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Results of the review of the 1984 FDES: missing elements, topics and dimensions

UNSD

This document has been prepared for discussion at the Expert Group Meeting on the Revision of the Framework for the Development of Environment Statistics (FDES), New York, May 2011. It has not been edited and do not necessarily reflect the views of the United Nations.

Introduction

The following notes build on the discussions and documentation produced by the Expert Group Meetings on the revision of the 1984 Framework for the Development of Environment Statistics (1984 FDES) and also encompass the current work of the United Nations Statistics Division on the revision of the FDES.

They summarize an understanding of the missing elements and of the issues from the original FDES that need strengthening and transformation within the revised FDES.

These notes were put together in January 2011 by UNSD as a starting point in the development of the revised FDES.

I. In general

1. In light of the new developments in both knowledge and user needs in the past twenty-five years, it is very important that the structure, properties, purpose and scope of the 1984 FDES are revised and updated. Indeed, the 1984 FDES itself envisaged, in its Preface, that there would be periodical revision “Changing environmental trends and priorities, accompanied by corresponding data requirements, call for a continuous critical review of the purposes of the framework, and periodic revisions are expected”.
2. The major elements that are to be further elaborated in the revised FDES and which are currently missing or not sufficiently developed are the:
 - **Objective** of environment statistics
 - **Scope** of environment statistics
 - **Purpose** of the **FDES**
3. The FDES also needs a profound analysis and improvement on:
 - The **structure of the FDES**, that is, the way the contents are organized
 - The **dimensions, themes and topics** of FDES.
4. It is also very important to explicitly differentiate between two elements that are interrelated but are distinct in nature: environment statistics as a domain, and the FDES as an organizing structure, when considering the updating and completion of its definitions, objectives, scope and users.

II. Objective, definition and scope of environmental statistics

5. The 2010 Expert Group Meeting (Expert Group) concluded that the **objective** of environment statistics was established as providing statistical information to improve policy and decision-making, on the state (and changes of the state) of the environment and its links with human well-being and economic and social development.
6. The 2010 Expert Group further concluded that the **scope** of environment statistics includes ecosystems and natural resources and recognized that environment statistics describe the qualitative and quantitative aspects of ecosystems and natural resources including their interactions with human activities and natural events.

III. Definition, scope and coverage of the FDES

7. Both the 1984 FDES’s scope and coverage seem somewhat vague, as they were developed at a time when the boundaries and scope of environmental statistics were not sufficiently clear. Now it is necessary to go beyond this to a proper definition of the scope of the new revised FDES.
8. The following description of comprehensiveness in the environment statistics context is presented in the 1984 FDES: “Comprehensiveness – A framework for environment statistics should permit access to the whole spectrum of current and potential environmental concerns, whether the objective is to deal with all of them or with only a selection of them” [1984 FDES, pg 9]. It is very important to maintain this purpose and property as outlined above, even as current and future evolution within environmental statistics continues with the development of more topics and more variables and cross-cutting issues that are deemed relevant to the diverse countries in the world.

9. As the 2009 Expert Group Meeting concluded, the revised FDES should be comprehensive and **integrative** as well as providing an overarching framework that encompasses all aspects of the environment.

IV. Objective and uses of the FDES

10. The 1984 FDES states its objective as follows: “*The objective of the framework is to assist in the development, co-ordination and organization of environment statistics at the national and international levels.*” The purpose of the 1984 FDES needs to be revisited and re-evaluated, particularly in the light of the new criteria suggested by the Expert Group.

11. For example, the revised purpose should articulate the fact that the Framework can help to identify data gaps in addition to the key institutional partners within environment statistics production. The current FDES does not explain that it can be instrumental in identifying the main partners in environmental statistics production within a country (and also within the international community), thus facilitating the organization and coordination of data sharing processes in this cross-cutting field of environment statistics. Adequate completion of the Framework demands that these and other elements should be included to satisfy the criteria laid out by the Expert Group.

V. Structure of the FDES

12. The current **rows** of the FDES seem far **too aggregated**. Disaggregation of the environment’s components in the table could provide more depth of information or perhaps, consideration of a different construct of environmental components altogether could yield an even better outcome.

13. The contents of the current rows in the 1984 FDES, as mutually exclusive and as comprehensive as they are, do not allow for showing the **interrelations** among the components and subcomponents in the environment. In identifying alternative components of the environment, it may be advantageous to also explicitly take into account the possibility of inter-relationship of some of the components.

14. The **columns** of the FDES definitely require scrutiny. Alternative ways of structuring analytical or assessment categories should be pursued, considering the developments in the field of environment statistics and current user needs including those of analysis, reporting, policy making as well as use by the public at large.

15. The Pressure-State-Response (**PSR**) in the current FDES and its possible derivate sequences (Driving Force-Pressure-State-Impact-Response [DPSIR], etc.) implicitly suggest **causal** relationship among its dimensions (pressure–state–response), or they have been **interpreted** as such by most users, although this was not the original intent. Statistically, it is not yet possible to establish those correlations at the current state of the art, with acceptable degrees of certainty. This should be examined in a revised FDES with a view to making it more integral or systemic (in the sense of everything interacting all the time).

16. It has been argued that the **PSR** (and derivate sequences found in the 1984 FDES) work better when used for analytical purposes of specific topics and dimensions of the environment, and not so much when used for organizing environmental statistics of a country. Actually, these PSR-type frameworks have been widely used for reporting on the environment, where specific

components can be analyzed and data sets can be clearly attributed to P, S or R. On the other hand, most experts find its usefulness to organize the production of environmental statistics in general less obvious, particularly for the difficulty of allocating some variables as either pressure, state or response given the different results to be attained depending on the specific context.

17. Finally, the current FDES structure makes it difficult to analyze **cross-cutting issues**. This needs to be improved in the revised version as the production of environment statistics routinely has to deal with these types of themes or cross-themes.

VI. Content and topics to be included in the FDES

18. State of the environment

Two of the sub-groups of the 2010 Expert Group Meeting concluded that the **State** (quantity and quality) of the environment and its changes (flows within the environment) are in the centre of environment statistics. At the same time, measuring the pressures on the environment (flows between the environment and the economy) and the impacts of environmental changes on humans, can create the links with economic and social statistics.

With regard to the **State** of the environment, the topics and also the column representing the State and its variables are quite underdeveloped in the current FDES. The Expert Group, along with main users in many countries, has noted that they should be the primary focus of attention.

19. Cross cutting issues

There are important themes and issues that are not contained in the current FDES which are cross-cutting, policy driven issues, that are of the highest policy relevance today, and that should be considered when revising the FDES. Some examples are:

- (a) Biodiversity
- (b) Climate change
- (c) Green economy and green growth
- (d) Natural resources degradation and depletion.

There is not necessarily a requirement for the FDES to convert these issues into rows or columns (certainly not as media), but perhaps these cross-cutting issues that are high profile in terms of their policy implications can be applications of the Framework. That is, the Framework could be used to provide guidance as to the particular elements - cells, columns and tables - that could be relevant for analyzing them.

20. Socio economic aspects

In the current 1984 FDES, the “socio-economic” aspects of the first information category (first column) are actually to be understood to include important driving forces that affect the environment, but these variables will probably not be an explicit part of the revised FDES.

21. Human Settlements

Questions have been raised about the place of this last component of the environment (last row in the 1984 matrix), within the FDES content. This component has been the center of long

discussions about whether its contents should be allocated among the media or whether it should be understood as a type of system where humans live. So far, while questions have been abundant, no solution has yet been found. An example of one such question is whether “human settlements” should only be considered as a spatial dimension or whether it should remain a component as it is now presented? Yet other questions suggest themselves:

- Using the ecosystem approach, can we think of “human settlements” as the *human ecosystem*?
- Can we add urban spaces in a similar fashion as the MEA?

This is one of the topics that needs to be deliberated upon in the Expert Group discussions.

22. Indoor pollution

Indoor pollution is currently included among the statistical topics covered by the FDES, but the most accepted understanding of environment refers to the outdoor environment. It can be strongly contended that the indoor environment should not be a component of environment statistics as the boundary of the environment can be set to be within the limits of the home. The same goes for the work environment. Perhaps this can be kept within some category of environmental health as it stands in the intersection set of these two areas.

VII. Criteria to be fulfilled by the revised FDES

23. There are a number of **criteria to be satisfied** that are not well developed in the 1984 FDES, but which need to characterize the revised FDES. In order to serve its intended purposes, the revised Framework should satisfy the following criteria which have been suggested by the Expert Group in the 2010 meeting, namely, the FDES should:

- (a) Be adaptable, applicable, easy to follow;
- (b) Be clearly aligned with the objectives of environment statistics;
- (c) Make the scope of environment statistics clear;
- (d) Make the dimensions of environment statistics clear;
- (e) Help organize environment statistics;
- (f) Help to set up standard classifications and definitions;
- (g) Be coherent with other internationally agreed frameworks;
- (h) Help to identify data gaps;
- (i) Help to identify a core set of statistics;
- (j) Facilitate the identification of roles and responsibilities of players;
- (k) Represent the state of the art.

VIII. The Background: new developments in the field of environment statistics

24. The 2010 Expert Group Meeting's working groups considered **new developments** in the areas of: knowledge of the environment, environmental policy issues and new policy instruments, since 1984, as well as the increasing availability of new technologies in statistics, and their influence on the development of environment statistics. The most important developments that they identified were: mainstreaming the concept of sustainable development; better understanding of links between well-being, ecology, economic development and social aspects; the open government and increased involvement of the public; emerging environmental issues (such as climate change, biodiversity, desertification, food security) and the resulting international conventions and agreements with accompanying special data requirements; the integration of environmental aspects into sector policies; the appearance of new economic/market instruments

to regulate pressures on the environment; the growing need for internationally comparable data; and the unprecedented development of information technology. These developments should be considered in the revision of the FDES.

25. From the statistical perspective, key new developments that are to be considered and discussed in the revised FDES are:

(a) Geographical Information Systems (**GIS**) - **remote sensing and spatialized** environmental statistics constitute important and emerging elements that can possibly transform the way environment (and other) statistics are produced and disseminated to their different users;

(b) **SEEA** (and SEEA Water, the IRWS, and future SEEA Energy) - from the statistical point of view this is a milestone methodological development in the field. The new FDES should at least consider and address these new developments.

IX. Challenges in the way forward

26. Thus far, the most important challenges identified in the revision of the FDES are the following:

(a) Developing a revised, comprehensive framework that can be adapted to most countries' needs and which satisfies its main objective and criteria;

(b) Elaborating a framework that will be of service for most environmental concerns, topics, dimensions, issues and themes that are globally relevant;

(c) Designing a framework that is flexible enough to accommodate country- and region-specific dimensions, topics and segments of variables, as needed. This has to be attained by avoiding strict or closed sets of information in favour of illustrative sets that outline possible sets and contents;

(d) Ensuring that the framework is statistically feasible, or applicable, that is, based on the characteristics of a majority of statistical systems at the national level, thus capitalizing on current and near future data production; and finally

(e) Exploring the possibility of a multi-layered framework, in order to accommodate different levels of aggregation of the topics and information, from the most synthetic matrix to more disaggregated levels showing sets of variables, at least for illustrative purposes.