

Chapter 1

Introduction

Background

The United Nations Conference on the Human Environment held in Stockholm in June 1972 noted that environmental concerns have increasingly become the subject of mainstream socioeconomic policies, both at the national and international levels. As part of its Earthwatch Programme, the conference recommended the gathering of data on specific environmental variables to determine and predict important environmental conditions and trends. Twenty years later, at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in June 1992, a consensus was reached that strategies for sustainable development should integrate environmental issues into development plans and policies. Such integration needs to be supported by integrated environmental and socioeconomic data and statistics. Specific recommendations by UNCED's Agenda 21 refer to the development and implementation of (i) integrated environmental and economic accounting, and (ii) indicators of sustainable development.

The rapid pace of modernization, urbanization, and industrialization has led to serious environmental concerns in the Asian and Pacific region's developing countries. The environmental situation has significantly deteriorated over the years, thus necessitating the development of broad-based environmental management policies for those countries. But before a national policy and programs for abatement and control of pollution can be formulated, the environment problems will have to be well defined. This will require the development of a reliable environment database and widely accepted ways of presenting environment data for the use of national planners and decision makers. Authentic statistical data relating to existing environmental conditions are vital in making appropriate decisions on environmental planning and management. The Bank's developing member countries (DMCs) will therefore need

to vigorously pursue the collection and collation of environment statistics on an urgent basis. The collection and compilation of environment statistics are prerequisite to the development of environmental indicators that are needed for monitoring the levels and effects of environmental pollution as well as for assessing the current state of the environment.

Environmental Issues in the Asian and Pacific Region

This section provides an overview of the common environmental problems and issues that are likely to be the focus of information-gathering efforts in the countries of the Asian and Pacific region. *A key premise is that efforts to collect environment statistics should be focused on priority environmental concerns, not just in order to economize on the usually limited resources for data collection and environmental monitoring in developing countries, but more importantly, to ensure that the data collected are the ones needed by those who make policies or decisions affecting the environment.* The Asian and Pacific region is vast, and the economies of the region share a wide range of environmental problems and issues. The major environmental issues identified by most developing countries in their state-of-the-environment reports (SOERs) are deforestation, land degradation, land desertification, landslides, land salinization, waste disposal, inland water pollution, marine water pollution, depletion of coastal and marine resources, loss of biodiversity, loss of aquatic life, air pollution, depletion of energy resources, and natural disasters such as floods, droughts, cyclones, and earthquakes. Some of these issues are briefly discussed here.

Deforestation

Deforestation is the most serious and widespread problem in the Asian and Pacific region. Its rate has accelerated from 2 million hectares per year during 1976-1981 to 3.9 million hectares per year during 1981-1990. The countries experiencing the most rapid deforestation are Bangladesh, Indonesia, Pakistan, Philippines, and Thailand (FAO 1993). In the early 1990s, Indonesia alone had a deforestation rate of 0.6 million hectares per year, while

Malaysia, Myanmar, Philippines, and Thailand each lost more than 0.3 million hectares a year for the period 1981-1990. The countries of the South Pacific subregion have the lowest rate of deforestation, except Papua New Guinea where it is severe (FAO 1993).

Land Degradation

Land degradation is also serious and widespread in the region. The majority of the developing countries suffer from varying degrees of soil erosion and degradation mainly due to rapid rates of deforestation, poor irrigation and drainage practices, inadequate soil conservation, steep slopes, and overgrazing. Extensive and severe water erosion occurs throughout the region. In India alone, about 18 percent of the total agricultural land is affected. In the dry belt stretching from Iran to Pakistan and India, wind erosion causes extensive and severe land degradation. About 59 million hectares are affected by wind erosion in the countries of South Asia alone, as well as in Afghanistan and Iran (UNEP 1997).

Population growth has already put tremendous pressure on land resources in most of those countries. Increased dependence on intensive agriculture and irrigation is likely to result in salinization, alkalization, and waterlogging in the irrigated areas. If the newly irrigated lands, which are expected to increase significantly by the year 2000, are not managed properly, more cultivable soil will eventually become waterlogged and subject to alkalization.

Inland Water Pollution

Inland water pollution has become a serious problem in many DMCs although the region is well endowed with water resources. Water quality parameters include indicators of the availability of oxygen like biological oxygen demand (BOD) and chemical oxygen demand (COD), indicators of nutrient level like nitrogen and phosphorus; and indicators of heavy metals like cadmium, chromium, copper, lead, mercury, and zinc. These pollutants are the products of excessive use of agrochemicals, sedimentation, domestic industrial

Table 1.1
Water Quality Problems in the Asian and Pacific Region

Water Quality Problems	South Asia	Southeast Asia	Pacific Islands	People's Rep. of China	Australia, Japan, & New Zealand
Pathogenic agents	1-3	1-2	2-3	1-3	0-1
Organic matter	1-3	0-2	0-1	1-3	0-1
Salinization	0-1	0-1	0-3	0-2	0-1
Nitrate	0-1	0-1	1-2	0-2	0-1
Fluoride	0-1	0	0	0-2	0
Eutrophication	0-1	0-3	0	0-2	0-1
Heavy metals	0-1	0-2	0-1	0-2	0-2
Pesticides	0-1	0-1	0-1	0-1	0-1
Sediment load	0-2	0-2	0-1	0-1	0-1
Acidification	0	0-1	0	0-1	0-1

Note: 0 = no pollution or irrelevant, 1 = some pollution, 2 = major pollution, 3 = severe pollution.

Source: ESCAP (1991).

wastes, saltwater intrusion due to overpumping of groundwater, and waterlogging. The severity of the water quality problems in the region is summarized in Table 1.1.

Pathogens generally come from domestic sewage that is discharged untreated into watercourses. The primary sources of organic matter pollution are domestic sewage and industrial effluents from tanneries, and paper and textile factories. South Asia and the People's Republic of China (PRC) are most severely affected by organic matter pollution due mainly to effluent from the pulp, paper, and food industries. The discharge of mine tailings and the development of industrial areas where pollutants are discharged directly into neighboring river systems have resulted in localized areas of heavy metal pollution throughout the Asian and Pacific region. In the small island countries in the South Pacific, groundwater resources are suffering from severe salinization due to the intrusion of seawater. As a result, the capacity of rivers to support aquatic life is threatened by pollution, loss of oxygen associated with the decomposition of pollutants, and eutrophication stimulated by nutrient runoff.

Marine Water Pollution

Marine water pollution is critical in the coastal areas of most developing countries in the region. Generally, the main pollution problems occur along the margins of the sea, around large cities and industrial complexes, and in the vicinity of the mouths of large rivers. There is a substantial loss of coastal habitats, specially in Southeast Asian countries, as mangrove swamps are converted into shrimp ponds or used for rice cultivation. These activities indirectly affect the commercial demersal fisheries that rely on the mangrove swamps as nursery areas. Coastal and marine water pollution in the region are due to direct discharge from rivers, surface runoff and drainage from port areas, domestic and industrial effluent discharges through outfalls, and various contaminants from ships. Rivers in the region are generally contaminated with municipal sewage, industrial effluent, and sediments. Asian rivers account for nearly 50 percent of the total sediment load transported by the world's rivers. Unfortunately, most of the coastal cities in the region discharge their domestic and industrial wastes directly into the sea, without any treatment (UNEP1997).

Biological Diversity

Widespread deforestation and the degradation of coral reefs in the developing countries are leading to loss of biodiversity. Loss of biodiversity may take many forms, but the most fundamental and irreversible loss is the extinction of species. Species extinction is a natural process, which occurs without human intervention. However, extinction caused by human beings is occurring at a rate that far exceeds any reasonable estimates of natural extinction. Overhunting is the most obvious direct cause of extinction of animals as it has affected several large and well-known species. Severe loss in biodiversity is a great loss from the economic, aesthetic, and scientific points of view and will greatly limit future genetic potential.

The flora and fauna of the region are increasingly threatened. The drive for increased agricultural production has resulted in the loss of genetic diversity. The coastal habitat loss and degradation, combined with increased discharge of sediments, nutrients, and pollutants into coastal areas, are a major concern to all coastal

countries. The rates of loss of coral reefs and mangrove habitats in the region are among the highest in the world. It is clear that loss of biodiversity is widespread and serious in the developing countries of the region. The high rates of population and economic growth in these countries suggest that even greater losses could occur in the coming years unless decisive action is taken (ESCAP 1995).

Air Pollution

Air pollution as a consequence of rapid urbanization and industrialization in recent years has become a major concern in most countries of the region. Urban air pollution is due mainly to sulfur dioxide, nitrogen oxides, carbon monoxide, and suspended particulate matter (SPM, including lead). Apart from the direct health impact on human beings, air pollution also creates three major global environmental issues: global warming, ozone depletion, and acid rain.

A recent survey by the World Health Organization/United Nations Environment Programme (WHO/UNEP) revealed that 10 of 11 major cities of the region had exceeded dangerous levels of SPM. The problems of sulfur dioxide, lead, and carbon monoxide pollution were also prevalent (Table 1.2).

In addition to the megacities, a large number of medium-size and small cities have serious problems resulting from their development and industrial centers. Air pollution is expected to increase in most of the cities of the developing countries irrespective of their size. Vehicular emissions are a significant problem in all major cities. In recent years, most governments have attempted to address this issue by (i) implementing programs for the development of environment-friendly mass transit systems such as the light rail transit, mass rail transit, and subways, (ii) setting emission standards for vehicles, (iii) requiring manufacturers to meet strict emission standards for all new vehicles, (iv) limiting the number of vehicles on the road, and (v) encouraging vehicle owners to use unleaded petrol. These measures have, no doubt, contributed to reduce air pollution substantially. Nevertheless, it is crucial that the governments and environment planners consider these increasingly severe air pollution inputs in their strategies and specific investment plans so as to prevent future problems.

Table 1.2
Air Quality in Megacities of the Asian and Pacific Region

City	SO ₂	SPM	Pb	CO
Bangkok	L	H	M	L
Beijing	H	H	L	L
Calcutta	L	H	L	L
Delhi	L	H	L	L
Jakarta	L	H	M	M
Karachi	L	H	H	L
Manila	L	H	M	L
Mumbai	L	H	L	L
Seoul	H	H	L	L
Shanghai	M	H	L	L
Tokyo	L	L	L	L

SO₂ = sulfur dioxide, SPM = suspended particulate matter, Pb = lead, CO = carbon monoxide.

Note: H = serious problem, M = moderate to heavy, L = low pollution (according to WHO Guidelines).

Source: WHO/ UNEP (1992).

Acidification of the environment has, so far, been regarded as a problem only in Europe and North America. But it also has the potential to affect the environment in the Asian and Pacific region. Increased emission of sulfur dioxide as a result of human activities is the major precursor of acid rain. It can damage vegetation, fabrics, and structures either directly or when dissolved in rain to form dilute sulfuric and nitric acids.

Energy

Energy is a very important sector of the national economy in all countries. Depletion of certain nonrenewable energy resources such as metals and fossil fuels due to a growing demand and some human activities has become a serious concern. The rapid growth of the population, residential activities, industrial activities, commercial activities, transportation activities, and oil spill problems are the major reasons for the depletion of energy resources. In the future, energy or environment questions, or both, will continue to be raised

and energy consumption will become an increasingly important factor in environmental impact analysis.

Natural Hazards

Many developing countries of the Asian and Pacific region are situated in the world's hazardous belts and are subject to various natural disasters such as landslides, floods, droughts, cyclones, and earthquakes. The major natural disasters that occur periodically in this region are largely due to climatic and seismic factors. Vulnerability to natural disasters has increased in urban centers because of environmental degradation and lack of planning and preparedness. Some of the natural disasters that occur frequently in the region are briefly discussed here.

Landslides have been severe in countries like PRC, India, Nepal, and Thailand. Most landslides often result from heavy rainfall, volcanic activity, and earthquakes. Some factors associated with landslides are deforestation, overpumping of groundwater, compressibility of the soil, geological formations, degree of natural slope, infrastructural activities such as road construction, and mining activities. Overpumping causes water levels in aquifers to decline. If the aquifer is not immediately recharged, large voids form above it, and the land subsides and slides. Earth slides can block streams and cause water backup. The result is upstream damage due to a gradual rise in water level, and extensive downstream damage due to rapid release of water when the slide is overtopped. Earth slides also destroy vegetation, increase sediment loads in streams, and disrupt transportation routes.

Floods are natural hydrologic events that become severe due to incompatible human activities in the floodplain. Flood disasters are increasing because of deforestation, poor land drainage, and heavy rainfall. Floods have become more frequent and more severe; they also come with less warning as in the case of the Himalayan watershed. Annual flood losses in India today are 14 times those in the 1950s. Floodwaters covered 60 percent of Bangladesh in 1988 and abnormal levels of flooding are now an annual event. In Bangkok at least 1.2 million people live in slums on swampy ground prone to flooding (UNEP 1997).

Droughts are hydrologic events causing acute water shortage. They are detrimental to human, plant, and animal existence in the

affected areas. Several countries in the region are susceptible to drought hazard intermittently. In many countries, the majority of the population are dependent on agriculture and are rural based. In case of droughts, this group is severely affected.

Tropical cyclones occur more frequently in the Asian and Pacific region than in any other part of the world. In this region, tropical cyclones frequently form over the northwest Pacific Ocean just east of the Philippines. Each year, Bangladesh is hit by cyclones that cause heavy damage to life and property. Cyclones originate from areas of low pressure or depressions, and the cyclone hazard is aggravated by wind velocity and topography. For example, depressions that form in the Bay of Bengal in the south of Bangladesh during premonsoon, monsoon, and postmonsoon periods can lead to cyclones. Cyclones are associated with heavy rainfall, gusty winds, and, sometimes, storm surges.

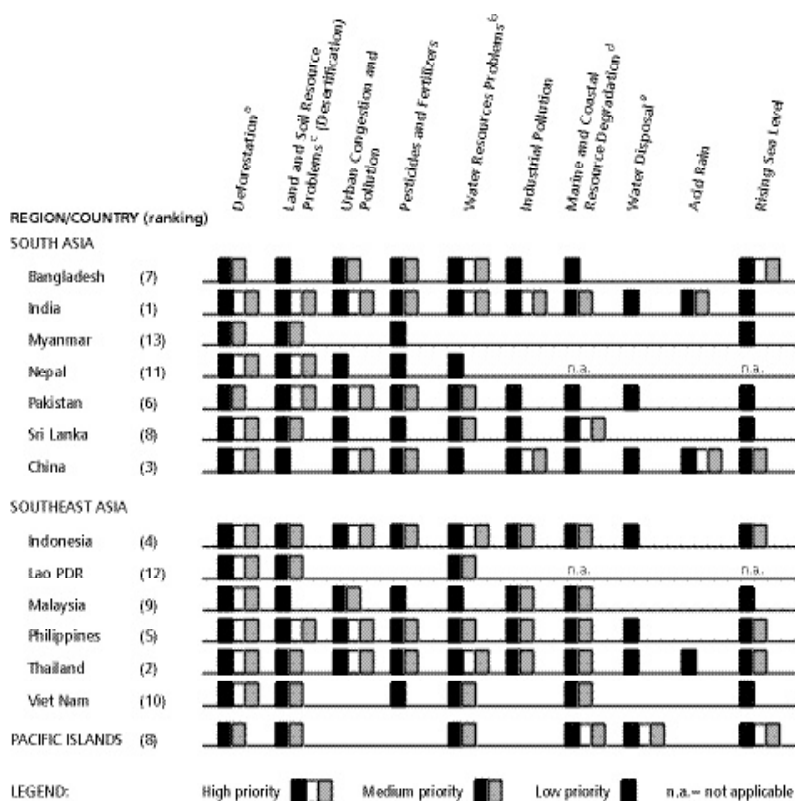
Earthquakes are one of the deadliest natural disasters. Two thirds of the world's devastating earthquakes occur in the circum-Pacific belt. The next most important earthquake zone stretches from Indonesia, through the Himalayas, and along the axis of the Mediterranean. Some 75 percent of the world's earthquake deaths occur in this zone, which is more densely populated than the circum-Pacific belt. Overpopulation and large-scale construction activities in tectonic zones increase the earthquake hazard. The primary effects of earthquakes are violent ground motions accompanied by fracturing, which may shear or collapse large buildings, bridges, dams, tunnels, and other massive structures. The secondary effects include short-range events such as fires, landslides, and floods, and long-range events, such as regional subsidence, uplift of landmasses, and regional changes in groundwater hydrology.

A 1991 Asian Development Bank (ADB) report assessed the relative significance and severity of the enumerated issues for selected countries in South and Southeast Asia, and the Pacific region. The results are summarized in Figure 1.1.

RETA 5555

Prior to 1995, environment statistics were generally lacking in many of the Bank's DMCs. Although several line ministries and specialized agencies were collecting subsets of environment-related

Figure 1.1
Relative Significance of Resource and Environmental
Issues in Selected DMCs



a Includes industrial wood production, fuel food collection, watershed degradation, and loss of biological diversity.

b Includes water shortages, groundwater depletion, flooding, and water pollution.

c Includes desertification, salinization, soil erosion, and other forms of land degradation such as water logging.

d Includes driftnet fishing, coral mining, and coastal development.

e Includes dumping of industrial and toxic waste

Note: Figures in parenthesis indicate diversity and severity of environmental problems in descending order

Source: ADB, *Asian Development Outlook 1991*, Manila, April 1991.

data, they were doing so without coordination. In most DMCs, no agency was primarily responsible for the collection and dissemination of environment statistics. Environment statistics being a new area, methodologies for data collection were not yet well-developed in any of these countries. Neither did they have conceptual frameworks that could be used as a guide in identifying the environment data to collect. Adequate expertise and resources for compiling environment statistics were also unavailable.

In 1995, the Bank initiated the regional technical assistance (RETA)¹ for institutional strengthening and collection of environment statistics to assist 11 selected DMCs in developing their institutional capabilities to collect, compile, and disseminate environment statistics. The RETA aimed to assist the respective DMCs in (i) setting up organizational linkages among different units involved in the collection of environment-related statistics; (ii) establishing their own framework for the development of environment statistics (FDES) and eventually integrating environment statistics with socioeconomic and demographic statistics; and (iii) bringing out a compendium of environment statistics, based on the country-specific framework, by organizing the environment data that are already available from existing sources.

In the process of implementing the Project, the Bank organized a number of meetings for representatives of national statistics offices (NSOs) and departments of environment (DOEs) of the participating countries. An inception workshop that the Bank organized in September 1995 discussed the work plan, organizational linkages, and issues and problems relating to the collection and compilation of environment statistics. The workshop identified many issues and elicited valuable suggestions.

Procedural and Methodological Issues

The main procedural and methodological issues were identified in the workshop:

¹ RETA 5555: *Institutional Strengthening and Collection of Environment Statistics in Selected Developing Member Countries*, for \$900,000, approved on 18 November 1993.

- (i) the choice between a comprehensive framework and a framework based on data available in the country, and
- (ii) the need for standard definitions and classifications of environment statistics.

In addition, the participants addressed (i) the problem of selecting core environment statistics and variables and bringing them into accord with the country FDES, and (ii) the steps in initiating the implementation of the technical assistance (TA) program in the selected DMCs.

The following recommendations were made:

- (i) Each DMC should start with the United Nations (UN) FDES² as the broad framework for developing the country's own framework for environment statistics collection and compilation.
- (ii) The framework that the country adopts should provide a logical way for developing statistics to meet its specific requirements, e.g., addressing national concerns, formulating policies.
- (iii) The country should start by making a list of variables using various existing references, e.g., UNEP/EAP-AP State of the Environment Database, Economic and Social Commission for Asia and the Pacific (ESCAP) handbook (to be published shortly), ESCAP guidelines for the preparation of SOE, and other relevant documents.
- (iv) To the extent possible, the country should adopt internationally accepted classifications, definitions, and methods such as those of, e.g., International Standard Classification, Economic Commission for Europe/Conference of European Statisticians, UNEP/Global Environmental Monitoring System, (UNEP/GEMS), Food and Agriculture Organization (FAO), World Health Organization (WHO), World Meteorological Organization (WMO), Habitat.

² The UN framework recommends a list of environment statistics that a country may want to collect and maintain. Since environment statistics are multidisciplinary in nature, various data sources need to be tapped and various methods have to be adopted to develop the database.

- (v) Since many international classifications have already been developed by First World countries, DMCs could simply adapt those suited to their own requirements instead of starting from scratch.
- (vi) Each country should take the following general steps:
 - (a) inventory environmental concerns and prioritize issues;
 - (b) delineate the scope of the issues (i.e., national or global);
 - (c) identify data gaps and the need for institutional capacity building to make the statistics more use-oriented (institutional strengthening may require conducting case studies and developing models to understand the dynamics, responses, and reactions of the environmental decision-making process); and subsequently develop handbooks or guidebooks, and conduct training;
 - (d) organize an environment statistics compendium based on the country's requirements although checklists may be used as guides; and
 - (e) collect and regularly update statistical data at a frequency to be determined by each country based on its needs and resources.

Institutional Linkage Issues

Three major linkage issues were identified and recommendations for addressing each were made:

Issue #1: Lack of effective coordination between and among the concerned agencies in each DMC with respect to the collection and compilation of environment statistics

Recommendations:

- (i) Each DMC should designate an agency (coordinating agency [CA]) to coordinate efforts in environment statistics collection on a continuing basis.
 - (a) Countries that have already identified their CAs should make those agencies serve as the focal points for the RETA;

- (b) The governments of countries that are yet to identify their CAs may opt to designate their central statistics office as the CA; and
 - (c) For countries that neither have identified nor are ready to identify their CAs, agencies that coordinate similar activities (e.g., the National Commission on Sustainable Development) or the activities of international organizations (e.g., ESCAP, South Asian Cooperative Environment Programme [SACEP], South Pacific Regional Environment Programme [SPREP], United Nations Statistics Division [UNSD]) may be named as CA. Nonetheless, the decision on which office is to serve as the CA rests with the respective governments.
- (ii) Each DMC should recognize the importance of having a pool of resource persons who can provide the continuity needed for the sustained development of environment statistics in the country.
 - (iii) A coordinating mechanism should be established in each country to ensure effective and efficient collection, analysis, and dissemination of environment statistics.
 - (a) An interagency committee should be set up, composed of the designated CA as chair, with representatives from the different agencies doing work in the environment or environment-related fields as members;
 - (b) This committee should be headed by a high-ranking government official to ensure that its recommendations are implemented;
 - (c) The committee should be provided with secretariat support by the CA to assist in its various tasks; and
 - (d) The committee should be assigned the following broad tasks:
 - give policy advice on matters relating to environment statistics;
 - direct and coordinate the activities of the various agencies involved in environment statistics collection and dissemination; and

- review, and monitor and evaluate the progress of work under the project, including reporting to ADB.

Issue #2: Lack of technical and financial resources in the CA and the concerned environment agencies for environment statistics collection and dissemination

Recommendations:

- (i) The governments should be made aware of this deficiency and urged to take the necessary steps to improve the capability of the concerned agencies in collecting and disseminating environment statistics.
- (ii) The governments of the concerned DMCs should see the ADB RETA as a first step in that direction (note that, in addition to financial assistance, the TA had provisions for technical advice and information exchange, and field review missions as required).

Issue #3: Lack of communication among the different countries in the region (e.g. Association of Southeast Asian Nations [ASEAN], South Asia), among international organizations, and even among the different divisions of the same organization regarding their respective activities in the same field (i.e., environment statistics)

Recommendation: There should be reciprocity in information exchange among the concerned organizations so as to prevent duplication of efforts and ensure a more efficient utilization of resources.

Two subregional workshops, one for participating South Asian countries and another for Southeast Asian and Pacific island countries, were organized in December 1996 and March 1997, respectively, to review the progress made by the participating countries and to discuss the detailed outlines of the proposed frameworks and compendiums of environment statistics. Finally, a concluding workshop was organized to discuss the final outcome of the RETA as well as the future courses of action to be taken by the countries participating in it.

The NSOs are responsible for collecting, compiling, and disseminating social, economic, and demographic statistics in all countries. Hence, they were selected as focal points for implementing the RETA for the development of environment statistics. However, various environment agencies were responsible for collecting environment-related statistics in their specific sectoral/subsectoral environmental areas. It was felt that it would be appropriate for the NSOs to coordinate the collection of environment-related statistics as well. Since environmental science is a highly specialized subject, it was thought logical and appropriate to also involve the DOEs, together with NSOs, in the implementation of the RETA.

RETA Outputs

As the scope of environment statistics is very broad, a systematic approach was needed to develop the system of environmental data collection. The Bank provided assistance in preparing country-specific frameworks. As recommended during the inception workshop, the country frameworks were based on the broad framework of the UN-FDES to promote uniformity and comparability across the countries. The preparation of country-specific frameworks was expected to facilitate the (i) review of the country's environmental concerns and identification of those that can be measured in quantifiable terms; (ii) listing of variables that can be used to measure aspects of environmental concerns; (iii) evaluation of data requirements, availability, and sources; and (iv) presentation of a plan of action for data collection and dissemination.

All the participating countries have now prepared the country-specific FDES, one of the major outputs of the RETA (Table 1.3). These specific frameworks were based on the UN-FDES. Some countries have already finalized their frameworks after discussing them in national workshops, whereas others are expected to do so in the near future. All frameworks present their environmental activities in terms of six components (*viz.*, flora, fauna, atmosphere, water, land or soil, and human settlements) with four information categories in each component, namely: (i) social economic activities, natural events; (ii) environmental impacts of activities and natural events; (iii) responses to environmental impacts; and (iv) inventories, stocks, and background conditions.

Table 1.3
Status of Environment Statistics Development Activities
in the RETA Participating Countries

Country	FDES	Compendium	National Workshop	Inter-agency Committee	Technical Committee	Environment Statistics Unit
Bangladesh	y	y	Y	y	x	y
India	y ^a	y	Y	y	x	y
Indonesia	y	y	Y	y	x	y
Malaysia	y	y	Y	y	x	y
Nepal	y	y	Y	y	x	y
Pakistan	y	y	Y	y	x	y
Philippines	y	y	Y	y	y	y
Samoa	y	y	Y	y	x	y
Sri Lanka	y	y	Y	y	x	y
Vanuatu	y	y	Y	y	x	x
Viet Nam	y	y	Y	y	x	y

x = does not exist, y = does exist.

^a First framework prepared in 1986.

The UN-FDES is a comprehensive document that covers all facets of environment statistics. In preparing the country-specific frameworks, some countries, however, could not include all information categories because of the unavailability of required data. Since the environmental problems as well as availability of data varied significantly among the participating countries, the country frameworks show major differences in terms of the appropriate variables and indicators, units of measurements, and the nature and type of the data included.

Another important output of the Project is the compendiums of environment statistics prepared by the participating countries, using approaches depending on their convenience. Some countries organized the data in the compendium along the lines of their own frameworks broadly following the UN-FDES format, some adopted the media approach, while others adopted the pressure-state-response (PSR) approach. Large amounts of environment-related statistics are collected by the countries on an ad hoc basis, and are available in

various administrative records. When appropriately organized, these statistics will certainly be useful to makers of policies and decisions, particularly, environment ministries in preparing SOERs. The preparation of such compendiums will help prevent duplication of data collection activities among agencies.

The Bank recently identified a short list of environmental variables or indicators that are important to Bank operations as well as to the countries in monitoring and assessing the state of their environment (Appendix 1). A part of the environment statistics and indicators collected and compiled by the countries participating in the RETA will be incorporated into the Bank's statistical database system to make the data more widely available to users both within and outside the Bank. The Compendium of Environment Statistics will be the primary source of data for these Bank-identified indicators. The indicators will be regularly updated on the basis of the availability of environment statistics in the DMCs. Hence, it will be helpful if the compendiums were also updated on a regular basis.

Some nine participating countries have established environment statistics cells in their NSOs while others have identified some professional staff to work on environment statistics. These steps are necessary for the systematic development and growth of environment statistics, and are expected to facilitate the smooth compilation and collection of environment statistics in close coordination with various environment-related agencies. Most countries have formed high-level steering or interagency committees that are expected to play an important role in providing not only effective coordination between various agencies but also technical guidance to the NSOs and DOEs in developing environment statistics. At least one country, the Philippines, has also formed technical working groups to provide technical guidance to statisticians and environment experts involved in the collection and compilation of environment statistics (Table 1.3). The formation of technical groups will be very helpful, for not many statisticians are familiar with environmental concepts and definitions.

The Bank, jointly with the Central Statistical Organization (CSO) of the Government of India, recently conducted a short-term training course on environment statistics in India for the benefit of the countries participating in the RETA. The course was attended by 23 participants from eight countries. The participants judged the

training as very useful. Although the course was of short duration, it was particularly successful in providing the participants with valuable insights into the issues involved in developing environment statistics.

The overriding objective of the Bank's technical assistance program is capacity building in its DMCs. In this light, one specific purpose of the RETA was to play a catalytic role in the sustained development of environment statistics in the DMCs; the bulk of future work rests on the concerned agencies of the DMCs. While the Bank RETA has been successful in creating the basic infrastructure, the work needs to be continued and further developed by the countries themselves. It is the purpose of this publication to assist DMCs in setting up statistical systems that will support the regular production of environmental compendiums.