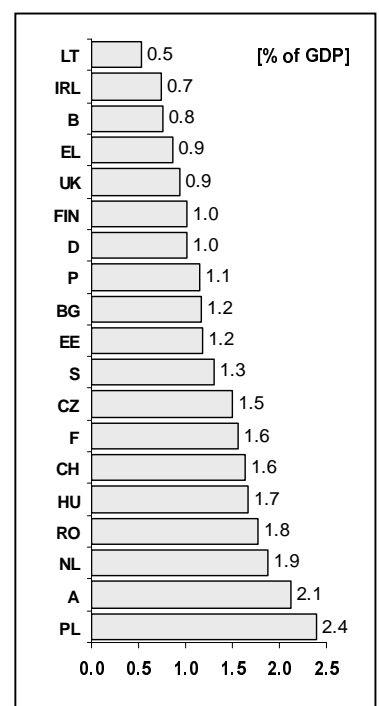
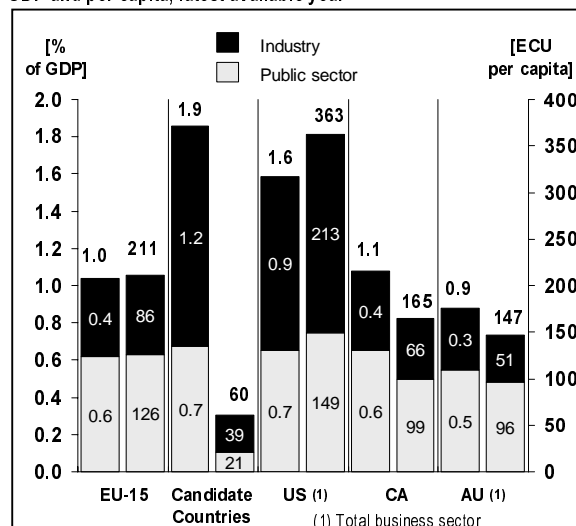


Figure 1: Environmental protection expenditure as a percent of GDP and per capita, latest available year



Statistics in focus

ENVIRONMENT AND ENERGY

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ENVIRONMENT

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Environmental Protection Expenditure by Public sector

How much money the public sector spends on environmental protection depends on how the activity is organised within the countries.

Traditional responsibilities of the central government include regulation and control, surveillance and other general administrative activities, but also e.g. preservation of protected areas and species. Local government has traditionally been responsible for waste collection and treatment and sewage treatment, although in recent years there has been a tendency to privatise these activities. Varying degrees of privatisation is a major explanation for variances in public sector expenditure among countries.

It is estimated that total public sector expenditure on environmental protection in the EU was around 50 bn euro in 1998, or 0.6% of GDP.

This is similar to the shares of GDP in the US, Canada and Australia, but lower than the share in Japan.

In the Candidate Countries, public sector expenditure on environmental protection is slightly above the EU average as a percentage of GDP, but less than one fifth of the per capita spending. Poland has the highest share of GDP of the Candidate Countries, 0.9%, and this has increased rapidly throughout the nineties. In the EU, Austria and the Netherlands have the highest share of GDP, around 1.5%.

It is estimated that around two thirds of the public sector spending on environmental protection in the EU is in the form of current expenditure: i.e. cost of personnel, material and other inputs used for environmental protection purposes. About one third

of total spending is in the form of investments in environmental protection equipment and facilities mainly in capital intensive activities such as wastewater treatment.

Figure 3: Environmental protection expenditure by public sector in the EU by type of transaction in 1998 (Eurostat estimate)

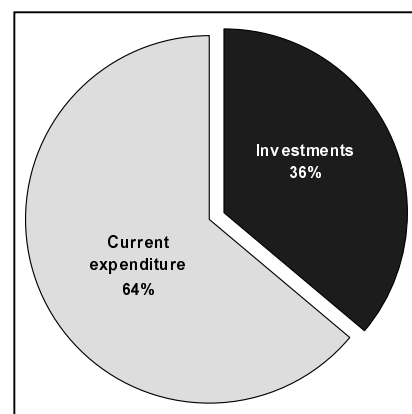


Table 1: Environmental protection expenditure by public sector, million ECU/Euro (source: Eurostat)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Share of GDP [%] (1)	per capita (1) [ECU/EURO]
B (2)	853	1 033	1 116	:	:	950	1 249	1 251	:	:	0.6	123
DK	:	258	285	442	685	769	755	764	814	856	0.5	161
D (7)	:	12 425	14 750	14 863	14 876	14 644	13 003	11 220	:	:	0.6	137
EL (3,9)	330	737	586	579	553	565	665	681	702	730	0.6	69
E	:	:	:	:	3 721	4 222	4 469	:	:	:	0.9	114
F	5 923	6 512	6 790	7 565	8 639	9 308	9 659	9 852	10 276	:	0.8	175
IRL	:	:	:	:	:	:	:	:	412	:	0.5	111
I	1 458	1 985	1 538	:	:	:	:	:	:	:	0.2	27
L	:	:	:	:	:	:	:	113	:	:	0.7	270
NL	2 129	2 634	2 969	:	:	4 593	:	4 845	:	:	1.5	311
A	1 539	1 714	1 726	1 978	1 739	2 637	2 416	2 607	2 916	:	1.5	361
P	419	408	564	590	597	662	765	790	839	:	0.8	84
FIN	:	:	:	:	514	543	613	666	650	:	0.6	126
S (3)	:	1 653	:	:	:	:	:	:	:	:	0.9	192
UK	3 137	:	:	:	:	:	:	:	:	:	0.4	55
CH	:	:	1 954	:	:	:	:	:	:	:	1.0	285
IS	:	:	19	18	19	18	18	22	24	:	0.3	88
BG	:	:	2	19	11	14	9	10	25	:	0.2	3
CZ (4)	:	:	:	155	286	316	369	376	313	299	0.6	29
EE	:	:	:	:	18	26	48	48	42	35	0.7	24
HU (4)	:	:	:	:	:	:	:	92	219	:	0.5	22
LV (4)	:	:	:	:	:	3	4	3	3	6	0.1	3
LT	:	:	:	:	:	:	16	20	19	:	0.2	5
PL (5)	:	:	:	:	268	307	654	744	1 314	1 315	0.9	34
RO	:	:	:	65	84	114	135	159	194	:	0.5	9
SK (6)	:	:	:	153	110	73	70	69	82	:	0.4	15
US (8)	28 429	31 222	31 397	36 283	38 713	:	:	:	:	:	0.7	149
JP (8)	22 127	:	:	:	:	:	:	:	:	:	0.9	179
CA (2,8)	3 077	3 343	2 970	3 058	3 204	2 921	:	:	:	:	0.6	99
AU (8)	:	1 010	1 053	1 372	1 393	1 494	1 758	:	:	:	0.5	96

(1) Latest available year

(2) Net of receipts from by-products

(3) GDP: ESA 79

(4) Only investments

(5) Only investments 1990 - 1997

(6) Only investments 1995 - 1998

(7) Only investments 1995 - 1998

(8) Excluding nature protection

(9) Only investments 1990

Environmental Protection Expenditure by Industry

Expenditure by industrial enterprises (mining, manufacturing, energy and water supply) includes traditional environmental protection activities such as waste collection, waste treatment and sewage treatment. Expenditure to combat air pollution is particularly important in industry, but virtually non-existent in the public sector. Many enterprises also have more general administrative expenditure, for example expenditure linked to environmental information systems and certification activities.

Total expenditure on environmental protection by industry in the EU is estimated to be around 30 bn Euro in 1998, or 0.4% of GDP. The average share of GDP is slightly higher in the EU than in Australia, on par with Canada, but lower than in the US. However, data for Australia and the US relate to the total business sector. "Total business sector" includes not only industry but also transport and other services.

Expenditure on environmental protection by industry in the Candidate Countries is considerably higher in terms of GDP (1.2%), three times the EU average, but much lower in terms of per capita spending. Poland (1.5%), Romania (1.2%) and Hungary (1.1%) have the highest shares among the Candidate Countries. In the EU, France has the highest share of GDP (0.8%), but this also relates to total business sector.

It is estimated that nearly two thirds of total expenditure on environmental protection by industry in the EU consists of current expenditure. Current expenditure includes cost of personnel and material, as well as environmental services bought in from the market, from environmental consultants or enterprises which specialise in waste collection or sewage treatment. Around one third of total expenditure by industry in the EU consists of investments.

There are two different types of environmental protection investments:

- On average, end-of-pipe type equipment such as filters, containers and sewage treatment plants make up around 60%.
- The pollution preventive, integrated type, account for less than 40% of total spending on environmental protection equipment and facilities.

Figure 4: Environmental protection expenditure by industry in the EU by type of transaction in 1998 (Eurostat estimate)

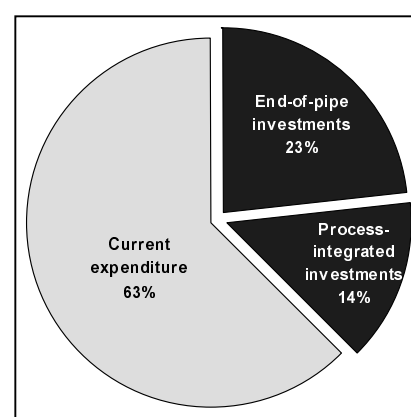


Table 2: Environmental protection expenditure by industry, million ECU/Euro (source: Eurostat)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Share of GDP [%] (1)	per capita (1) [ECU/EURO]
B (4)	:	:	:	:	:	319	361	:	:	:	0.2	36
D (11)	:	7 743	8 390	8 981	9 052	9 350	9 222	7 865	:	:	0.4	96
EL (2,12)	105	150	174	188	191	241	289	232	260	283	0.2	27
F (3)	6 089	6 324	6 744	7 596	8 343	8 682	9 221	9 661	9 918	:	0.8	169
IRL	:	:	:	:	:	:	:	:	166	:	0.2	45
NL	:	:	:	:	:	1 082	:	1 404	:	:	0.4	90
A	:	:	1 137	1 151	1 242	1 062	1 114	1 192	1 081	:	0.6	134
P	:	:	:	:	126	178	219	176	258	331	0.3	33
FIN	:	:	:	:	338	535	577	554	525	:	0.5	102
S (2)	:	711	:	:	:	:	:	958	:	:	0.5	108
UK	:	:	:	:	3 017	:	:	6 175	:	:	0.5	105
CH	:	:	:	1 204	:	:	:	:	:	:	0.6	174
BG	:	:	35	70	54	60	61	68	102	:	0.9	12
CZ (4)	:	:	:	342	492	557	660	695	568	448	0.9	44
EE	:	:	:	:	5	6	15	15	21	22	0.5	15
HU (5)	:	:	:	:	:	:	:	60	81	516	1.1	51
LV (3)	:	:	:	:	:	24	15	27	40	45	0.7	19
LT	:	:	:	:	:	:	:	40	31	:	0.3	8
PL (6,7)	:	:	:	:	:	645	2 177	2 264	2 540	2 174	1.5	56
RO	:	:	:	168	198	275	309	359	461	:	1.2	20
SI	:	:	:	:	:	73	58	78	63	:	0.4	33
US (3,10)	39 101	41 558	43 423	50 234	55 274	:	:	:	:	:	0.9	213
JP (3,4,9,10)	2 548	:	1 725	3 670	2 966	:	:	:	:	:	0.1	24
CA (8,10)	852	873	794	716	1 766	1 930	:	:	:	:	0.4	66
AU (3,10)	:	479	819	847	803	768	994	:	:	:	0.3	51

(1) Latest available year

(5) Only investments 1997 - 1998

(9) By large companies (assets of 100 million Yen or more) only.

(2) GDP: ESA 79

(6) Current expenditure for total business sector 1996-1999

Expenditure for Japan in 1990 is estimated by OECD at 15 bn ECU

(3) Total business sector

(7) Only investments 1995

(10) Excluding nature protection

(4) Only investments

(8) Only investments 1990 - 1993

(11) Only include end-of-pipe investments

(12) Only Energy and water in 1990 - 1994, 1997-1999

Environmental Protection Investments by Branches of Industries

The size of the investments in environmental protection can vary considerably from year to year. It is not unusual that individual enterprises or specific industries have very large environmental protection investments one year, e.g. as a result of increased government demands or the availability of new standard technology, followed by a number of years with small amounts. The table below shows the total investments in environmental protection by industry and their relative distribution by different branches of industries. There are often a few specific industries in a country, with potentially high environmental impact, which account for the majority of investment spending. However, the relative importance of different industries varies according to the industry structure in the respective countries.

Manufacturing industry accounts for at least 80% of the total industry investments in environmental protection in the EU countries. There is a different pattern in the Candidate Countries. Electricity, gas and water account for more than 50% of all investments in environmental protection in Romania, the Czech Republic, Slovenia and Poland. This industry accounts for a minor share of the environmental protection investments in most EU countries, with the exception of Greece (73%), Sweden and Germany (around 20%). Mining and quarrying account for a minor share in most countries, except Bulgaria (27%). The breakdown by detailed manufacturing industries shows that a large part of the total environmental protection investments is within:

- the pulp and paper industry in Finland and Sweden,
- refineries in the Netherlands and Hungary and
- the chemicals, rubber and plastics industries in the UK and Belgium.

Figure 5 shows how much of total investment spending by industry is devoted to protecting the environment. The Netherlands (5,8%) and Sweden (4,9%) have the highest shares for the industry as a whole. However, there are several specific branches of industries where the "environmental share" is considerably higher.

- Close to 25% of the total investments by the wood and the non-metallic industries in the UK.
- More than 12% of the total investments by the chemicals industry in the Netherlands and by refineries in Finland.

Figure 5: Environmental protection investments by industry as a percent of gross fixed capital formation (GFCF)

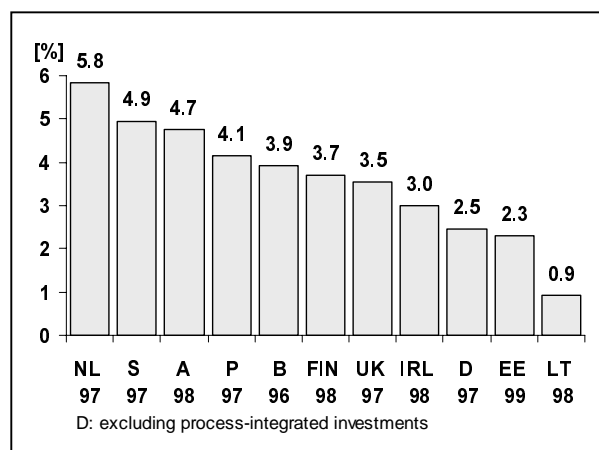


Table 3: Environmental protection investments by industry and distribution by branches of industries, latest available year (source: Eurostat)

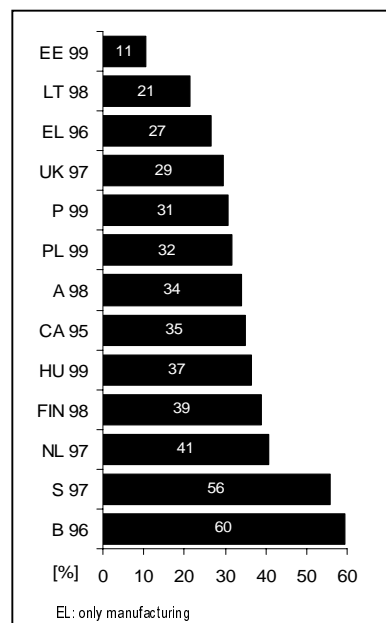
	Total industry [million ECU /EURO]	[% of total industry]											
		Mining & quarrying	Electricity, gas, water	Manufacturing	Food, beverages, tobacco	Textiles, leather	Wood	Pulp, paper, publishing	Refineries	Chemicals, rubber, plastics	Non-metallic mineral	Basic metals	Other manuf. industries
B 96	361	0	11	89	10	2	1	4	4	23	7	10	29
D 97	1 812	3	18	79	:	:	:	:	:	:	:	:	:
EL 95	303	2	73	25	7	2	0	1	2	1	7	4	1
IRL 98	166	:	9	91	10	:	:	:	:	10	:	:	:
NL 97	787	10	3	87	6	0	0	2	47	19	2	3	6
A 98	318	3	3	93	11	2	21	11	0	11	7	6	25
P 99	190	2	13	85	9	11	3	9	9	7	26	2	9
FIN 98	186	2	2	95	8	1	3	47	3	7	1	9	17
S 97	509	:	20	80	7	:	2	28	:	6	:	5	26
UK 97	1 686	1	5	94	8	0	6	11	2	35	15	11	7
BG 98	32	27	22	51	1	2	2	0	19	8	0	16	3
CZ 99	448	1	58	40	1	1	1	2	2	14	3	12	5
EE 99	8	0	10	90	15	1	7	3	2	10	39	0	14
HU 99	162	9	27	65	9	0	1	1	28	11	4	3	8
LV 98	5	:	13	87	3	0	43	:	:	0	40	:	0
LT 98	7	0	27	73	14	2	5	7	11	11	9	0	13
PL 99	1 110	3	49	48	3	1	1	1	25	3	5	6	3
RO 98	164	10	59	30	0	0	0	1	4	3	3	13	6
SI 98	33	1	57	43	2	2	3	0	:	13	4	6	12

D : excluding process-integrated investments

It has often been stated that there has been and will continue to be a shift from the traditional end-of-pipe technologies which take care of and treat pollution that has already been generated, to measures that prevent the actual generation of pollution. However, existing data show that enterprises in most countries still spend more on traditional end-of-pipe technology than on the preventive process-integrated type. Belgium and Sweden are the only countries where industry as a whole spends more on process-integrated than on end-of-pipe equipment, while for most countries report a share between 30% and 40%. However, there may be some underestimation of the process-integrated investments since these are more difficult to measure.

The relative importance of process-integrated investments can vary considerably among individual branches of industries. The share of integrated investments of total environmental protection investments is fairly low in the mining and quarrying industry, below 30 percent except in Belgium (60%) and the Netherlands (50%). There is a large variation in the electricity, gas and water industry. Integrated investments account for over 60 percent in the Netherlands, Belgium and Sweden, but around 40 percent at the most in all other countries. For the total manufacturing industry, only Sweden has a share over 50 percent, but there are specific manufacturing industries with a higher share in many countries.

Figure 6: Process-integrated investments as a percent of total environmental protection investments by industry, latest available year



Time series and Environmental domains

There is an ongoing trend to privatise former public sector responsibilities such as waste collection and treatment and sewage treatment. Figure 7 below shows that public sector expenditure on environmental protection as a share of GDP has decreased in Germany from 1992 onwards. One reason is privatisation, the other that Germany had high

expenditure in the early nineties due to the unification and the bad state of environmental equipment in eastern Germany.

The development of Public sector expenditure in other countries shows some tendency to stagnate or decline slightly at the end of the period, but longer time series and

data for more countries are needed to produce a clearer picture.

The same time series for industry expenditure shows a more divergent pattern. Spending on environmental protection as a share of GDP has declined sharply in Austria and Germany. However, there has been a significant increase in Portugal and a slow but steady increase in France and the US. Increased outsourcing of environmental protection activities to specialised enterprises and to environmental consultants could be one reason for a reduction in industry expenditure.

Privatisation and outsourcing leads to a shift in the expenditure structure, from public sector and industry (to a lesser degree), to enterprises which specialise in producing environmental services. It also affects the distribution of expenditure by environmental domain in the respective sectors. As can be seen in figure 8, over 70 percent of the estimated total spending on environmental protection in the EU in 1998 was in the water, waste or air domains.

Figure 7: Public sector and industry environmental protection expenditure 1990 – 99, % of GDP, selected countries

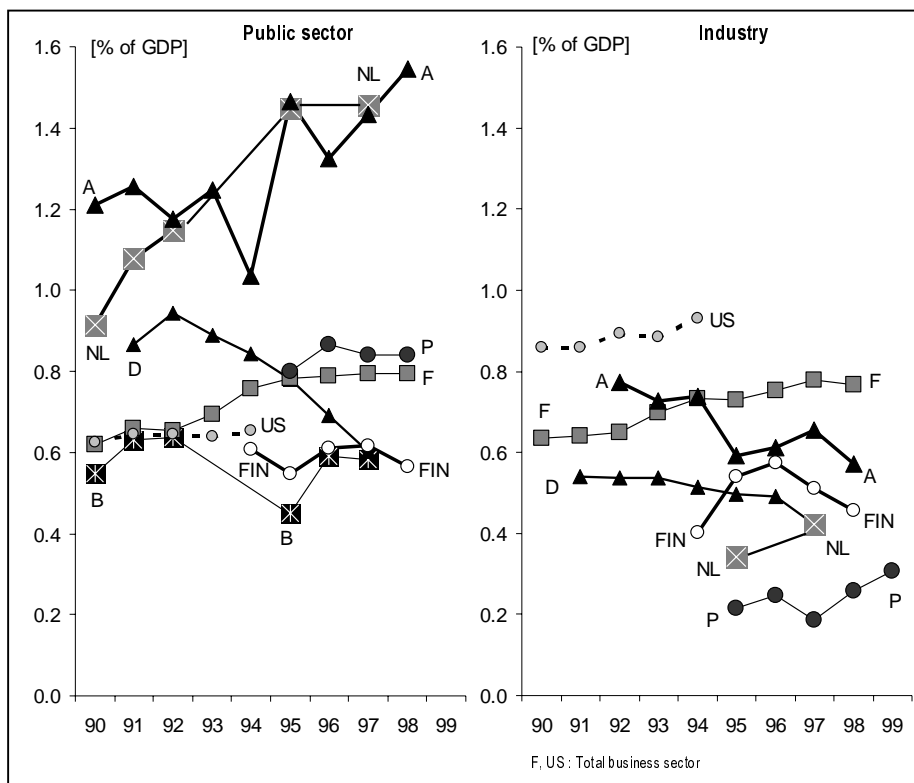
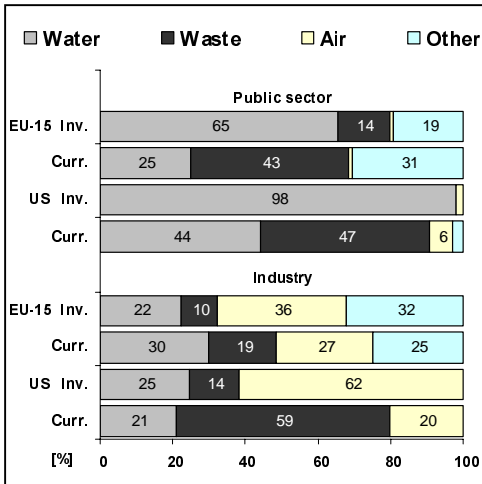


Figure 8: Investments and current expenditure by environmental domain



The domain "other" which is large in some countries include e.g. Biodiversity and Soil protection which could be important in some countries and sectors, as well as general administration and other expenditure items which could not be broken down by domains.

The distribution of public sector expenditure by environmental domain greatly depends on the degree to which the public sector remains responsible for the basic environmental protection activities - waste collection, waste treatment and sewage treatment. There are large variances among countries. Some countries have privatised the whole area of waste collection, but not wastewater treatment. Other

countries have privatised the operation of the sewage networks but not the networks itself. There is a gradual privatisation process in many countries with the coexistence of separate local government units, independent but governmentally owned enterprises, and purely privately owned enterprises. In the UK e.g. there are no public sector investments or current expenditure at all in the waste domain since this is totally privatised. In France the public sector is responsible for the sewage networks, but the operation of the system is mainly privatised. This means that the water domain is important in terms of investments, but less so in terms of current expenditure. In most countries, the majority of the public sector investments are within the water domain - more than 50% in 16 of the 25 countries. Water is also important in terms of current expenditure, but the share is much lower, around 30% in most countries. The waste domain is less capital intensive than other domains, which means that the share of public sector environmental protection investments is small, while the share of current expenditure is much larger - between 30% and 60% in most countries.

Figure 9: The public sector's environmental protection investments by environmental domain

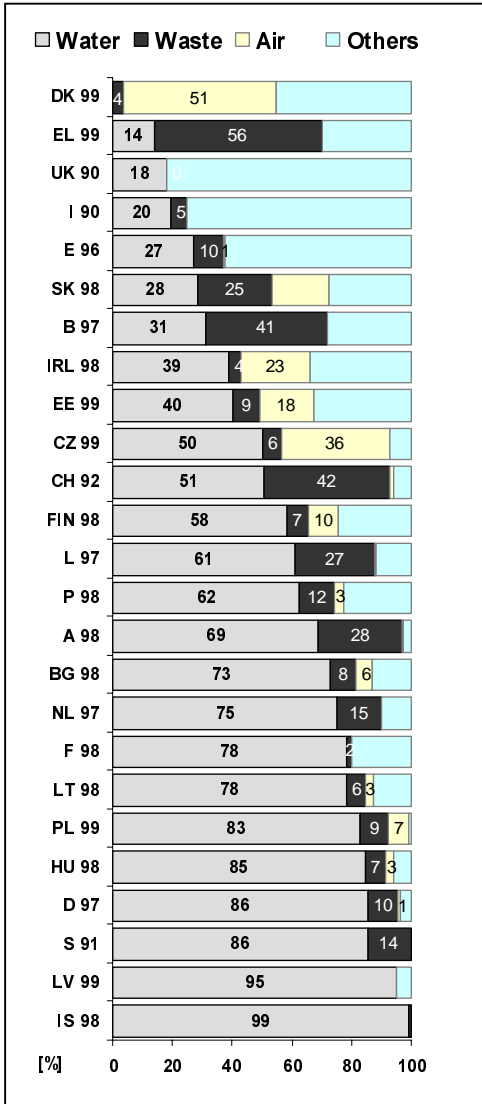
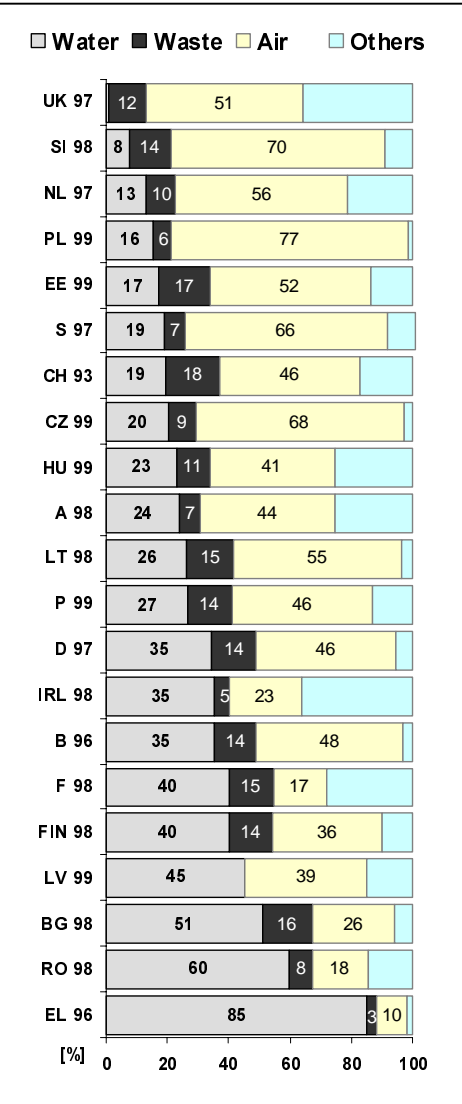


Figure 10: The industry's environmental protection investments by environmental domain



D, BG, EL, CZ, SK, I: Total water and soil instead of water
B: Total expenditure in net of receipts from by-products

RO, BG, B, A, EL, CZ, D: Water and soil instead of water
LV, F, CH: total business sector

Industry expenditure on environmental protection is more equally divided among the environmental domains. The relative importance of different domains is highly dependent on the industry structure in the countries. A large energy sector based on fossil fuels could be a basis for high expenditure in the air domain e.g., while a large pulp and paper industry affects the size of expenditure in the water domain. Efforts directed towards air pollution dominate in all but five countries and more than 70% of all environmental protection investments are within the air domain in Poland, Latvia and Slovenia. Two thirds of investments by industry in the US aim at reducing air pollution, which is much higher than the EU average. In Romania, Bulgaria, France, Finland and Ireland most investments are directed towards wastewater treatment and emission to water.

➤ ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

DEFINITION

Environmental protection expenditure is the money spent on all purposeful activities directly aimed at the prevention, reduction and elimination of pollution or nuisances resulting from production processes or from the consumption of goods and services. On the public sector side, administrative, monitoring, and enforcement expenditure are included. The data on Environmental Protection expenditure presented here do not include:

- Expenditure not directly aimed at environmental protection such as measures taken for technical reasons or commercial purposes only, or for workplace protection.
- Calculated cost items such as depreciation allowance for environmental protection equipment or interest paid for the financing of investments.
- Research and development expenditure related to the causes, effects and prevention of pollution.

ENVIRONMENTAL DOMAINS

Environmental protection expenditure is classified in 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

Water: Emission to water, wastewater management

Waste: Waste collection, treatment and minimisation

Other: Protection of soil and groundwater, Noise, Biodiversity and landscape, Radiation, General administration and multifunctional activities

SECTORS

This publication covers only expenditure by the Public sector and by Industry. Expenditure by private households, enterprises in other parts of the business sector, and enterprises which specialise in providing environmental protection services are not included for data availability reasons.

Data for some countries such as the US and Australia are only available for the total business sector. "Total business sector" includes not only industry, but also e.g. transport and other services.

Public sector

The public sector includes federal and local governments and communities, government agencies and other public bodies providing environmental protection services. Public enterprises, whose primary purpose is the provision of environmental protection services (e.g. sewage treatment plants), financed or controlled by municipalities, may be included under the public sector. Note that public corporations are not part of the government sector of national accounts.

Industry

The industry sector includes enterprises and other units whose main activity is in the following branches of industries according to NACE Rev. 1:

10-14 MINING AND QUARRYING

15-37 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

28-37 Other manufacturing: Fabricated metal products, except machinery and equipment; Transport equipment; Furniture; Manufacturing n.e.c and Recycling

40-41 ELECTRICITY, GAS AND WATER SUPPLY

ECONOMIC VARIABLES

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

Investment expenditure

Investment expenditure includes outlays (purchases and own-account production) on land and on additions of new durable goods to the stock of fixed assets for environmental protection. There are two fundamental types of environmental protection investments:

i) End-of-pipe.

Investments which do not affect the production process itself; they only serve to abate pollution stemming from the production process and the entire outlay should enter as environmental protection expenditure;

ii) Process-integrated.

Investments which lead to a modified/adapted production process the primary aim of which is the reduction of pollution. When a new production process is introduced, the environmental protection expenditure consists of the outlay over and above what would have been paid for a cheaper, viable, but less environmentally benign plant. Where an existing plant is modified, the environmental investment is equal to the total outlay for the modification for environmental purposes.

Current expenditure

Current expenditure includes outlays for:

i) own production of environmental services: wages and salaries, rents, energy, maintenance expenditure and other intermediate inputs; and

ii) environmental services and specific goods bought in from the market (e.g. a firm has its waste collected by a specialised enterprise).

Other economic variables

Comparisons have been made with GDP at current prices and Gross Fixed Capital Formation (GFCF) derived from the Eurostat database New Cronos. The ECU/euro exchange rates are averages for the year.

COUNTRIES

This publication includes countries that have reported environmental protection expenditure in the EU, EFTA and the Central and East European Candidate Countries. The term "Candidate Countries" in this publication include the following countries: Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia. Data for other Candidate Countries are not available. Comparisons are made with similar data for the US, Canada, Japan and Australia collected by the OECD.

DATA QUALITY

The data presented in this publication have been collected from the Statistical Services in the countries through the Joint Eurostat/OECD Questionnaire. More detailed information is available in the Eurostat database New Cronos.

Environmental protection expenditure statistics 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. Although this has been minimised through the choice of sectors and variables, there is still some differences in coverage for some countries. For more information see footnotes to tables and graphs and the Eurostat database New Cronos

Environmental protection expenditure is an indicator of the economic resources spent to reduce pollution, but the integration of environmental concerns in many policy areas and in many investment decisions does make it difficult to estimate all expenditure items exactly. It should also be noted that 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-15 AND CANDIDATE COUNTRIES ESTIMATES

An estimate of total spending on environmental protection in the EU-15 has been made based on the data in the Joint Questionnaire and applications of Environmental Protection Expenditure Accounts in several countries. In this estimate, compensations have been made for differences in coverage between countries and for lack of data for specific sectors such as enterprises where the main activity is to produce environmental protection services.

For the Candidate Countries no such estimate is available and the totals presented are an average based on the data reported by the countries in the Joint Questionnaire: i.e. without adjustments for possible differences in coverage.

Further information:

➤ Databases

New Cronos,
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