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TRENDS IN ENVIRONMENTAL EXPENDITURE AND INTERNATIONAL COMMITMENTS FOR THE ENVIRONMENT IN EASTERN EUROPE, CAUCASUS AND CENTRAL ASIA, 1996-2001

submitted by

the Task Force for the Implementation of the Environmental Action Programme for Central and Eastern Europe (EAP Task Force)
Organisation for Economic Cooperation and Development

through the Ad Hoc Working Group of Senior Officials

BACKGROUND DOCUMENT

UNITED NATIONS
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Foreword

1. Part of the "Environment for Europe" process since 1993, the EAP Task Force has sought to integrate environmental considerations into the transition to democratic, market-based societies in Central and Eastern Europe, South Eastern Europe and Eastern Europe, Caucasus and Central Asia (EECCA). This report examines developments in environmental financing in EECCA since 1996 focusing on expenditures as well as external environmental assistance, Official Development Assistance/Official Assistance (ODA/OA), and lending from International Financial Institutions (IFI).

2. Carla Bertuzzi and Ulrik Weuder prepared this report in close co-operation with Joanna Fiedler, Paulina Janiak (both from the Regional Environment Centre, Szentendre) and Grzegorz Peszko. We would like to specially thank Glen Anderson, Brendan Gillespie, Zsuzsanna Lehoczki, Nelly Petkova, Caroline Simonds and Stefan Speck for their valuable comments and guidance. In addition we owe a special debt to all persons and organisations that invested a substantial effort in collecting and compiling data for the report.

3. This report reflects the views of the OECD/EAP Task Force Secretariat and not necessarily those of the OECD, the EAP Task Force or their members.

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

CRS	Creditor Reporting System
DAC	Development Assistance Committee
DANCEE	Danish Co-operation for Eastern Europe
EPA	Environmental Protection Agency
EAP	Environmental Action Programme for Central and Eastern Europe
EAP TF	Task Force for the Implementation of the Environmental Action Programme for Central and Eastern Europe
EBRD	European Bank for Reconstruction and Development
EC	European Commission
EIB	European Investment Bank
EPE	Environmental Protection Expenditure
EU	European Union
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital Formation
GNI	Gross National Income
GNP	Gross National Product
IBRD	International Bank for Reconstruction and Development
IFI	International Financial Institution
ISIC	International Standard Industrial Classification
ISPA	Instrument for Structural Policies for Pre-accession
MTEF	Medium-Term Expenditure Framework
NACE	General Industrial Classification of Economic Activities within the European Communities (Nomenclature des Activités des Communautés Européennes)
NEAP	National Environmental Action Programme
NIB	Nordic Investment Bank
OA	Official Assistance
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
PAC	Pollution, Abatement and Control
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environmental Programme
USD	United States Dollars
WWT	Waste Water Treatment

Central and Eastern Europe (CEE): Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic and Slovenia.

Eastern Europe, Caucasus and Central Asia (EECCA): Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, the Kyrgyz Republic, Moldova, the Russian Federation, Tajikistan, Turkmenistan, Ukraine, Uzbekistan.

Official Assistance (OA) EECCA region: Flows of assistance going to the following transition countries: Belarus, the Russian Federation and Ukraine.

Official Development Assistance (ODA) EECCA region: Flows of assistance going to the following developing countries: Armenia, Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, Moldova, Tajikistan, Turkmenistan and Uzbekistan.

EXECUTIVE SUMMARY

4. This report presents information on environmental expenditure in Eastern Europe, Caucuses and Central Asia (EECCA) countries for the period 1996-2000/01. It covers environmental expenditure as well as assistance provided by donors and lending from International Financial Institutions (IFIs). The report supports and supplements an analysis of environmental financing in EECCA countries that was also prepared by the OECD Secretariat of the Task Force for the Implementation of the Environmental Action Programme for Central and Eastern Europe (EAP TF) (OECD 2003).

5. For many of the EECCA countries, preparation of this report was the first time that data was compiled using internationally established methodologies - the OECD and Eurostat methodologies. Time series data for the period 1996-2001 was provided by all countries except Russia, Belarus and Tajikistan. For Georgia survey data are available for the point year only the environmental expenditure data collection system was only recently re-established.

6. Data collection revealed important methodological, accounting and definitional differences that often make it difficult to interpret the data. Methodological difficulties make it difficult to identify time trends or to make comparisons with other countries. This experience underlines the need for reform of environmental expenditure data collection in EECCA countries in line with best practices in OECD countries. Failure to reform will hamper efforts to use scarce resources for environmental purposes in the most efficient way. A pilot project in Georgia, implemented in the framework of EAP Task Force, demonstrates how this can be done.

7. The report examines “environmentally-related expenditure”, which includes “environmental” expenditures (as defined in OECD Pollution Abatement and Control methodology) plus water resource management (mainly drinking water supply and treatment) and some natural resources management expenditures. Wherever possible efforts were made to distinguish between current and capital investment spending, between public and private expenditure, and between expenditure in relation to different environmental media. A brief discussion on sources of financing is also included.

8. As in most countries, domestic rather than international sources generally account for the largest share of total environmental expenditure in EECCA. In 1996-2001 domestic sources accounted for almost 89% of total environmental expenditure in Kazakhstan and Moldova, 90% Ukraine, 93% Turkmenistan and 97% in Russia. Domestic sources accounted for 50% or less of total environmental expenditure in only three countries: the Kyrgyz Republic (28%), Armenia (33%) and Georgia (38%).

9. Levels of environmentally-related expenditure in EECCA show no clear trends over time in the period 1996-2001: they have risen in some countries (Armenia, Kazakhstan and the Kyrgyz Republic) and declined in others (Azerbaijan, Russia, Ukraine and Uzbekistan). Except in Russia (€4 464m in 2000), Ukraine (€650m in 2000) and Kazakhstan (€455m in 2000) the size of the environmental and water market in EECCA countries is still very small from €7 to 49 million per year. With such small levels of environmental expenditure, there may be sharp discontinuities in trends due to single large projects, both domestic and foreign. Subject to further analysis and confirmation, the volume of environmentally related expenditure in Ukraine and Kazakhstan would appear to be similar to some CEE countries, such as Romania and Hungary, and about half of that in Portugal.

10. As a share of GDP, environmentally related expenditure has either stayed constant or decreased in the period analyzed. The share of reported environmentally related expenditure in GDP varies significantly among countries, from 0.4% in Azerbaijan to 2.4% in Moldova (2000). Except at the low end of this spectrum, most EECCA countries seem to devote an almost equal share of their incomes to environmentally-related expenditure as CEE and EU countries. Even taking into account possible overestimates of some reported expenditure analysed in this report, it seems that most EECCA countries are more committed to improving environmental and water supply quality than is commonly thought. This suggests that it is the low ability to pay due to low income, rather than lack of willingness to pay, that is the main obstacle to higher levels of domestic environmentally-related expenditure. This hypothesis, however, needs to be carefully verified on the basis of better environmental expenditure data and further analysis.

11. Usually current, rather than capital, expenditure is the most important component (about three quarters) of environmentally-related expenditure. However, capital expenditures appear to be more important in Armenia (70% of total environmentally related expenditure). This may be due to some large investment projects in the water supply sector and in protection of the water table level of Lake Sevan. Kazakhstan reported all expenditures as investments.

12. In most countries, water supply and sanitation accounts for the largest share of environmentally related expenditure - typically 50-85%. Air accounts for the second largest share – above 11% for seven out of 10 EECCA countries. Kazakhstan appears to be an exception as air-related expenditure accounts for 64% of the total. However, it is uncertain whether some countries have reported water supply expenditure.

13. In EECCA countries, environmentally related investments contribute to between 0.1% and 3% of total investments in the economy, which is lower than in transition economies in CEE but comparable with some EU countries (e.g. Portugal). Only in Kazakhstan did environmentally related investments appear to provide a significant contribution to gross fixed capital investment and this data require further analysis.

14. Overall, the available data seems to indicate that environmental and water supply expenditure in many (though not all) EECCA countries accounts for a nontrivial portion of GDP. Absolute values, however, are very small because of the very low incomes of EECCA countries. In addition, the bulk of financial resources seems to be used for current expenditure, rather than for capital spending.

External Sources of Financing

15. Commitments of environmental assistance from donors to EECCA countries have increased absolutely and as a share of total ODA/OA in the period 1996-2001. However, environmental assistance represents a significantly smaller share of total assistance to EECCA countries than in other regions. This suggests that there is scope on the supply side to increase the level of environmental assistance. However, increased supply is also linked to demand for environmental assistance by the EECCA countries, which has been weak in most countries so far. For example, Kazakhstan is the only country that has prioritized environment within the EC/TACIS programme.

16. The European Commission has been the single largest donor of environmental assistance to EECCA in the period 1996-2001, accounting for about 17.8% of the total. In 2001, the EC provided €21 m in environmentally-related assistance to EECCA. The United States (17.4%) and Denmark (12.4%) have also been major donors. These three, together with Germany, United Kingdom, Sweden, Norway, Finland, Switzerland and France account for nearly 80% of environmentally related assistance.

17. Russia and Ukraine have been the largest recipients of environmentally related assistance, together accounting for more than two thirds of the total. Over 1996-2001, Russia received €317m, and Ukraine, €102m. Uzbekistan, Kazakhstan, Georgia, Azerbaijan and Armenia each received between €31-

43 m in the same period. Belarus, Turkmenistan and Tajikistan have been the least successful in attracting donor assistance to the environmental sector.

18. On a per capita basis, the Caucasus countries (Armenia, Georgia and Azerbaijan) received the highest levels of external support, respectively €1.6, €1.3 and €0.7 on average. Belarus and Turkmenistan received the least on a per capita basis: €0.1 and €0.04 respectively on average. Environmental expenditure as a share of GDP shows similar trends, with the highest levels recorded for six of the seven low-income EECCA countries; for example in Armenia it represented 0.33%, while in Belarus and Turkmenistan, 0.01%. The larger, relatively higher income EECCA countries (Russia, Ukraine, Uzbekistan and Kazakhstan) all received very low levels of environmental assistance as a percentage of GDP, ranging between 0.05% and 0.02%.

19. Loans committed for environmentally related purposes by International Financial Institutions increased from 1996 to 1998, collapsed after the 1998 financial crises and began to recover afterwards, which may also reflect IFI programming and project development cycles. The overall volume of lending commitments in 2001 (€261 million) was still less than 70% of the peak level of commitments in 1998 (€375 million). Russia, Ukraine and Kazakhstan accounted for more than two-thirds of environmentally related loans. Loans for the low-income EECCA countries are much smaller in proportion to their borrowing capacity.

20. On the basis of the limited information available it seems that water supply and sanitation, followed by waste management are the main targets of donor assistance in EECCA countries. The largest IFI loans appear to be for the environmental components of non-environmental projects, particularly in the power generation and agriculture sectors.

21. Private sector flows, in the form of foreign direct investment (FDI), are low compared to other regions. This underlines the need for all EECCA countries to establish more stable and attractive investment frameworks. It is, however, not possible to distinguish environmentally related FDI from the overall FDI flows, or to evaluate the environmental impact of FDI in EECCA countries.

1. INTRODUCTION

22. Financing of the environment has been on the agenda of the "Environment for Europe" process since its beginning in 1993. The Lucerne Conference in 1993 focused on external sources of environmental financing, although participants acknowledged that the largest proportion of the financing for environmental investments in Central and Eastern Europe (CEE)[1] and in Eastern Europe, Caucasus and Central Asia (EECCA)[2] would come from the countries themselves. Discussions highlighted the importance of priority setting, strengthening local financial institutions, cost-effective use of scarce resources and external funding as a catalyst to leverage domestic funding.

23. At the Sofia Conference in 1995 it was acknowledged that demand for environmental financing was still low throughout the region as a whole. It was recognised that major obstacles to increased environmental financing in CEE and EECCA were more a question of the high price of commercial financing and limitations in flexibility of financing institutions than the lack of financing itself. Thus discussions focused on development of flexible financing mechanisms and provision of affordable or soft financing on a transitional basis[3].

24. At the Aarhus Conference in 1998 it was recognised that there was a need to increase focus on EECCA, as the gap between environmental financing levels in CEE and EECCA countries had become significant. Developments in environmental financing in CEE were increasingly driven by the European Union (EU) accession and corresponding requirements to transpose and implement provisions of EU environmental legislation, including thirteen investment-intensive directives.. For EECCA there were neither equivalent drivers nor clear environmental goals established domestically. Some improvements were notable, but these were exceptions. The Aarhus Conference provided the scene for refocusing the OECD Secretariat of the Task Force for the Implementation of the Environmental Action Programme for Central and Eastern Europe (EAP TF) activities toward EECCA. The refocusing should put specific focus on integrating environmental concerns into economic development, strengthening capacity for environmental financing and focusing on private – public partnerships. The conference encouraged donors, International Financial Institutions (IFI) and business to increase their focus on EECCA.

25. Underlying the important developments and conclusions from the Environment for Europe process has, among others, been the strong analytical work on developments in environmental financing in the regions. Regular reporting on external funding (donor and IFIs) together with new methods of accounting for environmental expenditure and supporting case studies have so far provided valuable information on these trends.

26. This report provides information and analysis on trends in environmental expenditure and international environmental commitments to EECCA. Together with the analytical report on environmental

1 In this report CEE countries refer to the ten candidate countries of Central and Eastern Europe.

2 Includes the following countries: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, the Kyrgyz Republic, Moldova, the Russian Federation, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

3 These issues are discussed in more detail in a supporting report on environmental financing in EECCA (OECD 2003).

financing for EECCA this report will provide the EAP TF inputs for discussions of financing issues at the Kiev Conference in May 2003. The report explores environmental expenditure, and international public financing from bilateral assistance programmes and from development banks (IFIs). Compared with previous environmental trends analysis from the EAP TF, more focus has been put on domestic expenditure collected in four countries through original empirical studies.

27. Chapter 2 of the report presents selected economic developments, which provide an important context for environmental expenditure, and some macro economic data in EECCA. Chapter 3 presents methodological issues related to data collection, availability and quality. Further discussions on methodology and definitions of the main environmental categories are presented in a supporting Annex 2. Chapter 4 discusses environmental expenditure. Chapter 5 presents international public commitments to the regions, focusing on Official Development Assistance/Official Assistance (ODA/OA)[4] and IFI commitments. Finally, the major findings of the report are presented in Chapter 6.

4 Official Development Assistance (ODA) and Official Assistance (OA) are defined as aid flows to developing countries and countries in transition (see lists below). To qualify as ODA/OA, a transaction must be undertaken by the official sector for the main purpose of promoting economic development and welfare, be concessional in character, and convey a grant element of at least 25%. Data are collected annually from the members of the OECD's Development Assistance Committee (DAC), which comprises 22 members and the European Commission, through two reporting systems: the aggregate DAC statistics and the activity-specific Creditor Reporting System (CRS). The data cover aid loans and grants, other official flows, private market transactions and assistance from non-governmental organisations to each recipient country and regions. In addition to financial flows, technical co-operation is included in aid. Grants, loans and credits for military purposes are excluded. Data presented in this report excludes other official flows and aid from other non-DAC donors. The data presented also includes revision and updates from donor countries and IFIs collected throughout the preparation of this report.

DAC List of Aid Recipients covered by this review, as of 1 January 2001

- *Part I ODA (developing countries):* Armenia, Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, Moldova, Tajikistan, Turkmenistan, and Uzbekistan.

Part II OA (transition countries): Belarus, the Russian Federation and Ukraine.

2. ECONOMIC TRENDS IN EASTERN EUROPE, CAUCASUS AND CENTRAL ASIA

28. Since the break-up of the Former Soviet Union in 1991, the countries of EECCA have seen drastic declines in their economies and long periods of economic contraction. Seven countries are now classified as low-income countries[5] (Armenia, Azerbaijan, Georgia, the Kyrgyz Republic, Moldova, Tajikistan and Uzbekistan) and the remaining five countries (Belarus, Kazakhstan, the Russian Federation, Turkmenistan and Ukraine) are low-middle income countries[6]. The crisis reached its bottom during the Russian financial crisis in 1998, but soon afterwards most economies began to grow again, with the slowest recovery in Moldova (which continued to decline), Ukraine and Russia. The GDP per capita at current exchange rates varies from €191 in Tajikistan (one the world's lowest) to €2 392 in Russia in 2001, which is more than some Balkan countries in Central Europe, such as Romania and Bulgaria.

Table 2.1 Macro Economic Indicators for EECCA Countries

	Population, 1000 inhabitants	GDP, billion €	GDP per capita, €	GDP, real growth % over the period:		General government expenditure, % of GDP	Share of general government tax revenues in GDP (%)	Gross fixed capital formation, million €	Foreign direct investments, million €, yearly average	Inflation, % change from previous year	Domestic credit provided by banking sector (% of GDP)	Deposit rate, % annum	Lending rate, % annum
	2001	2001	2001	1991-95	1996-2001	2001	2000	2000	1996-2001	2001	2000	2001	2001
Armenia	3 788	2	625	- 54	31	24	18	397	115	3	12	15	27
Azerbaijan	8 096	6	785	- 58	51	20	15	1 469	541	2	10	12	28
Belarus	10 147	13	1 257	- 31	37	31	44	7 386	213	61	19	35	48
Georgia	5 239	4	684	- 64	25	18	14	475	147	5	22	8	27
Kazakhstan	16 095	25	1 552	- 31	27	22	16	2 752	1 686	8	14	11	15
Kyrgyz Rep.	4 986	2	342	- 45	28	28	18	226	49	7	13	17	53
Moldova	4 285	2	420	- 53	- 3	27	20	310	84	10	25	24	32
Russian Fed.	144 664	346	2 392	- 41	16	36	22	46 627	2 944	21	24	5	17
Tajikistan	6 135	1	191	- 57	32	16	13	213	20	39	..	33	17
Turkmenistan	4 835	4	816	..	..	24	26	1 894	105	11	..	..	11
Ukraine	49 112	42	854	- 48	10	37	29	6 408	599	12	23	11	30
Uzbekistan	25 257	13	508	0	21	33	30	919	102	27	..	..	..
Bulgaria	7 870	15	1 922	- 23	9	37	29	2 159	605	8	18	3	11
Hungary	10 188	58	5 687	1	25	43	42	12 228	1 970	9	54	9	12
Lithuania	3 690	13	3 628	- 39	18	31	27	2 318	437	1	14	1	8
Romania	22390	44	1 976	3	- 5	35	30	7 604	1 074	35	14	23	41
Germany	82 335	2 061	25 033	5	9	45	38	438 770	55 994	2	148	3	5
Portugal	10 061	122	12 167	6	18	43	35	32 656	3 511	4	143	2	6

Source: **EBRD, FAO, IMF, UNCTAD, WB.**

29. The fiscal position of the governments is weakened by the generally low share of government tax revenue in GDP compared to advanced CEE countries (e.g. Hungary) and west European countries. This limits the public expenditure capacity at all levels of government. Investments in the economy have recovered after the 1998 crisis, although they remain low both compared to CEE and OECD countries and considering the deep depreciation of fixed assets in industry throughout the 1990s to say nothing of public infrastructure.

5 Low-income countries are defined as countries with less than USD 756 Gross National Income (GNI) per capita (2001 prices).

6 Low-middle income countries are defined as countries with income between USD 756 – 2 995 GNI per capita (2001 prices).

30. The banking sector is still a small, although a rapidly increasing part of the economy, and the volume of banking credit as a percentage of GDP is still much lower than in advanced CEE countries and several times smaller than in "old" OECD countries. High lending rates and spreads reflect the still very fragile credit market.

31. Until 1996 inflation was very high in all countries of EECCA. Later almost all countries have brought annual inflation down to below 30%, and in 2001 half of the countries in the region slashed annual inflation to a single digit number with more or less stable outlooks.

32. Foreign direct investment (FDI) in EECCA countries both per capita and per unit of GDP, are still well below FDI in the more advanced transition countries in CEE. Only Azerbaijan and Kazakhstan come close to the least advanced CEE countries. The main sectors attracting FDI in the region were telecommunications, beverages, commerce, banking, mining, oil and gas, metal processing, chemicals, and pharmaceuticals. No data is available that would allow analysis of the environmental impact of the FDI flows. Aggregated FDI data are presented below.

Table 2.2 Foreign Direct Investment to the Region

	as a share of GDP						total accumulated stock, million €	share of GDP, average %	per capita, average, €
	1996	1997	1998	1999	2000	2001	1996-2001	1996-2001	1996-2001
Armenia	1.1	3.2	12.2	7.1	6.9	6.6	689	6.4	30
Azerbaijan	18.6	26.9	24.4	11.1	2.5	4.0	3 247	13.3	68
Belarus	0.7	2.5	1.3	3.7	0.7	1.5	1 276	1.7	21
Georgia	1.5	6.8	7.3	2.9	4.3	5.0	883	4.8	28
Kazakhstan	8.1	9.5	5.6	8.7	7.0	12.3	10 118	8.6	103
Kyrgyz Republic	2.6	4.7	6.7	3.6	-0.2	2.6	291	3.4	10
Moldova	1.2	3.6	3.8	2.8	9.6	9.3	506	4.8	20
Russian Federation	0.6	1.1	1.0	1.7	1.0	0.8	17 664	1.0	20
Tajikistan	1.7	1.6	1.9	1.9	2.2	2.1	120	1.9	3
Turkmenistan	4.5	4.0	2.2	3.8	4.4	4.2	628	3.9	23
Ukraine	1.2	1.2	1.8	1.6	1.9	2.1	3 595	1.6	12
Uzbekistan	0.6	1.1	0.9	0.7	0.5	0.6	615	0.8	4
Bulgaria	1.1	4.9	4.2	6.7	8.0	5.1	3 631	5.1	75
Hungary	5.0	4.8	4.3	4.0	3.5	4.6	11 822	4.4	195
Lithuania	1.9	3.7	8.6	4.6	3.4	3.7	2 623	4.3	118
Romania	0.7	3.5	4.8	2.9	2.8	2.9	6 446	3.0	48
Germany	0.4	0.7	1.3	2.8	9.6	1.5	335 967	2.8	682
Portugal	1.7	2.7	3.1	1.1	5.6	4.9	21 066	3.3	349

Source: IMF, UNCTAD.

Notes: Inflows of FDI are comprised of capital received from an FDI enterprise by a foreign direct investor. There are three components in FDI: equity capital, reinvested earnings and intra- company loans. 2001 data are estimates.

33. Except in Turkmenistan, FDI in the region was attracted mainly by the countries, which are rich in energy resources, such as oil and coal. Three fourths of all inflows of FDI in the region flowed to Kazakhstan, Russia and Azerbaijan. Per capita disproportions in FDI patterns are also staggering. Russia received €20 per capita per year on average, around the region's average. In contrast, on average, in 1996-2000 two oil rich countries, Kazakhstan and Azerbaijan attracted €103 and €68 per capita per year, while Tajikistan and Uzbekistan attracted respectively only €3 and €4. Presented data do not allow any judgement on the environmental effects of FDI distribution, as foreign investments in oil extraction may have both negative environmental effects (accelerated exploitation) and positive effects (more efficiency, less wastage).

34. As a share of GDP, FDI accounted for 13.3% of the Azerbaijan's economy on average per year in the six-year period. The next biggest recipients were Kazakhstan (7.2%) and Armenia (6.4%) in the same period. Uzbekistan is the smallest recipient with only 0.4% of GDP per year from FDI. Also at very low levels are Russia, Belarus, Tajikistan and Ukraine all at flow levels below 2% of GDP per year.

3. METHODOLOGY AND MAJOR ISSUES

35. No uniform data collection of environmentally related expenditure has existed for the EECCA countries so far. This report is the first attempt at collecting consistent, cross-country and time series environmental expenditure data in EECCA. Therefore, it faces serious challenges related to quality and comparability of data. Not all data problems could be or have been resolved in the time and resources allocated to this project. A main problem still encountered concerns the process of data collection, definitions and methodology. A detailed description of the general EECCA methodology is presented in Annex 2. The EECCA methodology is compared to the OECD Pollution Abatement and Control (PAC[7]) methodology, highlighting possibilities of comparisons and issues of concern between the two methodologies. This annex also identifies major areas for improvement of environmental expenditure data collection systems in EECCA countries.

36. This report covers data on environmentally related domestic expenditure and on environmentally related international commitments. "Environmentally related" is a broader concept than OECD/Eurostat traditional definition of "environmental" (PAC) expenditure, because it also includes such "non environmental" expenditure as supply and treatment of drinking water.

37. Domestic expenditure data were collected from national official statistics. The data have been cross-referenced where possible by additional specifications requested (though not always obtained) from institutions and countries, which are members of the Task Force for the Implementation of the Environmental Action Programme for Central and Eastern Europe (EAP TF). In a few cases, a more specific country or regional studies were undertaken. The data on international commitments have been collected from international databases, and cross-checked by directly surveying international financial institutions (IFIs) and international co-operation and environmental agencies in individual donor countries.

3.1. Environmental Expenditure – Methodology and Major Issues

38. The data presented for EECCA on environmentally related expenditure have been collected through three detailed studies (one on Georgia and two covering regions of Russia – Novgorod and Pskov) and three country case studies where official data have been analysed in detail (Armenia, the Kyrgyz Republic and Moldova). In the eight remaining EECCA countries, data collection relied on domestic official statistics analysed by local consultants and, except for Russia[8], in co-operation with the respective ministries and bureau's of statistics.

39. The methodology for reporting environmentally related expenditure that is currently used in EECCA is inherited from the period of central planning. Thus in all countries in the region, the expenditure data collection systems are very much alike. The data are collected through three main reporting forms -

7 See definition in Annex 2.

8 In the Russian Federation expenditure information has been collected from official statistical yearbooks.

18KS for investment expenditures, 4OS for current expenditures and 1ECOFUND for environmental funds.

40. The methodology developed in the Soviet period and the OECD PAC methodology can to some extent be compared. In addition to several methodological discrepancies described in Annex 2, there are two features that make Soviet standards different from OECD standards. Contrary to the typical OECD tradition, the enterprises' statistical reporting in EECCA is very detailed and very comprehensive, covering almost all domestically owned industrial enterprises[9]. However, the reliability of these data is traditionally weak. Public expenditure data are not reported regularly or in detail. In developed market economies' public expenditure data are traditionally easily available and exhaustive, while enterprise data are usually collected via sporadic sample surveys.

41. In EECCA countries there is no unified definition of environmental expenditure similar to that of the OECD pollution abatement and control (PAC) or Eurostat (SEEA/SERIEE). From the list of activities on which enterprises need to report, it is clear that "environmental" expenditure is interpreted in a broader sense than in the OECD PAC framework. Its definition includes elements of water management and other natural resource management expenditures. The term environmentally related expenditure has been given to characterise environmental expenditure from EECCA official statistics. For further details and definitions of what is included in these categories please see Annex 2.

42. The likely magnitudes and directions of biases caused by the EECCA reporting system are not straightforward. On the one hand, public expenditure is likely to be underreported, and enterprises may report more expenditure as "environmental" than firms in OECD countries. On the other hand, some detailed surveys undertaken under the auspices of the EAP Task Force (DANCEE/COWI 2002a/b) suggested possible underreporting of expenditures, at least in some EECCA countries. The surveys conducted in two Oblasts in Russia showed that official data on current expenditure were 2 and 2.7 times lower than the survey showed. Investment expenditures were respectively 2.2 and 4 times lower in official statistics than in the survey conducted according to the OECD PAC methodology. Underreporting was found to result from the lack of resources to collect data, lack of knowledge of methodology and under-representation of several environmental sectors, such as waste, water supply and administration. The surveys likewise show that the data collection system is rapidly deteriorating. In three countries (Georgia, Kazakhstan and Tajikistan) the reporting systems have collapsed entirely in the 1990s and only recently have been reinstated.

43. Some common biases of the EECCA environmental reporting systems include:

- Problems obtaining information on public environmental expenditure by government administration, as this is not reported through the regular reporting system. This may lead to underestimation of public expenditure and an impression that expenditures on environmental "public goods" are particularly neglected.
- Data on investment and current expenditures are usually reported inconstantly, the interpretation of investments varies and the two expenditures are often difficult to separate. In some countries this may lead to downward bias such as in the Kyrgyz Republic, where only construction

9 It should be noted that the business sector coverage may differ in the selected countries. For CEE and OECD the data presented in the report refer to the industrial sector (mining, manufacturing, electricity, gas and water). For the ECCA region, data may also include expenditure carried out by the following economic sectors: agriculture, forestry, fishery, construction and other services as well as expenditure for water supply. In order to enhance comparability between the different regions, water supply data of the business sector, derived from the Structural Business Statistics data collection, have been added to environmental protection expenditure of CEE and OECD countries.

enterprises have an obligation to report on investments leaving aside many possible investments and maintenance carried out by other sectors. In other countries this may lead to upward bias. For instance, Kazakhstan reports only investment expenditure data, which in recent years seem unrealistically high by international standards. In the period 1996-2001, reported environmental expenditure increased from 0.9% to 2.3% of GDP, higher than in most OECD countries. Some Kazakh experts suggest that probably either some current expenditures were classified as investments, or some non-environmental investments were classified as environmental (e.g. total expenditure on new technologies in the oil industry, instead of only the portion that had environmental purposes).

- Data on expenditure by sources of financing (the so called "financier principle" in OECD PAC terminology - see Annex 2 for further definitions) are often mingled together with data reported by the entities that undertake expenditures to abate pollution (the so-called "abater principle"). This leads to double counting and overestimation of reported total expenditure. For example, when the government or environmental fund transfers a subsidy to cover 100% of the cost of an environmental project in enterprise (e.g. a local utility) the same amount of money is once reported as public sector expenditure (by financier principle), then as an environmental expenditure by an enterprise (by abater principle) and in the end double counted in the total expenditure report.
- Specific problems with reporting expenditures by environmental and water supply utilities include:
  - Environmental and water utilities, which are publicly owned, often report their spending as public sector expenditure, although by international standards they should belong to the business sector, irrespective of their ownership. This leads to an overestimate of the public expenditure at the expense of business expenditures.
  - For many countries in EECCA reporting on water supply and wastewater treatment is difficult to separate as these services are provided jointly by uniform utilities.
  - For some countries water supply utilities do not have to be reported. If it is possible to distinguish water supply expenditures from wastewater treatment expenditures then water supply expenditures may not be included in country reporting. This may lead to underestimates of water supply expenditure data.
- Reporting on expenditures on waste management is very limited, which causes likely underestimates of environmental expenditures in official statistical reports.
- Certain expenditure categories are very ambiguous and are likely not to belong to OECD classification of "environmental" or "environmentally related" expenditure. For example expenditure on "natural resource management", "land protection activities" and "water resource protection" may lead to overestimates of reported expenditures.
- There is very weak verification of current expenditure data reported by enterprises (business sector). In some countries (Kazakhstan and Ukraine) this is suggested to have lead to significant overestimates of current environmental expenditures, as enterprises often do not distinguish "environmentally motivated components" in the total expenditure in new technologies that bring about resource savings and indirectly decrease pollution. As noticed earlier this is likely the reason for excessive environmental expenditure reported by Kazakhstan. Another example is Ukraine, where total environmental expenditures are reported at levels of 2–3% of GDP, again higher than in most OECD countries. In 2000, 94% of these expenditures were incurred by business sector in Kazakhstan and Ukraine. Ukrainian experts and authorities cannot find a convincing explanation for these very high estimates. Some suggested that industry might have reported the full operational costs of technologies that reduce water consumption or other resource saving measures. By OECD standards, only a portion of these expenditures, having explicit environmental purpose, should have been reported as environmental expenditure (this issue is further discussed in Section 4 when domestic data are presented country by country).

44. None of these biases could have been quantified within the scope of the preparation of this report. Further studies should be undertaken to estimate the likely magnitudes and directions of mis-estimates of environmental expenditure.

45. Notwithstanding the common roots of expenditure reporting methodologies, the data on environmentally related expenditures collected in different EECCA countries differ in terms of coverage and comparability. The table below gives a quick overview of the main features of environmental expenditure data reporting systems in individual countries in the region. These differences should be kept in mind whenever international comparisons between EECCA countries are made.

Table 3.1 Overview of Individual Components of Data Collection Systems in EECCA

	Data Collection system	Environmental expenditure	Natural resource management expenditure	Possible to distinguish between water supply and WWT *	Investment expenditure	Current expenditure	Public expenditure	Business expenditure
	A	B	C	D	E	F	G	H
Armenia								
Azerbaijan								--
Belarus	Information not provided							
Georgia	from 2002	Data available only for 2001						
Kazakhstan	from 2000		--	--		--		
Kyrgyz Republic		incl. water supply	--	--				
Moldova								
Russian Federation		incl. water supply		--			from 2000	from 2000
Tajikistan	Data collection system not in place							
Turkmenistan			--	--				--
Ukraine			--	--	public: from 1999			
Uzbekistan			excl. water supply	--				

Source: National statistics.

Notes:

Shaded areas refer to available information and -- refers to not available data.

*) WWT= waste water treatment. Where it is not possible to distinguish between the two categories, it is expected that water supply expenditure is included in WWT expenditure.

46. Notwithstanding several remaining biases and problems with data quality and comparability, in the course of preparation of this report every effort was made to ensure that on aggregated levels it provides a reliable source of information on which to base further analytical studies of trends in environmentally related expenditures in EECCA.

3.2 Public international commitments, ODA/OA and IFI – methodology and major issues

47. International financial assistance from public international sources is reported to the Development Assistance Committee's databases at the OECD (DAC and CRS - creditors reporting system - databases)[10], which includes Official Development Aid and Official Aid data. The database also includes information on international development lending from many IFIs. Those IFI flows that qualify as ODA/OA are included in this report as IFI commitments, and not as ODA/OA[11].

48. Contrary to the domestic expenditure data, the international flows data used in this report are reported based on commitments, not disbursements. Commitments may, however, be different from assistance actually received, as commitments may be cancelled or postponed. Therefore commitments data

[10] For further details on the databases coverage and reporting directives consult the DAC site at the following address: www.oecd.org/dac/stats.

11 See footnote 4, page 10 for further detail and definition of ODA/OA.

are an overestimate of the actual flow of assistance. There are also problems with comparing commitments with Gross Domestic Product (GDP) and other macro economic indicators as these figures refer to expenditure in specific years, whereas commitments taken in one year may involve disbursement over several years or may not be disbursed at all.

49. The assistance and development lending is reported at aggregated levels as well as at disaggregated levels (project specific data), and unfortunately these two reporting frameworks do not give the same results. Reporting at the aggregate level is comprehensive and more or less complete, but does not allow for distinguishing environmentally related assistance from total assistance or breakdowns of expenditure by sector. At the project level (CRS project database) environmentally related assistance can be identified with higher accuracy, but only about 60% of total ODA/OA flows are reported. Not all countries report their assistance at the project level to the CRS database.

50. For the purpose of this report the effort was made to supplement missing project specific data in the CRS database to achieve comprehensiveness of the aggregated DAC database and not to loose the structural insight of the CRS. Therefore the major donor countries and IFIs operating in the EECCA region have been asked to update the information on environmentally related projects in the CRS database[12]. Some donors have provided project-specific information with purpose code identification, whereas others have provided aggregated figures. The EAP TF Secretariat has added the information provided by the countries and IFIs to the CRS database figures. All major donors to EECCA have either reported assistance at the project level to EAP TF Secretariat or provided aggregated figures for environmental assistance to EECCA countries.

51. The definition of environmentally related assistance reported here has been expanded compared to previous EAP TF Secretariat reports on donor flows and includes “environmentally related” commitments in addition to traditional “environmental” sectors as defined by the OECD expenditure framework. Annex 3 provides an overview of the categories included in the environmentally-related expenditure definition; definitions are identical to those introduced by World Resource Institute (Dong, Kato and Maure, 2001). The choice of a definition has a profound impact on the magnitude of estimated commitments. For example, in 2000 the total environmental assistance to all developing and transition countries was USD 1.4 billion under the strict OECD environment terminology, but was USD 7.3 billion under the expanded WRI definition.

52. Notwithstanding identified problems with the coverage and definitions of data and methodological problems with their collection and aggregation, this report remains the most comprehensive and the most detailed source of factual information on the levels and trends of international assistance for environmental purposes in the EECCA countries.

53. As discussed above, public international commitment data have been collected from existing databases with updates from major donors. Classification of purpose (see Annex 3) of the commitment is decided by the donors/IFIs themselves. The classification used to identify environmentally-related projects is broader than the definition used for environmental expenditures. For the environmental sector, public transfers for agriculture, rural and urban development as well as environmentally “friendlier energy” assistance are included. These three categories account for 26% of total donor and IFI commitments from 1996 – 2001 to the region (17% of donor assistance and 30% of IFI commitments).

12 The areas of environmental assistance requested from donors have been expanded since the last survey in 1997. The environmentally-related activities included in this report are presented in Annex 3.

4. ENVIRONMENTAL EXPENDITURE IN EECCA

54. This section discusses and compares trends in environmentally related expenditure. The category "environmentally related" includes "environmental" expenditures (as defined in the OECD PAC framework) plus water resource management (mainly drinking water supply and treatment) and some natural resources management expenditure. Environmentally related expenditure is compared across countries, where possible, through composite indicators, such as shares of GDP, per capita amounts. Wherever possible efforts were made to distinguish between current and capital investment spending, between public and private expenditure and between expenditure by different environmental media. A brief discussion on financiers has also been included (who pays for environmentally related expenditure). The analysis includes country time series for the period 1996–2000 (as most country information for 2001 is preliminary and/or partial) and cross-country regional trends if possible. The main body of the chapter contains graphical presentation of data. Detailed data tables are available in Annex 1.

55. Cross-country comparisons should be interpreted with caution. First, despite the common methodological origin, country-specific expenditure definitions and classifications may still differ across countries, although every effort has been made for this report to convert existing expenditure classifications to the common framework of OECD PAC and of "environmentally related expenditure". Second, data accuracy and reliability varies widely between countries and within countries. Wherever the OECD Task Force for the Implementation of the Environmental Action Programme for Central and Eastern Europe (EAP Task Force) Secretariat had serious doubts, it is noted in the report. In a more detailed review, methodological problems in specific countries are listed in Annex 2. Data coverage also differs by country. Belarus has not provided data for this report. Time series for environmentally related expenditure data are unavailable for Georgia and Tajikistan. Therefore, time trends data are only provided for nine of the twelve countries, and ad hoc data are included for Georgia.

4.1. Review of Environmental Expenditure in EECCA

56. From the table below it can be seen that there have been no consistent time trends in **environmentally related expenditure** in EECCA countries over 1996-2000. Some countries (Armenia, Kazakhstan and the Kyrgyz Republic) have increased their expenditures for the environment and water supply over time in constant euro terms. Other countries have decreased their expenditures, although year to year fluctuations were significant (e.g. in Azerbaijan, Russia, Ukraine and Uzbekistan). Moldova and Turkmenistan have kept their environmentally related expenditure more or less at constant levels in real terms throughout the period. It should be noted that for Moldova and Uzbekistan the preliminary data for 2001 would suggest that the declines in 2000 have been reversed in 2001. The countries with highest total expenditure in the analysed group are unsurprisingly Russia, Ukraine and Kazakhstan, which have the largest populations, largest economies, and highest levels of industrialisation of all the countries included in the survey. However, as already mentioned, in Ukraine and Kazakhstan the environmentally-related expenditure may be overestimated and further analysis of methodology used in Russian official statistics is also needed. The country with the least expenditure in absolute terms is the Kyrgyz Republic, which is partly explained by size of the country and of its economy.

57. The data show that except in Russia, Ukraine and Kazakhstan, the environmental business is very small. Such a small market is unlikely to attract significant private financiers in the short- to medium-term future, because the transaction costs of developing and marketing financial products would be high relative to the expected size of operations. Comparing EECCA countries to transition economies such as Romania and Bulgaria, one can see that both these countries, although smaller than Ukraine, have environmental sector market potentials for enterprises to engage. Countries, such as Portugal (EU cohesion country) or Germany, have much higher market potentials. These small absolute volumes of environmental expenditures in most EECCA countries make time series very sensitive to the impacts of individual, mainly investment projects, which can involve one-off expenditure comparable to all other annual expenditure taken together.

Table 4.1 Trends in Total Environmentally-Related Expenditure, 1996-2001 in Million 2000 €

	1996	1997	1998	1999	2000	2001
Armenia	5	6	7	12	12	4
Azerbaijan	34	22	22	20	20	19
Georgia	..	..	..	..	..	34
Kazakhstan	166	159	270	326	455	365
Kyrgyz Republic	4	5	5	9	7	..
Moldova	43	42	41	42	33	50
Russian Fed.	6 454	5 863	5 508	4 236	4 464	4 536
Turkmenistan	11	14	13	9	15	11
Ukraine	159	123	702	688	668	698
Uzbekistan	80	119	114	102	49	..
Bulgaria	223	194	265	367	351	..
Hungary	..	..	..	..	..	930
Lithuania	129	164	269	260	226	..
Romania	759	1 193	4 439	1 342	1 094	..
Germany	36 563	37 757	45 026	43 572	..	..
Portugal	1 228	1 254	1 252	1 936	2 101	..

Source: Eurostat, national statistics, OECD.

Notes: Comparisons amongst countries should be undertaken with care as definitions and sector coverage vary across countries. Some EECCA countries did not provide data for natural resources management expenditure and water supply expenditure may be included in WWT expenditure. Environmental expenditure data for OECD and CEE countries exclude natural resources management expenditure, therefore, water supply expenditure data from industry have been added to improve cross-country comparability. For more detailed explanations, see methodological sections.

ARM) 2001: Preliminary data, including partial current expenditure.

AZR) Data refer to the public sector only.

KAZ) Excludes expenditure for natural resources management. Investments only. Break in time series: 1996-99 data are national estimates.

TUR) Current €. Data refer to public sector only. Excludes expenditure for natural resources management.

UKR) Excludes expenditure for natural resources management.

UZB) Excludes water resources management expenditure.

HUN) Excludes expenditure for water supply.

LIT) 1996: Public sector only. Data from specialised producers of environmental protection are included from 1998 onward.

ROM) Break in time series in 2000 due to change in data collection system.

GER) 1996-2000: Excluding private specialised producers of environmental services and integrated investments in industry.

POR) 1999-2000: Excluding specialised producers of environmental services.

58. In terms of **environmentally related expenditure in constant international $ per capita** using purchasing power parities (PPPs) [13]**,** only four countries (Russia, Kazakhstan[14], Moldova and Ukraine) used to spend above $50 per person per year in PPPs in the period 1996-2000 with Russia on the top with nearly

13 This section has been prepared using WB data for purchasing power parities for EECCA. PPPs for EECCA countries only exist in $ and a conversion to EUROs has for this section not been attempted.

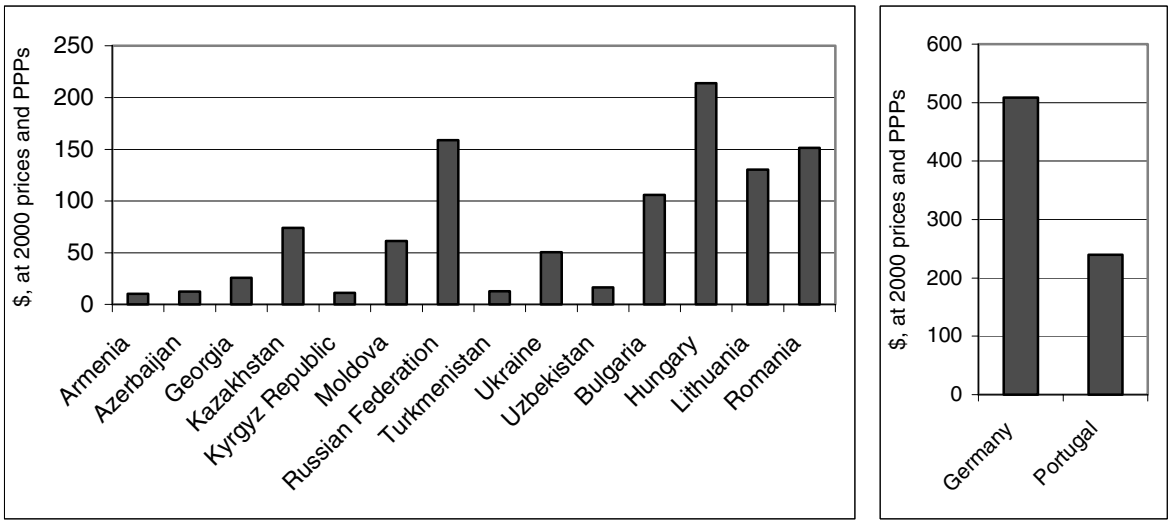
14 Although Kazakhstan and Ukraine data should be clarified – see discussion on investment expenditure.

$160 per person per year. For Kazakhstan, Moldova and Ukraine levels are between $70 - 50 per person per year in PPPs. All other countries are at relatively much lower levels per capita (varying between $10 and 16 per person on average), especially when compared to the transition countries in CEE where Bulgaria and Romania use about $106-150. In comparison with EECCA countries, Portugal uses three times more than Kazakhstan, and Germany uses almost seven times more per capita than Kazakhstan (the second highest spender in PPPs). On average Armenia had the lowest per capita environmentally related expenditure $10 per person per year in PPPs – 50 times lower than Germany.

59. When considered on a per capita basis, it becomes evident how low environmentally related expenditure is (except for Russia) compared to other countries in transition (CEE countries). The data also shows that sudden **external events can affect allocations from year to year**. In 2001 Denmark signed a bilateral environmental agreement with Moldova. The agreement was based on cost sharing, where assistance provided by the donor would be co-financed by Moldova. The donor increased its assistance, providing €2.5 million to the water supply sector. This amount was precipitated by a Moldavian commitment and partial disbursement. The total commitment from Moldova's side for these projects is €57 million of which, €3 million will be provided through own financing and €54 million is expected to come from loan financing. The specific focus from a donor on the water supply sector helped to increase expenditure from €9 per capita in 2000 to €14 per capita in 2001. This example illustrates how targeted environmental donor assistance can affect domestic expenditures and commitments to the environment.

60. The experiences of Armenia and the Kyrgyz Republic show how expenditure is affected by sudden exceptional needs and that additional resources are available, if justified. In the Kyrgyz Republic, a mining accident with toxic pollution occurred in 1999, which provided for a temporary increase in environmental expenditure in 1999 and 2000. Likewise increases in environmental expenditure in Armenia in 1999 and 2000 came about through an urgent need to replenish Lake Sevan with fresh water to keep water levels constant, which initiated major investments in the water supply sector.

Figure 4.1 Environmentally-Related Expenditure per Capita in EECCA, Average 1996 – 2000, $ at 2000 Prices and PPPs [a]



Source: Eurostat, national statistics, OECD, WB.
Notes:
Some countries did not provide data for natural resources management expenditure, water supply expenditure may be included in WWT expenditure. Data for CEE and OECD countries include business sector expenditure for water supply but exclude other natural resources management expenditure. For more detailed explanations concerning definitions and data coverage, see methodological sections. It should be noted that data coverage and methodology have improved over time, particularly for CEE and OECD countries, and this may affect considerably average values.

a) Converted to international dollars using purchasing power parity rates (PPPs), defined as the number of units of a given country's currency required to buy the same amount of goods and services in the domestic market as one $ would buy in the United States. Estimates based on WB data.
AZR) Data refer to the public sector only.
KAZ) 1996-99: National estimates for investments expenditure. Excludes expenditure for natural resources management.
TUR) Current $. Data refer to the public sector only. Excludes expenditure for natural resources management.
UKR) Excludes expenditure for natural resources management.
UZB) Excludes water resources management expenditure.
HUN) 2001 data only, excluding expenditure for water supply.
LIT) ROM) Break in time series due to changes in data coverage and collection system..
GER) Excluding private specialised producers of environmental services and integrated investments in industry.
POR) 1999--2000: Excluding specialised producers of environmental services.

61. Total **environmentally-related expenditure, as a share of GDP** is a good indicator of the commitment to environment because it indicates the share of income that the country is willing to devote to environmentally related purposes[15]. It reflects the priority assigned to environment in the country's economy, subject to what it can afford.

62. The share of reported environmentally related expenditure in GDP varies significantly among countries, from 0.3% in Azerbaijan to 2.4% and 3.1% of GDP in Moldova (2000-2001) (see annex 1). In Armenia, the Kyrgyz Republic, Turkmenistan and Uzbekistan the reported shares of environmentally-related expenditure were in the range from 0.4% to 0.7% of GDP in 2000.

63. Looking at the data from a dynamic perspective, in most EECCA countries the share of environmentally related expenditure in GDP has been kept almost constant over the last five years. Only Armenia and Kazakhstan have clearly increased their expenditures' share of GDP over the analysed period. Armenia increased its expenditures from 0.4% of GDP to 0.6%, due mainly to emergency investments in water resource management. Kazakhstan increased its expenditures from 0.9% of GDP in 1996 to 2.3% of GDP in 2000, but it is difficult to explain this jump. By the year 2000 Azerbaijan, and Uzbekistan have almost halved their environmentally related expenditures and Russia has decreased its expenditure by approximately 30% as shares of GDP, compared with 1996 levels. For Russia and Uzbekistan this indicator, however, remained at a relatively high level, around and above 1.5% of GDP (for Uzbekistan between 1997 - 1999). Moldova, the Kyrgyz Republic and Turkmenistan have kept their shares of income devoted to environment at more or less constant levels throughout the period.

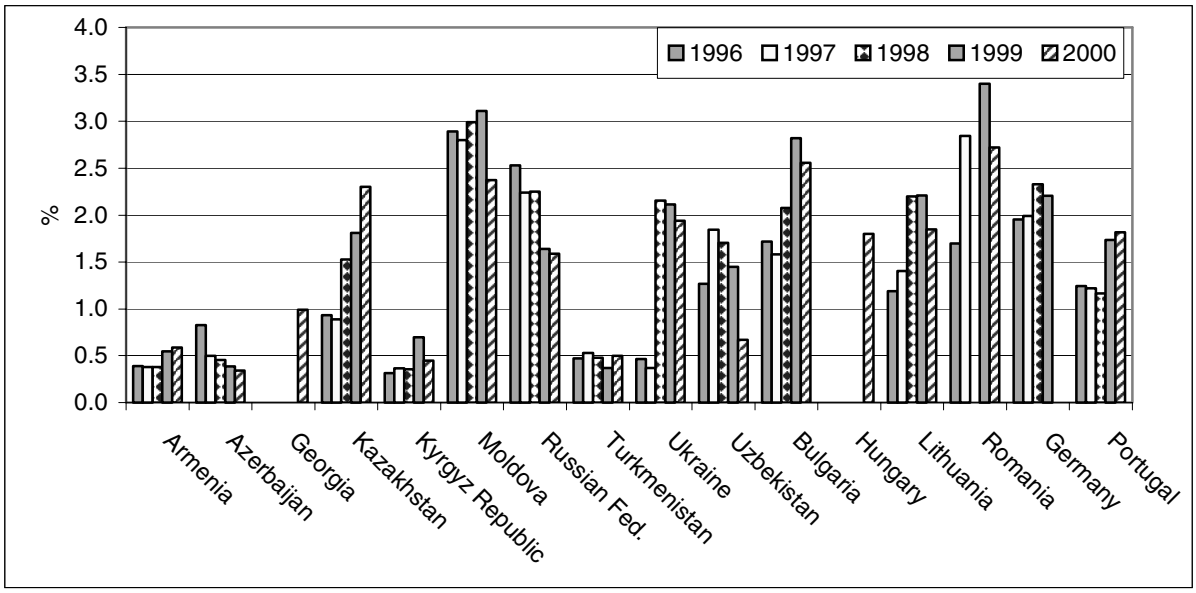
64. Caution should be taken when comparing among the countries as it is uncertain which countries have reported water supply expenditure, which is an environmentally related but not an environmental expenditure (see Section 3, Table 3.1 for full overview). For Armenia, Azerbaijan, Moldova and Russia, water supply expenditure and other natural resources management expenditure are included in their data. For other countries it is uncertain if these expenditures are included in their data, and for Uzbekistan water supply is not included, but other natural resources management is. Based on the few countries where it is possible to separate "environmental" from "environmentally related" expenditures, it would seem in general that environmental expenditures are a smaller part of environmentally related expenditures, as water resource management dominates environmentally related expenditures in EECCA. For Moldova environmental expenditure roughly averaged 0.7% of GDP, while the wider category of environmentally related expenditures roughly averaged 2.9% of GDP over the five years.

65. For Armenia, the Kyrgyz Republic and Moldova fluctuations in levels of expenditure are mainly due to environmental accidents. In Moldova, an important factor driving up the share of income spent on environment in 2001 was a high inflow of international environmental assistance. International environmental bilateral assistance went from €718 000 in 2000 to €10 358 000 in 2001 and thus contributed to leveraging additional domestic resources and causing an increase in the share of

15 Setting aside the difficulties with estimating GDP.

environmentally related expenditure in GDP from 2.4% in 2000 to 3.1% in 2001. In Armenia emergency investments to maintain water levels in Lake Sevan have accounted for the lion's share of environmentally related expenditure. In the Kyrgyz Republic, emergency clean up of contamination from mining caused a peak expenditure in 1999.

Figure 4.2 Total Environmentally-Related Expenditure in EECCA as a Share of GDP, 1996–2000



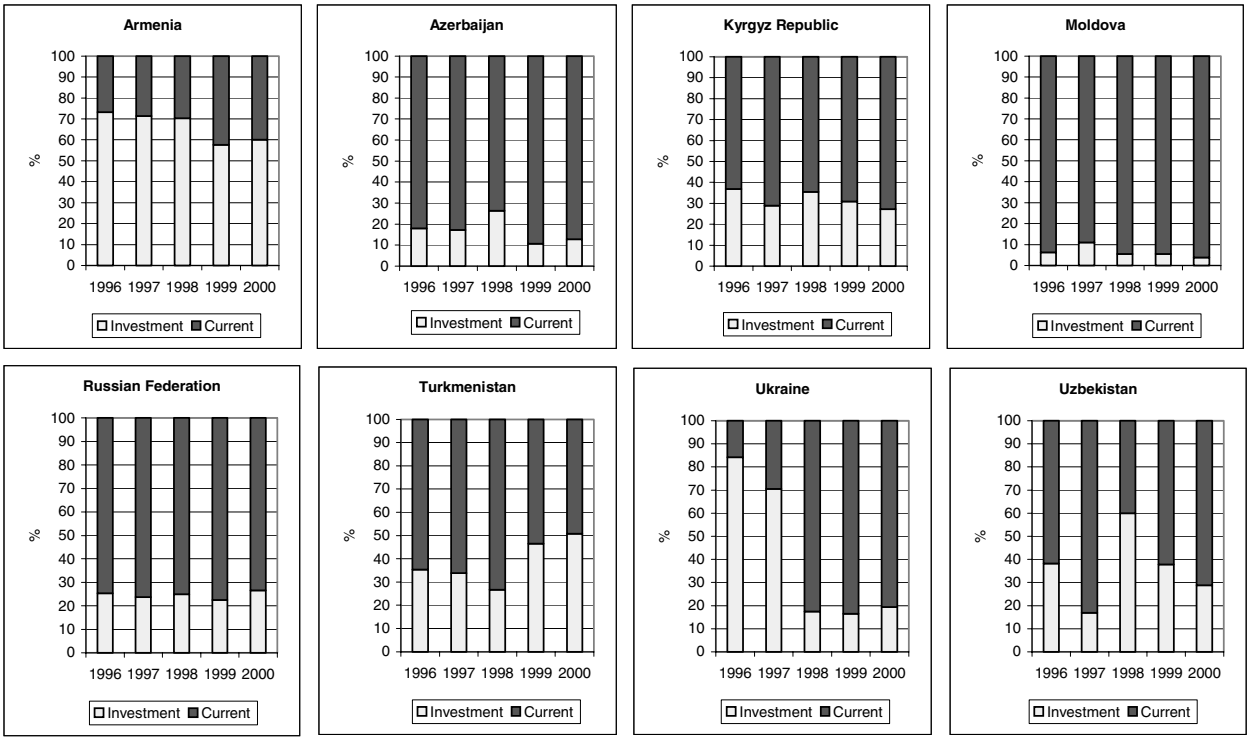
Source: Eurostat, national statistics, OECD.
Notes: Comparisons amongst countries should be undertaken with care as definitions and sector coverage vary across countries. Some EECCA countries did not provide data for natural resources management expenditure, water supply expenditure may be included in WWT expenditure. Environmental expenditure data for OECD and CEE countries exclude natural resources management expenditure, for the sake of comparisons, water supply expenditure data from industry has been added. For more detailed explanations, see methodological sections.
AZR) Data refer to the public sector only.
KAZ) Excludes expenditure for natural resources management. 1996-99: national estimates for investments expenditure.
TUR) Data refer to the public sector only. Excludes natural resources management expenditure.
UKR) Excludes natural resources management expenditure.
UZB) Excludes water resources management expenditure.
HUN) Excludes water supply expenditure.
LIT) 1996: Public sector only. Data from specialised producers of environmental protection are included from 1998 onward.
ROM) Break in time series in 2000.
GER) Excluding private specialised producers of environmental services and integrated investments in industry.
POR) 1999--2000: Excluding specialised producers of environmental services.

66. There are also wide differences among EECCA countries in allocation of environmentally related expenditure between **investment and current expenditures**. Usually current expenditure dominates over investments, with the noticeable exception of Armenia, where investments account for 70% of total environmentally related expenditure, and Kazakhstan, which has reported environmentally related expenditure for capital investments only. These two cases should be treated with caution. In Armenia this unusually high share of investment expenditure can be explained by some large investment projects in the water supply sector and in protection of the water table level of Lake Sevan. As mentioned before, given low absolute volumes of environmental expenditure, single larger investment projects significantly affect yearly investment and indeed total expenditures. Kazakhstan officially declared not to have reported current expenditure, but the levels of reported investment expenditure are so high that they raise serious methodological concerns that will be addressed later.

67. Over time the share of investment expenditures has slowly decreased in Armenia and Azerbaijan. In Moldova domestic expenditure for investments are almost non-existent except in 2001 because of an international assistance programme requiring co-financing (see Annex 1 for Moldova data 2001). In the

Kyrgyz Republic, Russia and Ukraine the proportions between current and investment expenditures seem unchanged and in Turkmenistan trends changed in 1999 when the share of investment expenditures in 2000 increased by 10–15% from previous levels, and reached around 50% of total environmentally related expenditure.

Figure 4.3 Share of Investments and Current Expenditure of Total Environmentally-Related Expenditure, 1996-2000



Source: National statistics.
Notes: Some countries did not provide data for natural resources management expenditure; water supply expenditure may be included in WWT expenditure. For more detailed explanations concerning definitions and data coverage, see methodological sections.
AZR) Data refer to the public sector only.
ARM) Current expenditure data include total expenditure for natural resources management.
AZR) Data refer to the public sector only. Current expenditure data include total expenditure of environmental funds.
MOL; RUS) Investment data include expenditure for capital repair.
TUR) Data refer to the public sector only. Excludes natural resources management expenditure.
UKR) Excludes natural resources management expenditure.
UZB) Excludes water resources management expenditure.

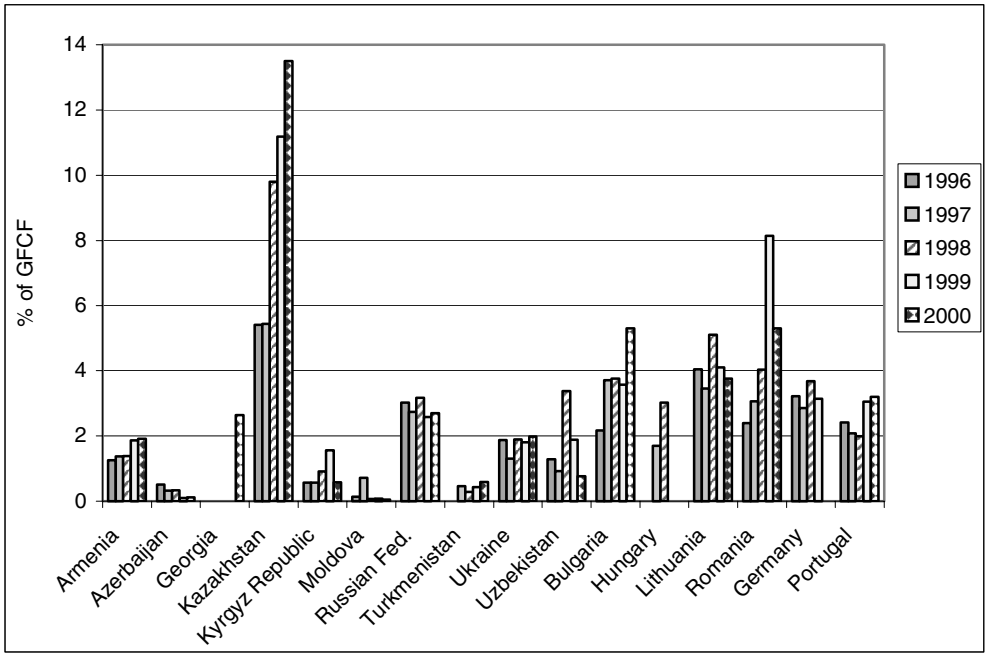
68. **Environmental investments**[16] **as a percentage of domestic investments** are in general relatively low compared to the transition economies in CEE countries, which are catching up with the past environmental investment backlog in order to comply with EU environmental standards. However, the Kyrgyz Republic, Ukraine, Armenia and Uzbekistan have been spending in recent years much smaller portions of their total investments for environmental purposes than Portugal (though annual variations blur international comparisons). Russia seems to spend approximately the same amount of resources as EU-member countries benchmarks – around 3%. In EECCA countries environmentally related investments contribute to between 0.1% and 3% of Gross Fixed Capital Formation (GFCF). The notable outlier is Kazakhstan, which has reported that environmentally related investments account for 13.5% of all

16 This data does not include natural resource management, as for most countries in EECCA it is impossible to differentiate between investments and current expenditure. However, due to methodological problems of accounting for water supply expenditure, including some of these expenditures in wastewater treatment expenditures, it is expected that water supply data is included for many countries in environmental investments.

investments in the country in 2000. This share in total GFCF seems very high, even more so when one considers that 95% of all expenditures are carried out by the business sector (see the following section). Kazakhstan has noted that the high levels of expenditure are partly due to the methodology for reporting environmentally related expenditure investments. In the oil and gas industry total investment expenditures for the projects that have environmental effects are reported as environmental investments. However, in OECD PAC methodology only the incremental portion of expenditure on the project, incurred for purely environmental reasons, over and above the expenditure undertaken for economic purposes should be reported as environmental investment expenditure. Further analysis of Kazakhstan's expenditure reporting system would be needed to clarify all these methodological problems.

69. In Armenia, Kazakhstan, Russia, Ukraine and Uzbekistan environmental investments account for more than 1% of GFCF. Other countries, such as Azerbaijan and Moldova and the Kyrgyz Republic, all have levels below 0.5%. Azerbaijan and Moldova have decreased their shares of environmental investments in total investment expenditure. In Armenia and Kazakhstan, which have increasing investment expenditures, the increases are due to increases in environmental investments and not due to a fall in GFCF.

Figure 4.4 Environmental Investments as a Share of GFCF, 1996-2000



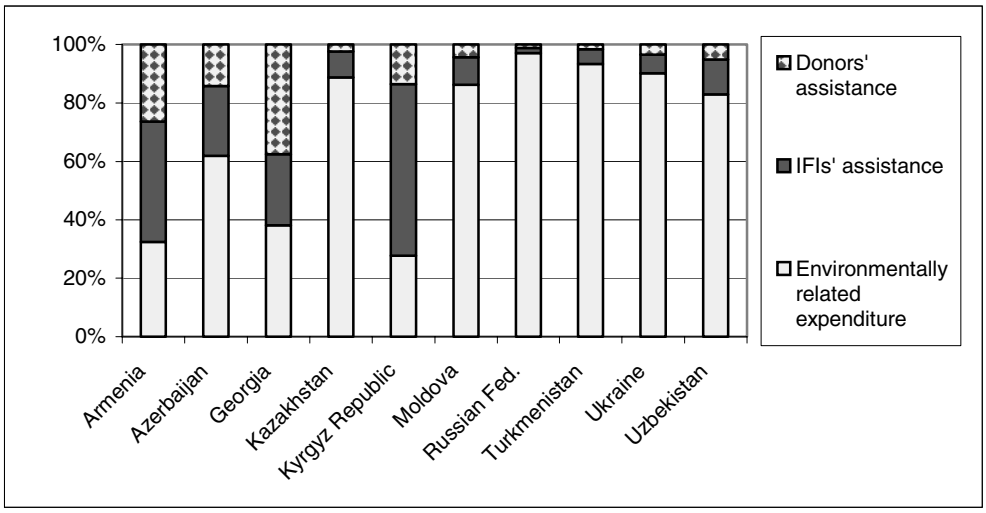
Source: Eurostat, national statistics.
Notes: Data should be compared with caution as definitions vary across countries. For more detailed explanations concerning definitions and data coverage, see methodological sections.
AZR) Data refer to the public sector only.
KAZ) Break in time series: 1996-99 data are national estimates.
MOL; RUS) Includes expenditure for capital repair.
TUR) Data refer to the public sector only.
HUN) Excludes investments from specialized producers of environmental services and for water supply.
GER) Excluding private specialised producers of environmental services and integrated investments in industry.
POR) 1999--2000: Excluding specialised producers of environmental services.

70. Identifying the sources of **financing of environmentally related expenditure** in EECCA has been difficult. It was not possible, based on the official data collected, to distinguish which source of revenue finances which expenditure (the financier principle). There are, for example, in the statistics for the business sector, problems in identifying subsidies from the public sector to business. Subsidies from

environmental funds going to public administration and business are also impossible to identify from the statistical information. Azerbaijan and Turkmenistan have also reported only public expenditure, however, it is unclear on which principle this reporting is based (abater or financier). As explained earlier, by mixing up expenditure by abater and by financier principles some (in some countries all) public transfers are probably counted twice in EECCA reporting systems.

71. One interesting policy issue is to what extend the countries rely on their domestic funds in financing environmentally related expenditure. The domestic share of total environmentally related expenditures varies widely from country to country, ranging from 28% to 97%[17]. The Kyrgyz Republic, Armenia and Georgia seem to be most dependent on foreign sources of financing, which account for 72% of total environmentally related expenditures in the Kyrgyz Republic, 67% in Armenia and 62% in Georgia. The lowest shares of environmentally related expenditures financed from foreign sources could be observed in Russia (3%), Turkmenistan (7%), Ukraine (10%) and Kazakhstan (11%).

Figure 4.5 Share of Environmentally-Related Expenditure by Domestic or International Financing (Commitments): Average Percentage Shares over the Period 1996-2001

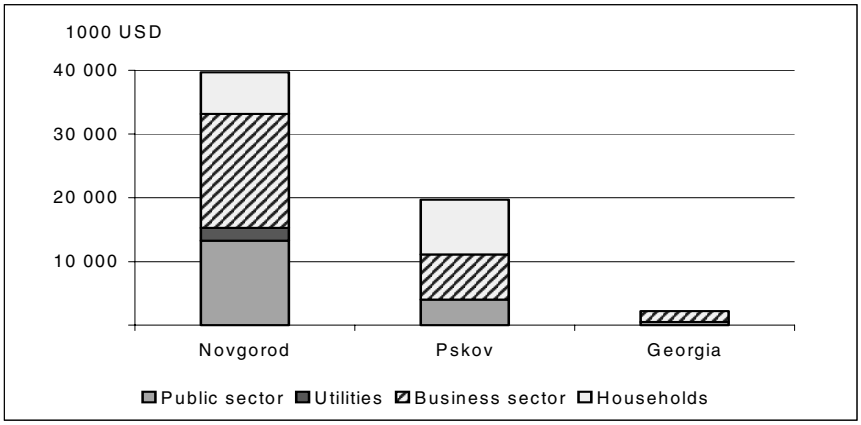


Source: OECD CRS database, donors and IFIs reporting, national statistics.
Notes: ARM) 2001: Preliminary data, including partial current expenditure only.
AZR) Data refer to the public sector only.
GEO) 2001 data only.
KAZ) Data refer to investments only and include estimates. Excludes expenditure for natural resources management.
TUR) Current €. Excludes expenditure for natural resources management.
UKR) Data include estimates. Excludes expenditure for natural resources management.
UZB) Excludes expenditure for water management.

72. Within the framework of the OECD EAP TF work programme in 1999 and 2000 the Danish EPA financed three case studies (Georgia, Novgorod - and Pskov Oblasts in Russian Federation) in order to gain an insight into the sources of financing of environmental expenditure in EECCA. In these countries and regions households and the business sector were found to finance around two thirds of all environmentally related expenditures, and the public sector finances approximately one third.

[17] It should be remembered that the foreign assistance is reported as commitments, not disbursements. Therefore its role compared to domestic expenditure is likely overestimated. Commitments fall over several years and may be cancelled. However, for identifying approximate levels of domestic and international contributions to the environment the comparison is made. It is our view that this comparison, although not methodologically correct, gives a level of magnitude for domestic and international efforts in the environmental area in EECCA.

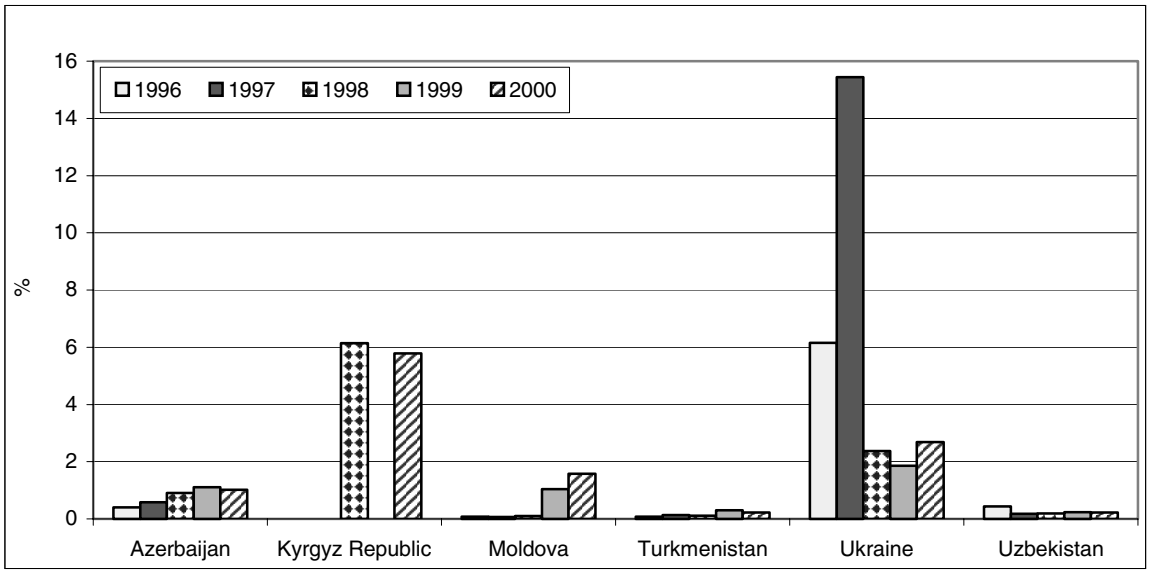
Figure 4.6 Total Environmentally-Related Expenditure in Novgorod and Pskov Oblasts and in Georgia by Financier Principles, 1998



Source: OECD.
Note: Data for Georgia refer to 1999 and concern only environmentally related investment expenditure of surveyed enterprises.

73. Most countries in EECCA have environmental funds to facilitate environmental investments in the countries. From figure 4.7 it is, however, obvious that expenditures of environmental funds in EECCA are small compared to overall public environmentally related expenditures.

Figure 4.7 Environmental Funds Share of Total Public Environmentally-Related Expenditure, 1996-2000

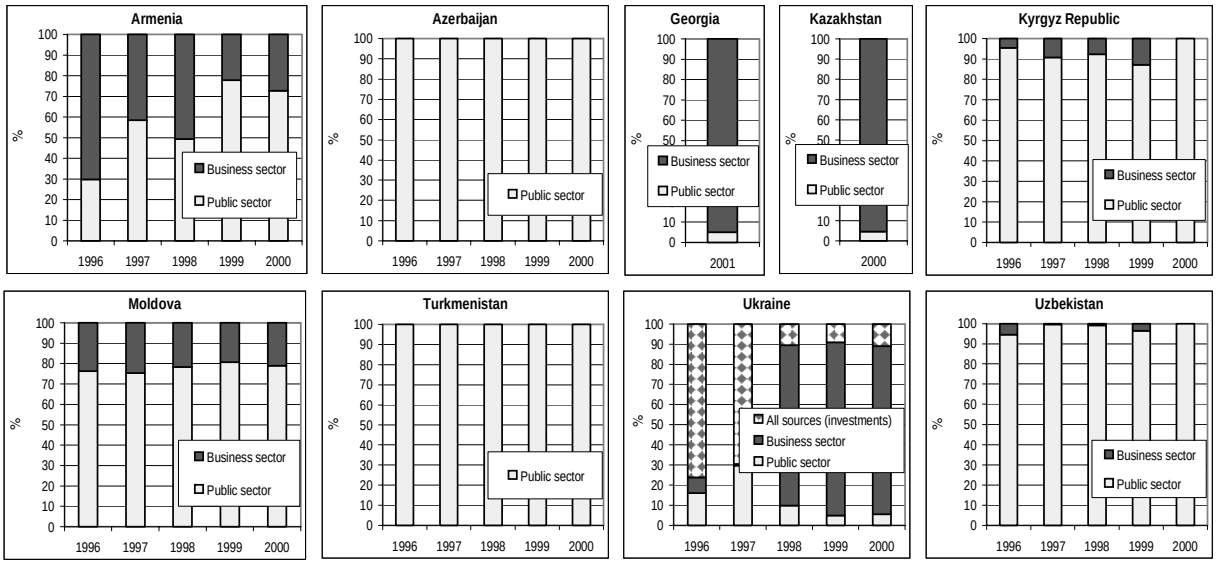


Source: National statistics.

74. The official data provided on the division between **public and private expenditure** by abater principle (who undertook environmentally related measure) is difficult to assess. Three countries, Azerbaijan, Russia and Turkmenistan, did not have business sector information available. Other countries, such as the Kyrgyz Republic and Uzbekistan, have only reported very little business expenditure (10% of total expenditure for the Kyrgyz Republic, and 3% for Uzbekistan). For Armenia and Moldova the public sector in general seems to have been the greatest contributor to environmentally related expenditures. For Moldova the public sector accounted for 75-80% for 1996-2000 and for Armenia 30-78% in the same period.

75. For Kazakhstan, Ukraine and Uzbekistan, it has been reported that the business sector incurred almost all environmental expenditures: 94% in Ukraine (1998-2000) and 95% in Kazakhstan. These high relative levels of business expenditure are quite surprising, and additional studies should be undertaken to verify this further. Ukraine has reported that the business sector data includes high levels of municipal expenditures that should not have been reported either as business or environmental expenditures. Thus business sector expenditures should have been much lower, and the share of public environmental expenditure should have been higher than reported. For Kazakhstan it has previously been discussed that there are severe problems with over-reporting from the oil and gas industry on environmentally related expenditure.

Figure 4.8 Environmentally-Related Expenditure in the Public and Business Sector, 1996-2000, % of Total Expenditure



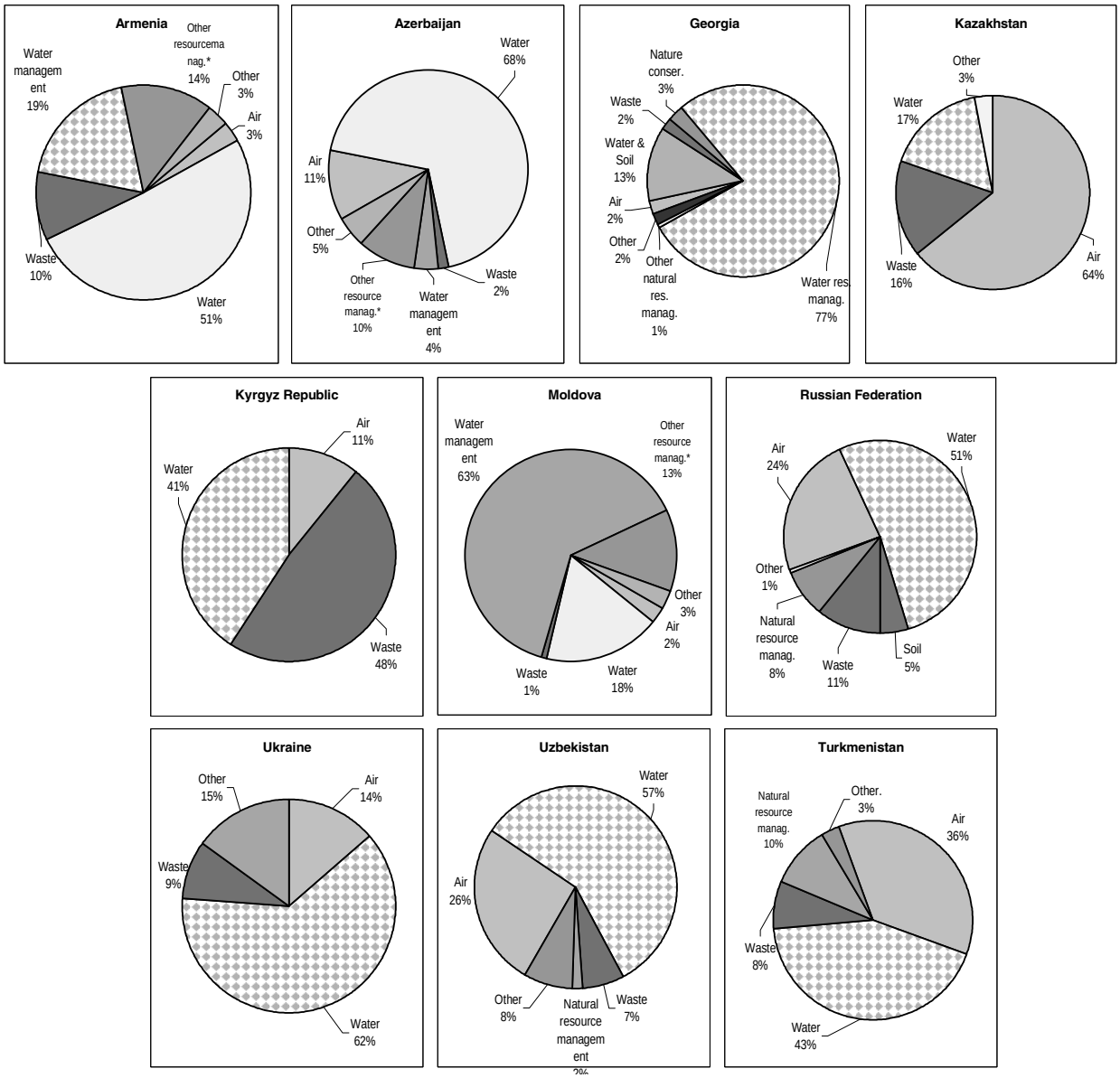
Source: National statistics.
Notes:
AZR) Data refer to the public sector only.
KAZ) Excludes expenditure for natural resources management. Investments only.
TUR) Data refer to the public sector only. Excludes natural resources management expenditure.
UKR) Excludes expenditure for natural resources management. For investment expenditure data is not possible to distinguish between public and business sector.
UZB) Excludes expenditure for water resources management.

76. The **distribution of environmental expenditure by media** shows that water supply and wastewater treatment account for by far the largest share of expenditure. The two media together received between 50–85% of the overall resources, except for Kazakhstan. The second largest receiving media is for most countries the air protection sector that for seven of the ten countries received above 11% of all environmentally related expenditure. Only Kazakhstan has a high level of total expenditure going to the air sector (64%). The data show that for all countries except the Kyrgyz Republic, Kazakhstan and Russia, waste expenditure is very low – 1% to 10%. In previous country surveys on environmental expenditure (DANCEE/COWI 2000a/b), it has been identified that environmental expenditure for the waste sector is often severely underreported or missing.

77. The country studies suggested that water supply expenditure is under-reported and sometimes is included under wastewater treatment expenditure. It would be expected that EECCA countries would give high priority to water supply (as a quasi-private good) and lower priority to wastewater treatment, which generate not private but external benefits to neighbouring communities, and thus water resource management (mainly water supply) would expectedly attract higher expenditures. For all countries except

Moldova, the water media (water protection management) is the highest receiving of the two media. This would support the suggestions from the case studies that there are methodological problems in reporting on water supply expenditures. Please see Chapter 3 on methodology for further discussion.

Figure 4.9 Total Environmentally-Related Expenditure by Environmental Media, 2000



Source: National statistics.

Notes:

Some countries did not provide data for natural resources management expenditure, water supply expenditure may be included in WWT expenditure. For more detailed explanations concerning definitions and data coverage, see methodological sections.

*: Data refer to other natural resources management expenditure.

AZR) Data refer to the public sector only.

KAZ) Investments expenditure only.

KAZ; KYR; TUR) Data for waste include expenditure for land protection.

TUR) Data refer to public sector only.

UKR) Other includes expenditure for administration, monitoring, education and emergency intervention.

UZB) Other includes nature protection expenditure.

5. INTERNATIONAL ENVIRONMENTAL ASSISTANCE AND FINANCING

78. During transition, international assistance and financing have often mobilised and leveraged domestic resources for environmental purposes. In the period 1996-2001 more than €2.2 billion has been committed to the region for the environment by individual governments and international financing institutions. Other external flows, such as foreign direct investment (FDI), commercial banking and export credits, can have an ambiguous impact on the environment.

79. As discussed previously, the environment ministers have endorsed a refocusing of the EAP TF Secretariat and the Pollution Abatement and Control (PPC) activities on the Eastern Europe, Caucuses and Central Asia (EECCA) countries, at the Aarhus Conference and encouraged donors, International Financing Institutions (IFIs) and business to increase their focus on the region. Four years have now passed since Aarhus and time series data are becoming available so that results of this refocusing can be evaluated.

80. In this section developments in international environmental assistance and the international financing institutions' environmental financing over 1996–2001 are presented. Environmental assistance data have been compiled from databases at the OECD and supplementary data collected from donor countries. IFI data have been collected directly from the institutions and are based on their own definitions of environmental assistance, that do not always match categories used in reporting bilateral assistance

81. In addition to direct environmental international assistance and environmental lending, some environmental expenditure also exists indirectly through integrating environmental considerations into investment projects having non-environmental purposes. In domestic expenditure these flows are categorised as "integrated processes" and in IFI lending as "mainstreaming of environment". International sources usually do not record these expenditures as "environmental". Over the last couple of years, focus has increased on these types of environmental improvements and expenditures. For the region covered, the World Bank and the European Bank for Reconstruction (EBRD) have tried to report not only financing for environmental projects but also environmental financing from non-environmental projects. In the following section these expenditures are included for the World Bank activities for all years, but are not included for EBRD as data is only available for 2001. Similar indirect environmental assistance for bilateral donors is not accounted for.

82. Other issues, such as export credits, international commercial lending, international leasing and trade are not covered even though they have both positive and negative effects on environment.

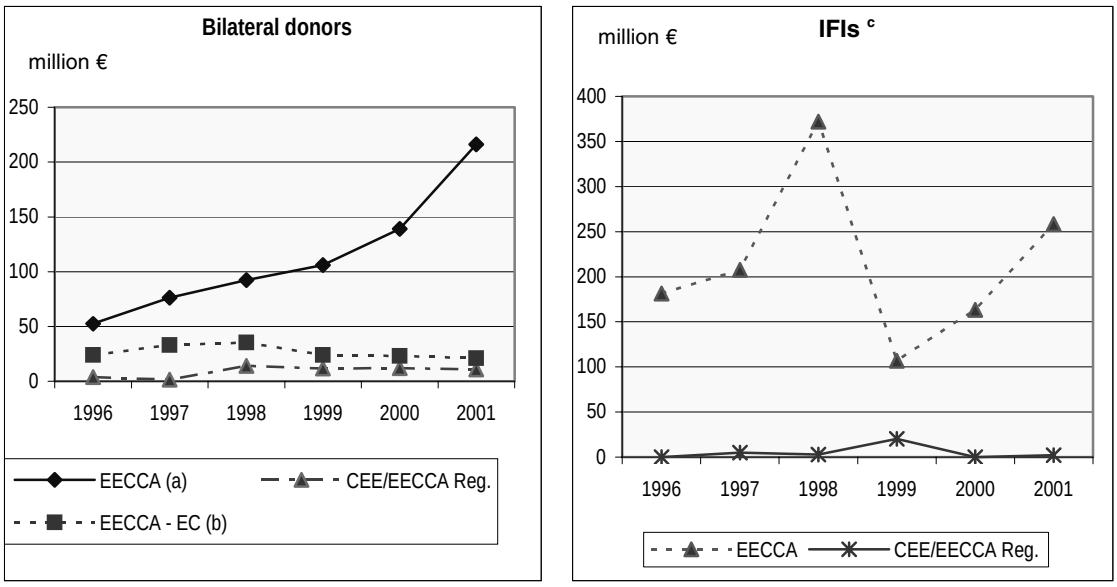
83. Section 5.1 presents a trends analysis by region, country, donor and IFI for environmental Official Development Assistance/Official Assistance (ODA/OA)[18] (see footnote 4, page 9 for detailed definition of ODA/OA) and environmental IFI lending. The data will be compared among countries by indicators of environmental expenditures per unit of Gross Domestic Product (GDP) and per capita.

[18] ODA/OA financing from IFIs have in the following section been included under IFIs financing- see note 4, page 10 for further detail on ODA/OA components of IFI – lending.

5.1. Environmental Assistance and Financing to EECCA

84. Overall commitments for environmental assistance from non EC-donors to EECCA countries has increased four times since 1996, reaching the peak level of €216 million in 2001. It has been increasing constantly until 1999 and increased more rapidly in 2000 and 2001, due to a significant increase in German and Swiss funding in 2000 and United States funding in 2001. Increases have mainly been due to increased share of commitments to the environment sector in overall assistance to the region, rather than to increasing total ODA/OA (see Table 5.2). Environmental Assistance from the European Commission (EC) is committed with large yearly fluctuations. This has a significant impact on the overall variability of overall environmental assistance to the region, because the EC is the largest donor, providing 17.8% of all bilateral environmental assistance. Environmental lending from IFIs declined with the financial crisis in 1998 and has begun to recover significantly only in 2001.

Figure 5.1 Environmentally-Related Assistance and Financing to the Region, 1996-2001, Million € of Commitments



Source: OECD CRS database; donors and IFIs reporting.
Notes:
Data for 2001 are preliminary. CEE/EECCA Reg. refer to commitments for projects involving countries from both regions.
a) Excluding EC.
b) Includes data from TACIS programme.
c) Includes data from ADB; EBRD; EIB; NEFCO; NIB and WB.

85. **Bilateral environmentally related assistance** has been distributed very unevenly between countries and, unsurprisingly, concentrated on the largest countries Russia and Ukraine. Together they received commitments for more than two thirds of this assistance, with Russia receiving €317 million from 1996 to 2001 and Ukraine receiving €102 million of commitments in the same period. Georgia, Kazakhstan, Armenia, Uzbekistan, Azerbaijan and Armenia each received between €43 and €31 million of commitments. At even lower levels, the Kyrgyz Republic and Moldova each received commitments between €17 and €15 million, and finally Tajikistan, Belarus and Turkmenistan received the least at €7 and €1 million each.

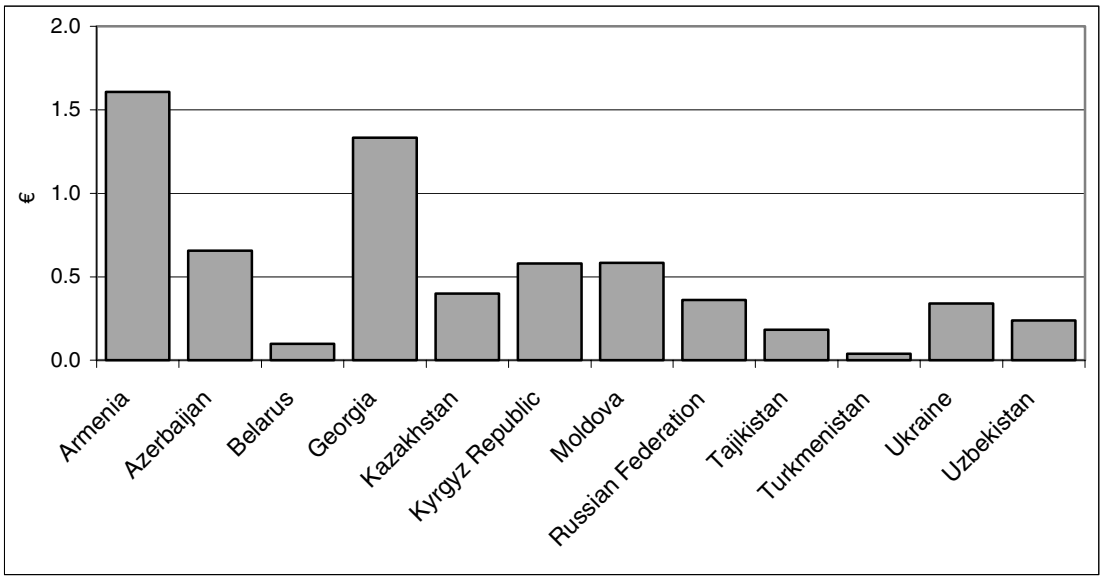
Table 5.1 Total Environmentally-Related Assistance by Recipient Country, 1996-2001, Thousand € of Commitments

	1996	1997	1998	1999	2000	2001	Total	average 1996-2001
Armenia	6 160	1 410	1 666	2 562	3 297	21 414	36 508	6 085
Azerbaijan	33	..	1 959	579	25 300	3 449	31 320	6 264
Belarus	1 338	1 495	372	541	811	1 436	5 993	999
Georgia	..	..	2 988	877	5 094	33 310	42 270	10 567
Kazakhstan	449	500	1 510	2 155	7 736	26 445	38 795	6 466
Kyrgyz Republic	962	2 804	342	1 153	4 055	7 404	16 720	2 787
Moldova	517	39	3 250	211	718	10 358	15 093	2 515
Russian Federation	31 993	57 929	32 725	65 417	58 519	70 208	316 792	52 799
Tajikistan	51 ..		27	1 206	4 042	1 219	6 546	1 309
Turkmenistan	386	434	21	144	68	23	1 077	179
Ukraine	6 546	9 487	22 964	13 505	19 888	29 327	101 717	16 953
Uzbekistan	1 639	449	18 474	7 360	1 895	4 896	34 714	5 786
EECCA Regional	26 376	34 710	41 561	34 343	30 614	27 761	195 364	32 561
CEE/EECCA Regional	3 686	1 572	14 053	11 785	12 048	10 703	53 847	8 975
Grand Total	80 137	110 829	141 910	141 840	174 085	247 954	896 756	149 459

Source: OECD CRS database, national data.
Notes:
Data for 2001 are preliminary.

86. Per capita, the Caucasus countries received most of commitments: Armenia, Georgia and Azerbaijan received the highest commitments on average per person per year, respectively €1.6, €1.3 and €0.7. Belarus and Turkmenistan received the least on per capita basis: only €0.1 and €0.04 respectively on average per year.

Figure 5.2 Total Environmentally-Related Assistance by Recipient Country per Capita, Average 1996-2001, €

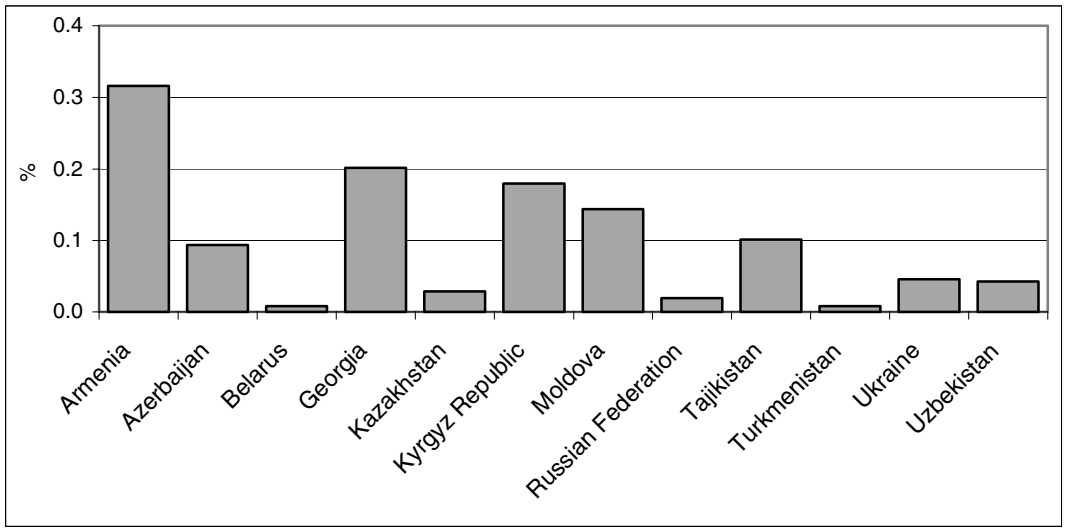


Source: OECD CRS database; national statistics.
Notes:
Data for 2001 are preliminary. Averages in this graph are not annual averages in the entire period, but averages only for the years in which the assistance was committed and reported

87. As a share of GDP environmentally related bilateral assistance contributes between 0.32% and 0.01% of GDP on average. Armenia ranks highest at 0.32% and Belarus and Turkmenistan lowest at 0.01%. The share of GDP is obviously highest for six of the seven low-income EECCA countries. The big, relatively higher income EECCA countries (Russia, Ukraine, Uzbekistan and Kazakhstan) all received very low levels ranging between 0.05% and 0.02% of GDP.

88. The low real term levels of assistance make it difficult to trace robust environmental assistance time trends for individual countries, except perhaps for Russia. A single-year increase – usually from an investment project can distort trends, as in the case of Ukraine in 1998, Uzbekistan in 1998, Azerbaijan in 2000 and Moldova in 2001.

Figure 5.3 Total Environmentally-Related Assistance to EECCA as a Share of GDP, Average 1996- 2001, %



Source: OECD CRS database; national statistics, IMF.
Note: Data for 2001 are preliminary. Averages in this graph are not annual averages in the entire period, but averages only for the years in which the assistance was committed and reported

89. There can be observed no general pattern for division of **donor's commitments to different media**. Water (supply and sanitation) seems to be the dominant focus and all countries except Turkmenistan have water as one of the three main areas of assistance. This focus also reflects the countries' own priority on water supply and wastewater. The second highest receiving area is waste. Finally, the last major area of support is environmental policy and management. In a few countries, such as Azerbaijan, Georgia and the Kyrgyz Republic, agriculture, fishery and forestry also receive high levels of assistance.

Table 5.2 Environmentally-Related ODA from Donors to EECCA by Media, 1996-2001, Percentage Share

		1996	1997	1998	1999	2000	2001
Armenia	Water	0	0	85	21	77	56
	Waste	100	0	0	0	0	0
	Agriculture	0	0	13	0	0	0
	Energy	0	0	0	0	0	25
	Env. Policy	0	0	1	35	0	19
	Others	0	100	2	44	22	0
Azerbaijan	Land Protection	0	..	0	62	0	0
	Water	0	..	73	3	60	10
	Agriculture	0	..	0	0	0	1
	Energy	0	..	0	0	15	82
	Env. Policy	100	..	26	34	26	6
Belarus	Nature protection	12	13	0	0	0	14
	Water	64	0	9	13	74	0
	Waste	0	70	42	2	0	0
	Agriculture	14	15	20	3	0	0
	Env. Policy	2	2	29	82	23	86
	Others	8	0	0	0	3	0
Georgia	Nature protection	..	..	85	0	0	12
	Water	..	..	0	0	9	17
	Waste	..	..	0	0	0	2
	Agriculture	..	..	0	0	0	3
	Energy	..	..	2	0	0	1
	Env. Policy	..	..	13	100	1	65
	Others	..	..	0	0	90	0
Kazakhstan	Water	0	0	85	35	66	0
	Waste	0	0	0	0	0	83
	Agriculture	0	0	1	0	6	0
	Energy	0	0	10	0	0	14
	Env. Policy	100	89	4	64	27	3
	Others	0	11	0	0	1	0
Kyrgyz Rep.	Land Protection	0	0	0	76	0	0
	Nature protection	0	0	0	0	14	0
	Water	0	0	13	0	6	87
	Agriculture	3	97	26	18	65	0
	Energy	0	0	0	0	0	2
	Env. Policy	7	0	61	0	14	1
	Others	90	3	0	6	0	10
Moldova	Land Protection	0	0	0	7	0	0
	Water	100	67	48	2	34	24
	Agriculture	0	0	3	0	4	0
	Energy	0	0	0	0	0	52
	Env. Policy	0	0	49	91	63	23
	Others	0	33	0	0	0	1
Russian Fed.	Biosphere protection	0	5	2	2	5	9
	Land Protection	1	1	2	1	1	0
	Nature protection	0	11	5	2	7	5
	Water	39	24	19	32	26	27
	Waste	3	6	2	4	1	9
	Agriculture	1	0	2	4	7	10
	Energy	0	1	3	2	7	4
	Env. Policy	16	10	40	34	23	23
	Others	41	42	25	20	24	12
Tajikistan	Nature protection	0	..	0	23	0	0
	Water	0	..	53	0	1	13
	Agriculture	0	..	10	0	0	0
	Energy	0	..	0	0	0	0
	Env. Policy	69	..	0	0	79	87
	Others	31	..	37	77	20	0
Turkmenistan	Nature protection	0	1	100	7	37	43
	Water	0	0	0	0	25	57
	Agriculture	0	0	0	0	38	0
	Env. Policy	100	99	0	93	0	0
Ukraine	Biosphere protection	1	0	8	5	4	0
	Water	18	64	47	26	19	9
	Waste	1	1	0	13	4	10
	Agriculture	1	0	3	0	0	3
	Energy	1	0	2	1	4	1
	Env. Policy	75	34	35	41	35	21
	Others	4	0	4	14	32	56
Uzbekistan	Biosphere protection	0	0	0	0	7	0
	Land Protection	0	1	0	0	1	0
	Water	51	0	99	99	82	4
	Waste	0	0	0	0	0	0
	Env. Policy	49	99	1	0	0	23
	Others	0	0	0	0	10	73

Source: OECD CRS database, national data.

Notes: Others includes commitments for projects which are either unspecified or related to urban and rural development. Projects dealing with air protection are mainly included in the categories energy and biosphere protection.

90. Environmentally related bilateral assistance accounts for 2.8–6.4% of all assistance to the region. For other regions, such as CEE, environmentally related assistance amounts to up to 10% of total assistance (REC 2003). Sandersley (2002) suggested that, on a global scale, environmentally related assistance accounts for up to 15% of total assistance. The European Commission is the largest donor, having committed 17.7% of total environmental assistance in the period 1996-2001. The United States and Denmark are the next biggest donors, providing 17.3% and 12.2% of total environmental commitments. Germany, United Kingdom, Sweden and Norway followed closely with 9.1–5.9%. These seven donors together provide 79% of all environmental assistance to the region. Other big donors to the region are Finland, Switzerland and France in that order.

Table 5.3 Total Commitments of Environmentally-Related Assistance by Donor, 1996-2001, Thousand €

	1996	1997	1998	1999	2000	2001	Total
Austria	0	0	0	871	0	0	871
Canada	1 409	2 807	482	151	3 633	3 361	11 843
Denmark	8 655	15 104	15 222	21 130	24 770	26 017	110 898
Finland	10 358	17 290	3 636	2 850	843	391	35 366
France	7 330	378	3 519	8 338	1 552	107	21 224
Germany	3 818	1 010	21 647	5 097	31 772	19 143	82 487
Italy	0	11	39	67	320	541	978
Netherlands	17	86	1 552	7	45	4 322	6 030
Norway	9 443	17 818	4 252	9 210	6 262	6 545	53 531
Spain	0	0	0	57	379	21 949	22 385
Sweden	316	1 601	14 430	25 208	5 845	22 591	69 991
Switzerland	28	2 960	1 290	3 941	20 139	4 237	32 596
United Kingdom	33	3 120	8 946	15 804	26 347	19 550	73 801
United States	11 043	13 567	16 898	11 927	16 248	86 529	156 211
UNDP	0	0	0	831	0	0	831
UNICEF	0	0	0	0	61	13	74
UNEP	0	656	664	697	884	812	3 714
EC TACIS	24 000	32 850	35 279	23 869	22 937	20 984	159 919
CEE/EECCA region all donors	3 686	1 572	14 053	11 785	12 048	10 703	53 847
Total environmental assistance to the region (thous. €)	80 137	110 829	141 910	141 840	174 085	247 796	896 598
Total ODA (million €)	2 900	2 709	3 871	3 800	3 808	..	17 087
Share of environmental component in total ODA	2.8	4.1	3.7	3.7	4.6	..	5.2

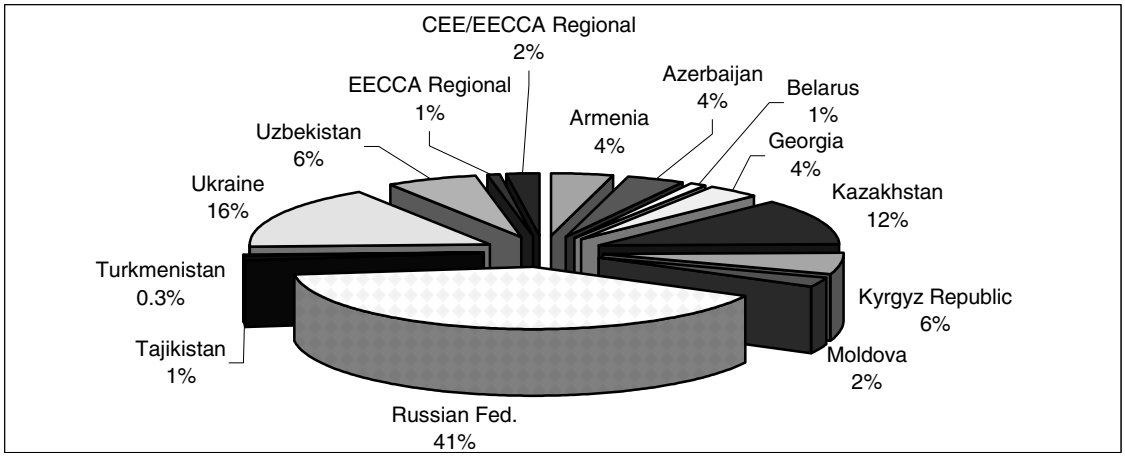
Source: OECD CRS database, national data.
Notes:
Data for 2001 are preliminary.

91. In general bilateral assistance to EECCA is very volatile from year to year. With some caution it could be stated that in the years 1996-2001 Denmark, Germany, United Kingdom and United Stated have increased their assistance. Norway, Sweden and Switzerland have either kept constant or slightly decreased their levels of assistance, and only Finland and France have decreased their levels of assistance to the region. The environmental assistance provided by the EC fluctuates enormously from year to year, which is most likely due to the fact that the European Union (EU) has no specific programmes focus on environment in the region except for its TACIS programme with Kazakhstan.

92. From the above review it seems that Belarus, Turkmenistan and Tajikistan have been the least successful in attracting donor assistance to environmental sector.

93. Environmental lending from **International Financing Institutions** (IFIs) was increasing until the 1998 financial crisis, and decreased thereafter to a third of the peak level (€367 million) in 1998. In 1999 lending was €127 million, increasing to €163 million in 2000 and €261 million in 2001. The main recipients were Russia, Ukraine and Kazakhstan, which together borrowed 69% of loans. Over 1996-2001, Russia borrowed over €531 million, Ukraine, €214, and Kazakhstan over €158. Other high borrowers included Uzbekistan (€81 million) and the Kyrgyz Republic (€74 million). Lower borrowers included Armenia, Azerbaijan, Georgia and Moldova, each at €56-32 million. Belarus and Tajikistan follow at €14-16, and finally Turkmenistan only borrowed €3 million in the six-year period.

Figure 5.4 Trends in IFIs Commitments of Environmentally-Related ODA/OA by Recipient, over the Period 1996-2001



Source: OECD CRDS database, IFIs reporting.
Note: Data refer to grants, loans, soft loans, equity, contingency financing, export credits from ADB, EIB, EBRD, NEFCO, NIB and WB.

94. As a share of GDP, IFI lending for environmentally related purposes represents between 0.02-0.8% of GDP. IFIs lending for the environment plays the largest role in the economy of the Kyrgyz Republic, which on average over six years borrowed up to 0.8% of GDP. The Kyrgyz Republic is followed by Moldova, where IFI lending accounted for 0.35% of GDP in this period. IFI environmental lending counted the least in the economies of Belarus and Russia (0.02% and 0.03% of average GDP respectively throughout the period). Kazakhstan and Ukraine fall in the lower end with 0.14 and 0.1% of GDP on average. As can be expected, IFI lending as a share of GDP is highest in the low-income EECCA countries.

Table 5.4 Commitments of Environmentally-Related ODA/OA by Recipient Country as a Share of GDP, 1996 –2001, %

	1996	1997	1998	1999	2000	2001	average 1996-2001
Armenia	..	..	0.69	0.53	..	1.48	0.49
Azerbaijan	..	0.14	0.20	0.31	0.43	..	0.19
Belarus	..	0.05	..	..	..	0.07	0.02
Georgia	..	0.01	0.08	0.58	0.28	0.60	0.25
Kazakhstan	0.17	0.26	0.04	0.03	0.15	0.14	0.14
Kyrgyz Republic	0.38	0.03	1.56	0.32	2.78	..	0.80
Moldova	0.18	1.30	0.24	0.00	0.01	..	0.35
Russian Federation	0.04	0.01	0.07	0.01	0.02	0.04	0.03
Tajikistan	0.11	..	..	0.46	0.97	..	0.24
Turkmenistan	..	0.15	..	..	..	..	0.02
Ukraine	0.01	0.17	0.21	0.10	0.02	0.05	0.10
Uzbekistan	..	0.01	0.47	0.00	0.00	0.13	0.10

Source: OECD CRDS database, IFIs reporting.
Note: Data refer to grants, loans, soft loans, equity, contingency financing, export credits from ADB, EIB, EBRD, NEFCO, NIB and WB.

95. There are no clear trends on distribution of IFI lending among different environmental media. The largest sums are associated with environmental components of non-environmental projects financed in power generation and agriculture - see Annex 1 for further detail.

6. FINDINGS AND RECOMMENDATIONS OF THE REPORT

96. This report has built on previous reports prepared for the Environment for Europe Conferences on financing trends in the CEE and EECCA regions. It has put additional emphasis on reporting environmentally related expenditure and on expanding the definition of the environmental activities to better reflect EECCA reporting and to cover international sources more extensively. Below are the main findings from Chapters 3, 4 and 5.

Methodology

97. It was the first time that many EECCA countries had participated in a **data collection survey** on environmentally related expenditures. Although most countries surveyed collect environmental expenditure information, for many of them it was the first time that information had been carefully scrutinised by external reviewers and compared with international standards. Throughout the process of preparing the report, many methodological, qualitative and coverage issues have been identified and have confirmed many of the previously identified problems encountered in stand-alone case studies.

98. The main areas for improvement of collection systems of domestic expenditures identified during the surveys are:

- To increase coverage and quality of data reported, to allow for better data for usage in policymaking and comparison context.
- To adhere as much as possible to international agreed systems of environment-economic accounting (PAC, SEEA and SERIEE) and gradually move towards reporting based on these standards.
- To improve clarity and classification by financier and abater principle, to allow for better analysis of financial flows in the environmental sector.
- To improve clarity and classification of ownership of enterprises, especially for publicly owned, environmentally related utility problems, as severe methodological issues exist.
- To improve classification problems between investment and current expenditure.
- To improve classification problems between environmental investments and other investments.
- To improve clarity of classification of expenditure by media, especially to allow for distinction between water supply and wastewater collection and treatment expenditure.
- To integrate public environmental administration and the waste sector into official data collection.

99. The main areas for improvement of international commitments data collection systems include:

- To improve the coverage of the project specific information to the international database (CRS database): only around 60% of total assistance is reported for ODA countries, although 83% is reported for OA countries in EECCA.
- To integrate the classification system for reporting assistance with environmental definitions in order to distinguish between environmental and environmentally related assistance.

100. The objective of this study was as much to identify problems with data quality and comparability, as to actually collect and analyse data. Therefore in addition to methodological analysis, every effort was made to ensure that on aggregated levels it provides a robust expenditure information basis for environmental policy analysis in EECCA. This study also identified problems with coverage, definitions and methodologies of collection and aggregation of data on international environmental assistance. Notwithstanding these problems, this report remains the most comprehensive and the most detailed source of factual information on the levels and trends of international assistance for environmental purposes in the EECCA countries.

Environmental Expenditure

101. As in most countries, domestic rather than international sources generally account for the largest share of total environmental expenditures in EECCA. Domestic sources accounted for 50% or less of total environmental expenditure in only three countries: the Kyrgyz Republic (28%), Armenia (33%) and Georgia (38%). At the other end of the spectrum, domestic sources accounted for between 1996 and 2001 for almost 89% of total environmental expenditure in Kazakhstan 90% in Ukraine, 93% in Turkmenistan and 97% in Russia.

102. Environmentally related expenditure in EECCA shows no clear trends over time in 1996-2001: generally expenditure increased in Armenia, Kazakhstan and the Kyrgyz Republic and decreased in Azerbaijan, Ukraine and Uzbekistan. Except in Russia (€4 464 million in 2000), Ukraine (€668 million in 2000) and Kazakhstan (€455 million in 2000) the size of the environmental market in other countries is still very small from €7 to 49 million per year. With such small levels of environmental expenditure, there may be sharp discontinuities in trends due to single major projects, both domestic and foreign. Both Ukraine and Kazakhstan business expenditure data, however, would require further investigation. If confirmed, the volume of environmentally related expenditure would be similar to some CEE countries, such as Romania and Hungary, and about half of that in Portugal.

103. As a share of GDP, environmentally related expenditure has either stayed constant or decreased in the period analyzed. The share of reported environmentally related expenditure in GDP varies significantly among countries, from 0.4% in Azerbaijan to 2.4% of GDP in Moldova (2000) and 3.1% of GDP in Kazakhstan in 2001. Except at the low end of this spectrum most EECCA countries seem to devote an almost equal share of their incomes to environmentally related expenditure as CEE and EU countries. Even taking into account possible overestimates of some reported expenditure analysed in the report, it seems that most EECCA countries are almost as committed to improving environmental and water supply quality than is commonly thought. It is the low ability to pay because of low income, rather than low willingness that seems to be the binding constraint to higher environmentally related expenditure. This hypothesis, however, needs to be carefully verified by addressing the identified methodological problems with data classification and collection.

104. Usually, current expenditure is the most important component of environmentally related expenditure. However, capital expenditures appear to be more important in Armenia (70% of total environmentally related expenditure), and Kazakhstan, which has reported only investment expenditures. In Armenia, it can be explained by some large investment projects in the water supply sector and in protection of the water table level of Lake Sevan. In Kazakhstan, it may be a reporting problem.

105. In most countries, water supply and sanitation accounts for the largest share of environmentally related expenditure - typically 50-85%. Air accounts for the second largest share – above 11%. Kazakhstan appears to be an exception as air-related expenditure accounts for 64% of the total. However, for some countries it is uncertain whether they have reported water supply expenditure.

106. In EECCA countries environmentally related investments contribute to between 0.1% and 3% of total investments in the economy, lower than transition economies in CEE but comparable with some EU countries (e.g. Portugal). Only in Kazakhstan, environmental investments provide a significant contribution to gross fixed capital investment, although Kazakh data should be studied more carefully.

107. Overall, preliminary empirical data analysis seems to indicate that environmental and water supply expenditures in many (though not all) EECCA countries account for a nontrivial portion of GDP. Absolute values are trivial, however, because incomes of EECCA countries are very low. In addition, the bulk of financial resources seems to be used for current expenditure, rather than for capital spending.

External Sources of Financing

108. Commitments of environmental assistance from donors to EECCA countries have increased absolutely and as a share of total ODA/OA in 1996-2001. However, environmental assistance represents a significantly smaller share of total assistance to EECCA countries then to other regions. This suggests that there is scope on the supply side to increase the level of environmental assistance. However, increased supply is also linked to demand, and hitherto demand for environmental assistance from EECCA countries has been week. For example, Kazakhstan is the only country that has prioritised environment within the TACIS programme.

109. The European Commission has been the single largest donor of environmental assistance to the EECCA region in the period 1996-2000, accounting for about 17.8% of the total. In 2001, the EC provided €21 million in environmentally-related assistance to EECCA region, and the United States (17.4%) and Denmark (12.4%) have also been major donors. These three, together with Germany, UK, Sweden, Norway, Finland, Switzerland and France account for about 79% of environmentally related assistance.

110. Russia and Ukraine have been the largest recipients of environmentally related assistance, together accounting for more than two thirds of the total. From 1996-2001, Russia received €317 million, and Ukraine, €102 million. Uzbekistan, Kazakhstan, Georgia, Azerbaijan and Armenia each received between €31-43m in the same period. Per capita the Caucasus countries (Armenia, Georgia and Azerbaijan) received the highest commitments respectively €1.6, €1.3 and €0.7 on average per person per year. Belarus and Turkmenistan received the least on per capita basis: only €0.1 and €0.04 respectively on average per year in the analysed period. As a share of GDP, Armenia ranks highest at 0.33% and Belarus and Turkmenistan lowest at 0.01%. The share of GDP is obviously highest for six of the seven low-income EECCA countries. The big, relatively higher income EECCA countries (Russia, Ukraine, Uzbekistan and Kazakhstan) all received very low levels ranging between 0.05% and 0.02% of GDP. Belarus, Turkmenistan and Tajikistan have been the least successful in attracting donor assistance to environmental sector.

111. Development loans for environmentally related purposes increased from 1996-98, collapsed after the 1998 financial crises and began to recover afterwards. The overall volume of committed lending in 2001 (€261 million) was still less than 70% of the peak level of commitments in 1998 (€375 million). Russia, Ukraine and Kazakhstan accounted for more than two thirds of environmentally related loans. Loans for the low-income EECCA countries can entail a significant debt burden.

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Annex 1:
Table 1. Total Environmentally-Related Expenditure as a Share of GDP, 1996-2001

	1996	1997	1998	1999	2000	2001
Armenia	0.4	0.4	0.4	0.5	0.6	0.2
Azerbaijan	0.8	0.5	0.5	0.4	0.3	0.3
Georgia	..	..	..	..	..	1.0
Kazakhstan	*0.9*	*0.9*	*1.5*	*1.8*	2.3	1.8
Kyrgyz Republic	0.3	0.4	0.4	0.7	0.4	..
Moldova	2.9	2.8	3.0	3.1	2.4	3.1
Russian Fed.	2.5	2.2	2.3	1.6	1.6	1.5
Turkmenistan	0.5	0.5	0.5	0.4	0.5	0.3
Ukraine	0.5	0.4	2.2	2.1	1.9	1.9
Uzbekistan	1.3	1.8	1.7	1.4	0.7	..
Bulgaria	1.7	1.6	2.1	2.8	2.6	..
Hungary	..	..	..	..	..	1.8
Lithuania	1.2	1.4	2.2	2.2	1.8	..
Romania	1.7	2.8	2.9	3.4	2.7	..
Germany	2.0	2.0	2.3	2.2	..	..
Portugal	1.2	1.2	1.2	1.7	1.8	..

Source: Eurostat, IMF, national statistics, OECD.
Notes:
Data should be compared with care, as definitions and sectors coverage vary across countries. To enhance comparisons, data on water supply expenditure of the industry sector have been included in total environmental protection expenditure of OECD and CEE countries.
ARM) Preliminary data for 2001, partial current expenditure only.
AZR) Data refer to the public sector only.
KAZ) Investments only. Break in time series: 1996-1999 data are national estimates. See methodological notes.
TUR) Data refer to the public sector only and exclude expenditure for natural resources management.
UKR) Excludes natural resources management expenditure.
UZB) Excludes water resources management expenditure.
HUN) Excludes water supply expenditure.
LIT) 1996: public sector only. Data from specialised producers of environmetnal services are included from 1998 onward.
ROM) 2000: Break in time series.
GER) Excludes expenditure of specialised producers of environmental services and integrated investments in industry,
POR) 1999-2000: excludes expenditure of specialised producers of environmental services

Table 2. Environmentally-Related Expenditure by Type of Expenditure, 1996-2001, Million €, 2000 €

	1996	1997	1998	1999	2000	2001
Armenia	**5**	**6**	**7**	**12**	**12**	**4**
Current	1.4	1.6	2.1	5.0	4.7	3.7
Investment	3.7	4.1	4.9	6.8	7.0	..
Azerbaijan	**34**	**22**	**22**	**20**	**20**	**19**
Current	27.9	17.9	16.0	17.8	17.1	16.8
Investment	6.1	3.7	5.8	2.1	2.5	2.5
Georgia	**..**	**..**	**..**	**..**	**..**	**34**
Current	..	..	..	..	..	28.7
Investment	..	..	..	..	..	5.3
Kazakhstan	**..**	**..**	**..**	**..**	**..**	**..**
Investment	166	159	270	326	455	365
Kyrgyz Republic	**4**	**5**	**5**	**9**	**7**	**..**
Current	2.3	3.3	3.2	6.5	4.8	..
Investment	1.3	1.3	1.7	2.9	1.8	..
Moldova	**43**	**42**	**41**	**42**	**33**	**50**
Current	39.8	36.9	38.9	40.1	31.8	38.1
Investment	2.7	4.6	2.3	2.3	1.3	11.9
Russian Fed.	**6 454**	**5 863**	**5 508**	**4 236**	**4 464**	**4 536**
Current	4 819	4 470	4 134	3 280	3 277	3 257
Investment	1 635	1 393	1 374	956	1 187	1 279
Turkmenistan	**11**	**14**	**13**	**9**	**15**	**11**
Current	5.2	7.4	7.9	4.3	7.3	6.7
Investment	2.9	3.8	2.9	3.8	7.5	4.6
Ukraine	**159**	**123**	**702**	**688**	**668**	**698**
Current	25.1	36.3	580.6	574.0	538.9	544.6
Investment	134.1	86.5	121.9	113.8	129.0	153.2
Uzbekistan	**80**	**119**	**114**	**102**	**49**	**..**
Current	49.7	99.0	45.7	63.6	34.7	..
Investment	30.7	20.1	68.3	38.5	14.1	..

Source: National statistics.

Notes:

ARM) Current expenditure data include total expenditure for natural resources management.

AZR) Data refer to the public sector only. Current expenditure data include total expenditure of environmental funds.

TUR) Current euros. Data refer to public sector only. Excludes expenditure for natural resources management.

UKR) Excludes expenditure for water and other natural resources management.

UZB) Excludes expenditure for water resources management.

Table 3. Environmentally-Related Expenditure by Type of Expenditure, 1996-2001

Million €, 2000 €

	1996	1997	1998	1999	2000	2001
Armenia	**5.1**	**5.7**	**7.0**	**11.8**	**11.6**	**3.7**
Air	*0.4*	*0.2*	*0.3*	*0.2*	*0.4*	*0.0*
Water	*2.8*	*2.2*	*3.8*	*5.2*	*5.9*	*0.3*
Waste	*0.5*	*1.8*	*0.9*	*1.8*	*1.2*	*0.0*
Water management	*0.0*	*0.0*	*0.0*	*2.9*	*2.2*	*1.3*
Other natural resources management	*1.0*	*1.0*	*1.4*	*1.1*	*1.6*	*1.5*
Other	*0.4*	*0.6*	*0.7*	*0.6*	*0.4*	*0.5*
Azerbaijan	**34.0**	**21.7**	**21.8**	**19.9**	**19.6**	**19.4**
Air	*16.1*	*5.6*	*1.9*	*1.9*	*2.3*	*2.2*
Water	*12.4*	*10.6*	*16.1*	*13.8*	*13.4*	*12.9*
Waste	*0.5*	*1.1*	*0.5*	*0.3*	*0.3*	*0.3*
Water management	*0.3*	*0.3*	*0.4*	*0.8*	*0.7*	*0.9*
Other natural resources management	*1.9*	*1.7*	*1.2*	*1.8*	*1.9*	*2.0*
Other	*2.8*	*2.4*	*1.7*	*1.4*	*1.0*	*1.1*
Georgia	..	..	..	..	..	**33.9**
Air	..	..	..	..	..	*0.7*
Water	..	..	..	..	..	*4.2*
Waste	..	..	..	..	..	*0.6*
Water management	..	..	..	..	..	*26.4*
Other natural resources management	..	..	..	..	..	*0.2*
Other	..	..	..	..	..	*1.7*
Kazakhstan	..	..	..	..	**454.6**	**365.5**
Air	..	..	..	..	*291.7*	*161.7*
Waste & land protection	..	..	..	..	*72.8*	*67.5*
Water	..	..	..	..	*75.9*	*83.0*
Other	..	..	..	..	*14.3*	*53.3*
Kyrgyzstan	**3.6**	**4.6**	**4.8**	**9.3**	**6.5**	..
Air	*0.5*	*0.9*	*0.6*	*0.5*	*0.7*	..
Waste & land protection	*1.2*	*1.0*	*2.0*	*3.9*	*3.1*	..
Water	*1.9*	*2.7*	*2.2*	*5.0*	*2.6*	..
Moldova	**42.5**	**41.5**	**41.2**	**42.4**	**33.0**	**49.9**
Air	*0.9*	*0.8*	*0.8*	*0.6*	*0.8*	*0.8*
Water	*9.0*	*9.4*	*8.0*	*7.4*	*5.9*	*6.1*
Waste	*0.5*	*0.4*	*0.3*	*0.3*	*0.3*	*0.3*
Water management	*24.7*	*24.1*	*26.7*	*29.4*	*20.9*	*37.3*
Other natural resources management	*5.9*	*5.0*	*4.3*	*3.9*	*4.2*	*4.6*
Other	*1.5*	*2.0*	*1.1*	*0.8*	*0.9*	*0.9*
Russian Fed.	**5 800**	**5 364**	**4 948**	**3 893**	**4 136**	**4 162**
Air	*1368.6*	*1173.1*	*811.5*	*808.0*	*977.6*	*846.6*
Water	*3321.8*	*3107.6*	*3018.9*	*2196.5*	*2154.4*	*2218.2*
Soil	*259.2*	*211.6*	*179.9*	*125.9*	*203.4*	*225.7*
Waste	*419.7*	*434.3*	*504.4*	*403.1*	*443.1*	*493.5*
Natural resources manag.	*371.3*	*413.5*	*402.9*	*336.8*	*335.1*	*348.3*
Other	*59.6*	*24.2*	*30.8*	*22.7*	*22.6*	*29.5*
Turkmenistan	**8.1**	**11.2**	**10.8**	**8.1**	**14.9**	**11.6**
Air	*2.0*	*1.5*	*1.6*	*1.4*	*5.3*	*1.2*
Land	*0.4*	*1.5*	*0.7*	*0.4*	*1.0*	*1.1*
Water	*3.9*	*6.4*	*6.3*	*5.1*	*6.4*	*7.0*
Waste	*0.1*	*0.1*	*0.2*	*0.2*	*0.2*	*0.3*
Natural resources management	*1.4*	*1.5*	*1.8*	*0.7*	*1.5*	*1.7*
Other	*116.0*	*100.2*	*579.3*	*595.7*	*667.9*	*719.9*
Ukraine	**159.3**	**122.8**	**702.5**	**687.8**	**667.9**	**697.8**
Air	*0.2*	*0.6*	*0.3*	*0.4*	*0.2*	*0.0*
Water	*81.8*	*51.5*	*423.7*	*411.9*	*410.9*	*44.2*
Waste	*9.2*	*4.2*	*61.4*	*65.4*	*59.0*	*5.9*
Other	*80.4*	*119.0*	*114.0*	*102.1*	*48.8*	*0.0*
Uzbekistan	**80.4**	**119.0**	**114.0**	**102.1**	**48.8**	..
Air	*23.5*	*28.6*	*68.0*	*29.5*	*12.8*	..
Water	*46.1*	*41.1*	*37.4*	*61.6*	*28.1*	..
Waste	*2.6*	*47.5*	*3.9*	*3.2*	*3.3*	..
Natural resources management	*2.1*	*0.3*	*1.6*	*3.1*	*0.9*	..
Other	*6.1*	*1.5*	*3.2*	*4.7*	*3.7*	..

Source: National statistics.

Notes:

AZR) Data refer to the public sector only.

KAZ) Investment expenditure only.

KAZ; KYR; TUR) Data for waste include expenditure for land protection.

UKR) Other includes expenditure for administration, monitoring, education and emergency intervention.

UZB) Other includes nature protection expenditure.

Table 4. Total Environmentally-Related Expenditure, 1996-2000, $ per Capita at 2000 Prices and PPPs [a]

	1996	1997	1998	1999	2000	average 1996-2000
Armenia	6.2	7.0	8.6	14.4	14.2	10.1
Azerbaijan	18.4	11.6	11.6	10.5	10.2	12.5
Georgia	..	..	..	..	*25.9*	..
Kazakhstan	44.1	42.5	72.7	88.3	123.9	74.3
Kyrgyz Republic	7.2	9.1	9.2	17.8	12.1	11.1
Moldova	64.9	63.4	63.0	65.0	50.7	61.4
Russian Federation	192.2	175.1	165.1	127.5	135.0	159.0
Turkmenistan	11.9	14.3	13.4	9.3	14.5	12.7
Ukraine	16.9	13.1	75.7	74.7	73.2	50.7
Uzbekistan	14.5	21.1	19.9	17.5	8.2	16.3
Bulgaria	82.2	72.2	100.2	140.4	135.6	106.1
Hungary	..	..	..	..	*214.0*	..
Lithuania	80.5	101.7	167.8	162.1	140.5	130.5
Romania	103.2	162.4	158.3	183.3	149.6	151.4
Germany	457.1	471.1	562.0	543.5	..	508.4
Portugal	191.2	195.0	192.9	297.7	322.4	239.8

Source: Eurostat, national statistics, OECD, WB.

Notes: Some countries did not provide data for natural resources management expenditure, water supply expenditure may be included in WWT expenditure. For more detailed explanations concerning definitions and data coverage, see methodological sections.

a) Converted to international dollars using purchasing power parity rates (PPPs), defined as the number of units of a given country's currency required to buy the same amount of goods and services in the domestic market as one $ would buy in the United States. Estimates based on WB data.

ARM) 2001: Preliminary data, including current expenditure only.

AZR) Data refer to the public sector only.

GEO) 2001 data.

KAZ) 1996-99 data are national estimates for investments expenditure. Excludes expenditure for natural resources management.

TUR) Current €. Data refer to the public sector only.

UKR) Excludes expenditure for natural resources management.

UZB) Excludes expenditure for water management.

HUN) 2001 data, excluding expenditure for water supply.

LIT) 1996: Public sector only. Data from specialised producers of environmental protection are included from 1998 onward.

ROM) 2000: Break in time series due to change in data collection system.

GER) Excluding private specialised producers of environmental services and integrated investments in industry.

POR) 1999--2000: Excluding specialised producers of environmental services.

Table 5. Environmentally-Related Expenditure in the Public and Business Sector, 1996-2001, Million 2000 €

	1996	1997	1998	1999	2000	2001
Armenia	**5.1**	**5.7**	**7.0**	**11.8**	**11.6**	**3.7**
Public sector	1.5	3.3	3.5	9.2	8.5	2.4
Business sector	3.6	2.4	3.6	2.6	3.2	1.3
Azerbaijan	**34.0**	**21.7**	**21.8**	**19.9**	**19.6**	**19.4**
Public sector	33.9	21.5	21.6	19.7	19.4	19.3
Environmental funds	0.1	0.1	0.2	0.2	0.2	0.1
Moldova	**42.5**	**41.5**	**41.3**	**42.9**	**33.4**	**49.9**
Public sector	32.4	31.4	32.3	34.3	26.0	40.3
Environmental funds	0.0	0.0	0.0	0.4	0.4	5.4
Business sector	10.1	10.2	9.0	8.3	7.0	4.2
Georgia	**..**	**..**	**..**	**..**	**..**	**33.9**
Public sector	..	..	..	..	..	32.2
Business sector	..	..	..	..	..	1.7
Kazakhstan	**0.0**	**0.0**	**0.0**	**0.0**	**455.2**	**365.9**
Public sector	..	..	..	..	21.1	30.2
Business sector	..	..	..	..	434.0	335.7
Kyrgyz Republic	**3.6**	**4.6**	**4.9**	**9.3**	**6.7**	..
Public sector	3.5	4.2	4.2	8.1	6.3	0.0
Environmental funds	0.0	0.0	0.3	0.0	0.4	0.0
Business sector	0.2	0.4	0.4	1.2	0.0	0.0
Turkmenistan	**8.1**	**11.2**	**10.8**	**8.1**	**14.9**	**11.6**
Public sector	8.1	11.2	10.8	8.1	14.8	11.6
Environmental funds	0.0	0.0	0.0	0.0	0.0	0.1
Ukraine	**159.3**	**122.8**	**702.5**	**687.8**	**667.9**	**697.8**
Public sector	15.8	17.4	52.1	21.3	18.9	19.2
Environmental funds	9.8	19.0	16.7	12.8	17.9	32.1
All sources (investment	121.4	85.3	74.0	62.8	74.1	82.7
Business sector	12.3	1.2	559.7	591.0	556.9	549.1
Uzbekistan	**80.4**	**119.0**	**114.0**	**102.1**	**48.8**	..
Public sector	75.7	118.4	112.7	98.3	48.7	..
Env. funds	0.3	0.2	0.2	0.2	0.1	..
Business sector	4.4	0.4	1.1	3.6	0.0	..

Source: National statistics.

Notes: Some countries did not provide data for natural resources management expenditure, water supply expenditure may be included in WWT expenditure. For more detailed explanations concerning definitions and data coverage, see methodological sections.

ARM) 2001: Preliminary data, including current expenditure only.

KAZ) Data refer to investments only and exclude expenditure for natural resources management.

TUR) Current €. Excludes expenditure for natural resources management.

UKR) Excludes expenditure for natural resources management.

UZB) Excludes expenditure for water management.

Table 6. Environmental Investment as a Share of GFCF, 1996-2000

	1996	1997	1998	1999	2000
Armenia	1.3	1.4	1.4	1.9	1.9
Azerbaijan	0.5	0.3	0.3	0.1	0.1
Kazakhstan	5.4	5.4	9.8	11.2	13.5
Kyrgyz Republic	0.6	0.6	0.9	1.6	0.6
Moldova	0.1	0.7	0.1	0.1	0.0
Russian Fed.	3.0	2.7	3.2	2.6	2.7
Turkmenistan	..	0.5	0.3	0.4	0.6
Ukraine	1.9	1.3	1.9	1.8	2.0
Uzbekistan	1.3	0.9	3.4	1.9	0.8
Bulgaria	6.9	8.1	9.3	12.6	10.3
Hungary	..	1.7	3.0	..	..
Lithuania	4.0	3.5	5.1	4.1	3.8
Romania	2.4	3.1	4.0	8.1	5.3
Germany	3.2	2.9	3.7	3.1	..
Portugal	2.4	2.1	2.0	3.0	3.2

Source: Eurostat, national statistics, OECD.
Notes:
Data should be compared with caution as definitions vary across countries.
Data for OECD and CEE countries do not include investment expenditure for water and other natural resources management activities.

Table 7. Total Environmentally-Related Commitments to EECCA per Capita, 1996-2001, €

	1996	1997	1998	1999	2000	2001	*average 1996-2001*
Armenia	1.6	0.4	0.4	0.7	0.9	5.7	*1.6*
Azerbaijan	0.0	0.0	0.2	0.1	3.1	0.4	*0.7*
Belarus	0.1	0.1	0.0	0.1	0.1	0.1	*0.1*
Georgia	0.0	0.0	0.6	0.2	1.0	6.4	*1.3*
Kazakhstan	0.0	0.0	0.1	0.1	0.5	1.6	*0.4*
Kyrgyz Republic	0.2	0.6	0.1	0.2	0.8	1.5	*0.6*
Moldova	0.1	0.0	0.8	0.0	0.2	2.4	*0.6*
Russian Federation	0.2	0.4	0.2	0.4	0.4	0.5	*0.4*
Tajikistan	0.0	0.0	0.0	0.2	0.7	0.2	*0.2*
Turkmenistan	0.1	0.1	0.0	0.0	0.0	0.0	*0.0*
Ukraine	0.1	0.2	0.5	0.3	0.4	0.6	*0.3*
Uzbekistan	0.1	0.0	0.8	0.3	0.1	0.2	*0.2*
EECCA Regional	0.1	0.1	0.1	0.1	0.1	0.1	*0.1*
CEE/EECCA Regiona	0.0	0.0	0.0	0.0	0.0	0.0	*0.0*

Source: OECD CRS database, FAO.

Table 8. Total Environmentally-Related Commitments to EECCA as a Share of GDP, 1996- 2001, %

	1996	1997	1998	1999	2000	2001	average 1996-2001
Armenia	0.49	0.10	0.10	0.15	0.16	0.90	0.32
Azerbaijan	0.00	0.00	0.05	0.01	0.44	0.05	0.09
Belarus	0.01	0.01	0.00	0.00	0.01	0.01	0.01
Georgia	0.00	0.00	0.09	0.03	0.15	0.93	0.20
Kazakhstan	0.00	0.00	0.01	0.01	0.04	0.11	0.03
Kyrgyz Republic	0.07	0.18	0.02	0.10	0.27	0.43	0.18
Moldova	0.03	0.00	0.19	0.02	0.05	0.58	0.14
Russian Federation	0.01	0.02	0.01	0.04	0.02	0.02	0.02
Tajikistan	0.01	0.00	0.00	0.12	0.38	0.10	0.10
Turkmenistan	0.02	0.02	0.00	0.01	0.00	0.00	0.01
Ukraine	0.02	0.02	0.06	0.05	0.06	0.07	0.05
Uzbekistan	0.01	0.00	0.14	0.05	0.01	0.04	0.04
EECCA Regional	0.01	0.01	0.00	0.00	0.01	0.01	0.01
CEE/EECCA Regional	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: OECD CRS database, IMF.

Table 9. Total Environmentally-Related ODA Commitments to EECCA by Media, 1996-2001, 1000 €

		1996	1997	1998	1999	2000	2001
Armenia	Water	0	0	1 415	541	2 550	11 899
	Waste	6 160	0	0	0	0	0
	Agriculture	0	0	212	0	0	84
	Energy	0	0	0	0	0	5 365
	Env. Policy	0	0	10	898	10	4 019
	Others	0	1 410	29	1 123	737	47
	Total	6 160	1 410	1 666	2 562	3 297	21 414
Azerbaijan	Land Protection	0	0	0	362	5	10
	Water	0	0	1 437	19	15 062	335
	Agriculture	0	0	4	0	0	51
	Energy	0	0	0	0	3 674	2 851
	Env. Policy	33	0	518	199	6 558	202
	Total	33	0	1 959	579	25 300	3 449
Belarus	Land Protection	164	191	0	0	0	197
	Water	858	0	32	72	600	0
	Waste	0	1 045	158	9	0	0
	Agriculture	184	229	74	19	0	0
	Env. Policy	23	23	107	441	183	1 239
	Others	109	7	1	0	27	0
	Total	1 338	1 495	372	541	811	1 436
Georgia	Nature protection	0	0	2 536	0	0	4 052
	Water	0	0	0	0	449	5 607
	Waste	0	0	0	0	0	502
	Agriculture	0	0	0	0	0	1 076
	Energy	0	0	46	0	0	359
	Env. Policy	0	0	399	877	56	21 553
	Others	0	0	6	0	4 589	161
	Total	0	0	2 988	877	5 094	33 310
Kazakhstan	Water	0	0	1 290	761	5 109	82
	Waste	0	0	0	0	0	21 949
	Agriculture	0	0	8	7	458	0
	Energy	0	0	150	0	1	3 601
	Env. Policy	449	446	56	1 386	2 078	777
	Others	0	54	6	0	90	36
	Total	449	500	1 510	2 155	7 736	26 445
Kyrgyz Rep.	Land Protection	0	0	0	871	0	0
	Nature protection	0	0	0	0	577	0
	Water	0	0	43	0	256	6 432
	Agriculture	28	2 719	89	204	2 655	0
	Energy	0	0	0	0	0	156
	Env. Policy	65	0	210	6	567	49
	Others	869	86	0	72	0	767
	Total	962	2 804	342	1 153	4 055	7 404
Moldova	Land Protection	0	0	0	14	0	0
	Water	517	26	1 549	5	242	2 448
	Agriculture	0	0	87	0	26	19
	Energy	0	0	0	0	0	5 356
	Env. Policy	0	0	1 598	192	450	2 385
	Others	0	13	15	0	0	150
	Total	517	39	3 250	211	718	10 358
Russian Fed.	Biosphere protect	0	2 943	614	1 247	3 135	6 600
	Land Protection	197	304	681	818	452	0
	Nature protection	0	6 377	1 603	1 092	3 943	3 612
	Water	12 326	14 158	6 274	20 809	15 330	18 923
	Waste	835	3 376	530	2 639	508	6 529
	Agriculture	194	170	623	2 327	3 961	7 219
	Energy	0	409	1 066	1 477	3 881	2 591
	Env. Policy	5 204	5 835	13 242	21 989	13 167	16 220
	Others	13 238	24 357	8 094	13 019	14 142	8 514
		31 993	57 929	32 725	65 417	58 519	70 208
Tajikistan	Nature protection	0	0	0	277	0	0
	Water	0	0	14	0	43	159
	Agriculture	0	0	3	0	0	0
	Energy	0	0	0	0	0	0
	Env. Policy	35	0	0	0	3 206	1 061
	Others	16	0	10	929	793	0
	Total	51	0	27	1 206	4 042	1 219
Turkmenistan	Nature protection	0	3	21	10	25	10
	Water	0	0	0	0	17	13
	Agriculture	0	0	0	0	26	0
	Env. Policy	386	431	0	134	0	0
	Total	386	434	21	144	68	23
Ukraine	Biosphere protect	65	0	1 931	725	885	0
	Water	1 165	6 109	10 694	3 476	3 800	2 578
	Waste	66	121	0	1 712	892	2 881
	Agriculture	64	0	747	0	24	990
	Energy	56	0	533	175	872	256
	Env. Policy	4 882	3 249	8 110	5 482	7 008	6 246
	Others	249	8	948	1 935	6 408	16 327
	Total	6 546	9 487	22 964	13 505	19 888	29 278
Uzbekistan	Biosphere protect	0	0	0	0	128	0
	Land Protection	0	3	8	37	15	0
	Water	832	0	18 298	7 313	1 561	182
	Waste	0	0	21	0	8	0
	Env. Policy	807	446	147	0	0	1 116
	Others	0	0	0	11	184	3 598
	Total	1 639	449	18 474	7 360	1 895	4 896

Source: OECD CRS database, national data.

Notes: Others include commitments for projects which are either unspecified or related to urban and rural development. Projects dealing with air protection are mainly included in the categories energy and biosphere protection.

Table 10. Total Environmentally-Related Commitments from IFIs to EECCA, 1996-2001, Million €

	1996	1997	1998	1999	2000	2001	Total
ADB	0	1	0	1	2	1	5
ADB Special Fund	0	0	9	0	0	0	9
EBRD	0	57	102	50	30	22	260
IFAD	0	0	0	0	18	0	18
NEFCO	2	7	1	2	14	9	35
NIB	0	0	8	0	0	49	57
WB	179	144	252	54	99	178	907
All IFIs to CEE/EECCA	0	5	3	20	0	2	30
Total	182	213	375	127	164	261	1 321

Source: OECD/CRS database, IFIs reporting.
Notes: Data refer to grants, loans, soft loans, equity, contingency financing, export credits.
Includes data from ADB, EIB, EBRD, NEFCO, NIB and WB.

Table 11. Total Environmentally-Related Commitments from IFIs to EECCA by Recipient, 1996-2001, 1000 €

	1996	1997	1998	1999	2000	2001	Total 1996-2001	% of GDP, average 1996-2001
Armenia			11 691	9 106		35 056	55 853	0.5
Azerbaijan		4 808	8 032	13 498	24 780		51 118	0.2
Belarus		6 089				8 326	14 415	0.0
Georgia		346	2 425	15 348	9 330	21 486	48 935	0.2
Kazakhstan	28 440	51 003	8 749	4 552	28 970	36 055	157 768	0.1
Kyrgyz Republic	5 493	528	22 612	3 750	41 131		73 513	0.8
Moldova	2 648	25 176	4 115	40	220		32 198	0.4
Russia	139 279	38 037	167 940	20 865	43 130	121 418	530 668	0.0
Tajikistan	867			4 692	10 411		15 969	0.2
Turkmenistan		3 476					3 476	0.0
Ukraine	5 007	76 778	77 833	30 222	5 088	19 413	214 340	0.1
Uzbekistan		1 728	62 429	48	148	16 825	81 177	0.1
EECCA Regional			6 097	4 498	271		10 865	0.0
CEE/EECCA Regional	32	5 046	2 972	20 071	76	2 263	30 462	0.0
Total	181 764	213 013	374 895	126 688	163 555	260 842	1 320 757	..

Source: OECD/CRS database, IFIs reporting.
Notes: Data refer to grants, loans, soft loans, equity, contingency financing, export credits.
Includes data from ADB, EIB, EBRD, NEFCO, NIB and WB.

Table 12. Total Environmentally-Related IFIs Commitments to EECCA by Recipient, 1996-2001, 1000€

		1996	1997	1998	1999	2000	2001	Total 1996-2001
Armenia	Env. policy			7 140				7 140
	Water supply & WWT			4 552				4 552
	Agriculture				7 231		27 799	32 614
	Env. component of non-environmental projects				1 875		7 257	9 132
Armenia Total				11 691	9 106		35 056	55 853
Azerbaijan	Water supply & WWT		8	8 032				8 041
	Energy					40		40
	Agriculture					24 740		34 481
	Env. component of non-environmental projects		4 799		6 468			11 267
	Site preservation				7 030			7 030
Azerbaijan Total			4 808	8 032	13 498	24 780		60 859
Belarus	Energy						8 326	8 326
	Env. research		6 089					6 089
Belarus Total			6 089				8 326	14 415
Georgia	Biodiversity						6 508	6 508
	Env. policy				4 755			4 755
	Water resources & admin. manag.			2 425				2 425
	Agriculture					8 658	8 742	17 400
	Env. component of non-environmental projects		346		10 592	672	6 236	17 847
Georgia Total			346	2 425	15 348	9 330	21 486	48 935
Kazakhstan	Env. policy				656			656
	Water resources & admin. manag.	79		8 749				8 828
	Water supply & WWT				3 867	28 929	50	32 767
	Energy				29	41		70
	Agriculture	28 361					36 005	64 366
	Env. component of non-environmental projects		51 003					51 003
Kazakhstan Total		28 440	51 003	8 749	4 552	28 970	36 055	157 689
Kyrgyz Rep. Tot	Env. policy		528			703		1 231
	Power generation	3 939		3 347				7 286
	Water supply & WWT					16 234		16 234
	Flood prevention/control				3 750			3 750
	Agriculture			19 266		21 645		40 911
	Env. component of non-environmental projects	1 554				2 549		4 102
Kyrgyz Rep. Total		5 493	528	22 612	3 750	41 131		73 513
Moldova	Biodiversity							
	Water supply & WWT	48	25 176			220		25 444
	Power generation				40			40
	Env. component of non-environmental projects	2 600		4 115				6 715
Moldova Total		2 648	25 176	4 115	40	220		32 198
Russian Fed.	Biodiversity	8 867						8 867
	Env. policy	2 423	6 748	909	1 509	13 862	9 244	34 695
	Water supply & WWT	10	31 289	67 075	19 356	47	65 837	183 614
	Energy	40 178					12 337	52 515
	Env. research	84 452						84 452
	Agriculture					29 221		29 221
	Env. component of non-environmental projects	3 348		99 955				103 304
	Others						34 000	34 000
Russian Fed. Total		139 279	38 037	167 940	20 865	43 130	121 418	530 667
Tajikistan	Env. policy				192	1 753		1 945
	Agriculture				4 499	8 658		13 157
	Env. component of non-environmental projects	867						867
Tajikistan Total		867			4 692	10 411		15 969
Turkmenistan	Water supply and WWT		3 476					3 476
Turkmenistan Total			3 476					3 476
Ukraine	Water supply & WWT	28	9		30 020	116	9 023	39 157
	Energy			57 128	201	4 973	10 390	72 666
	Env. research			20 705				20 705
	Agriculture							
	Env. component of non-environmental projects	4 979	76 769					81 748
Ukraine Total		5 007	76 778	77 833	30 222	5 088	19 413	214 276
Uzbekistan	Env. policy		596					596
	Water supply & WWT		1 132	48 078	48	147	83	49 463
	Energy						16 060	16 060
	Agriculture						670	670
	Waste			14 351				14 351
Uzbekistan Total			1 728	48 078	48	147	16 812	81 139
EECCA Regiona	Env. policy			6 097				6 097
	Agriculture				4 498			4 498
	Site preservation					271		271
EECCA Regional Total				6 097	4 498	271		10 865
Grand Total		**181 732**	**207 966**	**371 923**	**106 617**	**163 479**	**258 579**	**1 290 297**

Source: OECD CRS database, IFIs reporting.

Notes: Agriculture includes forestry and rural development.

ANNEX 2:

Environmental Expenditure Methodology OECD/Eurostat, CEE, NIS and SEE

AX.1. Introduction

112. This annex describes the different methods of data collection, which govern environmental and environmentally related data collection in EECCA, and upon which this analysis is based. It evaluates the extent to which existing environmental expenditure data collection systems in CEE, EECCA and SEE allow the application of the OECD framework used to present the data.

113. The **OECD PAC (Pollution, Abatement and Control)** framework[19] has focused on developing a framework for member states to report on environmental expenditures as the most important element in the integration of environmental and economic information. Definitions are harmonised with Eurostat, the statistical organisation of the European Union, and further harmonisation is ongoing to standardise reporting further. The PAC framework, however, does not prescribe requirements for national environmental expenditure data collection in member states.

114. The OECD framework and tables for reporting on environmental expenditure have been developed to identify: (i) the amount of resources spent on environmental protection, and (ii) the distribution of financing across public and private sources.

115. The **EECCA methodology** is rooted in a system developed in the period of central planning. Two main characteristics of that system differentiate environmental expenditure data collection from that of developed market economies. The enterprises' statistical reporting tradition is detailed, and reporting of enterprises in a given group is widespread (e.g. all domestically owned enterprises, or all industrial enterprises). However, the reliability of these data is traditionally weak. In addition, public expenditure data are still not reported regularly in detail. In developed market economies public expenditure data are more available, while enterprises' data are collected via sample surveys.

116. The implications of the above differences in environmental expenditure estimates imply difficulty estimating public sector expenditure in EECCA countries, particularly government expenditures and commitments to the private sector. At the same time there might be an overflow of inconsistent company data. In some cases, in identifying financing sources, EECCA data collection provides more detailed information than needed for the OECD framework. In practice, however, the quality of the collected data might undermine its usefulness.

[19] The joint OECD-Eurostat questionnaire has been revised in 2001 and the scope of environmental protection has been expanded accordingly to the Classification of Environmental Protection Activities, which includes also expenditure related to nature protection and research and development, contrary to the PAC concept used in the previous questionnaires. These changes, however, are not fully integrated into this report.

117. The possibilities for adjusting collected EECCA environmental expenditure data to fit into the OECD framework are described along the following dimensions:

- Definition and scope of environmental expenditures.
- Types of expenditure.
- Two sides of environmental expenditure: abatement vs. financing.
- Definition of economic sectors.
- Definition of environmental sectors.

AX.2. Definition and Scope of Environmental Expenditure

118. In the OECD framework, environmental expenditure consists of expenditure on pollution abatement and control. Pollution abatement and control are aimed at prevention, reduction and elimination of pollution or nuisances resulting from production processes and consumption of goods and services. On the public sector side, administrative, monitoring, and enforcement expenditures are included.

119. Items not included in PAC expenditure are:

- Depreciation allowances for PAC assets and interest paid for the financing of PAC investment;
- Expenditure aimed at nature conservation (e.g. natural parks), excluded from PAC expenditure, but added as an addendum.
- Mobilisation of natural resources, such as supply of drinking water.
- Expenditure not directly aimed at pollution control and abatement, such as investment in energy-saving equipment for commercial purposes or technical measures (e.g. to ensure a certain degree of purity in water used in the production process).
- Expenditure mainly for workplace protection.

120. Environmental protection expenditure is classified in different environmental domains according to the media or type of pollution/degradation concerned. The following domain breakdown is used by PAC when collecting data on environmental expenditure:

- Protection of ambient air and climate.
- Wastewater management (includes prevention of emissions to surface water).
- Waste management (includes treatment of low level radioactive waste, composting, street cleaning and sweeping, and recycling).
- Protection and remediation of soil, groundwater and surface water (includes all clean-up activities).
- Noise and vibration abatement (excluding workplace protection).
- Protection of biodiversity and landscape.
- Other: Sum of protection against radiation (excluding external safety), research and development, other environmental protection activities (including general environmental administration and management, education, training and information, invisible expenditure and expenditure unclassified elsewhere).

121. For EECCA there is no unified definition similar to that of the OECD framework. From the list of activities on which enterprises need to report in the environmental expenditure reporting form (18KS, 4OS), it is clear that environmental expenditure is interpreted in broader sense in the EECCA methodology. It includes elements of water management and other natural resource management expenditures.

122. Since water and other natural resource management expenditures can be substantial in EECCA countries, they have not been excluded from current presentation. Environmentally related expenditure, a new term, can facilitate inclusion of natural resource mobilisation expenditure, connected not only to exploitation, but also to sustainable resource use. Environmentally related expenditure therefore consists of:

- PAC expenditure.
- Expenditures aimed at nature conservation.
- Natural resource mobilisation connected with sustainable use of the resource.

A.X.3. Types of Expenditure

123. *Investment expenditures* are outlays (purchases and own-account production) on land and/or on additions of new durable goods to the stock of fixed assets for PAC, nature conservation or sustainable natural resource management.

124. There are two fundamental types of PAC investments:

- Curative/supplementary/end-of-pipe investments: these investments do not affect the production process itself; they only abate pollution stemming from it. The entire outlays should enter as PAC expenditure.
- Process-integrated investments: these are investments, which lead to a modified/adapted production process with the primary aim to reduce pollution. When a new production process is introduced, the PAC expenditure consists of outlays over and above the cost of a cheaper, viable, but less environmentally benign plant. When an existing plant is modified, the environmental investment equals total outlays for modification for environmental purposes.

125. Current expenditures are outlays for:

- In-firm production of environmental services, nature conservation and natural resource protection: wages and salaries, rents, energy, maintenance expenditure and other intermediate inputs.
- Environmental services and specific goods bought from the market (e.g. a firm has its waste collected by a specialised enterprise).

126. For household expenditures, experience from member countries with collection of data suggests only to include the following items:

- Purchase, operation and maintenance of air pollution control devices for motor vehicles. Operation and maintenance expenditure includes items such as price differentials for unleaded petrol or service costs for proper adjustment of engines.
- Sewage treatment by private households (e.g. septic tanks).
- Payments by households for provision of PAC services by private firms.
- For households, no breakdown into investment and current expenditure is foreseen, as, in line with national accounts, household expenditure on durable goods is not considered investment.

127. In EECCA, including household expenditure in estimates of environmentally related expenditures is probably premature, as these data are almost non-existent. In countries where national household expenditure surveys have been conducted it might be possible to obtain relevant expenditure data. This, however, is likely sufficient for qualitative assessment, but not for filling in OECD tables.

AX.4 Financing vs. Abater Principle

128. The environmental expenditure figures are distinguished in the OECD framework from two sides. Expenditure for a particular sector can be evaluated according to the financing principle (who pays for the activity) or according to the abater principle (where the activity occurs).

129. In OECD countries there have been a few attempts to estimate environmental expenditure by financing principle directly via reporting forms. The practical calculation applied distinguishes between private and public sector financing sources. In this case, environmentally related expenditure figures collected according to the two principles will typically differ when transfer payments are made between the private and public sectors (subsidies, fees or charges for environmental purposes).

130. OECD reporting tables are structured to allow for evaluation according to both principles. This requires that financial commitments between the public and private sector be singled out. When national sources do not allow this separation, it is of particular importance to indicate whether sector figures are net or gross of transfer flows. Otherwise problems of double counting are unavoidable. It is intended to carry out the following calculations for each environmental sector (air, water, etc.):

Public Sector	**Private Sector**
Investment expenditure	Investment expenditure
+ Current expenditure – Receipts from by-products of PAC activity	+ Current expenditure – Receipts from by-products of PAC activity
= Expenditure I (abater principle) + Subsidies to private sector – Fees/charges from private sector	= Expenditure I (abater principle) – Subsidies from public sector + Fees/charges to public sector
= Expenditure II (financing principle)	= Expenditure II (financing principle)

131. Financial commitments from the public to the private sector: the term “subsidies” as used in the OECD reporting table covers current and capital unrequited payments for environmentally related purposes. In national accounts terminology, these are subsidies for production, investment grants and other transfers. For the public sector, care must be taken to avoid double counting due to transfers between different levels of government; i.e. intergovernmental commitments should be netted out.

132. Financial commitments from the private sector to the public sector: fees are paid for environmentally related services, whereas taxes are compulsory, unrequited payments. Only taxes directly used for financing environmentally related expenditure by the public sector should be included.

133. For EECCA, environmentally related expenditure figures are compiled from the abaters reports. Therefore, the abater principle is readily applied in the collected data.

134. Expenditure figures by the financing principle can be calculated if all abaters report on each financing source used for financing the expenditures. This is applied to a limited extent in some EECCA reporting forms. However, these reported data are unreliable partly due to misunderstanding, partly to the fact that they come close to asking for internal business information.

AX.5 Definitions of Sectors

135. In the OECD framework public sector consists of federal and local governments and communities, and public organisations providing environmentally related services. In OECD countries these organisations are identified with the help of ISIC (NACE) codes.

136. Enterprises in these sectors are part of the business sector even if partly or fully owned by central or local governments. In the OECD framework the household sector consists of households as consumers, and the private sector consists of the business and household sectors.

137. EECCA countries still use the former classification of economic activities, so identification of the public sector can create problems. The governments (both federal and local) are outside of the classification system, and therefore the statistical system for environmental expenditure reporting. Estimating their expenditure requires analysis of government budgets and/or sample surveys. Identification of public organisations providing environmental services also requires a country specific approach in which the ownership code could be of help.

138. In EECCA countries where the ISIC classification system is already applied, ownership codes provide additional information for identification of public organisations providing environmentally related services. Enterprises with state ownership codes in the economic sector, ISIC 41 and 90, constitute the group of public organisations providing environmentally related services.

139. For households as consumers this definition can be applied readily in EECCA to the extent households' environmentally related expenditures are covered.

140. The definition of private sector consisting of the business and household sectors can be applied readily in EECCA. In most cases, however, households are not covered in the environmentally related expenditure tables. In those cases, private sector collapses to business sector in the OECD environmental expenditure tables.

141. In the OECD framework the business sector (based on ISIC rev. 3/NACE rev. 1) consists of the following economic sectors:

	Name	ISIC code
1)	agriculture, forestry, hunting and fishing	01-05
2)	mining and quarrying	10-14
3)	manufacturing	15-37
4)	electricity, gas and water	40-41
5)	construction	45
6)	transport, storage and communications	60-64
7)	other services	50-52, 65-67 and 9 except public sector as defined above

AX.6. Environmental Protection Activities

142. OECD definition of expenditure for air comprises:

- Prevention of air pollution linked to the production process; installation of non-polluting technologies (clean technologies and clean products used in the production process).
- Elimination of emissions at the source: de-dusting equipment and filters.

143. This expenditure category can for EECCA countries be approximated by the atmospheric air protection expenditure row in the 18 KS form and in the 4 OS form.

144. OECD definition of expenditure on water protection comprises:

- Collection and purification of wastewater (in collective and public as well as individual systems).
- Transport of wastewater, storm water systems, sewage networks.
- Wastewater treatment plants (including pre-treatment plants and special plants for wastewater from certain industrial processes).
- Combating pollution of the marine environment, including measures to combat discharges into the sea and the raising of wrecks (e.g. clean-up of oil spills).
- Prevention, control and monitoring of surface water pollution.
- Combating pollution of inland surface waters, other than collection and purification of wastewater.
- Prevention and combating of thermal pollution of water.
- Abatement of groundwater pollution.
- Abatement of soil pollution, including measures to combat uncontrolled releases, tipping and re-absorption of pollutants.

145. Expenditure related to the supply of drinking water should be excluded. For EECCA countries this expenditure category can be approximated by the "protection and rational use of the water resources protection expenditure" row (exception: expenditure on re-circulating water supply systems) in the 18 KS form, and the "protection and rational use of water resources protection expenditure row" in the 4 OS form.

146. In the OECD framework waste includes municipal waste and industrial waste, which in turn includes hazardous waste, ordinary waste and inert or heavy waste (waste from the extractive industries and power stations and demolition waste). It includes sewage sludge but excludes wastewater.

147. OECD definition of expenditure on waste comprises:

- Preventive measures to limit amounts and harmful effects of waste generated by final consumption of goods and production of industrial waste, or to lessen its harmful effects.
- Collection and transport.
- Treatment and disposal.
- Exploitation of waste: unprofitable operations with the purpose of replacing the disposal of waste (i.e. discharge into the environment) by processes for reinserting the corresponding objects or substances into the economic cycle (in the form of raw material or energy) and recovery (process integrated with the activity concerned).

148. This expenditure category can be approximated for EECCA countries by the "installations for the production waste utilisation and processing" (including households waste) expenditure row and the "toxic waste management expenditure" row in the 18 KS form and the protection of environment from the production and consumption waste expenditure row in the 4 OS form.

149. OECD definition of expenditure on nature protection

150. These expenditures should include expenditure directed at protection and rehabilitation of species, landscapes and habitats. It should include outlays on national parks and wildlife, on the protection against forest fires and on related monitoring, management and administration.

151. A list of possible activities follows:

- Protection of species (flora and fauna).
- Conservation of threatened species of flora and fauna.
- Other related activities.
- Protection of landscapes and habitats.
- Protection of outstanding ecosystems and habitats.
- Protection of landscapes for their aesthetic value.
- Other related activities.
- Protection of forests.
- Protection against forest fires.
- Rehabilitation of species populations and landscapes.
- Measurement, control, laboratories, etc.
- Related management and administration activities.
- Management and development of national parks.
- Other related activities.

152. This expenditure category can be approximated for EECCA countries by the "organisation of reservations and other environmental territories" expenditure row and the "protection and reproduction of wild animals and birds" expenditure row in the 18 KS form and a similar spending category in the government budget.

OECD Definition of Expenditure on Noise Protection

153. In the OECD framework this expenditure comprises:

- Preventive action at source:
  - Soundproofing of machinery.
  - Use of soundproofed machinery and equipment.
- Construction of anti-noise installations:
  - Construction of buffer-zones or anti-noise screens around airports or other sources of noise.
  - Soundproofing work.

154. Excluded are measures aimed mainly at reducing industrial process noise for workplace protection.

OECD Definition of Expenditure on Other

155. This expenditure is related to other types of pollution control such as abatement and control of non-radioactive radiation, multi-functional environmental protection activity and general administration of the environment.

OECD Definition of Expenditure on Rational/Sustainable Natural Resource Management

156. This is expenditure on natural resource mobilisation, which is connected not only with exploitation, but also with sustainable use of resources. An important part of theses expenditures are administrative and monitoring expenses.

157. This expenditure category can be approximated for EECCA countries by the “protection and rational use of soil”, “protection and rational use of forest resources” and “protection and rational use of fish resources” expenditure rows in the 18 KS form. Current expenditure and water resource expenditure data needs to be obtained from another form.

ANNEX 3

DAC CRS Purpose Codes Used for Filtering 'Environmental' Commitments

14010	Water resources and administrative management
14015	Water resources protection
14020	Water supply and sanitation—large systems
14030	Water supply and sanitation—small systems
14050	Waste management/disposal
14081	Education and training in water supply and sanitation
23030	Power generation/renewable resources
23066	Geothermal energy
23067	Solar energy
23068	Wind power
23069	Ocean power
23070	Biomass
23081	Energy education/training
23082	Energy research
31130	Agricultural land resources
31140	Agricultural water resources
31192	Plant and post-harvest protection and pest control
31210	Forestry policy and administrative management
31220	Forestry development
31281	Forestry education/training
31282	Forestry research
31291	Forestry service
31320	Fishery development
41010	Environmental policy & admin. Management
41020	Biosphere protection
41030	Biodiversity
41040	Site preservation
41050	Flood prevention/control
41081	Environmental education/training
41082	Environmental research
43030	Urban development
43040	Rural development

Donge, Kato and Maurer, 2001. "An Environmental Analysis of Recent Trends in International Financial Flows with a Special Focus on Japan".