ESA/STATISTICS/AC.228
EGM-FDES/1/22

DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS
STATISTICS DIVISION
UNITED NATIONS

---

**Expert Group Meeting on the Revision of the Framework for the Development of Environment Statistics (FDES)**
**New York, 8-10 November 2010**

# Streamlining of Environmental Indicators

# – Indicator Clearing House

**Christian Heidorn**

**Eurostat**

## 1. Background

Environmental indicators were already mentioned in the FDES paper of 1984, but not described or discussed in more detail. Today environmental indicators are widely used to translate complex information on the environment in a concise and easily understood manner.

Most environmental indicators are developed following the DPSIR framework introduced by the OECD in 1991 and present 'Driving forces', 'Pressures', the 'State of the environment', 'Impacts' and the 'Responses'[1] by societies to overcome environmental problems.

Indicator sets or systems are used to measure progress towards agreed policy targets: e.g. a more sustainable development, a reduction of emissions or a better state of ecosystems.

Some indicator systems have evolved to include many indicators and require a certain level of knowledge and expertise in various disciplines to fully understand their messages.

At the level of the European Union four main bodies produce environmental indicators for various indicator initiatives: The European Environment Agency (EEA) maintains a 'Core set of environmental indicators', the European Commission's Joint Research Centre (JRC) develops life cycle based environmental indicators and specific pressure indicators, the Commission's Directorate General for the Environment is a prominent user of these indicators for the annual efficiency assessment of the European Union environment policy. Eurostat, the European Union Statistical Office, is maintaining the 'Sustainable Development Indicator set' and the so-called 'Structural Indicators', which will be followed by a set of 'Europe 2020 indicators' to monitor the strategic targets for a smart, sustainable and inclusive growth.

The statistical basis for these indicators is either official statistics under legal cover, e.g. the European Waste Statistics Regulation or voluntary data collections such as the OECD/Eurostat Joint Questionnaire on the environment.

At the international level UNSD is producing environmental indicators to disseminate global environment statistics on ten indicator themes, compiled from a wide range of data sources. The OECD maintains indicators to measure environmental performance, harmonised data and helps member countries to improve their environmental information systems.

## 2. Streamlining required

Given the sheer number and diversity of environmental indicators it is more and more difficult for policymakers and the interested public to grab the relevance and meaning of the existing environmental indicators.

Among the four European bodies Eurostat has been given the lead for a 'streamlining' exercise of the various environmental indicator sets maintained at European level.

The streamlining became necessary because a number of problems became evident with regard to the environmental indicators:

- Some environmental indicators have the same name but show different variables;

[1] The DPSIR framework is an extension of the pressure-state-response model developed by OECD http://glossary.eea.europa.eu/EEAGlossary/D/DPSIR

- Other environmental indicators have different names but provide the same type of information, or have names which are not very representative of their real contents;
- The same indicators are presented differently, at the level of contents and at the level of tools used for the presentation;
- The provided meta-information is often not consistent.

Streamlining is also required in order to avoid confusion for users of these indicators and to avoid overlapping and/or multiple reporting for keeping the indicators up-dated.

## 3. Objectives / expected results

'Streamlining' would mean:

- Making sure that the same indicators have the same name;
- getting the names of indicators right;
- Use the correct label for the substance and consistent across sets, thus reducing the number of sets/indicators;
- Agreeing on responsibilities between the different players in order to avoid double work and improved timeliness between indicator calculation and indicator publication.

Work at Eurostat started already in 2007 with the establishment of an inventory of 400 indicators, from which some 338 potentially 'streamlineable' indicators[2] were identified. The set was organised alongside 48 clusters (environmental domains). A description of each indicator together with an analysis of their potential for harmonisation with other indicators was carried out. The study also provided some basic guidance for the practical implementation of the streamlining process and recommendations for further work, such as the establishment of an 'Environmental Indicator Clearing House'.

The current project has a duration of two years and will be completed by December 2011.

**The project is expected to deliver the following results:**

### 3.1 Concept for streamlining of European environmental indicators

- A harmonised and integrated concept for the European environmental indicators maintained by the European bodies;
- A presentation of the findings in a suitable format which allows interpretations on relationships between data and indicators;
- A methodology that will also be applicable for new indicators.

### 3.2 Practical implementation of streamlining of environmental indicators

The practical process of streamlining European environmental indicators:

- Implementation plans for the establishment of a harmonised and integrated set of indicators;

[2] 311 indicators and 27 sub-indicators (due to the availability of several sub-definitions within single indicators).

- Concrete proposals / recommendations of actions for streamlining the set of indicators, cluster by cluster;
- Discussion with the indicator 'owners' (Workshop to be held in Luxembourg on 22-23 February 2011).
- A set of briefing documents for the EEA and Eurostat indicator working groups and for indicator meetings at the OECD and the UNSD.

### 3.3 'Indicator Clearing House' website

- Implementation plan and a technical description for a web service as core element of the Indicator Clearing House:
  - Website on the Eurostat homepage;
  - Upload facility for indicator developers to describe the indicators they are planning to produce;
  - Presentation of results from the streamlining project on existing indicators;
- Provision of the contents-related material for the Indicator Clearing House website;
- Information on the activities and developments on environmental indicators at the European and at the international level;
- Day to day operation of the clearing house by Eurostat.

## 4. Implementation

The 3 results will be the outcome of the successful implementation of the various tasks and their related activities described below:

### 4.1 The concept

A presentation concept (‘factsheet’) was developed with the intention to apply it on all European environmental indicators. This concept tried already to take into consideration the requirements of the future Indicator Clearing House (Result 3).

#### *Presentation concept*

The factsheet template was designed and tested on 3 example indicators from the following pilot domains:

- Biodiversity
- Greenhouse gas emissions
- Municipal waste

After the discussion of first draft factsheet versions the final version integrated some of the features of the (meta-) data format ESMS/SDMX, a format sponsored by UN, OECD, the IMF, the World bank and Eurostat. Various headings were arranged alongside the following 4 sections:

Indicator description – Data – Assessment and dissemination – Other background information.

#### *Indicator Clearing House*

The factsheet template was developed towards the purpose of the future 'Indicator Clearing House'. The basic aspects of the website were already discussed in the course of the first task.

## 4.2 Practical implementation *(status of November 2010)*

After design of a presentation concept for the indicator set, a methodology for streamlining the indicator set was developed and presented in a first implementation plan. It describes in detail the various steps to be taken. Several versions of the plan were necessary as the methodology had to be fine-tuned, and more streamlining options are under discussion.

### *Inventory review*

A review of the inventory of 2006 was necessary to take account of the various changes in the initiatives considered.

Originally, 11 sets were taken on board and listed in the inventory:

- AEI (28 Agri-Environmental Indicators – Indicators Reporting on the Integration of Environmental Concerns into Agriculture Policy, EEA and Eurostat)
- CEI (19 Core Environmental Indicators and 15 Core Socio-economic and Sectoral indicators, considered together with CEI, OECD) and KEI (10 Key Environmental Indicators, OECD)
- CSI (37 Core Set Indicators, EEA)
- EERM EN (25 Indicators of Environmental integration of the Energy sector, EEA)
- EPI (54-60 Environmental Pressure Indicators, Eurostat and DG Environment)
- SDI (67 Sustainable Development Indicators from selected environmentally-relevant themes, Eurostat)
- SEBI 2010 (26 Streamlining European 2010 Biodiversity Indicators, EEA)
- SI (18 Structural Indicators from the theme « Environment », Eurostat)
- ISD (56 Indicators of Sustainable Development, UNCSD)
- TERM (40 Transport and Environment Reporting Mechanism, Eurostat/DG TREN)

The result was a list of more than 400 indicators. Some were disregarded due to their lack of direct environmental relevance (around 60 'deleted' indicators) or singularity (around 60 'singular' indicators). Of these, 338 indicators (including sub-indicators[3]) were analysed and first proposals for streamlining were made.

### *Clustering system*

The current table for the preparation of indicator streamlining is grouping the indicators alongside 48 environmental domains ('clusters', see Table 1 below). It will be slightly updated and extended as relevant due to the introduction of some new indicators. In the end, a proposed list of harmonised indicators, organised by broad domains and clusters/themes (and possibly sub-clusters/sub-themes) will be set up (see streamlining approach below).

[3] The presence of sub-indicators made it necessary to carry out an analysis for each sub-definition and sometimes to analyse the indicator in more than one cluster (up to 3 clusters – e.g. CEI 08 'Waste generation").

**Table 1 Indicator clustering system**

| Cluster n° | Domain | Sub-domain | N° of indic. | | Cluster n° | Domain | Sub-domain | N° of indic. |
|---|---|---|---|---|---|---|---|---|
| 1 | agriculture | Agri-env. commitmen | 2 | | 25 | waste | Hazardous waste | 6 |
| 2 | agriculture | Management | 2 | | 26 | waste | Industrial waste | 3 |
| 3 | agriculture | Intensification | 2 | | 27 | waste | Radioactive waste | 5 |
| 4 | agriculture | Organic farming | 4 | | 28 | biodiversity | Species | 18 |
| 5 | agriculture | Livestock density | 2 | | 29 | biodiversity | Pprotected areas | 11 |
| 6 | agriculture | N balance | 5 | | 30 | biodiversity | Habitats | 3 |
| 7 | water | Nutrients-concentr. | 10 | | 31 | land | Fragmentation | 6 |
| 8 | water | Nutrients-emissions | 3 | | 32 | land | Land use | 17 |
| 9 | agriculture | Pesticides | 8 | | 33 | Materials | Material use | 6 |
| 10 | air | Air emissions | 23 | | 34 | water | BOD - demand | 4 |
| 11 | air | Air quality, exposure | 11 | | 35 | forests | Timber | 7 |
| 12 | air | GHG concentr. | 2 | | 36 | forests | Forest resources | 2 |
| 13 | air | GHG emissions | 23 | | 37 | fisheries | Fisheries | 9 |
| 14 | air | ODS | 11 | | 38 | Marine | Marine trophic index | 2 |
| 15 | air | Temperature | 2 | | 39 | marine | Oil pollution | 5 |
| 16 | energy | Energy effic./intens. | 5 | | 40 | transport | Modal split | 13 |
| 17 | energy | GIC | 9 | | 41 | transport | Volume | 16 |
| 18 | energy | FEC | 13 | | 42 | waste | Waste water treatment | 6 |
| 19 | energy | Electricity cons. | 4 | | 43 | water | Water abstraction | 9 |
| 20 | energy | Renewable energy | 9 | | 44 | water | Other water pollution | 3 |
| 21 | energy | Clean energy | 7 | | 45 | water | BOD - emissions | 2 |
| 22 | energy | CHP | 3 | | 46 | transport | Noise | 2 |
| 23 | waste | Municipal waste | 14 | | 47 | other hazard. subst. | Chemicals | 2 |
| 24 | waste | Recycling | 3 | | 48 | market-based instr. | Taxation | 4 |
| **Total n° of sub-indicators** | | | | | | | | **338** |

The review of the inventory in 2010 reduced the number to some 302 indicators[4], 228[5] of which will be analysed by cluster.

- *AEI: not inventoried as the set is under review*
- CEI: 23 indicators[6] and KEI:10 indicators
- CSI: 34 indicators
- *EERM EN: not inventoried as the set is under review*
- *EPI: not inventoried, the set needs to be reactivated*
- SDI: 57 indicators
- SEBI 2010: 25 indicators
- SI: 17 indicators, discussion of possible use in EUROPE 2020 indicator set ongoing
- ISD: 44 indicators
- TERM: 18 indicators

[4] without counting of sub-indicators.
[5] Some 74 inventoried indicators will not be analysed because they are not directly environmentally-relevant (e.g. 'Healthy life years' – UN ISD 07, SDI - tsdph100 and SI - tsien180) or because they are currently not or not yet available (e.g. 'Concentrations of mercury in fish and shellfish' – SDI tsdnr410).
[6] Of which 4 core socio-economic and sectoral indicators, considered together with CEI, OECD.

Although not inventoried in 2010, AEI, EERM EN and EPI sets may nonetheless be taken on board in the future clearing house if some of the indicators become available.

### *Streamlining approach*

For each of the 228 indicators a factsheet will be produced and for all of them (except UNCSD, ISD and OECD KEI/CEI) an analysis of their streamlining (or non-streamlining) potential will be defined.

### *Concrete proposals for streamlining cluster by cluster*

The streamlining potentials will be presented via 2 types of documents:

1. in the individual **indicator factsheets**, under heading:

   **'17.3. High potential for streamlining with: […] indicator no. […]'**

   where indicators with a 'high potential for streamlining' will be listed.

2. in a **separate, dedicated document** providing for each cluster more details about **streamlining possibilities for each indicator** (even if not 'streamlineable') as follows:

   - Original list of indicators by cluster;
   - Optional: Proposal for 'harmonised' indicator list by cluster, (this may also be done for the whole list rather than by individual cluster);
   - Overview by sub-theme (i.e. by groups identified):
     - Identification of groups ('sub-themes') of streamlineable indicators, (i.e. indicators with similar features);
     - Proposals for streamlining for each of these groups, indicator by indicator, including list of other, possible, non-streamlineable indicators, if any, (explaining why they are not streamlineable, e.g. because they are too specific);
     - Overview table or other type of presentation still to be defined, including all indicators analysed, whether streamlineable or not;
     - List of other, not streamlined indicators: falling in no specific sub-theme above or indicators not streamlined (UN or OECD indicators) but kept nonetheless in the cluster.

The focus will be on indicators with a high potential. High potential will mean the same (or very similar) definition and/or the same data source. Where several indicators will serve the same objective they will be assessed to have a high potential for streamlining.

### *Presentation of implementation plan of harmonised indicator set to Eurostat*

Based on the above methodology concrete proposals for streamlining of environmental indicators cluster by cluster will be presented to Eurostat in a final version of the implementation plan in early 2011.

The plan will also suggest a list of harmonised indicators arranged in a way enabling to show the relations between indicators alongside a (simple) framework organising the indicators by cluster and/or domains. It is more or less the same clustering system as above that will be used, with some small adaptations in the overall organisation (design of broad domains containing several linked clusters).

*Workshop at Eurostat, Luxembourg on 22-23 February 2011*

The above results will be presented during a 2-day workshop for discussion with indicator owners (European Commission Directorate General for the Environment, the Commission's Joint Research Centre, the European Environment Agency and Eurostat, possibly also with representatives from European environment ministries and national statistical offices.

**The environment statistics branches of UNSD and OECD are kindly invited to participate.**

## 4.3 The 'Indicator Clearing House' website

An Indicator Clearing House will be established to enable indicator users and developers to have a clear picture of the European environmental indicator world. The approach will be defined in a technical description for a web service that will be the core element of the Indicator Clearing House.

### *Basic requirements*

The preliminary discussions about the website highlighted following basic features:

- A dedicated website on the Eurostat homepage. The design concept and contents will be provided by the contractor while the technical establishment and operation will be done by Eurostat staff;
- The main contents will be textual, with links to external databases;
- It will consist of a homepage to which several Wiki-pages will be attached;
- Horizontal navigation: the left-hand part of the page should provide links to other sections, on the right-hand side links to contextual information are provided;
- Vertical navigation: a 'search' facility will be installed on top of the page, together with other links (e.g. access to reference documents/publications, website contact information, site map etc.);
- It will provide an upload facility of indicator fact sheets for registered indicator developers;
- It shall be useful for policy makers and indicator developers, the usefulness for the wider public will probably be more limited.

### *Expected contents*

The website will contain the following information:

- **Results** from the streamlining exercise:
  Following the model of the Eurostat website for the 'Data Centre on Waste', the service will contain a main page and several Wiki-pages by 'purpose' (environmental compartments/sectors, indicator initiatives, …);
- **Easy and guided access** to specific sections in indicator fact sheets (e.g. indicator description; data; assessment and dissemination; other background information) for

different user profiles. (Developers and technical indicator users, the core target group, might need more detailed information than the general public user;

- **All indicators** are potentially to be **considered** for inclusion on the website, whether streamlineable or not. The 'no potential' indicators can indeed be highly relevant indicators even if not streamlineable (because they are singular indicators);
- The **UN** and **OECD** indicators for which only factsheets will be produced, will be integrated, cluster-wise, on the website, but will not be streamlined;
- **Other relevant indicator initiatives**: Following observation of the activities and developments on environmental indicators at the European and at the international level, additional relevant information will be placed on the website; in particular, initiatives such as the 'Europe 2020 Strategy' and the 'GDP and beyond' initiative.

## 5. Conclusions / Questions

- Environmental indicators are widely used to present the outcome of data collection, validation and aggregation of environmental data in a concise and easily understood manner. Should the revised FDES therefore pay particular attention to environmental indicator production?
- The new FDES could propose a continuous streamlining and coordination of environmental indicator production among major indicator 'owners' at the international level.
- Do the experts on the Revision of the Framework for the Development of Environment Statistics share Eurostat's view?

## 6. Contact

European Commission – Eurostat – Directorate E (Sectoral and regional statistics)
Unit E.3 (Environment and forestry statistics)

Christian Heidorn

Tel: +352 4301 35271
Email: christian.heidorn@ec.europa.eu

Internet locations:
http://ec.europa.eu/eurostat
http://epp.eurostat.ec.europa.eu/portal/page/portal/environment/introduction