

Overview of Malaysia's Experience in the Development of Environment Statistics

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1. Introduction

The Department of Statistics, Malaysia (DOS) commenced work on environment statistics through the Regional Technical (RETA) 5555 Project: Institutional Strengthening and Collection of Environment Statistics in Selected Developing Countries via an agreement signed on 10 August 1994 between the Asian Development Bank (ADB) and the Malaysian Government. DOS was selected as the Implementing Agency for this project and this commitment was reinforced in the Seventh Malaysia Plan when DOS was appointed as the Central Depository for Environment Statistics in Malaysia.

The expected outputs from this project were the Framework for the Development of Environment of Statistics (FDES) and the Compendium of Environment of Statistics (CES).

2. Preparation of the Framework for the Development of Environment Statistics in Malaysia

The Framework for the Development of Environment Statistics in Malaysia was prepared in 1998 with the help of a consultant funded by ADB.

As recommended, the United Nations Framework for the Development of Environment Statistics (UN FDES) was used as a guide in preparing the Malaysian FDES.

The main objective in preparing the Malaysian FDES was to identify and prioritise environment statistics/indicators, sources and data availability. This was carried out with the assistance of the Inter Agency Committee on Environment Statistics (IACES) via group discussions. This Committee was officially set up on 7 May 1997 with the relevant government agencies as its members and was chaired by the Economic Planning Unit. The issue of data needs of users, notably planners, academicians and others were addressed. The subsequent issue of institutionalising the compilation of environment statistics from the various related agencies was again carried out through the collaborative efforts of IACES.

The Malaysian FDES outlines a systematic approach to the organisation of the multi-disciplinary subject of environment statistics. The environmental components covered in the Malaysian FDES include atmosphere, water, land/soil, human settlements, flora and fauna. The framework relates each individual environmental component to four information categories namely (i) Social and economic activities and natural events (ii) Environmental impacts of activities and events (iii) Response to environmental impacts and (iv) Stocks and inventories. Within each information category, relevant statistical variables were identified and included in the framework.

3. Needs and Usefulness of a Framework

A framework is important to systematically sort out environment data (particularly on air, water and soil condition), which are often very large in volume. The framework provides a suggested approach to organising environmental data into types, level of aggregation, issues relevance, uses and potential users.¹

In Malaysia, the FDES is used to assist in the development, coordination and organisation of environment statistics. It is an indispensable part of the programme as the document details the desired coverage against data availability.

The Compendium constitutes a step-by-step implementation of an action plan to develop environment statistics. Environment statistics can be used in the following manner:

- (i) as part of the input for environmentally sound and sustainable development policy and programme compatible with a balanced National Economic Development;
- (ii) to quantify depletion and degradation levels pertaining to natural resources and the environment;
- (iii) to monitor and evaluate the effects of human action and natural disasters on environment trade-offs and investment cost effectiveness;
- (iv) to identify the environment concerns, policy, strategies and programmes that needs to be implemented as well as the direction of national development;
- (v) assist in the framework for preventive and corrective measures in line with problems encountered; and
- (vi) as part of the input for the compilation of the Integrated Environmental and Economic Accounts. The Environmental Accounts is a useful tool for measuring the interdependencies between the economy and the environment.

4. Development and Preparation of the Compendium of Environment of Statistics

The first Compendium of Environment Statistics in Malaysia was published in 1998. The development of the environment statistics was based on the Malaysian FDES which in turn is in line with the UN FDES. In adopting the chosen framework, DOS took into consideration the practical aspects of implementation such as availability, quality and coverage of environment data from existing data sources.

Based on the above considerations, DOS has organised the environment statistics in the Compendium by way of a simple framework of different environment media classification incorporating the pressure-state-response (PSR) framework developed by the Organisation for the Economic Cooperation and Development (OECD). Using this approach it is especially advantageous as it is easy to explain the impact on the status of each environmental media in simple terms such as water that is polluted. However, for purpose of

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effective presentation and easier understanding, the PSR format was modified to show the state first, followed by the pressure on the environmental media and finally the response taken to minimise the pressure.

5. Experience and Challenges Faced by DOS

In undertaking the task of developing environment statistics based on the Malaysian FDES, DOS faced challenges right from the initial stage. This wide coverage had a direct effect on manpower needs and expertise, timeliness of data, financial resources and work priorities in the compilation of the said statistics. There was a lack of knowledge, expertise and trained personnel as it was a relatively new field for the Department then. This field requires officers with expert knowledge in specific topic. Despite its specialised nature, it is very much a multi-disciplinary subject which demands that the officers to be proficient in different areas. Unfortunately, officers with such expertise and qualities were rare. This initial setback was soon overcome by way of capacity building with the assistance of ADB which played a crucial role in supporting the training programmes for the staff of the Department. At the initial stage, IACES also served as a platform for exchanging/sharing of knowledge, experience and expertise. This Committee also met regularly to discuss and resolve issues pertaining to priority, resources, availability and timeliness of data.

5.1 Data Availability, Reliability and Timeliness

Initially DOS obtained environmental data through three approaches/sources namely secondary data, administrative records and derived statistics. Besides the socio-economic data that are collected by DOS, the other main environment statistics is sourced from other government agencies. Due to the wide spectrum and multi-disciplinary nature of environment statistics, raw data have to be acquired from diverse data producers whom by nature of their core business are responsible for the collection of environmental related statistics that arise from their day-to-day activities. This process is both tedious and cumbersome. It requires systematic, effective and continuous cooperation from these agencies. Apart from this, there are also inherent and operational issues of quality associated with the use of these administrative records as basis of official statistics with respect to coverage, timeliness, frequency, reliability and consistency. Institutionalising the compilation of environment statistics from the various agencies was initiated through efforts by IACES which has since been evolved into a mechanism to effect commitment in the provision of reliable and timely data to DOS.

5.2 Methodological Problem

The main challenge for the statistician is to produce reliable statistics based on observations or raw data that were not designed for statistical purposes and were generated by other parties. Most of the socio-economic data are either secondary data from other surveys conducted by DOS or administrative data from other agencies. Data on the state of environment basically come from monitoring data obtained through observations using scientific measurements by the environmental agencies. DOS does not

have control over these data. The coverage of administrative data is normally exhaustive as they usually pertain to well-defined field. Consequently in collecting and compiling the relevant data for each environmental related topic, it is vital for DOS to overcome the heterogeneity in data sets that were sourced from the various non-collaborating sources in order to integrate and link the data in a format that gives coherent information on each environmental related topic and displays the links between environmental and socio-economic issues.

Due to the wide and multi-disciplinary nature of environment statistics, DOS adopts other appropriate tools besides statistical methods for its data analysis. However, effective use of non-statistical tools needs further 'investment' in acquiring the relevant knowledge as well as close cooperation with specialists in these disciplines. Continuous enhancement of the skill of the staff involved is also crucial.

5.3 Standards, Classifications and Definitions

In environment statistics there are numerous players and data collection is not always coordinated. DOS faces difficulties in the electronic integration of data from these sources due to irreconcilable differences e.g. in data storage and classification. Sometimes digitized data have to be manually processed. These organisations use different methods in acquiring, storing, processing and analysing these environmental data and information. This makes it very difficult for DOS to develop an integrated environmental information system based on consistent standards, definitions and data depositories. A typical example is the differences in the classification of protected areas for forestry in Peninsular Malaysia, Sabah and Sarawak.

A set of standard concepts, classifications and definitions is one of the most important tools for ensuring consistency and continuity in the compilation of environment statistics. In this respect, the challenge is to harmonise the standards, classifications, concepts and terms used for all the data compiled by the line agencies. It is also recognised that internationally comparable data are needed by international organisations to assess and resolve cross boundary, regional and global environmental problems. However, harmonising these standards for international comparison purposes poses another challenge for DOS as the priority of the environmental agencies/data providers is to cater to their respective needs.

5.4 Data Gaps

During the initial stage, statistics published in the CES Malaysia was limited by the data available from the producers mainly the line agencies. The availability of statistics for flora and fauna constitutes a major concern and has yet to be fully addressed. There are still gaps to be covered, in particular, areas related to biodiversity and business expenditure on environment protection due to the unavailability of data at the national level. Efforts have been initiated to collect some of these statistics through regular surveys. The data from the Survey on Biodiversity and Protected Areas have already been included in the CES Malaysia. The first report on the Survey of Environmental Expenditure (reference year 2007) is expected be released within this year.

5.5 Sustaining the Collection of Environment Statistics

While IACES played a crucial role during the initial stage, the Environment Statistics Division of DOS has an important role to play in maintaining good rapport with the various agencies. Continuous networking, discussions and follow-ups with the relevant agencies also help to sustain the collection of environment statistics from these agencies on a regular basis. Involvement of the Department's staff in the workshops and seminars organised by these agencies also helps to improve mutual understanding on each others' needs with regards to data.

5.6 Database Development

With the increase in demand for environmental statistics, DOS has taken initiative to develop an interactive database (for authorised users) in line with its role as the Central Depository for Environment Statistics. The FDES has provided the framework for structuring the database. Development of this database is currently in progress.

5.7 Integrated Environmental and Economic Accounting

In order to address the need for more comprehensive data for policy formulation, DOS needs to develop the Integrated Environmental and Economic Accounts. Presently, the Department is in the process of acquiring the necessary technical expertise.

6. Conclusion

In conclusion Malaysia finds the UN FDES a useful guideline in the development and compilation of environment statistics.