

Public Environmental

Expenditures in Jordan



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Public Environmental Expenditures in Jordan

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List of acronyms and symbols

CDIAC	Carbon Dioxide Information Analysis Center
CEA	Country Environmental Analysis
CEPA	Classification of Environmental Protection Activities and Expenditure (SEEA, Eurostat/UNECE)
CFC	Chlorofluorocarbon
CO₂	Carbon Dioxide
COFOG	Classification of the Functions of Government
EPE	Environmental Protection Expenditure
EPR	Environmental Performance Review
Eurostat	Statistical Office of the European Commission
EU	European Union
GDP	Gross Domestic Product
IMF	International Monetary Fund
ISIC	International Standard Industrial Classification of All Economic Activities
J/Q	Joint OECD/Eurostat questionnaire
MDGs	Millennium Development Goals
MoEnv	Ministry of Environment
MOF	Ministry of Finance
NEAP	National Environmental Action Plan
n.e.c.	not elsewhere classified
NGO	Non-governmental Organisation
ODP	Ozone-Depleting Potential
OECD	Organisation for Economic Co-operation and Development
PAC	Pollution Abatement Control
PEE	Public Environmental Expenditure
PEERs	Public Environmental Expenditure Reviews
PPP	Purchasing Power Parity
SEEA	System of Environmental and Economic Accounts
RSCN	Royal Society for Conservation the Nature
UNDP	United Nations Development Programme

Currency Equivalents

(Exchange Rate of Jordanian Dinar is Fixed with US\$, for the study time frame (2000-2007)

Currency Unit = Jordanian Dinar (JD)

1 JD = US\$1.41

US\$1 = 0.708 Jordanian Dinar

Fiscal Year

1 January-31 December

Abstract

This research study presents a detailed analysis of public environmental expenditure in Jordan. It covers 13 public ministries and one NGO. It examines the extent to which the expenditures are related to MDG goal--7 (Ensuring Environmental Sustainability) for the period 2000 to 2007.

The research is based on international systems of environmental accounting established by the United Nations System of Integrated Environmental and Economic Accounting revised - UN SEEA 2003 (in particular the Environmental Protection Expenditure Account (EPEA). The scope of the analysis includes expenditures on environmental domains compatible with the Classification of Environmental Protection Activities and Expenditure (CEPA) which for most of these expenditures are better categorized and related to goal 7.

The information provided by Public Environmental Expenditure Reviews (PEERs) greatly increases the visibility of environmental protection and management activities. Guidance has also been provided to the environment and finance ministries on areas where reforms were urgently necessary. Since a public expenditure review is about much more than statistics on implementing the budget, it should provide a context for environmental policy including key issues, and links to development strategy priorities, such as ensuring environmental sustainability (goal 7).

The aim of the research is to show the current situation of environmental expenditure in Jordan regarding the priorities achieved as at a given date. It provides a peer view for policy makers to properly evaluate expenditure programmes in terms of adequacy and allocation across environmental priorities. Moreover, it provides estimates of the funding necessary to mitigate environmental impacts. Furthermore, the current research represents the first database for public environmental expenditure in Jordan.

The key findings from the analyses of environmental expenditure are as follows:

- o In aggregate terms, public environmental expenditures have increased from about JD 220 million in 2000 to about JD 306 million in 2007 in constant prices (2000=100). Total public expenditure on the environment as a percentage of GDP is 3.7% in 2007. Expressed as a percentage of total governmental expenditures, public environmental expenditures amount to 8.1% of total government expenditure.

- o Most of the public environmental expenditure is from budgetary sources (Treasury), typically averaging 70% of total Public Environmental Expenditure (PEE) over the period 2000-2007 and 30% of total PEE over the same period from off-budgetary sources, such as foreign loans, grants and other sources.

The final conclusion of the research states that environmental expenditure programmes were fully reflected in three out of six activities linked with the progress indicators of (goal 7).

The largest share of the money is spent on the increasing the proportion of the population using improved drinking water sources and improved sanitation facilities, which indicates that this is the foremost priority of the Jordan government.

Also, the research results show that the aims of environmental expenditure programmes were reflected to some extent in two priorities, namely forest and waste management, whereas there was no alignment between environmental expenditure programmes and air pollution patterns.



1. Introduction

Many developing countries are experiencing serious financial difficulties which constrain their ability to spend on environment protection. Also, spending on the environment is often a small fraction of total government budget, and so policy makers are required to distribute scarce resources across alternative competing demands in order to manage this problem. As alternatives, they need to prioritize the spending on the environment.

Policy makers in Jordan have also tried to address the challenges. Therefore, in the last two decades many initiatives have been launched by environmental policy makers in Jordan in terms of developing legislation and policy documents, and taking part in international environmental agreements. In this sense Jordan to a certain extent exemplifies the global trend of increasing attention being paid to environmental issues.

As a response to the challenges, policy makers have devised many policies to meet the eight Millennium Development Goals (MDGs) and have devoted institutional, human and financing resources to achieve them by 2015. The majority targets and indicators of goal 7 "Ensuring environmental sustainability" correspond to the national environmental priorities in Jordan.

Ensuring environmental sustainability (MDG7) is a particular challenge in a country which suffers from environmental degradation, drought and severe water shortages. The Government of Jordan has long been committed to strengthening the environment as part of its strategy of attaining a degree of sustainable development (UNDP 2007).

Policy priority outcomes can be assessed from policy documents (laws, regulations etc...) and from the public environmental expenditure which, defined by Eurostat (2005) as environmental protection expenditure (EPE), is the money spent on all purposeful activities directly aimed at the prevention, reduction and elimination of pollution or any other degradation of the environment (EUROSTAT 2005).

EPE is an indicator of the response from society to reduce environmental pressure and move towards sustainability. Since Jordan has been addressing environmental issues since the 1960s, improvements are also part of day-to-day activities, where no specific expenditures to protect the environment can be identified.

Apparently, the need to integrate the environmental and the economic aspects will help to measure the contribution of the environment to the economy and the impact of the economy on the environment. The aim of the current research is to compare public environmental expenditures with the progress of environmental priorities and Goal 7, which will evaluate the extent to which the environmental policy priorities are reflected in PEE programmes in Jordan over the period 2000-2007.

1.1 Jordan background

Due to its location and climatic conditions, Jordan has a limited supply of fresh water resources; it has been estimated at around one billion m³ annually. Jordan is one of the four most water-poor countries in the world, and is already running a water deficit of 500 million m³ per year. Therefore, the challenges are daunting (Saqr 2001).

Notwithstanding the difficult regional political environment and the lack of resources, Jordan has achieved above-average development outcomes compared to other lower middle-income countries. This favourable situation can be credited to sound development policies, Environment is one of the major challenges in Jordan. Over the last few years, Jordan has made substantial efforts to strengthen its environmental institutions by establishing a Ministry of the Environment in 2003, and enacting an environmental protection law and environment impact assessment (EIA) regulations (Ministry of the Environment 2006). However, more progress is needed in order to consolidate the institutional setup for environmental management, particularly on EIA and pollution management (monitoring, enforcement). In addition, management of solid waste is consuming increasing amounts of public resources and requires both a comprehensive strategy and innovative approaches.

The performance of Jordan's water sector has seen significant progress as a result of efforts to improve the operational efficiency of both water supply and irrigation sub-sectors. In order to enhance the country's water resources, recent major investments in capital improvements have both increased the supply of bulk water and enhanced the wastewater treatment capacity. The Government is also working on investing in expensive non-renewable sources (e.g. Disi-Amman transfer). The capital expenditure and financing cost of the project will cause significant financial strain.

1.2 Scope of the research

The research is based on international systems of environmental accounting established by the UN System of Integrated Environmental and Economic Accounting revised - UN SEEA (2003), particularly the Environmental Protection Expenditure Account (EPEA). This research has received international acceptance, especially it was revised by the international bodies that are most concerned, such as the United Nations, Eurostat, IMF, OECD and the World Bank. The scope of the research involves the analysis of public sector concerned with the environment, because environmental protection activities in Jordan are the responsibility of the public sector ministries and state-owned enterprises - i.e. the specific producers whose activities are mainly concentrated in the infrastructure sectors (transport, electricity, water, and housing/urban development).

The research excluded environmental expenditures by NGOs, the private sector and households. Investment by the private sector in environmental protection activities is still a long way off, despite some initial investments in waste management and recycling.

1.3 Environmental Policies in Jordan

The review of the historical development of environmental policies in Jordan and of the outcomes of those policies is essential in order to show the development of Jordan's environmental priorities and the linkage between those priorities and goal 7. It also provides a measure of what is being done to protect the environment in terms of protection and management activities and the expenditures of those activities. In addition, it helps to track the development and shifts in priority setting, which are in turn responsible for the shifting of environmental expenditure programmes in Jordan.

Another major development affecting Jordan's environmental policy is the adoption since 2001 of the Millennium Declaration and the pledge to achieve the eight Millennium Development Goals (MDGs), of which goal 7 "Ensuring environmental sustainability" will be highlighted and compared with public expenditures in this review of Jordan's environmental priority setting.

Concerning the specific targets related to goal 7 (Ensure Environmental Sustainability), which is the central focus of this research, Jordan recorded a marked improvement in the proportion of the population with access to improved water resources, sanitation and secure tenure.

Some studies carried out on air quality in certain areas show that overall concentration of lead during 2002 reached an average of 0.23 micrograms per cubic metre of air compared to the level of 0.50 permitted by international standards.

Goal 7 of the MDGs is "Ensuring environmental sustainability" and it has three specific targets (targets 9-11 of the MDGs) as follows:

- _ Target 9: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources.
- _ Target 10: Halve by 2015 the proportion of people without sustainable access to safe drinking water
- _ Target 11: Have achieved by 2020 a significant improvement in the lives of at least 100 million slum dwellers. The table below shows the detailed analysis of progress made in environmental sustainability (goal 7) in Jordan.

Table 1: Progress made in environmental sustainability (goal 7) in Jordan

Target 9: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources					
Indicators	1990	2001/2	2005	State of Goal Achievement	State of Supportive Environment
Proportion of land area covered by forest (%)	0.44	0.84	0.9	Potentially	Weak but improving
Land area protected to maintain biological diversity (%)	0.14	0.44	10.9		
Energy use (Kg oil equivalent) per \$1,000 (PPP) GDP	205	243	260		
Carbon dioxide emissions (per capita)	2.2	3.15	3.07		
Target 10: Halve by 2015 the proportion of people without sustainable access to safe Drinking water					
Indicators	1990	2001/2	2005	State of Goal	State of Supportive
Proportion of population with sustainable access to an improved water source (%)	92.8	97	97	Achieved	Well developed
Target 11: Have achieved by 2020 a significant improvement in the lives of at least 100 million slum dwellers					
Indicators	1990	2001/2	2005/6	State of Goal	State of Supportive
Proportion of people with access to improved sanitation (%)	48	60.1	65	Potentially	Fair
Proportion of people with access to secure tenure (urban/rural disaggregating) (%)		64.1 /84.2	65.2/84.2		
Slum population as percentage of urban (%)	15.6	15.7	15.8		
Slum population in urban areas (number)	387 750	623 494	718 812		

Source: Jordan MDG Report 2004 and (UN 2007)

1.4 Jordan's environmental priorities

Several documents have established a prioritisation in Jordan which derived from both national and international actions that Jordan has been undertaking since the 1990s.

In April 2006, as one of the major steps in the process of capacity building and strategic planning, the Ministry of the Environment set up a committee of its staff to go through the process of reviewing previous and current environment and development strategies, and to perform a detailed content analysis of those strategies resulting in a suggested conceptual framework for a new Environmental Action Plan that will cover the period 2006-2012.

The Strategy Review "Taskforce" divided the priorities mentioned in the previous strategies into three levels (Ministry of the Environment 2006):

- Level 1: recommendations/ themes that are still a priority and have not yet been achieved.
- Level 2: recommendations/ themes that are still a priority, but where a considerable amount of effort has been made to achieve them.
- Level 3: Recommendations/ themes not currently considered a priority.

(1): Themes included in the National Agenda

It is important in this new environment strategy and action plan to focus on the themes included in the National Agenda. Hence these themes will form the priorities of the government's work in the years to come, and these priorities are:

- Institutional, organizational and legislative framework for the environmental sector in Jordan.
- Environmental pollution: (including health and the environment, industrial pollution, pollution caused by transport vehicles, and all types of chemical pollution)
- Waste Management.
- Biodiversity (which includes eco-tourism and the protection of the Natural Heritage)
- Land use management and combating desertification (which include sustainable agriculture and the rehabilitation of environmentally deteriorated areas).
- The protection of the coastal zones.

(2): the main environmental themes in the previous strategies

- Water Resources Management.
- Energy and environment - and that includes climate change and alternative energies.

(3): themes that were not covered properly in the previous sectoral strategies

- Poverty and Environment. (This theme includes socio-economy and local development projects)

(4): new themes arise from the strategic objectives of the ministry and the paper produced by the committee for sustainable development

- Environmental economy: this includes environmental incentives, trade and environment, and cleaner production.

In addition to these technical themes, a group of other cross-cutting issues and technical instruments will be used as common themes under each of the general themes. These are:

- Capacity building
- Education and awareness
- Knowledge management
- Environmental impact assessment
- Monitoring and auditing
- Regional and international cooperation
- Development of financial resources
- Public participation
- Academic research and technology

There is clearly a close relationship between (Goal-7) "Ensuring environmental sustainability" and environmental priorities in Jordan and it has a directly linkage, in particular, to priorities in level 1 and level 2. This linkage helps us to identify environmental priorities in Jordan, which is the first step towards taking rational decisions on public environmental expenditure programmes (PEEs). This means that when government wants to address environmental problems, priorities must be set and ranked so that limited resources can be channelled towards solutions to the most acute problems (Fulai 2006).

The identification of priorities is particularly necessary in times of financial difficulty in a country like Jordan, in order to protect the most important environmental objectives against disinvestment. Also, when we link public environmental expenditures (PEEs) and compare them to the environmental priorities which are represented in this research by Ensuring Environmental Sustainability (Goal-7), such a linkage will enable us to target PEEs at specific environmental problems, to justify the relative weights given to various priority issues, and to assess the effectiveness of PEEs in achieving established environmental goals.

2. Methodology

This chapter presents the methodological procedures applied in this research which consist of theoretical and technical methods. It starts with the research design to show the consistency of the methods used with the research objectives, and goes on to describe the definitions and guidelines (see annex 1) which are followed in this research in order to establish the boundaries for data collection procedures.

2.1 Research design

2.1.1 Problem statement

Although the pro-active approach of Jordan's policy makers is commendable, so far there has been no monitoring of public spending on the environment, and there is a problem of a lack of insight into prioritisation both in terms of policy documentation and expenditures, which in turn affects the progress made in achieving the MDGs. Also, there is no information available about levels, trends and distribution of public environmental expenditure.

An important initial step is to determine what should be considered as the policy priorities. These may involve fulfilling Agenda 21 or meeting the country's Millennium Development Goals. This research mainly examines the set of priorities for meeting Jordan's Millennium Development Goals(Goal 7).

2.1.2 Aim of the research

The research compares and evaluates the extent to which progress and environmental public expenditure reflect the policy priorities in Jordan for the time frame 2000-2007. This comparison will be instrumental in highlighting progress with respect to the achievement of Goal 7 of the Millennium Development Goals, which is to ensure environmental sustainability; (goal-7, Targets 9, 10 and 11).

2.1.3 Research objectives

Main objectives of the research

- Analyse the current situation of environmental expenditure overall and provide a database of public environmental expenditure in Jordan.
- Examine the shift that might occur in environmental priorities and the effect of that shift on expenditure programmes.
- Present the relationship between public environmental expenditure and the progress of (Goal-7) "ensuring environmental sustainability".
- Measure the performance and achievement of the Millennium Development Goal of ensuring environmental sustainability; (Goal-7, Targets 9, 10 and 11).
- Establish the levels, trends and distribution of environmental expenditure in relation to the country's environmental priorities.

2.2 Research techniques

The framework of the study involved a complete survey of all the public institutes in Jordan concerned with the environment within the scope of the study by categorizing those institutes on the basis of their spending on environmental protection activities linked to MDGs (Goal-7).

2.2.1 Scope of the research

Since the environment is a crosscutting issue, expenditure on the environment occurs and is found in different sectors, as well as at national and sub-national levels. Information on that expenditure has therefore been gathered from the review of programmes/strategies and planning/budget in the different sectors and from the budget allocation and expenditure on environment policies by central government.

The framework of the research involved 13 public institutes and one NGO (The Royal Society for the Conservation of Nature - RSCN) which has been given the role by the Ministry of Environment as the executive institute for Biodiversity and Reservations in Jordan.

Each institute mandated one person as a member of the working group in CEA , which is led by the Ministry of the Environment, to be a focal point for his/her institute and to represent the institute in the PEERs meetings at which the scope and definitions of environmental protection activities are discussed. The framework of this mandatory exercise is exclusively directed at the Country Environmental Analysis (CEA) components, which include PEERs as one of the components of CEA. In this framework, the coordination which is led by Ministry of Environment is sustained due to the strong institutional organisation between the Ministry of Environment and the other partner ministries. Working group members were also supplied with the necessary harmonised UN System Classification of Environmental Protection Activities CEPA (see annex 2), and other definitions and guidelines for definition criteria.

2.2.2 Definition and Classification of Environmental Expenditure

According to the World Bank Environment Strategy Paper (Lundethors and Swanson 2003), public environmental expenditure is defined as expenditure by public institutions for purposeful activities aimed directly at the prevention, reduction and elimination of pollution or any other degradation of the environment resulting from human activities, as well as natural resource management activities not aimed at resource exploitation or production.

The key innovations in this research are that it will cover all environmental expenditure activities in relation to SEEA methodological principles, guidelines and the definitions (see research methodology, annex 1). Also, the first step in conducting the PEER was the development of a proper classification system compatible with conventions established at international level. CEPA classification was explained to group members at the first working meeting of the PEERs; from the feedback during the meeting and later during a visit to each individual ministry involved, the following procedures were adopted:

- Introduction of CEPA definitions and subcategories for environmental protection expenditure domains (annex 2). A major part of the questionnaire and the guidance documents that were provided was devoted to the explaining the CEPA definitions.
- Inclusion of environment related expenditure items for water resources (including drinking water supply), forestry, and housing and urban development.
- Introducing activities related to Rehabilitation of facilities in each CEPA group as a result of identification of this activity in most of the Ministries.
- Compliance with SEEA included exploring criteria and guidelines for defining environmental expenditure activities

Table 2: Environmental Expenditure Activities

Environmental Expenditures			
Environmental management			
Environmental extended expenditure			
Environmental protection (CEPA)			
Pollution abatement and control (PAC) [air, water, waste, soil, noise, radiation]	Protection of biodiversity and landscapes	Mobilisation of natural resources (e.g. water supply)	Other natural resource Management (agri-env. payments, sustainable

Source: OECD/Eurostat, EPE and Revenue, Joint Questionnaire (2005)

The above principles adopted as part of the agreement with working group members from the different ministries and via a first round of data collection to cover all expenditures were related to environment activities which individually might not fit into the CEPA classification (see table 2).

In addition to the classification of expenditures on environmental protection activities as part of CEPA and for combined expenditures on Goal-7 with CEPA under harmonised classification with the accounting system, namely the Classification of the Functions of Government (COFOG), further addenda were introduced to capture the expenditure activities that are not related to CEPA alone, and the need to include the expenditures of environmental management activities as shown in table (2), which covered Goal-7 activities, water supply, forestry and housing development, as shown in the table (3).

Based on the functional classification, this classification was harmonized with the United Nations Handbook of National Accounting - Integrated Environmental and Economic Accounting (SEEA) CEPA. The single digit for CEPA was edited to match the functional classification codes, thereby facilitating the aggregation of expenditures and making them comparable for the coming years. The aim was also to make the expenditures comparable with other countries that might use such a system.

Table 3: Summary of estimated public expenditures according to functional classification

code	Functional Division	code	Functional Group	Current Expenditures	Capital Expenditures	Total
704	Economic affairs	7042	Agriculture, forestry, fishing, and hunting			
		7042.1	Forestry			
				Total		
705	Environmental protection	7051	Waste management			
		7052	Waste water Management			
		7053	Pollution abatement			
		7054	Protection of biodiversity and landscape			
		7055	R and D Environmental Protection			
		7056	Environmental Protection n.e.c.			
				Total		
706	Housing and community amenities	7061	Housing development			
		7063	Water supply			
				Total		
710	Social Protection	7106	Housing			
				Total		

Source: General Budget Law Report (2007)

Note: Item 7042.1 Forestry was separated from 7042 to serve the purpose of this research.

2.2.3 Data Collection

As the various individual sources might be insufficient to provide complete data on environmental expenditures in the public sector, it was useful to consider other sources of data. The approach used to collect data is a mixed approach, which includes the following:

1- Survey, questionnaire

The data from all governmental institutions are first obtained by means of a questionnaire which is prepared and developed on the basis of CEPA. This questionnaire on environmental expenditure (Harmonised CEPA) was broken down into sub-environmental domain categories similar to CEPA (in Annex 2).

The questionnaire was distributed to the Ministries involved, and the members of the working group were asked to provide data to specific deadlines.

In addition, they were asked to distinguish between expenditures by the financial sources criteria and by type of expenditure (current and capital) :

- Own sources
- Budget (Treasury)
- Grants and subsidies from public budget
- Grants and subsidies from abroad
- Grants and subsidies from other sources
- Loans and financial assistance

2- Budget, Annual Reports and Annual Accounts analysis

Budget analysis is a method of deriving data directly from the budgetary document reports and annual accounts published by the various government units. Economic information on government transactions in these budgetary documents includes receipts and uses of funds by the various government units.

Within each ministry, province or municipality, the various departments have their own budget which follows an economic classification (current and capital expenditure, salaries, purchase of goods and services or transfers).

The budgetary documents used were:

- Central government budget: data from budget lines in the environmental field.
- Annual reports: environmental protection expenditures within central ministries not identified by a study of the government budget or by the survey.
- Annual accounts for municipalities: environmental protection expenditure for municipalities (Greater Amman Municipality).

In addition to the questionnaire, the annual budgets, reports and accounts of these ministries and municipalities were collected and analysed to complement the questionnaire and to avoid gaps in the data.

A budgetary analysis involves running a syntactic analysis. As the label of the budget line is often not sufficient to classify the expenditure in a CEPA group, more information describing the activity is usually needed. Thus, each expenditure item is analysed on the basis of all the information available in the budgetary document, such as the description of the expenditure, whether or not the item falls within the field of analysis, its nature and the domain to which it belongs.

This work necessitated a detailed list of activities by domain and the explanatory information for each domain - as budgets do not always clearly define the purpose of transactions - the classification of expenditure as environmental or non-environmental expenditure, and also in a specific environmental domain. This work was quite difficult and took a long time.

Despite the difficulties mentioned above, the analysis of these reports was useful, because this made it possible to:

- Avoid definitions by working group members which might mislead those completing the questionnaire.
- Review the aggregated expenditure data provided by the questionnaire to ensure that CEPA is fully understood.
- Allow enough time to follow up the working group members and to ensure the timely correction of data.
- Take account of the fact that some expenditure data, especially old data, were difficult to find in the particular ministry.
- Compare the data obtained from questionnaire with data in the reports as a reference to the totals of data summations.
- Obtain physical data from the Ministries' reports generally, such as the volume of waste collected or the area of land purchased for environmental protection.
- Provide general scope about where the environmental expenditure could be found.

2.2.4 Data Verification

After the data had been collected and manipulated, they were validated during review visits to each ministry to approve the data. The visits involved not only the financial and project managers in each institute, but also the financial analyst of each ministry in the General Budget Department.

2.2.5 Analytical framework

The core of the analysis will include the linkage of expenditures with policies priorities, mainly targets 9, 10 and 11 (of Goal 7). The analytical framework needed for PEERs - a multidimensional, analysis classification system - is proposed. Depending on data availability, the underlying principle is that total expenditure should be the same for each dimension. The proposed dimensions, with examples of coverage for each, are:

- Institute (department or other institution, Core and non Core Institute)
- Economic (capital or current expenditure)
- Functional role of government (execution, policy development, regulation)
- Environmental domain (air, water, waste)
- Financial (source of funds such as foreign aid, loans).

After the data were collected and verified, the actualized value of the prices was applied to reflect the inflation rates over the period (2000-2007) based on year 2000 (2000 = 100). Thereafter, a critical analysis of the public environmental expenditures data was conducted to make sure that the objectives of the research had been accomplished. This analysis is set out in the next chapter.

The ad hoc database was created to serve the purposes of the study by aggregating the detailed expenditures item to be captured in one of the CEPA items; in some cases the projects were broken down to a level that could also be captured in CEPA items. The data were then aggregated to form one item of CEPA on the single institute; furthermore, it was easy to manipulate the data into information at any sphere level desired.

The information flows required close cooperation between the coordinator of PEERs and the working group members, who are ready to provide annual data. In Jordan we succeeded in establishing such close cooperation. Moreover, during the data collection, the CEPA items were directed to the working group member for new innovative working fields similar to CEPA items activities, for example anti sound bars, which do not exist in Jordan. In addition, for technical innovation they are trying to use the CEPA classification to classify and measure the performance activity indicators.

It is proposed that the information in this report should be updated annually. The work is now reproduced by DOS for the, mainly hazardous, private sector industries, but in the private sector it is necessary to edit CEPA in order to harmonize it with the situation in the country, for example expenditures of private industries are concentrated on environmental protection, and in particular on Pollution Abatement Control PAC, rather than on Environmental Management activities. Also, the activities covered, such as Environmental taxes, have to be edited, the abatement principle has to be applied and the cost of ISO 14001 and 14002 has to be factored in.

3. Data Analysis and Results

Analysis and interpretation of the data improve the approach to the information that the decision-maker can use to take a decision. The aim of this chapter is to show how to use the results, on an aggregate level, and how important and useful are the different variables, different environmental domains and the sectors concerned.

The analysis presented in this chapter involves the following dimensions:

1. Economic, to show who is paying (Total, capital or recurrent expenditure)
2. Ministry, to show who is spending (department or other institution, Core and non Core Ministries)
3. Functional role of government, to show where the money is being spent (Provision of services, policy development, regulation).
4. Financial, to show different sources of the money spent (Source of funds such as foreign aid).
5. Special Producers, Water Authority of Jordan (WAJ) and Housing and Urban Development Corporation (HUDC).
6. Environmental domains, to link expenditures with environmental priorities (air, water).
7. Activities related to the indicators of goal-7 targets.

3.1 Total public environmental expenditures by Economic dimension

Figure 1 shows the trend in total public environmental spending during 2000-2007, from 29.9 MJD in 2000 to 306.1 MJD in 2007. It is obvious from the chart that total government expenditure on the environment is increasing, which explains the extent to which General Government has assumed responsibility for such environmental protection services and the increasing importance that it attaches to the environment. The highest spending was in 2007.

Figure 1: Total Public Environmental Expenditures over the period 2000-2007, million JD

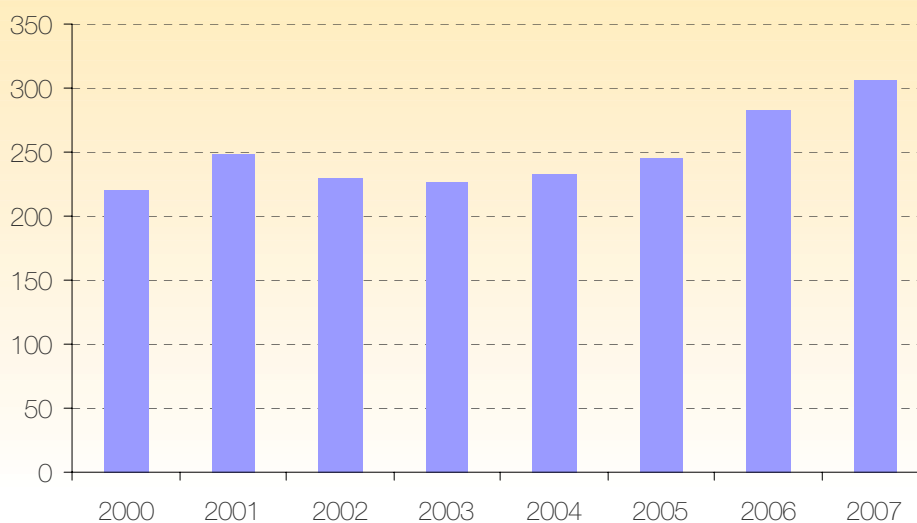
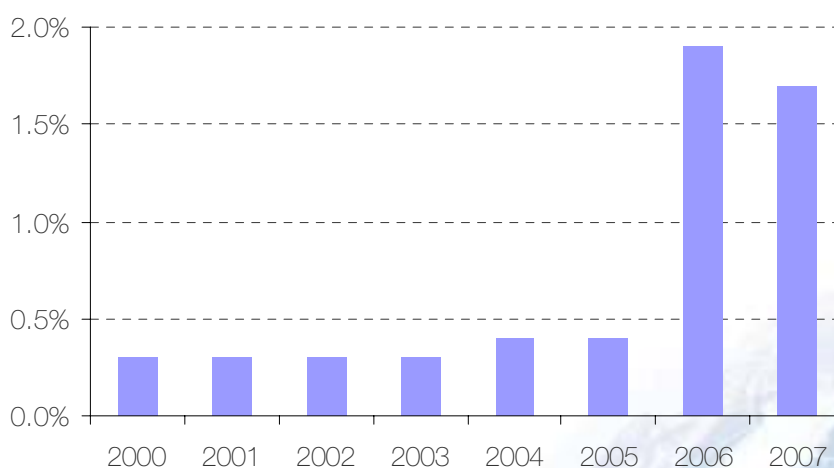


Figure 2 also provides another indicator to show the increasing attention being paid by the government to environmental issues. This indicator is the increased expenditure of Ministry of the Environment in the last two years compared with the period 2000-2005. In some countries environmental expenditures by the Ministry of the Environment are considered as a proxy for the total environmental expenditures in all the country.

Figure 2: Ministry of Environment (MoEnv) expenditures as % of total environmental expenditures



3.2 Public environmental expenditure as a percentage of GDP

Total public environmental expenditures (PEE) as a proportion of gross domestic product (GDP) and the public environmental expenditures as a share of total government expenditures are estimated and presented in table 4.

Table 4: Total PEE proportion in GDP and total public expenditure (constant prices, 2000=100)

	2000	2001	2002	2003	2004	2005	2006	2007
GDP at Current Prices (Million JD)	5 989.1	6 181.3	6 587.1	6 841.3	7 522.8	7 845.2	8 083.8	8 230.7
Inflation Rate (%)	0.7	1.8	1.8	2.3	2.6	6.5	6.3	5.4
Total Governmental Expenditure (MJD)	2 529.0	2 636.6	2 695.7	3 075.0	3 352.4	3 497.2	3 698.7	3 794.7
% of GDP	42.2	42.7	40.9	44.9	44.6	44.6	45.8	46.1
:-of Which from Central Government	2 187.1	2 258.7	2 294.5	2 628.7	2 898.2	3 015.1	3 123.2	3 220.4
:-of Which from Independent Institutions	341.9	378.0	401.1	446.3	454.2	482.1	575.5	574.2
Environmental Expenditure (MJD)	219.9	249.0	230.4	226.8	232.8	245.9	283.4	306.1
% of GDP	3.7	4.0	3.5	3.3	3.1	3.1	3.5	3.7
% of Total Governmental Expenditure	8.7	9.4	8.5	7.4	6.9	7	7.7	8.1

Source: data for GDP and general government expenditure by Department of statistics. Expenditures data, the author based on PEER data

3.3 Ratios of current expenditure to capital expenditure

Another critical indicator of environmental expenditures is the ratio of current to capital expenditures. It is obvious that Jordan is building the environmental infrastructure; the distinction between investment and current expenditures has been helpful in identifying patterns of environmental protection efforts over time. Typically when PAC measures or Waste Water Treatment are first implemented, actual expenditure accounts for a large share of total PAC expenditures. Over time, current expenditure becomes increasingly important. A very high ratio of current to capital expenditures may mean that the State is not investing enough in the sector and is incurring large recurrent costs. The data obtained show that the main components of the operating (current) spending are in the form of salaries, wages, operating costs, transfer costs and others.

Table 5: Public capital and current environmental expenditures

Expenditure	2000	2001	2002	2003	2004	2005	2006	2007
A+B: Total Expenditures (MJD)	219.9	249.0	230.4	226.8	232.8	245.9	283.4	306.1
A: Total Public (C1+C2) (MJD)	164.2	175.1	170.0	168.0	149.6	158.9	162.7	217.6
% of Total Expenditures	75.0	70.0	74.0	74.0	64.0	65.0	57.0	71.0
C1: Public Current (MJD)	65.6	69.4	69.6	68.4	66.8	67.6	71.9	53.1
% of Total Expenditures	30.0	28.0	30.0	30.0	29.0	28.0	25.0	17.0
% of Total Public Expenditures	40.0	40.0	41.0	41.0	45.0	43.0	44.0	24.0
C2: Public Capital (MJD)	98.7	105.6	100.4	99.6	82.8	91.3	90.8	164.5
% of Total Expenditures	45.0	42.0	44.0	44.0	36.0	37.0	32.0	54.0
% of Total Public Expenditures	60.0	60.0	59.0	59.0	55.0	57.0	56.0	76.0
B: Total Capital from non Budgetary sources (MJD)	55.7	73.9	60.4	58.8	83.2	87.0	120.7	88.5
% of Total Expenditures	25.0	30.0	26.0	26.0	36.0	35.0	43.0	29.0

Source: the author based on PEER data

It is apparent that there was a big jump in capital expenditures in 2007. This is attributed to the allocation of 250 million JD during that year to build various sewerage systems in different areas of Jordan. This surge was also related to the establishment of the Environmental Police by the Ministry of Environment at a cost of approximately JD 25 millions, to be the executive body for enforcing environmental regulations and acts in Jordan. This again reflects the adoption of policy outcomes which are aimed to achieve environmental priorities.

3.4 Efficiency and effectiveness of environmental expenditures

Another indicator for assessing public environmental expenditure is the efficiency of the expenditure. Table 6 provides a comparison of targeted and actual spending of five ministries during the fiscal year 2006. Despite the usual bureaucracy of public systems, the government was able to process and actually spend about 73 percent of the targeted environmental expenditure of five ministries. Through the field observations it noticed that even this actual spending is inadequate and is itself subject to budgetary ceiling constraints from the regulated system inside the ministry itself, which are also applied in the form of instructions from Ministry of Finance.

Table 6: Targeted vs actual spending of expenditure in 2006 (JD)

Ministry	Targeted	Actual	Actual Fund as % of Target
Ministry of Municipalities	4 017 000	3 277 000	0.82
Ministry of Planning	3 320 000	1 550 000	0.47
Ministry of Energy	1 000 000	1 000 000	1
Ministry of Transport	1 730 000	1 652 000	0.95
Ministry of Environment	1 590 000	1 077 000	0.68
Total	11 657 000	8 556 000	0.73

Source: Ministry of Finance, Department of General Budget

3.5 Expenditures by core and non Core Environmental Ministries

As expected, the results in tables 7 and 8 show the wide gap between core and non core Environmental Ministries. This analysis helps in examining the degree of environmental mainstreaming within the government ministries. Also, it gives a clear picture of the proposed activities that need to be carried out in each sector. It also shows the consistency with environmental policies. In table 7 it is obvious that the Ministry responsible for the considerable expenditure is the Ministry for Water and its associated bodies, namely the Water Authority of Jordan (WAJ) and the Jordan Valley Authority (JVA). These large expenditures reflect the extent of the financial burden for environmental protection and show that expenditures and environmental interventions are concentrated in the water sector.

Table 7: Public environmental expenditures by core environmental ministries

Expenditure	2000	2001	2002	2003	2004	2005	2006	2007
By core environmental agencies (000 JD):	189 164.6	214 283.6	196 402.9	192 490.1	192 423.0	200 759.9	234 162.0	242 132.0
% of Total PEE	86.0	86.1	85.2	84.9	82.7	81.6	82.6	79.1
1: Ministry of Environment (MoEnv) (000 JD)	669.1	715.7	765.1	720.8	887.2	1 105.3	5 260.9	5 300.4
% of Total PEE	0.3	0.3	0.3	0.3	0.4	0.4	1.9	1.7
2: Royal Society (RSCN) (000 JD)	1 710.0	1 564.0	2 126.0	2 091.0	2 604.0	1 922.0	1 659.0	1 262.5
% of Total PEE	0.8	0.6	0.9	0.9	1.1	0.8	0.6	0.4
3: Water Sector, MMI, WJA and JVA (000 JD)	186 785.8	212 003.6	193 511.5	189 678.8	188 931.9	197 732.4	227 242.2	235 569.1
% of Total PEE	84.9	85.2	84.0	83.6	81.2	80.4	80.2	76.9

Source: the author based on PEER data

The activities of this Ministry are related to water issues in Jordan, and in particular to water supply and waste water. Those two activities alone accounted for around 42% of total environmental expenditures in Jordan, with respective percentages of 36% of total environmental expenditures for water supply and 8% for waste water. Considering the trend in pressures on the quality of the environment, those two activities are the sectors with higher levels of pollution (the more polluting activities) and they are the same as for those that spend more on environmental protection.

Scrutiny of environmental expenditures in table 8 seems to show that adequate funding is not provided for non core environmental ministries. This mismatch between the level of funding and the activities of those ministries is attributed to a lack of financial resources.

The Ministry of Health\ Environmental Health Directorate, for example, is currently conducting large-scale measurements to monitor drinking water quality, monitoring medical hazardous wastes, and conducting air pollution measurements (before the establishment of the Ministry of Environment in 2003), but it is clear that it received the least funding.

Table 8: Public environmental expenditures by non core environmental ministries

Expenditure	2000	2001	2002	2003	2004	2005	2006	2007
By noncore environmental agencies (000 JD)	30 014.40	33 766.60	33 192.00	33 508.90	39 671.10	44 129.30	48 349.10	64 004.30
% of Total Environmental Expenditure	13.60	13.60	14.40	14.80	17.00	17.90	17.10	20.90
Ministry of Agriculture (000 JD)	4 105.60	3 961.50	3 880.70	3 916.30	4 136.40	4 145.40	5 217.40	6 680.60
% of Total Environmental Expenditure	1.90	1.60	1.70	1.70	1.80	1.70	1.80	2.20
(MoH)\ Environmental Health Directorate (000 JD)	231.00	205.80	195.30	218.00	192.30	209.60	254.30	148.00
% of Total Environmental Expenditure	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.05
Ministry of Energy (MoE) (000 JD)	3 363.00	1 799.40	1 555.90	2 469.90	3 101.80	2 249.30	2 905.90	2 299.60
% of Total Environmental Expenditure	1.50	0.70	0.70	1.10	1.30	0.90	1.00	0.80
MoT (Metrology & Airport) (000 JD)	1 405.30	1 308.50	1 319.90	1 365.30	1 355.50	1 380.90	1 350.00	1 365.00
% of Total Environmental Expenditure	0.60	0.50	0.60	0.60	0.60	0.60	0.50	0.40
Ministry of Municipality (000 JD)	795.00	1 009.30	882.10	926.20	852.30	1 124.60	1 720.80	2 152.40
% of Total Environmental Expenditure	0.40	0.40	0.40	0.40	0.40	0.50	0.60	0.70
Ministry of Planning (000 JD)	2 066.70	3 123.20	3 540.10	4 861.40	4 038.60	4 046.70	4 152.50	4 531.30
% of Total Environmental Expenditure	0.90	1.30	1.50	2.10	1.70	1.60	1.50	1.50
Total GAM Expenditure (000 JD)	5 509.60	6 034.30	7 266.70	7 784.30	13 200.30	16 130.00	13 122.00	15 938.60
% of Total Environmental Expenditure	2.50	2.40	3.20	3.40	5.70	6.60	4.60	5.20
Ministry of Tourism & Antiques (000 JD)	0.00	345.20	203.40	993.60	1 290.30	1 508.00	565.20	1 069.40
% of Total Environmental Expenditure	0.00	0.10	0.10	0.40	0.60	0.60	0.20	0.30
Housing & Urban Development Corporation (HUDC) (000 JD)	12 538.20	15 979.40	14 347.90	10 974.10	11 503.80	13 334.70	19 061.10	29 819.50
% of Total Environmental Expenditure	5.70	6.40	6.20	4.80	4.90	5.40	6.70	9.70

Source: the author based on PEER data

3.6 Total Expenditures by financing dimension

Table 9 represents different sources of funding that help to examine sources of fund mainstreaming in environmental activities and to see how much is earmarked. Those sources in Jordan include sources from central governmental budget, and off-budget sources. Total capital non-budgetary sources, which involve only capital expenditures, include capital from privatization revenue, capital from loans, capital from national agenda and capital from grants & others. Privatization revenue is the source of funds obtained from privatization procedures, which the government has used to supply additional funding for different general activities, mainly to pay back the external debt which was up to 67% of GDP. Some parts of this revenue are used as additional funds for urgent social issues in Jordan, in particular water and waste water activities. The National Agenda fund is the result of the adoption of the Government's national agenda in 2001. That reflects the government's intention to adopt policy priorities that

reflect the expenditure programmes by introducing a special fund to cover the important activities in Jordan, particularly the environmental priorities. This takes into account the fact that the majority of the environmental priorities were initially based on the national Agenda 21. The financial resources of the National Agenda consist of resources from national and international donors'.

Table 9: Total expenditures on environment, current capital and source of financing

Expenditure	2000	2001	2002	2003	2004	2005	2006	2007
A+B: Total Environmental Expenditures (MJD)	219.9	249	230.4	226.8	232.8	245.9	283.4	306.1
A: Total Public Expenditures (MJD)	164.2	175.1	170	168	149.6	158.9	162.7	217.6
% of Total Expenditures	75	70	74	74	64	65	57	71
B: Total Capital from non Budgetary sources (MJD)	55.7	73.9	60.4	58.8	83.2	87	120.7	88.5
% of Total Expenditures	25	30	26	26	36	35	43	29
1: Capital From Privatization Revenue (MJD)	10.78	10.7	14.13	0	8.88	5.11	3.12	0
% of Total Expenditures	5	4	6	0	3	2	1	0
2: Capital from Loans (MJD)	28.67	34.81	37.95	40.09	31.47	28.36	43.29	43.14
% of Total Expenditures	0.13	0.14	0.16	0.17	0.12	0.10	0.12	0.11
3: Capital from National Agenda (MJD)	:	:	:	:	:	:	26.27	:
% of Total Expenditures	:	:	:	:	:	:	7	:
4: Capitals from Grants & Others (MJD)	16.2	28.39	8.31	18.72	42.82	53.51	48.02	45.38
% of Total Expenditures	7	11	3	8	17	19	14	11

Source: the author based on PEER data

3.7 Functional dimension

Functional dimension analysis is an attempt to account for the main approaches that government can take in dealing with an environmental problem. Total public environmental expenditures for policymaking, including the development of regulations and standards related to technical research and development expenditures (R&D), whether those expenditures are for environmental protection or natural resource management: The results in table 10 show that there is an increase in environmental expenditure by the government as a result of the measurements taken by policymakers, and these expenditures are reflected in environmental expenditure programmes in Environmental Management & Regulations, which rose from 0.4% of total public environmental expenditures in 2000 to 1% in 2007. These activities were expected to receive more than this percentage, as they were ranked among the top priorities in the new Environmental Action Plan that is to cover the period 2006-2012, and in R&D. The major expenditure was on research related to protection of water, which once again reflects the importance of this area in Jordan. The lowest expenditure was on the protection of ambient air.

Table 10: Environmental expenditures on management, regulations and capacity building

Expenditures	2000	2001	2002	2003	2004	2005	2006	2007
Research and development (000 JD, constant prices)	2 273.5	2 634.4	3 629.9	2 257.9	3 260.6	2 275.0	2 430.5	4 563.0
% of Total Domains Expenditure	1.50	1.50	2.30	1.40	2.00	1.30	1.10	1.80
Environment Management & Regulations (000 JD, constant prices)	577.3	358.6	412.7	382.8	315.6	583.6	1 181.6	2 528.0
% of Total Domains Expenditure	0.40	0.20	0.30	0.20	0.20	0.30	0.60	0.10
General environmental administration and management (000 JD, constant prices)	:	0.0	0.0	0.0	0.0	0.0	16.0	260.5
General administration, regulation and the like (000 JD, constant prices)	:	0.0	0.0	0.0	0.0	0.0	803.9	1 919.0
Environmental management (000 JD, constant prices)	:	0.0	0.0	0.0	0.0	294.1	91.8	37.8
Education, training and information (000 JD, constant prices)	577.3	358.6	412.7	382.8	315.6	289.5	269.9	310.7

Source: the author based on PEER data

Another critical indicator is the ability of the government to provide environmental services, including waste management and waste water management. Table 5.8 presents those two areas and their percentages of total environmental expenditures.

Table 11: Environmental expenditures on provision services, waste management and waste management domains

Expenditures	2000	2001	2002	2003	2004	2005	2006	2007
Waste management (000 JD, constant prices)	6 333.9	7 462.8	8 426.8	9 618.4	15 646.3	17 838.3	17 644.2	17 539.3
% of Total Domains Expenditure	4.1	4.2	5.2	6.1	9.4	10.0	8.3	6.9
Wastewater management (000 JD, constant prices)	13 063.6	13 225.6	11 741.6	12 562.4	17 695.8	14 852.3	29 949.3	73 852.3
% of Total Domains Expenditure	8.5	7.4	7.3	7.9	10.7	8.3	14.2	29.2

Source: the author based on PEER data

Some 90% of treated water is now used in agriculture, which reflects the quality of the treated water, on one hand, and the fact that this is directly linked with the (Goal-7) target of ensuring sanitation facilities on the other hand.

The result also shows that the percentage of expenditure on waste water rose from 8% in 2000 to 29% in 2007. In waste management the results shows an increase from 4% in 2000 to 10% in 2005, but it declined in 2006 and 2007 respectively. Another related issue is hazardous waste. So far, Jordan is dealing with this problem and a great deal of effort needs to be made to mitigate this problem properly, especially with the development of industry and the population growth that is expected in the coming years.

3.8 Special Producers Dimension

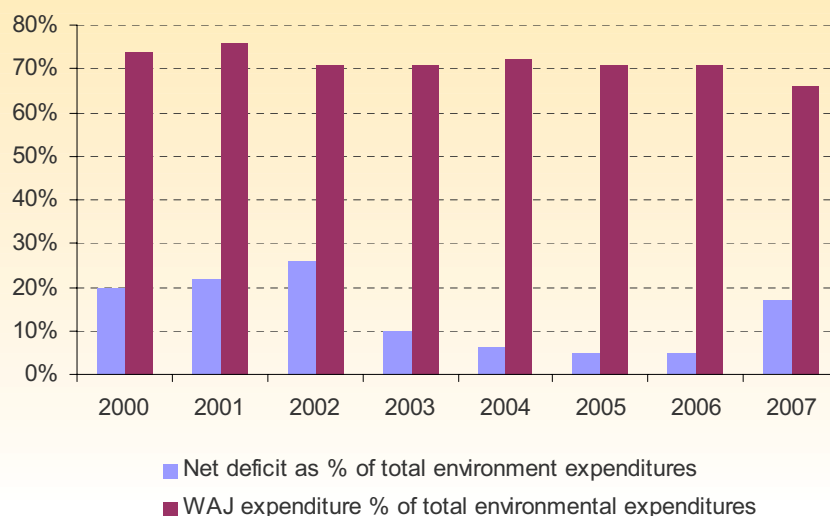
The special producers dimension refers to physical infrastructure to mitigate harmful environmental effects. These expenditures are made by state-owned companies (Special Producers, locally known as Independent General Institutions) and they consist of two large effective institutes in the field of water and housing in Jordan.

The Water Authority of Jordan (WAJ) is the major body in the field of water supply and sewage management in Jordan; it provides more than 60% of total drinking water and manages the total sewerage system in the Kingdom.

The increase in the deficit from JD 45 million in 2000 to JD 68 million in 2007 reflects the burden facing the WAJ in terms of managing the pressure on water supply, the sewerage system and waste water management activities, which are considered the main priorities in the history of environmental priorities in Jordan.

Figure 3 shows that WAJ total environmental expenditures reached an average of 72% of total public environmental expenditures over the period (2000-2007). Also the percentages of expenditures in WAJ in Figure 3 show that the majority of off-budgetary sources are allocated to WAJ, averaging 78% over the same period. For example, 95% of total grants allocated to environmental sector over the period (2000-2007) were directed entirely to WAJ. In 2007, 100% of total grants for the whole of the environmental sector were allocated to WAJ.

Figure 3: Water Authority of Jordan, Deficit and expenditures as % of total environmental expenditures



Source: Budget data obtained through analysis of budgets and of WAJ annual reports.
 Source of expenditures data, based on PEER data by the author.

Expenditures by the Housing & Urban Development Corporation (HUDC) are an important issue in relation to housing in Jordan. Figure 4 shows the increasing trend in expenditures, while at the same time the surplus is decreasing, especially in 2007. The results also show that the net surplus for HUDC declined from JD 6.5 m in 2000 to JD 3 million in 2007 while, in the same period, total expenditures increased from JD 12.5 m to about JD 40 m; this reflects the fact that the government is willing to improve the situation of housing and urban development in Jordan by increasing the expenditures allocated to this activity, which is linked directly with goal 7, target 11. The results also show that participation by the government in development projects rose from 6.3% in 2005 to 13% in 2007; this percentage is expected to increase threefold in the next year, to reach a total of JD 15 Million according to the estimates in the budget for the 2008 financial year.

Figure 4: Revenue and Expenditures of Housing & Urban Development Corporation (HUDC), MJD



Source: Budget data obtained through analysis of budgets and HUDC annual reports analysis.
 Source of expenditures data, based on PEER data.

3.9 Environmental expenditures by domains

The environmental dimension concerns the specific environmental domain that the expenditure is intended to protect. The subcategories are based on the categories in the CEPA (see annex 2). Lundethors (2003) suggested that it may be possible to use the environmental domain dimension as a proxy for the program/policy issue dimension.

Expenditures by environmental domain provide a general indication of a government's financial efforts directed towards that domain. PEER gives an indication of the type and level of service that the government provides for the different environmental domains (for example, waste water management) and the relative importance that it attaches to the domain relative to other services.

The results show a considerable increase in the various domains and activities, although there has been some decline in domains linked to air pollution. That is related to the relatively expensive investment in this field, which is difficult to provide given the limited resources of a country like Jordan.

3.10 Expenditures on MDGs - (Goal 7) "Ensuring environmental sustainability"

Linking expenditures data with physical data - which is the aim of this research - could lead to valuable insights on several issues related to environmental strategies. The domain groups provided in this research by CEPA are a particular application of this linkage by using the expenditure programmes of public sector spending in those areas and linking those expenditure programmes with the indicators of progress and performance towards achieving the targets (Goal-7), set in 2000, which are to be achieved by 2015.

Generally, Goal 7 targets cover topics of environmental domains defined by CEPA and the addenda cover areas such as water supply, forestry and housing and urban development. The expenditures on those targets are to be found below:

3.10.1 Expenditures on the indicator of the proportion of land area covered by forest

The table below shows the expenditures on the indicator (7.1) Proportion of land area covered by forest, annual afforestation and forest fires. The proportion of area covered by forest is still 0.9% of the total land area of Jordan, despite the annual increase in afforestation activities. The extension area to some extent equals the forest degradation in Jordan which is due to droughts, water shortages and forest fires. Some 42 fires occur annually, destroying/removing about 0.11% of the total forest area.

Expenditures on forest account for quite a considerable percentage of total government expenditure on the environment; it even increased from 9% in 2000 to 14% in 2007. By relating the performance of afforestation to actual expenditures, it appears that on the one hand there is a strong linkage between them, and the expenditures in last two years increasingly compare with forestation activities, whereas progress on meeting targets has improved only slightly. The forest in Jordan is increasingly important since Jordan established the Directorate of Forest and Range Lands in the 1970s to look after forest issues in Jordan.

Table 12: Forest expenditures against afforestation activities

Item	2000	2001	2002	2003	2004	2005	2006	2007
Afforestation Area (hectare)	247.8	549.2	379.4	485.8	294.4	284.9	246.4	289
Replantation Area (hectare)	13	97.5	114.1	141.4	46	252	74.4	143.9
Forest Fires Area (hectare)	10.8	79.2	65.31	61.7	84.95	143.4	87.3	99.4
Net Afforestation (hectare)	250	567.5	428.2	565.5	255.5	393.5	233.5	333.5
% of Total Forest Area	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009
Forestry Expenditure (000 JD, constant price)	1 414.60	1 452.10	1 459.20	1 414.30	1 459.70	1 480.20	2 605.50	3 473.20
% of Total Domains Expenditure	0.009	0.008	0.009	0.009	0.009	0.008	0.012	0.014

Source: physical data obtained from forest & Range lands Directorate.
Source of expenditures data, the author based on PEER data

Owing to the location of Jordan in an arid area and the nature of the country, about 90% of the total area is desert, which is encroaching on the forest area in Jordan. The allocated expenditures have increased over the period (2000-2007) and within the priorities envelope, but they are not enough to show good progress in terms of the percentage of forested area. Consequently, this target to some extent reflects the environmental expenditure programmes in Jordan for the period (2000-2007)

3.10.2 Expenditures on the Indicator, ratio of protected area to surface area to maintain biological diversity

Jordan is making sophisticated efforts and taking comprehensive steps in the areas of protection of biodiversity and natural resources via a number of activities. Jordan has a network of nature reserves consisting of seven reserves, covering 10% of the area of Jordan; there are five further proposed reserves within this network.

RSCN manages a network of nature reserves in Jordan. A national NGO - namely the Royal Society for the Conservation of Nature - represents a partnership based on decentralization in the management of natural protected areas that is unique in the Arab world. This is managed under an agreement with the Ministry of Environment.

Table 13: Expenditures on protected area

Expenditures	2000	2001	2002	2003	2004	2005	2006	2007
Protected area to total surface area (%)	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9
Protected areas (sq. km)	9734	9734	9734	9734	9734	9734	9734	9734
Expenditures on Protection of biodiversity and landscapes (000 JD)	2466.8	2835.7	3301.2	4231.7	4890.4	4676.3	4119.5	3679.9
as % of Total environmental public expenditures	1.6	1.6	2.0	2.7	2.9	2.6	1.9	1.4
Full Domain Protection of biodiversity and landscapes (000 JD)	1709.7	1564.2	2126.3	2090.6	2603.9	1922.3	1658.9	1262.5
Protection and rehabilitation of species and habitats (000 JD)	:	0.0	0.0	0.0	0.0	0.0	0.0	37.8
Protection of natural and semi-natural landscapes (000 JD)	175.0	209.7	311.2	1102.1	909.4	1254.1	641.8	644.9
Measurement, control, laboratories and the like (000 JD)	530.0	672.8	588.0	617.5	568.2	749.8	1381.5	770.3
Rehabilitation of facilities, environment, etc. (000 JD)	40.0	384.2	255.9	391.2	446.2	411.9	386.4	870.0
Other activities (000 JD)	:	0.0	0.0	0.0	322.6	301.6	0.0	0.0
Research and development								
Protection of species and habitats (000 JD)	12.1	4.8	19.8	30.3	40.1	36.6	50.9	94.4

Source: physical data obtained from RSCN. Source of expenditures data, the author based on PEER data

Although the protected area has remained the same, there are five proposed reservations which will be created in the coming years, with a total area of 1153.8 km², adding a further 1% to the current protected area and bringing it up to 11.9% of the total Jordan area.

Regarding this target of (Goal -7) the expenditure programmes are reflected in this target for the period (2000-2007).

3.10.3 Expenditures on the Indicators

- Energy use (kg oil equivalent) per \$1 GDP (PPP).
- Carbon dioxide emissions (per capita) and consumption of ozone-depleting CFCs (ODP tonnes).
- Proportion of population using solid fuels.

These indicators relate to Pollution Abatement Control (PAC), mainly the following groups (see table 14). The expenditure on those targets includes five domains which, in conjunction with the close overlap between those domains, succeed in achieving the related targets for (goal-7).

Table 14: Expenditure on Pollution Abatement Control (PAC) activities

Expenditures	2000	2001	2002	2003	2004	2005	2006	2007
PAC Expenditure (Sum 1-5) (000 JD)	2 967.9	1 249.0	963.6	2 209.3	2 154.8	2 072.2	3 152.4	2 622.3
% of Total public expenditure on Domains	1.9	0.7	0.6	1.4	1.3	1.2	1.5	1.0
1: Pollution abatement (Protection of ambient air, and climate) (000 JD)	1 116.1	1 181.2	910.9	1 786.5	1 735.7	1 634.3	2 739.4	1 914.8
% of Total Expenditure on Domains	0.7	0.7	0.6	1.1	1.0	0.9	1.3	0.8
2: Treatment of exhaust gases and ventilation air (000 JD)	1.9	1.8	1.8	1.8	1.7	1.6	1.5	5.2
% of Total Expenditure on Domains	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002
3: Noise and vibration abatement (000 JD)	:	0.0	0.0	0.0	0.0	0.0	12.8	75.5
% of Total Expenditure on Domains							0.01	0.03
4: Protection against radiation (excluding external safety) (000 JD)	1 850.0	0.0	0.0	346.2	337.2	315.2	295.4	430.5
% of Total Expenditure on Domains	1.2	0.0	0.0	0.2	0.2	0.2	0.1	0.2
5: Research and Development								
Protection of ambient air (000 JD)	:	:	:	62.7	43.3	76	23.9	120.8
Protection of atmosphere and climate (000 JD)	:	65.9	50.9	12.2	36.9	45.0	79.4	75.5

Source: the author based on PEER data

The table below shows Jordan's performance in meeting the target of carbon dioxide emissions, which are still increasing. This indicates that air pollution in Jordan is still a serious problem. Per capita and per \$1 GDP (PPP) are still approximately the same. Consumption of ozone-depleting substances fell from 746.6 in 2000 to 201.2 in 2005, reflecting the effectiveness of the relevant regulations.

Factories are the most important sources of air pollution, particularly in industrial areas such as Zarqa and Sahab, Rusifah and the Hashemite area. Industry-free zones, financial investments and substantial technical efforts are needed in order to reduce the sources of pollution. Vehicles are the second source of pollution, especially in terms of carbon pollutants.

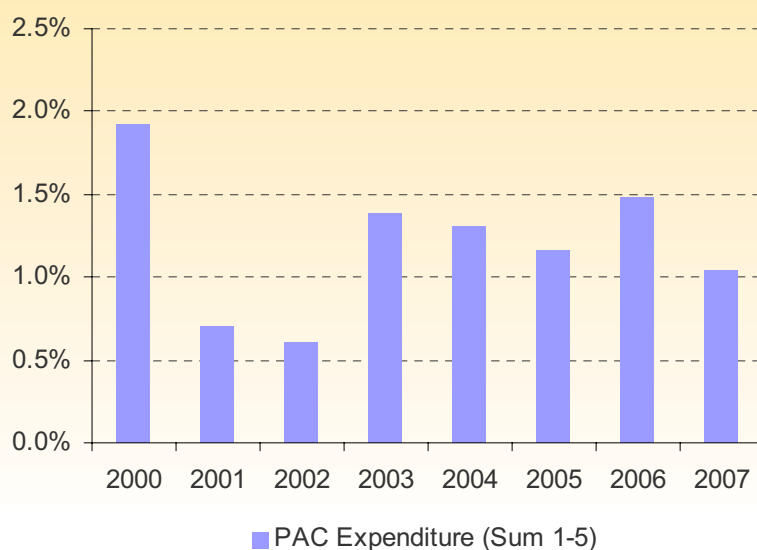
Table 15: Pollution Abatement Control (PAC) performance

Indicators	2000	2001	2002	2003	2004	2005
Carbon dioxide emissions, thousand metric tons of CO ₂ (CDIAC)	15 523.00	15 501.00	16 366.30	17 099.50	16 465.30	:
Carbon dioxide emissions, metric tons of CO ₂ per capita (CDIAC)	3.2348	3.1515	3.2377	3.2842	3.0658	:
Consumption of all Ozone-Depleting Substances in ODP, metric tons	746.6	607.7	267	228.6	196.9	201.2
Consumption of ozone-depleting CFCs in ODP, metric tons	354	321	90	74.4	58.4	59.6
Energy use (Kg oil equivalent) per \$1,000 (PPP) GDP	260	243	241	239	260	:

Source: Jordan MDG Report 2004 and (UN 2007). Source of expenditures data, the author based on PEER data

Figure 5 shows a decrease in the trend from 1.9% in 2000 to 1% in 2007; this indicates that the pressure of air pollution still remains, which is clear from Jordan's performance on CO₂ emissions.

Figure 5 : Expenditures on Pollution Abatement Control (PAC) Activities



Expenditures over the last 5 years in terms of the amount of money spent on PAC increased slightly, indicating that the government is on track to make some progress on Air Pollution as an environmental priority; this is the logical consequence of the sectoral and national environmental priorities concerning Air Pollution. However, in this current situation, there is mismatch between environmental expenditure programmes and air pollution.

3.10.4 Environmental Expenditure on:

Target 7.C: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation:

Indicator 7.7. Proportion of population using an improved drinking water source.

Indicator 7.8 Proportion of population using an improved sanitation facility

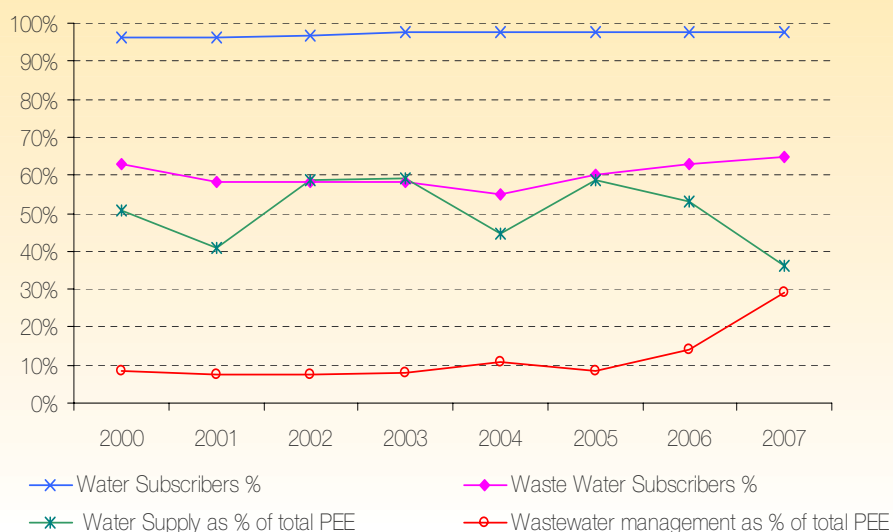
Table 16 shows the achievements on those indicators and Figure 6 compares progress on these indicators and expenditures.

Table 16: Proportion of population using an improved drinking water and an improved sanitation facility

Item	2000	2001	2002	2003	2004	2005	2006	2007
A: Water								
Subscribers (000)	695	723	753	770	812	826	860	865
Subscribers (%)	96.2	96.2	96.8	97.7	97.7	97.7	97.7	97.7
Pumped Water (MM ³)	245	213	245	248	258	266	270	280
Sold water (MM ³)	115	118	123	128	132	140	150	155
Lossing Water (%)	0.53	0.51	0.5	0.489	0.48	0.47	0.45	0.44
B: Sewerage								
Subscribers (000)	400	415	432	450	488	495	510	515
Subscribers (%)	63.0	58.0	58.0	58.0	55.0	60.0	61.0	63.0
Treated Water (MM ³)	83	88	89	91	93	101	104	110

Source: Ministry of Water and Irrigation, annual reports

Figure 6: Water performance indicators vs expenditures (%)



Source: Ministry of Water and Irrigation, annual reports.
Source of expenditures data, based by the author on PEER data.

As Figure 6 shows, environmental expenditures on both water supply and waste water have been allocated with increasingly effectiveness over the period (2000-2007). In 2007, those two activities alone accounted for around 65% of total environmental expenditures in Jordan. These figures break down into 36 % for water supply and 29% for waste water respectively. It is obvious from the results that environmental expenditure programmes reflected the proportion of the population using an improved drinking water source and improved sanitation facility indicators. Even the deficit of WAJ budget, which averaged 12% of total environmental expenditures over the period 2000-2007, bears witness to these increased expenditures. The results in Figure 6 also show a rising trend in total environmental expenditures on water activities related to those indicators, averaging 68% (2000-2007) and 75% for the last two years. Expenditure on those indicators is mainly the responsibility of the Ministry of Water, which involves the Jordan Valley Authority (JAV) which provides 40% of the total water supply in the Kingdom, mainly from dams, and from the Water Authority of Jordan (WAJ).

Table 17: Total Expenditure on the proportion of the population using an improved drinking water source and improved sanitation facility

Expenditures	2000	2001	2002	2003	2004	2005	2006	2007
Total Expenditures (000 JD, constant prices)	98 846.7	94 102.7	115 196.7	114 166.4	99 675.8	126 925.8	159 258.7	190 645.6
as % of total Environmental Expenditures	64	52	72	72	60	71	75	75
Water Supply as % of total PEE (000 JD, constant prices)	78 554.0	73 001.7	94 650.3	93 613.7	73 733.6	104 994.5	112 264.1	91 663.7
as % of total Environmental Expenditures	51	41	59	59	44	59	53	36
Protection and remediation of soil, groundwater and surface water (000 JD, constant prices)	5 105.4	5 453.6	5 714.2	6 245.9	5 530.3	4 986.7	14 801.1	20 936.7
as % of total Environmental Expenditures	3.3	3.0	3.6	3.9	3.3	2.8	7.0	8.3
Wastewater management (000 JD, constant prices)	13 063.6	13 225.6	11 741.6	12 562.4	17 695.8	14 852.3	29 949.3	73 852.3
as % of total PEE	8	7	7	8	11	8	14	29
Research and Development (water) (000 JD, constant prices)	2 123.7	2 421.7	3 090.6	1 744.5	2 716.1	2 092.3	2 244.3	4 192.9
as % of total Environmental Expenditures	1.4	1.3	1.9	1.1	1.6	1.2	1.1	1.7
Protection of water (000 JD, constant prices)	1 801.6	2 189.0	2 650.3	1 211.2	2 182.9	2 070.4	2 218.9	4 162.7
Protection of soil and groundwater (000 JD, constant prices)	322.1	232.7	440.4	533.3	533.2	21.9	25.3	30.2

Source: the author based on PEER data

Figure 7: Expenditures on Water activities as % of Total PEE



Source: the author based on PEER data

3.10.5 Environmental expenditure on slum dwellers

The recorded figure for Jordan on the slum population as a percentage of the total urban population for the year 2001 is 15.7%, and the slum population in urban areas numbered 623 494 persons. In response to that figure, the government has taken major steps to control this issue, especially in recent years. The government considers the year 2008 as the year of ensuring secure tenures for the population, mainly for those on limited and low incomes, and it will allocate US\$ 7 billion to this initiative which was launched in March 2008. Expenditure in this field reflects the importance of this issue in Jordan. Table 18 shows the expenditures on target 11 and the projects that have been carried out to facilitate and enable those on lower incomes to obtain secure tenures, which are directly reflected in the enhancement of the slum population in Jordan. It is obvious that, based on achieving this target, progress on environmental expenditures has been in line with this target. Thus, we can conclude that this target reflects environmental expenditure programmes.

Table 18: Expenditure and Performance of General Indicators in achieving a significant improvement in the lives of at least 100 million slum dwellers

	2000	2001	2002	2003	2004	2005	2006	2007
Expenditures on Housing & Urban Development (constant prices, 000 JD)	12 538.2	15 979.4	14 347.9	10 974.1	11 503.8	13 334.7	19 061.1	29 819.5
% of Total PEE	8	9	9	7	7	7	9	12
Performance General Indicators								
Projects Achieved (number)	4	7	9	6	12	15	8	n.a
Housing Units (urbanization)	474	66	134	125	198	160	1 000	n.a
Housing Units (Construction)	63	981	1 101	637	3 235	3 370	2 251	n.a
Beneficiaries (number)	537	1 051	767	1 366	2 635	2 750	1 682	n.a

Source: Housing and Urban Development Corporation (HUDC), data obtained from analysing the annual reports.
Source of expenditures data, the author based on PEER data

3.10.6 Environmental Expenditure on Waste Management

Waste management in this regard plays a major role in ensuring environmental sustainability, reversing the loss of environmental resources and ensuring a significant improvement for slum dwellers. Table 19 shows that expenditure on waste management increased from 4% in 2000 to 10% in 2005, but fell back to 7% in 2007.

Table 19: Expenditures on waste management

Expenditures	2000	2001	2002	2003	2004	2005	2006	2007
Waste management (000 JD, constant prices)	6 333.90	7 462.80	8 426.80	9 618.40	15 646.30	17 838.30	17 644.20	17 539.30
% of Total Domains Expenditure	4.1	4.2	5.2	6.1	9.4	10.0	8.3	6.9

Source: the author based on PEER data

3.10.7 Environmental expenditures not elsewhere classified, n. e. c.

These expenditures mainly involved environmental management regulations, education, capacity building and information. These expenditures represent institutional capacity to manage environmental protection and management activities. Also, environmental expenditures (grouped under n. e. c - not elsewhere classified) involve expenditures on other activities which did not fit within the CEPA domain groups.

The importance of these expenditures on environmental protection n.e.c is that it shows the institutional capacity to manage the activities in relation to the indicators of goal-7 targets and to show how the money is being spent wisely to achieve progress with those indicators.

Thus, this group of activities is also attributed to total expenditures on goal-7. Table 20 shows that expenditures are increasing over time for the activities of environment management & regulations, and also for education, training and information.

Table 20: Expenditures on Environmental Protection n.e.c

Expenditures	2000	2001	2002	2003	2004	2005	2006	2007
Environmental Protection n.e.c (000 JD, constant prices)	29 638.30	56 323.30	16 666.30	15 374.30	30 206.50	11 903.70	5 648.90	5 179.00
% of Total Expenditure on Domains	19.2	31.4	10.4	9.7	18.2	6.7	2.7	2.0
General environmental administration and management (000 JD, constant prices)	:	0	0	0	0	0	16	260.5
General administration, regulation and the like (000 JD, constant prices)	:	0	0	0	0	0	803.9	1 919.00
Environmental management (000 JD, constant prices)	:	0	0	0	0	294.1	91.8	37.8
Education, training and information (000 JD, constant prices)	577.3	358.6	412.7	382.8	315.6	289.5	269.9	310.7
Activities leading to indivisible expenditure (000 JD, constant prices)	13	12.7	12.4	36.1	29	11.1	22.4	247.7
Activities not elsewhere classified (000 JD, constant prices)	26 848.80	53 677.20	14 150.90	12 750.10	27 641.60	8 942.10	2 020.10	15.1
Other activities (000 JD, constant prices)	34.4	29.7	26.2	34.7	25.2	36.5	53.5	55.9
Wages (000 JD, constant prices)	1 939.40	2 015.10	1 897.30	2 012.80	1 974.40	2 154.70	2 110.40	1 813.30
Tools (000 JD, constant prices)	225.4	230.1	166.7	157.8	220.7	175.7	260.9	519.1

Source: the author based on PEER data

Based on the above analysis it is clear that the expenditures on goal 7 "Ensuring environmental sustainability" represent a close proxy public expenditures on the environmental priorities in Jordan. Therefore, to examine whether the expenditures programmes are reflected by the environmental priorities in Jordan, which is the aim of the current MSc thesis research, the hypothesis of the current research will be examined in the next chapter.

4. Conclusion

The core aim of this study is to compare environmental expenditure programmes with the main environmental priorities (goal-7). Based on data analysis in the previous chapter, it found that the total of all public environmental expenditures is wholly directed towards the indicators of goal-7 targets. The analysis examined six environmental expenditure programmes linked to activities aimed to achieve progress on the indicators of goal-7 targets. These six environmental expenditure programmes are listed and discussed below:

4.1 Expenditure on the indicator ratio of the area protected to maintain biological diversity of surface area (protection of biodiversity and landscapes)

The results show that expenditure programmes are reflected in this indicator; these expenditure programmes account for an average of 2.1% of total PEE. A slight shift (of 0.6%) in these expenditures was observed in 2007 without any additional funds being received from donors during this year compared to other years.

4.2 Environmental expenditure on water supply and waste water management domains

Target 7.C: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation:

Indicator 7.7: Proportion of population using an improved drinking water source.

Indicator 7.8: Proportion of population using an improved sanitation facility

The expenditures are reflected in the progress of those indicators which were totally achieved. The expenditure programmes account on average for 68% of total PEE over the period (2000-2007) and 75% on average for the last two years. The shift in these expenditures in last two years was related to new wastewater projects, amounting to JD 25 million in 2007 and the increasing expenditure on protection and remediation of soil, groundwater and surface water activities.

4.3 Environmental expenditure on Housing & Urban Development Activities

Target 7.D: To have achieved a significant improvement in the lives of at least 100 million slum dwellers by 2020.

The result shows that the target has been achieved and that future investments in this field will ensure the sustainability of this target. The expenditure programmes account for an average of 8.5% of total PEE over the period (2000-2007). No shift has been detected in these expenditures and the trend increased during the period (2000-2007).

4.4 Expenditures in forestry

The results show that expenditure programmes had some impact on forest management. Although forest performance indicators did not point to a considerable increase in forest area in Jordan, at the same time they did show sustainability in that area, which reflects the growth in activities aimed at achieving this target. The expenditures programme accounts for an average of 1% of total PEE over the period (2000-2007). Expenditure has shown a rising trend over time, from 0.9% of total PEE in 2000 to 1.4% in 2007.

4.5 Expenditure on waste management

The result shows that waste management reflects expenditure programmes to some extent. Waste management expenditure programmes account for an average of 6.8% of total PEE over the period (2000-2007). The trend shows a decline from 10% in 2005 to 6.9% in 2007. That decline is due to the construction by the Greater Amman Municipality (GAM), in 2005, of a special landfill for the management of solid and hazardous wastes in Jordan. Generally, expenditures on waste management are inadequate in relation to the challenges, especially in the case of hazardous waste. Expenditure on the Waste Management priority, which is explai-

ned in chapter 1, priority Level " 1: Recommendations/ themes that are still a priority and have not yet been achieved " and by comparing the overall percentage of expenditure on waste management. It then becomes obvious that there is a need for more expenditure in this area, particularly on hazardous waste.

4.6 Expenditures on air pollution patterns

The result shows a misalignment between environmental expenditure programmes and air pollution patterns. Expenditures account for an average of 0.9% of total PEE over the period (2000-2007) and the trend has fluctuated over time.

The projects and regulations which are currently in the pipeline and those planned for the future confirm that the current situation is going to be changed. For example, in February 2008 the government banned regular gasoline and replaced it with lead-free gasoline.

Based on the hypothesis tested above, the comparison includes six environmental expenditure programmes on six activities linked directly with goal 7. The result of the test showed that the success of the environmental expenditure programmes had been fully reflected in the following activities:

The largest percentage of money is spent on the proportion of the population using an improved drinking water source and an improved sanitation facility. This large percentage indicates that this is the uppermost priority of the Jordan government. The considerable attention paid to these environmental activities in terms of money spent is reflected in the major progress made with respect to this target, which has been totally achieved.

The second largest percentage is spent on target "Target 7.D: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers". This considerable percentage (averaging 8.5% of total PEE over the period 2000-2000) reflected the importance that Jordan government places in this target, as well as the considerable attention which this activity has attracted in terms of money spent is reflected in the major progress made on this target, which is obvious from the performance of Jordan in this target in Goal 7 and from the current and intended future actions by the government and by the Housing & Urban Development Corporation (HUDC).

The third largest percentage is spent on the indicator ratio of the area protected to maintain biological diversity in relation to surface area. This percentage indicates that this target is one of the major priorities of the Jordanese government. While the percentage was not that significant, it nevertheless indicated that the expenditures on this target are consistent with the progress made in achieving this target.

Also, the test results show that environmental expenditures programmes were reflected to some extent in two priority activities, forest and waste management, although there was no alignment between environmental expenditure programmes and air pollution patterns.

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6. Annex 1 : Research methodology

This part of the theoretical framework of the methodology, the System of Integrated Environmental and Economic Accounting (SEEA) and particularly the Environmental Protection Expenditure Account (EPEA), has been chosen for international acceptance. It has also been chosen for the definition and classification system that was developed by SEEA 2003 and which is applicable and harmonised with different definitions and classification systems of the various frameworks concerned. Also it is applicable for the case study of Jordan and for the research objectives, mainly for Goal 7: Ensuring Environmental Sustainability. Moreover, domains which are classified under the Classification of Environmental Protection Activities and Expenditures CEPA include the targets of Goal 7.

6.1 Public environmental expenditure reviews PEERS

Public environmental expenditure reviews (PEERS) can be an important part of the country environmental analysis (CEA).

The Country Environmental Analysis (CEA) is a country-level analytical tool that can help assess the environmental priorities of countries, development and poverty reduction strategies, the environmental implications of policies, and countries' institutional capacity to address their challenges.

The objective of CEA is to help integrate environmental considerations into the early stages of planning and to guide capacity building and operational priorities in development assistance. The CEA is also to be used as a framework for closer donor coordination, by helping to avoid duplication of environmental analyses.

The CEA consists of three building blocks (Ahmed 2005):

- 1- State of Environment and Priorities for Development
- 2- Policy Analysis
- 3- PEER founded on the third building block, Capacity/ Performance Assessment, which includes:
 - Institutional and organizational capacity assessment.
 - Methodology and processes for priority setting and cross-sectoral coordination.
 - Environmental Assessment (EA) capacity assessment.
 - Public environmental expenditure review (PEER).
 - Indicators for measuring public sector capacity.
 - Data gaps.
 - Areas for intervention.

The focus is on the current research on the third building block - capacity/performance assessment - which evaluates the country's capacity for managing environmental priorities by using PEER as one element of this block.

6.2 Definition and Categorization of Environmental Expenditure

6.2.1 Definition of Environmental Expenditure

Defining environmental expenditure is an important initial step for a PEER. The definition guides the selection of expenditures to be included in the review's database, which then feeds into the analysis. SEEA defined Environmental Expenditures as: those which reduce or eliminate pressures on the environment and which aim at making more efficient use of natural resources.

This definition is harmonised with the proposed general definition for public environmental expenditure which was developed on the basis of the literature review. Public Environmental Expenditures are those expenditures by public institutions for purposeful activities aimed directly at the prevention, reduction, and elimination of pollution or any other degradation of the environment resulting from human activity, as well as natural resource management activities not aimed at resource exploitation or production.

The SEEA definition includes those activities which are not necessarily carried out for environmental protection reasons, but which nevertheless produce clear, measurable environmental benefits.

Environmental protection expenditure is classified into different economic sectors (public, agriculture, industries, and households), financial variables (treatment and prevention investments, current expenditure, subsidies etc.) and environmental domains (air, water, waste, soil, noise, biodiversity and landscape), (Eurostat, 2000).

6.2.2 Classification System

So far, once the first step in conducting the PEER has been taken - namely the development of a proper classification system compatible with conventions established at the international level - CEPA defines the environmental protection activities. The activities are generally classified by the environmental domains which are protected, for example air, water, soil and groundwater, biodiversity and landscape, (see Box 1), as those where the primary purpose is the protection of the environment, i.e. the avoidance of the negative effects on the environment caused by economic activities.

The classification suggested for this group of activities by SEEA (2003) is the Classification of Environmental Protection Activities and Expenditures (CEPA).

CEPA is a generic, multipurpose, functional classification for environmental protection used for classifying not only activities but also products, actual outlays (expenditure) and other transactions.

CEPA defines both the environmental media and the types of expenditure to be considered. The environmental media are:

Box 1 Classification of Environmental Protection Activity (CEPA):

1. Protection of ambient air and climate
2. Waste water management
3. Waste management
4. Protection and remediation of soil, groundwater and surface water
5. Noise and vibration abatement
6. Protection of biodiversity and landscape
7. Protection against radiation
8. Research and development
9. Other environmental protection activities
 - 9.1 General environmental administration and management
 - 9.2 Education, training and information
 - 9.3 Activities leading to indivisible expenditure
 - 9.4 Activities not elsewhere specified

Source: *Integrated Environmental and Economic Accounting SEEA (2003)*

6.2.3 Guidelines of Definition Criteria

The SEEA report also explored criteria that may be used to determine whether particular expenditures should be included under its definitions. Relevant activities and expenditures are identified by the criterion of the primary purpose. Within this primary purpose definition, several variants or sub-sets have been used, either in combination or separately. The guidelines criteria below were adopted as far as applicable in the current research to identify and capture the other environment-related activities and expenditures.

A) The pure purpose criterion: Activities and expenditure where the main objective is protecting the environment are included in full. This criterion works best where the main objective of protecting the environment is clear and unambiguous, for example end-of-pipe capital expenditure.

B) The extra-cost criterion: This is used to identify the portion of the cost of more environmentally friendly technologies and changes in processes and products to be attributed to environmental protection. The investment and operating expenditures are compared to those of a standard or less environmentally beneficial alternative, if there is one, or the estimated additional cost of incorporating the environmentally beneficial feature. Only the extra expenditure is included.

C) The net-cost criterion: Only expenditure undertaken for environmental protection purposes which leads to a net increase in cost (that is where spending exceeds any savings or income arising before the net cost was actually incurred) is included. When expenditure is recorded, this criterion only applies to operating expenditure.

D) The compliance criterion: Expenditure undertaken with the main objective of protecting the environment, but specifically in order to comply with environmental protection legislation, conventions and voluntary agreements. This criterion can be further sub-divided to show only those activities and transactions undertaken in order to comply with legislation.

6.2.4 Addition Environmental Activities

Natural resource management activities appear to be less firm as a category. It includes: research into management of natural resources, monitoring, control and surveillance, data collection and statistics, cost of the natural resources management authorities at various levels, as well as temporary costs for facilitating structural adjustments of sectors concerned.

- Management activities

CEPA provides sound management to the conventional environmental protection activities, if those management activities are related to activities and transactions specifically for environmental protection, for example management of protected forests, which are not included. (They are included under environmental protection expenditure activities where the primary purpose is the protection of the environment, as mentioned above) Similarly, activities for the qualitative protection of natural resources, for example activities for biodiversity and landscape protection or activities aimed at preserving certain functions or the quality of the natural environment (air, water, soil and groundwater) are also included under environmental protection.

- Inland water mobilisation

Mobilisation covers all activities aimed at abstraction, treatment and distribution of water resources for their various uses, distinguished according to their specific use:

1- Drinking water supply: Capital outlays for water abstraction (protection of abstraction perimeters, pumping stations, etc.), processing of drinking water, pressure build-up, storage and distribution, expenditure for major maintenance. Operating expenses such as operating cost of production facilities, energy, purchase of treatment and distribution products, metering, billing, and so on.

Industrial water mobilisation: All mobilisation activities corresponding to industrial uses of water; uses for cooling of power plants and industrial installations are included.

2- Management of water bodies: Management of water bodies may include activities involved in the transit of water from its natural status to that of controlled water status, reinforcing river banks, construction and maintenance of waterways, water engineering and dams. Dams for the production of electricity are not included. Recharging activities involved in CEPA consist of land improvement, development of plant cover in order to increase water infiltration and recharge groundwater bodies.

3- Forest management: Management of forests includes expansion (afforestation) of wooded areas including net acquisitions of land for afforestation, their development for recreational use, inventories and assessment of forest resources, forest-related research, education, training and information activities, forest-related administration and surveillance. The increasing use of wood for construction and furniture, or use of woody biomass as fuel, etc, therefore is considered as being beneficial for the environment, as it is the main indicator of goal 7 "Proportion of land area covered by forest". Also it substitutes products based on non-renewable resources (plastics, concrete, fossil fuels, etc.) by renewable resources and increases the net fixation of carbon.

7. Annex 2 : Classification of environmental protection activities and expenditures (CEPA)

705 Environmental Protection:
<i>7051 Waste management</i>
7051.1 Prevention of pollution through in-process modifications
7051.2 Collection and transport
7051.3 Treatment and disposal of hazardous waste
7051.4 Thermal treatment
7051.5 Landfill
7051.6 Other treatment and disposal
7051.7 Treatment and disposal of non-hazardous waste
7051.8 Incineration
7051.9 Other treatment and disposal
7051.10 Measurement, control, laboratories and the like
7051.11 Rehabilitation of facilities, environment, etc.
7051.12 Other activities
<i>7052 Wastewater management</i>
7052.1 Prevention of pollution through in-process modifications
7052.2 Sewerage networks
7052.3 Wastewater treatment
7052.4 Treatment of cooling water
7052.5 Measurement, control, laboratories and the like
7052.6 Rehabilitation of facilities, environment, etc.
7052.7 Other activities
<i>7053 Pollution abatement (Protection of ambient air, water and climate)</i>
<i>7053.1 Prevention of pollution through in-process modifications</i>
7053.1.1 for the protection of ambient air
7053.1.2 for the protection of climate and ozone layer
7053.1.3 Measurement, control, laboratories and the like
7053.1.4 Other activities
<i>7053.2. Treatment of exhaust gases and ventilation air</i>
7053.2.1 for the protection of ambient air
7053.2.2 for the protection of climate and ozone layer
7053.2.3 Measurement, control, laboratories and the like
7053.2.4 Other activities
<i>7053.3 Protection and remediation of soil, groundwater and surface water</i>
7053.3.1 Prevention of pollutant infiltration
7053.3.2 Cleaning up of soil and water bodies
7053.3.3 Protection of soil from erosion and other physical degradation
7053.3.4 Prevention and remediation of soil salinity
7053.3.5 Measurement, control, laboratories and the like
7053.3.6 Other activities
7053.3.7 Rehabilitation of facilities, environment, etc.
<i>7053.4 Noise and vibration abatement (excluding workplace protection,</i>
7053.4.1 Preventive in-process modifications at the source
7053.4.2 Road and rail traffic
7053.4.3 Air traffic
7053.4.4 Industrial and other noise
7053.4.5 Construction of anti noise/vibration facilities

7053.4.6 Road and rail traffic
7053.4.7 Air traffic
7053.4.8 Industrial and other noise
7053.4.9 Measurement, control, laboratories and the like
7053.4.10 Rehabilitation of facilities, environment, etc.
7053.4.11 Other activities
7053.5. Protection against radiation (excluding external safety,
7053.5.1 Protection of ambient media
7053.5.2 Transport and treatment of high level radioactive waste
7053.5.3 Measurement, control, laboratories and the like
7053.5.4 Other activities
7054 Protection of biodiversity and landscapes
7054.1 Protection and rehabilitation of species and habitats
7054.2 Protection of natural and semi-natural landscapes
7054.3 Protection costs related to desertification
7054.4 Measurement, control, laboratories and the like
7052.5 Rehabilitation of facilities, environment, etc.
7054.6 Other activities
7055 Research and development
7055.1 Protection of ambient air and climate
7055.2 Protection of ambient air
7055.3 Protection of atmosphere and climate
7055.4 Protection of water
7055.5 Waste
7055.6 Protection of soil and groundwater
7055.7 Abatement of noise and vibration
7055.8 Protection of species and habitats
7055.9 Protection against radiation
7052.10 Rehabilitation of facilities, environment, etc.
7055.11 Other research on the environment
7056 Environmental Protection n.e.c- Other environmental protection activities
7056.1 General environmental administration and management
7056.2 General administration, regulation and the like
7056.3 Environmental management
7056.4 Education, training and information
7056.5 Activities leading to indivisible expenditure
7052.10 Rehabilitation of facilities, environment, etc.
7056.6 Activities not elsewhere classified
7056.7 Other activities
7056.8 Wages
7056.9 Tools
Addendum
7063 Water Supply
7042.1 Forestry
7061 & 7106 Housing & Urban Development

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