

The use of indicators in the European Commission

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1. Introduction

The European Commission is bound to propose evidence based policies to Council and Parliament. These policies originate in the social, economic or environmental policy spheres but often have impacts across a number of policy areas.

The European Commission uses a range of indicators to support policy making in its various steps, from awareness rising, decision-making to monitoring of implementation. The overall indicator picture is dynamic rather than static – more indicators are being used and existing indicators are being continually updated and upgraded. The indicators used differ in their make-up, coverage, and the emphasis put on them. What they have in common is that they have been designed to be used, and since the policy context differs from situation to situation so does their design.

2. The demand for indicators

Indicators are increasingly used in policy making, and the signs are that this trend will increase in the future.

2.1. Current use is widespread

An indicator is something that helps us to understand where we are, where we are going or how far we are from the goal. A fairly simple definition might be 'something that quantifies and simplifies phenomena and helps us understand complex realities', in other words it acts as a proxy or simplification of more complex information.

This is a wide definition. It can include systematically produced indicator sets, or information that is used on an ad-hoc basis because it is the only information available. Every policy area of the European Commission uses indicators to some extent and, as such, there are too many for a complete listing to be possible. In particular, listing every 'single indicator' would be impossible. Instead this paper provides a main summary of the main approaches and concepts of use along with the main examples.

2.2. More indicators in the future?

There is no indicator for the demand for indicators. However, the anecdotal evidence is that there is an increasing demand for their creation and use. This comes from many different factors, but two are clearest.

Firstly, there is frequently a move away from specifying what actions are needed and towards specifying the results that should be obtained. The shift in focus from process towards results leaves considerably more flexibility in the hands of Member States, but does imply that there needs to be some assessment of whether actions taken have been sufficient. This shift can be seen in many ways, the shift from Regulations towards Directives, the setting of political targets (such as the halting of biodiversity loss by 2010) but perhaps most clearly in the increased use of Open Method of Co-ordination.

The Open Method of Co-ordination (OMC) is a form of soft law that is increasingly used by the European Commission in policy areas that are the responsibility of national governments under the principle of subsidiarity, but where there is a role for sharing best practice. Under OMC policies are the responsibility of Member States and the European Commission has a monitoring role. In practice, this usually implies guidelines, sharing of best practice and indicators that allow for benchmarking and measuring progress. OMC is defined in the Treaties, and is best known for its use in the European Employment Strategy but it is widely used for social policy, social inclusion, pensions, immigration, education and culture and asylum and its use is spreading.

Secondly, there is a commitment towards Better Regulation shared by the European Commission, the other European institutions and the Member States¹. Better Regulation involves a number of tools (Impact Assessment, simplification and stakeholder consultation) but more importantly a shift in culture towards policy assessment and evaluation. One of the tenets of policy assessment is measurement: measurement along the policy cycle of inputs, states and outputs. And this measurement naturally leads to the collection of statistics and the use of indicators.

Of course, data and indicators take up resources and money. This constant pressure to improve their quality has always to be balanced against the costs of improving them.

2.3. Broad avenues for development

The type of indicator that will be used in the future is likely to centre on three different avenues:

1. More use of single indicators: at the micro, or individual policy level, indicators will allow the assessment of specific policies. The increasing focus on them can be seen in the requirement to set up monitoring and evaluation procedures for all new policies and to evaluate the existing acquis of legislation. These evaluations require indicators.
2. More use of indicator sets: there is a general consensus that policies are becoming more complex and more inter-twined. The implication is a move away from individual indicators and towards sets of indicators that allow for progress across a wider policy area (or interrelated policy areas) to be measured.
3. More use of composite indicators: along with the shift towards more interrelated policy packages comes a pressure to communicate complex messages simply. This can be seen in the search for composite indicators, which blend information into a single measurement.

3. The use made of GDP

Arguably, the indicator most used within the European Commission is Gross Domestic Product (GDP).

¹ http://ec.europa.eu/governance/better_regulation/index_en.htm

3.1. GDP as an indicator of the economy

GDP measures the market value of the final goods and services produced within a given time period and is calculated on the basis of the National Accounts.

There are a few issues worth stressing for the National Accounts:

- they are fully monetised and so physical units are not included,
- they are 'bottom up', recording the production of all marketed goods and services, the subsequent distribution and redistribution of incomes, and how income is used for purposes of consumption or saving. As such, any indicator produced using the National Accounts has underlying it precise and rigorous information about how the economy is working, and
- they are accepted by a wide range of people from statisticians to the public, and across different countries.

The result is that GDP, the GDP growth rate and GDP per capita are prominent indicators that feed into policy making in many ways. Together with their underlying data they show the evolution of economic activity throughout the European Union. And this underlying data is extensive with monthly macroeconomic data covering a wide range of indicators such as: output, demand, income, prices, labour market, external transactions, monetary and financial markets².

3.2. GDP as a formal threshold indicator

GDP is used formally in the determination of eligibility for Structural Funds. These are funds allocated by the European Union for support of the poorer regions of Europe, and for integrating European infrastructure especially in the transport sector. As these make up a significant share of total EU spending, it is important to have an accepted way of deciding eligibility. As it is the most rigorous measure of the current strength of an economy, GDP is used:

- Structural Funds: regions with GDP per capita measured on purchasing power parity less than 75% of the EU average fall under the 'convergence' objective, for which 78% of the SF budget is allocated.
- Cohesion Fund: Member States with Gross National Income per capita less than 90% of the EU average have access.

Of course, there are other uses made with GDP as an indicator, for example:

- The ceiling of the European Union Budget is set at 1.24 % of the Gross National Income of the European Union. The largest source of funding is based

²

http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1194,47773485,1194_47782287:1194_47782529&_dad=portal&_schema=PORTAL

on applying a multiplier to each country's Gross National Income to generate the Union's own resources³.

- the target for overseas development aid, where the target has been set at 0.7% of Member States' GDP.

3.3. GDP as an indicator for policy

Another high profile use within the European Union's immediate sphere is in the context of the Stability and Growth Pact (SGP). Under the SGP, Member States agreed on certain parameters within which they would conduct their fiscal policy – essentially committing to fiscal discipline as otherwise they might exert inflationary pressure on the other countries in Europe. The way to measure this discipline relies heavily on GDP as an indicator of fiscal behaviour. More specifically:

- The national debt should be lower than 60% of GDP or falling
- The annual budget deficit should not exceed 3% of GDP

Of course, GDP is not a perfect indicator for discipline (there may be extenuating circumstances such as a national catastrophe) and there may be problems in measurement (as evidenced in revisions in later years). Nevertheless, GDP is clearly a strong indicator of current macroeconomic performance and the financial performance of a country.

3.4. Is a policy good for GDP?

Naturally, when GDP is used to measure the success of the economy the question is asked as to whether a particular policy will be good for GDP. The clearest example is in the determination of monetary policy. Setting of interest rates is closely intertwined with the strength of the economy, so the European Central Bank would always be expected to keep a close eye on GDP and its underlying components. (Although strictly speaking, the ECB targets inflation rather than growth on the basis that monetary policy cannot do anything more than deliver stable prices. So, GDP is a key indicator (both lead and lag) of inflationary pressures in macroeconomic policy.

3.5. Is a policy package good for GDP?

The European Union also uses GDP in the assessment of its overall strategic policies. Most clearly, the Lisbon Strategy which was adopted in 2000 with the aim of making "Europe, by 2010, the most competitive and the most dynamic knowledge-based economy in the world" (as implicitly measured by GDP per capita). The Lisbon Agenda set a target growth rate of GDP of 3 % per annum, and also called for a general assessment of policy proposals' contribution to GDP growth. As such, the Lisbon Agenda is a top-down approach that promotes and prioritises policies by their impact on GDP, whilst also having an environmental dimension.

³ http://ec.europa.eu/budget/budget_detail/orig_develop_en.htm

3.6. GDP as indicator for individual policies

Individual policy assessments often do not talk about the impact on GDP. At its most fundamental level, policy analysis usually uses cost benefit analysis or cost effectiveness analysis. These are techniques that are concerned with the way in which resources are used and the trade-offs that we inevitably make in implementing policy. These are complementary to macroeconomic approaches that consider the impacts of policy on statistics such as GDP, the inflation rate or the trade balance. Macroeconomic approaches are obviously most useful for policy instruments with potentially significant macro-economic effects. An example would be the effect of changes in the tax structure as a result of the introduction of significant energy taxes.

However, macroeconomic modelling is often not particularly useful for assessing the efficiency or desirability of individual policy measures. This is because statistics such as GDP are measures of the volume and structure of market transactions rather than measures of welfare or the efficiency of resource use. More specifically:

- i. GDP fails to distinguish between negative and positive activities - war and natural disasters can all be 'good' for GDP (as they are catalysts for market transactions). A simple example could be the sinking of an oil tanker – expenditure would take place on clean-up etc, and so the impact on GDP may be small or even positive. However, this is obviously not a welfare-enhancing use of resources, and this needs to be reflected in policy analysis. Often, natural resources depletion and environmental degradation are in this situation.
- ii. For a policy to register a noticeable impact on GDP it has to be large (around €10 billion is equivalent to 0.1% of European Union GDP). As few policies have measurable impacts that are even a fraction of this size then their impact on GDP is negligible, and we normally express costs and benefits in terms of Euros.
- iii. GDP does not assess the long term viability of the economy (for example, the future expected pay-off from current investments)
- iv. GDP measures the market value of the final goods and services produced in a given time period. However, it does not include household production of goods and services. An example would be a family that does its own housework and home repairs is not contributing to GDP, while a family that hires someone to carry out these tasks is contributing to it.

Because of these issues, a policy's impact on GDP is only one criterion for judging it. This is reflected in the Guidelines for Impact Assessment used in all of the European Commission's assessments of new policy proposals⁴, which require that all economic, social and environmental impacts are assessed⁵. Within the Guidelines, a list of 32 main factors to be

⁴ http://ec.europa.eu/governance/impact/docs/key_docs/sec_2005_0791_en.pdf

⁵ Commission Impact Assessments are supposed to be balanced in that they should consider economic, social and environmental impacts (including economic and physical resources). However, an independent evaluation found that "because of the difficulty of identifying and quantifying certain types of impacts, the analysis of economic impacts is often more developed and concrete than the analysis of social or environmental impacts". In many cases, this means that it is harder to devise good environmental indicators and measure the impact on them of different policy options.

considered is provided. These include factors that would be almost always impossible to represent in GDP (such as impacts on crime or terrorism, social inclusion, trade and investment flows, innovation, land use etc).

Nevertheless, for all of these possible shortcomings, GDP is widely recognised and is based on a very strong and consistent tool in the form of the national accounts methodology. This means GDP is often a very rigorous indicator – certainly if used properly.

4. Integrated accounting

While the National Accounts capture the macroeconomic perspective, there is also considerable effort going into data gathering and statistical capture of the human, social, cultural and environmental perspectives of life, which may not be adequately captured except in the so-called Satellite Accounts.

One example is the SAM – Social Accounting Matrix, which examines both growth and distributional issues within a single analytical framework in an economy. Another example, of particular relevance – and connected to the system of National Accounts that underpin GDP – are the Environmental Accounts⁶. These analyse the links between the environment and the economy by including both economic and environmental information. Thus, it is a two-way assessment of the links:

1. An assessment of how production and consumption patterns affect the environment and natural resources. For example, kilograms of waste produced, energy consumption etc. In its primary form this is physical data, such as stocks of natural resources. There are some advances in monetisation of these physical impacts but the necessary techniques are difficult, so monetised impacts are not normally available.
2. What are the effects of environmentally-related policy measures on the sector of the economy? For example, environment-related taxes, subsidies, environmental protection expenditure, costs to clean up or remediate contaminated sites, environmental fines.

One of the attractions of environmental accounts is that they allow for an analysis of the environment-economy interlinkages at the level of different industrial sectors at country level. This is possible because the statistical data is collected using the systematic framework set in place by the National Accounting Matrix including Environmental Accounts (NAMEA).

Particular attention is being paid to harmonising environmental accounts across Europe, by building on links to other areas of statistics as well as improving comparability and timeliness. This is reflected in the review of the System of Environmental and Economic Accounts (SEEA), which led to the 2003 "Handbook of National Accounting – Integrated Environmental and Economic Accounting"⁷.

⁶ http://epp.eurostat.ec.europa.eu/portal/page?_pageid=2873,63643317,2873_63643793&_dad=portal&_schema=PORTAL

⁷ <http://unstats.un.org/unsd/envAccounting/seea2003.pdf>

5. Horizontal Indicator Sets

Leaving aside National Accounting, there are some sets of indicators used to assess horizontal issues and policy packages. They are chosen with care for their reliability, availability and link to a particular issue and are very much identified with that issue as a 'set'.

The use of a 'set' is necessary because no individual indicator can capture all of the information related to the policy objective. GDP is usually notable by its inclusion, but also by the fact that by itself it doesn't capture all of the information needed even on the economic side. This may be because it is too aggregate, or because it is a lag indicator responding only after a delay to some of the objectives in the policy package (such as a boost in innovation that affects future productivity).

5.1. Sustainable Development Indicators

The EU Sustainable Development Strategy (SDS), adopted by the European Council in Gothenburg in June 2001, and renewed in June 2006, aims to find synergies between economic development, social cohesion and protection of the environment. A set of indicators was developed to monitor the Strategy⁸ and to inform the general public about progress towards its objectives.

Eurostat developed the indicators with the help of a group of national experts, known as the Task Force on Sustainable Development Indicators (SDI). It was later reviewed so that it could be adapted to the new strategy and to take into account statistical developments. The set is organised within 10 themes reflecting the political priorities of the Strategy and further divided into sub-themes.

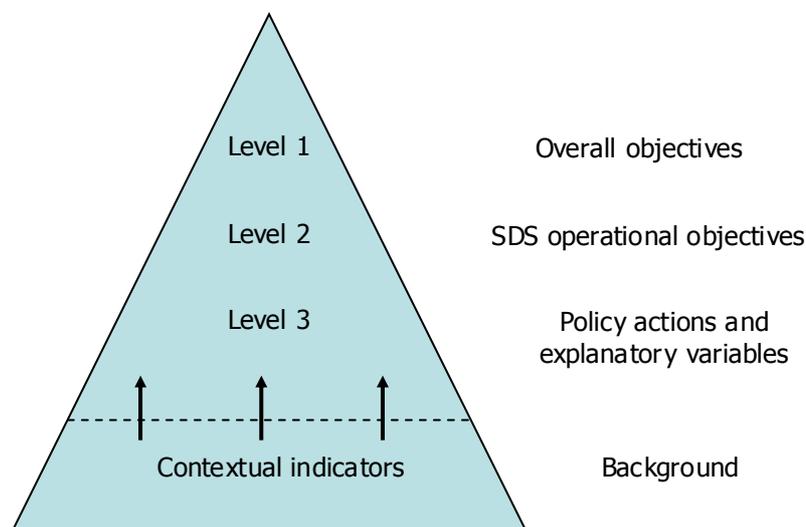
The indicator set is built as a three-level pyramid (figure 1). This distinction between the three levels of indicators aims to be symmetric to the structure of the renewed SDS (overall objectives, operational objectives, actions) and also responds to different kinds of user needs.

- **Headline (or level-1) indicators** are at the top of the pyramid. The objective is to monitor the 'overall objectives' of the SDS. They are well-known indicators with a high communicative and educative value. They are robust and available for most EU Member States for a period of at least five years.
- **The second level of the pyramid** consists of indicators related to the operational objectives of the SDS. They are the lead indicators in their respective sub-themes. They are robust and available for most EU Member States for a period of at least three years.
- **The third level** consists of indicators related to actions mentioned in the SDS or to other issues which are useful to analyse progress towards the SDS objectives. Breakdowns of level-1 or -2 indicators are usually also found at level-3.

⁸ http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1998.47433161.1998_47437045&_dad=portal&_schema=PORTAL

- Contextual indicators are part of the SDI set, but either they do not monitor directly any of the SDS objectives or are not policy responsive so they simply provide background information⁹.

Figure 1: The SDI pyramid



The themes unavoidably overlap to some extent. Some driving forces, such as energy use, affect developments in several themes, but cannot be presented several times in the indicator set. Furthermore, the scope of themes differs considerably as some themes address a very specific domain (e.g. climate change and energy) and others (e.g. production and consumption patterns) encompass a wide range of socio-economic and environmental issues.

5.2. Structural Indicators

The Structural Indicators are a horizontal indicator set used to monitor the Lisbon Strategy for Growth and Jobs, which sets Europe's strategic goal "of becoming the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion". The European Council invited the European Commission to use the Structural Indicators to undertake an objective assessment of the progress made in delivering on this objective. As such, they are used to underpin the analysis in the annual synthesis reports such as the 2006 Annual Progress Report to the European Council¹⁰.

⁹ The SDI set also describes indicators which are not yet fully developed but which would be necessary to get a more complete picture of progress. Indicators under development are either existing, but of insufficient quality or coverage (e.g. not yet available for three years or for a majority of Member States), or known to be currently under development by a group of experts in Europe. They are expected to become available within two years and of sufficient quality, respecting standards set by the European Statistical System. The indicators to be developed are either: (i) known to be under development currently by a group of experts in Europe, but no final satisfactory result is expected within two years; or (ii) not being developed currently as far as is known.

¹⁰ http://ec.europa.eu/growthandjobs/annual-report-1206_en.htm

The Structural Indicators, maintained by Eurostat, consists of over 100 indicators covering the six domains of General Economic Background, Employment, Innovation and Research, Economic Reform, Social Cohesion and the Environment. Following on from this, a short list was agreed to allow for a more concise presentation and a better assessment of achievements over time. There is a commitment to keep this list stable for three years (starting in 2004).

6. Sectoral indicators

Within an individual area of policy development, or even within a subset of that policy area, indicators are also frequently used to measure progress. Across the work of the European Commission, there are too many to document them all. Instead, the focus here is on the social indicators and environmental indicators. This leaves aside other indicator sets that are equally important in their own right such as the scoreboards on innovation or the Single Market.

Of course, even within the social and environmental field there are indicators used at the individual policy level. Therefore, what follows is primarily a discussion of the headline statistics in these two areas. This discussion is complemented by an annex on criteria for indicator choice (Annex 1) and a case study for the field of education (Annex 2).

6.1. Sectoral indicators - the social side

At the Nice European Council in December 2000, Heads of State and Government re-confirmed and implemented their March 2000 (Lisbon) decision that the fight against poverty and social exclusion would be best achieved by means of the Open Method for Co-ordination (OMC). Key elements of this approach included the definition of commonly-agreed objectives for the European Union, the development of national action plans to meet these objectives, and periodic reporting and monitoring of progress made. As already mentioned, the use of OMC means that indicators are often prominent in benchmarking and assessment of progress.

It was in this context that the Laeken European Council in December 2001 endorsed a first set of 18 common statistical indicators for social inclusion, which allow monitoring in a comparable way of Member States' progress towards the agreed EU objectives¹¹. It has been stressed that these indicators need to be considered as a consistent whole reflecting a balanced representation of EU social concerns. They cover four important dimensions of social inclusion (financial poverty, employment, health, and education), which highlight the complexity of the issue they seek to represent of social exclusion.

6.1.1. Further social indicators

There are a number of other complementary indicator initiatives, put in place to provide systematic monitoring and assessment of the social situation, and generally at a more detailed level (reflecting needs of decision-makers in these areas). A number of these can be found located in the European Foundation for Living and Working Conditions¹² (sometimes referred to as the Dublin Foundation), which provides information, advice and expertise – on living and working conditions, industrial relations and managing change in Europe. As such, it has worked on a number of indicator sets used to inform decision-making.

¹¹ http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-NK-03-008/EN/KS-NK-03-008-EN.PDF

¹² <http://www.eurofound.europa.eu/>

In addition, the European Observatory on Demography and the Social Situation¹³ consists of networks of independent experts established by the European Commission in 2005. They analyse through the use of indicators:

1. Demography
2. Social Inclusion & Income Distribution
3. Social Capital (trust in society and its institutions, participation in formal and informal networks etc)
4. Health Status & Living Conditions

The results are translated into a general review of the demographic and social situation and research notes on specific issues of high policy relevance. This input helps the European Commission in its duty to report on the Social Situation. Also, the Eurobarometer Survey¹⁴ asks regularly for the perceived life satisfaction of EU citizens.

6.2. Sectoral indicators – the environmental side

The annual Environment Policy Review (EPR)¹⁵ highlights the main developments in environment policy at EU and Member States level, recent findings and environmental trends and indicates the main issues to come up over the next year. Because one of its roles is to monitor progress, the EPR includes a survey of around 20 indicators covering key environmental issues. This indicator information, attached in an Annex, allows for year-by-year monitoring of trends and progress.

Indicator selection follows the DPSIR model (Drivers-Pressures-States-Impact-Responses) so that it covers the full causal chain of interest. For example, it allows an assessment of whether a policy response actually materialises in an improvement in the state of the environment.

Similarly to the social situation, there is much more detailed indicator work ongoing than is found summarised in the EPR. In particular, the European Environment Agency (EEA)¹⁶ has as its aim to help achieve significant and measurable improvement in Europe's environment through the provision of timely, targeted, relevant and reliable information to policy makers and the public.

The EEA has put together a set of 37 core indicators¹⁷ so that it can: provide a manageable and stable basis for indicator reporting by the EEA; prioritise improvements in the quality and geographical coverage of data flows; streamline EEA contributions to other European and global indicator initiatives, e.g. structural indicators and sustainable development indicators.

Behind the 37 core indicators are many more. These all serve purposes for monitoring individual environmental fields but the need was to have a shorter and sharper core list that summarises and simplifies the picture of environmental change. The EEA European

¹³ http://ec.europa.eu/employment_social/social_situation/sso_en.htm

¹⁴ http://ec.europa.eu/public_opinion/index_en.htm

¹⁵ <http://ec.europa.eu/environment/policyreview.htm>

¹⁶ <http://www.eea.europa.eu/>

¹⁷ <http://themes.eea.europa.eu/IMS/CSI>

Environment State and Outlook 2005¹⁸ report includes the most relevant environment-related indicators.

6.2.1. Further environmental indicators

There are of course other indicators in use in the environment area, focusing on specific issues or policy areas. For example:

A) Indicators related to the integration of environment into sectoral policies:

- TERM - This refers to the 'Transport Environment Reporting Mechanism', which allows for the links between transport and the environment¹⁹.
- EERM – The Energy and Environment Reporting Mechanism, whose indicators monitor the links between energy and environment-related issues.
- IRENA – The IRENA indicators track environmental issues related to agriculture and contribute to the assessment of progress, achievements and obstacles in the integration of environmental concerns into EU agriculture policy²⁰.

B) Other specific environmental indicators set:

- SEBI 2010 - This stands for 'Streamlining European 2010 Biodiversity Indicators'²¹. This is a pan European initiative, launched in 2004 to develop a set of biodiversity indicators to assess progress towards the European target of halting the loss of biodiversity by 2010. The process led to agreement on 26 biodiversity indicators within the 16 European Headline Indicators referred to in the “Message from Malahide” in 2004 (and based on the global indicators adopted by the Convention on Biological Diversity). The set will be one of the tools used by the European Commission to assess the implementation of the Biodiversity Action Plan.

7. Ongoing work on indicators

As well as the indicators already embedded in the current policy debate and systematically collected, the European Commission is actively engaged in pushing further methodological advances and uses of indicators. This effort complements the work to continually upgrade and improve existing indicators.

7.1. Developing composite indicators

Composite indicators are based on sub-indicators that have no common meaningful unit of measurement and no obvious way of weighting these sub-indicators (as opposed to aggregate indicators). They can be used to summarise complex or multi-dimensional issues and provide a big picture. By putting together a lot of information, they can be especially useful in

¹⁸ <http://www.eea.europa.eu/highlights/20051122115248>

¹⁹ http://reports.eea.europa.eu/eea_report_2006_3/en/term_2005.pdf

²⁰ http://reports.eea.europa.eu/eea_report_2006_2/en

²¹ <http://biodiversity-chm.eea.europa.eu/information/indicator/F1090245995>

attracting public interest (for example, by providing a summary figure with which to compare the performance across Countries and their progress over time).

They go one step - but a large step - beyond a 'set' of indicators, by trying to take that set and combine it into one individual figure. Doing so is always open to challenge. For example, somebody who does not agree with the message can easily challenge the weightings used (which are always subjective)²². They can also suffer from a lack of transparency and the fear that if poorly compiled then they may send the wrong policy message²³. This is perhaps why composite indicators, though useful for attracting public interest and stirring debate, are rarely seen as rigorous enough to allow for specific policy decisions. Nevertheless, they serve a powerful role in communicating complex information simplistically.

The Joint Research Centre of the European Commission is working to develop composite indicator methodologies, and provides a survey of their use²⁴ and a Handbook on their construction, produced jointly with the OECD²⁵ (for further methodological considerations see ^{26 27 28} and the opinion of the European Environment Agency's scientific committee in Annex 3).

In particular, work goes ahead on the MDG Dashboard²⁹, which is a graphical tool presenting 60 Millennium Development Goals indicators for around 200 countries in a composite indicator format. This is aimed not just at decision-makers but also at other stakeholders with the purpose of influencing and informing debate on the issue.

Of course, much of the development of composite indicators has taken place outside the European Institutions, perhaps reflecting their primary purpose for awareness raising, which is sometimes at odds with the demand for rigour placed on statisticians and the need to understand the underlying detail for policy-makers³⁰.

However, composite indicators are also used for communication purposes by the European Institutions and there are examples of them being investigated for the purposes of monitoring policy developments. An example of this is the Thematic Strategy for Sustainable Use of

²² Of course, other aspects are also subjective such as the mechanism for including and excluding indicators in the index; the type of normalization scheme; the choice of imputation method; and the selection of aggregation method etc.

²³ For example, if a change in one indicator could have an unexpected high impact on the value of the composite indicator

²⁴ <http://composite-indicators.jrc.ec.europa.eu/>

²⁵ Handbook on constructing composite indicators: methodology and users guide, OECD-JRC joint publication, STD/DOC(2005)3, JT00188147, pp. 108.
[http://www.oilis.oecd.org/olis/2005doc.nsf/7b20c1f93939d029c125685d005300b1/7bef27ea932895d4c1257058004bcdeb/\\$FILE/JT00188147.PDF](http://www.oilis.oecd.org/olis/2005doc.nsf/7b20c1f93939d029c125685d005300b1/7bef27ea932895d4c1257058004bcdeb/$FILE/JT00188147.PDF)

²⁶ Nardo M., Saisana M., Saltelli A. and Tarantola S. (2005) Tools for Composite Indicators Building. European Commission, EUR 21682 EN, Institute for the Protection and Security of the Citizen, JRC Ispra, Italy, pp. 131.

²⁷ Saltelli A. Tarantola S., Campolongo, F. and Ratto, M. (2004) *Sensitivity Analysis in Practice. A Guide to Assessing Scientific Models*, John Wiley & Sons.

²⁸ Saltelli A. Ratto M., Carboni J., Campolongo F., Gatelli D., Saisana M., Tarantola S., Andres T. (2007) *Global Sensitivity Analysis: Gauging the Worth of Scientific Models*, John Wiley & Sons.

²⁹ <http://esl.jrc.it/envind/dashbrds.htm>

³⁰ The best known example is perhaps the Ecological footprint (EF) analysis, which attempts to measure mankind's consumption of renewable natural resources and to compare it with the planet's ecological capacity to regenerate them and to absorb the waste produced.

Resources³¹, which committed to a process that should lead to the development of "an overall indicator to measure progress in reducing the ecological stress of resource use by the EU (eco-efficiency indicator)"³². More examples are given in Annex 4.

The European Commission has also been involved in the work to develop a 'well-being index'³³. This work has been undertaken by the Joint Research Centre along with the OECD, with the objective of producing recommendations for a framework of indicators to guide policy-makers in the pursuit of well-being. The workshop held on this was one of several events the OECD is co-ordinating as part of a new OECD World Forum project - "Statistics, Knowledge and Policy" – as part of a co-ordinated worldwide attempt to develop indicator systems on how best to measure the progress of societies and to improve the nexus between statistics and policy-making.

This OECD work most notably resulted in a conference in April 2007 entitled "Is happiness measurable and what do those measures mean for policy?"³⁴. However, whilst there is genuine interest in, primarily, understanding what drives happiness and, following on, the indicators to measure happiness, this does not translate into specific policy developments or indicator sets within the European institutions.

7.2. Monetary weighting

Of course, one form of weighting that is widely accepted is monetary weighting. Within GDP, different components can be added together because they are all expressed in the same, consistent unit – money, such as Euros. This falls naturally into place as GDP captures marketed transactions that are by definition monetised. However, there are also attempts to express other non-marketed impacts in monetised terms such as health or environmental impacts.

Monetary weighting is arguably not an indicator in the narrowest sense of the word; rather, aggregation in the same unit. However, because of its potential prominence in decision-making and the way it bypasses the need for traditional indicators it should not be neglected in any discussion of future policy assessment.

ExternE is an example of a research project that did this for electricity generation³⁵. The research project quantified the damages caused and which are not integrated into the pricing system (externalities or external costs in the jargon) and then calculated their monetary worth.

³¹ http://ec.europa.eu/environment/natres/pdf/com_natres_en.pdf

³² The Commission in collaboration the EEA is currently analysing indicators for assessing and monitoring the environmental impacts of natural resource use. The aspiration is to have a "basket" of highly aggregated indicators that can be used to measure and monitor the objectives of the Thematic Strategy on the Sustainable Use of Natural Resources – i.e. to what extent economic growth has been decoupled from environmental impacts including "exported" impacts. The basket currently includes the following assessment tools:

- Human Appropriation of Net Primary Production (HANPP)
- Ecological Footprint (EF)
- Environmentally Weighted Material Consumption (EMC)
- Land and Ecosystem Accounts (LEAC) / Coordination of Information on the Environment (Corine)

³³ <http://crell.jrc.ec.europa.eu/Well-being.htm>

³⁴ http://www.oecd.org/document/12/0,2340,en_21571361_31938349_37720396_1_1_1_1,00.html

³⁵ <http://www.externe.info/>

In doing so, it expresses the environmental dimension in monetary terms and allows its weight relative to economic impacts to be more clearly seen.

Expressing environmental or health impacts in monetary terms is not restricted to research. Such techniques are frequently used in Impact Assessments (and the underlying cost benefit and cost-effectiveness analyses) used to help decision-makers in the European Commission. A good example is the Thematic Strategy for Air Pollution, where the Impact Assessment monetises the health impacts, and uses these to demonstrate that the costs of around €7 billion per annum are justified. More such monetisation is likely in the future.

7.3. Better Indicators of sustainable development

The European Institutions are in the process of trying to promote methodological development and research into the best way to use indicators. As part of this push, the 6th Framework Programme for Research has been used to help fund projects examining the development and use of Sustainable Development Indicators (SDI) – notably, INDI-LINK and DECOIN.

The INDI-LINK project³⁶ assesses the interlinkages between the different priorities of the Sustainable Development Strategy (SDS) and seeks to derive policy conclusions for its implementation. Its main objectives are:

- a) to further develop EU sustainable development indicators,
- b) to assess the interlinkages between different dimensions of sustainable development, and
- c) to elaborate policy conclusions.

The DECOIN project³⁷ also deals with sustainable development indicators and the methodology of analyzing inter-linkages between different trends in the EU. Its main objectives are:

- a) to evaluate the existing methods and analytical frameworks in order to assess the progress towards sustainable development,
- b) to elaborate on forecasts and scenarios, and to identify inter-relationships between selected unsustainable trends in the EU, and
- c) to carry out a detailed analysis on the inter-relationships between selected unsustainable trends and to provide a prototype tool for the analysis and for forecasting.

The DECOIN project will be followed up by a project under the Seventh Framework Programme called SMILE, which is currently in elaboration.

Eurostat is also launching a study on improving existing indicators and following up the development of indicators to be developed for the SDI set, and a feasibility study on a well-being indicator to monitor the SDS objective of ‘the continuous improvement of the quality of life and well-being on Earth for present and future generations’.

³⁶ <http://www.indi-link.net/>

³⁷ <http://www.decoin.eu/>

7.4. Environmentally extended Input-Output tables

EXIOPOL is a project funded by the European Commission under the 6th framework programme³⁸, and being undertaken by a consortium of 38 universities and centres of research from Europe, China and India. The project started in March 2007 and will last up to March 2010 with a European Commission contribution of € million. It has 3 principal objectives:

- (a) synthesise and develop further estimates of the external costs of key environmental impacts for Europe;
- (b) set up an environmentally extended (EE) InputOutput (IO) framework in which as many of these estimates as possible are included, allowing the estimation of environmental impacts and external costs of different economic sector activities, final consumption activities and resource consumption for countries in the European Union;
- (c) apply the results of the external cost estimates and EE IO analysis for the analysis of policy questions of importance, as well as for the evaluation of the value and impact of past research on external costs on policymaking in the European Union.

7.5. New "beyond GDP" research projects

The European Commission is also in the process of launching a project under the seventh Framework Programme for Research on indicators that go beyond GDP, building on its strengths. The aim of this project is to further align mainstream economic performance indicators with the objectives of the renewed sustainable development strategy. The project will review GDP as an indicator, identify where it is weakest and investigate which indicators are used by institutions such as UN, World Bank, OECD, EU and national governments, and why. The research will result in recommendations for composite and aggregate indicators for sustainable development, together with concrete examples of estimations across countries, as well as a roadmap for their implementation. This is not likely to be the last push to improve methodologies.

7.6. Global Monitoring for Environment and Security

Global Monitoring for Environment and Security (GMES) is a joint initiative of the European Commission and the European Space Agency. It will develop the EU-wide capacity for the provision and use of operational information for Global Monitoring of Environment and Security. As such, it should improve the production and dissemination of information in support of EU policies for the environment, and could allow for improvements in the quality and timeliness of indicators.

³⁸ <http://www.feem-project.net/exiopol/>

Annex 1

Examples of criteria for indicator choice

Perhaps not surprisingly, the criteria for the choice of indicators are often very similar (though rarely documented for outside scrutiny). The examples below are representative of the criteria used and are reported for indicators used in the social and environmental areas.

The Social Protection Committee agreed to focus on indicators that address social outcomes rather than the means by which those outcomes are achieved, and used the following methodological principles:

- i. an indicator should capture the essence of the problem and have a clear and accepted normative interpretation;
- ii. an indicator should be robust and statistically validated;
- iii. an indicator should be responsive to policy interventions but not subject to manipulation;
- iv. an indicator should be measurable in a sufficiently comparable way across Member States, and comparable as far as practicable with the standards applied internationally;
- v. an indicator should be timely and susceptible to revision;
- vi. the measurement of an indicator should not impose too large a burden on Member States, on enterprises, nor on the Union's citizens;
- vii. the portfolio of indicators should be balanced across different dimensions;
- viii. the indicators should be mutually consistent and the weight of single indicators in the portfolio should be proportionate;
- ix. the portfolio of indicators should be as transparent and accessible as possible to the citizens of the European Union.

The criteria for the choice of the core indicators used by the EEA was:

- i. Be policy relevant
- ii. Should help with monitoring of progress toward the quantified targets (if there is no targets, then use thresholds)
- iii. Be based on ready available and routinely collected data within specified timescale (to be determined country by country) at reasonable cost-benefit ratio
- iv. Be consistent in space coverage and cover all or most EEA countries
- v. Time coverage – sufficient time trends
- vi. Primarily be national in scale and representative for countries (to allow for benchmarking)
- vii. Be understandable and simple
- viii. be conceptually and methodologically well founded and representative

Overall, the key criteria seem to be that indicators **should be relevant, precise, current, comprehensive and comparable.**

Annex 2

Examples of indicator use - the field of education

As an example of how indicator use is shifting for the European Commission, the area of education is looked at here as a case study and the experiences of the European Commission's Directorate General for Education, Training, Culture and Youth, which is responsible for this issue.

Current indicator use - milestones

Since Lisbon the use of indicators for monitoring common goals (but also for policy development) has grown strongly in EU education and training policies. As a response to Lisbon a 'Detailed Work Programme' was set up in 2002 with 13 objectives to be monitored by concrete indicators. In May 2003 the Council also adopted 5 benchmark indicators (on low achievers in reading, on early school leavers, on upper secondary attainment of young people, maths, science and technology graduates, lifelong learning) - the majority of these are also Structural Indicators:

Council conclusions of 5/6 May 2003 on **Reference Levels of European Average Performance in Education and Training (Benchmarks)**. (2003/C 134/02)³⁹.

Because some indicators that are needed to monitor the common goals were still missing, the Council concluded in May 2005 on 8 areas for the development of new indicators.

Council Conclusions of 24 May 2005 **on new indicators in education and training**. Brussels: Official Journal of the European Union, 10.6.2005(2005/C 141/04)⁴⁰

Since the framework provided by the detailed Work Programme of 2002 became increasingly outdated and because the above mentioned Conclusions asked the European Commission to report back to the Council, the European Commission adopted in February 2007 a Communication on a coherent framework.

"A coherent framework of indicators and benchmarks for monitoring progress towards the Lisbon objectives in education and training" COM (2007) 61 final⁴¹

The Council concluded then in May 2007 on a coherent framework of indicators and benchmarks listing 16 core indicators in the field of education and training.

Council conclusions of 25 May 2007 **on a coherent framework of indicators and benchmarks for monitoring progress towards the Lisbon objectives in education and training**(2007/C 1083/07),

<http://register.consilium.europa.eu/pdf/en/07/st10/st10083.en07.pdf>

³⁹ http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/c_134/c_13420030607en00030004.pdf

⁴⁰ http://europa.eu.int/eur-lex/lex/LexUriServ/site/en/oj/2005/c_141/c_14120050610en00070008.pdf

⁴¹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0061:FIN:EN:PDF>

The European Commission Staff Working Document on Progress Towards the Lisbon objectives in education and training in its latest issue (published in October 2007) now uses this new framework. A total number of about 60 indicators in 8 policy areas is analysed in this report. This indicator based report has been prepared since 2004 on an annual basis.

Progress Towards the Lisbon Objectives in Education and Training, Indicators and Benchmarks 2007⁴²

Looking forward - Aggregate and composite indicators

The European Commission is working on composite indicators in various fields, including civics, efficiency and equity, where a single indicator would not do justice given the complexity of the field. The area of efficiency of investment in education is particularly difficult since there is incomplete data both on the input and on the output side. Data on the quality of educational output are incomplete and as regards financial input, elements like private spending are partially missing and the question of comparability of spending levels opens the question of price/purchasing power differences and differences in wealth levels between countries. Because of the complexity of the education production function relating outputs to inputs is not always straightforward. Time lags have to be considered and the fact that the output of one education level is the input to the next higher level.

Looking forward - Indicator sets and their headline indicators

The European Commission currently works on a basis of 16 core indicators (including 5 benchmark related indicators), that have been confirmed in Council conclusions from May 2007. The 16 indicators follow a framework that is coherent with the current education policies. They can be considered as headline indicators, since they will be complemented by additional context indicators. In several cases what is listed represents more an indicator area than a concretely defined indicator. The definition of concrete indicators relating to the 16 areas is still ongoing, including breakdowns and the identification of complementary context indicators.

Since underlying data for several of these indicators are still missing the European Commission encourages the participation of countries in international surveys that produce such data (e.g. IEA ICCS civics survey).

Looking forward - Accounting approaches

Satellite accounts are not currently used in the field of education and training. However ongoing work on economics of education and efficiency and efforts to improve data on spending on education could make this more relevant in the future.

⁴² http://ec.europa.eu/education/policies/2010/progressreport_en.html

Annex 3

EEA scientific committee opinion on aggregate and composite environmental indicators

1. The scientific committee underlines the necessity for Europe, and more specifically the EEA, to allocate resources to the critical review and development of methods for aggregate and composite environmental indicators⁴³.
2. The importance of such indicators is to provide valuable insights into the sustainability of society-economy-environment interactions and in so doing contribute to monitoring progress with strategic and operational policy developments in Europe – in sustainable development strategies, environmental thematic and economic sectoral strategies. Such indicators should be analysed and presented alongside the more elementary indicators that constitute, for example, the EEA core set and the EU structural- and sustainable development indicators.
3. The committee welcomes the increasing interest in the issue of aggregated indicators in policy circles including the initiative of Commissioner Dimas – “Beyond GDP” – to put environmental considerations more central to economic and budgetary decisions. Past debates and initiatives around the concept of “green GDP” have yielded promising methodological developments. The EEA should respond to the policy demand by evaluating the relevance of these various approaches and their feasibility, in total or in part.
4. The committee also advocates the use of such indicators to channel improved communication with the public on the value of maintaining environmental resources in order to maintain the economic and social well-being of Europe’s citizens.
5. The committee’s view is that, to these ends, major breakthroughs will be achieved when attention will be given to the analyzing and further development of several of these indicators and underlying methods rather than just one, because different measurement methods and the computed indicators can serve different knowledge purposes. It is as a package, carefully framed, managed, targeted and communicated, that such methods and indicators can best serve improving understanding of how using the environment the way we do to sustain our socio-economic well-being - and the impacts that result – is jeopardizing the resilience of ecosystems’ goods and services. The Millennium Ecosystem Assessment calls for better information and knowledge in this respect and Europe now has the opportunity to respond positively to this challenge.

⁴³ In this context, aggregate indicators are made of non-weighted sums or balances of additive variables covering a given realm (country, sector...). Composite indicators are combinations of selected additive or non additive variables that have been assigned weighting factors.

6. From the perspective of scientific soundness, the committee recommends that the EEA takes a differentiated approach both in its evaluation and support to the development of different methods and in its use of the different indicators that result from the application of these methods. More specifically, the committee recommends that the EEA provides support to improvements of composites such as the Ecological Footprint and the Environmental Sustainability/Performance Indices of Yale by supplying underlying data provided by Eionet to ensure that the European picture is consistently represented in the global context. The EEA with Eurostat should also assess the practical usefulness of such composites for framing and monitoring European policies and/or their impacts. The committee further recommends that the EEA focuses its resources primarily towards developing composites building on the country analysis produced in The European Environment State and Outlook 2005.
7. For aggregates, the committee considers that the EEA should focus its resources, in co-operation with others such as Eurostat, primarily on methods and indicators which can be specifically related to environmental policy priorities. Of particular interest are the Human Appropriation of Net Primary Production (HANPP) index and relevant elements of the Integrated Environmental and Economic Accounting (SEEA) methodological guidelines of the United Nations. HANPP should be considered in its complexity and could develop into an indicator of pressure on biodiversity, while at the same time contributing to policy needs related to the 2010 target on halting biodiversity loss. The scientific community is close to consensus on the HANPP method, paving the way for its broader implementation. To that end, the EEA scientific committee welcomes the offer to work with Eurostat in developing deeper understanding of HANPP.
8. SEEA could support analysis of the use of energy, land, water and materials and how these impact on the environment, as well as the impacts of economic activities on ecosystem goods and services. Work is already well-established between the main European players (EEA, Eurostat and JRC) and is expected to become more mainstream pending the ongoing process in the United Nations to establish SEEA as an international standard in the official statistical system by 2010.⁴⁴ Moreover, the scientific committee supports EEA efforts to develop an agreed methodology and standards with Eurostat and member countries for spatial resource accounting, in connection with economic environmental accounting, more specifically, ecosystem, land and water accounts and those for material flows aspects.
9. Moreover, the complementarities within this package of composites and aggregates should be further explored by the EEA in terms of the research questions being addressed by the different measurement methods and

⁴⁴ The UN Statistical Commission has decided in March 2006 to raise the Integrated Environmental and Economic Accounting (SEEA2003) to the level of an international standard by 2010, in relation to the revision of the System of National Accounts (SNA1993). A UN Committee on Economic-Environmental Accounting is mandated to draft guidelines and promote them in areas mature for implementation; organise discussions on specific points to be considered in the SNA revision ; and, develop a longer term research agenda in areas such as valuation, social accounts and ecosystems.

their strengths and weaknesses in terms of policy relevance, communication value and other factors such as possible overlaps and contradictions.

10. The committee wishes to underline the importance of the aforementioned EU institutional co-operation on taking forward this package, and invites the Commission to consider how this package can be supported through activities under the EU's forthcoming seventh framework programme for research (FP7).

Adopted by the EEA scientific committee at its 37th meeting

Copenhagen, 11 October 2006

Annex 4

Additional European Commission Indicator use

Some of conceptual frameworks, indicators and composite indicators developed by the European Commission services are given below (please note this is not a comprehensive list).

- Indicators on Innovation (European Commission's Directorate General for Enterprise and Industry)⁴⁵
- Indicators of e-Business Readiness (European Commission's Directorate General for Enterprise and Industry)⁴⁶
- Indicators of Internal Market (European Commission's Directorate General for the Internal Market and Services)^{47 48}
- Indicators for the Lisbon Agenda (European Commission's Directorate General for Economic and Financial Affairs)^{49 50}
- Indicators of Active Citizenship (European Commission's Directorate General for Education, Training, Culture and Youth)⁵¹
- Indicators of Giovannini Barriers (these relate to Financial Markets, responsibility of European Commission's Directorate General for the Internal Market and Services)
- Indicators of Public Procurement (European Commission's Directorate General for the Internal Market and Services)
- New project on indicators of cost of capital (to start in 2008 for European Commission's Directorate General for the Internal Market and Services)
- New project on indicators of flexicurity (to start in 2008 for European Commission's Directorate General for Employment, Social Affairs and Equal Opportunities)^{52 53}

⁴⁵ Hollanders, H., M. Sajeva, D. Gatelli and S. Tarantola (2005) Methodology report of the European Innovation Scoreboard 2005, European Trend Chart on Innovation.

⁴⁶ Nardo M., S. Tarantola, A. Saltelli, C. Andropoulos, R. Buescher, G. Karageorgos, A. Latvala, F. Noel, 2004, The e-business readiness composite indicator for 2003: a pilot study. Report EUR 21294 EN.

⁴⁷ Tarantola S., Liska R., Saltelli A., Leapman N., Grant C. (2004) The Internal Market Index 2004, EUR 21274EN.

⁴⁸ Tarantola S., Saisana M., Saltelli A., Schmiedel F., Leapman N., 2002, Statistical techniques and participatory approaches for the composition of the European Internal Market Index 1992-2001, EUR Report 20547 EN, European Commission, JRC, Institute for the Protection and Security of the Citizen, Ispra, Italy, 27 pp.

⁴⁹ Andrea Saltelli, Silvio Funtowicz, Angela Guimarães-Pereira and Jean-Paul Malingreau, Giuseppe Munda, Mario Giampietro, (2005) Developing effective Lisbon Strategy Narratives, EUR 21644 EN.

⁵⁰ Tarantola S., R. Liska and A. Saltelli, M. Donnay (2004) Structural Indicators of the Lisbon agenda: robustness analysis and construction of composite indicators, EUR 21287EN.

⁵¹ Hoskins, B., Jesinghaus J, Mascherini M., Munda G., Nardo M, Saisana M, Van Nijlen D., Vidoni D., Villalba G. (2006) Measuring Active Citizenship in Europe. EUR22530EN

⁵² Stocktaking Note on Flexicurity and the Thematic Note on flexicurity to the EMCO Cambridge Review Group (DG EMPL/D).

⁵³ List of Dimensions, Sub-Dimensions and Indicators to Include in Composite Indicators of Flexicurity (DG EMPL/D)