

Workshop on environment Statistics

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Status of Environment Statistics in Mauritius

Country Report

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ENVIRONMENT STATISTICS IN MAURITIUS

1. COUNTRY PROFILE:

The Republic of Mauritius consists of the main island, Mauritius and of a group of small islands in the Indian Ocean. The total land area is 2040 km² whilst the Exclusive Economic Zone (EEZ) covers an area of about 1.9 million km².



Over the past two decades, Mauritius has experienced rapid economic growth and in just over 30 years, Mauritius has developed from a low income, mono-crop based economy to an upper middle income and diversified economy with growing industrial, financial services, information and communication technologies and tourism sectors. In fact, the country has a favourable Human Development Index (64th out of 174 countries) and it ranks 16th in Human Poverty Index.

The standard of living of the population has also increased considerably and there have been notable changes in consumption patterns. As a result, new demands are being placed on the environment, resulting in a range of environmental problems. Rising population is putting pressure on space, thus bringing problems such as road congestion, waste disposal and the need for more housing space. On a wider scale, the burning of fossil fuels for energy also adds to the emissions of greenhouse gases.

The Government of Mauritius is aware that a holistic approach is needed and must imperatively be adopted to favour sustainable development. Since development in the various areas are interdependent, Government therefore needs to come up with policies that are integrated and mutually reinforcing to meet long terms policies.

2. SITUATION OF ENVIRONMENTAL STATISTICS IN MAURITIUS:

To better integrate environmental considerations in policy decision, Governments need sufficient information on which to base their decisions. However, the lack of credible and up-to-date environmental information at times undermines effective environmental management.

Environmental data is collected in Mauritius by a number of public and private institutions along with the Central Statistics Office, which is the official organisation for the collection, compilation, analysis and dissemination of statistical data for the country. While a number of agencies dealing with the management of resources already collect data in order to carry out their tasks (such as preparing and implementing reports and plans for sectoral development), much of the data is collected on paper and stored in various files through the government system.

2.1 STATISTICS UNIT:

The Central Statistics Office is the official organisation responsible for collection, compilation, analysis and dissemination of the official statistical data relating to the economic and social activities of the country. It releases the following publications on a regular basis:

- Economic & Social Indicators
- Census & Survey reports
- Digests of Statistics
- Mauritius in Figures

The Central Statistics Office started to develop environmental statistics in 1994 and a Statistics Unit was subsequently created at the Department of Environment in June 1999.

Activities of the Statistics Unit

The main activities of the Statistics Unit are as follows:

- To carry out thorough inventories of all existing information on the environment
- To prepare a database on environmental statistics
- To compute annual inventory of greenhouse gas emissions
- To construct indicators to monitor trends and impacts of measures
- To conduct *ad hoc* environmental surveys, and
- To disseminate data on the status of the environment

Sources of data

Since environment statistics are multi-disciplinary and cover a wide range of diverse subjects, data sources are varied. Data is therefore gathered from different Statistics Units as well as reports published by different ministries and parastatal bodies.

- Ministry of Agro Industry & Fisheries
- Ministry of Local Government
- Ministry of Public Utilities
- Department of Environment
- Ministry of Industry, Small & Medium Enterprises and Commerce & Cooperatives
- Central Water Authority
- Central Electricity Board
- Meteorological Services
- Ministry of Health and Quality of Life
- National Transport Authority

Questionnaires are also sent to various organisations for data collection.

Topics and Data Items

The main areas of environmental concerns are broadly grouped into:

- **Terrestrial Biodiversity** – threatened species of plants and animals
- **Atmosphere** (pollution, air quality, greenhouse gas emissions)
- **Land** (land use, forest area, built-up areas, human settlements)
- **Water** (freshwater resources, water abstraction, precipitation, water consumption, water quality of rivers, reservoirs)
- **Human settlements** (settlements growth and change, population density, infrastructure, health and welfare conditions, housing stock, infrastructure)
- **Coastal zones, seas and oceans** (fish stocks, biodiversity, sea water quality)
- **Meteorological phenomena** (rainfall estimates, temperature, humidity, sunshine hours)
- **Waste** (industrial wastes, waste generation rate, waste oil, sanitation and sewerage, wastewater treatment)

Publications and Reports on Environment Statistics

Publication	Frequency	Published since
Economic and Social Indicator on Environmental Statistics	Yearly	2001
Digest of Environmental Statistics	Yearly	2002
Pocketbook of Environment Statistics		March 2006
Other <i>ad hoc</i> reports		
Provision of indicators/statistics for other reports, e.g. Environment Outlook Report		

2.2 ENVIRONMENTAL INFORMATION SYSTEM

Government acknowledged that environmental management in the context of sustainable development required sound, credible and up-to-date information. In this context, the National Environment Action Plan (NEAP 2), published in 1999, provided for the setting up of a key enabling project: the **Environment Information System** (EIS) to effectively manage the environment.

The Environmental Information System consists of 2 main components:

1. Development of a core set of environmental indicators for Mauritius, and
2. Development of a computer-based environmental information system, or EIS, that makes maximum use of information technology for strategic management of the environment.

The project started in March 2002 and surveys have been carried out among all major data collection, data use and environmental management agencies within Mauritius. In this regard, a core set of 32 environmental indicators specific to Mauritius have been developed. An EIS data

management unit has been created within the Department of Environment and one personal computer has been distributed to the main data custodians. Furthermore, the software for running the EIS has been developed locally. The EIS will be migrated and tested on the Government Online Centre. A training session for the staff of the Ministry of Environment and data custodians will also ensue.

Stakeholders involved

There are 28 different Ministries, Parastatal bodies and NGOs involved in collecting and recording details of the parameters required for the core set of 32 indicators. The smooth operability of the EIS lies in the commitment and collaboration of different stakeholders. In this context, memoranda of agreement have been signed between data custodians and the Ministry of Environment.

- Ministry of Information Technology & Telecommunications
 - *National Computer Board*
 - *Central Informatics Bureau*
 - *Central Information Systems Division*
- Ministry of Housing and Lands
- Ministry of Industry
- Ministry of Tourism
- Ministry of Local Government
- Ministry of Health & Quality of Life
- Ministry of Public Utilities
 - *Central Water Authority*
 - *Wastewater Management Authority*
 - *Central Electricity Board*
 - *National Remote Sensing Centre*
 - *Water Resources Unit*
- Ministry of Agro Industry and Fisheries
 - *Albion Fisheries Research Centre*
 - *National Parks and Conservation Services*
- *Forestry Services*
- *Agricultural Research & Extension Services*
- Ministry of Economic Development
 - *Central Statistics Office*
- Ministry of Public Infrastructure, Land Transport and Shipping
 - *National Transport Authority*
- Ministry of Education and Human Resources
 - *University of Mauritius*
- Prime Minister's Office
 - *Meteorological Services*
- Ministry of Environment
- Mauritius Wildlife Foundation
- Mauritius Oceanography Institute
- Indian Ocean Commission
- AHRIM
- Mauritius Sugar Industry Research Institute

Indicators

A core set of 32 indicators have been identified for Mauritius and represent an achievable short to medium term target that will assist in effectively monitoring the environment. Additional indicators will be developed over time as requirements dictate and capacities to monitor allow.

Annex 1 comprises a list of the core set of Environmental Indicators for Mauritius including: brief definition, units of measurement, responsible agency, selection criteria, status of data availability, data gaps and data management aspects.

The list of indicators is given below:

THEME: **Atmosphere**

- Emission rates of Greenhouse Gases
- Change in energy intensity in different sectors of GDP
- Number of environmental complaints
- Growth of air pollution sources
- Ambient air quality
- Noise pollution status and sources

THEME: **Freshwater**

- Water demand management for sustainable water potential
- Terrestrial aquatic biodiversity
- Groundwater pollution
- Environmental pollution load from wastewater pollution (COD, SS, N, P, SO₄, pesticides, metals, etc.)

THEME: **Land and Soil**

- Sustainable crop yield
- Soil erosion and soil fertility loss
- Quantity of solid waste and waste management
- Loss of wetlands
- Land use changes

THEME: **Biodiversity**

- Ratio of endangered/threatened species to total species of flora and fauna
- Dominance of exotic species among native species
- Economic loss due to ecological damage by cyclones

THEME: **Marine Resources and Coastal Pollution**

- Marine fish biodiversity
- Degradation of coastal zone: coral and mangrove
- State of fish stocks
- Vulnerability zones of coastline
- Coastal water quality
- Flow of tourist and its sustainability

THEME: **Quality of Life**

- GDP per capita
- GDP growth in each sector
- Unemployment rate

- Adult literacy rate
- Number of food poisoning cases
- Disease rate of communicable and non-communicable diseases
- National environmental health expenditure / environment protection

2.3 NATIONAL OCEANOGRAPHIC DATA CENTRE

The National Oceanographic Data Centre (NODC) operates as the national oceanographic data archive of Mauritius. It was officially established in November 1999 at the Mauritius Meteorological Services within the guidelines of the Ocean Data and Information Network for Africa second phase project (ODINAFRICA-II) with satellite stations at the University of Mauritius, Albion Fisheries Research Centre and Mauritius Oceanography Institute.

The mission of the NODC is to enhance oceanographic services and promote further marine research by making available, to policy-makers and the marine communities, ocean data and products, in real and non-real time, for the efficient management and sustainable development of coastal and marine resources.

A national committee oversees the development of the NODC and comprises representatives of:

- Albion Fisheries Research Centre of the Ministry of Agro Industry & Fisheries
- Central Informatics Bureau
- Central Statistics Bureau
- Department of Environment
- Mauritius Oceanography Institute
- Meteorological Services

The Committee regularly meets to review progress of ongoing activities and plans follow-up actions. (URL: <http://nodc.intnet.mu>)

Ocean Data Management

The following Ministries/Institutions are responsible for the collection, quality control, archival and dissemination, according to a data exchange policy scheme, of ocean data in Mauritius.

- ***Albion Fisheries Research Centre of the Ministry of Fisheries***
 - Chlorophyll data
 - Coastline and shoreline
 - Coastal Typology
 - Currents
 - Educational resources
 - Integrated coastal Area Management
 - Marine organisms/Biological data
 - Nutrients
 - Ocean productivity
 - Ocean station data
 - Plankton
 - Profile data
 - Regional data
 - Salinity
 - Satellite data
 - Taxonomy

- ***Meteorological Services***

- Altimeter data for oceanography
- AVHRR
- Buoys
- Climate
- Coastline and shoreline
- Currents
- Drifting buoys
- Educational resources
- EL NTNO, LA NINA
- Marine Meteorology
- Ocean-atmosphere interaction
- Ocean climate
- Ocean station data
- Ocean waves
- Profile data
- Regional data
- Satellite data
- Sea level
- Sea surface temperature
- Waves
- Winds
- Weather climate and climate change

- ***University of Mauritius***

- Educational resources
- Coastline and shoreline
- Currents
- Nutrients
- Ocean atmosphere interaction
- Ocean station data
- Regional data
- Taxonomy

- ***Central Statistical Office / Department of Environment***

- Coastline and shorelines
- Educational resources
- Integrated Coastal Area Management
- Nutrients
- Ocean station data
- Oil Spill response
- Climate change

- ***Mauritius Oceanography Institute***

- Altimeter data for Oceanography
- Bathymetry and Topography
- Hydrographic Data
- Numerical modelling
- Ocean station data

2.4 WIO-LAB PROJECT

The WIO-LaB Project focuses on addressing major land-based activities in the Western Indian Ocean region and is designed to serve as a demonstration project of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities of UNEP.

The regional Clearinghouse Mechanism for the coastal and marine sector is expected to bring relevant information sources in an organized and consistent manner. The Meteorological Services, focal point for the NODC will also be the nodal organisation for the clearing house mechanism.

2.5 AFRICA ENVIRONMENT INFORMATION NETWORK

In this context of the implementation of the Africa Environment Information Network on a pilot basis in Mauritius, a Memorandum of Understanding was signed between the Ministry of Environment and National Development Unit and UNEP on 24 May 2004.

Tasks to be carried out under the MoU included:

- Assessment of environment information systems and networking activities
- Strengthening of existing institutional capacities & Awareness-raising
- National AEIN workshop on environment information management
- Consensus on AEIN implementation at national level
- Preparation of implementation plan & peer review
- Establishment of a national secretariat
- Establishment / provision of database to collect environmental data
- Establishment of a national website on environmental data
- Drafting of National Environment Outlook report

Constraints:

One of the major constraints in project implementation has been the recruitment and selection of a National Consultant. While all activities should have been completed by December 2004, UNEP extended the MoU till 31 March 2005. A national consultant has still not been recruited.

Current Implementation mechanism:

- An implementation mechanism has been set up at the Ministry of Environment & NDU
 1. Steering committee:
 - o **Chairperson:** Director – Ministry of Environment & NDU
 - o **Members:** Environmental Data Custodians & Ministry of Information Technology and Telecommunications
 2. Ministry of Environment Team:
 - o **Chairperson:** Deputy Director - Ministry of Environment & NDU

- **Members:** Statistical Unit; Policy Planning Division; Coordination & Project Implementation Division; ICZM Division

3. Sub-Committees:

- Analysis of Survey Questionnaire – Statistical Unit
- Website Development – Information and Education Division & Ministry of Information Technology and Telecommunications (National Computer Board, Central Informatics Bureau, Central Information Systems Division and Government Online Centre)

Status of the Project:

A workshop to review the implementation of the AEIN project was held on 21st June 2007 and was facilitated by Mr. Chris Ambala, Coordinator of the AEIN Project (UNEP).

Following the meeting it was decided to have the following activities:

- i. A meeting on 9th July 2007, with all stakeholders, including new partners to review the questionnaire and to make further proposals with respect to indicators
- ii. A kick-start meeting in August to take cognizance of the outcomes of the Workshop on Environmental Statistics in Addis and to decide on the set of core indicators that would help in the preparation of the Environment Outlook Report.
- iii. A training workshop facilitated by the IOC on report writing on the first week of September and involving countries of the region.
- iv. UNEP will extend assistance in the preparation in the preparation of the Environment Outlook Report as and when required.

3. CONCLUSION

Strictly speaking, the number of environmental indicators currently in use in Mauritius is small, but there are a substantial number of environmental parameters utilised to measure attributes of the environment. Each organisation has created its own database using various archival formats not always compatible to international standard. As a consequence, exchange of data and information at the national level is very limited.

Moreover, although environmental data and information exist in numerous forms and locations, it was not well organised, difficult to access and not regularly available. Moreover, the fact that a wide range of organisations is responsible for collecting and managing environmental parameters further complicates the issue of data availability, quality and access.

Nevertheless, coordination mechanisms exist under the Environment Protection Act, 2002 to ensure effective management in the environmental assets of Mauritius, through high level committees, like the National Environment Commission and the Environment Coordination Committee.