

DEVELOPMENT OF ENVIRONMENT STATISTICS

in Developing Asian and Pacific Countries

Asian Development Bank
1999

Asian Development Bank
P.O. Box 789
0980 Manila

Published by the Asian Development Bank
© Asian Development Bank 1999

Printed in the Philippines

ISBN No. 971-561-165-7
Publication Stock No. 010798

Copies (US\$30) of this publication can be obtained from: Information
Office, Asian Development Bank, P.O. Box 789, 0980 Manila, Philippines;
e-mail: adbpub@adb.org; Fax No.: ++ 63-2-6362648

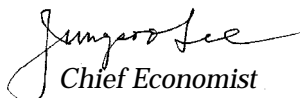
Foreword

The medium-term development objectives of the Bank accord high priority to environmental concerns. In recent years the Bank has been actively providing technical assistance in the area of environment protection to its developing member countries (DMCs). Such assistance can become more effective if policy makers' decisions are based on reliable quantifiable information. However, there is a general paucity of environment statistics in the DMCs.

In 1995, the Bank provided Regional Technical Assistance (RETA) for Institutional Strengthening and Collection of Environment Statistics in 11 selected DMCs. In the course of RETA implementation, a number of technical papers and documents were prepared. In view of the still sparse literature in the relatively new field of environment statistics, it was decided that organizing the documents in publication form would make them useful references for the national statistical and environmental agencies charged with compiling environment statistics.

The chapters of this publication were contributed partly by the staff of the Statistics and Data Systems Division of the Economics and Development Resource Center and partly by a consultant from the Tata Energy Research Institute of India. The data were based on RETA outputs such as country-specific frameworks for the development of environment statistics, technical papers from the various RETA workshops, and the compendiums on environment statistics prepared by the participating countries. Guidance and coordination in bringing out this publication were provided by the Statistics and Data Systems Division. Nevertheless, the views expressed in this publication are those of the authors, and do not necessarily reflect the views and policies of the Bank.

I would like to thank the people concerned for their contributions to this publication. It is hoped that all those involved in the development, collection, and compilation of environment statistics in the Bank's DMCs will find this handbook useful.



Junger Lee

Chief Economist

Economics and Development Resource Center

Acknowledgments

We are very grateful to the statistical and environment agencies in the DMCs that participated in *RETA 5555: Institutional Strengthening and Collection of Environment Statistics* for their continued cooperation and valuable support in terms of time and services to make this project successful.

<i>Bangladesh</i>	Bangladesh Bureau of Statistics Department of Environment
<i>India</i>	Central Statistical Organization Ministry of Environment and Forests
<i>Indonesia</i>	Central Bureau of Statistics Centre for Information Development and Environmental Compliance
<i>Malaysia</i>	Department of Statistics, Environment Statistics Section
<i>Nepal</i>	Central Bureau of Statistics
<i>Pakistan</i>	Federal Bureau of Statistics Ministry of Environment, Local Government and Rural Development
<i>Philippines</i>	National Statistical Coordination Board Department of Environment and Natural Resources
<i>Samoa</i>	Government of Samoa, Treasury Department
<i>Sri Lanka</i>	Census and Statistics Central Environment Authority
<i>Vanuatu</i>	Statistics Office
<i>Viet Nam</i>	General Statistics Office
	TATA Consultancy Services (TCS)
	Pacific Rim Innovation and Management Exponents, Inc. (PRIMEX)
	TATA Energy Research Institute (TERI)

Contents

Foreword	i
Acknowledgments	ii
Abbreviations	v
Chapter 1 – Introduction	1
Background	1
Environmental Issues in the Asian and Pacific Region	2
RETA 5555	9
Chapter 2 – Development of Environment Statistics in DMCs: Issues and Problems	21
Types and Uses of Environmental Data and Statistics	21
Framework for the Development of Environment Statistics	32
Compendium of Environment Statistics	36
State-of-Environment Statistics in Developing Member Countries	37
Problems and Issues in the Collection of Environment Statistics	40
Conclusion	51
Chapter 3 – Framework for the Development of Environment Statistics	53
Introduction	53
Framework for Environment Statistics	53
Conceptual Model for Compiling Environment Statistics	65
Implementation of an Environment Statistics Program	68

Chapter 4 – Core Environment Statistics and Methodological Issues 75

Land Use	75
Deforestation	76
Soil Degradation.....	79
Water Resources Availability and Use	83
Water Quality Degradation	86
Urban Air Pollution	88
Greenhouse Gases.....	90
Human Settlements	93
Bioresources	95
Methodological Issues in Developing Environment Statistics	99
Basic Data Standards	110

Chapter 5 – Country Experiences in the Development of Environment Statistics in DMCs 119

Status of Environment Statistics in Selected Countries Before the RETA	119
Institutional Framework for Collecting Environment Statistics Prior to the RETA	124
An Approach to Developing Environment Statistics Adopted by DMCs	127
Present Status	129

Chapter 6 – Future Directions in the Development of Environment Statistics 135

Priorities in Strengthening Environmental Statistical Systems	135
Linking the Environment Statistics Framework with Policy Through State-of-the-Environment Reporting	144
Institutional Issues	147
Handbook and Manuals	157
Recommendations of the Concluding Workshop	159
Future Work.....	162

Appendixes	167
Appendix 1 – Key Environmental Indicators Identified by the Asian Development Bank for Inclusion in the SDBS	167
Appendix 2 – Air and Water Quality Indexes	172
Appendix 3 – Ecosystem Structure Indices	173
References	175
Glossary of Environment Terms	179
Environment Statistics and Indicators	198
Index to the Bibliography	198
A Bibliography	206
Useful Web Sites	220

Abbreviations

ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
BFDES	Bangladesh Framework for Development of Environment Statistics
BOD	biological oxygen demand
CA	coordinating agency
CBS	Central Bureau of Statistics (Indonesia)
CDIAC	Carbon Dioxide Information Analysis Center
CES	compendium of environment statistics
CFC	chlorofluorocarbon
COD	chemical oxygen demand
CSO	Central Statistical Organization (India)
DENR	Department of Environment and Natural Resources
DMC	developing member country
DOE	Department of Energy
ECE	Economic Commission for Europe
EIA	environmental impact assessment
EPA	Environmental Protection Agency
ESCAP	Economic and Social Commission for Asia and the Pacific
FAO	Food and Agriculture Organization
FDES	framework for the development of environment statistics
FDES-NEP	Framework for Development of Environment Statistics - Nepal
GAW	Global Atmosphere Watch
GEMS	Global Environmental Monitoring System
GESAMP	Group of Experts on the Scientific Aspects of Marine Pollution
GGI	greenhouse gas index
GIS	geographic information system
GLASOD	Global Assessment of Soil Degradation
GNP	gross national product
GSO	General Statistics Office (Viet Nam)
IAC-TWG	Interagency Technical Working Group

MOSTE	Ministry of Science, Technology and Environment (Malaysia)
NEMS	National Environment Management Strategy
NGO	nongovernment organization
NNP	net national product
NSCB	National Statistical Coordination Board
NSO	national statistics office
OECD	Organization for Economic Co-operation and Development
PAHs	polynuclear aromatic hydrocarbons
PESC	preliminary environment statistics compendium
PFDES	Philippines Framework for the Development of Environment Statistics
PRC	People's Republic of China
PSR	pressure-state-response (model)
RAM	rapid assessment method
RETA	regional technical assistance
SACEP	South Asian Cooperative Environment Programme
SDBS	statistical database system
SEEA	system of integrated environmental and economic accounting
SNA	System of National Accounts
SOER	state-of-the-environment report
SPM	suspended particulate matter
TEC	target environment component
UN	United Nations
UNCED	United Nations Conference on the Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UN-FDES	United Nations Framework for the Development of Environment Statistics
UNSD	United Nations Statistics Division
VNESF	Viet Nam Environment Statistics Framework
VOC	volatile organic compound
WHO	World Health Organization
WMO	World Meteorological Organization
WRI	World Resources Institute