

Executive Summary

Assessment of the Situation of Environment Statistics
in the 13 Member States of the Economic and Social
Commission of Western Asia (ESCWA)

Based on the report prepared by
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1. Introduction

Considerable differences exist between the 13 Member States of the Economic and Social Commission of Western Asia (ESCWA) with respect to the stage of development of environment statistics. The situation of environment statistics in the region can be described in more general terms by four groups. However, due to the fact that the consultant could not visit all countries, the classification of countries given below is subject to adjustments as national information is updated or new information becomes available.

Group A: This group identifies countries that have not yet started an environment statistics program and includes Oman, Saudi Arabia, Iraq, and Lebanon.

Group B: The group includes countries that only recently started environment statistics programs and activities and that need technical support in the areas institutionalization/legal aspects and technical expertise. Yemen is considered to fall into this category.

Group C: In this group, countries have already gained some experience in collecting environment statistics and established programmes in certain areas of environmental concern. In some cases a strengthening of the environmental legislation is necessary and in other cases exists a pressing need for qualified staff in order to meet the demand for environmental information. The Syrian Arab Republic, Egypt, the United Arab Emirates, Bahrain, Qatar, and Kuwait belong to this group.

Group D: This group comprises the countries with a relatively strong experience and on-going activities in environment statistics such as Jordan and Palestine. Both countries are relatively advanced compared to the other countries in the region, i.e. have established environmental information and publication systems in some areas, but many issues still remain to be solved.

The following chapters aim at providing a comprehensive overview of the situation of environment statistics in the ESCWA region with respect to its embodiment in national legislation, financial and human resources, areas of work, availability of data and publications, areas of priority and major difficulties, as well as recommendations for the UNSD Development Account Project “Strengthening Statistical Capacity in ESCWA”. This Executive Summary is based entirely on the assessment report prepared by Mr. Khamis Raddad for UNSD.

2. Institutional Background and Legislation

Environment statistics can be anchored in legal framework of official statistical system in various ways: In Jordan and Palestine, for example, the general statistical law includes environment statistics, whereas in Bahrain and in the United Arab Emirates the statistical law implicitly provides the legal framework for conducting environment statistics. Other countries such as Lebanon and Egypt are in the process of releasing a specific environmental law.

In general, however, it was noticed that the legislative status does not necessarily inhibit environment statistics and that the countries can usually initiate environmental information programmes and followed by adjustments to the statistical law if necessary.

3. Sources of environmental data and statistics

Environmental data sources depend heavily on the availability of data from the primary data collectors. For example, air quality data require a functioning monitoring system, which does not exist in Yemen, and in the Syrian Arab Republic some data are produced for local use only. The most common sources of environmental data are governmental agencies (Statistical Offices, Ministry of Environment, Ministry of Water, Ministry of Agriculture, etc.), special surveys on environment statistics (e.g. hazardous waste survey in Jordan, industrial waste in Palestine) as well as existing data from other sources and surveys (in areas such as agriculture, economic statistics, etc.).

4. Institutions dealing with environmental information

Although numerous governmental agencies and NGO's work in various environmental fields, their main concern is environmental protection. This means that often no appropriate documentation systems exist, thereby reducing the availability of consistent information for use by the National Statistical Offices.

On the other hand, duplication of work due to different objectives of data collections and lack of coordination among the data collection activities may result in incompatible data at unnecessarily high costs of human and financial resources. It is thus essential to create a specific agency or steering committee guiding all environmental institutions with respect to the documentation and exchange of the collected information from environmental activities.

5. Human resources

In most ESCWA countries work in environment statistics is carried out by one employee who sometimes also fulfills duties in other areas of statistics. Exceptions are the Syrian Arab Republic and Jordan, which have allocated several staff to environment statistics but their contractual situation often transfers them to missions, which may negatively affect capacity building and results in a general reduction of the quantity and quality of work accomplished. The Director of the Blue Plan project, Mr. Jean Iotti, confirmed that the Blue Plan project provided training to employees, who were subsequently transferred to other assignments.

Environment statistics, due to its nature, also requires a high degree of cooperation between environmental technicians and statisticians, a point emphasized by Mr. Khordagui, Chief of the Environmental Coordination Unit in Lebanon.

6. Financial resources

It is recognized that in most ESCWA countries no separate funds are allocated to environment statistics and that in certain cases the statistical offices depend mainly on foreign support to continue or develop the work. As a consequence, the work conducted depends sometimes on the priorities of the donor country rather than the national interests and priorities of the recipient. Thus, an individual budget is needed at least throughout the initial stages.

7. Area of data production

Due to the early stage of development of environment statistics and the limitations posed by human resources and budgetary constraints, most ESCWA countries concentrate their work on a few fields related to environment statistics such as the collection of meteorological data, population statistics, and agriculture statistics, which are already compiled under different categories. In some countries other fields of work include waste and water statistics. For example, Yemen collects information on the occurrences of earthquakes and Kuwait focuses on waste statistics and water quality. This situation is also seen as a reflection of the level of priority given to environment statistics.

8. Data dissemination

Except for Jordan and Palestine, no country in the ESCWA region has so far produced separate environmental statistics reports. This does not include selected tables included in the annual statistical reports or other reports such as health statistics reports.

Data dissemination through modern technologies, e.g. Internet and CD-Rom, is also limited and the disseminated data often differ in the methods used for the design of the tables and their contents. This situation underlines the different priorities and areas of concern in the countries.

9. Activities in environment statistics

The activities in the collection of environmental data and information through special surveys are limited and the items covered vary from waste to water and electricity. In addition, the sampling units often differ between countries and range from individuals to economic enterprises (e.g. Jordan) and governmental institutions (e.g. Iraq). In general, the number of surveys conducted is limited and cover only a small fraction of environment statistics. In many cases these surveys also cover only a certain part of the country.

Besides primary data, use of other data sources is restricted by several factors such as the possible incompatibility of secondary data for environmental purposes, insufficient coordination, and the sensitivity of certain information.

10. Methodologies

In most cases the National Statistical Offices collect data from other governmental institutions. Some of the available data in the statistical offices are used to calculate aggregates, i.e. the progressive accumulation of information from lower levels to the higher, more condensed, levels such as national or sectoral totals, for presentation in tables. However, a more systematic application of statistical methodology for data collection, e.g. sampling design, the specification of the survey population, methods of data collection, methods of calculation and modeling to produce indicators, etc. is necessary.

In addition, concepts and methods used differ between countries. International definitions and classifications are not yet applied to their full extent. The use of classifications is challenged by the fact that for certain areas such as land use several

classifications exist; while for other areas such as waste statistics internationally harmonized classifications are still under development.

11. Publications and databases

As mentioned above, annual statistical reports are the main publications containing relevant environmental information. The annual environmental report produced by Jordan is the only comprehensive report on environment statistics in the ESCWA region but Palestine is successfully producing special reports on various individual areas of environment statistics. Annex 2 lists the publications containing environment statistics sorted by country.

Databases are available in some countries, for example, Lebanon and Jordan. These databases include environmental information and indicators and are mainly created by the environmental protection agencies and not the statistical offices. However, the limited availability of data and improved user-friendliness of the databases are very important issues, are still limiting the full use of database capabilities.

12. Data gaps

The consultant determined existing data gaps through interviews, by studying existing documents and publications as well as based on recommendations from regional agencies.

It is emphasized that data gaps include basic environmental information such as water and air quality but the situation is not homogeneous among countries: in Jordan and Palestine, for example, large amounts of data relating to water quality and quantity statistics are available. Other countries on the other hand have only very few tables relating to this field. In general, noticeable data gaps exist in all ESCWA countries, particularly with respect to the following issues:

- Water quantity statistics; including precipitation, water supply, water demand and water distribution.
- Water quality; including drinking water quality, river water quality, lake and marine water quality, sewage and treated water quality.
- Air quality and air emissions.
- Waste statistics; waste arising by source, method of disposal and composition.
- Biodiversity and ecosystem health.
- Environmental accounting.

The above listed areas were mentioned to the consultant in interviews in those countries visited. The consultant notes that in some cases, especially in countries he could not visit, additional information might be available but their source remained unknown; the information is not available in sufficient amounts or is of limited accuracy.

13. Priorities

The priorities specified by the countries differ depending on their respective needs, past experience and activities as well as institutional and financial resources. In general, the Syrian Arab Republic mentioned water statistics, solid and liquid wastes, and natural resources, Lebanon and Egypt listed water and air statistics as their first priority, Jordan specified water statistics, land cover, waste statistics, environmental accounting, and environmental indicators, and Yemen and Saudi Arabia prioritize household environment statistics, coastal zone and marine water quality as well as water statistics.

The consultant concludes that a first step in most ESCWA countries, e.g. Lebanon, Egypt, Oman, and the Syrian Arab Republic, would be to initiate the establishment of an environment statistics division/unit, which administers the activities in environment statistics. The second step would be to form an environment statistics committee consisting of the main agencies dealing with environmental information. The committee's main responsibility is to facilitate the specification of the data needed as well as pertaining data gaps based on an inventory of existing documents and statistical information from different institutions.

The main environmental themes of concern in the ESCWA countries are:

- Water statistics due to increasing water scarcity in the region. The production of fresh water is very expensive, especially the desalination of seawater. Hence, water statistics are of highest priority in all ESCWA countries. The suggested items to be covered are:
 - Water supply by source and cost of water production.
 - Water use by sectors, i.e. the quantity of water reaching the final user; water distribution from source to user; water quality including drinking water, sewage water, treated water and marine water.
 - Import and export of water including water inflow and outflow.
 - Water indicators, for example, per capita water consumption.

- Sewage water plants.
- Solid and liquid wastes; including hazardous waste such as medical and industrial hazardous wastes.
 - Quantity of waste generated by source.
 - Composition of wastes.
 - Methods of disposal.
 - Cost of disposing wastes as well as other waste indicators.
- Air statistics
 - Air quality in the hot spots.
 - Air emissions by source.
 - Quantity of ODPs emitted by type and source.
- Land use and land cover
 - Distribution of land by current use.
 - Classification of land by agro-climatic zone.
 - Changes in land use.
 - Land degradation and soil erosion.
 - Desertification.
- Environmental and sustainable development indicators.
- Natural resources statistics.

14. Main difficulties

The main difficulties in the establishment and harmonization of environmental information systems in the ESCWA region are:

- The absence of a statistical division in most of the national statistical offices in the ESCWA countries, which hinders coordination and improvement of environment statistics.
- As a result of the dispersion of environmental information, the aggregation of data and information is time consuming, expensive, and often results in incomparable data.
- Due to the lack of a sufficient number of monitoring stations and other problems, the availability of environmental data from their immediate sources is very limited.

- The cost of conducting special environmental surveys is expensive and limited by the chronic lack of sufficient funding.
- The lack of expertise in environment statistics and environmental sciences.
- The insufficient staffing of units working in environmentally relevant fields at the National Statistical Offices.
- The need for better coordination and cooperation between the relevant agencies in the field.
- Environmental data and statistics are often politically sensitive, which renders the collection of reliable data more difficult.
- The manuals and tools used for environment statistics are still under development and/or not adopted in the ESCWA region. Most of these documents are not available in Arabic.
- The low salary in the government sector compared with the private sector is a major obstacle in recruiting or retaining skilled staff.
- Scarce funding and limited budgets do not allow for the initiation of environmental programmes, especially since the start-up costs tend to be substantial.

15. Recommendations

15.1 Legislation and initiation of environmental statistical division

Considering the absence of environment statistics units in most national statistical offices in the ESCWA region and the lack of legislative guidelines to undertake this activity, the national statistical offices are encouraged to emphasize the need for essential adjustments in the statistical law allowing the sustained establishment of environmental programs under the guidance of experienced statisticians, environmental specialists and enumerators as well as the long-term allocation of financial resources. A legislative foundation is considered particularly beneficial in countries with decentralized statistical activities such as Oman. The time-consuming training of statisticians in environment statistics without legislative support and a designated environment statistics unit may result in a waste of resources without generating the desirable long-term capacity in this area.

15.2 Cooperation

Limiting environment statistics to the national statistical offices is not desirable and often impractical, unless the statisticians also have strong backgrounds in the environmental sciences. It is hence important to establish a system of coordination and cooperation between the NSO and other environmental administrative agencies such as the Ministry of Environment or the Environmental Protection Agency. In this regard, it is very important to simplify the exchange of environmental information and harmonize the available data by using the same standards, concepts, and definitions.

15.3 Manuals and other tools

In order to promote the establishment of more harmonized environmental information systems and to acquire comparable data from the ESCWA countries, the consultant suggests the development of a manual covering environment statistics in terms of the 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 furthermore suggested to use available material prepared by various United Nations agencies, the Plan Bleu project, and regional agencies. Adjustment of the material to the regional characteristics may be necessary and is important, as is the translation of the available documents into Arabic.

It is furthermore important to evaluate the application of modern technology such as GIS and remote sensing technology in the region. In this regard, the consultant suggests developing environmental software similar to the Echems Software for environmental information databases. This software was developed by the Plan Bleu project in Microsoft Access, is available in English and French, and allows multiple-users to handle over 3000 variables. The program could also be used to aggregate data on the regional level but cannot be used for data entry or data editing. No operational manual has been prepared yet.

Of further benefit would be a pilot compendium of environment statistics, which could serve as an example for the ESCWA countries to produce national compendia. The consultant suggests using the national data compendium model prepared under the Plan Bleu project adjusting it to the particular characteristics of the ESCWA region.

The consultant considers it desirable to provide the ESCWA countries with standard coefficients for emissions of air pollutants etc.

15.4 Training

In order to strengthen capacities of the environment statistics staff, the training courses should cover the following topics:

- Introduction to the principles and methods of environment statistics, including concepts and definitions, treatment of environmental data etc.
- Integration and aggregation of environmental data from diverse origins.
- Methods of tabulation of environment statistics.
- Development and qualitative analysis of thematic statistics: water, land use and soil degradation, and waste.
- Use of statistical tools in environment statistics, for example, specific sources of data and how to obtain data from these sources, basic principles of survey design, calculation of population parameters and estimation of technical coefficients, use of modeling techniques.

15.5 Technical assistance

Responding to the heterogeneous levels of development with regard to environment statistics in the ESCWA countries, all forms of technical assistance need to be tailored to the specific needs of the countries. Long-term technical assistance could hence be organized as follows:

- Conduct consultancy missions to those countries, which have already gained experience in environment statistics such as Jordan and Palestine. For these countries it is important to evaluate the current situation and to determine the strengths and weaknesses to further improve the situation. Data dissemination can often be improved in these countries including the methods for data tabulation. It is also recommended to provide training on environmental indicators and the classification of indicators into pressure, state and response indicators.
- Provide training in the institutionalization of environment statistics. This suggestion includes 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 recently began working in the area such as Yemen and Egypt as well as those that are planning to start such as Lebanon. The training is suggested to cover the principles of environment statistics. In addition the consultant suggests training on the aggregation of data from different sources for the production of pilot compendia.

- Those countries, which have already begun work in certain environmental areas but do not yet produce any publications or other tangible outputs such as the Syrian Arab Republic require a consultancy mission that provides them with training on the production of statistical tables from raw data as well as methods for estimation and filling data gaps. To assist their efforts, the countries would benefit from intermediate training and the exchange of practical work experiences.
- The consultant furthermore discussed with the responsible persons the issue of language of publication and they indicated that the language is one of the main constraints in the Syrian Arab Republic, Yemen, and Egypt. It is thus recommended to use Arabic instead of English as the language of instruction.

15.6 Study tours

According to the different levels of development in the countries of the ESCWA region, it is suggested to provide study tours to visit statistical offices in the more advanced countries. A candidate country would be Jordan, which already hosted trainees from other countries in 2001 and which has the support of the Director General of the Department of Statistics (DOS). The target persons for these study tours are the technicians in environment statistics from those countries that want to start an environment statistics programme. The study tours could take place at the regional institutions, for example CEDARE, which also has some experience in hosting trainees. The consultant discussed this point with the Executive Director of CEDARE, who accepted the idea to host participants from ESCWA countries.

The study tours ensure that technicians are prepared in a way that maximizes the benefit of a training programme and thus requires that the training programme be tailored to the

needs of the participants. Other criteria are the length of the training as well as the provision of supporting documents and training material.

15.7 Equipment and other requirements

In most ESCWA countries it is difficult to specify the equipment needed because programmes still do not exist or are in their infancy. The consultant therefore suggests to specify the needs for each country after the work has started and depending on a specific request from the country.

It is, however, desirable to provide some material for the following purposes:

- Software for environment statistics. It is suggested to make use of available software, in particular if it could be adopted to serve the entire region.
- International classifications for the main themes used in environment statistics, e.g. land use and land cover classifications.
- International and suggested national standards for the main environmental themes, e.g. drinking water quality, treated sewage water quality, toxic residuals in food, and air quality.
- It is suggested to make use of available information prepared by international agencies such as WHO and FAO in addition to the national standards prepared by some ESCWA countries.

15.8 Pilot survey

It suggested conducting an environmental survey at one of ESCWA countries to provide on-the-job training to the participants who attend the workshop from ESCWA countries. This survey would also provide information on the level of experience of the participants and their respective needs as well as a picture of the real situation in the countries, which should help in improving the manuals and other documents.

15.9 General

It is suggested to invite the national statistical offices to collect the available information from different sources and to document it using modern computer technology.

It is suggested to invite the national statistics offices to specify their priorities consistent with their national objectives in order to achieve the goals of environmental statistics.

15.10 For ESCWA

In general the consultant considers it desirable to establish a specialist in environment statistics at the ESCWA office to provide the essential expertise and assistance to the ESCWA countries, including technical advice, and to keep contact with specialists at the National Statistical Offices as well as a reference person for environmental statistics in this region.

15.11 Suggested institutions to host some activities

- *The Center for Environment and Development for the Arab Region and Europe (CEDARE)*, Cairo, Egypt: CEDARE could provide training in GIS.
- *The Arab Center 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.
- *Department of Statistics (DOS)*, Jordan: DOS could train the participants in water statistics and can also provide case studies.
- *Lebanese Environment and Development Observatory (LEDO)*, Lebanon: LEDO could provide training on database development for sustainable indicators.
- *The Plan Bleu project* has developed manuals and training documents. Classifications and software prepared by Plan Bleu for this project 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 the workshop.