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Statistics Division

AN ASSESSMENT OF THE SITUATION OF ENVIRONMENT STATISTICS IN THE ESCWA COUNTRIES

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PREFACE

This report was prepared by Inka Blickensdörfer-Wieland, consultant to the United Nations Statistics Division (UNSD). It is based on an earlier report from 2002 by Khamis Raddad, consultant to UNSD, established within the framework of the project "Strengthening Statistical Capacity in the region of the Economic and Social Commission for Western Asia (ESCWA)"

The 2002 version has been substantially revised and restructured, and has been updated and completed with new information obtained from countries and from public Web sites.

UNSD thanks all ESCWA countries as well as the ESCWA secretariat and Plan Bleu for their effective contributions to the report.

Table of contents

Executive summary

Environmental concerns have become a major topic in global and national policy making, and the need for reliable information becomes more apparent. In the countries of the Economic and Social Commission for Western Asia (ESCWA), water scarcity, water quality and land degradation are of primary concern, but air quality, waste management and biodiversity are also important issues. Environment statistics is a basic tool to collect and organize environmental information and a prerequisite for environmental indicators, environmental accounting and national State-of-the-Environment reports.

In 2002, the United Nations Statistics Division (UNSD) in collaboration with ESCWA launched a project on "Strengthening Statistical Capacity in the ESCWA Region". Within this project, an assessment of the situation in environment statistics was made in 2002 and updated in 2005. The assessment considered all aspects of environment statistics, including the legal context, the organizational set-up, and data availability and quality.

The country reports in chapter 3 show that official statistics on the environment are rarely generated or disclosed. Only Jordan and Palestine have a suitable infrastructure for environment statistics and Syria, Kuwait, Egypt, Bahrain and Lebanon have it to a lesser extent. Environmental data collection is dispersed and a variety of methods have been applied in its compilation. Only a few countries have an appropriate cooperation network which guarantees a coherent approach to environmental data. Units dealing with environment statistics are usually understaffed and lack specific experience. The data situation is weak in most countries.

Recommendations for improvements in environment statistics are provided for each country. To achieve progress, most of the ESCWA countries would need to set up a separate entity dealing with environment statistics. Human and financial resources need to be allocated and training activities should be organized. An institutionalized cooperation amongst national producers of environmental data needs to be established. Easy access to available data is important. Priority setting in the development of environment statistics is recommended to overcome financial shortages.

Chapter 4 describes role and activities of regional organizations related to environment statistics and provides recommendations for future cooperation. Cooperation in environment statistics at regional level is still in its initial phase. Increased regional cooperation would allow for better use of regional know-how and would promote the application of common methods, comparable standards and classifications and a common approach for the development of environment statistics.

Both ESCWA and UNSD should play a major role in promoting environment statistics in the region, by:

1. Sensitizing countries on the importance of environment statistics, indicators and accounting and on related data collection;
2. Providing or promoting guidelines, manuals and training material for the development of environment statistics in countries, in Arabic language;
3. Coordinating activities between countries, promoting teamwork and supporting exchange of experiences between experts in the region;
4. Supporting close collaboration with UNEP-ROWA and with other relevant regional organizations in building capacity for environmental statistics and data collection, including the establishment and operation of environment monitoring systems;

5. Supporting the creation of a regional environmental statistical system including standard classifications, guidelines for harmonization, data collection manuals, and best practices or case studies from the ESCWA region;
6. Promoting free access to environmental information;
7. Supporting countries in responding to the international data requests including to the UNSD/UNEP questionnaire;
8. Mobilizing funds to develop a project on building capacity in environment statistics in the ESCWA region.

1 Background

In 2002 the UNSD in collaboration with the Economic and Social Commission for Western Asia (ESCWA) launched a project on "Strengthening Statistical Capacity in the ESCWA Region". The project covered several statistical areas including environment statistics. In order to prepare the program for environment statistics, it was decided to carry out an assessment of the situation of environment statistics in the ESCWA region with the help of a consultant.

Information has been gathered through a questionnaire sent to all countries, through interviews with responsible persons of the relevant authorities in the countries, and through study of relevant documents. Country visits were made to Syria, Lebanon, Egypt, Yemen, Saudi-Arabia and Oman. Although the main data collection activity for this publication was carried out in 2002, the information has been recently reviewed and updated. Most of the ESCWA countries reviewed their country-specific information, and additional information was collected from relevant Web-sites.

The countries which belong to the region of Western Asia and which are subject of the present publication/assessment are:

- Arab Republic of Egypt;
- Hashemite Kingdom of Jordan;
- Kingdom of Bahrain;
- Kingdom of Saudi Arabia;
- Lebanese Republic;
- Palestine;
- Republic of Iraq;
- Republic of Yemen;
- State of Kuwait;
- State of Qatar;
- Sultanate of Oman;
- Syrian Arab Republic;
- United Arab Emirates.

Relevant information on environment statistics was also collected from various regional organizations or institutions, namely:

- United Nations, Economic and Social Commission for Western Asia (ESCWA);
- United Nations Environmental Programme – Regional Office for West Asia (UNEP-ROWA);
- The Centre for Environment & Development for the Arab Region and Europe (CEDARE);
- The Arab Centre for the Study of Arid Zones and Dry Lands (ACSAD);
- Plan Bleu.

2 Main findings of the assessment

The situation of environment statistics varies considerably between the ESCWA countries. Based on the present information available, the countries could be classified into four groups:

Principal status in environment statistics	ESCWA countries
Countries which have not yet started environment statistics programmes	***Oman, United Arab Emirates, Qatar***
Countries which have only recently started environment statistics programmes	***Yemen, Saudi Arabia, Iraq***
Countries which cover certain program components of environment statistics, however the work is mostly in the initial phase	***The Syrian Arab Republic, Egypt, Bahrain, Kuwait, Lebanon***
Countries which have a relatively long experience in environment statistics	***Jordan, Palestine***

2.1 The National Statistical Authority and environment statistics related acts

In most of the countries the National Statistical Office has the responsibility to collect, compile and disseminate official statistics including statistics on environmental issues. In Oman, Kuwait and in United Arab Emirates, a ministry (ministry of planning and/or economy) is the responsible body for central statistics.

The legislative situation with regard to environment statistics differs between the countries. In some countries, for example, Jordan and Palestine, activities in the field of environment statistics are based on a general statistical law, which explicitly includes environment statistics. In other countries the statistical law covers environment statistics implicitly. In general, legislation or the lack of legislation does not pose constraints on carrying out activities in environment statistics.

2.2 Other important institutions collecting environmental data

In almost all countries more than one governmental body collect environmental data. The Ministry of Environment or Environment Protection Agency as well as other line ministries, such as the Ministry of Agriculture, the Ministry of Water, and the Ministry of Municipalities, play an important role in collecting data on environmental issues. Environmental protection is the main objective of these governmental bodies, which means that data collection is mainly driven by the concerns of the relevant bodies. In some countries cooperation links between those governmental bodies and the National Statistical Office have been established in order to develop environment statistics at the national level (Jordan, Palestine, Lebanon, Syria and Bahrain). In many countries, however, internal regulations do not allow all relevant data to be made available to the Statistical Office.

In some cases, duplication in data collection exists, which usually leads to incompatible data.

Certain types of data, such as air and water quality, require a functioning monitoring system. Such systems are insufficiently developed in all countries.

2.3 Human and financial resources for environment statistics

In six countries (Egypt, Jordan, Palestine, Syria, Bahrain and Yemen), a separate unit dealing with environment statistics has been created within the National Statistical Office. However, almost all of them consider the number of employees dedicated to environment statistics as insufficient. In addition,

their work situation is affected by frequent transfers of personnel and limited capacity of equipment and logistic means to carry out data collection.

National Statistical Offices sometimes depend on foreign support to continue or to develop their projects (e.g. Palestine). Foreign support or technical assistance often focuses on the priorities of the donor countries which do not fully meet national priorities.

2.4 Activities in environment statistics

Six countries reported that they carry out regular environmental data collection through special statistical surveys (Jordan, Palestine, Saudi-Arabia, Iraq (recently), Yemen and Kuwait). Items covered differ from country to country, but waste and water are mostly covered. In addition to the limited scope, the surveys are sometimes restricted to certain regions of the country.

An important part of environmental data is collected by the National Statistical Offices from secondary data sources. Secondary data sources are the ministry of environment, the ministry of agriculture, the ministry of water and special environmental protection agencies.

A few countries add special questions on environmental issues to questionnaires of existing surveys (for example to the Economic Enterprise Survey or the Household Budget Survey).

Egypt, Syrian, Lebanon, Jordan and Palestine participated in the Euro-Mediterranean statistical cooperation project MEDSTAT-Environment phase one and completed the relevant questionnaires. This data collection was mainly supported by technical assistance provided through the project. These countries are at present involved in the on-going project MEDSTAT-Environment phase two.

2.5 Classifications, methodologies, standards and coding systems

In many cases (e.g. the Syrian Arab Republic, Lebanon, and Egypt), the National Statistical Office (NSO) collects environmental data from government institutions. The NSO may use some of the available data for the calculation of indicators and aggregates in order to present the information in tables. However generally, statistical methodologies such as sampling design, the specification of the survey population, methods of data collection, methods of calculation, and statistical modelling to produce indicators, have not yet been applied to their full extent.

The use of standard classifications is important to achieve international comparability and to facilitate regional capacity building. The use of standard classifications is challenged by incompatible national classifications or by the fact that national classifications have not yet been fully developed. Some countries (Jordan, Palestine, Saudi-Arabia, Syria and Lebanon) apply international classifications in specific fields. However, the most relevant classifications (e.g. ISIC classification for economic activities, or FAO land use classification) should be applied by all countries.

2.6 Publications and databases

With the exception of Jordan and Palestine, no country has so far produced specific reports on environment statistics. Usually countries include tables in the annual statistical report or in specific reports such as the health statistics report. The annual environmental report produced in Jordan is the only comprehensive report for environment statistics in the region. Palestine produces individual reports for specific environmental topics.

The amount of data disseminated through the Internet is limited and differs across countries in terms of the methods used for the design of the tables and their contents. This situation also reflects the varying priorities and areas of concern in the countries and the still limited capacities in environment statistics.

2.7 Data gaps

Data gaps are difficult to identify because available data on environmental issues in most ESWCA countries are scattered throughout data producing bodies, and the scope of available data is often not entirely known. In most countries data on background data for environmental analysis (meteorological and demographic data) are available; however, basic environment statistics such as water resource and air quality information are missing except for Jordan and Palestine. The assessment revealed substantial data gaps in all ESCWA countries which concern the following specific areas:

- Water quantity statistics: water supply, water demand, and water distribution;
- Water quality statistics: fresh water quality, drinking water quality, river water quality, lake and marine water quality, sewage and treated water quality;
- Air quality and air emissions;
- Municipal, industrial and hazardous waste, quantities generated by source, methods of disposal and composition;
- Land use and land degradation;
- Biodiversity.

Data gaps in the countries often depend on the national priorities, which in turn depend on their respective needs, past experience and activities, as well as the available institutional and financial resources. The Syrian Arab Republic, for example, considers water statistics, solid and liquid waste and natural resources as priorities, whereas Egypt considers water and air statistics as primary areas of concern. Jordan prioritizes water statistics, land use, and waste statistics. Yemen and Saudi Arabia concentrate on household environment statistics, costal zone, and marine water quality, as well as water statistics.

2.8 Main obstacles for improvements in environment statistics

The following list represents the main difficulties impeding improvements in environment statistics in the region:

- The absence of a designated unit responsible for environment statistics in most of the National Statistical Offices in most ESCWA countries;
- Lack of qualified human resources and lack of expertise to conduct environmental surveys and to produce environment statistics;
- Lack of financial means and inadequate equipment and logistic to implement environmental surveys which are often costly and time consuming;
- Scattered information in different institutions and limited accessibility to the information;
- Lack of cooperation between the governmental institutions concerned;
- Lack of monitoring stations and other technical infrastructure;
- High sensitivity of environmental data in some countries which results in inaccessibility of available information;
- Insufficiently developed methodology for data collection in different institutions;
- Unavailability of relevant documents, manuals, and internationally accepted standards and concepts in Arabic.

2.9 Recommendations for improvements in environment statistics

2.9.1 Regarding institutionalization and legal provisions

The absence of a designated unit responsible for environment statistics in most National Statistical Offices in the ESCWA region is often the result of the lack of legislation requiring the establishment of such a function and development of an environment statistics programme. The National Statistical Offices should strive for appropriate adjustments of their legal provisions on statistics allowing the establishment of an environmental programme and an appropriate organizational structure.

It is also important that the legal provisions determine clearly the responsibilities of different governmental bodies involved in collection and compilation of environmental data. The definition of their responsibilities should include their cooperation links to ensure the implementation of the designed environment statistics programme.

The legal provisions should also ensure the allocation of financial resources necessary to implement an agreed concept covering basic environment statistics in each country.

2.9.2 Regarding accessibility to environmental information

The UN-ECE 'Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters' (Aarhus Convention), which has been signed by many European and Central Asian countries, requires and promotes free access to environmental information. In most ESCWA countries, free access to environmentally relevant information is hindered either by the high sensitivity of the information (strategic information) or by inappropriate data storage in the data producing institutions (e.g. paper files). In order to implement an internationally compatible system of basic environment statistics, all countries need to grant free access to the relevant basic information and it is recommended to set forth appropriate legal provisions.

All relevant countries should make an effort to appropriately store and computerize the required environmental information. The storage media should allow efficient data processing and efficient data exchange amongst the institutions involved in environment statistics production.

2.9.3 Regarding cooperation amongst the data collecting and producing bodies

Since several institutions are involved in environmental data collection and compilation, the establishment of effective coordination links amongst them is indispensable for the development of an efficient environment statistics system. A cooperative approach would not only reduce duplication in data production but also reduce costs. Furthermore it allows agreement on applied methods, standards, classifications, concepts, and definitions to ensure data comparability. An efficient cooperation system would also facilitate data exchange of environmental information.

Due to its overall responsibility for official statistics, the National Statistical Office should strive to play the leading role in the cooperation system.

The creation of a statistical coordination committee is also recommended to support mutual coordination and agreement in statistical programming, organization of data collection, and data dissemination by all environmental bodies involved in the process.

2.9.4 Regarding human resources and training activities

Sufficient human resources need to be allocated to the designated units in the National Statistical Offices. Due to the complexity and the scientific specification of environment statistics, appropriate training should be provided which covers general statistical issues, like sampling, non-response evaluation, as well as subject matter issues, to analyse environmental data and to calculate relevant environmental indicators.

Training activities should be extended to the persons responsible for environmental data collection in other institutions (ministries, environment protection agencies or monitoring stations). The involvement of persons of other institutions could also be effective for the improvement of the cooperation between the institutions.

An appropriate training course to strengthen capacities in environment statistics in the short-term should cover the following topics:

- Principles and methods of environment statistics;
- Concept design, definitions and treatment of environmental data;
- Integration and aggregation of environmental data from different original sources;
- Methods for tabulating environment statistics;
- Qualitative analysis of statistics on water, land use, soil degradation, and waste;
- Use of statistical tools in environment statistics and accounting (for example, use of specific data sources, basic principles for survey design, calculation of population parameters, estimation of coefficients, statistical modelling).

Training in data tabulation could give rise to improvements in data dissemination in those countries which have environmental data available but not yet disseminated.

2.9.5 Regarding manuals, classifications and tools to be used in environment statistics

In order to promote the establishment of more harmonized environmental information systems and to produce comparable data in the ESCWA countries, it is recommended to develop manuals for environment statistics covering basic concepts and definitions, methods for data collection, tabulation of environmental data, and the calculation of environmental indicators, as well as the application of classifications.

It is recommended that use be made of available material prepared by various United Nations agencies, the Plan Bleu, and regional agencies. Adjustment of the material to the regional characteristics should be made whenever necessary. Translation of the available documents into Arabic is considered essential.

A pilot compendium of environment statistics will be helpful, which could serve as an example for the ESCWA countries to produce national compendia. The national data compendium model prepared by the Plan Bleu in the framework of the MEDSTAT-Environment project could be a reference document for the preparation of such a pilot compendium.

The availability and the use of international classifications for the main themes used in environment statistics as well as international and suggested national standards (for example, for drinking water quality, treated sewage water quality, toxic residuals in food, and air quality) are indispensable to ensure comparability of environmental data at international level. Those countries which do not yet or only partly apply these statistical basics are encouraged to implement them as soon as possible. It should be ensured that relevant documentation is available in each ESCWA country and translated into Arabic.

It is furthermore important to introduce GIS and remote sensing in the ESCWA countries. The development of an environmental database similar to the system ECHEMS developed by Plan Bleu is recommended. The system was developed using Microsoft Access and it is available in English, French, and Arabic. It allows, among others, multiple-users to handle over 3000 variables. The programmes can also be used to aggregate data on regional level.

2.9.6 Regarding the main issues to be covered by environment statistics

The following list specifies the main topic recommended to be covered by national environment statistics programmes in the ESCWA countries. Amongst the listed topics water statistics is considered of highest priority due to increasing water scarcity in the region and the high costs for the production of fresh water, especially when desalinating seawater.

- ***Water statistics***
    - Water resources (rainfall, evapo-transpiration, river inflow/outflow, import of water) and its water quality,

  - Water supply by source, cost of water production, water quality of the supplied water,
  - Groundwater and surface water abstraction, desalinisation,
  - Water use by sector (agriculture, industry, households, power stations) and its water quality,
  - Waste water treatment, waste water treatment plants,
  - Balance between water abstraction and available freshwater (ratio of used to total available water),
  - Non-traditional sources.
- ***Solid and liquid waste statistics, including hazardous waste (for example medical and industrial waste), municipal waste***
  - Waste generation (quantity of waste generated by source),
  - Waste collection,
  - Waste recycle and reuse,
  - Waste treatment (composition of waste, methods of waste disposal),
  - Cost of disposing of waste and related waste indicators.
- ***Air statistics***
  - Emission of greenhouse gases ,
  - Air quality (NOx, SO2, windblown sand, and dust), air quality in 'hot spots',
  - Emission of air pollutants (quantities of pollutants emitted by source).
- ***Land statistics***
  - Land use (agriculture, forestry, build up land, distribution of land by current use, classification of land by agro-climatic zone),
  - Changes in land use,
  - Land degradation (desertification, soil erosion).
- ***Biodiversity*** (threatened species, protected areas)
- ***Environmental and sustainable development indicators***
- ***Natural resource statistics***

2.9.7 Regarding the implementation of a pilot survey

Since environmental surveys have been carried out in only few ESCWA countries, a pilot survey covering one or more countries of the ESCWA region should be undertaken. This pilot survey, including the implementation experiences, could then subsequently be used as a survey model for other countries.

The pilot survey should be based on international classifications and internationally recommended methods but at the same time be tailored to the particularities of the ESCWA region. It should cover an agreed basic data set of environment statistics.

The results of the pilot survey and the gained experiences should become subject to a training course (workshop or on-the-job-training in countries). For that purpose, appropriate training material should be prepared.

2.9.8 Regarding dissemination of environmental data and databases

To make environmental data effective for decision making in national policy and at international level, the data need to be widely distributed. It is suggested that the environmental data be presented either in Statistical Yearbooks in separate chapters, or specific publications be prepared on environmental issues on a regular basis.

The distribution of the data through the internet would substantially increase the use of the data.

Whatever media of dissemination is chosen by the countries, a basic data set of environmental indicators should be covered. Data presentation should always be combined with sufficient description of the methods applied in data collection and data compilation to allow evaluation of data quality and comparability at international level.

Furthermore, it is recommended that common tabulation methods be applied which would facilitate the use of the data by the data users.

Databases in the data producing institutions should be designed in a way that formats are interchangeable and common tabulation methods are applied. If possible, user access should be granted to the database. For that purpose, the databases should be user-friendly and should include metadata.

2.9.9 Regarding the provision of technical assistance

Considering the heterogeneous levels in development of environment statistics in the ESCWA countries, technical assistance need to be organized. It should be tailored to the specific needs of the countries. Technical assistance could be organized as follows:

- Organize study tours to those countries, which are more advanced and have already gained practical experience in environment statistics such as Jordan and Palestine. Jordan has already hosted trainees from other countries. Target persons for these study tours are the technicians in environment statistics from those countries which want to start an environment statistics programme. The study tours could also include regional institutions, for example, CEDARE. The study tours should be tailored to the needs and level of expertise of the participants to ensure most benefit of the training. The duration of the study tour and the type of training documents should be adapted to the needs of the participants;
- Provide regular training workshops in the institutions producing environment statistics. The technical assistance should comprise expert missions to assist in the initial phase of the work and to provide on-the-job-training. This form of assistance is suggested for those countries, which have started working in the area such as Lebanon and Egypt as well as for those planning to start. The training for those countries should also focus on concept design;
- Those countries, which have already begun work in certain environmental areas but do not yet produce any publication or other tangible outputs (for example, the Syrian Arab Republic), would most benefit from consultancy missions which provide them with training on the production of statistical tables and on methods of estimating and filling data gaps. The exchange of practical work experiences should be foreseen.

2.9.10 Regarding potential candidate institutions for study tours and other training activities

- The Centre for Environment and Development for the Arab Region and Europe (CEDARE), Cairo, Egypt: CEDARE could provide training in GIS.
- The Arab Centre for the Study of Arid Zones and Dry Lands (ACSAD), Syrian Arab Republic: ACSAD has excellent experience in desertification studies and how to use GIS for this purpose and it could be used for land use and land cover.
- The Department of Statistics (DOS), Jordan: The DOS could train the participants in water statistics and can also provide case studies.
- The Plan Bleu has developed in the framework of the MEDSTAT-Environment project manuals and training documents. In other respect, workshops, documents, classifications and software prepared by Plan Bleu, as Regional Activity Centre of the UNEP/MAP, could also be helpful.
- The region has a number of experts in each field of environment statistics, who could provide training to the participants in a workshop.

2.10 Recommendations for the UN Statistics Division and for ESCWA

ESCWA and the UNSD executed a common project on strengthening statistical capacity in the region of ESCWA. The project included a training workshop on environment statistics where UNSD/UNEP questionnaire on the environment with its 4 sections on water, land, air and waste was introduced to and discussed with participants. The project also included fellowships for several country experts.

However, environment statistics still encounters enormous problems in collection, coverage, reliability, use of international standards, and dissemination.

In order to overcome these problems, UNSD could support the ESCWA countries by:

- Leading international harmonisation of definitions, concepts and methods in environment statistics, in close collaboration with UNEP, FAO, Conventions and other international bodies involved;
- Providing guidelines for the development of environment statistics in countries, in Arabic;
- Providing data collection manuals for the main environmental areas such as water, waste and air, in Arabic;
- Providing training material in Arabic, for the main environmental topics.

ESCWA could help countries by:

- Sensitizing countries on the importance of environment statistics and indicators and on related data collections;
- Organising training workshops with all countries on the main environmental areas;
- Coordinating activities between countries, promoting teamwork and supporting exchange of experiences between experts in the region;
- Supporting close collaboration with UNEP-ROWA, especially in view of common activities concerning the core indicator list and related data collections;
- Supporting the creation of a regional environmental statistical system including the development or adaptation of appropriate manuals, classifications, and guidelines for standardization, methodologies, as well as case studies from the ESCWA region;
- Supporting countries in responding to the international data requests, such as UNSD/UNEP questionnaire.

Sufficient human and financial resources will be very important, especially in the initial phase.

3 Country specific information

3.1 Arab Republic of Egypt

3.1.1 The National Statistical Authority and environment statistics related acts

Central Agency for Public Mobilization and Statistics (CAPMAS)

The *Central Agency for Public Mobilization and Statistics (CAPMAS)* is the agency responsible for conducting statistical surveys, processing and publishing of numerous types of statistics based on sample surveys or censuses. The agency is authorized to conduct statistics by the Presidential Decree No. 1946. In reference to the statistical law, all other bodies should obtain permission from the *CAPMAS* prior to engaging in any kind of statistical work.

3.1.2 Other important institutions producing environment statistics

Egyptian Environmental Affairs Agency (EEAA)
30 Misr-Helwan Elzyrae Road, Maadi-airo, P.O.Box 11728
Website: www.eeaa.gov.eg

The *Egyptian Environmental Affairs Agency (EEAA)* is the main body responsible for environmental management in Egypt. It was established in 1982 as an environmental affairs committee and became an authority in 1985 following a decision of the cabinet of ministers. Based on the Environmental Law No. 4/1994 in 1995, the *EEAA* was reorganized and strengthened as an institution and its duties and obligations were set forth. The *EEAA* is mainly a coordinating body, i.e. its executive power is limited. The *EEAA* closely cooperates with other organizations and ministries in order to perform its work. A chairman of a board of directors who is at the level of first deputy minister manages the *EEAA*. The Environmental Law No. 4/1994 defined the *EEAA*'s duties.

- The *EEAA* participates in the preparation and execution of the national environmental monitoring program and makes use of its data.
- In cooperation with information centres of other bodies, it gathers national and international data related to the state of the environment and the changes that happen to it. This data should be evaluated and used in environmental management and planning and made public.
- The *EEAA* prepares periodic reports on main environmental indicators.

For carrying out its duties, the *EEAA* has established an *Environmental Information Sector*. This sector performs all environmental information tasks of the *EEAA*. For better efficiency, a major project is underway to create an environmental information system.

The *EEAA* is required by law to submit to the President of the Republic and the Cabinet of Ministers an Annual Report of the State of the Environment. Governmental and private organizations, which produce polluted materials, are requested to maintain logbooks containing information on their discharges of various pollutants and supply an important input to this report.

3.1.3 Environmental data and relevant statistics produced

Due to the fact that no formal environment statistics programme exists in Egypt and because large amounts of data are scattered between national and regional institutions, it is difficult to specify the available data and their primary sources.

The following table presents the main environmental data and related statistics produced by administrative and governmental bodies.

Environmental data and relevant statistics	Producing institution/Internet address
Solid waste generation and solid waste composition, quantity of agriculture waste, quantity of industrial waste	*Egyptian Environmental Affairs Agency (EEAA)/ www.eeaa.gov.eg*
Ground water resources, surface water resources, water abstraction, water consumption by sector	*Ministry of Irrigation and Water Resources*
Land use, quantity of treated sewage water used for irrigation of artificial forest	*Ministry of Agriculture*
Chemical analysis of Nile water, trends in annual means of air pollutants concentration	*Environmental Monitoring Network and Ministry of Health and Population*
Total area of pools and swamps and filled up area of pools	*Municipal Councils*
Rainfall	*FAO*
Stocks of motor vehicles	*General Department of Traffic*
Industrial waste, which are causing pollution of the Nile river	*National Research Centre*

3.1.4 Human resources for environment statistics

At the *CAPMAS* a special unit for environment statistics was created in 2003. One employee carries out work in environment statistics in addition to his other duties as a technical affairs officer. The employee is a demographer and the national coordinator for the MEDSTAT-Environment project. Statisticians and environmental scientists will be recruited. The allocation of funds is subject to the decision of the Ministry of Finance.

The *EEAA* does not employ statisticians but a technician who is proficient in environmental science and information systems.

3.1.5 Activities in environment statistics

No environmental surveys have yet been carried out by the *CAPMAS* except a sample survey on waste statistics conducted in 2002 which covered only one governorate. The *CAPMAS* considers adding questions related to environmental aspects to questionnaires which are applied to collect other data, for example, the Household Surveys and the Economic Enterprises Surveys. This would be a first step towards improved data availability but not yet sufficient to meet the high demand on environment statistics.

Secondary data sources, for example, data from governmental institutions and other organizations are not yet used by the *CAPMAS*.

The *EEAA*, with the help of the Canadian International Development Agency (CIDA), conducted a pilot study for an environmental geographic information system in the Greater Cairo area with an aim of providing the urban planners and decision makers with reliable information.

A study was completed by the *National Research Centre* in 2001 on industrial waste causing pollution of the river Nile. Other studies have been carried out by national and international agencies, which are unfortunately not stored in a central place accessible to data users. A long-term strategy for documenting all environmental studies does not exist in the country due to the absence of coordination between all stakeholders in Egypt.

The CAPMAS participates in the MEDSTAT-Environment project. However, the MEDSTAT project is a temporary activity.

3.1.6 Classifications, methodologies, standards and coding systems

Closely related to the limited activities in the area of environment statistics at the *CAPMAS* is the lack of statistical concepts and methodologies. An exception is the completion of the MEDSTAT-Environment questionnaire, which follows a common classification.

The *EEAA* has access to international standards, and the agency has the authority to enact national standards for the environment and for acceptable pollution limits. However, the *EEAA* collects data primarily from other institutions and from some research studies and monitoring stations.

3.1.7 Publications and databases

Up to now no publication has yet been issued by the *EEAA* or the *CAPMAS.*

Some environmental data are available in the Statistical Yearbook prepared by the *CAPMAS* for air pollution, water use, coastal water pollution, water treatment, land and waste treatment, in addition to general data such as meteorological, geographical, and demographic data. The *CAPMAS* produces a large number of annual reports in different fields of statistics, which could be used to a limited extent to improve environment statistics visibility.

The national coordinator of the MEDSTAT-Environment project, however, has prepared a small number of draft tables. These tables are available in addition to the information used to complete the MEDSTAT questionnaire.

The *EEAA* has established the Egyptian Environmental Information System (EEIS). Both the CIDA and the Danish International Development Agency (DANIDA) support this information system.

The EEIS covers two main topics: water resources/pollution and air pollution. The data are collected from different institutions using a computer network to be established between the EEIS Centre and the institution concerned. Up to date, there is still limited information available at the centre. However, the Geographical Information System (GIS) unit has been established and a pilot study for environmental geographic information system in Greater Cairo has been produced.

Scattered environmental information is available in many governmental institutions and other organizations, but is presently not used to compile a more comprehensive set of environment statistics. The different institutions mostly establish their own environmental databases and work independently from each other.

The following table presents a list of data available relating to environmental aspects.

Data	Periodicity	Latest reference year
Solid waste generation and solid waste composition	n.a.	1996
Quantity of agriculture waste	n.a.	1996
Quantity of industrial waste	n.a.	1998
Ground water resources	Yearly	2002
Surface water resources	n.a.	1998
Water abstraction	n.a.	1993
Land use	n.a.	1995
Quantity of treated sewage water used for irrigation of artificial forest	n.a.	2000
Chemical analysis of Nile water	n.a.	1999
Trends in annual means of air pollutants concentration	Yearly	2002
Total area of pools and swamps and filled up area of pools	Yearly	2002
Rainfall	n.a.	1985
Trends in stocks of motor vehicles	n.a.	1998
Industrial waste, which are causing pollution of the Nile river	n.a.	2001 study

3.1.8 Data gaps

Due to the large amount of scattered data, it is difficult to identify data gaps.

A lack of data in major topics such as water, air, land and waste is to be stated:

- Air emissions and air quality;
- Water statistics including resources, use and treatment, fresh water quality, marine water quality;
- Municipal, industrial and hazardous waste;
- Land use and land degradation;
- Biodiversity;
- Toxic residuals in food and food safety;
- Public health and epidemiological data on disease rates attributable to pollution.

3.1.9 Main obstacles for improvements in environment statistics

- The high rate of turn over in the unit responsible for environment statistics at the *CAPMAS*,
- Unavailability of environmental data from their respective sources, e.g. the *EEAA*,
- Scattered environmental data in different governmental institutions and other organizations,
- The lack of cooperation between different governmental institutions and other organizations producing or collecting environmental data,
- Missing of concepts and institutionalized programmes on environmental issues,
- Not enough qualified human resources for environment statistics.

3.1.10 Recommendations for improvements in environment statistics

- A concept to develop environment statistics should be established and priorities should be set.
- The allocation of sufficient technical and financial means is needed to improve data collection and compilation of environment statistics.
- Experts proficient in environmental science and statistics should be recruited.
- A training program in statistical methodology and environment statistics should be set up for employees from both institutions (*CAPMAS, EEAA*).
- The *CAPMAS* should efficiently use secondary data sources (for example, environmentally related data produced by other ministries). The relationship to these secondary data producers should be strengthened. The creation of a committee for environment statistics should be foreseen in order to improve and institutionalize the coordination between all concerned agencies and institutions.
- The *EEAA* should be strengthened to fulfil its duties determined by law.
- Manuals containing the most widely used classifications and methodologies for environment statistics should be prepared.
- Special surveys to fill data gaps should be initiated and implemented.

3.1.11 Future activities planned

No activity has been identified.

3.2 Hashemite Kingdom of Jordan

3.2.1 The National Statistical Authority and environment statistics related acts

Department of Statistics (DOS)
www.dos.gov.jo

Based on the Statistical Temporal Law No. 8 in 2003 and its amendments, the *Department of Statistics (DOS*) in Jordan is the responsible agency that conducts and publishes all types of statistics. Any other institution can not engage in this type of work without the prior agreement from the *DOS*.

In 1994 the government requested that the *DOS* initiate a new unit for environment statistics. This unit was established on the level of a section. The section conducts its activities within the framework of the general statistical law.

3.2.2 Other important institutions producing environment statistics

National Information Technology Centre
www.nic.gov.jo

The *National Information Technology Centre* hosts the *Focal Point for the Environmental Information System*, which includes environment statistics. It also hosts the *Environmental Information Committee*, which consists of the main agencies producing environmental data.

All relevant ministries, e.g. the *Ministry of Water and Irrigation* and the *Ministry of Health*, have an environment division, which maintain databases for theirs main activities. The *DOS* is therefore continuously provided with large quantities of data, which can be used to produce environment statistics.

3.2.3 Environmental data and relevant statistics produced

The following table presents the data which are closely related to environmental aspects and are produced by administrative, governmental and private bodies.

Environmental data and relevant statistics	Producing institution / Internet address
Amount of rainfall	*Meteorological Department*
Quantity of imports, local production and exports of recorded pesticides	*Ministry of Agriculture*
Total, irrigated and non-irrigated cultivated area, Percentage of crops area treated with pesticides by crop and by kind of pesticide, percentage of fertilized crops area by crop and by kind of fertilizer	*Department of Statistics/* www.dos.gov.jo
Status of biodiversity for flora and fauna	*Royal Society for the Conservation of Nature*
General monthly rate of total suspended particles (TSP) and lead (Pb), monthly distribution of the TSP and lead concentration, results of microbial and parasites tests for treated water, status of cleaning plants, results of chemical tests of sewage water	*Ministry of Health: Environmental Health*
Estimated quantities of air emissions (NO_X, CO, CO_2, NMVOC) from energy use in different sectors	*Department of Statistics/* www.dos.gov.jo
Water quality and quantity	*Ministry of Water and Irrigation*
Surface water budget, quantity and usage of ground water by water basin	*Water Authority*
Solid waste generation in services, construction, maintaining and repairing of motor vehicles; Solid & liquid waste generation in medical services and in the industrial sector; Quantity of water used and sewage water produced by sector	*Department of Statistics/* www.dos.gov.jo
Number of vehicles	*Traffic Department*

3.2.4 Human resources for environment statistics

The *Environment Statistics Section* within the *DOS* employs eight staff members with qualification in different scientific fields, such as water science, geology, chemistry, biology, statistics, and agricul-

tural fields. At the initial stage, the *DOS* recruited only temporary employees. In 2001 *DOS* engaged permanent staff who needed time to take over the responsibilities from the temporary employees.

Other agencies and governmental bodies, such as the *Ministry of Environment* and the *Ministry of Health,* do not have statisticians but instead employ technical experts in environmental science.

3.2.5 Activities in environment statistics

The *DOS* collects available data from different governmental agencies, e.g. the *Ministry of Water and Irrigation*. These data are subsequently classified by subject, processed, and compiled to produce useful and comparable statistics. The *DOS* also collects some raw data and laboratory sheets, which are tabulated at the *DOS*.

Data are collected from various directorates in *DO*S, whether these data are published or not. Some environmental indicators are calculated while some other data are re-tabulated in the form of tables for inclusion in the environment statistics report.

Additional data are collected by adding an environmentally related form to existing surveys conducted by the *DOS*, e.g. to the Economic Enterprise Surveys. The form added to the Economic Enterprise Surveys includes questions on water consumption, sewage water production and method of disposal, quantity of solid waste produced and method of disposal, as well as methods of energy generation and consumption by type.

Some surveys are also designed and conducted by the *Environment Statistics Section* in order to compile data not available from any other sources. Examples for this type of survey are the Survey on Artesian Wells and the Medical Hazardous Waste Survey. These surveys are comprehensive, and solely designed for the compilation of environment statistics.

The survey on hazardous waste, which covers the chemical manufacturers and health services activities generating hazardous waste, has been carried out annually since 1996 and it covers all enterprises except the clinics and small enterprises. For clinics and small enterprises, a sample is carried out. The survey on the use of water from artesian wells was conducted for two years to provide data on the quantity of water pumped and to calculate the average consumption of water for each type of crop and for other uses of water.

With respect to questionnaires attached to other surveys, the problem of non-response is eminent because administrative persons in each enterprise usually fill in the main questionnaire, whereas a technical expert is required to answer the environmental questions. Thus, the *DOS* has decided to conduct the environmental surveys independently starting in 2002.

The *DOS* also conducted a survey called the urban agriculture survey, including small-scale farms, agricultural production in gardens etc., which covered the indoor environment and the demographic characteristics of households. It included some opinions of families on the environmental situation.

The *DOS* also receives trainees in environment statistics from different countries as part of the MEDSTAT-Environment project and the trainers from the *DOS* are invited to take part in training courses in environment statistics in the framework of the MEDSTAT project.

3.2.6 Classifications, methodologies, standards and coding systems

The *DOS* uses international classifications including ISIC Rev. 3 for economic activities, the CPC for commodities, and the FAO classification for land use.

The *DOS* combines data collected from secondary sources with those collected through field surveys.

The *Jordan Institution for Standards and Methodology* is the agency responsible for elaborating standards for all commodities in Jordan, including standards for water quality, for food and for other environmental aspects. The standards are submitted to the *Standard Committee* with special committees for each field. The *DOS* applies the standards proposed for environment statistics, and applies international standards in cases where no Jordanian standard is available. Parts of the national standards are based on international standards.

As coding system for chemical and hazardous waste, the *DOS* adopted a classification using ISIC Rev. 3, and the classification on hazardous waste available from the Basel Convention on the Trans-boundary Movement of Hazardous Materials.

Data are collected from governmental agencies and other institutions, their administrative records and annual reports or from surveys. The data are collected through different formats and types such as:

- Annual reports such as forest reports;
- Monthly reports like pesticide residual;
- Questionnaires attached to the Economic Enterprises Survey;
- Special questionnaires such as the Hazardous Waste Survey;
- Other information sources in reports or in directorates of the *DOS*.

While certain data such as meteorological information and data on drinking water quality are collected on a monthly basis, most other information is collected on a yearly basis. In general, all data are published annually.

3.2.7 Publications and databases

Since 1995, the *DOS* has been producing the Annual Environment Statistics Report. The most recent report was produced in 2003 but not yet published. It contains 16 main topics, including natural condition, population indicators, health indicators, economic indicators, pesticide residuals, agricultural indicators, transport and passengers, air quality, biodiversity, water statistics, energy and minerals, and solid and liquid waste including hazardous waste and non-hazardous waste.

The following table presents a list of data available closely related to environmental aspects.

Data	Periodicity	Latest reference year
Amount of rainfall	Yearly	2003
Results of food samples analyzed in the laboratory, number of local and imported samples, pesticide residuals	Yearly	2003
Quantity of imported, locally produced and export of recorded pesticides	Yearly	2003
Total, irrigated and non-irrigated area cultivated	Yearly	2003
Percentage of crops area treated with pesticide by crop and by kind of pesticide	Yearly	2003
Percentage of fertilized crops area by crop and by kind of fertilizer	Yearly	2003
Status of biodiversity for flora and fauna	Yearly	2003
Number of vehicles	Yearly	2003
General monthly concentration of TSP and Pb, monthly distribution of the concentration of total suspended particles (TSP) and lead, results of microbial and parasites tests for treated water, status of cleaning plants, results of chemical tests of sewage water	Yearly	2003
Summations of estimated quantities for gases emissions (NO_X, CO, CO_2, NMVOC) from energy use in different sectors	Yearly	2003
Water quality and quantity	Yearly	2003
Surface water budget, quantity and usage of ground water by water basin	Yearly	2003
Quantity of solid waste in services, construction, maintaining and repairing of motor vehicles sector, quantity of water used and sewage water	Yearly	2003
Quantity of solid & liquid waste in medical services and in the industrial sector, quantity of water used and sewage water quantity of solid waste resulted from the service sector	Yearly	2003

Data relating to environment statistics are available on the website of the *DOS* under www.dos.gov.jo. Most of the annual report tables can be found on this site.

The database of environment statistics is accessible through the website of the *National Information Technology Centre* under www.nic.gov.jo. This site has a focal point for environmental information and it has links to the main sources of environmental information in Jordan.

3.2.8 Data gaps

Despite the relative early start of the environmental protection activities in Jordan, environment statistics still has many data gaps and some fields are not yet covered.

The main categories with an insufficient coverage are:

- Municipal waste (available data only cover the capital Amman);
- Land cover, land use, and change of land use;
- Water outflow, water inflow and water quality in rivers and the sea;
- Desertification;
- Biodiversity (data are available only for some local areas);
- Air quality (air quality is monitored only by very few stations);
- Environmental accounting including environmental expenditures.

Environmental accounting is the main gap of environment statistics. However, due to the limited technical and financial recourses, it is difficult to develop appropriate expertise in this area in the short term.

3.2.9 Main obstacles for improvements in environment statistics

- Often inconsistent methodologies, enumeration standards, and field laboratory techniques,
- Sometimes missing quality and reliability of the original data (quantity of waste, medical waste),
- High costs of the data collection for environment statistics(high cost for monitoring stations and laboratories),
- High complexity of environment statistics, since it is challenging to meet user demands and set appropriate priorities,
- Unavailability of methodology in Arabic,
- Missing substantial experiences in environment statistics (e.g. agriculture, hydrology, atmospheric sciences, and waste).

3.2.10 Recommendations for improvements in environment statistics

The activities in Jordan with respect to environment statistics are very advanced compared to other countries in the ESCWA region. Nevertheless, a lot of work remains to be completed.

- Cooperation between the *DOS* and the ministries as well as non-governmental organizations needs to be enhanced. The creation of a *Steering Committee* is recommended.
- Data gaps have to be filled. Certain vital areas of environment statistics have not yet been developed but should be envisaged in the near future.
- A stringent quality measurement and quality control process need to be initiated.
- Training to the staff of the ministries needs to be provided in the basic concepts and principles of environment statistics. Specific training to the staff of the *Environment Statistics Section* of the *DOS* is required in the still missing fields of environment statistics.

- A fully operational environmental statistical system should be created.
- Financial support has to be ensured to further develop environment statistics.

3.2.11 Future activities planned

The priorities specified by the decision makers are as follows, which are determined by the demands laid down in the Agenda 21 for sustainable development:

- Covering water statistics in more detail, e.g. water import and irrigation and the quality of treated water;
- Carrying out land cover analysis and a more detailed survey on land use and changes in land use;
- Improving waste statistics, including municipal waste;
- Developing a Geographical Information System (GIS) database including the position of main point sources, such as chemical manufactories and sewage water treatment plants;
- Initiation of environmental accounting to meet the demand of the National Accounting Section in the *DOS*;
- Conducting some at least a descriptive analysis for the main environmental topics;
- Improving the environmental indicators;
- Calculating the sustainable development indicators;
- Carrying out a survey on emission of some gases from the industrial sector;
- Carrying out a survey on squeezing oil enterprises and the waste produced from them.

3.3 Kingdom of Bahrain

3.3.1 The National Statistical Authority and environment statistics related acts

Central Information Organization (CIO)
P.O.Box: 3305, Essa Town
Website: www.bahrain.gov.bh

The *Central Information Organization (CIO)* is a governmental organization and responsible for data collection and data compilation in close cooperation with the statistics units, offices of the ministries, and other governmental institutions. The *CIO* collects information relating to environment statistics.

3.3.2 Other important institutions producing environment statistics

Public Commission for the Protection of Marine Resources, Environment & Wildlife
General Directorate for the Protection of Environment & Wildlife
Environment Assessment and Planning Directorate
P.O .Box 32657

The *Environment Protection Commission* was the responsible agency for environmental protection according to the Amiri Decree No. 7 of 1980. According to the Amiri Decree No. 21 of 1996, this *Commission* has been subordinated to the Ministry of Housing and Municipalities, which was renamed thereafter into the *Ministry of Housing, Municipalities and Environment*. In 2002, the Amiri Decree No.50 set forth the present *Public Commission for the Protection of Marine Recourses, Environment & Wildlife* combining all environment-related agencies under one umbrella. The objective of this Commission is to base future decision making regarding future environmental issues on a solid data basis.

Other institutions:

Arabian Gulf University

Website: www.agu.edu.bh

Bahrain University
Website: www.uob.bh

Bahrain Centre for Study &Research (BCSR)
Website: www.bcsr.gov.bh

3.3.3 Environmental data and relevant statistics produced

There are sets of environmental data available collected by the *CIO*. Relevant statistics of general nature are also available. They are distributed through the website of the Bahrain government (www.bahrain.gov.bh).

The following table presents the environmental data and related statistics produced by the *CIO* as well as other administrative and governmental bodies.

Environmental data and relevant statistics	**Producing institution / Internet address**
Type of waste and method of disposal (treatment) by establishment	*Central Information Organization/* http://www.bahrain.gov.bh
Air quality, municipal waste and medical waste, costal marine environmental data	*Public Commission for the Protection of Marine Resources, Environment and Wildlife*
Information about rainfall	*Civil Aviation Affairs, Directorate of Meteorology /Ministry of Transport*
Number of blocks connected/not connected with the public sewerage network	*Directorate of Sewage & Drainage / Ministry of Works*
Information on water production and consumption/use	*Water Supply Directorate / Ministry of Power & Water*
General information about land use, quantities of fertilizers used in agriculture, quantities of pesticides consumed; Municipal waste, waste disposal; Waste water from desalination plants, groundwater data, soil data	*Municipalities Affairs / Ministry of Municipalities & Agriculture*
Medical waste	*Ministry of Health*
Environmental related information of oil and gas industry (production and consumption)	*Ministry of Oil, Bahrain National Gas Company*
Number of vehicles registered in use	*Directorate of Traffic & Licensing/ Ministry of Interior*
Domestic water quality	*Ministry of Electricity and Water*

3.3.4 Human resources for environment statistics

In 2004, the *Social & Environment Statistic Section* at the *CIO* was created. Its mandate is mainly to collect and distribute environmental data. Further information is not available.

3.3.5 Activities in environment statistics

Bahrain pays much attention to the issues of environment.

Most of the environmental data are collected by administrative procedures. Since most of environmental information is collected and compiled by different governmental bodies, the coordination between these bodies has become of utmost importance.

3.3.6 Classifications, methodologies, standards and coding systems

Currently, there is no information available.

3.3.7 Publications and databases

Environmental data are presented in the Statistical Yearbook, which is produced and issued by the *CIO*. The data are included in a separate chapter for environment. Other data relating to general environmental aspects are presented in the relevant chapters of the Statistical Yearbook (weather conditions, land use etc.).

The *CIO* established a database on environmental aspects which contains information collected from other ministries and other governmental bodies.

The following table presents a list of data available in the Statistical Yearbook closely related to environmental aspects.

Data	Periodicity	Latest reference year
Rainfall in millimeters by month	Yearly	2003
Monthly water consumption	Yearly	2003
Water production	Yearly	2003
Number of localities connected to public sewage water network	Yearly	2003
Number of connections to public sewerage water network	Yearly	2003
Type and quantity of solid waste disposed	Yearly	2003
Areas under vegetable crops	Yearly	2003
Quantity of fertilizers used	Yearly	2003
Quantity of pesticides consumed	Yearly	2003
Total area under vegetable crops	Yearly	2003
Registered vehicles in use	Yearly	2003
Production of oil	Yearly	2003
Production of gas, distribution of gas	Yearly	2003

3.3.8 Data gaps

Since the scope of the environmental data produced and published by Bahrain is not completely known, it is difficult to specify data gaps. However, it is assumed, that data on air emissions and air quality, fresh water quality, marine water quality, hazardous waste, land degradation and biodiversity have not been produced or have not been made publicly available.

3.3.9 Main obstacles for improvements in environment statistics

Based on the information available on the scope of the data production regarding environmental issues, the main obstacles for improvements in environment statistics are:

- Not enough qualified human resources as well as insufficient means to conduct environmental surveys and to produce environment statistics:
- Scattered information in different institutions and limited accessibility of the information, lack of cooperation between the governmental institutions concerned;
- Missing integrated system, where all available information is properly stored;
- Insufficient quality of the records, insufficient description of the data and applied methodology.

3.3.10 Recommendations for improvements in environment statistics

- Priorities should be defined for the development of environment statistics.
- A concept on how to collect and compile specific environmental data should be developed.
- Financial means and human resources should be allocated in order to initiate statistical activities in collection and compilation of environmental data.
- Training should be provided to staff dedicated to collect and compile data on environmental aspects.
- Environmental data available in different institutions should be made easily accessible.
- Cooperation should be set up between the governmental institutions involved in environmental data collection.
- The methodology used for collection and compilation of environmental data should be well described and made consistent with international requirements and recommendations.

3.3.11 Future activities planned

Bahrain is preparing a National Environmental Strategy which promotes the evaluation of environmental concerns and plans investment projects.

The preparation of the Environment Status Report, which is published every third year, is an important activity to address environmental issues in the country and to present the status achieved.

Furthermore, the Marine Geographical Information System Project will provide GEO-digital information on the marine habitat.

3.4 Kingdom of Saudi Arabia

3.4.1 The National Statistical Authority and environment statistics related acts

Central Department of Statistics (CDS)
Website: http://www.planning.gov.sa

The *Central Department of Statistics (CDS)* is considered the central authority of statistics in the Kingdom of Saudi Arabia. It is subordinated to the *Ministry of Planning*.

The *CDS* was established in accordance with the Public Statistics Law issued through the Royal Decree No. 23 dated 7/12/1379 Hijri (1960 AD). There is no specific law on environment statistics.

The *CDS* produces all types of statistics as required. It is responsible for developing the scientific methodology, statistical or technical instructions, which help other statistical departments in different governmental institutions to collect and prepare the statistics related to their work. These departments provide the *CDS* with statistical data on a regular basis. The *CDS* supervises technically all governmental institutions in the data production process and supports their statistical work through close coordination.

3.4.2 Other important institutions producing environment statistics

Meteorology and Environmental Protection Administration (MEPA)
Website: http://www.mepa.org.sa

The *Meteorology and Environmental Protection Administration (MEPA)* is responsible for environmental protection, including the response to pollution of all kinds. The agency is authorized to establish different environmental standards. This responsibility was established in accordance with the Royal Decree dated 04/24/1401 Hijri, (1981 AD).

Ministry of Agriculture
Website: http://www.agrwat.gov.sa

The *Ministry of Agriculture* is responsible for collecting statistical data related water.

3.4.3 Environmental data and relevant statistics produced

The following table presents the data closely related with environmental aspects produced by administrative and governmental bodies.

Environmental data and relevant statistics	Producing institution / Internet address
Data relevant to the environment collected by own means and by secondary sources	*Central Department of Statistics (CDS)/* http://www.planning.gov.sa
Data on waste including hazardous waste, marine water quality in the Gulf, air quality, air and water quality standards, rainfall	*Meteorology and Environmental Protection Administration (MEPA)/* http://www.mepa.org.sa
Data on land use, crop area for the main crops, quantity of pesticides imported, quantity of fertilizers and quantity of treated sewage water used for irrigation	*Ministry of Agriculture* http://www.agrwat.gov.sa
Information biodiversity in the protected areas	*National Commission for Wildlife Conservation and Development/* http://www.ncwcd.gov.sa
Data on the quantity of desalinated water produced (1980 – 2000)	*Saline Water Conversion Corporation/* http://www.swcc.gov.sa
National standards relating to environmental aspects	*Saudi Arabian Standards Organization (SASO)/* http://www.saso.org.sa

3.4.4 Human resources for environment statistics

To date no separate statistical unit responsible for environment statistics has been created in the *CDS*. The *CDS* plans to allocate employees to the work in this area in the near future.

A statistical division in the *Ministry of Agriculture* collects data for agricultural statistics, which includes some relevant environment statistics.

3.4.5 Activities in environment statistics

The *CDS* presently undertakes only limited activities indirectly relevant to environment statistics, which include a Household Environmental Survey. The survey covers indoor air pollution.

The *MEPA* carries out many activities directly related to environment statistics, for example, air quality monitoring. The *MEPA* operates 11 monitoring stations. In addition, the *MEPA* supervises other stations operated by other agencies such as Saudi Arabian Oil Company (ARAMCO) and the Arab Oil Company. The data of all stations are available from the *MEPA*. The *MEPA* furthermore monitors marine water quality in the Arab Gulf as well as groundwater quality in certain areas, e.g. in Jeddah.

The *Ministry of Agriculture* has a monitoring system for surface and groundwater resources. The ministry also monitors the work of desalination water stations.

Other environmentally relevant data are scattered across various institutions and agencies. They also differ in their methods of tabulation and recording.

3.4.6 Classifications, methodologies, standards and coding systems

The *CDS* uses international classifications, e.g. ISIC Rev. 3, for the classification of economic activities.

The methodology used for environment statistics is a mixture of different methods, for example, household sample survey methods are applied in the Household Environmental Survey. Other methods for compiling environmental data refer to the monitoring system.

The *Ministry of Agriculture* uses the FAO classification for land use.

The *MEPA* developed Environmental Protection Standards, which are specified in the Document 1409-01. These standards include the Saudi Arabian Standards for air quality and organic pollutants. Standards for water quality including drinking water and marine water are not covered. The *MEPA* uses few classifications for hazardous chemicals and air quality.

3.4.7 Publications and databases

There is a large amount of data and information relating to the environment in Saudi Arabia. Some data are published in the *CDS* Statistical Yearbook, while other data are published in the Agriculture Statistical Yearbook or disseminated through the internet.

The Agriculture Statistical Yearbook is produced and published by the *Ministry of Agriculture*. Information on drinking water quality is available only as hard copy for internal use.

The *MEPA* operates an archiving centre for scientific documents and information. The centre concentrates mainly on meteorological information and some other information relating to environment. The centre can support the production of environment statistics through provision of access to useful environmental information.

A relatively large number of scientific studies were conducted and published by the *MEPA*. The study reports provide information on plant cover and desertification, the effect of oil pollution during the Gulf Crises, pollution in the coastal zone in Jeddah, and the enumeration of the forest area and rangeland, which includes a classification of soil, flora and fauna.

The *MEPA* established eleven databases, which include water quality, air quality, hazardous chemicals, and environmental companies. These databases are useful tools for environment statistics.

The *MEPA* also publishes the National Report on the Current Situation of the Environment in Saudi Arabia. It contains the following chapters:

1. General information about Saudi Arabia;
2. Improvement of environment management concepts;
3. The Meteorology and Environmental Protection Administration ;
4. Human activities that affect the environment;
5. The current situation of environment and natural resources;
6. Environmental management and future challenge.

The following table presents a list of data available relating to environmental aspects.

Data	Periodicity	Latest reference year
Rainfall, by month and meteorological station	Yearly	2000
Occupied households by house type and source of drinking water in administrative areas	Yearly	2000
Quantity of water desalinated by desalination plant (in thousand cubic meters)	Yearly	1999
Water consumption and number of subscribers by city (quantity in thousand cubic meters)	Yearly	1999
Natural gas sales by station (in tons)	Yearly	2000

Vehicles imported by type	Yearly	2000
Total land area distributed in the kingdom according to the arable land distribution scheme	Yearly	2000
Estimated area of all crops by administrative region	Yearly	2000
Quantity of pesticides imported according to their kinds	Yearly	2000
Quantity of fertilizers imported according to their kinds	Yearly	2000
Production capacity of desalinated water and electricity	Yearly	2000
Production capacity of drinking water projects, number of wells and capacity of water storage	Yearly	2000
Cost and quantity of drinking water supplied by vehicle	Yearly	2000
Quantity of treated sewage water used for agriculture purpose	Yearly	2000
Air quality (dust, NO, NO2, NO x, O3, CO, THC, NMHC, SO2) by monitoring station	n.a.	Not published
Municipal waste statistics (irregular reports)	n.a.	Not published

3.4.8 Data gaps

Since large amounts of data are scattered across governmental institutions and private agencies, data gaps can hardly be defined precisely. Therefore, the following list of data gaps might be incomplete.

- Coastal zone including marine water quality and pollution,
- Air emissions,
- Industrial waste,
- Land degradation.

3.4.9 Main obstacles for improvements in environment statistics

- The absence of a designated unit responsible for environment statistics,
- The lack of knowledge on how to institutionalize an environment statistics system,
- Scattered information in different institutions and limited accessibility of the information, lack of cooperation between the governmental institutions concerned,
- Limited experience in environment statistics and the lack of prioritization of environmental monitoring and statistics,
- Insufficiently developed methodology used for data collection in different institutions.

3.4.10 Recommendations for improvements in environment statistics

- A unit responsible for environment statistics should be created.
- Training should be provided to staff dedicated to collect and compile data on environmental aspects (mainly to the *CDS* and the *MEPA*).
- Priorities should be defined for the development of environment statistics.
- A concept on how to collect and compile specific environmental data should be developed.
- The methodology used for collection and compilation of environmental data should be made consistent with international requirements and recommendations.
- An environmental compendium should be prepared based on an initial inventory of the large amount of data available in various institutions.
- Environmental data available in different institutions should be made easily accessible.
- Cooperation should be set up between the governmental institutions involved in environmental data collection.

- External technical assistance would be required to develop a concept for environment statistics and set up an appropriate methodology.

3.4.11 Future activities planned

No activity has been identified.

3.5 Lebanese Republic

3.5.1 The National Statistical Authority and environment statistics related acts

Central Administration of Statistics (CAS)
Website: www.cas.gov.lb

The *Central Administration of Statistics (CAS)* is the responsible agency in Lebanon to produce and publish all kind of statistics. In 2002, the statistical law was adjusted to include environment statistics in the *CAS* activities. The preparation of a decree especially for environment statistics is under way. The legal process is time consuming, as it requires the agreement of the Council of Ministers and other legislative agencies.

According to the rules of general administrative organization of the Lebanese Republic (according to the Law III of 16/6/1959 and the Decree 2894 of 16/12/1959), each ministry is required to collect the statistics relevant for its activities and supply them to the *CAS*. In addition, various other agencies deal with or collect statistical data including, the private sector.

3.5.2 Other important institutions producing environment statistics

Ministry of Environment
Lebanese Environment and Development Observatory (LEDO)
Website: www.moe.gov.lb

In 1999, the *Lebanese Environment and Development Observatory (LEDO)* was established under the subordination of the *Ministry of Environment*. The main objective of this institution is to provide and improve environmental data. The project that created the *LEDO* was funded by the European Union. The *LEDO* coordinated its work with national partners from the public, private and academic sectors as well as with research institutions and non-governmental organizations.

The *LEDO* had the responsibility to carry out the work on environmental indicators and to ensure their development. This responsibility, however, was not covered by the Decree 5591 of 30/8/1994, which regulates the tasks of the *Ministry of Environment.* The delay in the amendment of the law regulating the Ministry's organization and tasks resulted in the termination of the LEDO's activities after the project end.

3.5.3 Environmental data and relevant statistics produced

The *LEDO* calculated a number of the internationally suggested environmental indicators (for further details see chapter 3.5.7).

The following table presents environmental data and related statistics produced by administrative and governmental bodies.

Environmental data and relevant statistics	Producing institution / Internet address
Consumption/production patters, energy and water (access to water network and to safe drinking water, total water demand by sector, agriculture water demand)	*Ministry of Energy and Water*
Water, seawater quality, share of collected and treated waste water by	*Water Authority*

public sewerage system, amount of waste water treated by type, sustainable development activities and policies, waste water treatment rate, number of waste water treatment plants, number of fixed air/water/coastal water monitoring stations	
Use of pesticides, use of fertilizers, area irrigated with treated/untreated sewage, area effected by desertification, land use, biodiversity, threatened species,	*Ministry of Agriculture*
Generation of solid waste, distribution and number of passenger cars per 100 inhabitants, stocks of motor vehicles by age and fuel type,	*Ministry of Interior and Municipalities*
Destination of municipal waste, composition of municipal waste, public expenditure on environmental protection as % of GDP, cost of management of municipal solid waste, expenditure on waste water management by type	*Ministry of Environment/ www.moe.gov.lb*
Air, emissions of green house gases (GHG), sulphur oxides, nitrogen oxides, concentration of low level ozone, and consumption of ozone depleting substances, global solar UV index	*Ministry of Environment/ www.moe.gov.lb*

3.5.4 Human resources for environment statistics

The *CAS* currently does not include in its structure a unit responsible for environment statistics. One employee works on the logistic activities relating to this field.

The *Ministry of Environment* (LEDO) had a team working on the Geographical Information System (GIS) and on environmental indicators. The expertise of the employees with regard to information technology, database development/management and GIS was good.

3.5.5 Activities in environment statistics

Currently the *CAS* tries to cover the basic requirements for the MEDSTAT-Environment questionnaire. This questionnaire contains six main parts: air, wildlife, environmental indicators for sustainable development, water, land, and waste. The work on the questionnaire is still in progress. This highlights the rather limited activity and involvement of the *CAS* in environment statistics. The *CAS* provides certain demographic and other environmentally relevant statistics to the *Ministry of Environment*.

The *LEDO* collected and compiled data from different sources to calculate environmental indicators. The *LEDO* established a database for environmental data using GIS technology.

3.5.6 Classifications, methodologies, standards and coding systems

The *CAS* is currently not active in this field. The *CAS* completes the MEDSTAT questionnaire which uses the classifications applied in the European Union.

The *LEDO* used international classifications of the FAO for agriculture and land indicators, European classifications as applied in the MEDSTAT-Environment questionnaire, as well as the WHO Guidelines for air quality. The indicators are divided into three types: pressure, state and response indicators. In addition, the indicators are classified by statistical fields: population and socio-economic indicators, economic activity indicators, environmental indicators, and sustainable development activities and policies indicators. 90 indicators were chosen from 130 indicators identified by the Mediterranean Commission on Sustainable Development (MCSD). Data compilation and indicator calculation was based on data from different sources – no primary data collection is currently being carried out. For each indicator, the methodology of calculation is available.

Despite the number of ongoing activities, the level of detail and comprehensiveness is still in an early stage. It requires more time and a structured approach for its improvement.

3.5.7 Publications and databases

So far, the *CAS* has not produced any publication relating to environment statistics.

The *LEDO* produced a publication titled “Environment and Development Indicators for Lebanon”. The first publication of this type was issued in 2000. The publication contains a specification of indi-

cators derived from the MCSD list, implemented by Plan Bleu which was also used as a basis for the MEDSAT-Environment project, and the data sources for each indicator. A total of 90 indicators are defined into different types of indicators and the *LEDO* succeeded in calculating 60 of the suggested 90 indicators.

The report is available under the following internet address: www.moe.gov.lb.

It was intended to update the page whenever new data become available. However, due to the lack of relevant data, not all indicators are currently calculated. The publication is available on paper and on CD-ROM. The publication is of generally good quality and can be used for training purposes, since it also contains methodological descriptions for the calculation of each indicator.

The *Ministry of Environment* produced the "State on the Environment Report – 2001" which represents the most comprehensive compilation of environmental information of the country. This report will be updated every five years.

3.5.8 Data gaps

The main data gaps identified are:

- Water quality including river and drinking water;
- Air quality and air emissions;
- Industrial sewage water quality especially the sewage water disposed into rivers;
- Industrial and hazardous waste.

3.5.9 Main obstacles for improvements in environment statistics

- The absence of a designated unit responsible for environment statistics at the *CAS*,
- Not enough qualified human resources in the *CAS* and the *Ministry of Environment* to collect and produce environment statistics,
- Insufficient inter-institutional coordination especially after the end of the LEDO project
- Limited experience since environment statistics is a new subject in Lebanon,
- Insufficient monitoring and other data collection activities in the environmental field,
- Lack of necessary equipments and other facilities for observational purposes,
- Unavailability of a comprehensive information system in Lebanon for environment statistics.

3.5.10 Recommendations for improvements in environment statistics

- A unit responsible for environment statistics should be created.
- Training in environment statistics to the staff of the *CAS* and the *Ministry of Environment* should be provided starting with concepts and methods of data collection (the training should comprise case studies, the design of questionnaires, data cleaning, and data processing).
- A manual should be prepared, which includes a description of methods for data collection.
- Financial and technical means should be allocated to carry out data collection of environmental data.
- Cooperative relationship between the *CAS* and the *Ministry of Enviro*nment should be enhanced through intensified teamwork.
- The legal framework for environment statistics need to be strengthened, including clear specification of the relations between the *CAS* and the *Ministry of Environment* as well as the relationship between the *CAS/ Ministry of Environment* and other governmental agencies collecting environmentally relevant data.
- An environment statistics programme should be established.

- A database on environmental data should be developed at the Ministry of Environment, which can form the basis for an environmental compendium.
- An environmental monitoring system should be build up at the local level, decentralizing the work and expanding data coverage to the national level.

3.5.11 Future activities planned

No activity has been identified.

3.6 Palestine

3.6.1 The National Statistical Authority and environment statistics related acts

Palestinian Central Bureau of Statistics (PCBS)
Website: www.pcbs.ps

According to the statistical law No. 4 approved in 2000, the main function of the *Palestinian Central Bureau of Statistics* (PCBS) is to provide impartial information for all fields of statistics including environment statistics.

The *PCBS's Area Statistics Directorate* (ASD) produces, compiles and disseminates reliable statistics related to land and activities taking place on land relating also to environment statistics.

The main areas covered by the *ASD* are environment, natural resources, agriculture, housing units and tourism, which are directly related to environment statistics. The directorate is divided into five departments:

1. Agriculture Statistics Department
2. *Environment Statistics Department*
3. *Natural Resources Statistics Department*
4. Tourism Statistics Department
5. Housing and Housing Conditions Statistics Department

The *ASD* keeps close links to other directorates producing environment relevant statistics.

3.6.2 Other important institutions producing environment statistics

Environment Quality Authority (EQA)
Website: www.mena.gov.ps

The *EQA* is responsible for environmental policies, strategies, action plans, and regulations as well as monitoring and coordination. The *EQA* collects the data needed, if data are not available in other related institutes like the *PCBS*, or if available data are in a format or coverage different from what the *EQA* needs. Based on the collected data or the available data at other institutions, the *EQA* builds up its strategies and plans, develops indicators and standards as well as relevant regulations.

The *EQA* is a member of the *National Committee of Environment Statistics and Natural Resources*, which is chaired by the *PCBS*. Thus the *EQA* shares the decisions taken regarding the plans and priorities in the field of environment statistics. The *Environment Statistics Division* within the *Department of Scientific Research and Development* of the *EQA* is responsible for defining and prioritizing environmental surveys and following up the environmental surveys in cooperation with the *PCBS*.

3.6.3 Environmental data and relevant statistics produced

Most of the data on environmental issues are produced by the *Environment Statistics Department* at the *PCBS*. Other data are collected from governmental bodies and other organizations.

The following table presents the environmental data and related statistics produced by administrative and governmental bodies.

Environmental data and relevant statistics	Producing institution / Internet address
Water and waste water statistics, solid waste statistics, air pollution statistics and other related statistics	*Palestinian Central Bureau of Statistics* (*PCBS*) / www.pcbs.gov.ps
Solid waste data, environmental indicators, air quality data	*Environment Quality Authority* (*EQA*) / www.mena.gov.ps
Data about land use and related issues	*Ministry of Planning*
Data about water consumption, water purification and water quality	*Palestinian Water Authority*
Medical waste management	*Ministry of Health*

3.6.4 Human resources for environment statistics

Environment statistics are produced in two departments of the *PCBS*. The *Environment Statistics Department* consists of three divisions: waste water statistics, solid waste statistics and emissions to air statistics. The *Natural Resources Statistics Department* consists of three divisions: land use, water and energy. There are nine employees in these departments, three employees work in the *Environment Statistics Department* and six employees work in the *Natural Resources Statistics Department*.

3.6.5 Activities in environment statistics

To collect data on environmental issues, the *PCBS* conducts statistical surveys, for example the Household Environmental Survey. An environmental questionnaire has been designed for this survey. The sampling method is a two-stage stratified cluster random sampling design.

Beside the household survey, there are other surveys carried out, such as the Environmental Economic Survey, the Health Care Environmental Survey, the Local Community Survey, the Dumping Site Survey, the Industrial Survey and the Household Energy Survey. For energy, the data are collected by attaching energy questionnaires to the household and economic surveys, which are conducted annually by the *PCBS*.

Many reports were published relating to the environment, for example, the report on “Meteorological Conditions in the Palestinian Territory”, the report on “Waste Water Statistics in the Palestinian Territory”, and the national report on the solid waste statistics. There are other reports concerning water, energy and land use.

Furthermore, the *Environment Statistics Department* of the *PCBS* held many workshops and dialogues related to the environmental situation in the Palestinian Territory.

The descriptive analyses contained in the publications of the *PCBS* are indicative of the relatively advanced level of work in the institution.

Most of the work was accomplished with the support of foreign agencies, including aid for capacity building in the *PCBS*.

Environmental data are collected from governmental bodies and other organizations where they result from administrative processes. For example, water and land statistics are compiled mainly from the administrative records of Palestinian ministries and institutions.

3.6.6 Classifications, methodologies, standards and coding systems

The *PCBS* uses international classifications such as ISIC Rev. 3 for economic activities and to some extent for medical waste. The methodologies used in environment statistics are described in detail in both languages – Arabic and English. A coding system is not applied in the publications.

3.6.7 Publications and databases

The following table presents a list of publication produced by the *Environment Statistics Department* and the *Natural Resources Statistics Department* of the *PCBS.*

Publication	Periodicity	Latest reference year
Household environmental survey: Main findings	Yearly	2004
Industrial environmental survey 1998: Main findings		1998
Meteorological conditions in the Palestinian Territory	Yearly	2004
Waste water statistics in the Palestinian Territory		1997-1998
Medical environmental survey 2000: Main findings		2000
Environment statistics in Palestine 1999	Yearly	1999
Dumping sites survey in the Palestinian Territory: Main findings		2001
Environmental survey for health care centres: Main findings	Yearly	2004
Water statistics in the Palestinian Territory		2004
Land use statistics in the Palestinian Territory	Yearly	2002
Energy consumption in the Palestinian Territory	Yearly	2003
Biodiversity in the Palestinian Territory		1991-1997
Environmental economic survey	Yearly	2004
Household energy survey: Main findings	Yearly	2004

3.6.8 Data gaps

The *PCBS* produces a number of publications, however, the environment and natural resources statistics lack important geographical and environmental data. These data gaps are to a large extent the result of the current political situation.

The most important data gaps identified are:

- Fresh water quality, marine water quality, quality of sewage water released by waste water treatment plants;
- Further specification of land use statistics (about 64% of land is classified into “other type”), land degradation;
- Municipal, industrial waste statistics, the generation of hazardous waste;
- Air emissions and air quality.

3.6.9 Main obstacles for improvements in environment statistics

The current political situation in Palestine makes it particularly difficult to sustain environment statistics programmes due to the impacts, for example, on field surveys. Additional obstacles for improvements are identified:

- Limited availability of monitoring stations and data for air quality;
- Missing training and expertise for environment statistics as a rather new subject;
- The lack of sufficient and continued financing for expensive field surveys;
- The lack of full access to and control of some regions by the relevant statistical authorities due to the current political situation.

3.6.10 Recommendations for improvements in environment statistics

Based on the current information, the following recommendations are provided:

- Further training on data dissemination techniques applied in environment statistics should be provided to the staff of the *PCBS* dedicated to environment statistics.
- Methods used for data dissemination should be reviewed. The methods should be made consistent with international requirements and recommendations.
- The use of secondary data from different sources, e.g. the *Ministry of Environment*, should be improved.
- Improved cooperation between the *PCBS* and other relevant agencies with regard to the collection and processing of environmental information is considered important, given the current limitations in data sources and funding.
- The priorities of environment statistics should be set out more specifically and aligned with national objectives (not donor objectives).
- Due to the limited use of GIS data in environment statistics, it appears that training is needed on the use and applications of new GIS technologies.
- Capacity building and support is considered important for all related institutions, which deal with collection and production of environmental data. The *EQA* is one of those important institutions and would need foremost support.

3.6.11 Future activities planned

The *Environment and Natural Resources Statistics Departments* of the *PCBS* will continue data collection on different environmental topics, mainly:

- Solid waste;
- Water and waste water;
- Meteorological conditions;
- Emissions to air;
- Energy;
- Land use.

3.7 Republic of Iraq

3.7.1 The National Statistical Authority and environment statistics related acts

Central Organization for Statistics and Information Technology (COSIT)
Baghdad – Arrasat Al- Hindia

The *Central Organization for Statistics and Information Technology (COSIT)* is the responsible governmental agency for conducting surveys and publishing statistics including environment statistics. Due to the lack of sufficient financing and equipment, activities of the *COSIT* in environment statistics are still limited.

3.7.2 Other important institutions producing environment statistics

Ministry of Environment

The Ministry of Environment became the responsible agency for monitoring the environmental situation in Iraq. The *Ministry of Environment* has replaced the Central Environment Protection Agency in its responsibility for monitoring on environmental aspects.

3.7.3 Environmental data and relevant statistics produced

Environment statistics programme has recently been implemented in Iraq. A special unit, the *Environment Statistics Department*, has been created at the *COSIT*. Moreover, a committee composed of several ministries and the *COSIT* has been created to promote and further develop environment statistics. The ministries represented on this committee are: the *Ministry of Environment*, the *Ministry of Oil*, the *Ministry of Water Resource*, the *Ministry of Industry and Metal*, the *Ministry of Agriculture*, and the *Ammanat Baghdad*. Those ministries and bodies collaborate with the *COSIT* to provide the *Environment Statistics Department* with environmental data related to land, water and air. The data result from their administrative procedures. Since this process has recently been initiated, a considerable amount of environmental data is still missing. The lack of data also results from the shortage of measurement equipment in some fields.

3.7.4 Human resources for environment statistics

The *COSIT* intends to allocate additional human resources to environment statistics in the future. Detailed information is not available.

3.7.5 Activities in environment statistics

One annual survey has been conducted covering water and electricity. The survey provides information on water production and consumption as well as electricity production and consumption. The data was collected from the relevant governmental agencies.

The *Environment Statistics Department* is preparing a database containing environmental data collected and compiled by the ministries which are members of the committee. In future the *COSIT* plans to cover all aspects of environment statistics.

3.7.6 Classifications, methodologies, standards and coding systems

There is no information available.

3.7.7 Publications and databases

There is no database or publication available.

3.7.8 Data gaps

Since there is no publication on environmental data available, it is difficult to identify data gaps. It is assumed that the main data gaps are air emissions and air quality, water statistics including resources, use and treatment, fresh water quality, marine water quality, municipal, industrial and hazardous waste, land use and land degradation, and biodiversity. It is unclear to what extend data are available within the ministries concerned.

3.7.9 Main obstacles for improvements in environment statistics

The main obstacles for improvements in environment statistics are:

- The absence of a concept for the development of environmental data collection and compilation;
- Not enough qualified human resources as well as insufficient means to conduct environmental surveys and to produce environment statistics;
- The lack of cooperation between the institutions collecting data on environmental issues;
- Insufficiently developed methodology used for data collection in the different institutions.

3.7.10 Recommendations for improvements in environment statistics

Since there is little information available, recommendations for improvements could be addressed only on a general level.

- Priorities should be defined for the development of environment statistics.
- A concept on how to collect and compile specific environmental data should be developed.
- Financial means and human resources should be allocated in order to initiate statistical activities in collection and compilation of environmental data.
- Training should be provided to staff dedicated to collect and compile data on environmental aspects.
- Cooperation should be set up between the governmental institutions involved in environmental data collection.
- The methodology used for collection and compilation of environmental data should be made consistent with international requirements and recommendations.

3.7.11 Future activities planned

The creation of the *Environment Statistics Department* at the *COSIT* is a first step to initiate collection of environmental data available at other governmental agencies. In addition, data collection will also be carried out by surveys.

The establishment and dissemination of an Annual Environment Statistics Report is a main activity planned by the *COSIT* in environment statistics.

The *COSIT* will prepare the first phase of a survey on hazardous and non-hazardous waste.

3.8 Republic of Yemen

3.8.1 The National Statistical Authority and environment statistics related acts

Central Statistical Organization (CSO)
Sana'a Yemen, P.O.Box: 13434, E-mail: CSO1@y.net.ye

According to the Law No. 28 of 1995, the *Central Statistical Organization (CSO)* is the sole agency that has the authority to collect statistical data from other agencies and conduct censuses and surveys covering environment statistics. The organizational structure of the *CSO* includes a Directorate for Environment Statistics, which is subordinated to the *General Department of Goods Production and Environment Statistics*. This department consists of four directorates (Industry, Agriculture, Construction and Environment).

3.8.2 Other important institutions producing environment statistics

Environment Protection Authority (EPA)
Sana'a Yemen, P.O.Box: 19719, E-mail: EPA@y.net.ye

The *Environment Protection Authority (EPA)* is a governmental agency with the responsibility for establishing the relevant legal basis to protect environment in Yemen. The *EPA* conducts studies and research, with assistance of relevant institutions like the Yemen University.

On a fifth-annual basis, the *EPA* produces an Environmental Status Report in Yemen, which includes some environmental data. The data used in the report are not collected in field surveys by the *EP*A but by other agencies and institutions. The scope of the data does not cover all environmental aspects. The level of detail is limited.

The *CSO* cooperates with the *EPA* by providing environment statistics.

3.8.3 Environmental data and relevant statistics produced

The following table presents the main environmental data produced by administrative and governmental bodies.

Environmental data and relevant statistics	Producing institution / Internet address
Social and economic indicators	*Central Statistical Office/ CSO1@y.net.ye*
Quantity of monthly rainfall	*General Authority of Meteorology and Civil Aviation*
Quantity of solid waste	*Ministry of General Works and Roads*
Quantity of material used which causes depletion of ozone layers	*Environment Protection Authority/ EPA@y.net.ye*
Quantity of renewable water (surface and ground), quantity of drinking water produced and consumption, access of households to the public sewage water system	*National Water Resource and Sewage Authority*
Land use, natural ranges, type of desertification and deterioration of land, data on irrigation	*Ministry of Agriculture and Irrigation*

3.8.4 Human resources for environment statistics

The *Directorate for Environment Statistics* at the CSO was created in 2000. It consists of 3 employees carrying out data collection in environment statistics. Additional human resources are needed. The employees dedicated to environment statistics need training in the subject matter.

The *Environment Protection Agency* employs 6 persons in environmental data collection. Training in the subject matter is urgently needed.

3.8.5 Activities in environment statistics

The main activities in data collection for environment statistics are carried out by the *CSO*. The *CSO* conducts censuses and different surveys. Other institutions provide secondary data, collected in collaboration with the *CSO*, the *Ministry of Environment*, and other governmental agencies.

3.8.6 Classifications, methodologies, standards and coding systems

The *CSO* produces environment statistics at general level only. No classification system is currently being used. Aggregation of data from secondary sources is performed but no standards or coding systems have been used so far.

3.8.7 Publications and databases

Until now, no special publication on environment statistics has been released. The *CSO* includes a chapter on Environment in its Statistical Yearbook.

The following table presents the list of data available in the chapter of Environment of the Statistical Yearbook.

Data	Periodicity	Latest reference year
Quantity of monthly rainfall	Monthly	2002
Quantity of solid waste at governorate center	Yearly	2003
Distribution of number and ratio of dwellings and population by source of drinking water and method of sewage water disposal	Every 4th year	1998
Quantity of production and consumption of drinking water	Yearly	2003
Number of subscribers and beneficiaries of sanitary sewage service	Yearly	2003
Type and area deteriorated and desertification of land	-	2002

Quantity of material used which causes depletion of ozone layers	Yearly	2002

The *EPA* runs a database on environmental data. The data fed into this database comes from the *CSO*.

Much environmental data are available from the *Ministry of Agriculture*, unfortunately only on hard copy or sometimes on laboratory data sheets. The information covers ground water quantity and abstraction at the national level, water quality, forest area, plant classification in some area and protected area.

3.8.8 Data gaps

The main data gaps identified are:

- Water statistics, including resources, use and treatment, fresh water quality, and marine water quality;
- Forest area and area affected by desertification, land use and land degradation;
- Air emission and air quality;
- Municipal, industrial and hazardous waste and solid waste, the latter of which is currently available only for the governorate centres;
- Biodiversity.

3.8.9 Main obstacles for improvements in environment statistics

The main obstacles to the further development of environment statistics are as follows:

- Not enough qualified human resources, limited experiences in the field;
- The lack of financial means allocated to data collection on environment;
- Large number of agencies dealing with environmental issues resulting in scattered information in different institutions and limited accessibility of the information;
- The lack of cooperation between the governmental institutions concerned, lack of cooperation between data providers and the *CSO*;
- Incomparable data and difficulties in the aggregation of data from different sources due to the dispersion of data sources;
- Insufficient description of methodological concepts of the environmental data.

3.8.10 Recommendations for improvements in environment statistics

It can be stated that the development of environment statistics in Yemen is still at an early stage. Human and financial resources as well as a coordinated approach will be necessary to progressively enhance the situation.

The following recommendations are provided:

- The number of employees dedicated to environment statistics should be increased.
- Training should be provided to the staff of the *CSO* as well as to other institutions dealing with environmental data.
- Financial means and modern equipment for data processing should be allocated to the units producing environment statistics.
- Methodology applied in data collection should comprehensively be described. The methodology used should be made consistent with international recommendations.
- All available information from the various sources should be collected and stored as electronic documentation to avoid loss of information. This includes environmental information, which

is available only on hard copy. Available information should then be further distributed to potential users.

- The scope of environmental information presented in the Statistical Yearbook should be enlarged. Tabulating and calculation methods of environmental data should be improved.
- Cooperation between the *CSO* and the *EPA* in particular should be strengthen to further develop the database of environmental information running at the *EPA* (if appropriate, enlarge the database, feed missing data, enhance comparability in data format, prepare appropriate documentation of the database). Improved teamwork and cooperation among all agencies directly involved in environmental issues and statistics would benefit environment statistics.
- External assistance should be requested to overcome shortage in financial means and expertise.

3.8.11 Future activities planned

The following activities are planned for improvements in environment statistics:

- Setting priorities in the data collection and compilation of environmental data, focus on important environmental indicators;
- Establishing close cooperation between the *CSO* and the *EPA* and with other relevant agencies;
- Implementation of new surveys in cooperation with the *EPA*;
- Carrying out training for the staff of the *CSO* to improve data quality in environment statistics.

3.9 State of Kuwait

3.9.1 The National Statistical Authority and environment statistics related acts

Ministry of Planning, Statistics & Census Sector
Website: http://scs.mop.gov.kw

In the Decree No. 63 in 1997, which relates to the organization and specification of activities of the *Ministry of Planning*, it is stated that the *Statistics & Information Sector* shall be one of the main sectors of the *Ministry of Planning*.

According to Decree No. 5 in 2004, the *Statistics & Census Sector* is responsible for data collection, data processing, and data dissemination for all national statistics including environment statistics. The *Statistics & Census Sector* also carries out data collection to produce environment statistics.

3.9.2 Other important institutions producing environment statistics

Environment Public Authority (EPA)

The *EPA* is responsible for collecting and compiling environment statistics.

3.9.3 Environmental data and relevant statistics produced

The data collection on environmental issues is only of limited scope. Relevant statistics of general nature are collected and made available through the internet by the *Ministry of Planning.*

The following table presents the environmental data and related statistics produced by the *Ministry of Planning, Statistics & Census Sector*.

Environmental data and relevant statistics	Producing institution / Internet address
Weather conditions statistics, population statistics, health statistics, waste statistics, production and consumption of	*Ministry of Planning, Statistics & Census Sector*/

water, production and consumption of energy, air pollutants statistics, land use statistics, water pollutants statistics.	http://scs.mop.gov.kw

3.9.4 Human resources for environment statistics

The *Statistics & Census Sector of the Ministry of Planning* is one of the main sectors of the ministry. It is assumed that appropriate human as well as financial resources are allocated to carry out data collection and data compilation. However, the number of employees dedicated to environment statistics is two in SCS.

3.9.5 Activities in environment statistics

The *Statistics & Census Sector* of the Ministry of Planning carries out data collection of environment statistics, which relates to waste and water statistics, air pollutants and land use. The data sets produced are very limited. The results of the data collection are accessible on the internet. Published data excluded Production & Consumption Environmental Resources.

3.9.6 Classifications, methodologies, standards and coding systems

Information on the methodology used and classifications applied for environmental data is not available. It may be assumed that no international classification is applied in this respect.

On the website of the *Ministry of Planning,* a "Major Economical and Social Classification's System" of the year 1988 is presented. Detailed information is not available.

3.9.7 Publications and databases

The table below presents available data on environment related issues. The data sets available on environmental aspects are very limited. Environmental information of general nature is scattered across various chapters of the Annual Statistical Report, which is produced and published by the *Statistics & Census Sector*.

Data	Periodicity	Latest reference year
Production and consumption of water (in billion of gallons)	Yearly and monthly	2003
Rainfall & evaporation	Yearly and monthly	2003
The annual average of air pollutants, the amount and rate of changes (TSP, H_2S, SO_2, THC, NCH_4)	Yearly and monthly	2003
The annual average of the results of the analysis of drinking water, the amount and the rate of change (T.ALK, T.HARD.CL, F, N-NO_3, SO_4, T.D.S, NA, K, CA, HG, CD, PB, MN, CR, CU, ZN, FE , NI, T.O.C., T.HMS, T.COLIFORM, FAECAL COLIFORM)	Yearly and monthly	2003
The annual average of the results of the analysis of brackish water, the amount and the rate of change (T.ALK, T.HARD.CL, F, N-NO_3, SO_4, T.D.S, NA, K, CA, HG, CD, PB, MN, CR, CU, ZN, FE, NI, T.O.C., T.HMS, T.COLIFORM, FAECAL COLIFORM)	Yearly and monthly	2003
The annual average of the results of the analysis of treated water for agricultural purposes, the amount and the rate of change (T.ALK, T.HARD.CL, F, N-NO_3, SO_4 , T.D.S, NA, K, CA, HG, CD, PB, MN, CR, CU, ZN, FE, NI, T.O.C., T.HMS, T.COLIFORM, FAECAL COLIFORM)	Yearly and monthly	2003

3.9.8 Data gaps

Since data for specific environmental aspects are rarely available. The main data gaps are air emissions and air quality, water statistics including resources, use and treatment, fresh water quality, marine water quality, municipal, industrial and hazardous waste, land use and land degradation, and biodiversity.

3.9.9 Main obstacles for improvements in environment statistics

Based on the information available on the scope of the current data production regarding environmental issues, it is assumed that the main obstacles for improvements in environment statistics are:

- The absence of a designated unit responsible for environment statistics within the *Statistics & Census Sector*;
- Not enough qualified human resources to produce environment statistics;
- The limited scope of data collection for specific environmental indicators;
- Insufficiently described methodology on data collection for available variables;
- No application of international classifications for environmental data.

3.9.10 Recommendations for improvements in environment statistics

- A unit responsible for environment statistics should be created within the *Statistics & Census Sector*.
- Training should be provided to staff dedicated to collect and compile data on environmental aspects.
- Priorities should be defined for the development of environment statistics. The scope of data collection on environmental aspects should be enlarged to reduce data gaps.
- A concept on how to collect and compile specific environmental data should be developed.
- The methodology used for collection and compilation of environmental data should be made consistent with international requirements and recommendations.
- The methodology applied should be described comprehensively.
- International classifications, e.g. the FAO classification for land use and the classification for economic activities ISIC Rev.3 should be applied in environment statistics.

3.9.11 Future activities planned

No activity has been identified.

3.10 State of Qatar

3.10.1 The National Statistical Authority and environment statistics related acts

Central Bureau of Statistics (CBS)

The *Central Bureau of Statistics (CBS)* is the responsible agency for statistics. The *CBS* collects information relating to environmental aspects. However, specific activities in this field are currently not carried out.

3.10.2 Other important institutions producing environment statistics

Ministry of Municipal Affairs and Agriculture

The *Ministry of Municipal Affairs and Agriculture* is the responsible agency for environmental protection according to the Ameer decision in 1998.

Environment statistics is not yet a priority in this agency. The ministry provides little information on environmental protection and environmental policies.

3.10.3 Environmental data and relevant statistics produced

No information is available on specific environmental issues. Relevant statistics of general nature have partly been distributed through the internet by other international organizations and institutions.

3.10.4 Human resources for environment statistics

The *CBS* does not specifically allocate human resources to environment statistics. The same happens in the *Ministry of Municipal Affairs and Agriculture*.

3.10.5 Activities in environment statistics

Activities of the *CBS* refer to data relating to general environmental issues (land use, whether conditions, energy supply, water consumed etc.). There is no data collection for specific environmental aspects.

3.10.6 Classifications, methodologies, standards and coding systems

The FAO classification is applied for land use. Further information is currently not available.

3.10.7 Publications and databases

The *CBS* produces the Statistical Yearbook, which does not contain a separate chapter on environmental aspects. Currently no specific publication is being produced presenting environmental data.

The following table presents a list of data available closely related to environmental aspects.

Data	Periodicity	Latest reference year
Rainfall	Monthly	n.a.
Land utilization	Yearly	n.a.
Area under different crops (FAO classification)	Yearly	n.a.
Quantities of water production	Yearly	n.a.
Water consumed (used) by sectors	Yearly	n.a.

3.10.8 Data gaps

Since there is no particular activity known aiming at collecting and compiling environmental data, it could be stated that specific environmental data are generally missing. The main data gaps are air emissions and air quality, water statistics, use and treatment of water, fresh water quality, marine water quality, municipal, industrial and hazardous waste, land use and land degradation and biodiversity.

3.10.9 Main obstacles for improvements in environment statistics

Based on the information available, it could be assumed that the obstacles for improvement in environment statistics are:

- The absence of a designated unit responsible for environment statistics;
- Not enough qualified human resources as well as insufficient means to conduct environmental surveys and to produce environment statistics;
- No conceptual approach for the development of environment statistics;
- The lack of cooperation between the *CBS* and other institutions, which collect data on environmental aspects through theirs administrative procedures.

3.10.10 Recommendations for improvements in environment statistics

Since there is only little information available, recommendations for improvements could only be addressed on a general level.

- A unit responsible for environment statistics should be created.
- Priorities should be defined for the development of environment statistics.
- A concept on how to collect and compile specific environmental data should be developed.
- Financial means and human resources should be allocated in order to initiate statistical activities in collection and compilation of environmental data.
- Training should be provided to staff dedicated to collect and compile data on environmental aspects.
- The methodology used for collection and compilation of environmental data should be consistent with international requirements and recommendations.
- Environmentally relevant classifications should be applied to ensure data comparability.

3.10.11 Future activities planned

Currently no activity has been identified.

3.11 Sultanate of Oman

3.11.1 The National Statistical Authority and environment statistics related acts

Ministry of National Economy

The *Ministry of National Economy* is the responsible and coordinating agency for statistical activities. The duties of the ministry relating to statistics are:

- To conduct research and studies in order to broaden the production base, to diversify national income sources and to promote human resources development;
- To collect and publish different statistics, carrying out surveys and censuses in cooperation with the concerned authorities, in accordance with the requirements and needs of the development plans and with the statistical law, and to work toward upgrading the country's statistical work;
- To formulate a national information plan, to create an integrated economic, social and geographical information network to serve the various development interests and goals in the country;
- To formulate appropriate proposals for the coordination of the activities of the ministries and government units concerned with the implementation of development plans and programmes, and to assist their planning and statistics units.

The statistical law does not specifically mention environment statistics, since it covers statistics in general.

3.11.2 Other important institutions producing environment statistics

There is no information available about other institution dealing explicitly with environment statistics.

3.11.3 Environmental data and relevant statistics produced

There is no information available on specific environmental data. Relevant statistics of general nature are presented in the various chapters of the Annual Statistical Abstract produced by the Ministry of National Economy.

Some information relevant for environment statistics is available from other ministries, such as water use from the Ministry of Agriculture as well as wildlife, natural reserves, endangered species, and rare plants & trees from the Ministry of Information.

3.11.4 Human resources for environment statistics

There is no section in the *Ministry of National Economy* specifically dedicated to environment statistics.

3.11.5 Activities in environment statistics

To date, no environment statistics survey has been conducted, except a household environmental survey carried out in 2001. The questionnaire of this survey contained the following main topics:

- Source of drinking water;
- Quality of drinking water (qualitative statistics evaluating the personal opinion of the respondents);
- Quantity and method of disposal of household waste (cesspool or public waste collection network, etc.);
- Method of sewage water disposal;
- Information on cesspool,;
- Pollution in the close vicinity of the house (evaluating personal opinion of the respondents with respect to noise, bad smell, etc.);
- Use of chemical detergents in the house (including chemical materials used for cleaning purpose inside the house);
- Use of pesticides inside the house (yes/no).

This questionnaire basically recorded living conditions. The questionnaire provided mainly qualitative data, which might be strongly affected by individual opinions. Although it delivered only limited results, some statistical data relating to environment were collected.

3.11.6 Classifications, methodologies, standards and coding systems

Currently there is no information available.

3.11.7 Publications and databases

The Statistical Yearbook is produced by the *Ministry of National Economy*. It presents environment related statistics in various chapters. There is no specific chapter on environment. No separate publication dedicated to environmental data is produced.

The following table presents data related to environmental aspects, which are contained in the Annual Statistical Abstract.

Data	Periodicity	Latest reference year
Total annual rainfall by station	Yearly	2002
Monthly total annual rainfall by station	Monthly	2002
Agriculture land distribution	Yearly	2002
Estimates of cultivated area and production by crop	Yearly	2002

Areas treated against dobas bug & the quantity of insecticides utilized	Yearly	2002
Production and consumption (use) of water	Monthly	2002
Production & distribution of water by governorate, region and number of connections	Monthly	2002
Production & export of crude oil by production companies	Yearly	2002
Crude oil production & uses	Yearly	2002

3.11.8 Data gaps

The main data gaps are air emissions and air quality, water statistics including resources, use and treatment, fresh water quality, marine water quality, municipal, industrial and hazardous waste, land use and land degradation, and biodiversity. It is unclear to what extend data are available within the ministries concerned. Very few data are publicly available.

3.11.9 Main obstacles for improvements in environment statistics

The main obstacles for improvements in environment statistics are:

- The absence of a designated unit responsible for environment statistics;
- Not enough qualified human resources as well as insufficient means to conduct environmental surveys and to produce environment statistics;
- Scattered information in different institutions and limited accessibility of the information, lack of cooperation between the governmental institutions concerned;
- Insufficiently developed methodology used for data collection in different institutions.

3.11.10 Recommendations for improvements in environment statistics

Since there is little information available, recommendations for improvements could be addressed only on a general level.

- A unit responsible for environment statistics should be created.
- Priorities should be defined for the development of environment statistics.
- A concept on how to collect and compile specific environmental data should be developed.
- Financial means and human resources should be allocated to initiate statistical activities in collection and compilation of environmental data.
- Training should be provided to staff dedicated to collect and compile data on environmental aspects.
- Environmental data available in different institutions should be made easily accessible.
- Cooperation should be set up between the governmental institutions involved in environmental data collection.
- The methodology used for collection and compilation of environmental data should be made consistent with international requirements and recommendations.

3.11.11 Future activities planned

No activity has been identified.

3.12 Syrian Arab Republic

3.12.1 The National Statistical Authority and environment statistics related acts

Central Bureau of Statistics (CBS)

The *Central Bureau of Statistics (CBS)* has the responsibility to produce and publish official statistics. According to the statistical law of 1986 in conjunction with the Decree No. 87, other institutions are not authorized to produce any official statistics without the agreement of the *CBS*. The statistical law comprises all types of statistics including environment statistics. The responsibilities of the *CBS* comprise the compilation, evaluation, and dissemination of all kinds of statistics which are used to determine the status, changes and trends in economics and social development. No special law exists for environment statistics.

3.12.2 Other important institutions producing environment statistics

Ministry of Environment
General Commission of Environmental Affairs

The *Ministry of Environment* established the *General Commission for Environmental Affairs (GCEA)* following the presidential Decree No. 11 of 1991. The *GCEA* consists of seven units including a statistical division.

The *Ministry of Environment* and its executive body, the *GCEA*, are responsible for environmental issues in the country. The *GCEA* is well recognized in the overall administrative structure. Its activities relating to environment statistics are the creation of a database and a GIS facility as well as the establishment of a statistical service. The statistical service comprises data collection activities in agreement and with support of the *CBS* and other partners. The *CBS* and the *Ministry of Environment* share the work for the production of environment statistics.

The *CBS* receives statistical information from other ministries and governmental agencies. It processes and disseminates the data and publishes the National Statistical Yearbook, which covers all fields of economic activity. To serve the *CBS* in these activities, governmental agencies have the responsibility to maintain the registers and prepare progress reports on their activities. The different directorates of the ministries compile data for theirs fields of responsibility and forward these data to the *CBS*, which finalizes and publishes the results.

In 1998, the *CBS* created the *Industry and Environment Directorate*. In 1999, the *Ministry of Environment* created a *Statistical Division*. The latter is supervised by the *GCEA*. It has a branch in each governorate to collect environmental data. Each governorate sends the collected data to the *Statistical Division* of the *Ministry of Environment*, which in turn provides the *Industry and Environment Directorate* of the *CBS* with these data.

3.12.3 Environmental data and relevant statistics produced

The table below shows the collecting authorities of environmental data finally published by the *CBS*. However, it is assumed that there are several agencies holding a good amount of environmental raw data, which is not passed to the *CBS* for further processing and publication. For example, data might be available from sewage companies, from the *General Organization for Remote Sensing for Land Use*, data from the *Marine Institute in Lattakia* on data on the marine environment, and data from the universities on several environmental topics.

Environmental data and relevant statistics	Producing institution
Air quality (possibly not made public), biodiversity, land use and marine environment	*Ministry of Environment*
Length of rivers, flow rates of the most important rivers and springs, lakes area, fresh water resources, fresh water	*Ministry of Irrigation*

uses, and characteristics of main dams	
Land use and forest	*Ministry of Agriculture*
Waste water treatment and quality	*Ministry of Housing*
Annual precipitation quantity	*General Directorate of Meteorology*
Municipal waste generation, hazardous waste	*Governorate of Damascus*

3.12.4 Human resources for environment statistics

In the *CSB,* the *Industry and Environment Directorate* is responsible for producing environment statistics. One employee works in the environmental field. However, this person is also responsible for industrial statistics. This employee is also acting as the National Coordinator for environment statistics in the MEDSTAT-Environment project. In the past, training on environment statistics was provided to the staff of the *CBS*. Unfortunately, most of the employees trained have then been transferred to other government agencies.

The *Ministry of Environment* employs technicians in environment and environmental monitoring. The *Statistical Division* at the *Ministry of Environment* has branches in each governorate.

3.12.5 Activities in environment statistics

No environmental survey is currently being conducted in Syria. The data are collected from different governmental bodies and other institutions. The data are compiled and aggregated whenever a specific demand for certain data from national or international agencies arises.

The *CBS* collects data relevant to the MEDSTAT-Environment questionnaire. The MEDSTAT-Environment questionnaire consists of six main parts: air, wildlife, environmental indicators for sustainable development, water, land, and waste. The data are collected from many different institutions.

3.12.6 Classifications, methodologies, standards and coding systems

The *Ministry of Environment* has developed national standards for drinking water quality, industrial sewage water quality and air quality. The classifications used to collect and compile the data on water depend on these standards. However, these standards do not cover other environmental activities, such as hazardous waste.

International classifications are applied in several fields, for example, in land use statistics (FAO) and waste statistics (Basel Convention). It is difficult to evaluate the current situation due to the limited number of disseminated data.

The collection of the data and the completion of the MEDSTAT-Environment questionnaire follow a common methodology and classification.

3.12.7 Publications and databases

Until now, no special environmental publication has been released in Syria. The following environmental information is presented in the Annual Statistical Abstract published by the *CBS.*

Data	Periodicity	Latest reference year
Area of land by soil group	Yearly	2000
Flow rates of main springs	Yearly	2000
Annual precipitation in mm, average daily evaporation	Yearly	2000

The *Ministry of Environment* produces a Report on the Status of Environment in Syria for internal use only, but publishes a summary of this report. The ministry also runs a database for water and air quality. No time series data are available.

3.12.8 Data gaps

The main data gaps are air pollutant concentrations, air quality, water statistics including supply and demand, fresh water quality, marine water quality, solid and liquid waste, and natural resources data in general. These data are available only for some areas and not at national level. The number of monitoring stations as well as the spectrum of parameters monitored is limited and the data are often not computerized.

3.12.9 Main obstacles for improvements in environment statistics

The main obstacles for improvements in environment statistics are:

- Scattered information in different institutions;
- Methodology used for data collection in different institutions not sufficiently described;
- Insufficient accessibility of the data in some institutions, (for example, in the Ministry of Environment), data are often not computerized or restricted for internal use;
- Not enough qualified human resources as well as insufficient means to conduct environmental surveys and to produce environment statistics.

3.12.10 Recommendations for improvements in environment statistics

- Employees should be recruited by the *CBS* with backgrounds in different fields of environmental science to work as permanent staff on environment statistics.
- Training should be provided to employees of the *CBS* and the *Ministry of Environment*. Training should start with the general principles of environment statistics and should cover water statistics as one of the most important areas. The language used for the training should be Arabic.
- The cooperation between the *CBS* and the *Ministry of Environment* should be strengthened and further developed.
- Available information should be computerized and exchanged between the organizations concerned.
- The description of the methodology used in the different institutions to collect the environmental data should be improved.
- The quality of the data, its reliability and comparability should be improved.
- Additional computer software and hardware is required.
- External assistance is required both in capacity building and conducting surveys.

3.12.11 Future activities planned

No activity has been identified.

3.13 United Arab Emirates

3.13.1 The National Statistical Authority and environment statistics related acts

Ministry of Economy & Planning, Planning Sector
Website: www.uae.gov.ae/mop

The role of statistics within the *Ministry of Economy & Planning* is stated in the Law No. 1 (1972), which specifies the duties and responsibilities of each ministry. Law No. 3 (1973) refers to national planning and the Decree No. 40 (1974) specifies the activities of the *Ministry of Planning*. The *Ministry of Economy & Planning, Planning Sector* is considered the reference body for central statistics.

The laws and related decrees imply environment statistics; however, environment statistics is not yet incorporated in the activities of the *Ministry of Economy & Planning, Planning Sector*.

3.13.2 Other important institutions producing environment statistics

No additional information is currently available.

3.13.3 Environmental data and relevant statistics produced

There is no information available on environmental data. Relevant statistics of general nature are partly made available through the internet by the governmental website of the United Arab Emirates (see item 3.13.1).

3.13.4 Human resources for environment statistics

There is neither section nor division in the *Ministry of Economy & Planning, Planning Sector* specifically responsible for environment statistics and no employee is working in this area.

3.13.5 Activities in environment statistics

According to the laws mention above, the *Ministry of Economy & Planning, Planning Sector* conducts the population censuses and other surveys as well as statistical research, which are needed by the government for social and economic development. However, no activity is carried out to collect data on specific environmental issues.

3.13.6 Classifications, methodologies, standards and coding systems

There is no information currently available.

3.13.7 Publications and databases

There are various statistical reports, including the Statistical Abstract available on the website of the *Ministry of Economy & Planning, Planning Sector*. No report is being produced presenting specific environment statistics. Environmental data of general nature are available from several chapters of the Statistical Abstract. Some of them are presented in the following table.

Data	Periodicity	Latest reference year
Rainfall	Yearly and monthly	2003
Cultivated area by type of crop	Yearly	2003
Land use	Yearly	2003
Water production	Yearly	2003
Oil production	Yearly	2003
Gas production	Yearly	2003

3.13.8 Data gaps

Since there is no particular activity known aiming at collecting and compiling environmental data, it is assumed that specific environmental data are generally missing. Therefore, the main data gaps are air emissions and air quality, water statistics including resources, use and treatment, fresh water quality, marine water quality, municipal, industrial and hazardous waste, land use and land degradation, and biodiversity.

3.13.9 Main obstacles for improvements in environment statistics

The main obstacles for improvements in environment statistics are:

- The absence of a designated unit responsible for environment statistics;

- No qualified human resources as well as no means allocated to conduct environmental surveys and to produce environment statistics;
- The absence of concepts to develop data collection on environmental issues;
- The absence of cooperation between potential governmental bodies and other organizations which may collect data on environmental issues through their administrative procedures.

3.13.10 Recommendations for improvements in environment statistics

Since there is little information available, recommendations for improvements could be addressed only on a general level.

- A unit responsible for environment statistics should be created.
- Priorities should be defined for the development of environment statistics.
- A concept on how to collect and compile specific environmental data should be developed.
- Financial means and human resources should be allocated to initiate statistical activities in collection and compilation of environmental data.
- Training should be provided to staff dedicated to collect and compile data on environmental aspects.
- Cooperation should be set up between potential governmental institutions involved in environmental data collection.
- The methodology used for collection and compilation of environmental data should be made consistent with international requirements and recommendations.

3.13.11 Future activities planned

No activity has been identified.

4 Other activities in environment statistics in the West Asia Region

4.1 United Nations, Economic and Social Commission for Western Asia (ESCWA)

Website: www.escwa.org.lb

The Economic Commission for Western Asia (ECWA) was established by Economic and Social Council Resolution 1818 (LV) of 9 August 1973 as the successor to the United Nations Economic and Social Office in Beirut (UNESOB). In 1985, the Commission was redesigned the Economic and Social Commission for Western Asia (ESCWA). ESCWA is a part of the Secretariat of the United Nations and is one of the five regional commissions which report to the Economic and Social Council.

4.1.1 The mission

ESCWA promotes economic and social development through regional and sub-regional cooperation and integration and serves as the main general economic and social development forum within the United Nations system for the ESCWA region. It formulates and promotes development assistance activities and projects commensurate with the needs and priorities of the region and acts as an executing agency for relevant operational projects. ESCWA coordinates its activities with the League of Arab States, the Gulf Cooperation Council and the Organization of the Islamic Conference, with a view to avoid duplication and ensure complementarities, synergy and exchange of information.

4.1.2 Environment statistics related activities

Within the Commission the *Sustainable Development and Productivity Division* promotes regional and sub-regional cooperation in the field of energy, water resources, and environment. It provides assistance in the formulation of policies and measures for the proper management of energy and water resources and assists in integrating the environmental dimension in socio-economic development processes.

The *Economic Analysis Division* of the Commission contributes to the development of timely, reliable and relevant internationally comparable statistics in the ESCWA region in cooperation with the national, regional and international bodies concerned; collects, assesses and compiles statistics, develops databases and disseminates financial and economic statistics on national accounts and indicators in the area of social statistics. It promotes international statistical standards and classifications and international statistical programmes and systems and adapts them to the needs of the ESCWA member countries.

4.2 United Nations Environmental Programme – Regional Office for West Asia (UNEP-ROWA)

With a view of reaching out to member states more effectively, coordination between UNEP headquarters and its regional offices has been consolidated by the establishment of the Division Regional Cooperation and Representation (DRCR) in Nairobi.

4.2.1 The mission

The role of the Regional Office for West Asia (UNEP/ROWA) is to ensure that the environmental priorities in the West Asia region get adequate representation in the global network programmes carried out by UNEP, and that global focus areas are reflected in the environmental work carried out in the countries of the region. UNEP/ROWA seeks to link and integrate the environmental priorities and programmes of West Asia with the global Environmental Programmes of UNEP.

4.2.2 Environment statistics related activities

UNEP-ROWA developed in 2003 a list of core environmental indicators for the region, covering the following themes: water, energy, health and environment, agriculture-land, biodiversity, coastal and marine.

4.2.3 Recommendations

It is recommended that activities concerning the list of core environmental indicators are closely coordinated with ESCWA. This should include:

- The harmonisation of indicators with data definitions and concepts used by ESCWA and UNSD;
- Coordinated data collection;
- Common activities in capacity building.

4.3 The Centre for Environment & Development for the Arab Region and Europe (CEDARE)

Wesite: www.cedare.gov.eg

CEDARE was established on the basis of a joint commitment by the three principal sponsors, namely the government of Egypt, the Arab Fund for Economic and Social Development, and the United Nations Development Programme. Its objective is to assist the region in its effort to pursue global environmental trends and support national programmes by promoting their national capacities.

4.3.1 The mission

CEDARE's mission is capacity building of its member countries, promoting skills in environmental management, transfer of technologies, environmental education, and development of environmental policies. It supports its member countries mainly in land and water resources management, marine and coastal zone management, and urbanization and human settlements.

4.3.2 Environment statistics related activities

CEDARE facilitates inter-country cooperation and exchange of information and experience. Its organizational structure comprises an *Environmental Information Unit (EIU)*. The *EIU's* mandate is:

- Assist the creation and strengthening of national Environmental Information System programmes;
- Foster cooperative and coordinated efforts for the production of environmental information in the region;
- Act as a clearing house for the dissemination and exchange of environmental information;
- Coordinate and promote data harmonization and standardization, and influence data collection methodologies;
- Use of environmental information to mobilize and augment public opinion;
- Development of sound environmental information technology projects at the national and regional levels;
- Establish a regional environmental information network that offers shared access to distributed databases located at various institutions, and links between the actors in the environmental field in the region.

CEDARE built up a Geographic Information Systems (GIS) which is recognized as a key tool to collect, manage, analyze and present environmental information derived from a variety of sources. As an integral part of its system, *CEDARE* initiated a geographically referenced database. The focus of the data set lies on water resources and land degradation. The selection of the data included was based on

relevance and on the availability of geo-referenced information. The GIS presents data at *CEDARE* region-wide level, the national level and the hot spot level.
CEDARE will continue to expand its spatial data holdings both vertically by adding additional data entries to the existing coverage, and horizontally by introducing new geographic areas to cover the entire region.

4.3.3 Publications and databases

CEDARE produces a CD-ROM, which consists of two main components: a website and a GIS module. The GIS component consists of digital data and a data viewer (GIS Data Viewer from ESRI). The geographic extent of the GIS database covers the Arab countries and Mediterranean Europe.

CEDARE's website represents comprehensive information about *CEDARE* and its programmes and provides access to the Geographic Information System (GIS) and related databases.

Publications are available which present and describe comprehensively the GIS.

4.3.4 Cooperation activities between CEDARE and ESCWA to improve environment statistics

In March 2002, *CEDARE* and *ESCWA* signed a memorandum of cooperation which covers the following areas:

- Water resources management;
- Environmental policies and strategies;
- Information and GIS;
- Urbanization and human settlements.

Cooperation between *CEDARE* and its member states is mainly carried out at the ministry level. Relationship is built up mostly to the *Ministries of Environment* of the member countries. There is presently no cooperation between *CEDARE* and the *National Statistical Offices* of the *CEDARE* member countries.

4.3.5 Recommendations

CEDARE and *ESCWA* should join their efforts to further develop their cooperation to improve environment statistics in the countries.

The involvement of the National Statistical Offices in the cooperation activities between *CEDARE* and its member countries would allow better coordination.

CEDARE could support the further development of environment statistics in the *ESCWA* countries by providing training in developing environmental information systems such as GIS.

Cooperation activities between *CEDARE* and the *ESCW*A countries should focus on enhancement of data availability and accessibility, creation of common standards in data collection and compilation and creation of a network mechanism to facilitate information exchange.

4.4 The Arab Centre for the Study of Arid Zones and Dry Lands (ACSAD)

Website: www.acsad.org

ACSAD was established in 1968. ACSAD is a specialized Arab organization working within the framework of the League of Arab States. The two principal sponsors of *ACSAD* are the United Nations Environment Programme (UNEP) and the General Department of Economic Affairs of the League of Arab States (LAS).

4.4.1 The mission

The mandate of this Centre is to improve the situation of the dry lands in the Arab region, which includes combating desertification and increasing the green area in the Arab region. It aims at developing the scientific agricultural research in the arid and semi-arid areas and supporting the exchange of information and experiences.

4.4.2 Environment statistics related activities

The results of *ACSAD's* research and studies, which are partly based in surveys, tests, pilot projects and monitoring desertification, are disseminated through scientific conferences, training courses, workshops and publication of reports and specialized scientific studies.

In order to fulfil its mandate, *ACSAD* also collects environmental data by using remote sensing. As a result, it produces statistical information on the status and trends in desertification.

The Centre completed a study titled "*State of Desertification in the Arab Region and the ways and means to deal with it"*. The study was published in 1996. It includes all Arab countries. The main themes covered by the study are:

- Climate;
- Geology and geomorphology;
- Water resources;
- Soil resources;
- Plant cover;
- Desertification status and methods to combat desertification.

The document was prepared using available information from different sources. However, the use of these different sources resulted in some discrepancies in the coverage of the tables. Data are not always consistent and up-to-date. Presently *ACSAD* is about to update this report.

The data required by the Centre include natural resources statistics, forest data and information on biodiversity. Data on water resources resulting from studies are stored in a databank which is linked to a Geographical Information System (GIS).

4.4.3 Publications and databases

A considerable number of publications produced by *ACSAD* are listed on the website of the Centre. Most of the publications present results of scientific studies and researches. It is assumed that only a few documents would be specifically useful as source for environment statistics. A relevant publication in this respect is mentioned above.

4.4.4 Cooperation activities between ACSAD and ESCWA to improve environment statistics

Currently there is not information available.

4.4.5 Recommendations

Although the subject matter of *ACSAD* is limited to desertification and remote sensing, cooperation should be built up between *ACSAD* and ESCWA for technical assistance and environmental data exchange.

ACSAD has gained an excellent expertise in the field of training and the transfer of modern techniques. The training of statisticians dedicated to environment statistics could be useful to gain further expertise on the subject matter and to apply common standards in data collection.

4.5 Plan Bleu – Plan Bleu for environment and development of the Mediterranean region

Website: www.planbleu.org

Plan Bleu was established in 1985. Its headquarter is located in Sophia-Antipolis, France. It acts as a Regional Activity Centre (BP/RAC) of the Mediterranean Action Plan (MAP), which itself works under the auspices of the United Nations Environment Programme.

Plan Bleu's activities programme includes a general mission of observation, evaluation and exploration in the relationships between populations, the environment and development, as well as studies and summaries on themes that are priorities for the Mediterranean Basin as a whole and certain bordering countries or their coastal areas.

As a MAP think tank, Plan Bleu is led to play an important role as a "support centre" for the Mediterranean Commission on Sustainable Development (MCSD). Within this framework it has especially contributed to work done on strategic proposals about water, the tourist industry and indicators for sustainable development. It is also contributing to the study of the relationship between free trade and the environment and on urban and rural development in the Euro-Mediterranean context.

In its function as a Mediterranean Environment and Development Observatory, Plan Bleu endeavours to promote in the Mediterranean countries the creation of national observatories, the use of indicators**"** on the environment and sustainable development and the strengthening of capacities in the field of environment statistics.

On behalf of the European Commission, Plan Bleu has been implementing since 1999 up to now the two phases of the MEDSTAT-Environment project for the improvement of environment statistics in the Mediterranean Region. The first phase covered water, waste and land statistics, the second phase, ongoing up to March 2006, covers emissions of pollutants in the atmosphere, biodiversity and environmental indicators for sustainable development. Five of the twelve countries involved are the ESCWA countries: the Syrian Arab Republic, Lebanon, Egypt, Palestine, and Jordan.

4.5.1 Environment statistics related activities

After a first assessment of the situation of environment statistics in the Mediterranean countries and the specification of the priorities to be covered by the centre, *Plan Bleu* initiated the work on environment activities.

Plan Bleu initiated, *on behalf of the European Commission,* a data collection on several environmental aspects. The National Statistical Offices of the ESCWA countries completed a questionnaire on environment statistics which was derived from the OECD/Eurostat questionnaire. Plan Bleu and international statistical experts supported the relevant countries in completing the questionnaire transferring at the same time knowledge of statistical methods in this field. The more than 3000 variables questionnaire was translated into Arabic.

Plan Bleu in the framework of the MEDSTAT-Environment project organizes and carries out training courses covering environment statistics like water, waste, and land use statistics. It also organizes study tours to advanced institutions working in environment statistics, e.g. to the Institut Français de l'Environnement (IFEN).

4.5.2 Publications and databases

Plan Bleu, as Regional Activity Centre of UNEP/MAP, produces a considerable number of documents and materials. The publications are working documents, workshop documents or presentations of study results. Some of the documents are available on the Internet.

In the framework of the Euro-Mediterranean MEDSTAT-Environment project, the results of the first phase were published by Eurostat in 2002, and data are available through the Eurostat website.

4.5.3 Recommendations

- The training material of the courses held by *Plan Bleu* covering environment statistics should be made available to the ESCWA countries.
- Other relevant documents and material prepared by *Plan Bleu* should be used as reference documents for the improvements of environment statistics in the ESCWA countries.
- The data collected by *Plan Bleu* relating to water, land, waste, and other environment statistics should be exploited as a source to initiate and/or further develop and complete environment statistics in the Mediterranean countries.
- The Eurostat publication on the Plan Bleu results could be extended to all ESCWA countries.
- The software for the environment statistics database developed by *Plan Bleu* could be a helpful tool to initiate databases in the ESCWA countries. The software should be made available to all ESCWA countries.
- The collaboration between UNSD and *Plan Bleu* should be intensified in order to create synergy effects by using the experience and results of *Plan Bleu*. A common strategy to achieve agreed results would facilitate and support the development of environment statistics in the ESCWA countries.

List of abbreviations

Abbreviation	Full denomination
ACSAD	Arab Centre for the Study of Arid Zones and Dry Lands
ASD	Area Statistics Directorate
BCSR	Bahrain Centre for Study &Research
CAPMAS	Central Agency for Public Mobilization and Statistics
CAS	Central Administration of Statistic
CBS	Central Bureau of Statistics
CDS	Central Department of Statistics
CEDARE	Centre for Environment & Development for the Arab Region and Europe
CIDA	Canadian International Development Agency
CIO	Central Information Organization
COSIT	Central Organization for Statistics and Information Technology
CPC	Central Product Classification
CSO	Central Statistical Organization
DANIDA	Danish International Development Agency
DOS	Department of Statistics
DRCR	Division Regional Cooperation and Representation
ECE	Economic Commission of Europe
ECWA	Economic Commission for Western Asia
EEAA	Egyptian Environmental Affairs Agency
EEIS	Egyptian Environmental Information System
EIU	Environmental Information Unit
EPA	Environment Protection Authority
EQA	Environment Quality Authority
ESCWA	Economic and Social Commission for Western Asia (United Nations)
FAO	Food and Agriculture Organization
GCEA	Ministry of Environment established the General Commission for Environmental Affairs
GIS	Geographical Information System
IFEN	Institut Français de l'Environnement
ISIC	International Standard Classification of all Economic Activities
LAS	League of Arab States
LEDO	Lebanese Environment and Development Observatory
MCSD	Mediterranean Commission on Sustainable Devel-

	opment
MEDSTAT	Statistical Project for Mediterranean Region
MEPA	Meteorology and Environmental Protection Administration
NGO	Non-governmental organization
NSO	National Statistical Office
PCBS	Palestinian Central Bureau of Statistic
UNEP	United Nations Environmental Programme
UNEP/MAP	United Nations Environmental Programme - Mediterranean Action Plan
UNEP-ROWA	United Nations Environmental Programme – Regional Office for West Asia
UNESOB	United Nations Economic and Social Office in Beirut
UNSD	United Nations Statistics Division