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## KEY INDICATORS FOR SUSTAINABLE DEVELOPMENT

Paper submitted by EUROSTAT

**Summary:** The Göteborg European Council of Heads of State, held in June 2001, agreed a strategy for sustainable development which completes the Union's political commitment to economic and social renewal, adding a third, environmental dimension, establishing a new co-ordinated approach to policy making. As a first step, the European Council singled out a number of objectives and measures as general guidance for future policy development in four priority areas: *climate change, transport, public health and natural resources*, thus complementing decisions on social and economic issues taken by the European Council in Stockholm.

The European Council noted that *"the Commission will evaluate implementation of the Sustainable Development Strategy in its annual synthesis report, on the basis of a number of headline indicators, to be agreed by the Council in time for the Spring European Council 2002"*.

Several EU Member States have already developed their own strategies for sustainable development and/or published the first sets of indicators to monitor progress.

Adding the environmental dimension to the Structural Indicators will require further work by some Member States, in co-operation with the Statistical Offices and Environment Ministries/Agencies, to improve environment statistics and indicators and to achieve the same quality and timeliness as the other structural indicators.

**Outstanding Problems:** The user demand may continue to be vague and may differ at national, EU and global levels, which may make co-ordination of efforts and harmonisation of indicator systems difficult.

As there are few explicit targets for policy achievements, the indicators and the subsequent statistical needs are difficult to prioritise.

**Risk Assessment:** In the short term, if the statistical system does not respond to the request of adding environment to the structural indicators, data will be collected outside the statistical system and will be badly co-ordinated with other indicators.

In the mid-to-long term, if the statistical system does not respond to the need for adjustments to sustainability in general, the effects will be wider but less tangible, as they will influence the system's capacity to reflect the interactions between social, economic and environmental concerns from a long-term perspective.

# 1 POLITICAL PROCESSES AND INDICATORS RELATING TO SUSTAINABLE DEVELOPMENT AT EU LEVEL

## *The policy process*

Sustainable development was introduced as an explicit objective of the European Community in the Single European Act (1987). The requirement for environmental considerations to be integrated into all Community policies was added in the Maastricht Treaty (1992) and reinforced in the Amsterdam Treaty.

The Cardiff European Council in June 1998, asked several Council formations to report on their steps towards integration of environmental concerns into their policies. This included a requirement to produce indicators to monitor progress. Other European Councils have added new areas for this integration, and the process now covers Transport, Energy, Agriculture, Industry, Fisheries, Development, Internal Market, ECOFIN and General Affairs. The Cardiff decision started intense work on integration policies in the Commission and a number of communications have been presented to the Council formations concerned.

## *Göteborg European Council*

In June 2001 the Göteborg European Council considered the first comprehensive EU Strategy for Sustainable Development, based on a Commission Communication (COM(2001)264).

The European Council emphasised that the Union's Sustainable Development Strategy is based on the principle that the economic, social and environmental effects of all policies should be examined in a co-ordinated way and taken into account in decision-making.

It agreed a strategy for sustainable development which completed the Union's political commitment to economic and social renewal, and added a third, environmental dimension to the Lisbon strategy to establish a new approach to policy making.

It noted that the ***Commission will evaluate implementation of the Sustainable Development Strategy in its annual synthesis report, on the basis of a number of headline indicators, to be agreed by the Council in time for the Spring European Council 2002.*** At the same time, the Commission will present a report assessing how environment technology can promote growth and employment.

As a first step, the European Council singled out a number of objectives and measures as general guidance for future policy development in four priority areas: *climate change, transport, public health and natural resources*, thus complementing decisions on social and economic issues taken by the European Council in Stockholm.

*Regarding climate change* it reaffirmed its commitment to delivering on Kyoto targets and its determination to meet the indicative target for the contribution of electricity produced from renewable energy as set out in the Directive on Renewable Energy.

*Regarding transport*, it invited the European Parliament and the Council to adopt revised guidelines for trans-European transport networks by 2003 and noted that the Commission will propose a framework to ensure that by 2004 the price of using different modes of transport better reflects costs to society.

*Regarding public health* it noted that the chemicals policy should be in place by 2004, and also noted the Commission's intention for an action plan on measures against infectious diseases and resistance to antibiotics. It urged the Parliament and the Council to agree on adoption of the European Food Authority and Food Law Regulation. It asked that the possibility of the creation of a European surveillance and early warning network on health issues be examined.

*Regarding natural resources*, it emphasised that the relationship between economic growth, consumption of natural resources and the generation of waste must change. It agreed that the Common Agricultural Policy, among its objectives, shall contribute to achieving sustainable development and that the review of the Common Fisheries Policy shall address the overall fishing pressure by adapting the EU fishing effort. It agreed that the EU Integrated Product Policy aimed at reducing resource use and the environmental impact of waste should be implemented in co-operation with business; it also agreed on halting bio-diversity decline as set out in the 6<sup>th</sup> Environmental Action Programme.

The Council was invited to finalise and further develop sector strategies for integrating environment into all relevant Community policy areas with a view to implementing them as soon as possible and presenting the results of this work before the Spring European Council in 2002.

The Council also invited Member States to draw up their own national sustainable development strategies.

It emphasised that sustainable development requires global solutions and stated that the Union's Sustainable Development Strategy forms part of the Union's preparations for the 2002 World Summit on Sustainable Development.

## **2 ISSUES TO BE ADDRESSED BY THE STATISTICAL SYSTEM - AN EVOLVING PROCESS FOR MEASURING SUSTAINABILITY**

As an immediate answer to the request by the Göteborg European Council, the environmental dimension should be added to the Structural Indicators. The work to identify the relevant indicators will be led by the Economic and Financial Affairs DG of the Commission. Eurostat is taking an active part in this work to ensure that statistical issues such as measurability, data availability, the need for harmonisation, and timeliness of data will be thoroughly considered.

A more long-term process to adapt the statistical system to reflect sustainable development issues and requirements is also essential. This need for adaptation is not totally new, but will rather further deepen and clarify modifications already begun. The processes are policy driven: indicators will be identified by policy makers; as a result, adaptations of social and economic statistics to better integrate environmental and sustainability concerns will be requested.

The ESS can therefore build on the current indicator projects, both in terms of experiences at EU level, summarised in Annex 1, and at national level, set out in Annex 2. These illustrate the main indicator initiatives only and provide a partial, but indicative, picture of the variety of indicator systems and the different interpretations given to the complex concept of sustainability. Another feature which emerges from existing projects is the 'double nature' of indicators: on the one hand, they should be strictly linked to specific policy issues in order to permit the evaluation of policy measures; on the other hand, indicators should be well rooted in the statistical system and its basic definitions and classifications.

This is part of another key issue in the definition of an appropriate SD indicator set, i.e. the choice of frameworks to be applied. Annex 3 summarises the most important possible options available and in use at present. Two general considerations are important here. Firstly, up to now no comprehensive analytical framework has been identified and agreed at international level. This implies that at the present stage of development no comprehensive unit of measurement can bring together the three ‘pillars’ of sustainability. Secondly, one should be aware of the objective limits of a purely quantitative dimension of sustainability (the ‘measurement side’), as qualitative factors also play a major role. A crucial issue is the capability to assure an inter-dimensional assessment of sustainability. To this end, the European Statistical System can contribute to the improvement of the statistical analysis of the links between the three major sustainability building blocks: the social, economic and environmental dimensions.

The conclusions from Göteborg also invite Member States to draw up their own national sustainable development strategies. At national level this will be followed by the need to monitor the strategies through indicators, which will further support the indicator initiatives by Member States. Actions by the Statistical System should thus build on experiences gained at Member State level in combination with those gained at Community level, to achieve convergence of approaches, when suitable.

### **3 A COMMON APPROACH TO SUSTAINABLE DEVELOPMENT**

A task force composed of experienced Member State representatives and Eurostat will be set up, with the objectives of:

- Playing an active role in work on identifying indicators for sustainable development, so that statistical issues will be taken into account and so that the necessary statistics are compiled, using experiences from Member State representatives to achieve common approaches at EU level;
- Analysing/developing suitable frameworks for statistical work on indicators of sustainable development (balance between existing analytical frameworks, e.g. extensions of national accounts, verification of research theoretical work on sustainability, etc.);
- Acting as a mediator and facilitator on sustainability issues for relevant working groups on social, economic and environmental statistics.

## ANNEX 1

### PROGRESS ON SDI RELEVANT INDICATOR PROJECTS AT EU AND COMMISSION LEVEL

There are a number of indicator initiatives at EU level referring to sustainability and environment which will be useful in future work.

#### 1. Sustainable Development Indicators

Eurostat has produced two publications on indicators of sustainable development, both covering the three pillars of sustainable development strategy – economic, social and environmental and the institutional dimension – as structured in the UN/CSD indicator concepts. The 2001 edition, “*Measuring Progress Towards a more Sustainable Europe*”, contains 63 indicators, of which 22 are mainly social, 21 are mainly economical and 16 mainly environmental. Some have been adapted to reflect EU conditions. The set follows the new more policy-oriented classification of the CSD list, but it also provides some preliminary illustration of the major issues highlighted in the EU Strategy. As for the environmental dimension, the 16 compiled indicators are to a considerable extent identical/similar to those in the Headline Indicator or the Environmental Pressure Indicator sets. It should be noted that for most of the environmental variables, data availability and the possibility of updating are clearly insufficient. Moreover, the social indicators usually do not yet reach the quality standard of the economic indicators.

The publication also contains an overview of recent Member State experiences concerning indicators of sustainable development.

#### 2. Integration Indicators

The following publications should be mentioned with regard to integration of environmental concerns into other policies:

- **Transport:** “*TERM (Transport and Environment Reporting Mechanism)*” was initially set up “to develop a comprehensive set of indicators of the sustainability of transport in conjunction with the EEA”, as requested to the Commission by the Cardiff Council (June 1998). Annual publications are produced by the EEA (synthetic report) and Eurostat (statistics and indicators). The first editions were published in 2000, and second editions are now in press.

- **Energy:** “*Integration Indicators for Energy*” (often referred to as “The Energy Indicators Pocketbook”) is produced by Eurostat in co-operation with the Transport and Energy DG and the European Environment Agency, as a result of the initiatives taken at the Cardiff European Council in 1998. It was published first in 1999 and again in 2001; a further issue is planned for 2002. The publication gives an overview of energy market developments and of the Community’s progress towards sustainability. The content reinforces the notion that, from an energy point of view, sustainable development encompasses the three traditional objectives of energy policy: “security of supply”, “competitiveness”, and “concern for the environment”. The “Energy Indicators Pocket Book” illustrates the evolution of the Community’s energy systems in the form of graphical presentations, data and explanatory text.

- **Agriculture:** A comprehensive publication “*Agriculture: Facts and figures*” (1999), produced by Eurostat in conjunction with the Agriculture and Environment Directorates General, is a first attempt to use existing agricultural statistics to give some insight into environmental aspects of agriculture. This project has highlighted the scarcity of data essential (with the appropriate level of disaggregation) for the creation of a set of indicators to monitor the integration of environmental

concerns into the Common Agricultural Policy'; specific actions on the statistical side are therefore being developed (see Annex 3). For other sectoral areas, general schemes or preliminary indicators for environmental integration have been identified, but no compilation has yet taken place.

### **3. Environmental Indicators**

There are also indicator initiatives focussing on the environmental concerns themselves:

- "*Environmental Headline Indicators*": This project, started in 1999, represents a co-operative effort between the Environment DG, Eurostat and the EEA together with Member States to identify a small set of indicators for environmental policy. The set contains 11 core indicators, ready to be published.<sup>1</sup> The work programme also contains plans for developing more suitable indicators for the present (often partial) ones when data availability has improved.

- "*Environmental Pressure Indicators*" has been published twice by Eurostat (1999, 2001) as a result of the Communication on Indicators and Green Environmental Accounts in 1994 (COM(94)670). It contains a set of 48 indicators, of which some are taken up in the Headline Indicator set.

- "*Environmental Signals*" has been published twice by the EEA (2000,2001), as part of its specific mandate. It contains indicators, partly the same in each edition, and policy-oriented analysis of the indicators ("name, fame and shame"). For future editions there will be closer co-operation between Eurostat and the EEA, with the creation of joint fact sheets and possibly also joint publications.

### **4. Social indicators**

The social field includes important policy areas which are relevant from the perspective of sustainable development. In particular the areas of public health (one of the four priority areas of the EU Strategy for SD, see Section 1.2 above), poverty and the aging population are important in assessing sustainable development. A set of social indicators (including some in each of these three areas) is used by Eurostat and the Employment and Social Affairs DG to track progress as part of the follow-up to the Lisbon Summit. The annual report on the "*The Social Situation in the European Union*" sets out the progress made. This report has been produced jointly by the two DGs in 2000 and 2001; the planning phase of the 2002 edition is under way.

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<sup>1</sup> The actual Environmental Headline Indicators are the following: *Climate Change*: 'emissions of greenhouse gases', *Nature & Biodiversity*: 'designated special protection areas', *Environment & Human Health*: 'emissions of acidifying substances and ground level ozone', 'air pollutant in urban areas', 'river water quality', 'selected toxic chemical substances', *Waste & Resources*: 'municipal and hazardous waste', 'energy consumption and intensity', 'water abstraction', 'evolution of land use'.

## ANNEX 2

### EU MEMBER STATES' EXPERIENCES WITH SDI DEVELOPMENT

As a result of the Rio Summit and further implementation processes at EU and national level, several EU Member States have taken up initiatives on indicators for sustainable development.

The 'measurement side' of the issue of sustainability has clearly emerged as a crucial aspect.

A selection of some representative experiences is presented here: the five EU Member States which took part in the UN testing phase (Austria, Belgium, Finland, France, and Germany,) as well as countries with recent publications (the UK, Denmark and Sweden).

A indicative overview – but surely not exhaustive – of some recent experiences of the EU countries in developing sustainability indicators can be structured according to two main lines:

- the coverage of all three sustainability dimensions – the so-called 'three pillars' – the economic, social and environmental dimensions,
- the use of a specific framework for selecting and organising the indicators.

The sustainable development indicator systems developed by these countries consider all three dimensions, even if more focus is given to a specific aspect or conceptual guideline than another (e.g. the environmental dimension in the German, Finnish and Austrian programmes, the inter-generational dimension in the French work, the social dimension in the UK strategy, etc.)

In general, a policy-oriented framework, following the UN philosophy with stronger or more 'oriented' links to specific policy commitments, is preferred by the majority of countries (UK, Belgium, Germany, Finland), with France and, to some extent, Sweden and Austria as the main exceptions.

Some countries (Germany, Austria, the UK) have further developed a sort of 'core set' of indicators on selected issues, with a focus on relevant targets of communication, i.e. the policy makers and/or public opinion.

Some very general aspects of the work on indicators carried out by these countries are described below.

#### **Austria**

The environmental dimension has been predominant in the Austrian National Environmental Plan (1995), with a focus on integration of environmental concerns into sectoral policies: transport, industry, agriculture, local planning. The regional dimension and local plans for sustainability also play an important role. An 'eco-efficiency' summary report analysed the links among social, economic and ecological aspects for selected issues: the economy as a whole, energy, transport, agriculture, industry, waste.

#### **Belgium**

According to the Federal Plan for Sustainable Development (2000-2004), four key sustainability areas have been identified: consumption and production patterns, poverty-social exclusion-health, marine environment-biodiversity, and climate change. These are illustrated with a broad reference to

around 100 indicators, of which 34 are very similar to the UN selection. A second indicator report is expected in 2002.

### **France**

The French sustainable development indicator programme – carried out at statistical level by IFEN – is based on a ‘modular or thematic approach’ and identifies 10 specific sustainability components, covering all three dimensions. The modules are focussed on wide-ranging, global and even conceptual issues (e.g. ‘critical, providing a long-term perspective to sustainability’). Based on this methodological framework, the compilation of around 200 indicators is foreseen. The statistical adherence to the UN indicators is high (53 UN indicators routinely compiled in France and data are available for 55 variables).

### **Finland**

‘Ecological sustainability’ is a central objective in the Finnish programme for sustainable development (1998), but the other dimensions – economic, social and cultural – are also crucial to achieve environmental and more general goals: preservation of the ‘natural environment’ and the ‘environments’ where people live. An indicator report published in 2000 covers around 80 indicators, organised along 20 key subject areas in the three selected spheres: ecological, economic, socio-cultural. This policy framework and the indicator selection shows the close adherence by the Finnish indicator system to UN methodology.

### **Germany**

As a result of the UN testing phase, a ‘basic set’ of 218 indicators adapted to German conditions has been identified. A more specific and reduced SDI set is currently under development in parallel to the definition (expected in the near future) of a National Sustainable Development Strategy. The ‘German Environmental Barometer’, a selection of 6 environmental headline indicators, represents at present the most relevant monitoring and communication tool with, in addition, good media coverage.

### **Denmark**

A first sustainability report following Denmark’s National Strategy for Sustainable Development has been published in June 2001. The inter-relations between welfare conditions and environment, the quality of the environment, the use of natural resources, international co-operation and sectoral integration processes are key themes in the Danish approach.

### **United Kingdom**

The first report published by the UK in 2000 showed that the main methodological feature of the UK sustainable development indicator system is the strict link between indicator and policy issues and, whenever feasible, to quantified targets. The high level of policy commitment emphasises the role of indicators as monitoring tools for policy implementation. Out of a total of around 140 indicators organised according to policy goals, 15 are designated as ‘headline indicators’, the most important and policy-relevant ones in the three sustainability spheres.

### **Sweden**

In 1999, a first set of 15 environmental headline indicators was developed, according to specific objectives for environmental quality. In the recent first SDI proposed compilation (2001), the three sustainability dimensions are inter-linked in the Swedish approach, focussed on the different facets of the transition towards sustainability. Four key inter-dimensional themes (Efficiency, Contribution and

Equality, Adaptability and Values of Resources to Coming Generations) are introduced and a total of 30 main indicators (economic, environmental, social) have been selected.

## ANNEX 3

### ANALYTICAL AND STATISTICAL FRAMEWORKS FOR MEASURING SUSTAINABILITY

#### 1. POLICY-DRIVEN SCHEMES:

##### ◆ UNCSO framework

The UNCSO framework has already been briefly described under Section 1.1. It should be emphasised that it focuses on the policy issues set out in Agenda 21 and selects suitable indicators for each policy issue. An important element is the search for indicators that are also available on a global scale. It thus strikes a balance between the relevance of the data for the policy issue and the possibility of actually producing the indicators from a short- or medium-term perspective.

##### ◆ Schemes used for integration of environmental and sustainability concerns into other policies

A main feature for the selection of integration indicators is their direct link to specific sectoral policies implemented (or expected to be implemented) at EU level. This can imply the inclusion in the integration indicator schemes of economic, environmental and, to some extent, also social data. The main focus still remains on the policy-oriented questions at EU level which the indicators are supposed to answer. From this perspective, the Transport Environment Reporting Mechanism (TERM) can represent a significant example. Two main key issues can be identified in the TERM scheme: the market mechanisms influencing the structure and the efficiency of the sector (analysis of supply and demand, pricing system, modal split, infrastructures ) and the environmental performance of the sector (the impacts generated, i.e. air pollution, land occupation, spatial congestion). A final selection of 31 indicators has been agreed.

The approach to sustainable development within the energy sector has been to develop indicators (65 in total under around 10 main headings) which respond to the three key policy issues described previously (see Annex 1):

- security of supply (dependencies on energy imports by products and regions)
- competitiveness and prices (energy prices and taxes charged to industrial and domestic consumers, import prices of energy commodities),
- concern for the environment (emissions by pollutants and activities, renewable energy sources, energy efficiency & energy intensity, fuel mix at production and consumption stages).

A diversified and adapted scheme may be necessary for other economic sectors. For instance, in the case of agriculture, an initial set of 35 agri-environmental indicators has been identified according to a DPSIR framework (COM(2000)20), with a focus on specific policy objectives related to the monitoring of agri-environmental policies and programmes, and on the need to investigate the links between agricultural practices and the environment. Further statistical requirements, including an inventory of data sources, have been identified for the definition or calculation of some indicators (COM(2001)144). In addition, the whole issue of sustainable agriculture is tackled by another recent document issued by the Agriculture DG where additional social and economic indicators for rural development are also discussed according to a three dimensional framework (stocks, efficiency and equity).

For other relevant areas at EU level – in particular, enterprises, internal market, economic and development co-operation policies, fisheries, macroeconomic policies, external relations and trade –

specific sectoral integration strategies have been adopted. In some cases, some general schemes (or indicators) for environmental integration have been also preliminarily identified.

In all the schemes the focus is on specific sectoral concerns for environmental integration. Issues which transverse policy fields are not well linked.

As a result, it is extremely difficult to extrapolate one single indicator scheme from the different integration processes.

#### ◆ **The Structural Indicators Classification**

The 35 structural indicators used for the Commission Synthesis Report are organised under five headings more in regard to broader thematic fields than to a specific policy issue:

- General economic background indicators
- Employment,
- Innovation and research
- Economic reform
- Social cohesion

Additional indicators are under development in the area of demography of enterprises, market structure in network industries, E-society, marginal effective tax rate, quality of work and social cohesion.

#### ◆ **Key Social Indicators**

Two of the five domains listed above under Structural Indicators (Employment and Social Cohesion) are regarded as primarily social. The social indicators selected for these two domains are largely a sub-set of the 20 key indicators defined by Eurostat and the Employment and Social Affairs DG, in the wake of the Lisbon summit, to serve as a general benchmark for social progress. The key social indicators map onto the major EU social policy domains, covering demographic trends, the labour market, welfare indicators and education.

## **2. ENVIRONMENTAL FRAMEWORK**

#### ◆ **The Driving Forces-Pressure-State-Response (DPSR) analytical framework**

This framework was originally developed by the OECD for their work on environmental policies and reporting. It was also used in the first CSD set of indicators of sustainable development. It has also been used by the US Interagency Working Group on Sustainable Development Indicators. In an extended form – Driving Forces-Pressures-State-Impact-Responses – it is used by the EEA and Eurostat to structure environmental statistics. It has proven useful for supporting analysis and for organising data. It is, however, a loose framework with no facilities for linking data, modelling etc as in a national accounting framework.

#### ◆ **A complementary EEA typology**

The EEA also uses a more objective-oriented typology of environmental indicators. It distinguishes between descriptive, performance, efficiency and total welfare indicators. This can be considered a reformulation of the DPSR model with a focus on key aspects: analysis of the observed phenomenon (descriptive indicator), progress (or non-progress) towards reference values and/or policy objectives (performance indicator), and changes resulting from the policies in the production and consumption processes (efficiency indicators).

### **3. NATIONAL ACCOUNTING FRAMEWORKS**

The System of Environmental and Economic Accounting (SEEA) was developed during the early 1990s and a revision is just being finalised for approval by the UN Statistical Commission; it will be published by OECD, Eurostat, the World Bank and the UN in 2002. At European level, statistical offices and Eurostat have developed environmental accounts including accounts for natural assets, emission accounts (NAMEAs), material flow accounts, and environmental expenditure accounts. The frameworks are well developed and tested through numerous pilot studies. Regular data collection, however, has only just started. Environmental accounts results have as yet not been used much for compiling indicators of sustainable development. The national accounts approach however probably offers a valuable potential to integrate economic, environmental and social dimensions (including for modelling and forecasts), when monetary values can be attributed. It should be noted that a Eurostat/Member States task force on the European Strategy for Environmental Accounting (ESEA) was created in December 2000 (final report to be submitted to the SPC by the end of 2002).

Social accounting is focussed in particular on income distribution, linking household income and consumption with national accounts aggregates. The data are organised in social accounting frameworks, called SAMs.

The OECD has started work on broadening national accounts to all aspects of sustainable development. Extended national accounts would be a good way of measuring sustainability with a firm conceptual basis, but if all aspects of sustainability were to be included, data availability would be a major problem.

It should be noted that national accounts also constitute the basis of several "single" indicator approaches, as exemplified below.

### **4. SINGLE INDICATOR APPROACH – INDICES AND AGGREGATIONS**

Another approach to SDI which is being developed in research fields and has also already had some operative applications is the "global approach" to indicators, aimed at singling out one very highly aggregated indicator, capable of summarising all the dimensions of sustainability in one overall value. The need for a powerful communication tool for reaching public opinion and policy makers, and the need for a synthetic value in order to compare countries performance, are often the main motivations behind this approach. The intention to 'emulate' the macro-economic measures – GDP in particular – also explains why national accounts often form the basis for these aggregated indices.

Without pretending to be exhaustive, mention may be made here of the most significant initiatives.

In the "Green National Product" approach, economic output is adjusted for changes in environmental (resource depletion and environmental pollution) and social capital (such as health, income inequality). The Genuine Saving approach (World Bank) – expressed as percentage of GDP – adjusts gross savings by deducting the value of resources depleted (energy, minerals, forests) and some environmental damage (carbon dioxide). In both these approaches, the components are valued in monetary terms.

The Human Development Index (HDI), developed by the UN, is a composite measure reflecting life expectancy, educational standard and average income. More focussed on the ecological performance are the "Environmental Sustainability Index" (Columbia and Yale Universities, World

Economic Forum) and the “Ecological Footprint Analysis, ” (Redefining progress WWF) which provides for the assessment of natural resources (over)use in terms of ecological deficit, that is the depletion of the natural capital beyond the regenerative bio-capacity of the earth. “Material Consumption” indicators, which can be developed on the basis of a Material Balance (input/output) approach (Wuppertal Institute, Eurostat, EEA), combine physical and monetary values in order to evaluate – in flow and stocks terms – the overall consumption of material and resources by an economic system. A first estimate of a EU-wide Material Consumption indicator has been included in the Eurostat publication ‘Measuring progress towards a more sustainable Europe’ (2001).

In general, the single indicator approaches pose several questions from a technical and statistical perspective. The main critical issues of a global framework for sustainability indicators are the following:

- the choice of mixed/combined measurement units (hectares and money for instance), the choice of components and of weighting factors,
- the robustness and quality standards of underlying data (or the prominent role of estimation methods),
- the limitation of a ‘global’ perspective for evaluating all aspects of sustainability, (i.e. a single figure for the whole world) which needs to include national and local dimensions as well.

Where resources have a market value, monetary evaluation is easier, although market prices do not necessarily reflect the full environmental and social values of these assets. Where assets do not have a market value, prices are more difficult to obtain and can only be assigned by subjective measures, resulting in potentially misleading conclusions.

Finally, it can be argued that a single figure has more communicative power: it is more easily understood than an indicator set. Moreover, it is widely recognised that a comprehensive, detailed indicator set is useful – and needed – for analytical purposes, but it is not suitable as a communication tool. With this in mind, a 'headline indicators' selection, comprised of a limited but significant indicator set, presents an alternative, more comprehensive and more transparent picture than a single aggregated measure.