Session 2: UN Framework for the Development of Environment Statistics and the Core Set of Environment Statistics

United Nations Statistics Division

Workshop on Environment Statistics
(Yaoundé, 5-9 December 2011)

Outline

I. The UN Framework for the Development of Environment Statistics (FDES)

II. Core set of environment statistics

I. Revision of the UN FDES

a) Need for the revision of the UN FDES
b) What is a framework
c) The UN FDES
d) Expert Group Meeting (EGM) on the UN FDES in 2009
e) Expert Group Meeting (EGM) on the UN FDES in 2010
f) Expert Group Meeting (EGM) on the UN FDES in May 2011
g) Expert Group Meeting (EGM) on the UN FDES in Nov 2011

a) Need for the revision of the UN FDES

- Oslo Conference on Climate Change and Official Statistics (2008)
- Seoul Conference on Climate Change, Development and Official Statistics (2008)
- Programme Review on Climate Change and Official Statistics – prepared by Australia for 40th session of the Statistical Commission (SC) 2009
- 40th session of the SC 2009 discussed a framework
- Statistics Canada prepared document about a conceptual framework for environment statistics for the SC 2009

a) Need for the revision of the UN FDES (cont.)

The countries had stressed the importance of an overarching framework that:

- clearly marks out the scope and contents of environment statistics;
- is integrative in nature, comprehensive and flexible enough to accommodate the information needs of new and emerging environmental and policy issues such as climate change;
- allows for the identification of data needs, data sources and gaps; and
- allows for allocation of roles and responsibilities of different stakeholders in production of environmental data including assurance of data quality.

b) What is a framework

- A framework is a basic organizing structure to guide environment statistics.
- This is achieved through the identification of the structure, dimensions, categories and components (statistical topics) that constitute the contents of the framework.
- The framework identifies the fields of concern with an illustration of classifications, selected statistics and indicators for application.
- Statistical concepts, definitions and classifications or tabulations are not part of the framework but described in separate recommendations and guidelines.

c) The UN FDES

- The UN FDES is a broad framework that relates the components of the environment to information categories.
- The components of the environment define the scope of environment statistics.
- The information categories reflect the fact that environmental problems are the result of human activities and natural events.

c) The UN-FDES (cont.)

Components of the environment	Information categories			
	Social and economic activities, natural events	Environmental impacts of activities/events	Responses to environmental impacts	Inventories, stocks and background conditions
1. Flora				
2. Fauna				
3. Atmosphere				
4. Water (a) Freshwater (b) Marine water				
5. Land/soil (a) surface (b) sub-surface				
6. Human settlements				

c) The UN FDES (cont.)

The basic components of the environment are:

(i) flora;

(ii) fauna;

(iii) atmosphere;

(iv) water (freshwater and marine water);

(v) land and soil (surface and subsurface); and

(vi) human settlements.

Note: The basic components are those of the *ecosystems*.

c) The UN FDES (cont.)

The information categories represent:

(i) the social and economic activities, and natural events that exert impacts on the environment;

(ii) the environmental impacts of these activities or events;

(iii) the socio-economic responses to environmental impacts; and

(iv) inventories, stocks and background conditions.

The information categories reflect:

(a) stocks and flows

(b) drivers, pressures, impacts, state and responses.

c) The UN FDES (cont.)

The contents of the framework are the statistical topics.

- These are determined as the statistically quantifiable aspects of general environmental concerns (*link to environmental policy*).
- The statistical topics are listed in the framework tables.
- The list is not necessarily exhaustive:

  – the framework's generality and flexibility allows for additional topics as well as for additional details (aggregation or disaggregation) within the topics.

c) The UN FDES (cont.)

Main properties of the UN FDES:

- Flexibility
- Consistency
- Comprehensiveness

d) EGM on UN FDES (Nov 2009)

The EGM agreed: (i) on a set of guiding principles for the revision of the UN FDES; (ii) on a list of contents to include in the revised UN FDES; (iii) that UNSD should establish a core set of environment statistics; and (iv) on the modalities and timetable for the revision of the UN FDES.

All documentation on the UN FDES is available at http://unstats.un.org/unsd/environment/fdes.htm

d) Core set of environment statistics

- The EGM also recommended that UNSD should develop a core set of environment statistics to provide guidance to countries with limited resources and at early stages of environment statistics
- Core set should include limited number of variables accompanied by methodological description and guidance for their compilation
- Core set of environment statistics should be based on *UNSD List of Environmental Indicators* (adopted by Statistical Commission 1995) and on assessment of international data collections, major global/regional indicator initiatives, and consider pertinent data needs created by global environmental conventions and MEAs

d) Modalities and timetable

- Two years (SC 2012) for the revision of the UN FDES and the establishment of the core set of statistics (methodological and data compilation guidelines after 2012).
- UNSD should lead the process with the support of an expert group, including statisticians as well as representatives from the scientific and user communities from all regions to carry out the revision.

- The Statistical Commission, at its 41st session, endorsed the programme of work for the revision of the FDES and the development of a core set of environment statistics.

(For more details see paper to (E/CN.3/2010/9) and report of the 41st session of the Statistical Commission at: (http://unstats.un.org/unsd/statcom/sc2010.htm)

e) EGM on FDES (Nov 2010)

- The EGM concluded that there has not yet been agreement on a single scientific theory upon which the framework for environment statistics could be based.
- While an agreed scientific theory provides a strong and sound foundation for a conceptual framework, it is not a necessary precondition to begin the process of revising the 1984 FDES.
- While the Expert Group deliberates on what scientific theory can best support the conceptual framework, work towards the revision of the FDES and the establishment of a core set of environment statistics has to start.

e) EGM on FDES (Nov 2010) (cont)

- The EGM agreed therefore that work should progress in two parallel processes which later should be merged once options for the conceptual framework have been identified and agreed upon by the Expert Group.
- The EGM invited UNSD to initiate the process of revising the 1984 FDES and the development of a core set of environment statistics.
- The EGM also invited Statistics Canada to further elaborate on their proposal to apply the natural capital theory to develop a conceptual framework for environment statistics, and illustrate the dimensions, structure and contents (statistical topics) of the resulting framework.

f) EGM on FDES (May 2011)

- The EGM adopted the objective, scope and coverage of the revised FDES.
- The EGM invited the Working Groups, formed during the meeting, to further elaborate and fully describe their proposals for the structure, components and building blocks of the revised FDES and send them to UNSD after the meeting.
- The EGM requested UNSD to elaborate the final proposal for the structure based on the contributions from the Working Groups.

f) EGM on FDES (May 2011) (cont)

The EGM appreciated the progress made towards the identification of a core set of environment statistics, and:

(i) agreed with the process that had been followed;

(ii) agreed that the leading criteria for the selection of the core set should be policy relevance, measurability, methodological soundness and frequency of use; and

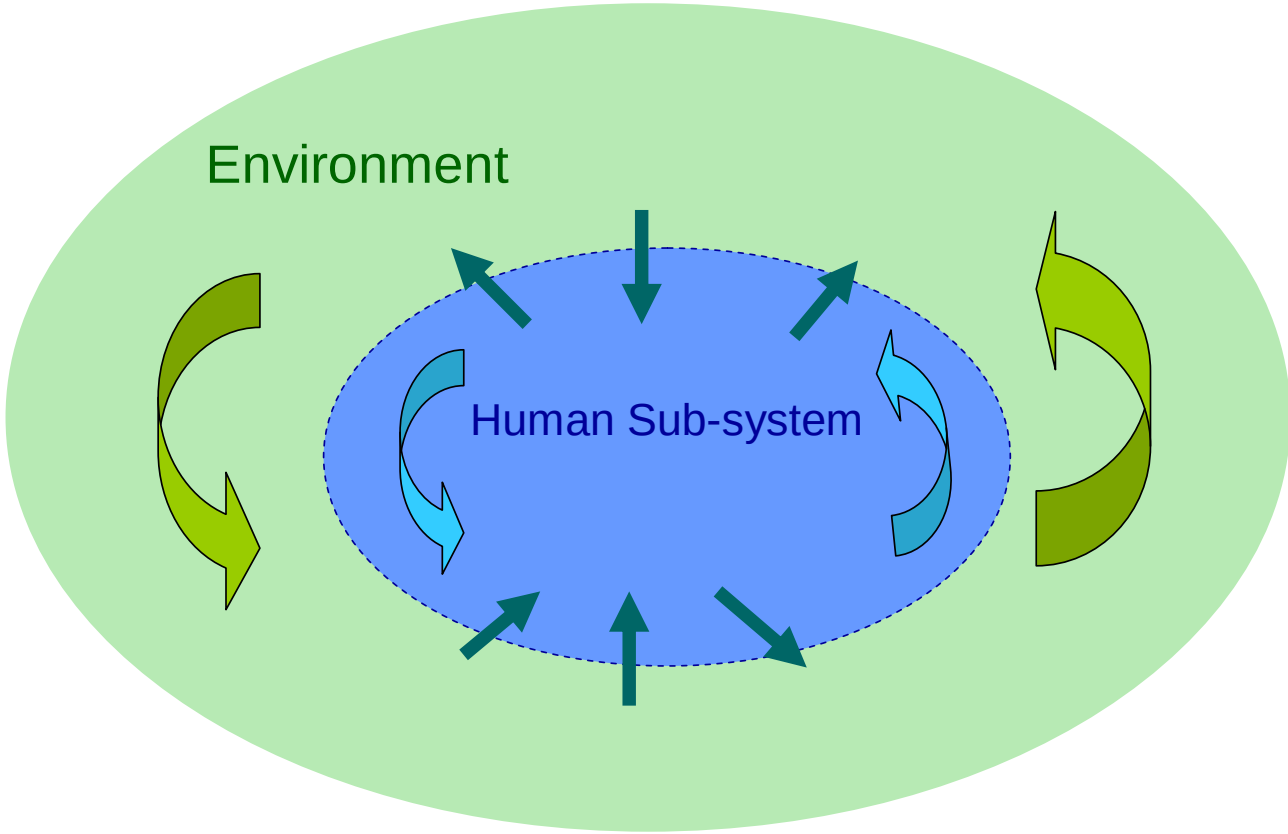
(iii) recommended that UNSD continue the work following the evolving structure of the revised FDES.

g) EGM on FDES (Nov 2011)

- Acknowledged with appreciation the progress of the draft chapters of the revised FDES and congratulated UNSD for the work done.
- Discussed the draft chapters, identified the gaps, and made detailed recommendations.
- Agreed that the core of the FDES consists of current chapters 3 and 4 (Objective and scope, place in the overall framework of statistics, relationship with the SEEA, conceptual foundation, structure and components of the FDES) and chapter 5 (core set of environment statistics).
- The Statistical Commission at its 43rd session in Feb. 2012 is expected to approve the core chapters of the revised FDES and endorse the steps to finalize the revision.

h) EGM on FDES (Nov 2011) (cont)

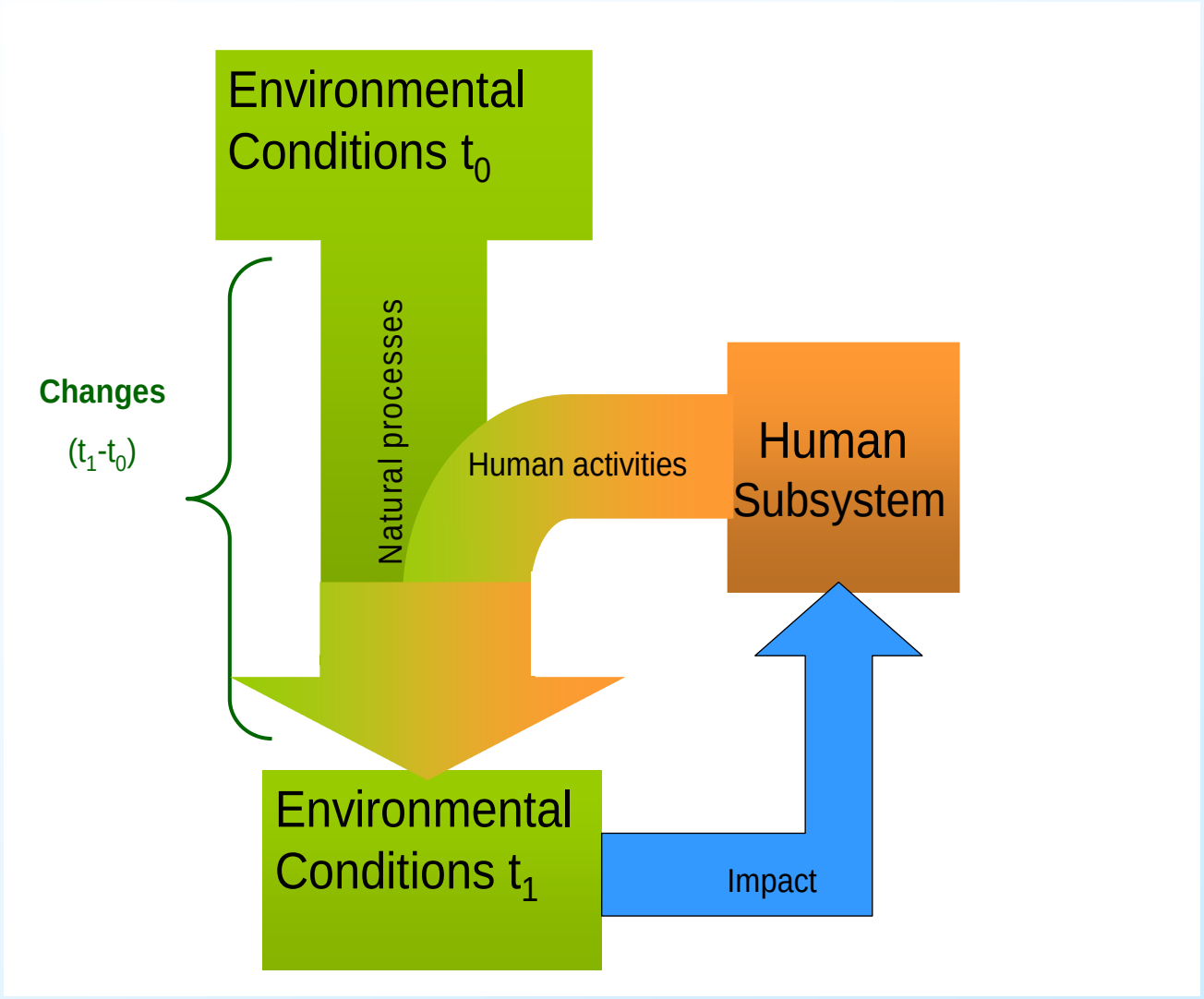
The following slides provide a background to and an overview of the proposed structure of the revised FDES.



Processes within the environment

Processes within the human sub-sytem

Interactions between the environment and the human sub-system



FDES Conceptual foundation- preliminary

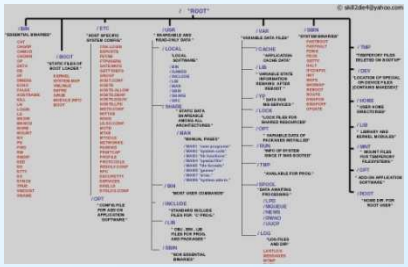
Rev. FDES structure:

Matrix

impact category	Wind electricity	Natural gas power	Photovoltaic electricity	Nuclear electricity
Acidification	0.0000103	0.000384	0.000056	0.0000139
Ecotoxicity	0.0277	0.0179	0.178	0.0345
Fossil fuel depletion	0.0000288	0.00126	0.000193	0.0000222
Global warming	0.000234	0.00439	0.0012	0.000221
Human carcinogen	0.0493	0.0695	0.212	0.0456
Human respiratory	0.0000285	0.000502	0.0000955	0.0000254
Human toxicity	0.0163	0.0457	00.0744	0.000136
Ozone layer depletion	0.00000004	0.0000001	0.0000008	0.000004
Photochemical smog	0.0000067	0.0000368	0.0000349	0.0000093
Water eutrophication	0.0000305	0.0000525	0.000165	0.0000227
Total millipoints / kw-hr	0.0936	0.1397	0.466	0.217

- Widely used in statistics
- Allows 2-dimensional analysis: intersection of rows and columns
- Simple representation
- Difficult to capture relations among components
- Requires overall fit in contents of rows and columns (analytical categories apply and relevant to all environmental components)

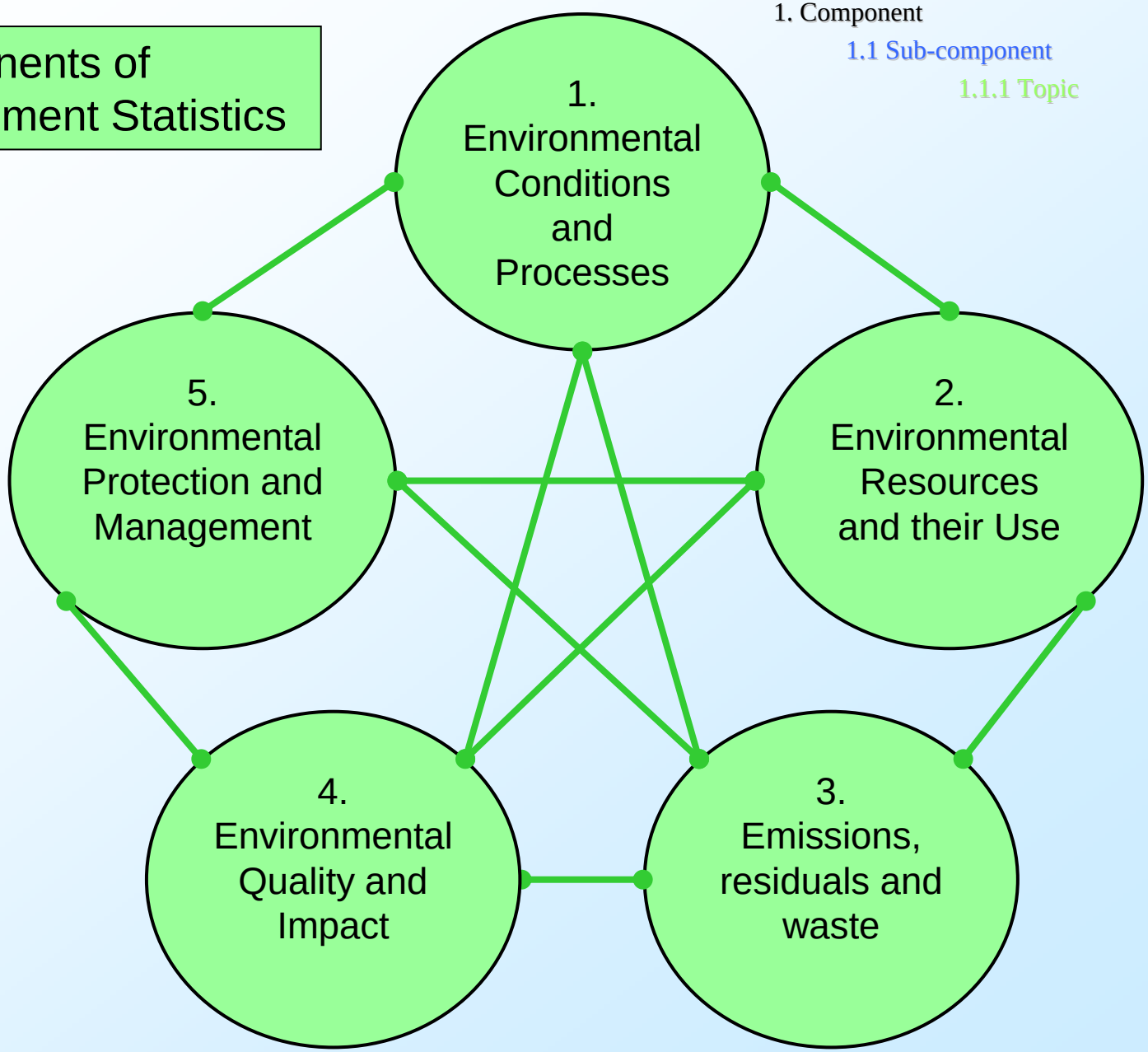
Hierarchical



- Allows different disaggregation within each theme (no columns needed)
- Representation from simple lists to three-dimensional
- Does not require overall fit among rows and columns contents

Hybrid: combination of matrix and hierarchical

Components of Environment Statistics



FDES, Components preliminary.

Structure and components of the FDES

1. Environmental Conditions and Processes
    - 1.1. Topography and Geology
    - 1.2. Weather, Climate and Atmosphere
    - 1.3. Hydrological systems
    - 1.4. Flora, fauna and biodiversity
    - 1.5. Ecosystems
    - 1.6. Natural Disasters and Extreme Events
2. Environmental Resources and their Use
    - 2.1. Stocks and changes of stocks of environmental resources
        - 2.1.1. Land
        - 2.1.2. Water
        - 2.1.3. Energy
        - 2.1.4. Non-energy minerals
        - 2.1.5. Soil
        - 2.1.6. Biological resources
    - 2.2.Use and management of environmental resources
        - 2.2.1. Land
        - 2.2.2. Water
        - 2.2.3. Energy
        - 2.2.4. Non-energy minerals
        - 2.2.5. Soil
        - 2.2.6. Biological resources
3. Emissions, Residuals and Waste
    - 3.1. Generation
        - 3.1.1. Emissions to air and atmosphere
        - 3.1.2. Wastewater and emissions to water
        - 3.1.3. Solid waste
        - 3.1.4. Use of chemicals
    - 3.2. Management
        - 3.2.1. Emissions to air and atmosphere
        - 3.2.2. Wastewater and emissions to water
        - 3.2.3. Solid waste
        - 3.2.4. Use of chemicals
    - 3.3. Discharge to the environment
        - 3.3.1. Emissions to air and atmosphere
        - 3.3.2. Wastewater and emissions to water
        - 3.3.3. Solid waste
        - 3.3.4. Use of chemicals
4. Environmental Quality
    - 4.1. Air quality
    - 4.2. Freshwater quality
    - 4.3. Marine water quality
    - 4.4. Land contamination
    - 4.5. Contamination of flora, fauna and foodstuff
    - 4.6. Impacts on human health and well-being
    - 4.7. Perception of environmental quality
5. Environment Protection and Management
    - 5.1. Environment protection and resource management expenditure
    - 5.2. Environmental governance, regulations and engagement
    - 5.3. Environmental information, education and action

II. Core set of environment statistics

- For the EGM in May 2011 UNSD compiled 2575 statistics/indicators from 37 sources (65 lists/sets) comprising international, regional institutions, conventions etc., selected 10 themes (and sub-themes) under which to organize them, and then presented a more refined list of statistics/indicators to the meeting.
- The EGM: (i) agreed with the process being followed; (ii) agreed that the leading criteria for the selection of the core set should be policy relevance, measurability, methodological soundness and frequency of use; and (iii) recommended that UNSD continue the work following the evolving structure of the revised FDES.

II. Core set of environment statistics (cont)

- The EGM expressed that it had to be kept in mind that the objective was to set up a core (minimum) set of environment statistics that all countries would produce based on standardized methodologies.
- The EGM reinforced the point that the core set should be about “statistics” and not indicators.
- The EGM agreed that the core set would be: allocated in the FDES structure; combined into the FDES document; part of the global consultation process; and submitted to the Statistical Commission in 2012 for adoption.

II. Core set of environment statistics (cont)

- UNSD presented to the EGM in Nov. 2011 a compilation of the most frequently used indicators allocated in the proposed structure of the revised FDES, according to its five components and their related sub-components, topics and sub-topics.
- UNSD updated the sets of indicators/statistics since the EGM – now a total of 80 lists/sets of statistics/indicators sourced from 40 agencies.
- A sub-group of the EGM has been set up to assist UNSD with the finalization of the core set and work is underway.
- The Statistical Commission at its 43rd session in Feb. 2012 is expected to approve the core chapters of the revised FDES, including the one on the core set of environment statistics.