

THE ISSUE OF EVALUATION IN THE FRAMEWORK OF EUROPEAN ENVIRONMENTAL POLICY

In the framework of a series of strategic reflections and activities launched by the Brussels-Capital Region in view of the future Belgian presidency under the title "Towards a real seventh Community Environmental Action Programme (7EAP)", Brussels Environment and the Spanish Ministry of the Environment have decided to organise a workshop, "Better Instruments for European Environmental Policy", in Madrid on 20/05/2010. Three themes have been put on the agenda: "better regulation", "better evaluation" and "better implementation".

The present note aims to assemble some items of information for the discussion of evaluation. The outline is as follows:

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ASPECTS OF EVALUATION OF ENVIRONMENTAL ISSUES

The 6th Community Environmental Action Programme¹ (6EAP) specifies in its Article 10, with regard to the issue of evaluation: " *The objectives set out in Article 2 on environment policy-making based on participation and best available scientific knowledge and the strategic approaches set out in Article 3 shall be pursued by means of the following priority actions : ...*

(e) ensuring regular information, to be provided starting from 2003, that can help to provide the basis for:

- *policy decisions on the environment and sustainable development,*
- *follow-up and review of sectoral integration strategies as well as the Sustainable Development Strategy,*
- *information for the wider public.*

The production of this information will be supported by regular reports from the European Environment Agency and other relevant bodies. This information shall consist notably of:

- *headlines environmental indicators;*
- *indicators on the state and trends of the environment;*
- *integration indicators.*

WHAT DOES ONE WANT TO EVALUATE?

Environmental evaluation takes place on two levels:

- Evaluation of the state of the environment (status, pressures on the environment, impacts on human health, ecosystems, the economy, etc.);
- Evaluation of the implementation of policies and their efficacy.

Evaluation of the state of the environment allows an assessment of the situation to be made, as is or in comparison to specified final environmental objectives. It is necessary to aid in identifying policies to implement or in reorienting policies implemented.

Evaluation of the implementation of policies and their efficacy can seem much more administrative. It is, however, necessary insofar as causality relations between the state of the environment, its variation (in comparison to final objectives) and policy implementation are not apparent.

All levels of authority are involved, from local to international (including the European level).

The state of the environment

In the 70s, the emergence of environmental concerns was given concrete form in Europe by the adoption of the first environmental action programme, which gave the go-ahead for the State of the Environment evaluations (SOER 1977 and 1979).

The CORINE² programme was established to make coherent and comparable information on the state of the environment and natural resources of the Community available to the third community action programme (SOER 1986). It was then modified³ (SOER 1992).

¹ Decision 1600/2002/EC of the European Parliament and Council of 22 July 2002 establishing the sixth community environmental action programme ([OJ L 242 of 10/09/2002](#))

² Council decision 85/338/EEC of 27 June 1985 on adoption of the work programme of the Commission concerning an experimental project for collection, coordination and ensuring the consistency of information on the state of the environment and natural resources in the Community - OJ no. L 176 of 06/07/1985, pp. 0014 - 0017.

³ Council decision 90/150/EEC of 22 March 1990 modifying decision 85/338/EEC on adoption of the work programme of the Commission on an experimental project for collection, coordination and ensuring the consistency of information on the state of the environment and natural resources in the Community - OJ L 81 of 28/3/1990, pp. 38

In the context of the 5th environmental action programme, the European Environment Agency was set up. Drafting a State of the Environment report is one of its missions (SOER 1995, 1999, 2005 and soon [2010](#)).

The state of the economic situation

The evaluation of the economic situation goes back much further. It began in the 1930s, a period of major economic crisis, with the development of an index designed to measure economic activity: the gross domestic product (GDP). It represents the gross value of the goods and services produced within a country over a given period (year, quarter).

Over time, GDP became a standard reference used by decision-makers around the world and frequently cited in public debates⁴: contribution to the budget of the European Union, eligibility for access to structural funds/cohesion funds, convergence criteria, growth objectives, aid to development, research and development investments, etc.

GDP even became an indicator of the overall development of society, an indicator of progress in general. But this was never its intention; its inventors were already aware of this. A few examples illustrate this discrepancy:

- GDP increases in the event of natural catastrophe due to the expenses involved in reconstruction, but the cost of the catastrophe itself is not taken into account.
- It is more advantageous for the GDP to have one's children kept by a "nanny" paid to do this than to call upon grandparents or, worse yet, to stop working to take care of them oneself. What the children think of this is not the concern of the GDP!

During the Lisbon European Council of March 2000, the heads of state and government of the European Union initiated an ambitious programme aiming to respond to the economic developments brought about by globalisation. As a consequence, they requested the European Commission to present an annual report on progress made in terms of employment, innovation, economic reform, social cohesion and the environment. And structural indicators were specified allowing performances of the Member States in these areas to be evaluated quantitatively and compared.

... and with regard to sustainable development

Already in 1994, in the communication "Economic Growth and the Environment"⁵, the Commission considered that it was necessary to "*transform the principle of sustainable development into a more tangible and measurable concept". It added, "*There are a number of concrete policy steps that authorities could take in order to further the development of economically efficient policies that contribute to environmentally sustainable growth. Among these ... there is a need for improved statistics in this field in order to assist policy makers in devising sound policies and in evaluating them. The development of environmental pressure indicators and indices, satellite accounts to existing national accounts, and in the long run, of integrated economic/environmental national accounts, announced in the fifth environmental action programme, should thus receive clear support*".*

After a long process of revision begun in 2004, the heads of state and government adopted the new strategy of the Union in favour of sustainable development⁶ in June 2006. Certain points of this strategy concern evaluation more specifically:

- 33. The Commission will submit every two years (starting in September 2007) a progress report on implementation of the sustainable development strategy in the EU and the Member States also including future priorities, orientations and actions. As for monitoring at EU level, the Commission will, in analysing the state of play with regard to the challenges described above, draw on a*

⁴ [The use of indicators in the European Commission](#) - Stephen White, Oliver Zwirner - European Commission, DG ENV - November 2007

⁵ Economic growth and the environment: some implications for economic policy - [COM\(94\) 465 final](#) - 03/11/1994

⁶ Renewed EU Sustainable Development Strategy- Council of the Union - [ST 10117/06](#) - 9 June 2006

comprehensive set of sustainable development indicators (SDIs), taking into account the Eurostat sustainable development monitoring report to be updated every two years, as well as on the latest scientific evidence and on developments in relation to key EU activities (strategies, action plans, legislation).

34. *To ensure both a comprehensive and in-depth coverage of the complexity of sustainable development, the indicators are to be developed at the appropriate level of detail to ensure proper assessment of the situation with regard to each particular challenge.*
35. *The Commission, in cooperation with Member States, through the working group on sustainable development indicators, will further develop and review indicators to increase their quality and comparability, as well as their relevance to the renewed EU SDS, also taking into account other indicator initiatives and focusing on those indicators marked as most needed.*
36. *In 2007 at the latest, and at regular intervals after that, the Council will examine progress with regard to sustainable development indicators and will consider endorsement of a limited set of indicators for monitoring the sustainable development strategy at EU level and for communication purposes.*

Under the impetus of the Swedish presidency, conclusions⁷ were adopted in the Environment Council of 21/10/2009. These promote eco-efficiency of the economy to the rank of essential elements of the post-2010 Lisbon Strategy. This is a very important recognition of the necessity of conducting environmental and economic policies harmoniously in a sustainable approach. The conclusions request the Commission moreover "to complement GDP with additional robust, reliable and widely recognised indicators, to measure progress towards an eco-efficient economy, and to develop, together with Member States, a sustainable development scoreboard by 2010, which will provide information on the implementation of EU sustainable development objectives in Member States".

Policy evaluations

In the continuation of the introduction of the sustainable development concept into treaties (Amsterdam, 1997) and the definition of a sustainable development strategy (Göteborg, 2001), a new method of policy development originated, obliging the Commission to perform an impact analysis for every new policy.

Obligations with regard to evaluation are also imposed within the Commission on financial regulations⁸ and communication with regard to evaluation⁹:

- The financial regulation of June 2002 requires that all programmes and activities leading to significant expenditures be subject to "ex ante" and "ex post" budgetary evaluations. These obligations are presented in detail in the implementation methods for financial regulation. A guide¹⁰ was also published by the DG Budget. It must be updated and supplemented in order to complete the guidelines on impact analysis.
- The communication of February 2007 on evaluation requires that all actions of the Commission addressed to external parties must be regularly evaluated. It also includes a set of evaluation standards.

It should be stressed however that "ex ante" evaluation and impact analysis have different functions and aims. While "ex ante" evaluation mainly concentrates on optimal use of resources, in other words the cost-efficiency relation of all the expenditure/action programmes proposed for the community budget, the impact

⁷ Towards Sustainability: Eco-efficient economy in the context of the post 2010 Lisbon Agenda and the EU Sustainable Development Strategy - Council conclusions - [ST 14891/09](#)

⁸ Regulation no. 1605/2002 of the Council of 25 June 2002 on financial regulations applicable to the general budget of the European Communities - OJ L 248 of 16/9/2002, p. 1

⁹ Responding to strategic needs: reinforcing the use of evaluation - [SEC\(2007\)213](#) - 21/02/2007

¹⁰ Ex ante Evaluation - Practical guide for development of expense programme proposals - 2001

analysis is on the other hand guided by policies and strives to determine whether the impact of the principal proposals for action is sustainable and compliant with the principles of improving regulation.

HOW TO EVALUATE?

Indicators: single indicators, sets of indicators, compound and matrix indicators

Environmental evaluation is essentially based on analysis of quantifiable indicators developed from available data.

Generally speaking, the principal function of an indicator is communication of information, accompanied by a simplification of the actual situation. The objectives pursued or the type of public will however involve use of various types of indicators:

- A single indicator corresponds to a single theme, and does not integrate interconnections that exist with other themes. It is often easily comprehensible, but of limited scope;
- Interest in sets of indicators became very apparent in the 1990s following the Rio Summit. Chapter 40 of Agenda 21 in fact requested the countries signing to develop quantitative information on their actions and performances, bearing in mind the 3 fundamentals of sustainable development: economic efficiency, social equity and environmental sustainability. The annexes contain a brief description of some sets of indicators developed at the European level (Core set, sustainable development indicators, structural indicators and Indicators related to the annual Environment Policy Review).

The complexity of these scoreboards is difficult to avoid, which makes it difficult to use them as tools for effective communication. The principal issue in developing a set of indicators concerns the number of indicators to keep. It should simultaneously allow easy use of the set depending on the objectives set, and be sufficiently complete to capture all the interesting information with regard to the objectives pursued, and to limit errors in evaluations and "collateral effects". A balance consequently must be found, often supplemented by establishment of a hierarchy of indicators, allowing key messages to be highlighted and analysis to be refined later. The selection of indicators should moreover be dynamic, depending on emergence of new problems or development of knowledge, while allowing follow-up over time.

- Compound indicators¹¹ allow the problem posed by the great range of scoreboards to be partially circumvented and their abundant information to be synthesised into a single number. The general idea is to re-calibrate the basic components of the scoreboards, weight them and then combine them to produce a single number. These compound indicators often become powerful tools for communication with the general public. But while these indicators have the advantage of assembling a significant quantity of information, there are a number of objections to them: lack of transparency as to the methodology followed, choice of sub-indicators and arbitrary weighting, recourse to approximations for some sub-indicators, a sometimes erroneous, because too-simplified, overall message, or the necessity for studying the various sub-indicators to understand the trend displayed. These indicators are thus rarely sufficiently rigorous to allow an appropriate policy decision to be made. Moreover, the choices made during development of such indicators must be maintained to allow temporal and spatial comparison, making integration of new themes difficult or impossible. More information can be found in appendices.
- It should also be noted that matrix approaches have been developed to facilitate consideration of the integrated themes typical of sustainable development while ensuring that all aspects are treated. More information can be found in appendices.

¹¹ If these sub-indicators have no common unit of measurement (monetary, surface, toe, CO2 eq, etc.), the resulting indicator will be referred to as "composite". Otherwise, it will be referred to as "aggregate".

Impact assessment

Impact assessment (IA) marks an important step in the efforts made by the Commission to reinforce its culture of evaluation. It is a key tool in ensuring that the initiatives of the Commission and community legislation are developed in principle from transparent, complete and balanced information. This procedure aims to allow political decision-makers to base their choices on meticulous analysis of the potential economic, social and environmental impacts of the conceivable political options. It is a tool in to be used in decision-making and does not substitute for it.

As a general rule, IAs are necessary for the main initiatives of the Commission and for those that will have the most significant consequences. This is in particular the case for:

- all legislative proposals of the working programme of the Commission,
- all legislative proposals not resulting from this programme that have clearly identifiable economic, social and environmental impacts, and
- all non-legislative proposals (such as white papers, action plans, programmes of expenditures or negotiation directives for international agreements) that determine future policies.

Some enforcement measures capable of having significant repercussions are also subject to IAs.

A genuine impact analysis must **define** the problem, the objectives, and the main policy options, **analyse** the probable economic, social and environmental impacts of these options, **compare** these options and describe follow-up and evaluation of the policies. Following the 2005 growth and employment initiative¹², it must also henceforth include an assessment of administrative costs.

All impact analyses however are not identical. The term of validity and precision of the analysis depend on the significance of the possible consequences, and some elements should be further developed than others. Guidelines have been developed to guide the services of the Commission. They contain general orientations and establish procedures and steps for analysing potential consequences of different policy options. They were revised in 2009¹³. They are however relatively sparse in regard to environmental impacts. Only Annex 9.3 talks about them, in reference to life cycle assessment approach.

The service responsible for the proposal is charged with preparation of the IA. The General Secretariat furnishes support via steering groups for impact analysis and interservice consultation. The Impact Assessment Board (IAB), which monitors the quality of IAs, can also supply support and advice.

In its 2009 report¹⁴, the IAB states that it has formulated recommendations on analysis of environmental impacts in approximately 25% of cases. It has observed that in impact assessments drafted for various sectoral policies, the attention given to indirect environmental impacts was insufficient. It has, moreover, often drawn attention to the necessity of analysing environmental impacts not related to carbon emissions.

The European Parliament is also concerned with the quality of this type of analysis. In a resolution¹⁵ it:

5. ... fully supports, therefore, the setting-up within the Commission of an Impact Assessment Board;
6. Stresses, nevertheless, that, in order to guarantee a minimum level of independent scrutiny in the drafting of impact assessments, an independent panel of experts should be set up to monitor, by means of spot checks, the quality of opinions delivered by the Impact Assessment Board, and that representatives of interested parties should also be allowed to assist in conducting them;
7. Considers it necessary that the Impact Assessment Board should guarantee the application of a common methodology for all impact assessments, so as to avoid contradictory approaches and to facilitate comparability;

¹² Communication from the Commission to the Council and the European Parliament - Better Regulation for Growth and Jobs in the European Union - COM(2005)97 - 16/03/2005

¹³ Impact Assessment Guidelines - [SEC\(2009\) 92](#) - 15/01/2009

¹⁴ Impact Assessment Board report for 2009 - [SEC\(2009\)1728](#) - 29/01/2010

¹⁵ European Parliament resolution of 4 September 2007 on Better Regulation in the European Union - [2007/2095\(INI\)](#)

42. *Is concerned by the findings of various independent studies(11) that the Commission guidelines on impact assessments are not fully respected by Commission DGs, that the assessment and quantification of economic impacts have been emphasised at the expense of environmental, social and international impacts, that the costs of legislation are assessed far more than the benefits, and that short-term considerations overshadow long-term ones .. ;*

43. *Supports the conclusion resulting from the study entitled "Simplifying EU Environmental Policy" ... that the quality of some assessments needs to be improved; urges the Commission to ensure:*

- *that adequate time and financial resources are allocated for these assessments;*
- *that impact assessments consider economic, social, environmental and health aspects on an equal footing, in both the short term and the longer term;*
- *that impact assessments consider not only the costs of measures but also the costs of not addressing the environmental, public health or food issues;*
- *transparency and input of all relevant stakeholders;*
- *that the impact assessments are broad enough in scope and that they take into account the different national circumstances in the Member States;*

recognises that impact assessments could also play an essential role in the case of amendments proposed by the European Parliament or the Council having potentially significant impacts;

Life cycle assessment (LCA)

Life cycle assessment¹⁶ is one of the tools commonly used in assessing environmental impacts. This approach, which appeared during the 1970s, is beginning to become one of the methods currently used in environmental management, especially since its normalisation with the series of ISO 14040 standards.

It consists of evaluating the pressure that a product, service or process has on the environment over the entire period of its life - from the extraction of the raw materials to its end-of-life processing, and including its utilisation; this is why it is sometimes called analysis from "cradle to grave". It is important to understand that life cycle assessment can involve studying the function of the product. In fact, studying only the product itself, it becomes difficult to compare products serving the same function but in a different way, such as the automobile and public transport, with the common function of transporting people.

Life cycle assessment allows one to gain an overall view of the environmental impact of a circuit, to predict the movement of pollution, and to evaluate which type of environmental impact is dominant in production of a product and which stages (production, utilisation, disposal) or which particular elements of the product contribute the most in terms of environmental impacts. This is done by an approach as exhaustive as possible and clearly documented. This method also allows various types of impacts to be put into perspective rather than limiting oneself to a particular type of impact. It is also a very useful tool for making choices of both overall (choice of an environmental policy, such as the value of recycling certain products) and local (choice of design and production for a product) scope.

However, a number of difficulties remain. First of all, given that it is near-impossible to obtain all the flows used for a product, one must be content with sometimes limited data and call upon generic data, which lack precision. Moreover, several methodological choices remain fairly subjective, such as choices of attribution and methods of characterisation of impacts, and of standardisation and weighting used. Thus, it is not rare, in the context of a comparison, to see the classification of several products reversed according to the evaluation method chosen.

The Commission has just officially presented the "International Reference Life Cycle Data System (ILCD) Handbook". This manual has been drafted following numerous consultations and is coherent with the existing international standards. It contains a whole series of technical documents specifying all the necessary steps in carrying out a LCA.

¹⁶ See the site of the JRC : <http://lct.jrc.ec.europa.eu/>

In fact, while life cycle analysis is relevant in a number of ways, great caution is needed in using the results obtained. A simplistic reading can lead to erroneous conclusions:

- First of all, the conclusions most often relate to well-defined conditions and limits. Not to cite them can lead to inaccuracies.
- Some LCAs include only a small part of the impacts of certain options. Analyses of plastics, for example, almost never take account of the impact of petroleum exploitation (oil spills, oil well fires, etc.).
- These analyses give a picture corresponding to a given moment and specific practices. They most often do not take into account possibilities for development or improvement of existing practices.
- These analyses are often very complex and costly. They are performed by offices that compete with each other based on price, which leads some offices to accept assignments without guaranteeing the quality of the results and the reliability of the conclusions¹⁷. Barring exceptions, a system does not exist for monitoring the quality of LCA analyses nor for certification of offices performing them.

Environmental accounting

Environmental accounting is a system for indexing, organising, managing and delivering data and information on the environment via physical or monetary indicators. Its objective is to contribute to sustainable economic development by improving knowledge and understanding of the growing interactions between environment and economy. It groups economic and environmental information in a common framework to measure the contribution of the environment to the economy and the impact of the economy on the environment.

Its principal methodological basis is the System of Integrated Environmental and Economic Accounting (SEEA) established by several international agencies (European Commission, UN, IMF, OECD and World Bank), the latest edition of which appeared in 2003. Work is underway to make this a statistical standard by 2012 and to promote application of this system in all countries.

The 2003 SEEA includes 4 categories of accounts:

- Accounts of flows of energy and materials (both in the form of resources provided to the economy and in the form of pollutants emitted). This category is organised insofar as possible according to the accounting structure of the system of national accounts.
- Accounts of expenditures devoted to environmental protection and resource management. This category uses the elements of the system of national accounts that are relevant to good management of the environment and makes transactions related to the environment more explicit.
- Accounts of environmental assets. These are accounts where stocks and the variation in stocks of natural resources (water, fishing resources, etc.) are recorded.
- The fourth category shows how the existing system of national accounts can be adjusted (in monetary terms) to take account of the impact of the economy on the environment. Three adjustments are envisaged:
 - adjustments related to depletion of resources,
 - those involving so-called defensive expenditures and
 - those dealing with environmental degradation.

These environmental adjustments are better known by the name "green GDP". Just as national accounting transforms the gross domestic product (GDP) into the net domestic product (NDP)

¹⁷ WRAP carried out an exhaustive study in 2006 on LCA analyses with regard to recycling. Of the 272 studies identified, only 55 were judged to be of sufficient quality.

taking account of the consumption of capital, the idea is that it would be sensible to calculate an environmental NDP taking account of the consumption of natural capital.

The green GDP and the environmental NDP remain however the most controversial aspects of the environmental economic accounting system and they are therefore less often implemented by statistical services, due to the numerous problems they raise: conceptual problems, measurement problems and occasionally political problems (the fact that depletion of resources is taken into account would encourage for example attaching less importance to sectors such as mines or logging, and in some cases there have been pressures against establishing such accounting).

In truth, there is also a more crucial problem with these adjustments. Neither the green GDP nor the environmental NDP measures sustainability. Their aim is only to integrate depletion or degradation of environmental resources into the GDP, without, for all that, telling us whether we are above or below a sustainable level of production.

At European level, the first strategy on green accounting was presented in 1994¹⁸. Since then, Commission offered financial support to Member States to assist them in collecting data through pilots studies, so that several Member States now regularly provide on a voluntary basis first sets of environmental accounts. A number of European countries have however declared¹⁹ that environmental accounts will not be developed or even continued without a European legal base, providing the legal right to claim for the necessary resources to fulfil this requirement. This is why the Commission recently published a proposal for a regulation on European environmental economic account²⁰. This proposal intends to establish "*a common framework for the collection, compilation, transmission and evaluation of European environmental economic accounts for the purpose of setting up environmental economic accounts as satellite accounts*" to the European system of accounts (ESA) "*by providing methodology, common standards, definitions, classifications and accounting rules, intended to be used for compiling environmental economic accounts*". Three modules are described : air emissions accounts, environmentally related taxes and economy-wide material flow accounts.

WHO DOES WHAT?

In the European context, 4 main bodies have developed expertise in evaluation of environmental issues: Eurostat, the European Environment Agency, the Joint Research Centre (JRC) and the Directorate-General for the Environment (DG ENV) of the European Commission. In order to distribute the work somewhat, they recently created "the group of 4" (G4). Special areas of expertise are henceforth defined.

Eurostat

Eurostat was created in 1953 to fulfil the needs of the Coal and Steel Community. Over the years, its mission has expanded: it is to provide the European Union with a high-quality statistical information service. This is a key role. Democracies cannot function properly if they cannot depend on reliable and objective statistics. On the one hand, these are needed by managers at the community, national, and local levels and by heads of businesses in decision making. On the other hand, they allow public opinion and the media to form an accurate idea of contemporary society and to evaluate the results, especially of political action.

Eurostat publishes structural indicators and the sustainable development indicators referred to above. The E3 unit is more specifically responsible for statistics and environmental accounting. Within the G4, Eurostat has developed a special expertise with regard to waste and materials flows.

¹⁸ Communication from the Commission to the Council and the European Parliament : Directions for the EU on Environmental Indicators and Green National Accounting - [COM\(94\) 670 final](#) - 21/12/1994

¹⁹ Environmental Accounts - State of Play - Eurostat - 2007

²⁰ Proposal for a Regulation of the European Parliament and of the Council on European environmental economic accounts - [COM\(2010\)132](#) - 09/04/2010

European Environment Agency

The European Environment Agency (EEA) was established²¹ in 1990. Believing that special emphasis should be given to improvement of data, and especially to development of environmental indicators, the 5th community environmental action programme (5EAP)²² judged it to be essential that the EEA begin its work as soon as possible. This was the case from 1994. Having been modified substantially several times, the regulations of the EEA were codified in 2009²³.

Article 1§2 stipulates that the objective of the Agency and of the related European Environment Information and Observation Network consists of providing the Community and the Member States with "*objective, reliable and comparable information at European level enabling them to take the requisite measures to protect the environment, to assess the results of such measures and to ensure that the public is properly informed about the state of the environment...*"

Article 2 adds that to fulfil its objective the Agency must "*provide the Commission with the information that it needs to be able to carry out successfully its tasks of identifying, preparing and evaluating measures and legislation in the field of the environment*", and "*to publish a report on the state of, trends in and prospects for the environment every five years...*"

Article 3 lists its priority areas of activity : air quality and atmospheric emissions; water quality, pollutants and aquatic resources; state of the soil, of the fauna and flora, and of biotopes; land use and natural resources; waste management; noise emissions; chemical substances which are hazardous for the environment; coastal and marine protection.

The 2009-2013 strategy²⁴ of the EEA specifies that its objective is "*to become recognised as the world's leading body for the provision of timely, relevant and accessible European environmental data, information, knowledge and assessments*". It takes on in particular as a strategic objective "*play a key role in the development and implementation of European environmental policies*", "*monitor the efficacy of environmental policies*", and "*provide access to more frequently updated information and, where possible, near-real-time data to improve the timeliness of environmental information through the Shared Environmental Information System and the Environmental Data Centres*".

Within the G4, the Agency has developed special expertise with regard to Air, Climate Change, Water, Biodiversity and Land use. It has set up various "European Topic Centres" (ETC) ...:

- Air and climate change (ACC - designated up to 2010 inclusive)*
- Land use and spatial information (LUSI - designated up to 2010 inclusive)*
- Water (W - designated up to 2010 inclusive)*
- Biological diversity (BD - designated for the 2009-2013 period)

²¹ Regulation (EEC) no. 1210/90 of the Council of 7 May 1990 on creation of the European Environment Agency and the European Environment Information and Observation Network - OJ L 120 of 11/5/1990, p. 1.

²² Community policy and action programme with regard to the environment and sustainable development - OJ C 138 of 17/5/1993, pp. 5-98

²³ Regulation [401/2009](#) of the European Parliament and the Council of 23 April 2009 on the European Environment Agency and the European Environment Information and Observation Network (codified version) - OJ L 126 of 21/05/2009 pp. 0013 - 0022

²⁴ "[Informing. Interpreting. Empowering. EEA Strategy 2009-2013](#) - European Environment Agency

*Note that in December 2009, the EEA launched a call for proposals with a view to renewal of 3 of the 5 ETCs (ACC, LUSI and W) for the 2011-2013 period. In this framework, the themes treated by these centres have been slightly revised. These new ETC will deal with:

- Air pollution and mitigation of climate change;
- Impacts, vulnerability and adaptation to climate change;
- Domestic, coastal and marine waters;
- Information and spatial analysis.

- Sustainable consumption and production (SCP - designated for the 2009-2013 period)

JRC

The Joint Research Centre (JRC) was originally established under the Euratom treaty. Euratom's role is to promote nuclear safety and security in Europe and the JRC has been contributing to this aim with its research activities ever since. The JRC has, however, at the request of its customers, transformed itself from a purely research-driven organisation focussing on nuclear energy to a customer-driven, research-based policy support organisation.

Created in 2001, the Institute for Environment and Sustainability (IES) located in Ispra (Italy) is one of seven institutes that constitute the JRC. IES is at the forefront in providing research-based support for the development and implementation of European environmental policies. Its mission is to provide scientific-technical support to the European Union's policies for the protection and sustainable development of the European and global environment. Within the group of 4, IES-JRC has developed special expertise with regard to Land and forests.

DG ENV

DG ENV is in charge of following up transposition and reporting obligations as well as implementation of European environmental policies : on the basis of the data of the EEA, the ETC and Eurostat, it proposes policy orientations. Within the G4, DG ENV is in charge of the "policy" aspect.

As a reminder, with regard to impact assessments more specifically, other parties also enter into consideration: the Impact Assessment Board (IAB), the Secretariat-General, and the Units providing IA support within the various DGs.

LINES OF ENQUIRY

THE COMMUNICATION "GDP AND BEYOND"

Almost 2 years after the conference "*Beyond GDP*"²⁵, the European Commission published a communication entitled "GDP and beyond - Measuring progress in a changing world"²⁶ in August 2009. This communication describes various actions to "*develop more inclusive indicators that provide a more reliable knowledge base for better public debate and policy-making*":

(1) Complementing GDP with environmental and social indicators

The Commission envisages developing a "comprehensive environmental index" to provide an efficient communications tool to encourage debates. "*This index will reflect pollution and other harm to the environment within the territory of the Union*". It will comprise the problems of climate change and energy use, nature and biodiversity, air pollution and health impacts, water use and pollution, waste generation and use of resources. "*A fall in the value of the index will show that progress on environmental protection is being made*". In parallel, the Commission will continue to work on "*indicators that capture the environmental impact outside the territory of the Union*", as well as on a "comprehensive index of environmental quality". It will "*continue to support improvement of the Ecological footprint*". Studies have been launched on the feasibility of well-being indicators and on the people's perception of well-being.

(2) Improving the timeliness of environmental and social data for decision makers

While "*GDP and unemployment figures are published within a few weeks of the period they are assessing*", "*environmental and social data are in many cases too old to provide operational information*". But some technologies allow the environment to be monitored in real time. The

²⁵ Beyond GDP - Measuring progress, true wealth and well-being of nations, 19-20 November 2007 - [Conference Proceedings](#) - European Commission, European Parliament, Club of Rome, WWF, OECD - 2009

²⁶ GDP and beyond - Measuring progress in a changing world - [COM\(2009\)433](#) - 20/08/2009

Commission intends to step up efforts to realise this potential. SEIS²⁷ is an internet-compatible system through which providers of public information share environmental data and information. It will collect existing information and data streams relating to the environmental policy and legislation of the European Union and make them easily accessible to political decision makers and citizens. A major challenge is to develop the SEIS as a platform allowing bilateral communication, to allow users to download and share information. The Commission and the EEA also intend to produce more timely data using "now-casting" for greenhouse gas emissions and environmental accounts.

The new European system of social statistical survey modules should allow the timeliness of social data to be improved.

(3) Improving the accuracy of reports on distribution and inequalities

Social cohesion, confidence of the citizen in official statistics, ... all reasons for which distributional issues is receiving more and more attention. This is why the Commission intends to regularly update reports dealing with this issue.

(4) Developing a European Sustainable Development scoreboard

The present set of sustainable development indicators does not fully capture recent developments in important areas such as sustainable production and consumption or governance issues. The Commission intends to present a more concise and duly updated version of the scoreboard. It will also reinforce the link between research and official statistics to determine threshold values for environmental sustainability.

(5) Extending national accounts to environmental and social issues

The Commission plans to extend to all Member States the collection of data on some already well-developed accounts (physical flows of atmospheric emissions, material consumption; environmental protection expenditures and taxes). It wants to set up physical environmental accounts for energy consumption and waste generation and treatment, as well as monetary accounts for environmental related subsidies. It plans to propose a legal framework for environmental accounting²⁸. With regard to accounts of natural capital, the Commission will contribute to the work undertaken by the United Nations. It also plans to intensify work on monetary valuation of damage caused and prevented.

Finally, the Commission plans to intensify use of the existing social indicators such as disposable income of households and adjusted household income figures, taking account of the existing differences in social protection regimes of different countries.

THE REPORT OF THE "STIGLITZ COMMISSION"

In France, the Commission on the Measurement of Economic Performance and Social Progress, also known as the "Stiglitz Commission", from the name of its president, Joseph Stiglitz, grew out of the desire of Nicolas Sarkozy at the beginning of 2008 to identify and compensate for the limits of GDP as an indicator of economic performance and social progress. Among the members of this commission are notably Nicholas Stern and five Nobel Prize winners in economics (Joseph Stiglitz, Kenneth Arrow, Daniel Kahneman, James Heckman and Amartya Sen). It submitted its report in September 2009²⁹.

This report gives a good overview of dispersed academic work. It aims to map out the search for indicators alternative or complementary to GDP, oriented toward the well-being of present and future generations. It

²⁷ Toward a shared environmental information system (SEIS) - [COM/2008/0046](#) - 1/2/2008

²⁸ Proposal for a regulation of the European Parliament and of the Council on European environmental economic accounts - [COM\(2010\)132](#) - 09/04/2010

²⁹ [Report of the Commission on the Measurement of Economic Performance and Social Progress](#) - Stiglitz, Sen and Fitoussi - September 2009

takes note of a large discrepancy between two visions of socioeconomic reality: that conveyed by statistical information on the one hand and the perception that ordinary citizens can have of this reality on the other hand. Twelve recommendations have been formulated:

- (1) *"When evaluating material well-being, look at income and consumption rather than production"*
- (2) *"Emphasise the household perspective"*
- (3) *"Consider income and consumption jointly with wealth"*
- (4) *"Give more prominence to the distribution of income, consumption and wealth"*
- (5) *"Broaden income measures to non-market activities"*
- (6) *"Quality of life depends on people's objective conditions and capabilities. Steps should be taken to improve measures of people's health, education, personal activities and environmental conditions. In particular, substantial effort should be devoted to developing and implementing robust, reliable measures of social connections, political voice, and insecurity that can be shown to predict life satisfaction"*
- (7) *"Quality-of-life indicators in all the dimensions covered should assess inequalities in a comprehensive way"*
- (8) *"Surveys should be designed to assess the links between various quality-of-life domains for each person, and this information should be used when designing policies in various fields"*
- (9) *"Statistical offices should provide the information needed to aggregate across quality-of-life dimensions, allowing the construction of different indexes"*
- (10) *"Measures of both objective and subjective well-being provide key information about people's quality of life. Statistical offices should incorporate questions to capture people's life evaluations, hedonic experiences and priorities in their own survey"*
- (11) *"Sustainability assessment requires a well-identified dashboard of indicators. The distinctive feature of the components of this dashboard should be that they are interpretable as variations of some underlying "stocks". A monetary index of sustainability has its place in such a dashboard but, under the current state of the art, it should remain essentially focused on economic aspects of sustainability"*
- (12) *"The environmental aspects of sustainability deserve a separate follow-up based on a well-chosen set of physical indicators. In particular there is a need for a clear indicator of our proximity to dangerous levels of environmental damage (such as associated with climate change or the depletion of fishing stocks)"*

The 12 recommendations of the commission confirm the inadequacy of present accounting systems, which have not played a role of warning of crisis: *We are almost blind when the metrics on which action is based are ill-designed or when they are not well understood*".

THE WORK OF THE OECD

The Global Project "Measuring the progress of Societies"³⁰, hosted by the OECD and run in collaboration with other international and regional partners, seeks to become the world wide reference point for those who wish to measure and assess the progress of their societies. The European Commission and the World Bank are partners.

This project aims to foster the development of a set of key economic, social and environmental indicators to provide a comprehensive picture of how the well-being of a society is evolving. It also seeks to encourage use of these indicators to inform and promote evidence-based decision-making.

Initial results were presented at the 3rd forum held in Busan³¹, Korea, at the end of 2009.

³⁰ http://www.oecd.org/pages/0,3417,en_40033426_40033828_1_1_1_1_1,00.html

³¹ <http://www.oecdworldforum2009.org/>

CONCLUSIONS

As we have seen above, experts agree in acknowledging the advantages of the GDP: its apparent simplicity - a single number - is appreciated by the media and its rapid availability is appreciated by decision-makers... to the point of losing sight of its actual significance. But today even the latter are becoming aware of its weaknesses: *"For years, statistics flaunted increasingly strong economic growth [...] until it turned out that, by endangering the planet's future, this growth was destroying more than it was creating. The problem stems from the fact that the world, society, and economy have changed and the measuring instrument has not changed enough,"* declared Nicolas Sarkozy during the International Conference presenting the conclusions of the "Stiglitz Commission". We support unreservedly the international efforts to complement the GDP with an overall environmental indicator, and research aiming to improve the topicality of environmental and social data. It is also clear that work undertaken to refine integrated accounting deserves to be continued.

But we would also like to stress 3 additional points:

Refining sets of indicators: rationalisation

The sets of indicators presently established at the international level generally fulfil objectives of evaluating progress made in attaining certain policy objectives. Developing and updating them often depends on data made available by the Member States in the context of reporting, obligatory or otherwise.

Rationalisation initiatives - already underway - are indispensable in ensuring the efficacy of these sets and the coherence of the information given. So, for example, use of single sources constitutes a prerequisite for ensuring quality and homogeneity of information. Rationalisation of requests for information intended for data producers should in addition allow them to avoid excessive work (related to multiple questionnaires sent by different agencies to obtain the same basic information).

The four main sets of indicators (core set, sustainable development indicators, structural indicators and EPR indicators) involve common indicators, but also unique indicators. The exercise of rationalising environmental indicators initiated at the beginning of 2007 by the so-called "Group of four" (EEA, DG ENV, ESTAT, JRC), should be continued. It has two objectives:

- Clarifying the environmental indicators (transversal and thematic lists) made available by international organisations (EU, OECD and UNSD) to avoid any confusion. Certain sets of indicators in fact involve indicators having identical names but a different purpose and methodology, or conversely different names, while they provide the same information.
- Avoiding duplicates and/or multiple reports requested from Member States, especially for the purpose of updating sets of indicators.

Various recommendations were already made in 2007-2008, including use of the same sources of data for similar indicators, and avoiding having the same indicator calculated by several organisations, in order to be more efficient, ensure a coherent message (while taking account of quality requirements and deadlines of the organisations using the indicator) and improve metadata of the indicators.

Refining sets of indicators ... so that they also serve decentralised authorities

The desire for centralisation and completeness of information could lead to increased pressure on Member States, especially with a possible increase in mandatory reporting. Recall however that all indicators should result from a well-posed question and pre-defined objectives, which is not necessarily suited to local enquiries...from the point of view of scale, availability of information or specific local features. A balance must consequently be found between local, national and international interests, in terms of management of resources and working method.

As we said above, the principal objective of the sets of indicators established at the European level is evaluation of progress made in attaining objectives set at the European policy level. Thus, while the results of these indicators allow Member States to compare themselves with others with regard to implementation of these policies, the integration of identical indicators into national or regional sets of indicators is not

always pertinent. In fact, whatever the scale on which it is developed, a set of indicators must fulfil precise objectives, and these depend on specificities of scale in terms of the state of the situation as well as political choices.

Consequently, while the Member States are often the source of data used to develop sets of European indicators, these are sometimes of limited interest for national, regional or local policies.

Improving impact analyses

While impact analyses have the potential to compare various policy options through analysis of the economic, social, and environmental effects, it must be said that in practice this does not actually seem to be the case. The Impact Assessment Board as well as the European Parliament have in fact pointed out the deficiencies in analysis of environmental impacts.

The Parliament³² has proposed setting up an "independent panel of experts" "*to monitor, by means of spot checks, the quality of opinions delivered by the Impact Assessment Board*", in order to "*guarantee a minimum level of independent scrutiny in the drafting of impact assessments*". We would like to support this proposal and entrust this role to the European Environment Agency. Article 2 of Regulation 401/2009 of the European Parliament and the Council of 23 April 2009 on the European Environment Agency³³ stipulates in fact that it must provide the Commission with "*the information that it needs to be able to carry out successfully its tasks of identifying, preparing and evaluating measures and legislation in the field of the environment*".

³² European Parliament resolution of 4 September 2007 on Better Regulation in the European Union - [2007/2095\(INI\)](#)

³³ Regulation [401/2009](#) of the European Parliament and the Council of 23 April 2009 on the European Environment Agency and the European Environment Information and Observation Network (codified version) - OJ L 126 of 21/05/2009 pp. 0013 - 0022

APPENDICES

SETS OF INDICATORS

Various international organisations have developed and updated sets of environmental, or more broadly, sustainable development, indicators.

At the European level, 4 sets of **transversal** indicators are to be distinguished:

- the [Core Set of Indicators](#) (CSI) developed by the European Environment Agency;
- the set of [Sustainable Development Indicators](#) (SDI) established by Eurostat;
- the set of [structural indicators](#) also established by Eurostat;
- the indicators related to the annual [environmental policy review](#) (EPR) used by DG ENV

Note that there also exist sets of **sectoral** indicators such as, for example:

- the **TERM**³⁴ (transport and environment reporting mechanism) indicators, developed by the EEA in collaboration with Eurostat, the DG Transport and Environment and the Member States
- the **ODYSSEE**³⁵ (energy efficiency) indicators developed via a project between the DG TREN, ADEME and agencies active in the area of energy efficiency
- the **IRENA**³⁶ (Indicator Reporting on the Integration of Environmental Concerns into Agriculture Policy) indicators developed by the DG Agriculture and Environment, Eurostat, JRC and the EEA.

and sets of **thematic** indicators, such as for example:

- The **SEBI**³⁷ (Streamlining European 2010 Biodiversity Indicators) indicators
- The **ENHIS**³⁸ (European environment and health information system) indicators (coordination by WHO Europe, cofinancing by the EC)

Some initiatives specifically concerning the urban environment have also been launched at the European level, as for example:

- The **European Common Indicators** (ECI)³⁹ whose objective was to make available a set of indicators with a published methodology in order to assist local authorities in measuring their progress with regard to sustainable development. It contains 10 indicators. An internet site has been set up to publish the results and allow local authorities to compare themselves with others. However, of the 148 local authorities that are part of the study, only 2 cities are registered on this site, providing data that are sketchy and not updated.
- The **Urban audit**⁴⁰ is a set of 343 indicators, not organised into a hierarchy, intended to evaluate the quality of life in European cities on the initiative of the European Commission (DG REGIO and Eurostat). These indicators cover various areas: demography, social and economic aspects, civic investment, education and training, environment, travel and transport, information and culture and recreation. The latest data collection involved 321 cities in the 27 European countries as well as 46 Norwegian, Swiss, Croatian and Turkish cities, and was accompanied by an opinion poll on the quality of life in 70 European cities. It was conducted by national statistical organisations and, where necessary, local bodies, in 2006-2007 for the year 2004. The results were published with some delay (related to the time needed for the Member States to assemble the data and the time period for collection and validation of the data by Eurostat before indicators were calculated). It

³⁴ For more information, see: <http://www.eea.europa.eu/themes/transport/indicators>

³⁵ For more information, see: <http://www.odyssee-indicators.org/>

³⁶ For more information, see: <http://www.eea.europa.eu/projects/irena>

³⁷ For more information, see: <http://biodiversity-chm.eea.europa.eu/information/indicator/F1090245995>

³⁸ For more information, see: http://www.enhis.net/object_class/enhis_home_tab.html

³⁹ For more information, see : http://ec.europa.eu/environment/urban/common_indicators.htm

⁴⁰ http://ec.europa.eu/regional_policy/themes/urban/audit/index_fr.htm, <http://www.urbanaudit.org/>, [European Regional and Urban Statistics Reference Guide](#)", Edition 2009 - Eurostat - 2009

should be noted that all local data needed for calculation of the various indicators are not available for all the cities involved. Moreover, the very significant number of indicators limits manipulation of the results. A new exhaustive data collection is planned for 2010.

Core set of indicators (European Environment Agency)

The European Environment Agency has specified a collection of basic indicators (CSI)⁴¹ in order to:

- make available a manageable and stable basis for EEA reporting (evaluation of progress compared to environmental policy priorities);
- define the priorities for improvements to be made to the quality and coverage of data flows, to increase the comparability and reliability of information and evaluations;
- rationalise the contributions to other initiatives generating indicators in Europe and elsewhere, such as the structural indicators, sustainable development indicators and environmental indicators of the OECD.

These are indicators intended for European and national policy managers, European and national institutions, environmental experts and the general public.

This set includes 37 indicators distributed over 6 environmental themes (atmospheric pollution and ozone depletion, climate change, waste, water, biological diversity and terrestrial environment) and 4 sectors (agriculture, energy, transport and fishing).

More details can be found in [annex](#).

Sustainable development indicators (Eurostat)

A set of sustainable development indicators (SDI)⁴² has been developed to provide an objective statistical picture of progress with regard to the aims and objectives of the Sustainable Development Strategy of the European Union. It is published every 2 years⁴³ and covers 10 themes reflecting the 7 key challenges of the Strategy as well as the objective of economic prosperity and the guiding principles related to good governance: sustainable consumption and production, social inclusion, demographic change, public health, climate change and energy, sustainable transport, natural resources, socioeconomic development, global partnership, and good governance.

140 indicators, classified into 3 levels, are involved here:

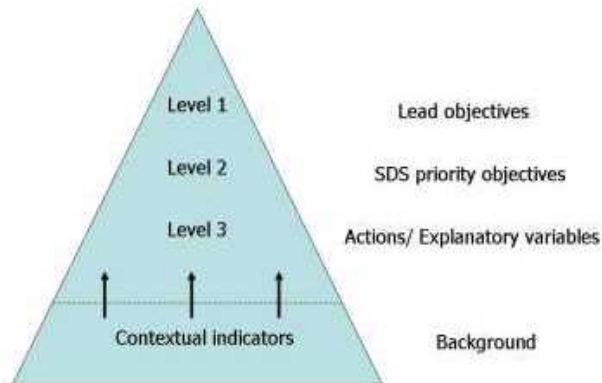
- Level 1 indicators or "headline indicators" (11 indicators) which aim to ensure follow-up of the general objectives related to the 7 key challenges of the EU SDS. These indicators are considered to have high communication potential.
- Level 2 indicators (33 indicators) which relate to the operational objectives of the Strategy. These are guiding indicators in their sub-category.
- Level 3 indicators (85 indicators) which relate to actions described in the Strategy or other issues useful in analysing progress with regard to the Strategy and allowing more detailed analysis by specialists.

The three levels are completed by contextual indicators (11 indicators). These are not intended to evaluate the effects of policy implementation, but provide valuable basic information (facilitating analysis) on themes useful in sustainable development policy.

⁴¹ <http://themes.eea.europa.eu/IMS/CSI>

⁴² <http://epp.eurostat.ec.europa.eu/portal/page/portal/sdi/introduction>

⁴³ Latest report available: "[Sustainable development in the European Union, 2009 monitoring report of the EU sustainable development strategy](#)" - Eurostat Statistical books - 302 pages - 2009



This separation into 3 levels also fulfils different types of needs on the part of users: European and national policy managers (levels 1 and 2), European and national institutions (levels 1 to 3), environmental experts (levels 1 to 3) and the general public (level 1). It should be noted that the level 2 and 3 indicators and contextual indicators are not yet all fully developed.

More details can be found in [annex](#).

Structural indicators (Eurostat)

The heads of state and government have requested the Commission to present an annual report on the progress made on the objectives of the Lisbon Strategy. The structural indicators^{44,45}, divided into 6 themes (general economic context, employment, innovation, economic reform, social cohesion and environment), allow quantitative evaluation and comparison of the performance of Member States in these areas.

Generally available for the 25-member European Union, these indicators allow a clear annual assessment of the situation of Member States to be established. The list of indicators is updated every three years in order to ensure some degree of stability over time. It includes 79 indicators, 14 of which are included in a "short list".

More details can be found in [annex](#).

Indicators related to the annual Environment Policy Review (EPR)

The objective of Environment Policy Reviews (EPR)⁴⁶ is to monitor recent environmental trends and policy developments at EU and national level and the progress towards the EU's key environmental goals as set out in the 6th Environment Action Programme. The first EPR dates from 2003.

The 2008 EPR contains 30 indicators classified according to the DPSIR structure and divided into 6 themes (climate change and energy; nature and biodiversity; environment and health; natural resources and waste; environment and the economy; implementation). Each indicator is accompanied by an analysis and, as necessary, its variation is compared to the target objectives issued in European policies for the themes involved.

More details can be found in [annex](#).

COMPOUND INDICATORS

As mentioned before, the report of the Stiglitz Commission gives a good overview of dispersed academic work. We will make use of it to a broad extent in describing these indicators.

⁴⁴ Communication of the Commission - Structural Indicators - [COM\(2003\)585 final](#) - 08/10/2003

⁴⁵ http://epp.eurostat.ec.europa.eu/portal/page/portal/structural_indicators

⁴⁶ <http://ec.europa.eu/environment/policyreview.htm>

Index of economic well-being

The index of economic well-being (Osberg and Sharpe, 2002) simultaneously covers current prosperity (based on measures of consumption), sustainable accumulation and social topics (reduction in inequalities and protection against "social" risks). Consumption flows and accumulation of wealth are evaluated according to the national accounting methodology. Normalisation of each aspect is carried out by putting it on a linear scale (nine countries of the OECD) and aggregation is performed by allocating the same coefficient to each of them. The "green" aspect of this index remains secondary at this stage.

Results have confirmed the divergence between the GDP and the index of economic well-being since the end of the 1980s, but this divergence is largely due to lack of progress in the reduction of inequalities and improvement in economic security.

Environmental Sustainability Index (ESI) and Environmental Performance Index (EPI)

The environmental sustainability index is based on 76 variables covering 5 domains : global health of environmental systems (air, land, water, biodiversity), their environmental stress (anthropogenic pressure on the environmental systems : atmospheric pollution, waste, ...), human vulnerability (exposure of inhabitants to environmental disturbances), social and institutional capacity (their capacity to foster effective responses to environmental challenges), and global stewardship (cooperation with other countries in the management of common environmental problems).

A reduced form of this index, the environmental performance index (EPI) has been defined on the basis of 16 indicators and is more policy oriented.

Index of sustainable economic welfare (ISEW) and genuine progress indicator (GPI)

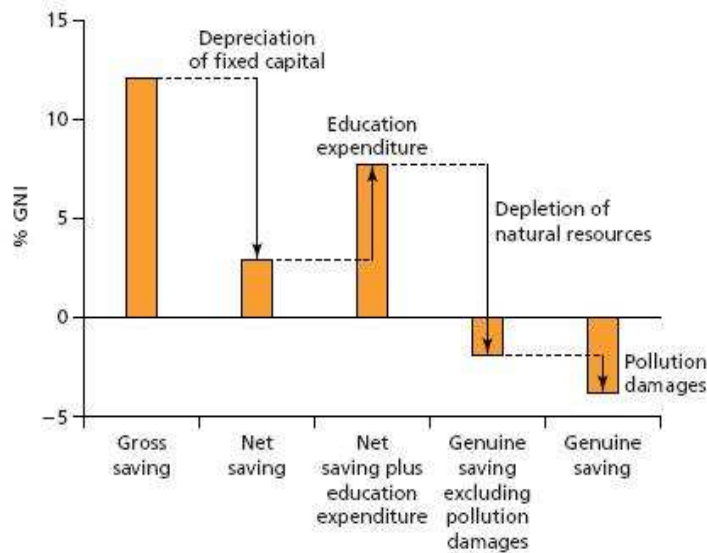
The index of sustainable economic welfare (ISEW) and the genuine progress indicator deduct some evaluations of the cost of water, air and noise pollution from consumption and also try to account for the loss of wetlands, farmland and primary forests, and for other natural resources depletion, as well as for CO₂ damage and ozone depletion. Depletion of natural resources is valued by the investment necessary to generate a perpetual equivalent stream of renewable substitutes.

In all countries for which both indicators are available, their values are quite similar and start diverging from GDP at some point in time. This has led some authors to put forward a "threshold" hypothesis according to which GDP and welfare move in the same direction up to a certain point, beyond which the continuation of GDP growth no longer generates any improvement in well-being. In other words, according to these indicators, sustainability is already far behind us and we have already entered a phase of decline.

Adjusted net savings (ANS)

The adjusted net savings (ANS) or genuine savings popularised by the World Bank is an indicator of sustainability that builds on the concepts of "green national accounts". The idea behind this indicator is that sustainability requires the maintenance of a constant stock of "extended wealth" which includes productive physical capital as measured in traditional national accounting, natural resources and human capital. The adjusted net savings is defined as the variation in this "wealth" over a given period.

It is derived from standard national accounting measures of gross national savings by adding to it current expenditures for education, considered as investments in human capital, and deducting estimates of capital consumption (produced assets, natural resources) as well as damage related to pollution (mainly CO₂).



Negative adjusted net savings rates imply that wealth is decreasing and as such provide a warning message.

This kind of approach is attractive but has shortcomings : which kinds of wealth does one take into account and what price does one allocate to them; which pollutants are of concern? Moreover, the overconsumption by importing countries is not taken into account.

Ecological footprint and carbon footprint

This tool was developed during the 1990s by two researchers, William Rees and Mathis Wackernagel.

The ecological footprint of a given geographical entity (i.e. a country) is defined as the estimate of the productive surface of the planet necessary to meet the consumption of resources of the population of this entity. The entire surface of our planet is not in fact productive. Our planet includes areas that produce natural resources, such as forests, fishing areas, rivers, cultivated land, etc.: this is what we call the biologically productive surface of the Earth, or biocapacity. Other portions in contrast produce little, are not exploitable, or are poorly accessible (deserts, ice caps, ocean floors, etc.). Biocapacity is measured in global hectares. In the last "Living Planet Report" published by the WWF⁴⁷, this biocapacity was estimated at 13.4 billion global hectares... which humanity must share. Each individual thus has 2.1 global hectares for housing and feeding himself, transport, clothing, heating, material goods, recreation and absorbing the waste he produces.

The footprint of a country is therefore the sum of the space needed to:

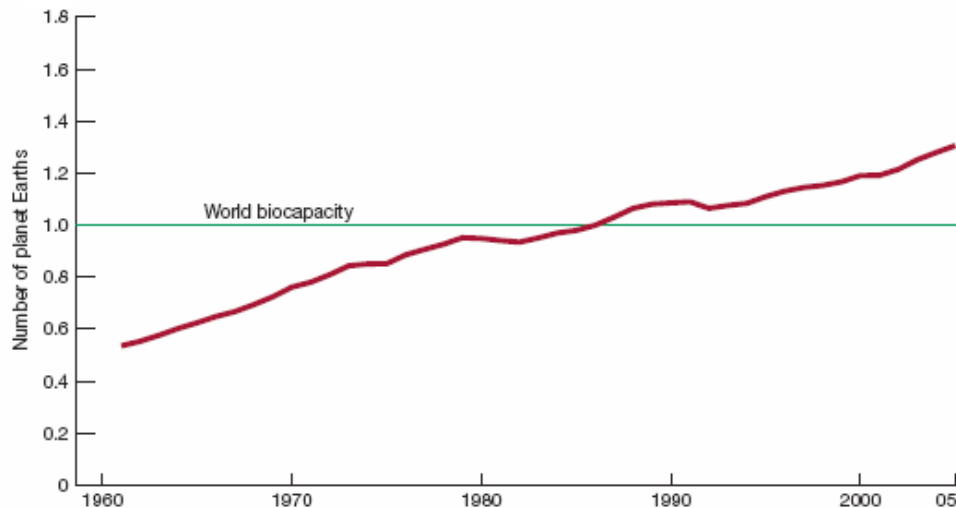
- grow all the organic products used in producing the food, fibres and wood consumed by its inhabitants (agriculture, raising livestock and silviculture);
- provide the space needed for infrastructures (houses, roads, industries, services, waste treatment);
- extract all the raw materials and fossil energy sources used;
- absorb, via wooded areas, the CO₂ emissions resulting from energy consumption and waste treatment.

The graph⁴⁸ below shows that the footprint of humanity exceeded the total biocapacity of the Earth for the first time in the 1980s. Since then, this excess has continued to increase so that in 2005, demand was 30% greater than supply.

⁴⁷ [Living Planet Report 2008 - Full report](#) - WWF - 2008

⁴⁸ [Living Planet Report 2008 - Full report](#) - WWF - 2008

HUMANITY'S ECOLOGICAL FOOTPRINT, 1961-2005



The ecological footprint is often seen as a global indicator of environmental performance, reflecting the impact of human activities on the environment. But the footprint does not take account, or takes account only in a very marginal way, of:

- emissions of atmospheric pollutants other than greenhouse gases;
- depletion of non-renewable resources and freshwater and energy resources;
- degradation of water quality;
- damage to biodiversity and green spaces;
- soil degradation (except in downward re-evaluation of biocapacity);
- waste production, in particular production of hazardous waste (except for GHG emissions, land use related to waste treatment, and energy gains related to use of recycled products);

On the other hand, from the methodological viewpoint, calculation of the ecological footprint is subject to a number of limitations, in particular:

- The footprint is calculated on the basis of a large number of hypotheses and a large amount of data from extremely varied sources; the margin of error is therefore potentially significant.
- The conversion factors used rely on data obtained based on lifecycle analyses (LCA), the results of which, for a single product, can vary appreciably according to the study;
- Given the fact that the conversion factors used generally rely on averages (global, European, national, etc.), the footprint calculated at the local level is quite insensitive to the changes that it is supposed to characterise;
- The value of the carbon sequestration rate of forests, used to evaluate the energy component of the ecological footprint, is also subject to controversy.
- The production of nuclear energy, emitting virtually no CO₂ compared to fossil energies, also poses a problem in calculating the footprint (by convention, the ecological footprint of nuclear energy is taken to be equal, per unit of energy, to that of fossil energy).
- The data sources are most often not updated annually and are available after several years' delay.

The methods of calculating the footprint are therefore constant being developed with a view to improvement.

The apparent simplicity of the ecological footprint therefore conceals several important limitations and methodological difficulties that motivate us to better focus on its genuine contribution, an eloquent vision of the magnitude of the problem created by our way of life, and to make do with approaches that are less ambitious but more transparent, such as for example the carbon footprint, which is centred on greenhouse gas emissions.

The ecological footprint constitutes a very interesting pedagogical tool insofar as:

- it is given in terms of a single number that takes into account several types of human impacts on the environment: direct land use, electricity consumption, GHG emission;
- the method uses a simple and self-explanatory unit (m² or ha);
- the calculation provides a footprint figure that can be compared to a clear maximum (the "absolute" capacity of the planet) and therefore can be used in a normative way.

Its real contribution is to provide an eloquent vision of the magnitude of the problem created by our way of life. The ecological footprint is above all a tool for sensitisation and communication, allowing simple and graphic communication and effectively supporting actions fundamentally related to direct and indirect energy savings.

Carbon Footprint

This method was initially developed for ADEME by Jean-Marc JANCOVICI. According to its definition, the "Bilan Carbone®" (Carbon Footprint) method allows the order of magnitude of greenhouse gas emissions generated by all the physical processes necessary for the existence of a human activity or organisation to be evaluated, insofar as it is possible to assign clear boundaries to it. As with the ecological footprint, the method takes into account both direct and indirect emissions.

While the method is faced with the same difficulties as the ecological footprint in terms of availability and quality of data, it nonetheless currently seems more standardised and transparent. Moreover, as its name indicates, its field of evaluation is clearly limited to greenhouse gas emissions.

MATRIX APPROACH

To our knowledge, two initiatives using matrix approaches are presently developed at the European level:

- The "Reference framework for sustainable cities"⁴⁹, a tool for enquiry, analysis and evaluation that is presently set up via a European working group on urban development. This tool aims to translate the principles and recommendations of the Leipzig Charter on the sustainable European city into operational objectives (covering all the policies at work in a city: town planning, mobility, environment, social, economy, employment and training, health, etc.), while including interdependences between these. Moreover, it will include several types of access, allowing the varied needs of those active in the city (planner, policy manager, etc.) to be fulfilled. This tool will be based on a unique vision of the sustainable city, while accepting variability, and will necessitate a description of the "starting" environmental situation, allowing specific local features to be introduced. Performance indicators and target objectives coherent with the tool will in addition be suggested.
- The "Integraal method: multicriteria multi-stakeholder assessment with the KerDST Deliberation Matrix"⁵⁰, which is implemented in the framework of the APHEKOM (WP7) project, financed notably by the community action programme in the public health area (2003-2008). This deliberation matrix is a three-dimensional mapping of "stakes or objectives/scenarios or measures/participants". Use of this matrix in the context of development of a plan (related to air pollution in this case) allows points of disagreement between the various participants to be identified and consequently allows discussion to be refined. It also allows perception (by planners, local authorities, NGOs, etc., depending on the target public) of performance of measures established to be analysed, and predictable pitfalls in implementation of the plan to be revealed. Development of policy or performance follow-up indicators is also envisaged.

⁴⁹ For more information, see: <http://www.rfsustainablecities.eu/index.php3>

⁵⁰ For more information, see: <http://www.c3ed.uvsq.fr/?q=fr/node/5779>; <http://kerdst.c3ed.uvsq.fr/?q=fr>; <http://kercoast.c3ed.uvsq.fr/?q=en/node/128>; <http://kerbabel.c3ed.uvsq.fr/Documents/TCAH-FIC-CAH-C3ED-20060131-00028.pdf> 18/03 - links to be verified: server always inaccessible when searches made

Matrix approaches are recent initiatives, under development. At present, this type of approach is mainly used as an aid to integrated decision-making (policy development and identification of priorities), along with establishment of indicators.

Introduction

The SOER is a report on the status of, trends in and prospects for the environment. It is published every 5 years by the European Environment Agency (EEA). The next edition of this report will be published in November 2010 and will be the 4th edition of the SOER (the previous ones having been published in 1995, 2000 and 2005).

The 2010 SOER will cover 38 countries (32 member countries of the EEA + 6 west Balkan countries) and will be comprised of 4 parts:

- part A (long-term trends),
- part B (environmental themes) and
- part C (analysis by country), as well as a
- synthesis document.

The 2010 version of the report will essentially be published in English via a website accessible to all and multimedia tools, with the objective in particular of allowing more regular updates of information in the future. Only the synthesis will be translated into 25 languages and printed in paper format.

Part A (long-term trends)

The first part of the 2010 SOER will include an integrated long-term exploratory analysis (i. e. with a view to 2050) of overall trends or key "mega-trends" which can have implications for future European policy and the capacity of Europe to sustainability manage natural resources.

Six starting points are presently envisaged:

- Urbanisation and the growth in the global consumer class,
- Demography and global migration,
- Technological innovations: progress in "nano", "bio" and cognitive sciences,
- Use of global resources and competition,
- Future global environmental changes,
- The development of global governance and power.

For each of these points, the analysis will include in particular an assessment of the situation and an analysis of the possible impact for the Europe of tomorrow, and the uncertainties.

Part B (environmental themes)

The second part of the 2010 SOER will consist of an evaluation (using the DPSIR model) on the European scale of the status of, and trends in, a selection of key environmental themes (including socioeconomic aspects) that will contribute to evaluation of existing policy commitments and medium- to long-term objectives.

The 9 themes to be analysed are the following:

- Land use,
- Air pollution,
- Biodiversity,
- Use of resources and waste,
- The marine, maritime and coastal environment,
- Water pollution,
- Management of bodies of water,
- The urban environment,
- Health.

Each of these themes will be analysed following a common structure (DPSIR):

- Present state and past and present trends;
- Impacts;
- Prospects for 2020 and

- Responses.

Part C (Analysis by country)

The third part of the 2010 SOER will contain an evaluation of the environmental situation for each of the 38 countries, based on

- analysis of six common problems identified as high-priority ("commonality"),
- description of the context for each country ("diversity") and
- identification of specific important problems, "success stories" or emerging problems likely to also affect the other Member States ("flexibility").

According to the EEA, development of this part C represents an opportunity to initiate a process of analysis at the national level which can support at the same time the major evaluations of the EEA (SOER), national environmental assessments and other requests at the European or international level. This approach fulfils one of the aims of the SEIS, namely to provide all at once information that can be used for various objectives.

"Commonality" part

The 6 common problems are:

- Air pollution (quality of urban and rural air, national and trans-border pollution, measures)
- Reduction in climate change ("CC mitigation") (GHG emissions: trends and projections, national measures)
- Protection of nature and biodiversity (protected areas, 2010 objective, measures)
- Land use (Corine Land Cover 1990-2006, stocks, changes, driving forces)
- Fresh water (surface or subterranean water, quality and quantity, DCE, measures)
- Waste (production, waste treatment and prevention, measures)

For each of these themes, the EEA has proposed guidelines providing a certain degree of coherence between national presentations and taking account of the constraints related to web publication (e.g. in terms of length of the text). These guidelines are based on key questions, proposed indicators (originating from the EEA core set) among which the Member States are requested to choose, and keywords.

The key questions are common to all the themes:

- Why are we interested in this theme?
- What are the states (S) and impacts (I) related to this theme, including impacts on the natural environment and human health/well-being, at the national as well as trans-border level?
- What are the key driving forces (D) and the related pressures (P) at the national level?
- What is the prospect for 2020 (flexible date) for the theme in question and in what way will this evolution affect possible impacts on the natural environment and human health/well-being?
 - What responses (R) have been established or are planned at the national level for the theme in question?

"Diversity" part

For this part also, the EEA has supplied a guideline based on questions, keywords and recommendations in terms of length:

- What are the factors distinguishing your country from all the others?
- What have been the major societal developments since 1980, in comparison to the period 1950-1980, including their relevance to the environment?
- What are the main driving forces and pressures on the environment, and how do they contribute to the multiple impacts on people and the natural environment?
- What are the principal developments envisaged for the coming decades that could contribute the most to future pressures on the environment?

"Flexibility" part

For this part, the EEA has not really set editorial constraints except on length. This part can be developed jointly by several Member States (e.g. questions related to the Baltic Sea, the Mediterranean Sea, the Alpine Regions, etc.).

For Belgium, it has been decided that the Federal State and the 3 Regions will each supply a subject:

- Brussels Region: indoor pollution
- Flemish Region: transport
- Walloon Region: river contracts and application of the "sanction" decree for environmental infractions
- Federal State: (in principle) pesticides

Synthesis

The only document published in paper format, the synthesis of the 2010 SOER will be a self-sufficient document based on parts A, B and C of the full report, but without its 3-part structure. The analysis will in addition be supplemented by "key observations" originating from other activities of the EEA (principle of precaution and green economy in particular).

It will be composed of different sections:

- The first section will be intended to provide an "assessment of the state of the environment in Europe". It will summarise the progress (sometimes insufficient) made on the European scale for a selection of environmental themes (involving status, pressures and impacts).
- The second section will be the main section of the synthesis. It will examine "progress in the state of the environment in Europe", integrating the development of emerging questions and environmental challenges over time (increasing complexity in the approach, up to a systemic approach incorporating interrelations between various sectors). It will include 4 parts, each based on a selection of key indicators (internal, from the CSI or from thematic sets) allowing comparison of the situation between different countries:
 - Climate change: mitigation to a global increase of 2°C and preparation for adaptation
 - Natural resources and waste: evolution toward sustainable consumption
 - Nature and biodiversity: protecting ecosystems and natural capital
 - Environment, health and quality of life: preventing pollution while exercising precaution.
- The third section will consist of an analysis of the "present environmental challenges" that emerge from the first two sections, their interconnections, relation to economic and social trends and the necessary policy adaptation for this integrated approach (coherent action programmes).
- Finally, the fourth and last section will follow from the third, and will concern the necessity to "Re-think environmental priorities (and the way to go about this)": implementation of more extensive and more coherent actions (but taking account of present political realities and thematic constraints), improvement of information to facilitate a participatory decision-making process, interactions between environmental areas and economic sectors, etc.

The objectives presently identified for the synthesis are the following:

- Objectives in the context of the 2010 SOER:
 - To integrate all the evaluations drawn up in the framework of the SOER (parts A, B and C), as well as via other activities of the EEA when appropriate;
 - To provide a starting point for more detailed evaluations, thematic or national (notably via direct links to the various parts of the full report);
 - To serve as a basis for shorter summaries intended for "decision-makers" (for example, 2 pages long) and other potential by-products that could be necessary in various contexts.
- Objectives in a broader context:
 - To give an expanded "picture" (including a global perspective) of the relevant themes with regard to the European environment, focussing on interconnections that exist between these themes;
 - To support planning of policy responses and societal solutions allowing significant and sustainable improvement in the European environment;

- To provide solid bases for the conclusions to be drawn by European legislators with a view to defining and validating the architecture of future environmental policies (for example based on a revision of the 6th programme framework);
- To constitute an established and recurring reference over time, offering a (re)interpretation of dominant environmental themes seen in a broader societal context;
- To allow the reader to (and assist him in) "posing the right questions" to support establishment of priorities and anticipate future environmental challenges.

For more information

- The website of the EEA devoted to the SOER: <http://soer2010.ew.eea.europa.eu/>
- Different provisional versions of documents are available from the EEA (limited access). The following versions have been consulted:
- "SOER 2010 - Synthesis: Project plan", August 2009, 19 pages.
- "SOER 2010 Synthesis: Annotated Outline -final-", November 2009, 15 pages.
- "Annotated outlines for the analysis of long-term global megatrends: SOER 2010 Part A", Document interne, 33 pages.
- "SOER 2010 - Part B (thematic assessment)", end of October or beginning of November 2009, first version concerning analyses of the 6 themes considered: "Land" (36 pages), "Urban Environment" (32 pages), "Atmospheric pollution" (49 pages), "Marine, maritime and coastal environment" (36 pages), "Biodiversity" (38 pages), "Resource use and waste" (46 pages), "Water pollution" (28 pages) and "Water quantity and structural management" (50 pages).
- "SOER 2010 Part C guidance for contributors in Eionet", 4 November 2009, 28 pages

TECHNICAL ANNEX

CHARACTERISTICS OF THE CORE SET OF INDICATORS (CSI)

List of CSI indicators⁵¹

- T1. Air pollution and ozone depletion
 - CSI 001 - Emissions of acidifying substances
 - CSI 002 - Emissions of ozone precursors
 - CSI 003 - Emissions of primary particles and secondary particulate matter precursors
 - CSI 004 - Exceeding air quality limit values in urban areas
 - CSI 005 - Exposure of ecosystems to acidification, eutrophication and ozone
- T2. Biodiversity
 - CSI 007 - Threatened and protected species
 - CSI 008 - Designated areas
 - CSI 009 - Species diversity
- T3. Climate change
 - CSI 006 - Production and consumption of ozone depleting substances
 - CSI 010 - Greenhouse gas emission trends
 - CSI 011 - Greenhouse gas emission projections
 - CSI 012 - Global and European temperature
 - CSI 013 - Atmospheric greenhouse gas concentrations
- T4. Terrestrial environment
 - CSI 014 - Land take
 - CSI 015 - Progress in management of contaminated sites
- T5. Waste
 - CSI 016 - Municipal waste generation
 - CSI 017 - Generation and recycling of packaging waste
- T6. Water
 - CSI 018 - Use of freshwater resources
 - CSI 019 - Oxygen consuming substances in rivers
 - CSI 020 - Nutrients in freshwater
 - CSI 021 - Nutrients in transitional, coastal and marine waters
 - CSI 022 - Bathing water quality
 - CSI 023 - Chlorophyll in transitional, coastal and marine waters
 - CSI 024 - Urban waste water treatment
- S1. Agriculture
 - CSI 026 - Area under organic farming
 - CSI 025 - Gross nutrient balance
- S2. Energy
 - CSI 027 - Final energy consumption by sector
 - CSI 028 - Total primary energy intensity
 - CSI 029 - Primary energy consumption by fuel
 - CSI 030 - Renewable primary energy consumption
 - CSI 031 - Renewable electricity consumption
- S3. Fisheries
 - CSI 032 - Status of marine fish stocks
 - CSI 033 - Aquaculture production
 - CSI 034 - Fishing fleet capacity
- S4. Transport
 - CSI 035 - Passenger transport demand
 - CSI 036 - Freight transport demand
 - CSI 037 - Use of cleaner and alternative fuels

⁵¹ <http://themes.eea.europa.eu/IMS/CSI>

Method of selecting indicators	<p>Selection from a much larger set of indicators intended to provide a selection of high-priority policy questions (key or specific, see Appendix 4 of EEA, 2005), on the basis of criteria widely used in Europe and by the OECD (EEA, 2005⁵²):</p> <ol style="list-style-type: none"> 1. Policy relevance 2. Progress towards targets 3. Available and routinely collected data 4. and 5. Spatial and temporal coverage 6. National scale and representativeness of data 7. Understandability of indicators 8. Methodologically well founded 9. EU priority policy issues <p>Indicators are in addition classified by type and positioned according to the DPSIR structure</p>
Data assembly method	<p>Part of the data used (9 databases of the 97 used) are developed by the EEA (air, water, soil, land use and protected areas).</p> <p>The principal data source is Eurostat data (30 databases), followed by the DG ENV (14 databases). Other sources are also used (UN, etc.)</p> <p>See Appendix 5 of EEA, 2005 for further details.</p>
Legal status of transmission of the information	<p>50 of the 97 databases used are fed by a legal reporting obligation (for Eurostat, the EC or the UN), and 16 by a moral reporting obligation (for the EEA in particular).</p> <p>See Appendix 5 of EEA, 2005 for further details</p>
Calculation of indicators	Calculated by the EEA or by specific organisations
Scale of calculation	European and/or national depending on the indicator
Periodicity of calculation	Determined by the availability of data (update every year, every 2, 3, 5 or 10 years depending on the case - see Appendix 2 of EEA, 2005)
Latest data available	2005, 2007, 2008 or 2009 depending on the indicator and availability of data

⁵² European Environment Agency, 2005, "EEA core set of indicators - Guide", EEA Technical report, No 1/2005, 38 pages, disponible sur http://www.eea.europa.eu/publications/technical_report_2005_1

CHARACTERISTICS OF THE SET OF SUSTAINABLE DEVELOPMENT INDICATORS (SDI)

List of SDI indicators⁵³

Level 1	Level 2	Level 3	
Theme: SOCIOECONOMIC DEVELOPMENT			
Growth rate of real GDP per capita	Sub-theme: ECONOMIC DEVELOPMENT		
	Total investment	Dispersion of regional GDP by inhabitant	
	Investment by public administrations	Net national income	
	Business investment	Household saving rate	
	Sub-theme: INVESTMENT, COMPETITIVENESS AND ECO-EFFICIENCY		
	Rate of growth in labour productivity per hour worked	Total Research and Development expenditure	
		Real effective exchange rate	
		Turnover attributable to innovative products	
		Effects of innovation on material and energy efficiency	
		Energy intensity of the economy	
	Effects of innovation on reduction of environmental impacts or improvement in safety and health		
		Sub-theme: EMPLOYMENT	
		Total employment rate	Employment rate by gender
			Employment rate by highest level of education or training attained
			Dispersion of regional employment rates by gender
Unemployment rate by gender			
Unemployment rate by age group			
Theme: SUSTAINABLE CONSUMPTION AND PRODUCTION			
Resource Productivity	Sub-theme: RESOURCE USE AND WASTE		
	Municipal waste generated	Components of domestic material consumption	
		Domestic material consumption by material	
		Municipal waste treatment by type of treatment method	
		Production of hazardous waste, by economic activity	
		Authorised emissions of acidifying substances, by source sector	
		Emissions of ozone precursors, by source sector	
	Emissions of particulate matter, by source sector		
	Sub-theme: CONSUMPTION PATTERNS		
	Household electricity consumption	Final energy consumption by sector	
		Consumption of certain foodstuffs per inhabitant	
		Motorisation rate	
	Sub-theme: PRODUCTION PATTERNS		
	Organisations with an environmental management system	Ecological label allocation	
		Area receiving agro-environmental support	
Agricultural area under organic agriculture			
Livestock density index			
Contextual indicators			
- Number of households			
- Household expenditure per person, by category			

⁵³ <http://epp.eurostat.ec.europa.eu/portal/page/portal/sdi/introduction>

Level 1	Level 2	Level 3
Theme: SOCIAL INCLUSION		
Rate at risk of poverty, by gender	Sub-theme: MONETARY POVERTY AND LIVING CONDITIONS	
	Persistent poverty risk rate	Rate of poverty risk by age group
		Poverty risk rate by household type
		Relative median gap at poverty threshold
		Inequality of income distribution
	Sub-theme: ACCESS TO LABOUR MARKET	
	Peoples living in jobless households, by age group	Poverty risk rate for working persons
		Total long-term unemployment rate
		Salary gap between men and women (uncorrected)
	Sub-theme: EDUCATION	
	Young people having quit school early	Poverty risk rate, by highest level of education
		Persons with a low level of education by age group
		Life-long learning
Poor reading performance of students		
Individuals' computer skills		
Individuals' internet use skills		
Contextual indicator - Public expenditure for education		
Theme: DEMOGRAPHIC CHANGES		
Employment rate of older workers	Sub-theme: DEMOGRAPHY	
	Life expectancy at age 65, by gender	Total fertility rate
		Crude rate of migratory balance plus adjustment
	Sub-theme: INCOME ADEQUACY OF THE ELDERLY	
	Aggregate replacement rate	Poverty risk rate for elderly persons
	Sub-theme: PUBLIC FINANCE STABILITY	
Gross public debt	Average exit age from the labour market	
Contextual indicators - Old-age dependency rate (for sub-theme demography) - Projected old-age dependency rate (for sub-theme demography) - Pension expenditure projections (baseline scenario) (for sub-theme public finance stability) - Expenditures for assistance to the elderly (for sub-theme public finance stability)		
Theme: PUBLIC HEALTH		
Number of years in good health and life expectancy at birth, by gender	Sub-theme: HEALTH AND HEALTH INEQUALITIES	
	Mortality rate due to chronic diseases, by gender	Number of years in good health and life expectancy at age 65, by gender
		Mortality rate by suicide, total, by age group
		Mortality rate by suicide, men, by age group
		Mortality rate by suicide, women, by age group
		Self-reported unmet needs for medical examination or treatment, by income quintile
		<i>Dispersion of regional death rates</i>
	Sub-theme: FACTORS INFLUENCING HEALTH	
	Index of production of toxic chemical products, by toxicity class	Exposure of the urban population to air pollution by particulate matter
		Exposure of the urban population to air pollution by ozone
		Proportion of the population living in households believing that they suffer from noise
		Serious work-related accidents

Level 1	Level 2	Level 3
Theme: CLIMATE CHANGE AND ENERGY		
Greenhouse gas emissions	Sub-theme: CLIMATE CHANGE	
	Greenhouse gas emissions by sector	Intensity of greenhouse gas emissions by consumption of energy
		Projections for greenhouse gas emissions
		Average temperature at the Earth's surface
Proportion of renewable energies in gross domestic energy consumption	Sub-theme: ENERGY	
	Energy dependency	Gross domestic energy consumption, by type of fuel
		Electricity from renewable energies
		Share of biofuels in total consumption of fuel for transport
		Combined heat and electricity production
Implicit tax rate on energy		
Theme: SUSTAINABLE TRANSPORT		
Energy consumption of transport compared to GDP	Sub-theme: TRANSPORT AND MOBILITY	
	Modal distribution of passenger transport	Volume of freight transport compared to GDP
	Modal distribution of freight transport	Volume of passenger transport compared to GDP
		Energy consumption of transport by mode
		Investments in transport infrastructure by mode
	Sub-theme: TRANSPORT IMPACTS	
	GHG emissions of transport activities	Emissions of ozone precursors by transport
		Emissions of particulate matter by transport
People killed in road accidents	Average CO ₂ emissions per km from new private vehicles	
Contextual indicator		
- Price indices of transport		
Theme: NATURAL RESOURCES		
Common bird index	Sub-theme: BIODIVERSITY	
	Sufficient number of sites designated under the EU Habitats Directive	<i>Deadwood</i>
	Sub-theme: FRESHWATER RESOURCES	
	Surface and groundwater abstraction as a share of available resources	Population connected to urban waste water treatment with at least secondary treatment
Biochemical oxygen demand in rivers		
Fish catches from stocks outside safe biological limits	Sub-theme: MARINE ECOSYSTEMS	
	<i>Mercury concentration in fish and shellfish</i>	Size of the fishing fleet
	Sub-theme: LAND USE	
	Built-up land	Forest trees affected by defoliation
	Forest: growth and felling	<i>Land at risk of erosion</i>

Level 1	Level 2	Level 3
Theme: GLOBAL PARTNERSHIP		
Official development assistance in proportion to gross national income	Sub-theme: GLOBALISATION OF TRADE	
	EU imports from developing countries by income group	EU imports from developing countries by product group
		EU imports from least-developed countries by product group
		Aggregate measure of support for agriculture
	Sub-theme: FINANCING FOR SUSTAINABLE DEVELOPMENT	
	EU financing for development, by type	Foreign direct investment in developing countries by income group
		Official development assistance, by income group
		Official development assistance, untied
		Bilateral official development assistance by category
	Sub-theme: GLOBAL RESOURCE MANAGEMENT	
CO ₂ emissions per inhabitant in the EU and in developing countries		
Contextual indicators		
<ul style="list-style-type: none"> - Population living on less than one dollar per day - Official development assistance per inhabitant - Population with sustainable access to a high-quality water source 		
Theme: GOOD GOVERNANCE		
	Sub-theme: POLICY COHERENCE AND EFFECTIVENESS	
	Cases of new infractions	Transposition of community legislation, by policy area
	Sub-theme: OPENNESS AND PARTICIPATION	
	Participation in national and EU parliamentary elections	Availability of online administration
		Use of online administration by citizens
	Sub-theme: ECONOMIC INSTRUMENTS	
	Share of environmental and labour taxes in total tax revenue	
Contextual indicator		
- Level of citizen confidence in EU institutions		

Method of selection of indicators	<p>By a group of experts (Sustainable Development Indicators - Task Force). Starting from the policy priorities of the EU SDS Maximum use of existing initiatives in development of indicators (EUROSTAT, EEA, EC, UN, OECD, etc.) Selection criteria (applied with some flexibility given the absence of data in some areas) (Alumnia, 2005⁵⁴):</p> <ul style="list-style-type: none"> - An indicator should capture the essence of the problem and have a clear and accepted normative interpretation. - An indicator should be robust and statistically validated. - An indicator should be responsive to policy interventions but not subject to manipulation. - An indicator should be measurable in a sufficiently comparable way across Member States, and comparable as far as practicable with the standards applied internationally by the UN and the OECD. - An indicator should be timely and susceptible to revision. - The measurement of an indicator should not impose on Member States, on enterprises, nor on the Union's citizens a burden disproportionate to its benefits.
Data assembly method	<p>Most of the data used come from regular collection of information by Eurostat, via the European Statistical System (comprised of the Commission (Eurostat), the national statistical institutes (NSI) and the other national authorities responsible for development, production and distribution of European statistics). Other European sources are also used, notably the services of the European Commission and the European Environment Agency.</p>
Legal status of the transmission of information	Not specified
Calculation of indicators	Indicators calculated by Eurostat, organisation responsible for their quality (see the methodological "quality profile" reports available on the website)
Scale of calculation	European and/or national depending on the indicator
Periodicity of calculation	Report drafted every 2 years (latest report available = 2009)
Latest data available	2007 or 2008 (publication of 2009)

⁵⁴ Alumnia, février 2005, "Sustainable Development Indicators to monitor the implementation of the EU Sustainable Development Strategy", Communication to the members of the EC commission, SEC(2005) 161 final, 20 pages, disponible sur http://ec.europa.eu/sustainable/docs/sec2005_0161_en.pdf

CHARACTERISTICS OF THE STRUCTURAL INDICATORS

List of the structural indicators^{55,56}

	Short list	Other indicators
GENERAL ECONOMIC CONTEXT		
	<i>GDP per capita in PPS</i>	
		Real GDP growth rate
	<i>Labour productivity</i>	
		Labour productivity per hour worked
		Employment growth by gender
		Annual average inflation rate
		Real unit labour cost growth
		Public balance
		Public debt
INNOVATION AND RESEARCH		
		Expenditures devoted to human resources
	<i>Gross domestic R&D expenditure</i>	
		Gross domestic R&D expenditure by financing source
		Level of internet access - households
		Science and technology graduates by gender
		Patents applications to the European Patent Office (EPO)
		Patents granted by the US Patent and Trademark Office (USPTO)
		Venture capital investments by type of investment
		ICT expenditures by type of product
		E-Commerce via Internet
	<i>Educational level of young people (20-24)*</i>	
		Availability of online administration
		Use of online administration by citizens by gender
		Use of online administration by businesses
		Broadband penetration rate
		High-technology exports
ECONOMIC REFORM		
	<i>Comparative price levels</i>	
		Price convergence between EU Member States
		Price of telecommunications by type of call
		Electricity prices by type of user
		Gas prices by type of user
		Market share of the largest electricity producer
		Market share of the incumbent operator in fixed telecommunications by type of call
		Market share of the leading operator in mobile telecommunications
		Public procurement
		State aid by type of aid
		Convergence of interest rates by type of credit
		Market integration by type of trade activities
		Market integration - Intensity of foreign direct investments (FDI)
	<i>Business investment</i>	
		Business demography

⁵⁵ Communication of the Commission - Structural Indicators - [COM\(2003\)585 final](#) - 08/10/2003

⁵⁶ http://epp.eurostat.ec.europa.eu/portal/page/portal/structural_indicators

	<i>Short list</i>	Other indicators
EMPLOYMENT		
	<i>Employment rate by gender</i>	
	<i>Employment rate of older workers by gender</i>	
		Average exit age from the labour force by gender
		Gender pay gap, unadjusted
		Tax burden on labour cost
		Tax rate on low age earners by marginal effective tax rates on employment incomes
		Implicit tax rate on labour
		Life-long learning by gender
		Serious work-related accidents by gender
		Fatal work-related accidents
		Unemployment rate by gender
SOCIAL COHESION		
		Inequality of income distribution
		Rate of poverty risk before social transfers by gender
	<i>Rate of poverty risk after social transfers by gender</i>	
		Persistent poverty risk rate by gender (<i>Data under review</i>)
	<i>Dispersion of regional unemployment rates by gender</i>	
		Early school leavers, by gender
	<i>Long-term unemployment rate by gender</i>	
		Jobless households - children
		Jobless households by gender
		Formal child care by duration and age group
		Poverty risk rate after social transfers
		Long-term unemployment rate
		Dispersion in regional employment rates
ENVIRONMENT		
	<i>Greenhouse gas emissions</i>	
	<i>Energy intensity of the economy</i>	
		Combined heat and electricity production
		Implicit tax rate on energy
		Electricity from renewable energy sources
	<i>Volume of freight transport relative to GDP</i>	
		Volume of passenger transport relative to GDP
		Road transport share of total inland freight transport
		Car share of inland passenger transport
		Urban population exposure to air pollution by ozone
		Urban population exposure to air pollution by particulate matter
		Municipal waste generated
		Municipal waste by type of treatment
		Resource productivity
		Fish catches from stocks outside of safe biological limits
		Sufficient number of designated sites under the EU Habitats Directive
		Farmland bird index
		Years of healthy life expectancy at birth by gender

Method of selection of indicators	Search for a "high-quality profile" by Eurostat, in collaboration with the National Statistical Institutes, according to the following criteria: <ul style="list-style-type: none"> - Feasibility in terms of spatial and temporal coverage - Reliable sources following high standards and having statistical expertise (with regard to applied techniques and methodology). - Comparability: between countries (Member States, Candidate countries, USA and Japan) and over time (from one year to another).
Data assembly method	By Eurostat, in collaboration with the National Statistical Institutes
Legal status of transmission of the information	Not specified
Calculation of indicators	By Eurostat
Scale of calculation	National + European averages
Periodicity of calculation	Annual (indicators for input to the "Annual Progress Reports" of the Commission on the Lisbon Strategy)
Latest available data	2008

CHARACTERISTICS OF THE EPR INDICATORS

*List of EPR indicators*⁵⁷

1 Climate change and energy

- 1.1 Global air temperature change
- 1.2 Natural disasters linked to climate change
- 1.3 Total Kyoto greenhouse gas emissions
- 1.4 Electricity produced from renewable energy
- 1.5 Combined heat and power generation
- 1.6 Energy intensity
- 1.7 Final energy consumption by transport
- 1.8 Average CO₂ emissions from passenger cars
- 1.9 Cumulative spent fuel from nuclear power plants

2 Nature and biodiversity

- 2.1 Common birds
- 2.2 Landscape fragmentation
- 2.3 Freight transport
- 2.4 Area occupied by organic farming
- 2.5 Area under agri-environmental commitment
- 2.6 Sufficiency of site designation under the Habitats Directive
- 2.7 Natura 2000 area (% terrestrial area)

3 Environment and health

- 3.1 Urban population exposure to air pollution by particles
- 3.2 Urban population exposure to air pollution by ozone
- 3.3 Emission projections for air pollutants
- 3.4 Air emissions of nitrogen oxides
- 3.5 Exposure of ecosystems to acidification
- 3.6 Exposure of ecosystems to eutrophication
- 3.7 Water exploitation index
- 3.8 Production of toxic chemicals
- 3.9 Pesticides residues in food

4 Natural resources and waste

- 4.1 Fish catches from stocks outside safe biological limits
- 4.2 Municipal waste generated
- 4.3 Recycling of packaging waste

5 Environment and the economy

- 5.1 Environmental taxes

6 Implementation

- 6.1 Infringements of EU environmental legislation

⁵⁷ <http://ec.europa.eu/environment/policyreview.htm>

Method of selection of indicators	<p>Selection of themes as a function of the key environmental objectives, notably of the 6th European Framework Programme.</p> <p>Indicators principally selected from other sets of indicators developed in Europe (sustainable development indicators, structural indicators and core set of indicators).</p> <p>This selection has been complemented by a performance indicator and an eco-efficiency indicator. The selection method for these indicators is not specified.</p>
Data assembly method	Data collected from various European authorities or study bureaus, as a function of the indicator concerned (EEA and ETCs, Eurostat, DGs, EC, UNECE, CRU, CRED, EBCC, RSPB, etc.)
Legal status of transmission of the information	Function of the source
Calculation of indicators	Indicators principally collected from other sets of European indicators by the DG Env.
Scale of calculation	<p>European (12, 15 and/or 27) and national.</p> <p>The first part of the reports contains an analysis on the European scale. The second gives an analysis sheet by country, compared to the European average.</p>
Periodicity of calculation	Report produced every year (since 2003, last report available = 2008)
Latest available data	2005, 2006, 2007 or 2008, depending on the indicator (2008 publication)