Chapter 5

Country Experiences in the Development of Environment Statistics in DMCs

This chapter aims to document the changes that the RETA has brought about in the participating DMCs. The status of environment statistics is examined before and after the RETA. The chapter begins by reporting the status of statistics in some core areas. Subsequently, the institutional setups that existed prior to the RETA are analyzed. The chapter then reports on the approach that the DMCs adopted to develop the FDES and the compendium, largely as a result of the consensus steps agreed upon in the inception workshop. The experience of each country during the course of the RETA is then described. Lastly, a critical examination is made of the final outcome of the FDES and the compendium, specially on the status of the data for the core environment statistics.

Status of Environment Statistics in Selected Countries Before the RETA

Environment Statistics for Land-Related Issues

The first level of data reflecting land-related problems concerns land use. Land use describes the utilization of land for crops, pastures, forests and woodlands, and wilderness areas. Although the data on pastures and cropland are complete, no data exist for wilderness areas in Bangladesh, Nepal, Philippines, Sri Lanka, and Viet Nam. This lack prevents those countries from assessing the current situation properly, especially considering that Bangladesh lists the loss of habitat for its precious species as a

problem and Sri Lanka worries about soil erosion due to inappropriate land use.

Land degradation is observed to be a major problem for countries, but data on land quality are either incomplete or unavailable. A good parameter for judging the trend in land quality is soil productivity. It is recommended that statistics on soil productivity be collected.

To understand or predict the changes taking place in land use, data on the movement of population are very important. However, such data are incomplete in almost all the selected countries.

Deforestation is a major problem faced by the participating countries. Fortunately, all of them monitor the total area under forest regularly. Good data exist for productive forest areas and fuelwood production. Data on average annual reforestation are also well maintained; however, data on forest quality are not easily available. Areas classified as forest area may be already degraded forest and some indication of the quality of the forest is necessary.

The data sets on wildlife (large animals) seem to be more or less complete. All countries have data on the number of known species in a particular region and on a number of endangered species. Habitat loss is recorded by all the countries. However, the data on the factors that threaten wildlife are incomplete. For example estimates of trade in raw ivory, which is a major cause of poaching for elephants, are not available for Bangladesh, Indonesia, Nepal, and Viet Nam. Figures on trade in mammal skin are important for the same reason. Data on this are not available for Indonesia, Malaysia, Pakistan, Philippines, Sri Lanka, Nepal, and Viet Nam. It seems that Nepal and Viet Nam do not collect any data on trade involving wildlife, which includes trade in live primates and reptiles, mammal skin, and ivory.

However, wildlife in forests do not consist of just large animals. Data on other forms of wildlife like plants and their diversity, insect habitants and so on, as well as on ecology are missing altogether in any of the data sets.

India faces the problem of an energy shortage, Malaysia is looking for more efficient ways to produce and consume energy. Such problems can be studied from the available data on production, consumption, and trade of energy, but time series data are not available for most of the countries.

The most crucial energy problem faced by the world is the accelerated use of nonrenewable fossil fuels. To address this concern, data on coal and oil reserves are needed. The selected countries maintain data on coal reserve, but some (like Bangladesh) measure reserves in place while others (e.g., Indonesia) keep data on just the recoverable reserves. A decision is needed on the uniform basis for measuring reserves.

The production of uranium and nuclear energy might be very small for some of the countries, but no information on uranium is available for Indonesia, Malaysia, Nepal, Pakistan, Philippines, Sri Lanka, and Viet Nam. Pakistan does not have data on a nuclear reactor under construction either.

For the rural areas, the principal energy source is biomass-based fuels. It is observed that some data are available on the shortage of fuelwood, which is indicative of the seriousness of the problem. However, systematic data collection on sources of fuelwood and their trends is not done in any of the selected countries. Such data will be useful for analyzing the fuel shortage problem.

Waste disposal is becoming a major problem for all the selected countries. However, data on waste generation is difficult to come by. For example, India and Malaysia do not have any data on annual municipal waste or industrial waste generation. Only data for hazardous waste are maintained. It is realized that the disposal of hazardous waste is a more difficult task, but data on the generation of other waste will give some idea of the size of the problem of waste generation and disposal.

Data for Water-Related Issues

Foremost on the list of water-related issues is the availability of potable water. Satisfactory data for total availability of renewable water resources and water withdrawal rates are also available sectorwise for all the concerned countries.

Data on surface water quality are collected by all the countries, but, in the absence of a uniform structure, the indices are not the same. The presence of coliform in water is a well-accepted index that is available for all the countries.

Another problem noted is the consistency of using the same methodology for collecting data as well as the regularity of data

collection. It is observed that the river sampling station does not remain the same, that is, the samples are taken from a different source in the third year. This is true mainly for India and Malaysia. Such inconsistencies need to be corrected.

Data on groundwater consumption need to be generated in the region in the light of acknowledged problems such as the lowering of water tables, land subsidence, and saltwater intrusion.

Data on total fish production are available for all the countries, but data for individual fish species are sketchy. A decision has to be made on the type of data needed to assess fish yield as well as the overexploitation of certain fish species.

Some indices also have to be devised for assessing the condition of the mangrove swamps, coral reefs, and sea grasses because most urban sewage is being dumped into the sea. And in view of the occurrence of oil spills, data on marine pollution are important and the carrying capacity of coastal water should not be overestimated.

Natural disasters like floods, tsunamis, and cyclones are common in the selected countries. Bangladesh, Nepal, and Vanuatu cite them as major environmental concerns. The selected countries maintain a record of the time and types of disasters and, more often than not, the number of deaths caused by these natural disasters (though the accuracy of the data is not always ensured); however, the total number of people injured and affected is not well recorded. Without these data, it is difficult to estimate the extent of success in protecting people against such natural disasters.

Air Pollution Data

Since Agenda 21, more efforts are being exerted to collect more reliable data to estimate net additions to global warming, however, not all the indices for estimating and comparing air quality across countries are available. A case in point is the data on smoke, which is lacking for all the large countries covered by the RETA (India, Indonesia, Malaysia, and Philippines). As far as emissions are concerned, proper data are available for carbon, sulfur dioxide, and methane emissions, but the data on consumption of chlorofluorocarbons are incomplete for many countries including Bangladesh, India, Indonesia, Nepal, and Pakistan. Malaysia seems to be the only country with good quality data on air pollution. Uniform air pollution data

must be integrated with data on the exposure of people to such pollution.

To summarize, air quality data are still difficult to obtain in most of the countries. It is desirable that gaps be filled soon. In addition, worldwide estimates of emissions are of uneven quality. The problem is further aggravated by the fact that data are often collected and analyzed on an ad hoc basis.

Environment Statistics Related to Social Economic Indicators

The relation between population pressure and environmental degradation has been discussed in the previous sections. It has been demonstrated that population-related data are essential to assess the existing and predicted pressures that will be exerted on the environment.

Although the collection of environment statistics is a relatively new task for nations, the collection of socioeconomic information has a much longer history. Basic demographic data are collected by all the 11 countries. Hence, it does not come as a surprise that complete data exist for population growth; labor force distribution of the population by age; birth and death rates; life expectancy; fertility rate; infant, child, and maternal mortality rates, and so on. However, data on the factors that create the trends in the basic demographic indicator differ in structure from country to country and are not always available. For example, Bangladesh and the Philippines do not collect data on the number of births attended by trained personnel. Many countries (India, Indonesia, Nepal, Sri Lanka, and Viet Nam) do not have data on the average number of children as affected by the mother's years of education. Uniform indices have to be developed for comparing global and regional trends.

The most common indicator used to determine the economic status of a country is its GNP. The selected countries seem to keep a good account of GNP, but the indices for more detailed analysis are not always complete. For example, the change in real GNP over the years is not recorded by Viet Nam. The distribution of GNP among the different sectors, i.e., agriculture, industry, and services, was not recorded by Malaysia and Viet Nam in 1987.

Environmental degradation is often closely related to the deterioration of human health. Hence, health statistics form an

important part of environment statistics. Accessibility of the basic infrastructure facilities is another aspect of environment statistics that should not be underrated. Lack of a proper sanitation system leads to water pollution; therefore, countries will need to collect data on health and access to infrastructure facilities.

The current status of health and infrastructure statistics shows that much needs to be improved on this front. Viet Nam does not have data on sanitation services. Most of the selected countries (Bangladesh, India, Indonesia, Malaysia, Nepal, Philippines, and Sri Lanka) do not have information on the percentage of the population with access to health services. However, records on people affected by major diseases like malaria and cholera are adequately maintained.

Institutional Framework for Collecting Environment Statistics Prior to the RETA

The purpose of this section is to describe the institutional framework for the collection of environment statistics that existed in each of the selected countries prior to the RETA.

Most of the countries have well established NSOs, known by various names. The NSOs have been collecting, collating, and reporting primarily socioeconomic data. Much of these data are relevant to environmental analysis, mainly because they describe the extent of human activities (the pressure aspect of the pressure-state-response framework).

In nearly all the selected countries, the responsibility for collecting core environment statistics rests with other line ministries such as those of environment, agriculture, forests, fisheries, etc. But there is little evidence to suggest that formal systems are in place for environmental information to be routinely transmitted to the NSOs. Certainly, in none of the countries is there any legislation or executive orders that make communication of such data mandatory.

In some countries, notably India, Indonesia, and Philippines, substantial amounts of environmental data were available, though in a scattered manner, owing to previous activities related to state-of-environment reporting, national environmental action plans,

National Agenda 21, and general environmental management-capacity-building exercises. Yet, none of these activities actually generated new data; the results were largely recompilations of existing data and used secondary data to a large extent. These activities were commonly funded by international agencies such as UNEP, the World Bank, and United Nations Development Programme (UNDP). Thus, the funds for new surveys and monitoring are still supplied by internal sources, which are, in all countries, very meager.

From an assessment of the country papers prepared by the participating DMCs before the launching of the Project, some more specific points emerge.

(i) In most of the countries, except India, Indonesia, and Malaysia, there was a general lack of coordination/ collaboration among the agencies responsible for collecting data for environment statistics. Moreover, no single unit or agency was officially entrusted with the responsibility for collecting, collating, and compiling data for environment statistics. In India, an interdisciplinary working group under the Director General of the Central Statistical Organization (CSO), comprising various government agencies, was involved in collecting and disseminating data for environment statistics. No separate unit or division within CSO, however, was entrusted with the responsibility for working on various aspects of environment statistics.

(ii) In Indonesia, coordination among various data collection agencies was good, but there were no formal institutional linkages among them. The Central Bureau of Statistics (CBS) had been responsible for publishing environment statistics data on a regular basis since 1982. In Malaysia, some informal institutional linkages were in place among various government agencies within the Ministry of Science, Technology, and Environment (MOSTE). The Department of Environment under MOSTE was responsible for compiling environment statistics data; NGOs were directly or indirectly involved with collection. No separate unit within the Department of Statistics (DOS) was given the responsibility for dealing with environment statistics.

(iii) There was no formal framework for environment statistics in any of the participating DMCs, barring India, Indonesia, and Philippines. In India, although a framework based on UN-FDES was in place, interlinking of regular and time series data for appropriate environmental indicators (EIs) was absent. In Indonesia, the Government adopted UN-FDES in 1993. In the Philippines, no UN-FDES was adopted but there was a framework for Philippine environmental accounts (through a UNDP-Department of Environment and Natural Resources [DENR] project) and the Bureau of Agricultural Statistics (BAS) had a database on environmental accounting (through a USAID-funded project).

(iv) Except for Indonesia, whose CBS published a compendium of environment statistics (CES) in 1982 (updated in subsequent years), no other participating DMCs had prepared a formal CES.

The collection of environment statistics is important to assess the current environmental problems of a country and to make informed decisions about environmental policies. To make policies for a group of countries, a common statistical framework for all these countries is necessary. Such a framework is the goal that ADB would like its member countries to achieve.

Some environmental concerns are common to all the member countries: deforestation, water pollution, excessive water withdrawal, and air pollution. In addition, each country has some unique problems. Land subsidence, saltwater intrusion into groundwater, reservoir desertification, slums, and lack of access to basic services are categories of such individual problems. The aim is to reflect these concerns in the common statistical framework for the selected countries.

The selected countries maintain adequate statistics on forests, water availability, wildlife animal population, occurrence of disasters and the resulting casualties, as well as on basic economic and demographic indicators. However, not much is available beyond the basic statistics. For example, data on forest quality, flora and some forms of fauna (e.g., insects), and trade in wildlife skins and other

parts are not available in many countries. Information on aspects of land use, population movement, waste generation, water and air quality, and health is difficult to get in all the selected countries. A common statistical framework needs to be designed to identify the basic statistical parameters as well as to determine the data needs for defining higher order indicators. In each of the selected countries, an institution will have to be identified and given the responsibility for compiling all necessary data on the environment.

An Approach to Developing Environment Statistics Adopted by DMCs

The general paucity of environment statistics in DMCs is the result of several factors:

(i) the nondesignation of a focal agency with responsibility for collecting environment statistics and lack of coordination between the various government agencies involved in environment statistics;
(ii) lack of a clear definition of terms, concepts, and classifications within the environment and in statistics agencies in the countries concerned;
(iii) lack of clear-cut methodologies for developing environment statistics; and
(iv) lack of government support for the collection of environment statistics.

All countries face similar problems, such as the lack of

(i) adequately trained staff,
(ii) technical documents including operational manuals on environment statistics and methodological and procedural guidelines, and
(iii) computer hardware and software.

For the initial stages, these needs were identified:

(i) training for concerned personnel, possibly with financial support from ADB, ESCAP, or similar agencies;
(ii) logistical resources such as vehicles and computers;

(iii) technical documents;
(iv) short-term consulting services, and
(v) study tours.

To complete the process of developing an environment statistics system, each participating country undertook the following key actions:

(i) finalization of the FDES and the compendium of environment statistics,
(ii) operationalization of institutional linkages,
(iii) organization of training courses, and
(iv) acquisition of additional facilities.

At an early stage, the following recommendations for the RETA were made:

(i) Various training programs and study tours both in-country and on a subregional level should be organized and conducted for concerned personnel of the participating DMCs.
(ii) Relevant technical documentation on operational guidelines, methodologies, and procedures on environment statistics should be disseminated by the Bank to the participating countries.
(iii) Training materials should be collated and documented, and a training curriculum should be prepared for in-country or subregional courses.
(iv) Technical assistance to the participating DMCs to enable them to finalize their FDES or compendium should be provided by ADB.
(v) Interdepartmental linkages within each DMC with respect to the collection of environment statistics should be strengthened.
(vi) Information exchange or sharing and other forms of cooperation in the area of environment statistics should be fostered or promoted between DMCs.

Present Status

The status of the three major aspects of environment statistics (institutional linkages, FDES, and compendium of environment statistics [CES]) has changed considerably during the course of RETA 5555, as indicated by the responses to the questionnaire survey and other supporting documents (FDES and CES) obtained from the participating DMCs. All the participating DMCs have established institutional linkages among various agencies responsible for data collection and the users of environment statistics. Most of the participating DMCs have established separate units or equivalent bodies responsible for matters relating to the collection of environment statistics (data from various agencies, collation and compilation of such data, and preparation of FDES and CES in the future).

Most of the participating countries, as revealed in the survey, would need additional surveys, research programs, etc. to update their CES and FDES. Due to lack of adequate data on various environmental issues, most of the DMCs can supply only partial data to ADB on a regular basis, as per the format provided in Appendix 1.

The major differences among the DMCs include their choice of appropriate environmental issues, their units of measurement, and availability of data on the issues; nature of data (time series vs one-time measurements); level of technical knowledge, skills, or expertise on environment statistics available in individual DMCs; and availability of infrastructure for primary data collection for environmental issues. Since all of these features are related to the FDES, these were considered in assessing the quality of the FDES prepared by the DMCs.

Framework for Developing Environment Statistics

The FDESs prepared by Indonesia, Malaysia, and Philippines are well-structured, contain appropriate environmental issues (along with their units of measurement) to describe various environmental components under different information categories as per the UN-FDES format, and have adequate time series data.

The FDESs prepared by India and Nepal have a fairly wide coverage of environmental issues and have adequate data in some

form or another (time series or one-time measurements) on most of the issues. Nevertheless, improvement could be made in the structure of the FDES, units of measurement of the issues, and availability of time series data for a larger number of environmental issues. Institutional linkages across data-collecting agencies (both government and NGOs) need to be strengthened further to help create improved versions of the FDES in the future. Both India and Nepal have the required expertise (trained and skilled manpower) for developing environment statistics. Better coordination among these trained and skilled personnel, and a more systematic and focused attention on environment statistics are required, however, to sustain the progress achieved through RETA 5555.

The FDESs prepared by Bangladesh, Pakistan, Samoa, Sri Lanka, Vanuatu, and Viet Nam could be considered preliminary as they lack adequate data on the environmental issues identified and included in the present version. Also, a majority of the data are either secondary or one-time data. This is mainly due to lack of adequate knowledge, skills or expertise, and infrastructure in these countries for collecting or generating primary and time-series data. Moreover, the concept of environment statistics in these countries is still in its infancy. Nevertheless, given the above constraints, these countries should be commended for the efforts they have exerted to date to bring out their present FDES.

Compendium of Environment Statistics

An overall qualitative assessment is made of the data on core environment statistics presented in the compendiums. The criteria for evaluation are mainly depth and specificity of coverage.

The presentation of data related to the atmospheric environment (Table 5.1) clearly shows that inventories of greenhouse gases and ozone-depleting substances have not been presented in great detail. Countries such as Nepal, Pakistan, Sri Lanka, and Viet Nam also need to improve the section on regional emissions. Most countries have adequately presented whatever information on local air quality information was available to them.

Water availability being perhaps the most crucial problem of the region, it is surprising that most countries have not presented the data in an adequate manner - in terms of either availability across

Table 5.1
Core Environment Data Status: Atmospheric Environment

Country	Global Level (Greenhouse Gases and Ozone Depleting Substances)	Regional Level (Emissions)	Local Level (Urban Air Pollution)
Bangladesh	Needs improvement	Satisfactory	Needs improvement
India	Satisfactory	Satisfactory	Satisfactory
Indonesia	Needs improvement	Satisfactory	Satisfactory
Malaysia	Needs improvement	Satisfactory	Satisfactory
Nepal	Not available	Needs improvement	Satisfactory
Pakistan	Needs improvement	Needs improvement	Needs improvement
Philippines	Needs improvement	Satisfactory	Satisfactory
Samoa	Not available	Not relevant	Not relevant
Sri Lanka	Needs improvement	Needs improvement	Needs improvement
Viet Nam	Satisfactory	Needs improvement	Needs improvement

sources or demand across sectors (Table 5.2). Data pertaining to water quality was presented only for rivers, and not for lakes and groundwater.

Table 5.2
Core Environment Data Status: Aquatic Environment

Country	Water Resource Use	Water Quality
Bangladesh	Satisfactory	Needs improvement
India	Satisfactory	Needs improvement
Indonesia	Needs improvement	Satisfactory
Malaysia	Satisfactory	Satisfactory
Nepal	Needs improvement	Needs improvement
Pakistan	Needs improvement	Needs improvement
Philippines	Satisfactory	Satisfactory
Samoa	Satisfactory	Not relevant
Sri Lanka	Needs improvement	Satisfactory
Viet Nam	Needs improvement	Needs improvement

Data related to forests are restricted to the current amount of land under various types of forests (Table 5.3). Rate of deforestation is rarely presented. The data on number of species, endangered species, etc., are fairly adequately presented. But many countries

Table 5.3
Core Environment Data Status: Terrestrial Environment

Country	Forests	Flora and Fauna	Coastal Environment
Bangladesh	Satisfactory	Satisfactory	Needs improvement
India	Satisfactory	Satisfactory	Needs improvement
Indonesia	Satisfactory	Satisfactory	Needs improvement
Malaysia	Satisfactory	Needs improvement	Satisfactory
Nepal	Satisfactory	Satisfactory	Not relevant
Pakistan	Needs improvement	Needs improvement	Needs improvement
Philippines	Satisfactory	Satisfactory	Satisfactory
Samoa	Satisfactory	Satisfactory	Satisfactory
Sri Lanka	Satisfactory	Satisfactory	Satisfactory
Viet Nam	Needs improvement	Needs improvement	Needs improvement

facing acute coastal and marine problems have not provided any data related to either pressure factors or status.

Basic data related to the very important urban problem of sanitation has hardly been reported (Table 5.4). Data related to municipal solid waste have been presented, but in a rather simplistic way.

In the case of all four areas of core environment statistics—atmospheric, aquatic, terrestrial, and urban environment—wherever data presentation is inadequate, it is not clear from the compendiums whether data do not exist or whether there were problems in accessing the data.

Table 5.4
Core Environment Data Status: Urban Environment

Country	Sanitation	Solid Waste Management
Bangladesh	Needs improvement	Needs improvement
India	Satisfactory	Needs improvement
Indonesia	Satisfactory	Needs improvement
Malaysia	Needs improvement	Satisfactory
Nepal	Needs improvement	Satisfactory
Pakistan	Satisfactory	Needs improvement
Philippines	Needs improvement	Satisfactory
Samoa	Needs improvement	Satisfactory
Sri Lanka	Needs improvement	Needs improvement
Viet Nam	Needs improvement	Needs improvement