Ministry of Environment, Denmark

Environmental Expenditure in the NIS

Georgian Country Report

OECD OCDE

EAP Task Force

DEPA/DANCEE

Danish Environmental Protection Agency
Danish Cooperation for Environment in Eastern Europe

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Background

The Danish Ministry of Environment and Energy, the Danish Environmental Protection Agency, (The Danish EPA) has decided to fund a number of projects to provide assistance to the OECD Environmental Action Plan Task Force (EAP TF) Secretariat and directly to selected Ministries of Environment in the NIS.

The projects commenced in August 1999. The present document, "Environmental Expenditure in the NIS, Georgian Country Report", is one of a series of documents coming from the projects.

The projects will:

- Provide assistance in elaborating national environmental financing strategies in four selected countries in the NIS, viz.: Georgia, Kazakhstan, Moldova and Ukraine.

- Provide assistance in elaborating regional environmental financing strategies in two selected regions in the Russian Federation, viz.: Novgorod and Pskov regions.

- Provide assistance to the EAP TF in the preparation of a survey on the use of economic instruments for pollution control and natural resources management in the New Independent States.

- Conduct a study of the suitability of the OECD methodology for assessment of environmental expenditure based on case studies in Georgia and two regions in the Russian Federation, viz.: Novgorod and Pskov.

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Abbreviations and Acronyms

CEE	Central and Eastern Europe
DANCEE	Danish Cooperation for Environment in Eastern Europe
EAP	Environmental Action Programme for Central and Eastern Europe
EC	Environmental committee
EF	Environmental fund
GEL	Georgian Lari
JSC	Joint Stock Company
ME	Municipal Enterprises
MoE	Ministry of Environment
NGO	Non Governmental Organisation
NIS	New Independent States
OECD	Organisation of Economic Cooperation and Development
PAC	Pollution Abatement and Control
PCE	Pollution Charge Exemptions
PU	Public Utilities
R&D	Research and Development
DoS	Department of Statistics
USD	US Dollar
WWT	Wastewater Treatment
WWTP	Wastewater Treatment Plant

1 Introduction

Purpose of report

The purpose of this country report is to present the results of the project on environmental expenditure in Georgia. It provides information on how the first steps have been taken to re-establish environmental expenditure collection in Georgia and presents collected environmental expenditure data for year 1999.

Principal authors

The report was prepared within the framework of the project entitled "Environmental Financing Strategies, Environmental Expenditure and Use of Economic Instruments in NIS Countries", which COWI was entrusted by DANCEE and the EAP Task Force Secretariat at OECD. Its principal authors were Mrs Zsuzsanna Lehoczki, COWI Hungary in co-operation with Yuri Safanov, COWI Moscow and Pavle Tsagareishvili, Georgia and Jørgen Jordal Jørgensen, COWI.

Acknowledgements

The survey has been carried out by the Statistical Department of Georgia at a very high professional level. Several experts have provided useful suggestions and comments[1].

Disclaimer

The opinions expressed are those of the consultant. The Danish Ministry of Environment and Energy - Danish Environmental Protection Agency (Danish EPA), the OECD EAP Task Force and the beneficiary ministries may not agree with these opinions.

Methodology paper

The preparation of the questionnaire, data collection and the subsequent data processing and analyses have been carried out in accordance with the OECD environmental expenditure methodology as outlined in the methodology paper, which was (also) prepared within the framework of the project[2]. It sets up guidelines for the data collection on environmental expenditure in Georgia and in Novgorod oblast' and Pskov oblast' of the Russian Federation. Furthermore, it establishes a framework for the subsequent data processing and analyses. The methodology paper should ensure the provision of comparable, consistent and reliable data, which, to the extent possible, are in accordance with the OECD environmental expenditure methodology[3].

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[1] including, but not limited to Carla Bertuzzi, OECD, EAP Task Force Secretariat, Anton Steurer, EUROSTAT

[2] Working Paper No 3: Methodology Paper

[3] OECD 1998 Pact Methodology

Confidentiality

All information provided by enterprises will be kept strictly confidential and will not be given to third parties without the written consent of the enterprises in question.

1.1 Purpose of collecting environmental expenditure data

Purpose

The major purpose for collecting environmental expenditure data is to assess the value of real resources (such as capital, labour, etc.) devoted to environmental protection activities.

Three reasons

In brief, there are three reasons why the provision of consistent, reliable and comparable environmental expenditure data is of utmost importance:

- It provides valuable expenditure allocation information to decision-makers, both inside and outside the national government
- It allows for cross-country comparisons, thereby making it possible to trace the impacts of the "Environment for Europe" process.
- It provides a baseline for environmental financing strategies aimed at supporting the implementation of the National Environmental Action Plans.

Context to the project

In Georgia environmental expenditure data was collected according to the methodology developed in FSU. By the second half of the 90's the traditional process of sending out environmental expenditure reporting format was not adapted to the changes in the country. In that context, the focus of the work was to assist the Statistical Department in re-establishing the environmental expenditure data collection.

Assistance was provided by developing a reporting format and carrying out a pilot survey. The aim of the survey was to test the methodology and reporting format and collect environmental expenditure data on the basis of a selected sample.

Organisation of report

The country report is organised as follows: Chapter 2 provides a brief country background. Chapter 3 describes the methodology including the samples and surveys and data collection process. Chapter 4 presents results and analysis. Finally, Chapter 5 contains the conclusions to be drawn from the previous chapters. Furthermore, two annexes are attached.

2 Country background

Georgia is located in the south-eastern part of Europe. There are nine regions and Autonomous Republics of Abkhazia and Adjara located in its territory. The population is 5.4 million, of which 56% lives in urban areas.

Georgia has experienced a very steep economic decline after its independence. Its economy was dependent on FSU "planned" demand for its agricultural and highly specialised industrial products and on the supply of energy, mineral resources and spare parts from other parts of FSU.

The breakdown of the traditional economic ties and the civil unrest resulted in GDP decline reaching about 20% of its 1989 level by 1994, hyperinflation and high foreign debt. The political stabilisation reversed the devastating trend in 1995. A new currency was introduced, inflation curbed and double digit growth rates were achieved in 1996 and 1997. The Russian financial crises hit Georgia hard and, together with the severe drought, slowed down the economic development in 1998. However, GDP still increased by approximately 3% in both 1998 and 1999.

Structure of the economy

The structure of the economy also changed radically after 1991. Industry's share of GDP dropped from 23% in 1990 to 10% in 1998. The share of agriculture increased until 1995 and has been fluctuating around 30% since then. The trade and service sector has gained 22% share since 1998.

Share of government expenditure in GDP

The share of government budget revenue in GDP is around 15% while the share of budget expenditure is around 21-22%. It is below the average figure of 28% in NIS and around 40% in CEEC.

Table 2.1 provides some main economic indicators for the period 1995-1999 for Georgia.

Table 2.1 Economic indicators - Real sector. Georgia. 1996-1999[4]

Variable/year	1996	1997	1998	1999*
Nominal GDP, million GEL	3,768	4,505	4,795	5,594
Investment in fixed capital, million GEL	170	266	481	
Foreign investment in fixed capital, million GEL	86	180	378	
GDP/capita, GEL	698	834	888	1036
GDP/capita, USD	554	642	639	513
Exchange rate GLA/USD. Period aver.	1.26	1.30	1.39	2.02

Sources: State Department for Statistics of Georgia (1999), IMF Report, 2000

Table 2.2 Economic Indicators - Government Finances. Georgia 1995 - 2000

Millions of GEL	1995	1996	1997	1998	1999
Total state revenue[5]	259	531	669	786	873
Total state expenses,	455	810	982	1,096	1,250
total state revenue in % of GDP	10.6%	14.1%	14.8%	16.4%	15.6%
Total state expenses in % of GDP	18.7%	21.5%	21.8%	22.9%	22.3%

Sources: State Department for Statistics of Georgia (1999), 1999 National Budget of Georgia, Tbilisi 1999; IMF (2000)

[4] In 1998 IMF in co-operation with the State Department for Statistics of Georgia adjusted the national accounts of Georgia as well as the GDP structure to improve the statistical methods of accounting. As a result of the adjustment the value of GDP in 1998 decreased by 30% compared to official statistical figures reported in the Statistical Yearbooks. In the table we present the adjusted figures.

[5] Includes grants but excludes privatisation revenues.

3 Methodology applied

Historical background

Until 1996, Georgian environmental expenditure data collection was based on the methodology developed in FSU. Reporting forms for investment and current expenditure were sent to enterprises to be filled out annually. All enterprises were obliged to submit the detailed report. Terminology classification was similar to the OECD environmental expenditure methodology at that time. Important differences did exist, however, particularly in the field of water resource use.

Major shifts in the economic structure resulted in many close-downs and establishments of enterprises. Environmental expenditure data collection could not cope with this challenge and regular procedures have stopped functioning.

Steps in reviving data collection and processing

Reviving data collection and processing requires elaboration of new reporting format, a new set of procedures for submitting the reports and new methodology for processing, publishing and utilising the collected data.

The new system must take into account the fundamentally changed nature of enterprises - governments - households relationships. In a market economy the state is not entitled to collect any information about enterprises and it must honour business secrets when collected information is used. Meantime, public (households) have the right to access environmental information both on the activities of enterprises and the *governments*. A new reporting format must be elaborated that must be filled by enterprises and government organisations[6].

Limitations

The original aim of analysing trends and levels in environmental expenditure has been adapted to the shifting focus of the project. Instead of collecting time series data on environmental expenditure, the focus became assistance to the re-establishment of regular environmental expenditure data collection. Data has been collected but through a pilot survey and for one year only. However, the analysis of collected data can only be limited. The results refer to expenditure in *one year* only. As a consequence, there are very limited possibilities for making comparisons with expenditure from previous years.

[6] The Government of Georgia became the third country to ratify the convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters on April 11, 2000.

Structure of this chapter

The purpose of this chapter is to inform on the methodology applied in the data collection and processing made in Georgia. A detailed description of the process of work and the data collection and processing is provided, enabling the reader to assess the validity of the data.

3.1 Process of work

This section describes the process of work from November 1999 through April 2000, highlighting the identification of needs elaboration of questionnaire, carrying out the interviews and data processing.

Identification of need

The breakdown in the former system of environmental expenditure data collection and processing opened up for an opportunity to adapt a new system. The first step in the redesigning is the elaboration and testing of a new reporting format and related data processing. The need for assistance for that task has been identified by the MoE and the DoS.

Developing new reporting format

The original request from the experts in the Statistical Department and the MoE was to keep the new reporting format as close as possible to the forms used in the past. They argued that similarity would make the forms more familiar to the enterprises. When the old reporting format was revised to facilitate data collection according to the OECD methodology the resulting set of questionnaire was too complicated.

After several rounds of expert discussions, a simplified reporting format was elaborated and agreed on with the DoS and MoE experts.

Training interviewers

DoS employs experienced interviewers but the environmental expenditure terminology and the structure of the reporting form was new to them. Therefore a half-day training session was organised with the participation of MoE experts and the consultants. Short case study presentations were used to clarify terminology and potentially problematic points in the questionnaire.

Carrying out the survey

DoS interviewers carried out 115 interviews, which was supplemented by 16 in-depth interviews.

Interviewers' experiences

The interviewers reported their experience at a meeting for future references. They concluded that generally, there was no problem with the understanding of the terminology or with the willingness to participate in the survey. Some of the terms however, required extensive explanations. The majority of the respondents were cooperative. Mostly accountants and chief engineers participated in the interview. Information was often not readily available and the interviewers had to visit enterprises more than once.

Data processing

Result from the questionnaires were organised in both "Excel" and "Access" files. Tables for this report were generated from those files.

Time period covered by the study.

The study covers only data from the last year. A future task would be to build a consistent time series database that allows a well-based assessment of the amount of resources spent on environmental protection.

3.2 Data collection and processing

Due to shortage of time a decision was made to carry out a sample survey rather than mailing out the questionnaire to all enterprises. The concern was that enterprises would not mail back their report in time, if at all.

3.2.1 Elaboration of the questionnaire

Aims guiding elaboration

The elaboration of the questionnaire was guided by two somewhat contradicting aims. One was to ask all information needed to fill the OECD PAC reporting tables and similar tables for natural resource management. The other aim was to keep the form simple and to introduce a minimum set of new concepts.

Parts of the questionnaire: First block

The final questionnaire consists of five main components. The first block of questions relates to the capital investment spending on environmental protection and natural resource management. It collects information on the type, sources and purposes of investment spending.

Second block

The second block asks for information on current expenditure separating the payment for environmental services. In the in-depth interviews, questions on sources such as transfers from the state were also asked.

Third block

The third block asks questions on R&D expenditure. In the OECD PAC expenditure, reporting tables do not cover R&D expenditure as that information is collected in different reporting. However, R&D expenditure information is not yet collected regularly in Georgia. Therefore we included it in the questionnaire.

Fourth block

Information collected in the fourth block covers environmental charges and fine payments and taxes on natural resources. Presently, these charges and taxes are not earmarked for environmental or natural resource management purposes. Therefore they should not be included when calculating expenditure by financing principles. They can be used more as additional information from the present survey. However, if any of these charges or taxes would become earmarked, this information is needed to calculate expenditure according to the financing principle.

Fifth block

The fifth block is mostly intended as "awareness raising". It relates to the accounting practices of the enterprises in relation to the environmental expenditure data collection.

In depth interviews

A slightly expanded version of the "standard" questionnaire was used in 16 in depth interview. The in-depth interviews were carried out by senior staff and

more time was allocated for these than for the "standard" interviews. The purpose of these interviews was to gain more insight into

(i) how the environmental part of the process integrated investments can be calculated;

(ii) sources of financing for covering current costs; and

(iii) difficulties in providing environmental expenditure information from the standard accounting and management data.

The "standard" questionnaire with the instructions and annexes is presented in ANNEX II.

3.2.2 Sample selection

Sampling principles

The sample was designed on the basis of two considerations. The first consideration was to maximize environmental expenditure captured by the survey. For that reason we tried to include *all* enterprises which are most likely to have environmental expenditure. The second consideration was to ensure the representativenes of the sample, that we need for consistent grossing up of sample expenditure values to national figures.

These two considerations unfortunately do not lead to consistent selection criteria. The attempt to include the enterprises that are most likely to have environmental expenditure leads to a non-representative sample. Therefore we cannot use the same overall grossing up rule for each sector. Expert judgements are applied to design and carry out sector specific rules for each economic sector as defined by the two digits level NACE code.

Sample selection for general survey

Selection criteria

Selection of the sample of enterprises/organisations[7] for the general survey was carried out with regard to four criteria. Enterprises were selected from the full list of enterprises registered with the Statistical Department with the following characteristics.

Size of the enterprise

We screened the "full list of enterprises" according to their size. Enterprises with a monthly turnover of more than GEL 5,000 were selected. The selection excludes the large number of "family enterprise" which we find particularly in the rural area in agriculture. The monthly turnover limit, however, serves not only the purpose of screening for the size but selecting actually operating enterprises. Many enterprises went out of business in the turmoil of the transition period but many of them still exist as legal entities.

[7] In the following we use the term enterprises to encompass private enterprises as well as public enterprises and organisations with productive activities e.g. the postal service.

The monthly turnover criteria, therefore, serves a double purpose: it ensures that only (i) large and medium size enterprises which are actually (ii) operating enterprises enter our sample.

Substantial impact on the environment

Pollution-control related environmental expenditure is likely to occur in those enterprises that have a substantial impact on the environment. Therefore we considered enterprises with total emissions into the atmosphere above 100 tonnes per annum and/or with regular effluent discharges into water.

Possessing capital assets for environmental protection

A selection of enterprises which possess capital assets for environmental protection is motivated by the expectation that these enterprises are likely to have current environmental expenditure. Operating capital assets for environmental protection implies current expenditure in those enterprises and, potentially, additional capital expenditure for e.g. rehabilitation of the capital assets;

Reported investments above GEEL 50,000

The argument to include enterprises reporting total investments above GEL 50,000 in 1999 is that these enterprises are able to spend resources on capital investments, including environmental protection investments.

Selection procedure

The sample selection was done according to the following procedure:

Step 1.

From the "full list of enterprises" registered at the statistical department, only those having a monthly turnover of more than GEL 5,000 were selected. These are the large and medium-sized enterprises.

Since detailed statistical information is available only for these enterprises, moreover the likelihood of small enterprises incurring environmental expenditure is practically zero, we defined total population for our sample as the pool of large and medium-sized enterprises. Table 3.1 shows that the majority of the economic activities is concentrated in large and medium-sized companies even though their share in the number of enterprises and in the number of employees are small.

Table 3.1 Share of large and medium-sized enterprises, 1999

All enterprises	Large and medium-sized enterprises	Share of large and medium-sized enterprises		
		in number of enterprises	in turnover	in employees
9,408	1,164	12%	70%	33%

Source: Statistical Department, 2000

Defining large and medium-sized enterprises as total population means that grossing up sample results is done for the group of these enterprises. It also means that we approximate national environmental expenditure figures with estimated results for large and medium size enterprises with the addition of government organisations. Therefore we should have selected a representative sample of 130 enterprises from the population of 1164 large and medium-sized enterprises.

However, we aimed at capturing environmental expenditure in our sample to the maximum extent. For that reason we created a "biased" subset of the population to serve as a basis for sampling. This subset was defined in the following way from various statistical reporting.

Step 2/A From the "full list of enterprises" only those that invested more than GEL 50,000 in 1999 were selected. The list contains about 100 enterprises.

Step 2/B From the "full list of enterprises" only those reporting on waste water discharges were selected. The list contains about 510 enterprises.

Step 2/C From the "full list of enterprises" only those reporting on 4OS form were selected. These are the enterprises that have capital environmental protection assets and reported current pollution abatement expenditure in the past. The list contains about 70 enterprises.

Step 2/D From the "full list of enterprises" only those reporting emission into the air were selected. These are the enterprises which have more than 100 tonnes of emissions per year. The list contains about 360 enterprises.

Step 3. The four short lists have been combined: enterprises which fall into any of the short lists have been included into the combined list. These are the enterprises that are most likely to have environmental expenditure.

Step 4. The subset of the population was created through selecting large and medium-sized enterprises from the combined list. Here, the assumption was that those enterprises that used to report on current environmental expenditure or were on the list of reporting emissions were usually not small. Therefore if they are not on the list of enterprises with a monthly turnover more than GEL 5,000 they are likely to be out of operation. This shortened list consists of 274 enterprises.

Step 5. The shortened list was the basis for selecting 120 enterprises according to representativeness by economic sectors and regions of the country.

Step 6 Two special organisations were added to the sample. One is the Forestry Department and the other is the Department of Protected Areas.

Sample selection for in-depth survey

Selection criteria For the in-depth survey a sample of 20 enterprises was created including the following specific groups:

- Large enterprises with old management, so called “red directors”. These enterprises are usually slow to adapt to the changing market circumstances. However they still constitute a significant share of the country’s economy.

- Large enterprises of the dynamically developing sectors. These are the enterprises with market-oriented management which actively develop the Georgian and export market, in many cases in partnership with foreign companies. They do not constitute a very large share of the national

economy, but will play an important role in further economic development and influence the environmental policy.

- Small, newly established enterprises in the new sectors such as services, agricultural firms, etc. This group of enterprises reflects the tendency of small business development in Georgia which increases its share in the national economy. By now, such enterprises already have a significant impact on the environment, so there is a critical need for an investigation of their environmental policy.

Actual total sample size: 131

The survey resulted in 131 filled-in questionnaires. The actual sample size was 115 for the questionnaire and 16 for the enhanced questionnaire filled in during the in-depth interviews.

Characteristics of the sample are summarised in the following table.

Table 3.2 Sample characteristics

NACE code	Economic sector	Number of enterprises in the population	Number of selected enterprises	Share according to the		
				# of enterprises %	turnover %	# of employees %
01	Agriculture, hunting and related service activities	17	1	6	5	2
02	Forestry, logging and related service activities	1	1	100	100	100
10	Mining of coal and lignite; extraction of peat	1	1	100	100	100
11	Extraction of crude petroleum and natural gas;	1	1	100	100	100
13	Mining of metal ores	5	1	20	32	12
15	Manufacture of food prodacts and beverages	187	38	20	66	39
16	Manufacture of tobacco products	6	3	50	50	49
17	Manufacture of textiles	3	2	67	77	92
19	Tanning and dressing of leather	6	3	50	84	57
20	Manufacture of food and of products of wood	12	1	8	13	26
21	Manufacture of pulp, paper and paper product	3	2	67	88	75
22	Publishing, printing	24	3	12	23	32
23	Manufacture of coke, refined petroleum products and nuclear fuel	2	2	100	100	100
24	Manifacture of chemicals, chemical products and man-made fibres	17	8	47	97	94

NACE code	Economic sector	Number of enterprises in the population	Number of selected enterprises	Share according to the		
				# of enterprises %	turnover %	# of employees %
25	Manufacture of rubber and plastic products	7	2	29	74	27
26	Manufacture of other non- metallic mineral products	23	6	26	72	56
27	Manufacture of basic metals	7	2	29	54	97
28	Manufacture of fabricated metal products	11	2	18	8	2
29	Manufacture of machinery and equipment nec	6	2	33	9	43
31	Manufacture of electrical machinery	10	3	30	61	46
32	Manufacture of radio, television	1	1	100	100	100
34	Manufacture of motor vehicles, trailers x	4	1	25	98	98
35	Manufacture of other transport equipment	12	8	67	95	90
40	Electricity, gas, steam and hot water supply	57	2	4	24	13
41	Collection, purfication and distribution of water	18	6	33	72	75
45	Construction	157	5	3	19	8
51	Wholesale trade and commission trade	59	2	3	39	5
55	Hotels and restaurants	18	1	6	67	29
60	Land transport; transport via pipelines	47	5	11	65	45
61	Water transport	1	1	100	100	100
63	Supporting transport activities;	76	7	9	67	52
64	Post and telecommunications	71	2	3	27	4
70	Real estate activities	19	1	5	8	15
90	Sewage and refuse disposal,	11	3	27	28	22
92	Recreation and sporting	1	1	100	100	100

Source: Consultant's assessment

3.2.3 Issues in grossing up survey results

Difficulties in grossing up

Grossing up sample results is usually done according to a variable, which is made up of relevant and important characteristics of the total population. Due to our attempt to maximise environmental expenditure captured in our sample we cannot consider our sample as representative by economic sector or by region.

Fortunately, we have information on the predicted monthly turnover and size of investments above GEL 50,000 for the enterprises in the sample and for all large and medium-sized enterprises (total population). On that basis, expert

judgement was applied for each sector to assess whether grossing up was necessary and feasible on the basis of survey results.

Criteria for grossing up

In those cases where the share of the sector in the turnover of the total population[8] is below 1%, grossing up is not suggested since the sector is not very important among large and medium-sized enterprises. Grossing up is not needed where the sample covers 90-100% of the total population.

In some sectors investment spending is concentrated in one enterprise which has not been included in the sample even though several others are included. This is the case in the land transport sector. There the sample does not provide sufficient basis for grossing up.

In other sectors, the largest and most efficient enterprises are clearly included in the sample and it is not likely that the small ones can make investments. Therefore, grossing up would overestimate investment expenditure. In case of the electricity sector hydropower plants are not included into the sample, while they provide large part of the electricity supply. Therefore, grossing up would be misleading since it would assume that investment expenditure of the thermal power plant is of a similar size and pattern as for the hydropower plants. Therefore, grossing up is not suggested.

For current expenditure, similar considerations lead to suggesting grossing up in somewhat more sectors.

The following table summarises the team's decision on whether to apply grossing up or not in a given sector. The highlighted (white) rows pertain to those sectors for which grossing up is done for investment expenditure or current expenditure or both.

[8] Total population: all enterprises with predicted monthly turnover above GEL5,000

Table 3.3 Suggestions for grossing up environmental expenditure

NACE code	Economic sector	Share of the sample in the turnover	Share of the sector	Investment expenditure		Current expenditure	
				Reported	Grossing up	Reported	Grossing up
01	Agriculture, hunting and related service activities	5%	0.9%	+	no	0	no
02	Forestry, logging and related service activities	100%		+	no	0	no
10	Mining of coal and lignite; extraction of peat	100%	0.04%	0	no	0	no
11	Extraction of crude petroleum and natural gas;	100%	1.0%	+	no	0	no
13	Mining of metal ores	32h%	0.7%	+	no	+	no
15	**Manufacture of food prodacts and beverages**	**66%**	**17.4%**	**+**	**no**	**+**	**yes**
16	Manufacture of tobacco prodacts	50%	0.3%	0	no	+	no
17	Manufacture of textiles	77%	0.2%	0	no	+	no
19	Tanning and dressing of leather	84%	0.7%	0	no	0	no
20	Manufacture of food and of products of wood	13%	0.2%	0	no	+	no
21	Manufacture of pulp, paper and paper product	88%	0.2%	0	no	0	no
22	**Publishing, printing**	**23%**	**0.9%**	**0**	**no**	**+**	**yes**
23	Manufacture of coke, refined petroleum products and nuclear fuel	100%	1.2%	+	no	+	no
24	Manifacture of chemicals, chemical products and man-made fibres	97%	3.6%	+	no	+	no
25	Manufacture of rubber and plastic products	74%	0.5%	0	no	+	no
26	**Manufacture of other non- metallic mineral products**	**72%**	**3.8%**	**+**	**yes**	**+**	**yes**
27	**Manufacture of basic metals**	**54%**	**3.2%**	**0**	**no**	**+**	**yes**
28	Manufacture of fabricated metal products	8%	0.3%	0	no	+	no
29	Manufacture of machinery and equipment nec	9%	0.2%	0	no	+	no
31	Manufacture of electrical machinery	61%	0.3%	0	no	+	no
32	Manufacture of radio, television	100%	0.1%	0	no	0	no
34	Manufacture of motor vehicles, trailers	98%	0.4%	+	no	+	no
35	Manufacture of other transport equipment	95%	3.8%	+	no	+	no

NACE code	Economic sector	Share of the sample in the turnover	Share of the sector	Investment expenditure		Current expenditure	
				Reported	Grossing up	Reported	Grossing up
40	Electricity, gas, steam and hot water supply	24%	12.2%	+	no	+	no
41	**Collection, purfication and distribution of water**	**72%**	**1.4%**	**+**	**yes**	**+**	**yes**
45	**Construction**	**19%**	**12.4%**	**0**	**no**	**+**	**yes**
51	Wholesale trade and commission trade	39%	2.7%	0	no	0	no
55	Hotels and restaurants	67%	1.1%	0	no	0	no
60	Land transport; transport via pipelines	65%	4.8%	0	no	+	no
61	Water transport	100%	0.9%	0	no	0	no
63	**Supporting transport activities;**	**67%**	**12.0%**	**+**	**no**	**+**	**yes**
64	Post and telecommunications	27%	8.2%	0	no	+	no
70	Real estate activities	8%	0.7%	0	no	+	no
90	**Sewage and refuse disposal,**	**28%**		**0**	**no**	**+**	**yes**
92	Recreation and sporting	100%	0.7%	0	no	0	no

Source: Consultant's estimate.

4 Results and analysis

The purpose of this chapter is to present the results from the data collection. In the first section the survey data are presented in the OECD tables for the PAC and addendum expenditure. Natural resource management expenditure data are presented in similarly structured tables.

In the second section, additional information and grossing up is added and a few observations are made on the basis of the results.

4.1 Environmental expenditure

In the following tables, survey data are organised according to the OECD methodology. Some modifications had to be made. The public sector includes not only public PAC service providers but also water suppliers (NACE 4100). Many water suppliers are organisationally and financially integrated with wastewater service providers. Many of these water and wastewater utilities do not have accounting systems that allow them to separate water supply from wastewater expenditure. At the same time, these utilities receive public transfers that are not earmarked for either water supply or wastewater services.

Environmental charges and taxes are not earmarked for environmental purposes - therefore they do not appear in the OECD tables for calculating expenditure by the financing principle. Environmental charge and tax payment information was collected and is provided in a separate table.

International assistance (foreign subsidies) is reported, which is added to the domestic state subsidies in the tables.

Table 4.1 Total PAC and nature conservation expenditure in 1999 (1,000 GEL)

	Water & soil			Waste			Air	Noise	Other	Total PAC	Adden-dum: na-ture protection
	total[9]	waste-water	ground-water & soil	total[10]	collection	other treatment					
Investment Expenditure A	44.2	8.0	4.8	0	0	0	1,887.8	0	28.8	1,960.8	0
Of which end-of-pipe investments	25.7	8.0	4.8	0	0	0	29.2	0	0	54.9	0
Current Expenditure B	4,881.2	3,724.4	0.6	1,287.7	878.1	48.0	1,936.0	3.4	0	8,108.2	326.6
Expenditure I =(A+B)	4,925.3	3,732.4	5.4	1,287.7	878.1	48.0	3,823.8	3.4	28.8	10,069.0	326.6

Source: Consultant's estimate

Table 4.2 Total natural resource management expenditure in 1999 (1,000 GEL)

	Water resources		Prevention of soil degradation	Forest resources	Mineral resources	Total
	total	drinking water				
Investment Expenditure A	6,797.0	3,052.0	3.7	0	1,500.0	8,300.7
Current Expenditure B	3,2385.0	2,6580.9	0	2,026.8	0	3,4411.7
Expenditure I =(A+B)	3,9182.0	2,9632.9	3.7	2,026.8	1,500.0	4,2712.5

Source: Consultant's estimate

[9] Only part of the totals were classified by respondents therefore, the results of the categories do not add-up to the total amount

Table 4.3 PAC and nature conservation expenditure by the public sector in 1999 (1,000 GEL)

	Water & Soil			Waste			Air	Noise	Other	Total PAC	Addendum : nature protection
	total[10]	waste-water	ground-water & soil	total[10]	collection	treatment					
Investment Expenditure A	0	0	0	0	0	0	0	0	0	0	0
Of which end-of-pipe investments	0	0	0	0	0	0	0	0	0	0	0
Current Expenditure B	3,276.6	3,140.0	0	723.6	708.2	15.0	0	0	0	4,000.2	203.6
Expenditure I =(A+B)	3,276.6	3,140.0	0	723.6	708.2	15.0	0	0	0	4,000.2	203.6
Subsidies D	37.8	0	0	0.0	0	0	151.1	0	0	189.0	0
Expenditure II =(I+D-E)	3,314.4	3,140.0	0	723.6	708.2	15.0	151.1	0	0	4,189.2	203.6

Source: Consultant's estimate

Table 4.4 PAC and nature conservation expenditure by the business sector in 1999 (1,000 GEL)

	Water & Soil			Waste			Air	Noise	Other	Total PAC	Addendum nature protection
	total[10]	waste-water	ground-water & soil	total[10]	collection	treatment					
Investment Expenditure A	44.2	8.0	4.8	0	0	0	1887.8	0	28.8	1,960.8	0
Of which end-of-pipe investments	25.7	8.0	4.8	0	0	0	29.2	0	0	54.9	0
Current Expenditure B	1,604.6	584.4	0.6	564.1	169.9	33.0	1,936.0	3.4	0	4,108.0	123.0
Expenditure I =(A+B)	1,648.7	592.4	5.4	564.1	169.9	33.0	3,823.8	3.4	28.8	6,068.8	123.0
Subsidies D	37.8	0	0	0	0	0	151.1	0	0	189.0	0
Expenditure II =(I-D+E)	1,610.9	592.4	5.4	564.1	169.9	33.0	3,672.7	3.4	28.8	5,879.8	123.0

Source: Consultant's estimate

Table 4.5 PAC and nature conservation expenditure by the agricultural sector in 1999 (1,000 GEL)

	Water & Soil			Waste			Air	Noise	Other	Total PAC	Addendum : nature protection
	total[10]	waste-water	ground-water & soil	total[10]	collection	treatment					
Investment Expenditure A	0	0	0	0	0	0	0	0	0	0	0
Of which end-of-pipe investments	0	0	0	0	0	0	0	0	0	0	0
Current Expenditure B	0	0	0	0	0	0	0	0	0	0	120.0
Expenditure I =(A+B)	0	0	0	0	0	0	0	0	0	0	120.0
Subsidies D	0	0	0	0	0	0	0	0	0	0	0
Expenditure II =(I-D+E)	0	0	0	0	0	0	0	0	0	0	120.0

Source: Consultant's estimate

Table 4.6 PAC and nature conservation expenditure by the mining sector in 1999 (1,000 GEL)

	Water & Soil			Waste			Air	Noise	Other	Total PAC	Addendum : nature protection
	total[10]	waste-water	ground-water & soil	total[10]	collection	treatment					
Investment Expenditure A	0	0	0	0	0	0	0	0	0	0	0
Of which end-of-pipe investments	0	0	0	0	0	0	0	0	0	0	0
Current Expenditure B	70.6	70.0	0.6	0	0	0	0.2	0	0	70.8	0
Expenditure I =(A+B)	70.6	70.0	0.6	0	0	0	0.2	0	0	70.8	0
Subsidies D	0	0	0	0	0	0	0	0	0	0	0
Expenditure II =(I-D+E)	70.6	70.0	0.6	0	0	0	0.2	0	0	70.8	0

Source: Consultant's estimate

Table 4.7 PAC and nature conservation expenditure by the manufacturing sector in 1999 (1,000 GEL)

	Water & Soil			Waste			Air	Noise	Other	Total PAC	Addendum : nature protection
	total[10]	waste-water	ground-water & soil	total[10]	collection	treatment					
Investment Expenditure A	37.8	8.0	4.8	0	0	0	174.1	0	28.8	212.0	0
Of which end-of-pipe investments	19.3	8.0	4.8	0	0	0	22.5	0	0	41.8	0
Current Expenditure B	467.8	411.7	0	142.7	73.5	33.0	454.7	3.4	0	1,068.6	3.0
Expenditure I =(A+B)	505.7	419.7	4.8	142.7	73.5	33.0	628.8	3.4	28.8	1,280.6	3.0
Subsidies D	37.8	0	0	0	0	0	151.1	0	0	189.0	0
Expenditure II =(I-D+E)	467.8	419.7	4.8	142.7	73.5	33.0	477.7	3.4	28.8	1,091.6	3.0

Source: Consultant's estimate

Table 4.8 PAC and nature conservation expenditure by the Electricity, gas and water (NACE 10-14) sector in 1999 (in GEL)

	Water & Soil			Waste			Air	Noise	Other	Total PAC	Addendum : nature protection
	total[10]	waste-water	ground-water & soil	total[10]	collection	treatment					
Investment Expenditure A	0	0	0	0	0	0	1,707.0	0	0	1,707.0	0
Of which end-of-pipe investments	0	0	0	0	0	0	0	0	0	0	0
Current Expenditure B	73.0	0	0	0.6	0.6	0	1,138.0	0	0	1,211.6	0
Expenditure I =(A+B)	73.0	0	0	0.6	0.6	0	2,845.0	0	0	2,918.6	0
Subsidies D	0	0	0	0	0	0	0	0	0	0	0
Expenditure II =(I-D+E)	73.0	0	0	0.6	0.6	0	2,845.0	0	0	2,918.6	0

Source: Consultant's estimate

Table 4.9 PAC and nature conservation expenditure by other business sector in 1999 (1,000 GEL)

	Water & Soil			Waste			Air	Noise	Other	Total PAC	Addendum : nature protection
	total[10]	waste-water	ground-water & soil	total[10]	collection	treatment					
Investment Expenditure A	6.3	0	0	0	0	0	6.7	0	0	0	0
Of which end-of-pipe investments	6.3	0	0	0	0	0	6.7	0	0	0	0
Current Expenditure B	993.1	102.7	0	420.7	95.8	0	343.2	0	0	1,757.0	0
Expenditure I =(A+B)	999.5	102.7	0	420.7	95.8	0	349.9	0	0	1,770.1	0
Subsidies D	0	0	0	0	0	0	0	0	0	0	0
Expenditure II =(I-D+E)	999.5	102.7	0	420.7	95.8	0	349.9	0	0	1,770.1	0

Source: Consultant's estimate

Table 4.10 Natural resource management expenditure in the public sector in 1999 (1,000 GEL)

	Water Resources		Prevention of soil degradation	Forest resources	Mineral resources	Total
	total	drinking water				
Investment Expenditure A	6,797.0	3,052.0	0	0	0	6,797.0
Current Expenditure B	31,078.5	25,557.8	0	0	0	31,078.5
Expenditure I =(A+B)	37,875.5	28,609.8	0	0	0	37,875.5
Subsidies D	10.0	10.0	0	0	0	10.0
Fees E	0	0	0	0	0	0
Expenditure II =(I+D-E)	37,885.5	28,619.8	0	0	0	37,885.5

Source: Consultant's estimate

Table 4.11 Natural resource management expenditure by the business sector in 1999 (1,000 GEL)

	Water Resources		Prevention of soil degradation	Forest resources	Mineral resources	Total
	total	drinking water				
Investment Expenditure A	0	0	3.7	0	1,500.0	1,503.7
Current Expenditure B	1,306.5	1,023.0	0	2,026.8	0	3,333.3
Expenditure I =(A+B)	1,306.5	1,023.0	3.7	2,026.8	1,500.0	4,837.0
Subsidies D	32.9	32.9	0	0	0	32.9
Expenditure II =(I+D-E)	1,273.6	990.2	3.7	2,026.8	1,500.0	4,804.1

Source: Consultant's estimate

Table 4.12 Natural resource management expenditure by the agriculture sector in 1999 (1,000 GEL)

	Water Resources		Prevention of soil degradation	Forest resources	Mineral resources	Total
	total	drinking water				
Investment Expenditure A	0	0	0	0	0	0
Current Expenditure B	0.4	0.4	0	2,026.8	0	2,027.1
Expenditure I =(A+B)	0.4	0.4	0	2,026.8	0	2,027.1
Subsidies D	0	0	0	0	0	0
Expenditure II =(I+D-E)	0.4	0.4	0	2,026.8	0	2,027.1

Source: Consultant's estimate

Table 4.13 Natural resource management expenditure by the mining sector in 1999 (1,000 GEL)

	Water Resources		Prevention of soil degradation	Forest resources	Mineral resources	Total
	total	drinking water				
Investment Expenditure A	0	0	3.7	0	0	3.7
Current Expenditure B	0	0	0	0	0	0
Expenditure I =(A+B)	0	0	3.7	0	0	3.7
Subsidies D	0	0	0	0	0	0
Expenditure II =(I+D-E)	0	0	3.7	0	0	3.7

Source: Consultant's estimate

Table 4.14 Natural resource management expenditure by the manufacturing sector in 1999 (1,000 GEL)

	Water Resources		Prevention of soil degradation	Forest resources	Mineral resources	Total
	total	drinking water				
Investment Expenditure A	0	0	0	0	0	0
Current Expenditure B	588.6	383.9	0	0	0	588.6
Expenditure I =(A+B)	588.6	383.9	0	0	0	588.6
Subsidies D	18.2	18.2	0	0	0	18.2
Expenditure II =(I+D-E)	570.4	365.7	0	0	0	570.4

Source: Consultant's estimate

Table 4.15 Natural resource management expenditure by electricity, gas, and water sector in 1999 (1,000 GEL)

	Water Resources		Prevention of soil degradation	Forest resources	Mineral resources	Total
	total	drinking water				
Investment Expenditure A	0	0	0	0	0	0
Current Expenditure B	0.4	0.4	0	0	0	0.4
Expenditure I =(A+B)	0.4	0.4	0	0	0	0.4
Subsidies D	0	0	0	0	0	0
Expenditure II =(I+D-E)	0.4	0.4	0	0	0	0.4

Source: Consultant's estimate

Table 4.16 Natural resource management expenditure by other business sectors in 1999 (in GEL)

	Water Resources		Prevention of soil degradation	Forest resources	Mineral resources	Total
	total	drinking water				
Investment Expenditure A	0	0	0	0	0	0
Current Expenditure B	705.6	637.2	0	0	0	705.6
Expenditure I =(A+B)	705.6	637.2	0	0	0	705.6
Subsidies D	14.7	14.7	0	0	0	14.7
Expenditure II =(I+D-E)	691.0	622.5	0	0	0	691.0

Source: Consultant's estimate

4.2 Additional information

4.2.1 Environmental expenditure by regions

The following tables present environmental expenditure figures for the nine regions and two autonomous republics. The information is summarised in the attached map in Annex I.

Table 4.17 Imerety Area: PAC and nature conservation expenditure in 1999 (1,000 GEL)

Total	Water & Soil			Waste			Air	Noise	Other	Total PAC	Addendum : nature protection
	total	waste-water	ground-water & soil	total	collection	treatment					
Investment Expenditure A	0	0	0	0	0	0	19.0	0	0	19.0	0
Of which end-of-pipe investments	0	0	0	0	0	0	19.0	0	0	19.0	0
Current Expenditure B	61.6	56.6	0	0	0	0	72.8	0.5	0	134.8	0
Expenditure I =(A+B)	61.6	56.6	0	0	0	0	91.8	0.5	0	153.8	0

Source: Consultant's estimate

Table 4.18 Imerety Area: Natural resource management in 1999 (1,000 GEL)

	Water resources		Prevention of soil degradation	Forest resources	Mineral resources	Total
	total	drinking water				
Investment Expenditure A	0	0	0	0	0	0
Current Expenditure B	491.6	341.6	0	0	0	491.6
Expenditure I =(A+B)	491.6	341.6	0	0	0	491.6

Source: Consultant's estimate

Table 4.19 Shida-kartli Are: PAC and nature conservation expenditure in 1999 (1,000 GEL)

Total	Water & Soil			Waste			Air	Noise	Other	Total PAC	Addendum : nature protection
	total	waste-water	ground-water & soil	total	collection	treatment					
Investment Expenditure A	31.3	8.0	4.8	0	0	0	0	0	0	31.3	0
Of which end-of-pipe investments	12.8	8.0	4.8	0	0	0	0	0	0	12.8	0
Current Expenditure B	9.2	5.3	0.0	2.2	0.7	0	0.1	2.1	0	13.7	0.4
Expenditure I =(A+B)	40.5	13.3	4.8	2.2	0.7	0	0.1	2.1	0	45.0	0.4

Source: Consultant's estimate

Table 4.20 Shida-kartli Area:Nnatural resource management in 1999 (1,000 GEL)

	Water resources		Prevention of soil degradation	Forest resources	Mineral resources	Total
	total	drinking water				
Investment Expenditure A	0	0	0	0	0	0
Current Expenditure B	17.9	17.9	0	0	0	17.9
Expenditure I =(A+B)	17.9	17.9	0	0	0	17.9

Source: Consultant's estimate

Table 4.21 Qvemo-Kartli Are: PAC and nature conservation expenditure in 1999 (1,000 GEL)

Total	Water & Soil			Waste			Air	Noise	Other	Total PAC	Addendum : nature protection
	total	wastewater	ground-water & soil	total	collection	treatment					
Investment Expenditure A	0	0	0	0	0	0	1,711.7	0	0	1,711.7	0
Of which end-of-pipe investments	0	0	0	0	0	0	0	0	0	0	0
Current Expenditure B	295.4	185.9	0	20.4	4.0	0	1,221.7	0	0	1,537.5	0
Expenditure I =(A+B)	295.4	185.9	0	20.4	4.0	0	2,933.4	0	0	3,249.2	0

Source: Consultant's estimate

Table 4.22 Qvemo-Kartli Area: Nnatural resource management in 1999 (1,000 GEL)

	Water resources		Prevention of soil degradation	Forest resources	Mineral resources	Total
	total	drinking water				
Investment Expenditure A	0	0	3.7	0	1,500.0	1,503.7
Current Expenditure B	5,556.3	25.3	0	0	0	5,556.3
Expenditure I =(A+B)	5,556.3	25.3	3.7	0	1,500.0	7,060.0

Source: Consultant's estimate

Table 4.23 Adjarian Autonomous Republi: PAC and nature conservation expenditure in 1999 (1,000 GEL)

Total	Water & Soil			Waste			Air	Noise	Other	Total PAC	Addendum : nature protection
	total	waste-water	ground-water & soil	total	collection	treatment					
Investment Expenditure A	6.5	0	0	0	0	0	0	0	0	6.5	0.0
Of which end-of-pipe investments	6.5	0	0	0	0	0	0	0	0	6.5	0.0
Current Expenditure B	797.3	11.5	0	78.8	78.5	0.2	69.4	0.7	0	946.2	0.0
Expenditure I =(A+B)	803.8	11.5	0	78.8	78.5	0.2	69.4	0.7	0	952.7	0.0

Source: Consultant's estimate

Table 4.24 Adjarian Autonomous Republic: Natural resource management in 1999 (1,000 GEL)

	Water resources		Prevention of soil degradation	Forest resources	Mineral resources	Total
	total	drinking water				
Investment Expenditure A	100.0	100.0	0	0	0	100.0
Current Expenditure B	121.0	121.0	0	0	0	121.0
Expenditure I =(A+B)	221.0	221.0	0	0	0	221.0

Source: Consultant's estimate

Table 4.25 Tbilis: PAC and nature conservation expenditure in 1999 (1,000 GEL)

Total	Water & Soil			Waste			Air	Noise	Other	Total PAC	Addendum : nature protection
	total	wastewater	ground-water & soil	total	collection	treatment					
Investment Expenditure A	0	0	0	0	0	0	150.4	0	28.8	179.2	0
Of which end-of-pipe investments	0	0	0	0	0	0	3.5	0	0	3.5	0
Current Expenditure B	3,148.0	3,075.2	0.6	1,064.1	706.9	32.8	409.1	0	0	4,621.2	205.1
Expenditure I =(A+B)	3,148.0	3,075.2	0.6	1,064.1	706.9	32.8	559.5	0	28.8	4,800.4	205.1

Source: Consultant's estimate

Table 4.26 Tbilisi: Natural resource management in 1999 (1,000 GEL)

	Water resources		Prevention of soil degradation	Forest resources	Mineral resources	Total
	total	drinking water				
Investment Expenditure A	5,697.0	1,952.0	0	0	0	5,697.0
Current Expenditure B	25,281.0	25,266.2	0	2,026.8	0	27,307.8
Expenditure I =(A+B)	30,978.0	27,218.2	0	2,026.8	0	33,004.8

Source: Consultant's estimate

Table 4.27 Mtskheta-Tianeti Area: PAC and nature conservation expenditure in 1999 (1,000 GEL)

Total	Water & Soil			Waste			Air	Noise	Other	Total PAC	Addendum : nature protection
	total	wastewater	ground-water & soil	total	collection	treatment					
Investment Expenditure A	0	0	0	0	0	0	0	0	0	0	0
Of which end-of-pipe investments	0	0	0	0	0	0	0	0	0	0	0
Current Expenditure B	0	0	0	2.0	2.0	0	0	0	0	2.0	121.1
Expenditure I =(A+B)	0	0	0	2.0	2.0	0	0	0	0	2.0	121.1

Source: Consultant's estimate

Table 4.28 Mtskheta-Tianeti Area: Natural resource management in 1999 (1,000 GEL)

	Water resources		Prevention of soil degradation	Forest resources	Mineral resources	Total
	total	drinking water				
Investment Expenditure A	0	0	0	0	0	0
Current Expenditure B	39.6	3.1	0	0	0	39.6
Expenditure I =(A+B)	39.6	3.1	0	0	0	39.6

Source: Consultant's estimate

Table 4.29 Samegrelo and Zemo (Upper) Svaneti area: PAC and nature conservation expenditure in 1999 (1,000 GEL)

Total	Water & Soil			Waste			Air	Noise	Other	Total PAC	Addendum : nature protection
	total	wastewater	ground-water & soil	total	collection	treatment					
Investment Expenditure A	6.3	0	0	0	0	0	6.7	0	0	13.0	0
Of which end-of-pipe investments	6.3	0	0	0	0	0	6.7	0	0	13.0	0
Current Expenditure B	568.0	388.7	0	120.2	86.0	15.0	162.1	0	0	850.3	0
Expenditure I =(A+B)	574.3	388.7	0	120.2	86.0	15.0	168.7	0	0	863.3	0

Source: Consultant's estimate

Table 4.30 Samegrelo and Zemo (Upper) Svaneti area: Natural resource management in 1999 (1,000 GEL)

	Water Resources		Prevention of soil degradation	Forest resources	Mineral resources	Total
	total	drinking water				
Investment Expenditure A	1,000.0	1,000.0	0	0	0	1,000.0
Current Expenditure B	867.7	795.8	0	0	0	867.7
Expenditure I =(A+B)	1,867.7	1,795.8	0	0	0	1,867.7

Source: Consultant's estimate

Table 4.31 Samtskhe-Javakheti area: PAC and Nature conservation expenditure in 1999 (1,000 GEL)

Total	Water & Soil			Waste			Air	Noise	Other	Total PAC	Addendum : nature protection
	total	wastewater	ground-water & soil	total	collection	treatment					
Investment Expenditure A	0	0	0	0	0	0	0	0	0	0	0
Of which end-of-pipe investments	0	0	0	0	0	0	0	0	0	0	0
Current Expenditure B	0.5	0	0	0	0	0	0.8	0.1	0	1.4	0
Expenditure I =(A+B)	0.5	0	0	0	0	0	0.8	0.1	0	1.4	0

Source: Consultant's estimate

Table 4.32 Samtskhe-Javakheti area: Natural resource management in 1999 (1,000 GEL)

	Water resources		Prevention of soil degradation	Forest resources	Mineral resources	Total
	total	drinking water				
Investment Expenditure A	0	0	0	0	0	0
Current Expenditure B	9.9	9.9	0	0	0	9.9
Expenditure I =(A+B)	9.9	9.9	0	0	0	9.9

Source: Consultant's estimate

Table 4.33 Abkhazia Autonomous Republic: PAC and nature consevation expenditure

Total	Water & soil			Waste			Air	Noise	Other	Total PAC	Addendum : nature protection
	total	wastewater	ground-water & soil	total	collection	treatment					
Investment Expenditure A	0	0	0	0	0	0	0	0	0	0	0
Of which end-of-pipe investments	0	0	0	0	0	0	0	0	0	0	0
Current Expenditure B	1.3	1.3	0	0	0	0	0	0	0	1.3	0
Expenditure I =(A+B)	1.3	1.3	0	0	0	0	0	0	0	1.3	0

Source: Consultant's estimate

Table 4.34 Abkhazia Autonomous Republic: Natural resource management in 1999 (1,000 GEL)

	Water resources		Prevention of soil degradation	Forest resources	Mineral resources	Total
	total	drinking water				
Investment Expenditure A	0	0	0	0	0	0
Current Expenditure B	0	0	0	0	0	0
Expenditure I =(A+B)	0	0	0	0	0	0

Source: Consultant's estimate

4.2.2 Grossing up

Since grossing up involves several assumptions and expert judgements we have assessed that the presentation of grossed up results is only reasonable for fairly aggregated data. The data which can be reasonably grossed up is summarised in the tables below.

Table 4.35 Estimated total national PAC and nature conservation expenditure in 1999 (1,000 GEL)

	Water & soil total	Waste total	Air	Noise	Other	Total PAC	Addendum: nature protection
Investment Expenditure - in sample A	44.2	0	1,887.8	0	28.8	1,960.8	0
Investment Expenditure - grossed up A	44.2	0	1,888.0	0	28.8	1,961.0	0
Current Expenditure in sample B	4,881.2	1,287.7	1,936.0	3.4	0	8,108.2	326.6
Current Expenditure - grossed up B	8,554.0	4,599.6	2,371.8	3.4	0	15,528.8	410.0
Expenditure - in the sample I =(A+B)	4,925.3	1,287.7	3,823.8	3.4	28.8	10,069.0	326.6
Expenditure - grossed up I =(A+B)	8,598.2	4,599.6	4,259.8	3.4	28.8	17,489.8	410.0

Source: Consultant's estimate

Table 4.36 Estimated total natural resource management expenditure in 1999 (1,000 GEL)

	Water resources total	Prevention of soil degradation	Forest resources	Mineral resources	Total
Investment Expenditure - in sample A	6,797.0	3.7	0.0	1,500.0	8,300.7
Investment Expenditure - grossed up A	9,440.3	3.7	0.0	1,500.0	10,944.0
Current Expenditure in sample B	32,385.0	0.0	2,026.8	0.0	34,411.7
Current Expenditure – grossed up B	45,202.4	0.0	2,026.8	0.0	47,229.2
Expenditure - in the sample I =(A+B)	39,182.0	3.7	2,026.8	1,500.0	42,712.5
Expenditure - grossed up I =(A+B)	54,642.7	3.7	2,026.8	1,500.0	58,173.2

Source: Consultant's estimate

In the tables below, we illustrate the expenditure by public and business sectors respectively.

Table 4.37 Estimated public sector (NACE 90-92 and 4100) PAC and nature conservation expenditure in 1999 (1,000 GEL)

	Water & soil total	Waste total	Air	Noise	Other	Total PAC	Addendum : nature protection
Investment Expenditure - in sample A	0	0	0	0	0	0	0
Investment Expenditure - grossed up A	0	0	0	0	0	0	0
Current Expenditure in sample B	3,276.6	723.6	0	0	0	4,000.2	203.6
Current Expenditure - grossed up B	6,285.3	3,869.1	0	0	0	10,154.4	282.8
Expenditure - in the sample I =(A+B)	3,276.6	723.6	0	0	0	4,000.2	203.6
Expenditure - grossed up I =(A+B)	6,285.3	3,869.1	0	0	0	10,154.4	282.8

Source: Consultant's estimate

Table 4.38 Estimated public sector natural resource management expenditure in 1999 (1,000 GEL)

	Water resources total	Prevention of soil degradation	Forest resources	Mineral resources	Total
Investment Expenditure - in sample A	6,797.0	0	0	0	6,797.0
Investment Expenditure - grossed up A	9,440.3	0	0	0	9,440.3
Current Expenditure in sample B	31,078.5	0	0	0	31,078.5
Current Expenditure - grossed up B	43,186.3	0	0	0	43,186.3
Expenditure - in the sample I =(A+B)	37,875.5	0	0	0	37,875.5
Expenditure - grossed up I =(A+B)	52,626.6	0	0	0	52,626.6

Source: Consultant's estimate

Table 4.39 Estimated business sector (NACE 90-92 and 4100) PAC and nature conservation expenditure in 1999 (1,000 GEL)

	Water & soil total	Waste total	Air	Noise	Other	Total PAC	Addendum : nature protection
Investment Expenditure - in sample A	44.2	0	1,887.8	0	28.8	1,960.8	0
Investment Expenditure - grossed up A	44.2	0	1,888.0	0	28.8	1,961.0	0
Current Expenditure in sample B	1,604.6	564.1	1,936.0	3.4	0.0	4,108.0	123.0
Current Expenditure - grossed up B	2,268.7	730.5	2,371.7	3.4	0.0	5,374.3	127.2
Expenditure - in the sample I =(A+B)	1,648.7	564.1	3,823.8	3.4	28.8	6,068.8	123.0
Expenditure - grossed up I =(A+B)	2,312.9	730.5	4,259.7	3.4	28.8	7,335.3	127.2

Source: Consultant's estimate

Table 4.40 Estimated business sector natural resource management expenditure in 1999 (1,000 GEL)

	Water resources total	Prevention of soil degradation	Forest resources	Mineral resources	Total
Investment Expenditure - in sample A	0	3.7	0	1,500.0	1,503.7
Investment Expenditure - grossed up A	0	3.7	0	1,500.0	1,503.7
Current Expenditure in sample B	1,306.5	0	2,026.8	0	3,333.3
Current Expenditure - grossed up B	2,016.0	0	2,026.8	0	4,042.8
Expenditure - in the sample I =(A+B)	1,306.5	3.7	2,026.8	1,500.0	4,837.0
Expenditure - grossed up I =(A+B)	2,016.0	3.7	2,026.8	1,500.0	5,546.5

Source: Consultant's estimate

4.3 Expenditure by financing principle

In the survey the aim was to collect environment expenditure according to the abater principle. Sample data were grossed up to national figures but with very high levels of uncertainty.

There are two ways to arrive at expenditure figures by the financing principle.

1 If *all* the financing sources for *each* expenditure items are known, we can simply aggregate private/business sector and public sector sources separately and calculate private/business sector and public sector finances. That procedure can be followed in our sample for investment expenditure because we asked the question on financial sources. Similar questions for the current expenditure have not been asked. Answering on the basis of present accounting practices was thought to be too difficult, therefore it was asked only in the in-depth interviews but with very limited results. On that basis, we produced the OECD tables for the survey sample. Fees for gen-

erating the tables by financing principle were not included because environmental charges are not earmarked in Georgia. User fee payments were not included either because it is not necessarily true that enterprises paying the fees in the sample would pay the fee to the water companies in the sample. In fact, this is very unlikely.

The financing principle for the grossed up (national) expenditure data could not be calculated. Grossing up expenditure figures by the abater principle has already introduced substantial uncertainties. Grossing up subsidies, however, could not be done on the basis of turnover share since the allocation of subsidies follows different rules. Therefore, grossing up financial sources cannot be done with any consistency. National expenditure figures by the financing principle were not calculated.

2 The other way to calculate expenditure figures by the financing principle is to correct aggregated expenditure figures by the abater principle for aggregated subsidies and tax/fee payment. This is the usual practice and is suggested by the form of the OECD tables. This practice could not be followed for the sample because we could not use the aggregate subsidy figures (which were not obtainable from the budget). Our national expenditure figures are too uncertain to use as a basis for further calculations.

Therefore, we calculated expenditure according to the financing principle only for the sample on the basis of financial source information for investment expenditure data.

4.3.1 Environmental charge and tax payments

Table 4.41 Charges and fines for pollution (1,000 GEL)

	Public	Business
Total	240.8	2,590.52
Water pollution	0	0.16
Air pollution	0	33.87
Waste disposal	0.04	0.12
Taxes on natural resource use, total	177.0	2,111.81
Water	177.0	85.0
Forest	0	1,909.8
Minerals	0	94.6

Source: Consultant's estimate

4.3.2 Financial sources for environmental investment expenditure

Taxes on natural resource use dominate as illustrated in the table below. Emission charges and fines are negligible.

Table 4.42 Financing environmental investments by media (1,000 GEL)

	Domestic Subsidies from state budget, transfers etc.	Domestic loans	International Grants	International Loans
Water & Soil	37.8	0	0	0
Waste	0	0	0	0
Air	0	0	1,51.1	1,707.0
Noise	0	0	0	0
Other	0	0	0	0
Water resources	300.0	0	800.0	0
Prevention of soil degradation	0	0	0	0
Forest resources	0	0	0	0
Mineral resources	0	1,500.0	0	0
Total	337.8	1,500.0	951.1	1,707.0

Source: Consultant's estimate

Table 4.43 Financing environmental investments by sectors (1,000 GEL)

	Domestic Subsidies from state budget, transfers etc.	Domestic loans	International Grants	International Loans
Public	300.0	0	800.0	0
Business	37.8	1,500.0	151.1	1,707.0
Agriculture, hunting, fishing, forestry	0	0	0	0
Mining	0	0	0	0
Manufacturing	37.8	1,500.0	151.1	0
Electricity and Gas	0	0	0	1,707.0
Other	0	0	0	0
Total	337.8	1,500.0	951.1	1,707.0

Source: Consultant's estimate

Table 4.44 Financing environmental investments by regions (1,000 GEL)

	Domestic Subsidies from state budget, transfers etc.	Domestic loans	International Grants	International Loans
Tbilisi	0	1,500.0	151.1	0
Ajara area	0	0	0	0
Samegrelo & Zemo Svaneti area	25.0	0	0	0
Imerety area	12.8	0	0	1,707.0
Mtskheta-Tianeti area	0	0	0	0
Samtskhe-Javakheti area	0	0	0	0
Qvemo-Kartli area	100.0	0	0	0
Abkhazia	0	0	0	0
Shida-Kartli area	200.0	0	800.0	0
Total	337.8	1,500.0	951.1	1,707.0

Source: Consultant's estimate

4.3.3 Environmental impact of new investments

The following table indicates the evaluation of the environmental impact of the new investments without environmental purpose. Many of these investments are described as the introduction of new technology or production processes. Therefore these are potential technological improvement investments which can bring environmental benefits. The enterprises' own evaluation is reflected in the following table. The table describes how much is invested in projects that are evaluated as having a positive or negative environmental impact.

Table 4.45 Environmental impact of non-environmental investments (1,000 GEL)

	Investment	Subsidies
Very positive	0	0
Slightly positive	2,576	2,492
Neutral	60,386	38,550
Slightly negative	0	0
Total	62,962	41,042

Source: Consultant's estimate

The table summarises the subjective valuation of the investing enterprise and it is not necessarily the "real" impact.

5 Overview of environmental expenditure

5.1 Composition of environmental expenditure

5.1.1 Level of expenditure

It is difficult and can easily be misleading to assess the level of environmental expenditure for one year without the context of past years' experiences. Low investment figures may reflect high investment activities in previous years. In that case, current costs should show an increasing trend. We cannot make this type of assessment since we cannot construct time series data. Two simple measures were calculated to allow a basic assessment and facilitate international comparison. These are expenditure figures on per capita basis and in relation to GDP.

Table 5.1 Expenditure indexes

PAC and nature protection expenditure	Sample figure	Grossed up figure
Investment expenditure/capita (GEL/capita)	0.36	0.36
Investment expenditure/GDP (%)	0.04	0.04
Current expenditure/capita (GEL/capita)	1.56	2.95
Current expenditure/GDP (%)	0.15	0.28
Total expenditure/capita (GEL/capita)	1.93	3.31
Total expenditure/GDP (%)	0.19	0.32
Environmental Expenditure		
Investment expenditure/capita (GEL/capita)	1.90	2.39
Investment expenditure/GDP (%)	0.18	0.23
Current expenditure/capita (GEL/capita)	7.93	11.70
Current expenditure/GDP (%)	0.77	1.13
Total expenditure/capita (GEL/capita)	9.83	14.09
Total expenditure/GDP (%)	0.95	1.36

Source: Consultant's estimate

Expenditure figures on the basis of population size are low compared to international standards, but it is not so low if we compare it to the GDP.

5.1.2 Investment vs. current expenditure

The share of investment expenditure is very low in PAC expenditure. This reflects the small amount of new environmental capital that is put in place. Considering the extensive wastewater infrastructure in place, it is partly the result of high investment activities in the past mostly in FSU time. The state of the environmental infrastructure, however is very deteriorated. The low capital investment figures indicate that there is not likely to be sufficient investment to stop the deterioration.

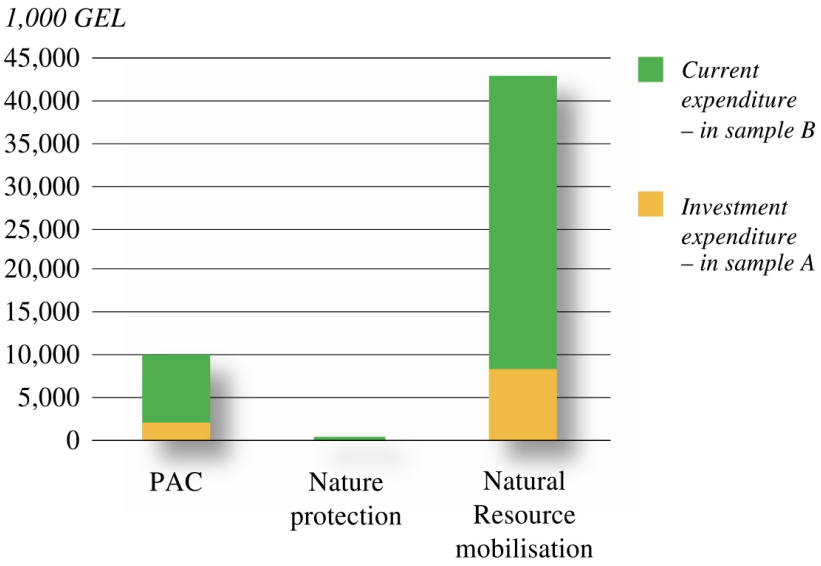
PAC investment expenditure is largely dominated by one air pollution control project in the power sector which is process integrated.

A dominant part of PAC expenditure is current expenditure, indicating that the main emphasis is on operating existing environmental capital assets.

There is no investment expenditure in nature conservation, only some current expenditure in a region with protected areas.

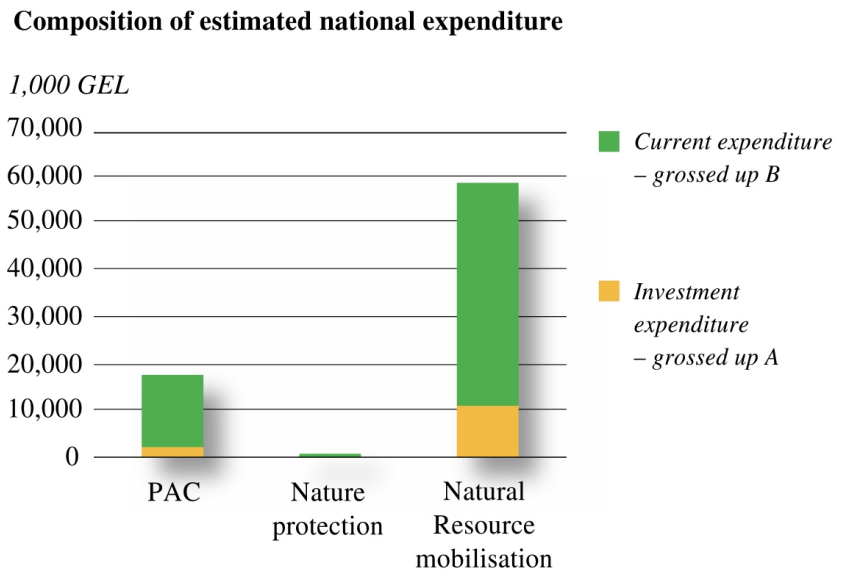
The ratio of investment expenditure is higher in natural resource mobilisation mostly in water supply. The dominant part, however, is also current expenditure.

Composition of expenditure in the sample



Source: Consultant's estimate

Figure 1 Composition of environmental expenditure in the sample

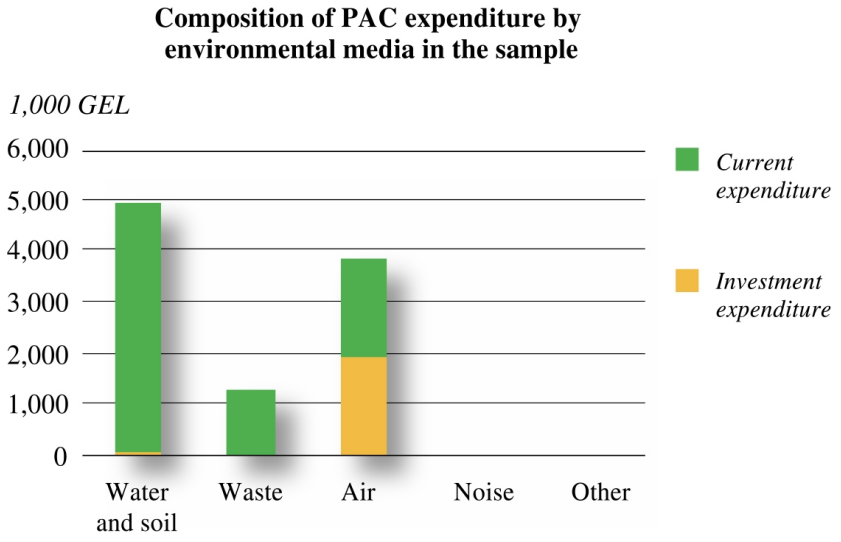


Source: Consultant's estimate

Figure 2 Composition of estimated national environmental expenditure

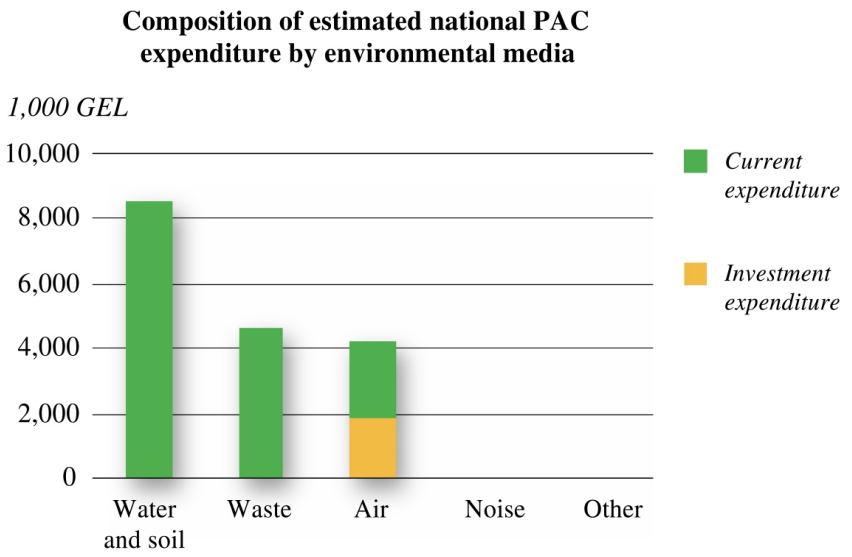
5.1.3 Expenditure by environmental media

Expenditure both on PAC and natural resource mobilisation is largely dominated by water sector spending. However, the air quality spending is highly concentrated in terms of the number of enterprises.



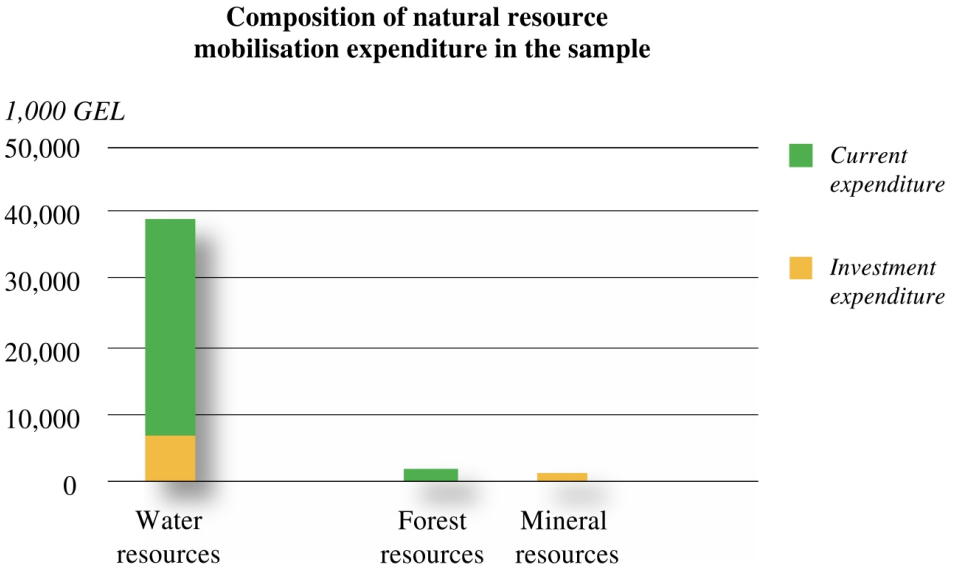
Source: Consultant's estimate

Figure 3 Composition of PAC expenditure by environmental media in the sample



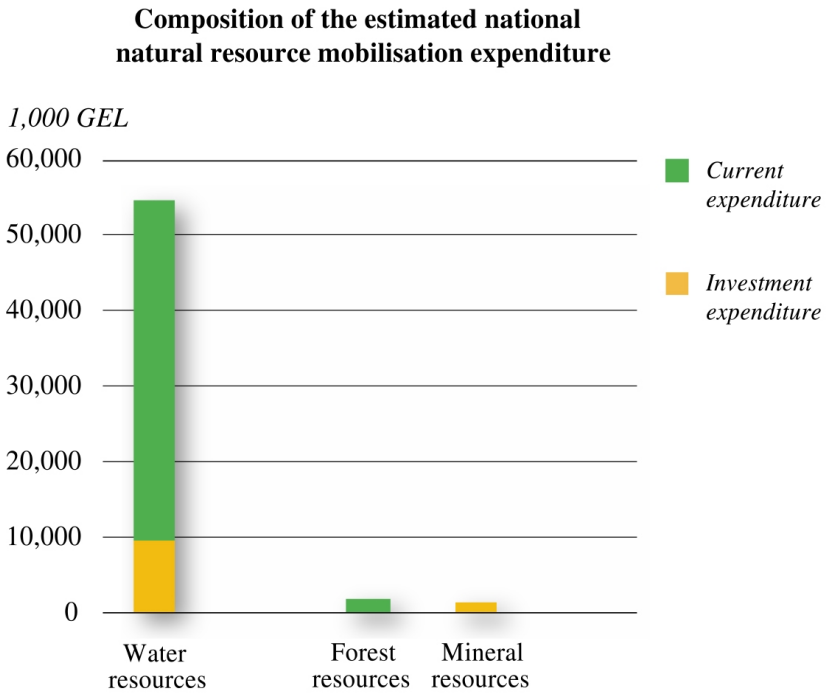
Source: Consultant's estimate

Figure 4 *Composition of estimated national PAC expenditure by environmental media*



Source: Consultant's estimate

Figure 5 *Composition of natural resource mobilisation expenditure in the sample*



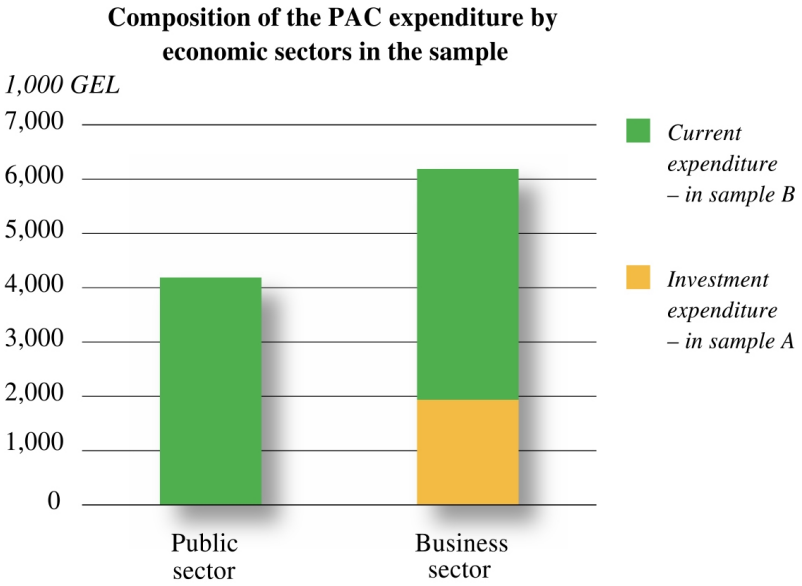
Source: Consultant's estimate

Figure 6 *Composition of estimated natural resource mobilisation expenditure*

There are two other process-integrated projects where the environmental media is not identified. There is little investment in water quality protection and none in waste management.

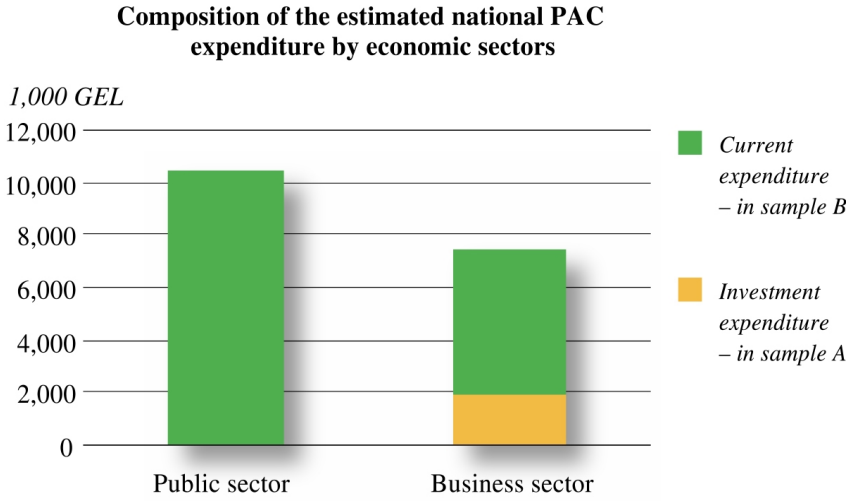
5.1.4 Expenditure by economic sectors

We note that PAC investment expenditure is exclusively in the business sector. However, a large share hereof was financed by public sector subsidies.



Source: Consultant's estimate

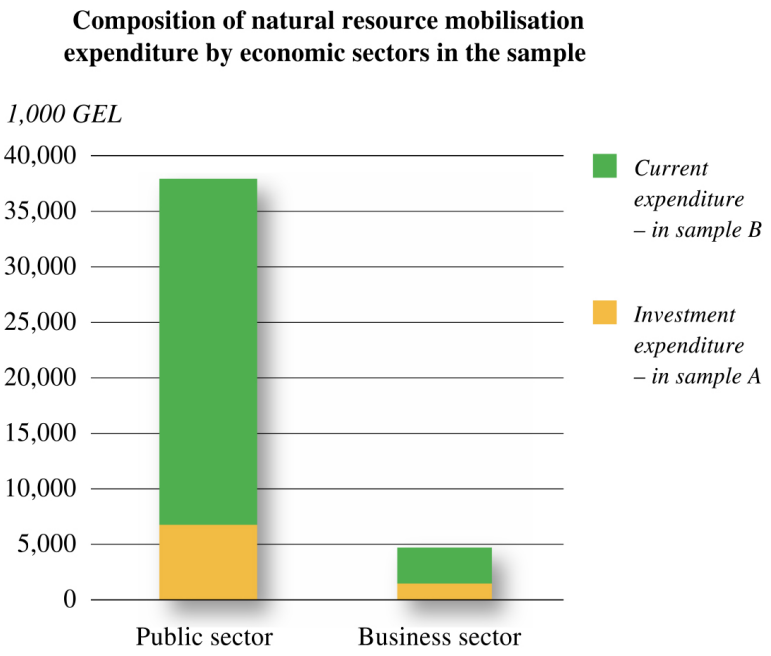
Figure 7 *Composition of estimated national PAC expenditure by economic sectors in the sample*



Source: Consultant's estimate

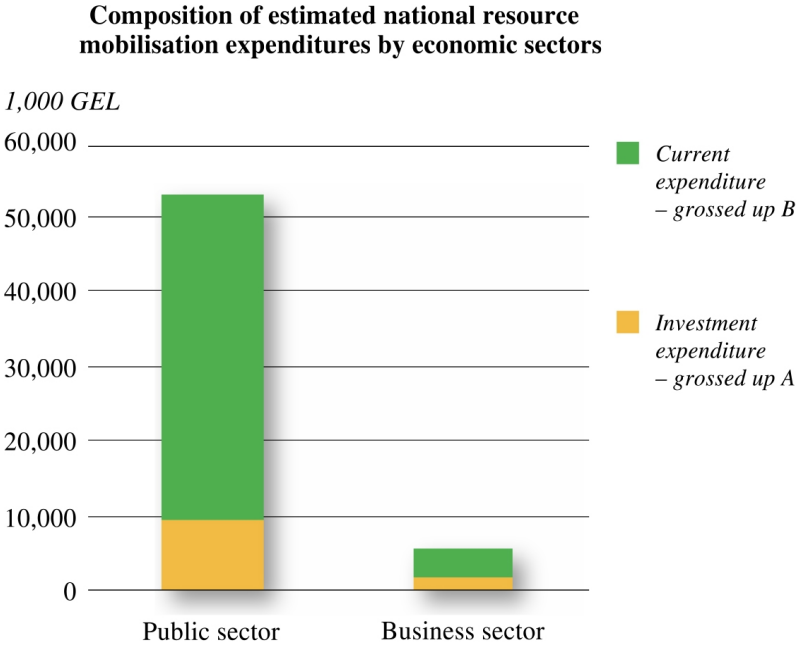
Figure 8 *Composition of estimated national PAC expenditure by economic sectors*

For natural resource mobilisation, the public sector dominates both investment and recurrent spending.



Source: Consultant's estimate

Figure 9 *Composition of estimated national resource mobilisation expenditure by economic sectors in the sample*



Source: Consultant's estimate

Figure 10 *Composition of estimated national resource mobilisation expenditure by economic sectors*

6 Notes on the data collection process

The total volume of enterprises' investments included in the in-depth survey in 1999 amounted to around GEL 41 million, of which less than 0,1% was related to environmental investment expenditure. Three enterprises of the total 21 were provided with the subsidies from the public budget that contributed to 94% of the overall investment expenditure.

6.1 Motive for investment

The major reasons for investments were identified as: increase in production of the main product, complying with international standards, and cost saving. Only one enterprise declared complying with environmental regulation as the major reason for investment. Other reasons, such as the image of "green" enterprise, etc. were not identified as important.

6.2 Non-monetary transactions

None of the enterprises declared use of non-monetary transactions in their business activity, including environmental protection. However, according to other expert estimations the share of non-monetary transactions between organisations is quite significant (analysis carried out by the Chamber of Control). It must be emphasised that since June 1999, pursuant to the Ordinance issued by President it is prohibited to use non-monetary transaction with the state budget.

During the survey period only one enterprise from the sample made R&D expenditure of 4,200 GEL, so this category of expenses was negligible.

The research showed that the environmental expenditure is not recorded in details required by the OECD methodology, especially at the new enterprises, primarily because there is no corresponding requirement for it from the state statistical and environmental organisations. Thus, it was difficult for the enterprises and often impossible to distinguish the environmental protection expenditure from their total expenditure. In such cases the financial managers provided only approximate figures.

6.3 Capital expenditure

It turned out to be especially difficult for enterprises to define the environmental expenditure component in the process-integrated investment. They have succeeded relatively in doing so in case of complex investments. The following two methods were used for identification of the environmental expenditure component within the process-integrated investment:

- In case of new technologies or new facilities it was necessary to perform a search in the financial records of the investment projects or in the technical passports of the adopted technology. Generally, the technical directors of enterprises managed to identify the environmental expenditure component within the implemented investment projects.

- At the time when it was impossible to identify the environmental expenditure component within the investment projects the financial director of the enterprise provided information about differences in percentage between the prices of the general technology available at the market and the one they adopted at the enterprise. It also included the additional investment expenditure of the enterprises for meeting the environmental regulation requirements.

6.4 Current expenditure

The major difficulties with the current environmental expenditure data collection were as follows:

- Demarcation of fees for using sewerage and water supply system services. The existing financial reporting system does not consider the wastewater treatment and drinking water supply expenditure to be environmental. These are considered as a part of the production costs of the utilities and included in a single item in the bookkeeping papers of enterprises. This is the reason why the data on wastewater treatment (1. environment protection and natural resources management) and water supply (2. natural resources management) are often aggregated or estimated.

- In their financial reports the enterprises do not separately identify the expenditure on waste management. These data are aggregated with other expenditure so that it is quite difficult to distinguish the item, especially in cases where activities were performed utilising their own facilities. In such cases, the required figures were often estimated. It was possible to get financial records data covering waste management only in cases where the enterprise had paid for provision of environmental services by other organisations.

Table 6.1 Assessment of the environmental expenditure data collection capacity.

	Number of enterprises
The env. expenditure data are separated in the accounts of the enterprise	1
Accounting system allows to connect financial data with physical data	4
Estimated the data asked in this questionnaire	6
Possibility to change accounting practice	14
Total sample for in-depth survey	16

Source: Consultant's estimate

Note: It is possible to give an affirmative answer to more than one of the four questions.

7 Selected recommendations for data collection

The purpose of this chapter is to put forward the conclusions to be drawn from the previous chapters. Conclusions relate to the experiences with preparing the questionnaire, carrying out the pilot survey and data processing.

Need for new system

There is consensus on the need to renew the traditional system of environmental data collection. However , there have been somewhat conflicting requests to prepare the reporting format close to the old ones on one hand and a great deal of simplification on the other hand.

The new system should not be too complicated. The complexity of the reporting format should be determined by the actual use of the information.

Co-operation

Traditionally, DoS collects environmental expenditure data and it has the required expertise for statistical data collection and processing. However, MoE experts must provide the professional guidance for the proper definition of terms, structure of information to be collected and the insight as one of the main user of the collected information. Co-operation between the two organisations is particularly important in the initial design phase but it should also become part of the regular operation of the new system.

Terminology

Generally, the terminology has been perceived as well understood by enterprises but some terms as end-of-pipe investment and process-integrated investment needs further clarification in future reporting.

Questionnaire

The reporting format functioned well in the pilot survey. Some parts, however need to be revised, particularly the questions on payments and subsidies.

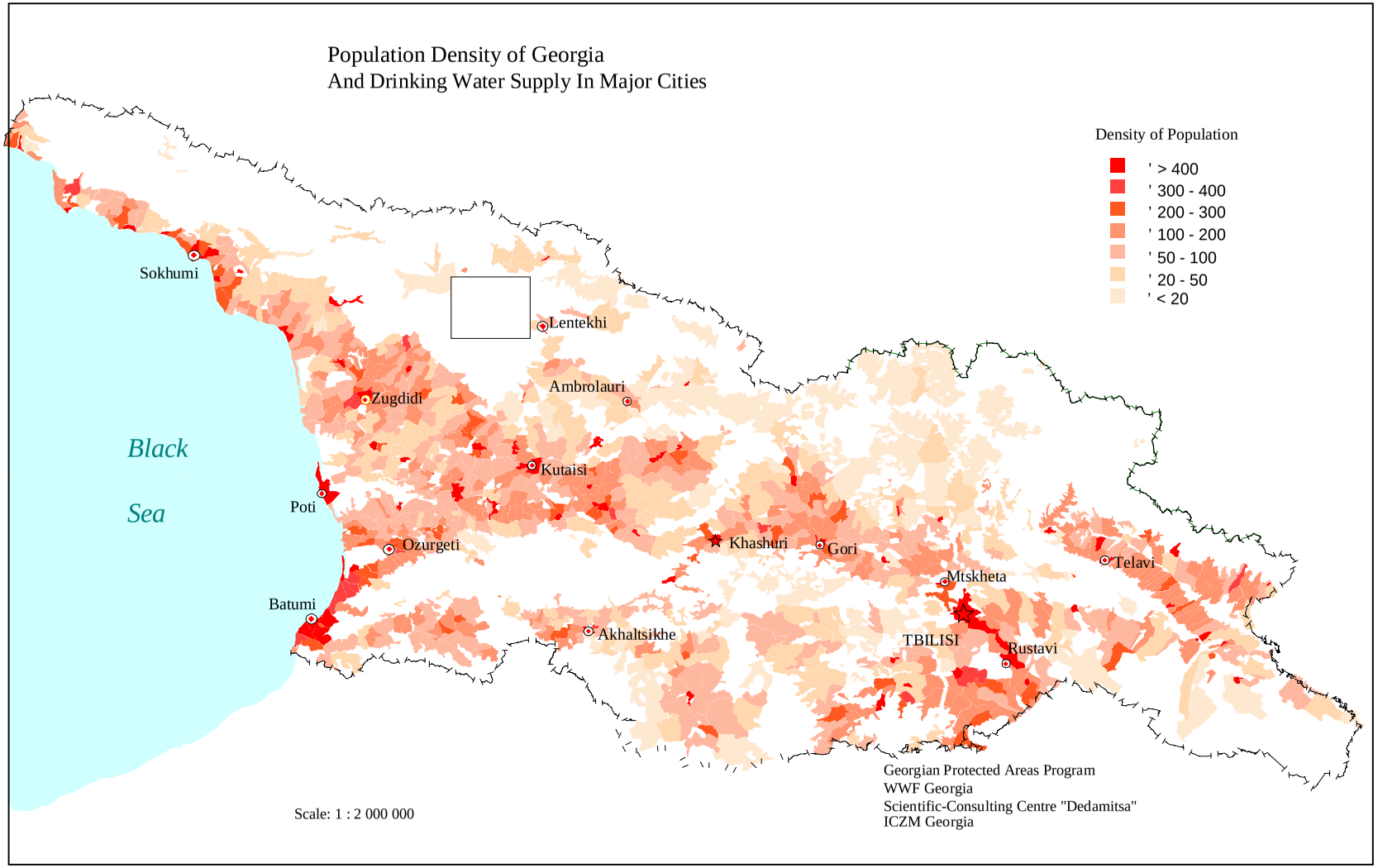
Timing

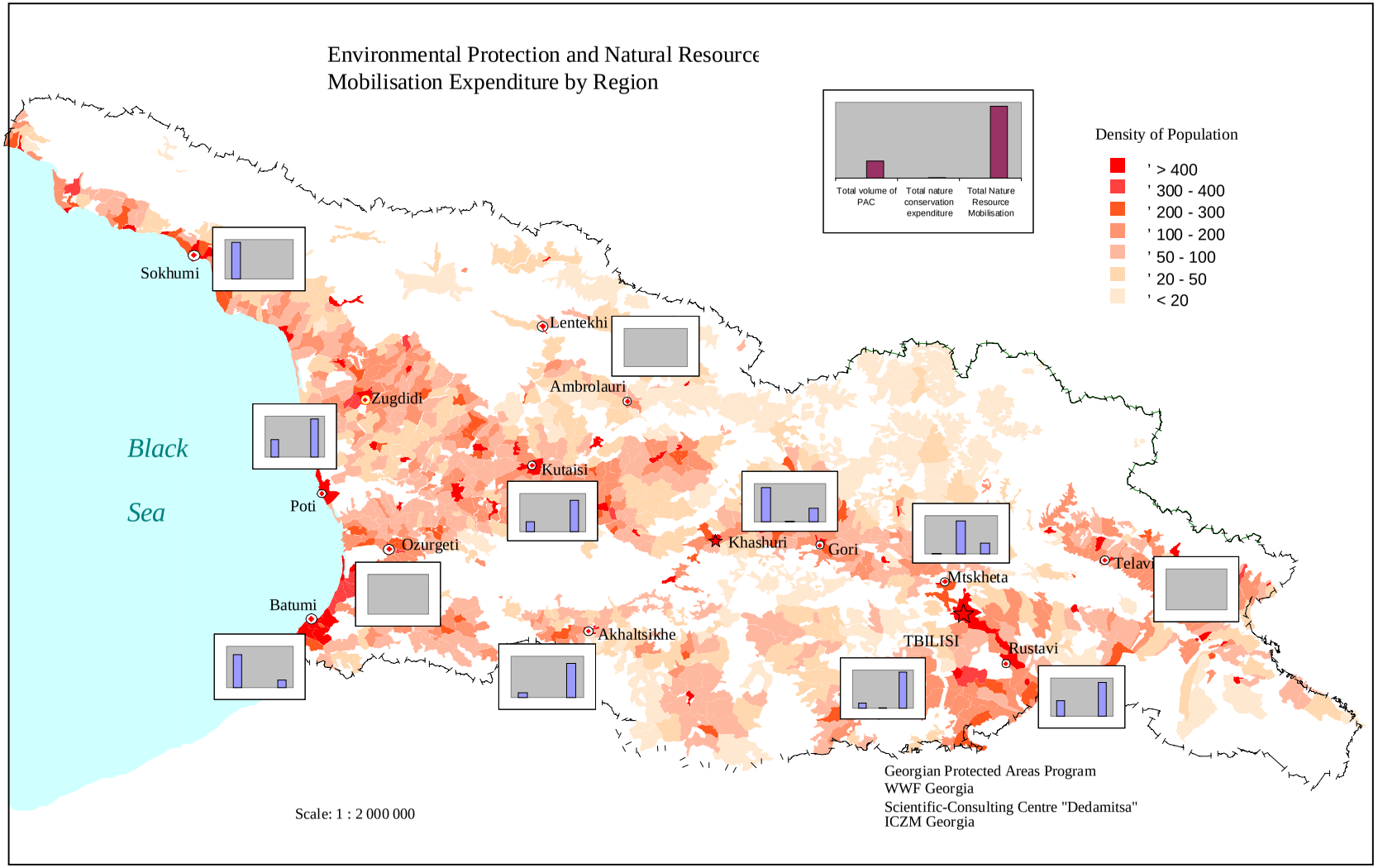
If a new survey is planned in the process of fully redesigning the system, timing is very important. In the project, there was no flexibility to carry out the survey at the right time and timing of the interviews was not fortunate. Enterprises did not have their full 1999 account ready yet. Suggested timing for similar surveys or for sending out the form is April-May in each year.

Accounting practices

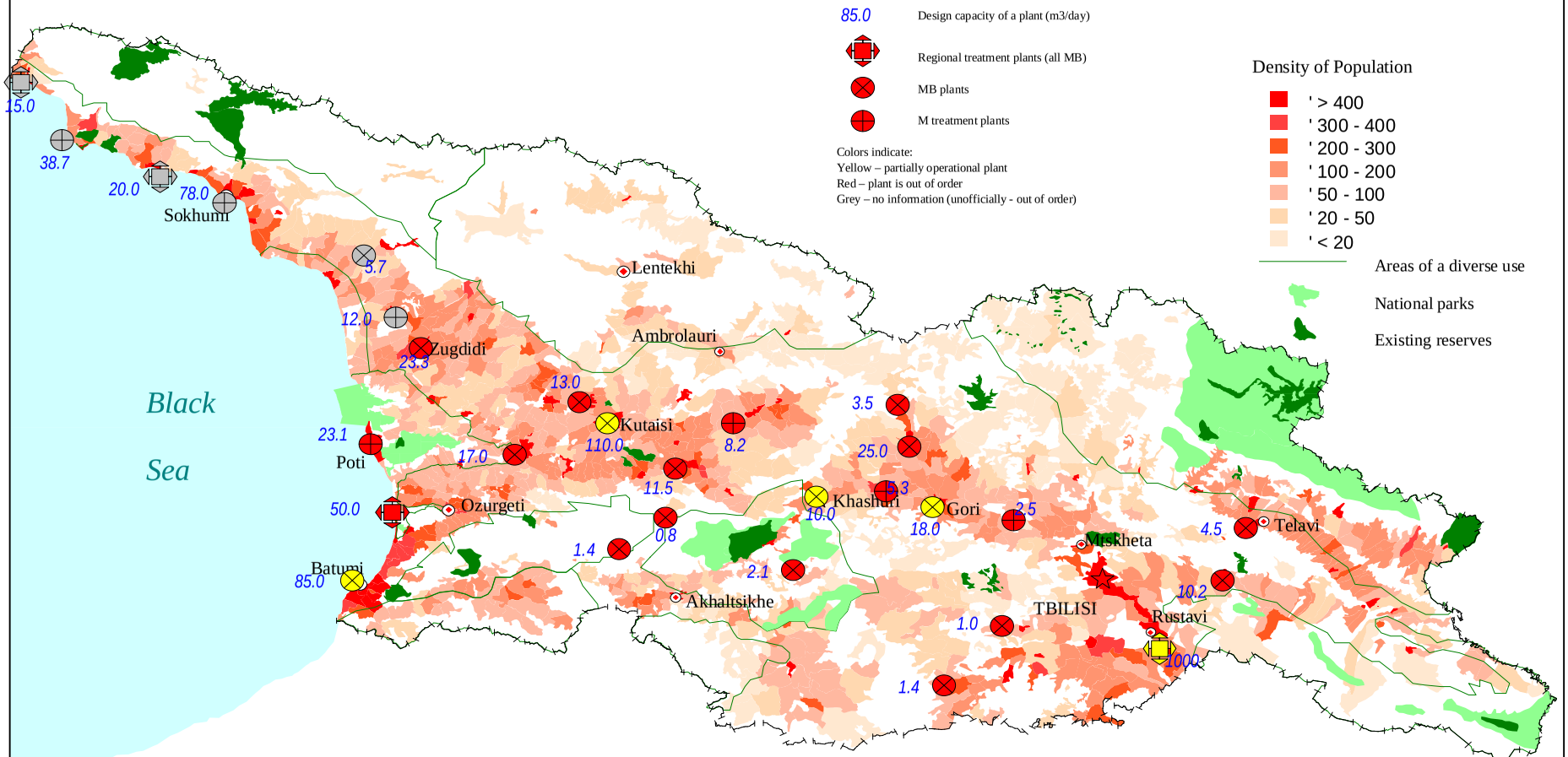
From the in-depth interviews and also the survey it turned out that some figures particularly for current expenditure were difficult to retrieve from the books of the enterprises. Separation of wastewater and water related expenditure proved particularly difficult.

Annex I Environmental Maps


Population Density of Georgia
And Drinking Water Supply In Major Cities
Density of Population
' > 400
' 300 - 400
' 200 - 300
' 100 - 200
' 50 - 100
' 20 - 50
' < 20
Sokhumi
Lentekhi
Zugdidi
Ambrolauri
Black
Sea
Kutaisi
Poti
Ozurgeti
Khashuri
Gori
Telavi
Mtskheta
Batumi
Akhaltsikhe
TBILISI
Rustavi
Scale: 1 : 2 000 000
Georgian Protected Areas Program
WWF Georgia
Scientific-Consulting Centre "Dedamitsa"
ICZM Georgia


Environmental Protection and Natural Resource
Mobilisation Expenditure by Region
Total volume of PAC
Total nature conservation expenditure
Total Nature Resource Mobilisation
Density of Population
' > 400
' 300 - 400
' 200 - 300
' 100 - 200
' 50 - 100
' 20 - 50
' < 20
Sokhumi
Lentekhi
Ambrolauri
Zugdidi
Black
Sea
Kutaisi
Poti
Ozurgeti
Khashuri
Gori
Telavi
Mtskheta
Batumi
Akhaltsikhe
TBILISI
Rustavi
Georgian Protected Areas Program
WWF Georgia
Scientific-Consulting Centre "Dedamitsa"
ICZM Georgia
Scale: 1 : 2 000 000

Waste water treatment plants in Georgia mapped against the Protected Areas System of Georgia & Population Density



Scale: 1 : 2 000 000

Ministry of Environment and Natural Resources Protection of Georgia

Georgian Protected Areas Program
WWF Georgia
Scientific-Consulting Centre "Dedamitsa"
ICZM Georgia

Annex II Questionnaire

Pilot survey on environmental expenditure

CONFIDENTIALITY IS GUARANTEED BY THE INFORMATION RECIPIENT

INFORMATION ON EXPENDITURE FOR ENVIRONMENTAL PROTECTION AND RATIONAL USE OF NATURAL RESOURCES in 1999

Code of the re-porting organization	
Code of the territory	
NACE (ISIC) code of the sector	
code of the form of ownership	
Number of sheets on investment expenditures	

I. INFORMATION ON CAPITAL INVESTMENTS

INFORMATION ON THE INVESTMENT PROJECTS IMPLEMENTED IN 1999

INVESTMENT PROJECT #1

1. Brief project description _____

_____

_____

2. Total volume of investment (for account of all sources of financing) _____ thousand Lari

3. Is environmental protection the purpose of the investment?

yes ☐ no ☐

If yes the code of environmental target: ☐

4. Estimate the environmental impact of the investment:

very positive ☐ slightly positive ☐ neutral ☐ slightly negative ☐

5. If the project is environmentally oriented, what type of environmental investment is corresponds better::

end of pipe project ☐ process integrated project ☐

6. If the project corresponds to process integrated investment, please estimate the environmental share of investment:

_____ % of total investment under the project

7. Sources of financing the project:

DOMESTIC	Subsidies from the state budget, transfers, etc.	_____ thousand Lari
	Domestic loans	_____ thousand Lari
INTERNATIONAL	Grants	_____ thousand Lari
	Loans	_____ thousand Lari

8. What were the major reasons for implementing this investment project?

- increase in production of the main products ☐
- cost saving ☐
- complying to environmental regulation ☐
- compying to international quality standards ☐
- other ☐

(please specify) _____

_____

_____

INVESTMENT PROJECT #2

1. Brief project description _____

_____

_

_____

_

2. Total volume of investment (for account of all sources of financing) _____ thousand Lari

3. Is environmental protection the purpose of the investment?

yes		no
☐		☐

If yes the code of environmental target: ☐

4. Estimate the environmental impact of the investment:

very positive	slightly positive	neutral	slightly negative
☐	☐	☐	☐

5. If the project is environmentally oriented, what type of environmental investment is corresponds better::

end of pipe project	process integrated project
☐	☐

6. If the project corresponds to process integrated investment, please estimate the environmental share of investment:

_____ % of total investment under the project

7. Sources of financing the project:

DOMESTIC	Subsidies from the state budget, transfers, etc.	_____ thousand Lari
	Domestic loans	_____ thousand Lari
INTERNATIONAL	Grants	_____ thousand Lari
	Loans	_____ thousand Lari

8. What were the major reasons for implementing this investment project?

- increase in production of the main products ☐
- cost saving ☐
- complying to environmental regulation ☐
- compying to international quality standards ☐
- other ☐

(please specify) _____

_____

_____

INVESTMENT PROJECT #3

1. Brief project description _____

_____

_

_____

_

2. Total volume of investment (for account of all sources of financing) _____ thousand Lari

3. Is environmental protection the purpose of the investment?

yes ☐ no ☐

If yes the code of environmental target:

4. Estimate the environmental impact of the investment:

very positive ☐ slightly positive ☐ neutral ☐ slightly negative ☐

5. If the project is environmentally oriented, what type of environmental investment is corresponds better::

end of pipe project ☐ process integrated project ☐

6. If the project corresponds to process integrated investment, please estimate the environmental share of investment:

_____ % of total investment under the project

7. Sources of financing the project:

DOMESTIC	Subsidies from the state budget, transfers, etc.	_____ thousand Lari
	Domestic loans	_____ thousand Lari
INTERNATIONAL	Grants	_____ thousand Lari
	Loans	_____ thousand Lari

8. What were the major reasons for implementing this investment project?

- increase in production of the main products ☐
- cost saving ☐
- complying to environmental regulation ☐
- compying to international quality standards ☐
- other ☐

(please specify) _____

_____

_____

GENERAL INFORMATION ON INVESTMENT POOLICY OF THE ENTERPRISE

1. Did the investments of your enterprise decrease in comparison with the previous year?
(sign «+» if increased, «-» if decreased)

- Overall investments __ _____ %
- Environmental investments __ _____ %

2. Non-monetary transactions

2.1 Did your enterprise use non-monetary payments for environmental investments in 1999?:

- no ☐
- yes: barter ☐ offsets ☐ veksels ☐

  other (please specify) _____

  _____

  _____

2.2. Please estimate the share of non-monetary payments:

- in overall investments _____ %
- in environmental investments _____ %

2.3 Please estimate benefits/losses from non-monetary payment operations:

("+" benefits, "-" losses) ___ _____ % of overall investments

2.4. Which of the following types of investments are mostly characterized by non-monetary payments:

equipments ☐ building/constructions ☐ engeneering design ☐

II. INFORMATION ON CURRENT EXPENDITURE ON ENVIRONMENTAL PROTECTION AND RATIONAL USE OF NATURAL RESOURCES

1. Environmental Protection and Nature Conservation

Expenditure figures must be reported in current prices, in thousand LARI.

Name	Expenditure	Payment for environmental services	Revenues from by products	State subsidies, transfers, etc	International grants
Protection of water resources					
including:					
Monitoring					
Wastewater collection					
Wastewater treatment					
Protecting underground water					
Abatement of soil pollution					
Air pollution control					
including:					
Monitoring					
Waste management					
including:					
collection and transport of waste					
treatment of waste					
hazardous (toxic) waste management					
monitoring					
Noise control					
including:					
Monitoring					
Control of non-radioactive radiation					
Other					
Nature conservation					
including:					
Organization /creation/ of reservations and other environmental territories					
Protection and reproduction of wild animals and birds.					
monitoring					

2. Natural Resource Management

Expenditure figures must be reported in current prices, in thousand LARI.

Name	expenditure	State subsidies, transfers, etc
Water resource management		
including:		
drinking water supply		
Prevention of soil degredation		
Protrection and rational use of forest resources		
Protection and reproduction of fish resources		
Rational use of mineral resources		

III. R&D EXPENDITURES ON ENVIRONMENTAL PROTECTION AND NATURE CONSERVATION

Expenditure figures must be reported in current prices, in thousand GEL.

	Investment expenditure	Current expenditure
R&D expenditure total		
including		
protection of water resources		
atmospheric air protection		
waste management		
prevention of noise pollution		
others		

IV. INFORMATION ON THE ENVIRONMENTAL CHARGES RELATED TO ENVIRONMENTAL PROTECTION AND RATIONAL USE OF NATURAL RESOURCES

Expenditure figures must be reported in current prices, in thousand GEL.

	Actual payment
Charges and fines for pollution, total	
including: Water pollution	
Air pollution	
Waste disposal	
Taxes on natural resource use, total	
including: Water	
Forest	
Minerals	

V. ASSESSMENT OF DATA PROVIDED

1. Are the environmental expenditure data separated in the accounts of your enterprise?

   Yes ☐ No ☐

2. Do you have an accounting system that allows to connect financial data with physical data?

   Yes ☐ No ☐

3. Did you have to estimate the data asked in this questionarre?

   No ☐ Yes ☐

4. Could you change your accounting practice after this interview (according to OECD requirements)?

   Yes ☐ No ☐

Please explain _____

_____

_____

INSTRUCTIONS FOR THE INTERVIEWERS

A. INTRODUCTION

- Few words about the project: task is the estimation of environmental expenditure

  Environmental expenditure includes expenditures:

  - on environmental protection called pollution abatement and control (PAC). PAC expenditure is expenditure on "purposeful activities directly aimed at the prevention, reduction and elimination of pollution or nuisances resulting from production processes or from the consumption of goods and services" Expenditures for clean-up of past contamination are included. On the side of the public sector, administrative, monitoring, and enforcement expenditure in connection of the PAC activities are included.
- on nature conservation. It is expenditure on protecting biodiversity, landscape and related administrative, monitoring activities.
- on rational/sustainable natural resource management. It is expenditure on natural resource mobilization which is **not connected only to the exploitation but to the sustainable use** of those resources. Important part of theses expenditures are administrative and monitoring expenses.
- Blocks of questions:

  I. Investment expenditures and their sources

Investment expenditures are spending on arrangements executed by the developers for the account of the capital investments from all the sources of financing. The capital investments and building and assembly works shall be presented both for the objects, which are put into commission during the current year, and for the objects, which will be under construction during next year.

.

II. Current expenditures

Current expenditures are spending on operation and maintenance of assets for environmental protection, nature conservation and rational natural resource use including administration and monitoring. It consists of mostly wages and salaries, rents, energy, maintenance expenditure.

III. R&D expenditures

Research and development expenditure related to the causes, effects and prevention of pollution.

IV. Environmental charges

The actual sums of payments made by the enterprises for the environmental pollution and for the use of natural resources, as well as the sums of action payments, collected from the enterprise as a compensation for damages, and fines for the violation of the requirements of the environmental legislation.

V. Data on the respondent

B. **FILLING THE QUESTIONNAIRE**

I. INFORMATION ON CAPITAL INVESTMENT

INFORMATION ON THE INVESTMENT PROJECTS IMPLEMENTED IN 1999

1. Project description is a brief characterization of the investment.

   For each investment the company/organisation undertook in the given year a sheet must be filled out.

   In case of a complex investment such as building a new factory one sheet must be filled. If there was an environmental investment part of the complex investment:
   - the complex investment – including the environmental must be reported in one sheet;
   - in a separate sheet, the environment part must be presented with a note indicating that this investment is pat of the other complex one.

2. The total value of investment expenditure in the given year must be calculated. If the sheet is filled for the environmental component of a complex investment only the value of environmental component must be reported here.

3. The codes for the environmental purpose are the following:

Name	Code
Protection of water resources	**1**
including:	
Monitoring	1.1
Wastewater collection	1.2
Wastewater treatment	1.3
Protecting underground water	1.4
Abatement of soil pollution	1.5
Air pollution control	**2**
including:	
installations for trapping and neutralization of harmful substances from flue gases	2.1
control for the examination and decrease of the vehicle exhaust gas toxicity	2.2
Monitoring	2.3
Waste management	**3**
including:	
collection and transport of waste	3.1
treatment of waste	3.2
hazardous (toxic) waste management	3.3
monitoring	3.4
Noise control	**4**
including:	
Monitoring	4.1
Control of non-radioactive radiation	**5**
Other	**6**
Nature conservation	**7**
including:	
Organization /creation/ of reservations and other environmental territories	7.1
Protection and reproduction of wild animals and birds.	7.2
monitoring	7.3
Water resource management	**8**
including:	

Name	Code
drinking water supply	8.1
Monitoring	8.2
Prevention of soil degredation	**9**
including:	
Protection against erosion	9.1
Land recultivation	9.2
Monitoring	9.3
Protrection and rational use of forest resources	**10**
including:	
Monitoring	10.1
Protection and reproduction of fish resources	**11**
including:	
Monitoring	11.1
Rational use of mineral resources	**12**
including:	
Monitoring	12.1

Detailed definitions for each term are provided in Annex 1.

4. Environmental impact

The environmental impact of the investment must be estimated here both for investment with no environmental purpose and with environmental purpose.

5. Type of the environmental investments

- **End-of-pipe investments** do not affect the production process itself, they only serve to abate pollution stemming from the production process and 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 the outlays over and above what would have been paid for a cheaper, viable but less environmentally benign plant. Where an existing plant is modified, the environmental investment is equal to the total outlays for the modification for environmental purposes.

GENERAL INFORMATION ON INVESTMENT POOLICY OF THE ENTERPRISE

2. Non-monetary transactions

Non-monetary transactions are exchanges where the means of payment is not money but some substitutes.

Barter is when goods are traded for other goods.

Offset is when payment obligations (most often tax payment obligations) are fullfilled with goods or services rather than money payments.

Veksels: money for paying for goods and services is raised via issuing promisory notes by banks or enterprises.

Benefits/losses from non-monetary transactions must be estimated by comparing the book (accounting) value and the market value of the transaction.

II. INFORMATION ON CURRENT EXPENDITURE ON ENVIRONMENTAL PROTECTION AND RATIONAL USE OF NATURAL RESOURCES

Current expenditure must be reported according to the same environmental purposes as the investment expenditures.

In the table for environmental protection and nature conservation purposes the expenditure for paying other companies for environmental services must be reported in the column called payment for environmental services.

DATASHEET

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Abstract:
The purpose of this report is to present data on environmental expenditure data for Georgia. The major purpose for collecting environmental expenditure data is to assess the value of real resources (such as capital, labour, etc.) devoted to environmental protection activities. Environmental expenditure data:

- Provides valuable expenditure allocation information to decision-makers, both inside and outside the national government;
- Allows for cross-country comparisons, thereby making it possible to trace the impacts of the "Environment for Europe" process; and
- Provides a baseline for environmental financing strategies aimed at supporting the implementation of the National Environmental Action Plans.

Terms:
Georgia; pollution abatement, pollution control; national environmental action plan (NEAP); environmental expenditure, environmental expenditure data

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