

## ***The EEA Indicator Fact Sheet Model***

### **Concept**

During the past three years the EEA has used a standard model for indicator reporting in two Environmental signals reports and the first TERM report. In general the experiences are positive: the indicator and the assessment are documented in a standard way; the indicator fact sheet as such can be used as background document to each individual indicator (and published by making it downloadable from the web) and it is generally easy to re-use the information for several publications.

Using the experiences of the past years an improved indicator fact sheet model has been developed. Use of this model will be compulsory for all indicators developed by or for the EEA.

### **Design changes compared with earlier models**

As we aim to publish all indicators on the web as soon as they have been finalised, some changes for easy extracting of the information for web-publishing have been made: for 'support indicators' or 'support graphs' that contain other data than the main graph now separate indicator fact sheet need to be developed; the 'Key message' box now allows for a text of 5 lines.

Requirements for rationalising the production process of indicator led to the introduction of the concept that an indicator fact sheet, if relevant, also contains the detailed indicators needed for reporting with a special viewpoint. For example: the indicator fact sheet on final energy use contains also the indicators needed for TERM (final energy use by the transport sector), and for any other sector reporting mechanism; the indicator fact sheet on sulphur dioxide emissions could also contain the indicators on SO<sub>2</sub> emissions by transport, by the energy industry and fossil fuel related SO<sub>2</sub> emissions. It is obvious that requests for the more detailed indicators must be discussed with the responsible project managers well in advance.

Several other small changes have been introduced, the most important of which are:

- A box for references has been added;
- The definition of the 'Data' section has been improved;
- A scoring system to indicate the quality of the indicator has been added to ask for more attention for the quality information on the indicator (this information can be used to create a quality icon next to each indicator).

It is important to stress that the Metadata box still follows the Catalogue of Data Sources (CDS) standards ("Standard element set for GELOS records").

### **The making of a good indicator**

Communication is the main function of indicators. Environmental indicators provide information that is considered to be critical to the development of environmental problems. It is on this information base that decision makers (ranging from individual consumers to high level policy makers) decide to take action or not. Each newly developed indicator must thus be screened on its relevancy for deciders: does the indicator give the incentive to undertake an action?

To make this communication process work simplicity is needed. Indicators simplify a complex reality. An indicator distils information derived from analysing data obtained by monitoring and data collection. Raw data or statistics do not make an indicator without the results of analysis and synthesis. As a bare minimum an explanation must be given of the (possible) causes of change (or lack of change) shown by the indicator.

Linking to other indicators and telling the story about the features of the larger system should overcome the risk of losing the sense of interrelations between processes in society and the environment. The DPSIR framework is to be used to place an indicator into the context of human activities and their environmental impacts and the societal responses to these impacts.

A good graphical presentation of the information is key for communication: too often the message behind an indicator is lost because, for instance, the countries in a bar chart are ordered alphabetically. The guideline for the presentation of statistics developed by the Environment Agency of England and Wales should be used. An electronic copy can be found in the indicator interest group on CIRCLE [http://eea.eionet.eu.int:8980/Members/irc/eionet-circle/indicator/library?l=/general\\_documents&vm=detailed&sb=Title](http://eea.eionet.eu.int:8980/Members/irc/eionet-circle/indicator/library?l=/general_documents&vm=detailed&sb=Title)

Part of the presentation of the indicator is the attention for reliability. Apart from a proper and as far as possible quantitative documentation in the 'Meta-data' box, presentation of confidence intervals in the graph has a big value added.

There are different types of indicators useful in the context of supporting environmental policy: descriptive indicators (type A), performance indicators (type B), efficiency indicators (type C) and policy effectiveness indicators (type D). Descriptive indicators exist for all elements in the DPSIR framework, and describe the development of a variable related to an environmental issue. In fact, all indicators are descriptive but not all indicators are performance indicators.

Performance indicators measure the achievement of stated objectives or with a specific set of reference conditions. By doing this they enable a 'distance to target' assessment. Performance indicators are especially relevant if specific groups or institutions can be held accountable for reaching the targets. Performance indicators relate mostly to Driving Forces and Pressures, sometimes to State.

Some indicators express the relation between separate elements of the DPSIR causal chain. Eco-efficiency indicators, which relate pressures to human activities (P/D), give insight in the change in the efficiency of use of the environment in processes or products. As a "2% increase per year in energy efficiency" means the same for a company as for a municipality as for a national government, these indicators are very suited to enable communication and target setting at various levels in society

Policy effectiveness indicators are relatively new: they show the effect of structural changes in the economy and of policy measures relative to a reference scenario. See EEA, Environmental signals 2000, page 69; and 2001, page 32 and 41. As these indicators include the analysis in the graph, they are very powerful in communicating how measures/policies have worked with respect to other developments in societies.

## Test questions

The following questions are a test to be applied to each draft Indicator Fact Sheet:

- Is the indicator attractive to the eye (accessible)?
- Is the indicator easy to interpret correctly?
- Does it match the interest of the target audience? Does it invite to take action?
- How is this indicator representative to the issue or area being considered?
- What are the causes behind the development (trends) of the indicator?
- Is the indicator based on data which are updated at regular intervals?
- What is the shortest time period required to show change?
- Is there a reference value for comparing changes over time? What is this value? What change could be expected when random errors are considered?
- Is the data (raw data or indicator data) allowing international comparability? What would make the data non-comparable (differences in national definitions, changes over time to the definition and methodologies, etc.)?
- Scientifically, is the work well done? Is the indicator well founded and of good quality (data & methodology)?
- Is there consensus on the data validity: data collection methods, statistical methods, etc.?

## The Model

The model of the Indicator Fact Sheet is presented on the next pages together with a guideline for completing the sheet.

**Indicator Fact Sheet**

**(Code) Title of indicator (add 'EEA', 'ACC', etc. if there are different versions)**

☺ ☹ ☺

**Key message** [5 lines]

**(Technical title of graph)**

insert: One graph  
(via copy/paste special/picture)

Notes: >>add relevant notes in the indicator fact sheet word document, as they should appear in the final publication<<

Sources: >>add source as it should appear in the final publication<<

**Results and assessment**

Section describing (can be as one continuous text, the balance of topics may vary depending on the type of indicator):

Policy relevance: target or objective for the indicator

>> insert: 1-5 lines of description <<

Policy context (relevance of the indicator with reference to specific policy processes)

>> insert:5-10 lines of description <<

Environmental context: (scientific soundness and choice and definition of the indicator)

>> insert:5-10 lines of description <<

Assessment

>> insert: 15 lines of description <<

**Subindicators**

If a subdivision of the indicator (for instance by country, by sector, by fuel type) will be used in the same or another publication, include here for each graph:

☺ ☹ ☺ **Key message** [5 lines]

**Technical title of sub-graph**

Insert graph

Notes: >>add relevant notes in the indicator fact sheet word document, as they should appear in the final publication<<

Sources: >>add source as it should appear in the final publication

**Assessment for the sub-indicator**

>> insert: 15 lines of description <<

## References

>> insert the bibliographical details of the references used or cited <<

## Data

>> If you consider it useful for a publication or for this indicator fact sheet to provide statistical data, insert then a publication-ready table (that is: a WORD table, not a link to a spreadsheet) with statistics on country level and as a total for a relevant country grouping. Data should be made comparable between countries (by dividing by population, land area, GDP etc) if that enhances the use of the table. Select in the number of years if necessary to keep the table readable.

>> The background data for producing the indicators should be provided as three spreadsheets in a workbook, with clearly marked tabs:

A) base data (by country and year)

B) manipulated data (for the indicator)

C) graph <<

>> Mention the file name here: Spreadsheet file:

## Meta data

### Technical information

1. Data source:
2. Description of data:
3. Geographical coverage:
4. Temporal coverage:
5. Methodology and frequency of data collection:
6. Methodology of data manipulation, including making 'early estimates':

### Quality information

7. Strength and weakness (at data level):
8. Reliability, accuracy, robustness, uncertainty (at data level):
9. Overall scoring (give 1 to 3 points: 1=no major problems, 3=major reservations):

Relevancy: <see Description of elements for definitions>

Accuracy:

Comparability over time:

Comparability over space:

## Further work required

<< for most indicators necessary; insert short description >>

## Descriptions of all elements

Fact Sheet Element	Description/definition
<b>1. General + graph</b>	
Language	The working language for the indicator fact sheets is English.
File format	Digital files of the Fact Sheet : Microsoft Word (the EEA uses currently Word 2000, v.9.0) Digital files of spreadsheets: Microsoft Excel (the EEA uses currently Excell 2000, v.9.0)
Codes	A coding system helps to keep some order in a pile of indicator fact sheets. Indicator codes need to be systematically assigned by project managers.
Title/name of graph	This is a short descriptive title of key words (maximum 10 words). It clarifies to add 'EU' or 'EEA' or 'Accession countries' to the title if the geographical scope is not clear from the graph itself. Idem for the year if that is not clear from the graph. It is not necessary to add in the title: the units (because that should be with the axis), the time span (like 1990-1999, because you can see that also from the axis), or the subdivisions in the graph if these are already clear from the lay-out of the graph (the famous: "population broked down by sex and age").
Graph / diagram / map	The following is a check list. Each graph must have: <ul style="list-style-type: none"> <li><input type="checkbox"/> Years, preferably on the x-axis.</li> <li><input type="checkbox"/> Units of measure, on y-axis.</li> <li><input type="checkbox"/> Legend, key of symbols.</li> <li><input type="checkbox"/> Notes located below the graph (in Word).</li> <li><input type="checkbox"/> Source information - place below the graph (in Word).</li> <li><input type="checkbox"/> Check if the graph is still readable if reproduced with a black/white photocopying machine.</li> </ul> <p>Use the guideline for the presentation of statistics (Env. Agency England and Wales).</p> <p>Note that also another graphical presentation, like a map, can be the main indicator.</p>
Targets	Include on the graph relevant policy and/or sustainability targets.
Geographical groupings	The following are guidelines for the geographical groupings of countries: <ul style="list-style-type: none"> <li>• EU15: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, United Kingdom.</li> <li>• EFTA 3: Iceland, Norway and Liechtenstein ( ! not Switzerland).</li> <li>• EU15 + EFTA 3: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, United Kingdom, Iceland, Norway and Liechtenstein (not Switzerland)</li> <li>• North EU + EFTA 3: Austria, Belgium, Denmark, Finland, Germany, Ireland, Luxembourg, the Netherlands, Sweden, United Kingdom, Iceland, Norway and Liechtenstein</li> <li>• North EU: Austria, Belgium, Denmark, Finland, Germany, Ireland, Luxembourg, the Netherlands, Sweden, United Kingdom</li> <li>• South EU: France, Greece, Italy, Spain, Portugal</li> </ul>
Time series	In general a time series 1980 – the most recent year is preferred, if not possible present 1990 – the most recent year. Explore possibilities to provide an early estimate for the previous (or even the current) year.

Fact Sheet Element	Description/definition
Key message	<p>This is the eye-important message for each graph presented. Examples include:</p> <ul style="list-style-type: none"> <li>• ☺ In England, about 55 per cent of new homes are now built on previously developed land. The Government has set a target of 60 per cent to be achieved by 2008.</li> <li>• ☺ In Iceland the total length of roads has remained stable for the last 15 to 20 years and no major changes are expected in the near future. Iceland has just over 0.1 km road per km<sup>2</sup> land.</li> <li>• ☹ Although between 1980 and 1990 the NO<sub>x</sub> deposition in the Netherlands dropped slightly, the actual emissions from Dutch sources did not drop in that period. The reductions achieved by cleaner cars and power plants was off set by growth in the number of vehicles and equipment.</li> </ul> <p>Keep the text length to five lines.</p>
Positive, neutral, negative assessments	<p>There are 3 rankings or subjective valuations available:</p> <ul style="list-style-type: none"> <li>• Positive ☺: <ul style="list-style-type: none"> <li>- development of <i>driving forces</i> or <i>responses</i> in a direction that reasonably should lead to lower environmental pressures</li> <li>- decreasing <i>pressures</i> on the environment in such an extent that targets have been reached or are coming within reach</li> <li>- decreasing <i>pressures</i> on the environment showing (the beginning of) an absolute decoupling from the development of the causing activities</li> <li>- improvement in the <i>state</i> of the environment, targets/guidance values only exceeded in a small (&lt;15%) part of the area/for a small (&lt;15%) part of the population.</li> </ul> </li> <li>• Neutral ☺: <ul style="list-style-type: none"> <li>- developments in the <i>driving force</i> or in <i>pressures</i> on the environment are levelling of</li> <li>- reductions in <i>pressures</i> on the environment, but insufficient to bring targets within reach</li> <li>- reductions in the concentration levels/improvement in the <i>state</i> of the environment, but targets/guideline values are still exceeded in &gt;15% of the area/ for &gt;15% of the population</li> <li>- no changes in <i>pressure</i> on and <i>state</i> of the environment</li> <li>- mixed developments within the indicator.</li> </ul> </li> <li>• Negative ☹: <ul style="list-style-type: none"> <li>- <i>driving force</i> or <i>response</i> development that reasonably should lead to higher environmental pressures</li> <li>- increasing <i>pressures</i> on the environment</li> <li>- decreasing <i>quality</i> of the environment.</li> </ul> </li> </ul> <p>The assessment value needs to be presented next to the “key message” of each graph. Unless it is mentioned explicitly, the assessment should be made for the whole period shown.</p>

## 2. Results and assessment

This section can be written as a continuous text, but needs to pay attention to the following questions. Depending on the type of indicator (more scientific versus more political) the balance can vary. Keep the text short and to the point.

Policy relevance: targets for the indicators	What policy targets been agreed for the variable? And are there sustainability reference values available? And what is the distance to target?
Policy context	<p>What is the policy relevance of the indicator? For which policy process has the indicator been developed? Add references to policy documents which contain the policy statements that are to be evaluated with this indicator.</p> <p>Which policy instruments may influence the developments in the indicator? (note: some indicators have been added mainly because of public concern, describe in that case, why so).</p>
Relevance of the indicator for describing developments in the environment	<p>For which environmental process is the indicator indicative? (refer to other indicators if relevant)?</p> <p>What does the indicator show that we should be concerned about?</p>
Assessment	The assessment is the elaboration of the key message in more details; it

	<p>must cover the following elements:</p> <ul style="list-style-type: none"> <li>- the explanation of the trend: what have been the causes for its development. Be as precise and quantitative as possible, give results of and refer to background studies analysing the effect of various technical measures and structural developments in the various countries. Include relevant country specific assessments</li> <li>- list separately the policy measures that have influenced the trend and give an account of the magnitude of the influence.</li> <li>- the reasons why targets/guidance values are reached or not reached. Mention relevant policy developments which have hindered/promoted reaching of the targets. Mention, if not done already, developments in society and technology that have played a role.</li> <li>- the implications of the development of the indicator (1) for the environment (refer to other indicators) and (2) for policy makers.</li> </ul> <p>If relevant highlight any national/regional differences.</p>
<b>3. References</b>	
	<p>Provide literature references for the assessment. May include webpages, Use the EEA style guide</p>
<b>4. Data</b>	
Presentation of a data table	<p>Contents and design of a table are determined by needs of the reader: national breakdowns, complementary information to the graph. This box is not intended for basic data for the graph that can be made available electronically (via the data service or by sending an Excell sheet).</p> <p>Make sure that each table has:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> title in key words.</li> <li><input type="checkbox"/> units of measure.</li> <li><input type="checkbox"/> headings for all columns and all rows, definitions of the headings are defined in the notes at the bottom of the table (if not obvious).</li> <li><input type="checkbox"/> table notes are provided under each table and explain key data issues found within the table.</li> <li><input type="checkbox"/> a source of the data</li> <li><input type="checkbox"/> decimal symbol is the “.” (point) and not “,” (comma).</li> <li><input type="checkbox"/> put years always on top of the columns</li> </ul> <p>put countries always in the rows</p>
<b>5. Meta Data</b>	
<b>Technical information</b>	<p>This section refers to all descriptive and technical information about each indicator. This information is essential, and all the elements are considered mandatory.</p>
Data provider (source)	<p>Usually one international source of data will be used. Here is a check list, for citing the data source:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Contact organisation.</li> <li><input type="checkbox"/> Point of contact / person.</li> <li><input type="checkbox"/> Copyright and other restrictions that might apply.</li> <li><input type="checkbox"/> Other places where the data has been published.</li> </ul>
Description of data	<p>For purposes of retracing the information the following information should be provided:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Original name of the data file.</li> <li><input type="checkbox"/> Unit of measure of original data.</li> <li><input type="checkbox"/> Original projection files (geographic data).</li> <li><input type="checkbox"/> Original purpose of the data.</li> </ul>
Geographical coverage	<p>This indicates if the extent of the source data includes EU15, EU15 + EFTA 3, pan Europe, etc. .</p>

Fact Sheet Element	Description/definition
<p>Temporal coverage</p> <p>Methodology and frequency of data collection</p>	<p>Describe the time referencing of the data (annual, bi-annual, daily, etc.) Clearly note all times for which data was observed, the earliest temporal coverage and the most recent, and in-between.</p> <p>Summarise the methodology used to collect the raw data, and note the frequency of this collection procedure.</p> <p>Example: A data set is collected by a house to house survey of a sample set of the population. The results are then extrapolated to provide an idea of the entire population. Data are gathered annually by each country.</p>
<p>Methodology of data manipulation: from base data to indicator</p>	<p>Describe the methodology used to create the indicator. Provide:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> formulas and calculations; weighting factors</li> <li><input type="checkbox"/> assumptions that influence the methodology (e.g. reliability);</li> <li><input type="checkbox"/> name of equation or the statistical method,</li> <li><input type="checkbox"/> management of rounding up or down, errors, decimals, etc.</li> <li><input type="checkbox"/> methodology for creating an 'early estimate (data for the year n-1).</li> </ul> <p>As it has appeared that others who are redoing the indicator with their own data use this section, please check if the information provided is sufficient for an outsider to repeat the indicator construction!</p>
<p><b>Quality information</b></p>	<p>This section refers to quality of the information, and the focus is the data level. This information is important to develop a full appreciation of the indicators presented in a Fact Sheet, and all the elements are considered mandatory.</p>
<p>Strength and weakness (at data level)</p>	<p>This is for the data level. Describe the strengths of a data set, and also the weaknesses of the data set.</p> <p>Examples include: <i>Strength</i> of a data set is the mandatory requirement for the collection and the results are harmonised at the EU level. <i>Weakness</i> of a data set is that different definitions or methodologies are used, and so the results are not completely comparable.</p>
<p>Reliability, accuracy, precision, robustness, uncertainty (at data level)</p>	<p>At data level - the purpose is to record the quality of the data being used, what is known and unknown.</p> <p>Example: if a data set is based on a survey of the population, and the figures for the total population are derived by extrapolation, then the reliability of the data values is dependant upon the original sample size.</p>
<p>Overall scoring</p>	<p>Relevancy: closeness of the indicator to the information that would be needed for answer policy questions.</p> <p>Accuracy represents issues such as comparability of the data, reliability of data sources, coverage of the indicator, validation of results through sensitiveness analysis</p> <p>Comparability over time relates to the completeness of the time series and the consistency of the methodology over time</p> <p>Comparability over space relates to the number of countries represented in the indicator, the use of the same or similar methodologies in these and the reliability within the countries.</p>
<p><b>6. Further work required</b></p>	
	<p>This addresses both the data level and indicator level.</p> <p>Reflect with expert knowledge what is and is not available, and what would be the most useful next steps: new data, better data, revised methods, etc.</p> <p>Also reflect on the continued usefulness as policy relevant indicator and to provide information. Have relevant policy questions been changed so much that the indicator does not match the requirements any more?</p>