Environment Statistics and Use of Framework for the Development of Environment Statistics (FDES) in Mauritius

1. Introduction

In order to meet the data needs of planners, policy makers in environmental and related socio-economic field, the Central Statistics Office (CSO), in 1994, started work on the development of environmental statistics. In June 1999, a Statistics Unit was subsequently created at the Department of Environment of the Ministry of Environment and National Development Unit.

2. Development of Environment Indicators in line with the Framework for the Development of Environment Statistics

The environment statistics and indicators are being developed according to the recommendations of the following UN manuals:

- A Framework for the Development of Environment Statistics, Statistical Papers, Series M, No.78
- Concepts and Methods of Environment Statistics: Statistics of the Natural Environment, Studies and Methods, Series F, No.57
- Concept and Methods of Environment Statistics: Human Settlements Statistics- A Technical Report, Studies and Methods, Series F, No.51

Environment is a very broad and complex subject and include, among others, fresh water, marine water as well as terrestrial ecosystems activities and also the human influences on them. The Ministry has a National Environment Action Plan (NEAP) and a National Environmental Strategy (NES). The National Environment Policy prepared in 2007 also supplements the above documents, which serve as a guideline and roadmap for action on identified areas of concern.

3. Needs and Usefulness of the Framework

The framework provides a method to organise environmental data in a systematic way. The FDES is also used to assist in the development, coordination and organisation of environment statistics. It is used as a document, which presents the desired coverage, data availability, sources and data requirement.

Environment statistics are used:

- As part of the input for environmentally sound and sustainable development policy and programme compatible with a balanced National Environmental Action Plan (NEAP) and National Environmental Strategy (NES)

- To quantify depletion and degradation levels pertaining to natural resources and the Environment such as forest and water resources
- To monitor and evaluate the effects of human action and natural disasters on environment trade-offs and investment cost effectiveness
- To identify the environment concerns, policy, strategies and programmes that needs to be implemented as well as the direction of national development
- Assist in the framework for preventive and corrective measures in line with problems encountered e.g. air and water quality monitoring programmes
- As part of the input for the compilation of the Integrated Environment-Economic - Accounts. The Environmental Accounts is a useful tool for measuring the interdependencies between the economy and the environment.

4. Activities

The Environment Statistics Unit has therefore to mainstream all the sectoral statistics that form part of the environmental issues. Due to its multi-disciplinary nature, Environment Statistics has to cater for a wide spectrum of subject matters. The main activities of the Unit consist of the following:

- Undertake a thorough inventory of all existing information relevant to the environment, including actual and potential suppliers of data;
- Prepare, update and maintain a database on environmental statistics;
- Compute annual inventory of greenhouse gas emissions and removals;
- Construct indicators to monitor trends and impacts of measures;
- Conduct ad hoc environmental surveys;
- Disseminate data on the status of the environment;
- Service the line Ministry and all the relevant stakeholders by providing all the necessary statistical support.

5. Sources of Data

Various Institutions/Organisations are involved in the collection, quality control and archival of environmental data. These include the Mauritius Meteorological Services (MMS), the Albion Fisheries Research Centre of the Ministry of Agro-Industry, Food Production and Security, the Department of Environment of the Ministry of Environment and National Development Unit, the Water Resources Unit of the Ministry of Renewable Energy and Public Utilities, the University of Mauritius, the Mauritius Oceanography Institute, the Ministry of Housing and Lands, the Forest Department of the Ministry of Agro-Industry, Food Production and Security.

Data on the environment and related socio-economic fields are mainly extracted from the various digest of statistics published by the Central Statistics Office. Other data sources include the following Ministries/Department:

- Ministry of Agro-Industry, Food Production and Security
- Ministry of Renewable Energy and Public Utilities
- Ministry of Industry, Science and Research
- Ministry of Labour, Industrial Relations and Employment
- Ministry of Health and Quality of Life
- Ministry for Local Government,
- Ministry of Environment and National Development Unit
- Central Water Authority
- Central Electricity Board
- Mauritius Meteorological Services
- National Transport Authority
- Mauritius Ports Authority

6. Data Processing and Analysis

The Excel software is used for data archival in a tabular form and the SPSS software for statistical analysis. Greenhouse Gas emission is calculated according to the Intergovernmental Panel on Climate Change (IPCC) methodology using the software developed for national greenhouse gas inventory.

7. Scope and Coverage

The main areas of environmental concerns are broadly grouped into:

- Flora
- Fauna
- Atmosphere
- Land
- Water
- Human settlements

Environment data are grouped under the following themes: flora, fauna, atmosphere, land, water and human settlements. The different items on the main themes are:

- **Flora**: Forest area, local production, land-protected areas, forest plantations
- **Fauna**: Livestock, fish catch, consumption of fish, fishable areas, marine protected areas
- **Atmosphere**: Temperature, humidity, ambient air quality, greenhouse gas emissions, ozone - depleting substances, respiratory diseases
- **Water**: Fresh water resources, water abstraction, water consumption, water quality of rivers, and coastal areas, sea surface temperature
- **Land**: Land use, forest area, built-up areas, agricultural land areas, road network, waste landfill
- **Human settlements**: Population growth, population density, primary energy requirement, energy consumption, health and welfare conditions, building permits, employment by industry group

8. Output

A digest with detailed information on Environment Statistics, which is divided into six chapters, namely: Flora, Fauna, Atmosphere, Water, Land and Human Settlements is published on an annual basis.

Moreover, a summary of the Environment Statistics is published in the annual Economic and Social Indicators (ESI).

The Environment-Economic-Accounts have been compiled for the first time in 2009 using data from various sources such as energy and water statistics and detailed information from the 2002 Census of Economic Activities. It has been published in the year 2009 issue of ESI on "Environment Statistics and Environment-Economic-Accounts 2008".

Environment statistics are also included in the Mauritius in figures, "Tableau de Bords" and the Millennium Development Goal indicators prepared by CSO.

The following table indicates the publication on Environment Statistics:

Title	Periodicity	Time Lag	First issue
Economic and Social Indicators on Environment Statistics	Yearly	8 months	2001
Digest of Environment Statistics	Yearly	11 months	2002

9. Dissemination Media and Format

The ESI and the Digest of Environment Statistics, which are released yearly, are available both in soft copy (on the CSO website at http:// statsmauritius.gov.mu) as well as hard copy.

The environment statistics are also incorporated into various reports, the main one being the State of the Environment Report issued by the Ministry of Environment and National Development Unit.

10. Dissemination of Environment Statistics to other Organizations

The Statistics Unit also supports other national and regional databases such as the National Oceanographic Data Centre (NODC), the Environment Information System (EIS – under process), the Africa Environmental Information Network (AEIN – under process) and the Clearinghouse Mechanism Project – GIS web based (under process), for the African region.

Moreover, data are also supplied to international organizations, the main one being the United Nations Statistics Division (UNSD).

11. Data Gaps

Environment statistics is one of the latest, among the family of statistics being developed. Data are mostly tapped from administrative records on an annual basis.

The data gaps include data on natural disasters, erosion, biodiversity and expenditure on environment protection. Another issue to address in the compilation of environment statistics involves development of indices such as Environmental Vulnerability Index, which will help to monitor the protection of the environment and the population. Further development of environmental indicators is also envisaged.

12. Way Forward

The following are planned for environment statistics:

- Use of Geographic Information System (GIS).
- To compile Sustainable Consumption and Production (SCP) indicators
- To further developed the Integrated Coastal Zone Management (ICZM) statistics
- Climate change statistics