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Sustainable Development Indicators

Overview of relevant FP-funded research
and identification of further needs

STUDY



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Sustainable Development Indicators

*An Overview of relevant Framework Programme
funded research and identification of
further needs in view of EU and international activities*

This report was written by

Camilla Adelle - IEEP

Marc Pallemerts - IEEP

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1 EXECUTIVE SUMMARY

The 2006 ‘renewed’ EU Sustainable Development Strategy (SDS) calls for the European Commission to monitor the progress of the EU against the challenges laid out in the strategy and specifically to draw up a comprehensive set of Sustainable Development Indicators (SDIs). It specifies that these SDIs ‘*are to be developed at the appropriate level of detail to ensure proper assessment of the situation* with regard to each particular challenge.’ In order to address this requirement Eurostat has developed a set of SDIs, along with the help of a group of national experts known as the Task Force on Sustainable Development Indicators. A first set of indicators was adopted by the Commission in 2005 and then updated in 2007. However, development of this set of SDIs is ongoing and the work of the Directorate General (DG) for Research is to contribute to this process through the EU Framework Programmes (FPs) for Research and Technological Development.

This report was commissioned by DG Research to assess the main FP6 and selected FP7 projects (and latest work programmes) which have examined (or refer to) indicators supporting the renewed SDS in order to identify trends and gaps in the research agenda and produce recommendations on further research in light of activities and uses of indicators within the EU and beyond. The report includes a review of over 40 such research projects selected because, either as a part of their work or as the main focus of their work, they develop indicators which are relevant to measuring progress on the SDS. These projects are mainly FP6 projects for which information on results is readily available but, where possible, relevant FP7 projects in their early phases have also been included.

The key findings of the report in relation to the trends and gaps in these research projects are:

- There is a tendency in the FP funded research (and the SDS itself) to *reduce sustainable development to its economic and environmental dimensions* while disregarding social aspects.
- Indicators to measure *climate change and energy* objectives have been relatively well covered in the FP funded research but areas which may require further attention remain, such as indicators for: end-use energy efficiency and savings; monitoring the influence of sustainability criteria for biofuels; and the integration of adaptation to and mitigation of climate change into policies.
- Indicators for *sustainable transport* are addressed relatively fully but research has tended to focus on modelling for the prediction of transport trends and impacts rather than monitoring progress towards specific sustainability objectives.
- There is a significant gap in FP funded research in the field of *sustainable consumption and production* (SCP). Eurostat indicators are currently inadequate to monitor the EU’s progress in this regard though indicators for SCP are currently on the policy agenda of the Commission in the context of the Thematic Strategy on Sustainable Use of Natural Resources. In particular indicators of absolute resource use and not just resource efficiency are needed.
- There are two fields of SDIs which have been the focus of FP funded research towards the key challenge of *conservation and management of natural resources*: fisheries and biodiversity. The use of fisheries indicators in the EU

continues to be an issue but in part this is a practical issue of data collection rather than only an indicator development issue. However, biodiversity indicators are high on the EU and international research and policy agenda and several shortcomings of the current system have been identified. Currently most progress in this field looks likely to come in the area of indicators of ecosystem health.

- Social indicators including for *public health, social inclusion and demographic changes and migration* are the areas least researched under the FPs – with the exception of one recent FP7 project focused on social inclusion indicators. Indicators of ‘health inequalities’ are the least well represented aspect.
- Indicators to measure progress on the SDS key challenge of *global poverty and sustainable development* are also poorly covered by FP funded research. Many of the operational objectives for this key challenge of the SDS are particularly hard to quantify and so not easily captured by indicators. However further work is needed to improve those indicators included in Eurostat’s list which do not currently well capture the relevant operational objectives.
- Indicators for the many *cross-cutting objectives* of the SDS are also under-represented in the FP funded research – with the exception of one new FP7 research project. Such indicators are included in the Eurostat list under the heading ‘*good governance*’ but substantial further work would be required to develop and operationalise a wider range of relevant indicators. However, in some cases the operational objectives are not well suited to be measured by indicators because they cannot be easily quantified (eg policy coherence and environmental policy integration).

Beyond just identifying gaps in the research in relation to the operational objectives of the SDS, the report suggests that further work may be needed to fundamentally rethink and restructure the SDI landscape in certain important areas. One such area is the governance-related and cross-cutting dimensions of the SDS as the relevance and organisation of the existing indicators is highly questionable.

In addition, indicators may need to be developed to assess progress on issues of transition management. Ultimately, the achievement of the objectives of the SDS depends on complex processes of social transformation which are necessary to ensure a transition from unsustainable to sustainable patterns of production and consumption. Such processes need to be studied in all their complexity in accordance with the objective of the SDS to ensure that research into sustainable development include not only ‘short-term decision support projects’ but also contribute to the development of ‘long-term visionary concepts’ by promoting inter- and trans-disciplinary approaches. SDIs are useful as instruments for short-term decision support, but a more conceptual approach to the management and measurement of social transformation and transition processes seems required to complement the insights that can be derived from the use of indicators.

2 INTRODUCTION AND CONTEXT

2.1 The EU Sustainable Development Strategy

In 1999, the Helsinki European Council invited the Commission to present ‘a proposal for a long-term strategy *dovetailing policies for economically, socially and ecologically sustainable development*’ (European Council 1999). This was the start of the process which would eventually lead to the adoption of the ‘EU Strategy for Sustainable Development’ (EU SDS) in 2001 (CEC 2001).¹ The SDS was first proposed by the Commission in May 2001 and endorsed (at least in part) by the Göteborg European Council in June 2001. This strategy 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.

The European Council did not really follow the Commission’s proposal to clearly articulate the SDS in terms of ‘headline objectives’ and specific measures for each of them. As a ‘first step’, it merely ‘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.

As the Commission, in its communication of May 2001, had limited itself to formulating proposals with respect to the *internal* aspects of sustainable development, the Göteborg European Council, in a section of the Presidency Conclusions stressing that ‘sustainable development requires global solutions’, asked it ‘to present a communication ... on how the Union is contributing and should further contribute to *global* sustainable development’, as part of the EU’s preparations for the Johannesburg World Summit on Sustainable Development (WSSD). In response to this request, the Commission prepared another communication, entitled ‘Towards a global partnership for sustainable development’, which was in fact designed to serve two different, though interrelated purposes: first, to complement the SDS agreed in Göteborg with measures addressing the sustainable development dimension of the EU’s *external* policies, and, second, to ‘identify strategic components’ of the EU’s negotiating position for the WSSD.²

¹ There was in fact never a single agreed text of the 2001 SDS, but its content could be derived from two different policy documents: the Commission Communication to the European Council of May 2001 entitled ‘European Union Strategy for Sustainable Development’ (CEC 2001),¹ and the section entitled ‘A Strategy for Sustainable Development’ in the Presidency Conclusions of the Göteborg European Council of June 2001 referring to this Communication (European Council 2001a). In these conclusions, the Heads of State and Government ‘welcomed’ the presentation of the Commission’s Communication and the ‘important proposals’ it contained and agreed ‘*a* strategy for sustainable development which completes the Union’s political commitment to economic and social renewal and adds a third, environmental dimension to the Lisbon strategy’. As the language indicates, the European Council did not in fact adopt the Commission’s proposed strategy as such. However, its Presidency Conclusions endorsed a number of important objectives and principles proposed by the Commission.

² It should also be noted that this second Communication was not formally submitted to, let alone endorsed by the European Council but was examined at the level of the Council only, which took a position on certain proposals in successive Council conclusions, without ever properly addressing the document as a whole as an integral part of the SDS.

Further development of the EU SDS in fact did not occur incrementally as originally envisaged, but as a result of a comprehensive review process which was initiated in 2005. The political impetus for the review came mainly from the European Council, under whose leadership a 'renewed' SDS was elaborated and endorsed by Heads of State and Government at their June 2006 summit at the initiative of the Austrian Presidency. The current version of the SDS, as adopted in 2006 (Council of the European Union 2006), is formulated as a single, coherent document, elaborating on the 2001 SDS but different in structure and scope. Contrary to its 2001 predecessor, it is clearly structured around a set of overall objectives, which lead on to operational targets and specific actions. The four priority areas selected in 2001 were confirmed but two more were added: social cohesion and the EU's role in promoting sustainable development at the global level. The renewed strategy also contains more detailed arrangements for implementation, monitoring and follow-up and specifies what is expected not only of other EU institutions, but also of Member States.

2.2 Monitoring the Sustainable Development Strategy

When it first adopted the SDS in 2001, the European Council at the same time undertook to 'review progress in developing and implementing the strategy' and to 'give policy guidance, as necessary, to promote sustainable development in the Union' at its annual Spring meetings. (European Council 2001a). As a basis for this annual review process, the Commission was invited to 'evaluate implementation of the Sustainable Development Strategy in its annual synthesis report, *on the basis of a number of headline indicators*'. (emphasis added) This synthesis report was a task first given to the Commission by the Lisbon European Council in 2000 as part of the monitoring and review process of the Lisbon Strategy. In effect, the European Council initially decided to apply the same process to the SDS. As a result of this decision made in Göteborg, the Commission's synthesis report was henceforth to be based not only on economic and social, but also environmental indicators, in order to enable the annual Spring meeting of the European Council to evaluate progress across all three dimensions of sustainable development. The main emphasis of the annual synthesis report however clearly remained on the socio-economic objectives of the Lisbon Strategy, and only a limited number of environmental indicators were added to the core list of headline economic and social indicators.

The failure of the integrated monitoring and reporting system of the Lisbon Strategy to contribute to dynamic implementation of the 2001 SDS led to the establishment of a separate system for SDS purposes when the renewed strategy was adopted in 2006. Starting in 2007, the Commission was mandated to draw up a progress report on the implementation of the SDS, covering both the EU level and the member states, every two years. The 2006 SDS specifically provides that "for the monitoring at EU level, the Commission will, in analysing the state of play with regard to the challenges [of the SDS], draw *on a comprehensive set of sustainable development indicators (SDIs), taking into account the EUROSTAT SD Monitoring Report*, to be updated every two years, as well as on the latest scientific evidence and on developments in relation to key EU activities (strategies, action plans, legislation)." It further specifies that "[t]o ensure both a comprehensive and in-depth coverage of the complexity of sustainable development, *the indicators are to be developed at the appropriate level of detail to ensure proper assessment of the situation* with regard to each particular challenge."

(Council of the European Union 2006 - emphasis added) The bi-annual Commission progress reports are to be submitted to the December European Council (instead of the Spring Council devoted to the Lisbon Strategy), which will review progress and provide further political guidance.

In order to contribute to these progress reports, Eurostat has developed a set of Sustainable Development Indicators (SDIs), along with the help of a group of national experts known as the Task Force on Sustainable Development Indicators. A first set of indicators was adopted by the Commission in 2005 (CEC 2005b) and then updated in 2007 (see Appendix 2). The first progress report under the renewed SDS was presented by the Commission in 2007 (CEC 2007a) (accompanied by a first comprehensive SDI report compiled by Eurostat), and the second was issued in July 2009 (CEC 2009f).

2.3 Purpose and Scope of Review

This review was commissioned by DG Research to assess the main FP6 and selected FP7 projects which have examined indicators supporting the renewed SDS. The goal of the review is to identify trends in the research agenda and produce recommendations on further research in light of activities and uses of indicators within the EU and beyond by other international organisations.

The next section of this report sets out the main FP6 and selected FP7 projects (and recent work programmes) which deal with indicators supporting the SDS. These are discussed according to which theme of the SDS the indicators developed most support. Next the main uses of SDIs and activities in this field within the EU are set out. These included indicators within the economic, social and many in the environmental field including some sectoral environmental indicators. This is followed by a section on the use of indicators in selected countries, namely France, Sweden, the UK, and the US. The next section, section 6, outlines the main SDI activities at the international level including within the OECD and UN. Finally the concluding section of this report reflects on the FP6 and FP7 projects reviewed in the light of the preceding sections on EU, national and international activities to discuss where the main trends and gaps in SDI research lie and makes recommendations on where the priorities of the FP7 and FP8 might be concentrated.

3 REVIEW OF FP6 AND FP7 RESEARCH PROJECTS

3.1 Introduction

This review is based on a search of FP6 and FP7 projects (for which information was available on DG Research's website or on individual project websites as of July 2009). Only projects which developed indicators considered relevant to sustainable development were included in the review. Thus projects which develop indicators dealing with fine level detail of river ecosystems health, for example, do not come within the scope of this project nor do research projects developing measures or assessments of sustainable development which are not normally labelled as indicators such as carbon budgeting or aspects of impact assessment or policy appraisal.

The full results of the review are shown in Appendix 1. For the purposes of this section of the report, the projects have been categorised into groups according to the main focus of the SDIs developed. There are ten groups which equate to the SDI themes developed by Eurostat which roughly, but not entirely, mirror the key objectives of the EU SDS. In the final and concluding section of this report, the projects will be discussed directly in relation to the key challenges and operational objectives of the EU SDS. There is also one overall category of general research on SDIs in which projects tackling SDIs in general, rather than specific sectors or dimensions of sustainable development, are placed. The main research projects on SDIs and the most apparent gaps are discussed below.

3.2 General Research Projects on Sustainable Development Indicators

Several of the EU FP funded research projects either focus on sustainable development indicators explicitly or develop indicator sets which cover a number of different aspects of sustainable development. The most notable research projects which focus explicitly on SDIs are DECOIN, INDI-LINK under FP6 and SMILE (a follow-up project to DECOIN), POINT, OPEN-EU and INSTREAM, under FP7.

The [INDI-LINK](#) project aims to improve the EU SDIs and assesses the inter-linkages between different priorities of the renewed EU SDS. As part of this project, the state of the art in SDIs was reviewed and the results used to develop a set of key indicators. These include indicators for a wide variety of SDS themes including: Social Inclusion; Sustainable Consumption and Production (SCP); Public Health; Sustainable Transport; and Good Governance. These indicators were chosen after an analysis of different criteria available in the literature. The project also evaluates methods suitable for assessing the inter-linkages between different aspects of sustainable development (ie economic, social and environmental). This task identified a set of appraisal methods (such as Strategic Environmental Assessment and the European Commission's Impact Assessment procedure), evaluation methods (such as Cost Benefit Analysis) and indicator methods (such as the Living Planet Index and the Human Development Index). These methodologies are used to assess inter-linkages between different aspects of sustainable development.

The [DECOIN](#) project also focuses on SDIs in general and analyzes inter-linkages between different trends in the EU. The project aims to evaluate existing frameworks to assess the progress towards sustainable development; elaborate on forecasts and scenarios, identify inter-relationships between selected unsustainable trends in the EU; carry out a detailed analysis of the inter-relationships between selected unsustainable trends; and provide a prototype tool for analysis and forecasting. To do this the project developed new analytical tools and used them to examine, decompose and test a number of existing SDIs, including those under the themes of: Socio-Economic Development; Social Inclusion; Climate Change and Energy; and Demographic Changes. The SMILE project started in the summer of 2009 and is following on from DECOIN with the objective to apply and further develop the tools used in the DECOIN project.

Three new projects focusing on SDIs have also recently started under FP7: POINT, INSTREAM and OPEN-EU. The [POINT](#) project aims to help find better ways of

using indicators in all aspects of policy, by enhancing the understanding of the factors that condition the successful use and influence of indicators in policymaking. The focus will be on the processes through which indicators enter into policymaking, but the project also seeks new ways of improving the conceptual validity and reliability of indicators, so as to improve their relevance for policy. Sustainable development will act as the main thematic focus. The [IN-STREAM](#) project aims to provide insight into the synergies and trade-offs implicit in Europe's pursuit of economic growth and environmental sustainability. In doing so, the project will perform quantitative and qualitative assessments in order to link mainstream economic indicators with key well-being and sustainability indicators whilst also recommending new indicator approaches (and sets of indicators) based on their robustness, feasibility and suitability to EU policy objectives. The [OPEN-EU](#) Project aims to develop an academically robust 'footprint family' of sustainable development indicators, place these in a scenario modelling tool for evidence-based policy, and create a new forum for stakeholders to help transform the EU to a 'One Planet Economy' by 2050.

A number of other FP6 research projects focus on developing indicators for sustainable development at a more local level (ie at a local, regional or city level). These include STATUS and TISSUE which aimed to support the Thematic Strategy on the Urban Environment under the 6th EAP.

The aim of [TISSUE](#) was: to determine which trends should be measured to monitor progress towards sustainable development of the urban environment at a local level; to carry out comparative research on existing sets of indicators; to define the set-up needed for harmonised set of indicators; to analyse the conditions for increasing the acceptance and use of harmonised sets of indicators through Europe. The indicators recommended for harmonised application across Europe included many which are relevant for the SDS, including indicators on themes which have not been included in projects concentrating on specific themes or key challenges of the SDS such as 'Social Inclusion, Public Health, and Good Governance. Similarly the [STATUS](#) project also focused on the Thematic Strategy on Urban Environment and aimed to develop a tool giving local governments the opportunity to assess their progress towards sustainable development. To do this a package of SDIs was developed which was specifically adapted to be relevant at a local level. These included indicators which are also relevant for the SDS and cover a number of themes which have been sparsely covered in other projects such as under the themes of Public Health and 'SCP'.

In addition to these projects linked to the Urban Environment Thematic Strategy, three other research projects focused on monitoring the local level of sustainable development. [INSURE](#) aimed to develop a common flexible European framework for SDIs aimed at monitoring progress towards sustainable development on a regional scale. The main objective of the [ECO DEV](#) project was to produce monitoring tools (including indicators) for the evaluation of sustainable development at local level with emphasis on urban and regional processes. This was in order to develop and implement the concept of 'Ecosites' at an EU level. The [SENSOR](#) project aimed to establish relationships between different environmental and socio-economic processes as characterised by indicators considered to be quantitative measures of sustainability. The focus was on sensitive regions, particularly those in accession countries. The project found relevant indicator sets and frameworks that could be used for describing

aspects of sustainable development in relation to landscape at European level, including those under the following themes: Public Health; Natural Resources; Climate Change and Energy; Natural Resources; SCP; and Socio-Economic Development.

3.3 Research Projects on Sustainable Development Indicators by Theme

3.3.1 Socio-Economic Development

A number of projects fall under this category. Three research projects (MEI, ACETECH and ECODRIVE) focus on indicators for eco-innovation, which falls under the ‘Innovation, Competitiveness and Eco-efficiency’ sub-theme of the Eurostat SDIs. The [MEI](#) project offered a conceptual clarification of eco-innovation by developing a typology of ses possible indicators. The project results list a number of methods and indicators that can be used to measure eco-innovation. Indicators include: total investment in Research and Development (R&D); number of R&D projects; sales due to the innovation; innovation expenditure. The second project, [ACE Tech](#) was conducted by the Joint Research Centre (JRC) but has not yet published its findings. This was a highly practical project supporting the development of the ‘Sustainable Energy Technologies Reference and Information System’ (SETRIS). In addition to providing general expert advice on clean energy technologies, specific activities conducted under this project included (among other things) updating a set of indicators for clean energy technologies (with special emphasis on carbon sequestration, fuel cells, hydrogen technologies, biomass and natural gas). The ECODRIVE project explores how best to measure eco-innovation. Eco-innovation indicators are proposed to measure progress, both of economic performance, as in terms of cost reduction and enhanced functionality, and environmental performance, from reduced emissions and resource depletion and other environmental improvements.

The [MERIPA](#) project develops indicators to measure innovation at a regional level which could also be classified under the ‘Innovation, Competitiveness and Eco-efficiency’ sub-theme of the Eurostat SDIs but this project is not linked specifically to the environmental dimension of sustainable development.

Other projects focus on indicators for measuring progress towards a knowledge based economy as well as general support (often highly applied in the case of JRC projects) of the structural indicators for monitoring the Lisbon Strategy or more general support of indicators for the internal market. These projects include: [KEI](#) - which identifies key indicators for knowledge economies and methodologies for constructing composite indicators to measure and compare national performance; [QSI](#) – which aims to perform specific work on internal market indicators (including the internal market scoreboard) and for the Structural Indicators initiative; and the [STAT-ECON](#) project – which develops indicators of a knowledge based economy, including indicators to assess the impact of structural reforms under the Lisbon Strategy, as well as offering assistance in the calculation of the Internal Market Index for the Internal Market Scoreboard.

A number of other research projects focused on the more social aspects of sustainable development in the EU. These include: [ESS3](#) and [ESS4](#) - which were the third and fourth round of the European Social Survey series, a biennial multi-country survey covering over 30 nations and designed to chart and explain the interaction between Europe's changing institutions and the attitudes, beliefs and behaviour patterns of its diverse populations (these projects do not mainly focus on indicators but include some relevant ones in their measurement); [MEADOW](#) – which set out guidelines for collecting and interpreting data on the dynamics of organisations and their economic and social impact including indicators relating to access to jobs, work environments and influence at the work place; [WORKCARE](#) – which set out to measure the social quality in Europe in terms of the work and care systems in creating a work/life balance; finally [HEATCO](#) - was a project within the transport sector but included the development of a set of SDIs as part of a wider policy appraisal component.

A number of other projects also included indicators for socio-economic development: [DECOIN](#); [FORESCENE](#); [SENSOR](#); [RECIPES](#); [TRANSFORUM](#); [INDECO](#).

3.3.2 Sustainable Consumption and Production

No research project under FP6 was mainly focused on SCP (and so is categorised as such in the project matrix). However, a number of SCP indicators are included in most of the general SDI research projects including: [INDI-LINK](#); [DECOIN](#); [FORESCENE](#); [TISSUE](#); [STATUS](#); and [SENSOR](#). In addition, three of the projects categorised under Socio-Economic Development also include aspects of SCP in the form of eco-innovation and eco-efficiency indicators. These projects include [MEI](#), [ACETECH](#) and [ECODRIVE](#).

Overall, however, only certain aspects of SCP are covered in these research projects. The aspects of SCP currently covered by the indicators addressed in the general research projects include: Green Public Procurement (GPP); construction and demolition waste; municipal waste; environmental management practices; water consumption. Issues which have most obviously been left out are those which are currently very difficult to measure such as overall natural resource use (in terms of metals; wood; food; etc).

Although eco-innovation and eco-efficiency is categorised by the Eurostat indicators as falling under the Socio-Economic theme, the work by the [MEI](#), [ACETECH](#) and [ECODRIVE](#) projects could also be considered as contributing to SCP theme at least in terms of moving towards sustainable production.

A number of other projects also include SCP indicators, particularly those that focus on energy and transport issues (see below). These projects include: [RECIPES](#); [WETO_H2](#); [REFIT](#); [ELME](#). In addition, a new project which tackles fair trade issues has recently started under the FP7.

[GEO FAIR TRADE](#) brings together Fair Trade Civil Society Organisations and Research and Technology Developers to build a reference framework built on the sustainable development Geo-Indicators that can be used in the traceability systems already implemented in Fair Trade. These SDIs will have a spatial component and relate to the three dimensions of Fair Trade (social, economic and environmental).

3.3.3 Social Inclusion

No FP6 research project focused mainly on the theme of social inclusion but already in the FP7 projects one project (AMELI) is dedicated to researching poverty and social inclusion indicators. The main goal of this project is to review the state-of-the-art of the existing indicators monitoring the multidimensional phenomena of poverty and social exclusion - the Laeken indicators (see section 4.4.1 below) including their relation to social cohesion. Special emphasis will be put on methodological aspects of indicators and especially on their impact on policy making. This will include quality aspects as well as mathematical and statistical properties within a framework of a complex survey in the context of practical needs and peculiarities.

In addition to the new AMELI project, and as with the theme SCP above, some of the FP6 research projects on SDIs in general include indicators of social inclusion. INDI-LINK includes consideration of child well being while DECOIN includes consideration of poverty and social inclusion in its work on SDIs in general. TISSUE offered several indicators of social inclusion including: accessibility of basic services; poor quality housing; population and jobs density; and the jobs/housing ratio.

The KEI project included the social inclusion indicators of 'inequality of income distribution' and 'variability of income/capita GINI index' in its list of 64 indicators. Finally, the RECIPES project, which focused mainly on the theme Climate Change and Energy (and will be described below), included the indicators for social inclusion of 'population below the poverty line' and 'participation in life long learning per working age population' in its set of indicators developed to assist appropriate action to further the implementation of renewable energy in developing countries. In addition, although the indicators for ESS3 and ESS4 are not listed in the project summaries it is probable that these general social surveys may have included some indicators on social inclusion.

3.3.4 Demographic Changes

Research on indicators for demographic change is relatively sparse. No research project reviewed focused entirely on this theme while only a few other projects included indicators in this field. DECOIN includes indicators for 'ageing society' and 'at-risk-of poverty productivity of the ageing society'. FORESCENE included the indicators of 'population density' and 'ageing population'. Although the indicators for ESS3 and ESS4 are not listed it is probable that these general social surveys may have included some demographic indicators. The WORKCARE project included three indicators which could be included under the demographic change theme: 'population aged 65 and more'; 'old age dependency ration'; and 'total fertility rate'.

3.3.5 Public Health

None of the research projects reviewed in the FP6 and FP7 projects focused mainly on the Public Health theme. Six projects focused on other themes included some consideration of public health indicators. However, the wide range of aspects of public health covered in the SDS is not reflected in these projects leaving Public Health indicators as one of the least researched areas in the review.

The sub-theme ‘determinants of health’ is the most researched group of indicators within the ‘Public Health’ theme in the research projects. TISSUE; STATUS; SENSOR; REFIT; and INDECO all included indicators for this sub-theme. For example SENSOR included consideration of exposure to fire risk; REFIT included the indicator ‘population exposure to PM10 emissions’; while TISSUE included ‘includes the number of days exceeding certain PM10 and O₃ levels’. Exposure to noise is also a common indicator of health given in the reviewed projects. The second Eurostat sub-theme, ‘health inequalities’, is less well represented in the research, though DECOIN does include consideration of ‘unmet needs for health care by cause’ and STATUS included ‘access to green areas’ and ‘proportion of houses being of adequate standard’. However, many other public health operational objectives presented in the SDS such as ‘curbing the increase in lifestyle-related and chronic diseases’ and ‘improving information on environmental pollution and adverse health impacts’ are not addressed.

3.3.6 *Climate Change and Energy*

Two projects focused mainly on indicators for climate change and energy, while many other projects included some consideration of this theme. The [RECIPES](#) project aimed to provide the Commission and stakeholders with pragmatic recommendations facilitating appropriate action to further the implementation of renewable energy in developing countries. The project took into account a number of factors including; local and global environmental impacts and effects on the local socio-economic situation. A website was developed with an integrated database section including information regarding the current situation and technical potential for renewable energy options in each of the 114 developing countries. The main relevant indicators developed include: traditional fuel consumption; fuel consumption by type; renewable energy situation; electricity production from solar, thermal and Photo Voltaic; electricity production from geothermal sources. Various indicators of fuel production by type are also offered but these have been classified under SCP and already discussed above.

The WETO-H2 project produced a reference book presenting a world energy technology outlook by 2050 paying special attention to the role of hydrogen-generated energy. This projection adopts exogenous forecasts for population and economic growth in the different world regions and it makes consistent assumptions for the availability of fossil energy resources and for the costs and performances of future technologies. It uses a world energy sector simulation model – the POLES model – to describe the development to 2050 of the national and regional energy systems and of their interactions through international energy markets, under constraints on resources and from climate policy. Indicators developed under this project include: ‘CO₂ emissions; ‘share of renewables in electricity’; ‘GHG emissions for industry’; ‘GHG emissions from industry’; ‘GHG emissions from electricity generation’; ‘GHG emissions from households and services’; ‘GHG emissions from agriculture’; and ‘GHG emission for transport’. Other indicators of fuel production by type are included under the theme SCP and discussed above but could arguably have been included under the Climate Change and Energy theme instead.

Eight other projects included climate and energy indicators. These are: DECOIN; FORESCENE; TISSUE; STATUS; SENSOR; MEI; REFIT; ELME.

3.3.7 Sustainable Transport

Three projects included in this review focused on the theme of Sustainable Transport: TRANSFORUM; REFIT; and TRANS-TOOLS.

The **TRANSFORUM** project focused on policy support and assessment tools for the EU's Common Transport Policy. Specifically, the project looked at transport policies dealing with the inter-urban and international mobility of goods and passengers. It addressed the need to verify the scientific consistency and transparency of these tools, and their ability to match the needs and expectations of policy-makers, users and stakeholders. The project tried to develop commonly accepted indicators used in measuring transport policy impacts which are also compatible with measuring *sustainable* transport. Indicators developed include (among others): 'expenditures on transport'; 'number of fatalities in transport'; 'GHG emissions by transport mode'; 'emissions affecting local air pollution'; and 'share of substitute fuels'.

REFIT aimed to provide the Commission with a comprehensive methodology for assessing the impact of various transport policies and strategies on sustainability through incorporating the economic, environmental and social dimensions of sustainability. Initially, a comprehensive assessment framework was developed that links European transport policy objectives and indicators to the growing pool of tools and expertise accumulated within various European research projects. By combining an existing Europe-wide transport demand network model (like TRANSTOOLS) with the environmental REMOVE model and the spatial economic CGEurope model, REFIT aimed to offer a quantitative tool to evaluate transport policies. Numerous indicators were evaluated within the REFIT operational framework. Those which were focused on sustainable transport mainly included amount of transport by mode.

The **TRANS-TOOLS** project resulted in one of the largest existing transport models in terms of number of countries covered, population covered, geographical scale, as well as the completeness of coverage of both freight and passenger transport, and of a number of other transport modes. However, only limited attention was given to indicators which included: accident rates; emissions by transport mode; and supplier operating costs for public transport.

TISSUE and STATUS also include some consideration of sustainable transport indicators.

3.3.8 Natural Resources

The research on the Natural Resource theme falls mainly under the 'Biodiversity and Marine Ecosystems' sub-themes with no projects mainly focusing on fresh water resources and only one on land use. Consideration of natural resource efficiency and natural resource use is discussed in this review under SCP and Socio-Economic Development in accordance with Eurostat's categorisation of indicators.

Four research projects examine indicators in relation to fisheries and marine sustainability: INDECO; ELME; INCOFISH; and THRESHOLDS.

The purpose of the **INDECO** project was to ensure a coherent approach to the development of indicators at EU level, in support of environmental integration within the Common Fisheries Policy (CFP) and in the context of international work on indicators. More specifically the project aimed to identify and assess the applicability of quantitative indicators for the impact of fishing on the ecosystem state, functioning and dynamics, as well as indicators for socio-economic factors and for the effectiveness of different management measures. Indicators related to the natural resources theme included: ‘abundance of commercial fish stocks’; ‘number of fishermen’; and ‘water quality’. Other indicators were also developed contributing to other themes (within the context of this sector) such as ‘number of work injuries’ and ‘number of unemployed’.

The **ELME** project aimed to highlight the link between the declining state of the marine environment and human lifestyles in Europe. The project focused on four major European sea areas (the Baltic Sea, Black Sea, Mediterranean Sea and North-East Atlantic) and on four cross-cutting environmental issues: habitat change, eutrophication (over fertilisation of the sea), chemical pollution and fishing. Results show that ecosystems in each of the four sea areas covered had their own ‘winners’ and ‘losers’ as a result of human activity. In almost every case the winners are either species that are low in the food chain or opportunistic, undesirable species. Indicators include: ‘shipping activity’; ‘fishing effort’; ‘shipping and transport activity’; ‘landuse’; land use and ‘municipal waste’ and ‘industrial discharge’.

The **INCOFISH** project aimed to reconcile multiple demands on coastal zones. It sought to evaluate and integrate data, tools and concepts suitable to contribute to the goals set by the 2002 World Summit for Sustainable Development (WSSD) in Johannesburg, such as restoring healthy fish stocks and ecosystems by 2015. The wide range of research activities undertaken within this project included identifying suitable simple indicators to promote and monitor sustainable fisheries.

The **THRESHOLDS** project emphasised the formulation of a generic theory of thresholds in nature, encompassing the understanding of alternative stable states and regime shifts in ecosystems, nonlinear and cascading responses in ecosystems. The project aimed to contribute to the development of sustainability science by developing, improving and integrating tools and methods that can deal with complex behaviour of ecosystems. The project used the concept of thresholds of indicators of environmental sustainability to feed scientific knowledge into policy making for sustainable resource management. The tools developed to do this were applied to a number of case studies on the sustainable management of European coastal zones. As part of this project indicators of marine ecosystem function and biodiversity were developed.

Two research projects focus on indicators in the field of biodiversity: RUBICODE and BIOSCORE. The **RUBICODE** project aimed to contribute to solving the problem with translating biodiversity threats into a tangible factor for decision-making. It does this by examining what biodiversity does for society in terms of ecosystem services. The project was based around workshops to coordinate research and review results from previous projects. Indicators featured heavily in the first workshop which reflected on the indicator approach used in the Thematic Strategy on soils, Water

Framework Directive as well as various more general developments in the research on biodiversity indicators. For example, indicator approaches in different ecosystem types (eg grassland ecosystems) were reviewed. In addition, indicator approaches for different ecosystems were then assessed in relation to what specific parameters of ecosystem health they help indicate (eg do they indicate services, stressors, spatial scale etc?).

The **BIOSCORE** project developed a tool for linking pressures from policy sectors to the (changes in the) state of biodiversity as measured by the presence and abundance of individual species. The tool contains indicator values on the ecological preferences of more than 1000 species of birds, mammals, amphibians, reptiles, fish, butterflies, dragonflies, aquatic macro-invertebrates and vascular plants. These values are linked to policy-related pressures and environmental variables.

3.3.9 Global Partnership

No FP research project focused specifically on global partnership indicators. The only research project which included indicators on global partnership in its work was FORESCENE which has an indicator of ‘global trade’. The SDS included relevant operational objectives such as: ‘0.7 per cent of GNI as ODA by 2015’; ‘promoting sustainable development in the WTO negotiations’; ‘increasing the effectiveness, coherence and quality of EU and Member States’ aid policies’. The new GEO FAIR TRADE project may also provide some global partnership indicators.

3.3.10 Good Governance

Only one FP6 project focused mainly on ‘Good Governance’ indicators. The project ‘Integration of Environmental Concerns into Agriculture’ developed indicators to assess the integration of environmental concerns into agricultural policy. A number of other FP6 projects also included governance indicators as part of their work: INDI-LINK – ‘proportion of environmentally harmful subsidies’; TISSUE – ‘citizens’ engagement with environmental and sustainability orientated activities’, ‘legal framework for active public participation, adoption of integrated urban plans’; KEI – ‘percentage of individuals who use the internet to interact with public authorities (e-governance)’.

In addition one recently started FP7 project will focus on good governance indicators. The **PASSO** project will assess SDIs on Good Governance and its cross-cutting features from a social perspective. The starting point will be the list of SDIs adopted in the context of the EU SDS on the Good Governance theme. Alternative sets of governance indicators from international initiatives (eg United Nations) will be considered too. These sets of indicators will be subject to a participatory assessment process allowing Civil Society Organisations members to react to RTD performers, statisticians and experts’ views in an iterative manner.

3.4 Potential of the FP7 Work Programme to Contribute to SDI Research

The review in this section is based on a keyword search of the 2009 Work Programmes for the Cooperation component of FP7, using the search terms "indicator" and "sustainable".

3.4.1 Socio-Economic Development

The review did not find specific indicator-related research topics in this area, except general support to statistical research in the SSH WP.

3.4.2 Sustainable Consumption and Production

None of the WPs specifically provides for research on indicators of SCP. However, several topics have the potential of yielding results which may be valuable for the future development of relevant indicators.

For instance, topic ENV.2009.4.1.3.2 "Earth observation in support of a sustainable exploitation of mineral resources", is directly relevant to this SDS objective, since the EU's production and consumption of mineral resources as an important source of pressure on the environment and sustainable development in Europe and globally. Projects that will be funded under this topic are to provide the scientific basis to improve the monitoring of the impact on environment and society of the exploration and exploitation of mineral resources. More specifically it is expected that these projects will contribute to the EU Technology Platform on Sustainable Resources in the domain of environmental footprint reduction by providing information about populations and societies affected by the exploration and exploitation of raw materials. The project should be implemented taking into account the relevant GEO tasks. There is no explicit reference to SDIs in the call but the relevance of such research results to the development of indicators in support of the implementation of the SCP/SIP Action Plan is obvious.

Topic ENV.2009.3.3.2.1 "Improved Life Cycle Impact Assessment methods (LCIA) for better sustainability assessment of technologies" is intended to support research into methodologies for consistently and accurately associating LCA inventory data with specific potential environmental impacts. Research in response to this call should develop or improve LCIA methods and characterisation factors for a series of "impact categories" for which there are not yet widely agreed LCIA methods, leading to improved decision support. The results of such research may be relevant in future development or further refinement of existing SDIs. The call specifically refers to the SCP/SIP Action Plan and the Climate and Energy package.

The topic KBBE-2009-2-2-04 "Strategies for sustainable eating habits" is also highly topical from an SDS and SDI perspective. As the call text notes: "New eating habits and actual trends in production and consumption have a health, environmental and social impact." Funded projects are expected to investigate food consumption patterns and trends in Europe and their environmental and socio-economic impact worldwide. This research will make it possible to promote healthy diets while minimising the ecological footprint, by generating knowledge on nutrition ecology and developing

strategies to improve sustainable eating habits in Europe. Results will be relevant not only to the SCP theme but also to the public health challenge of the SDS.

Another sector of the European economy which has been identified as having a major impact on sustainable development is the building sector. Topic ENV.2009.3.1.5.2 "Benchmarking and labelling of the sustainability performance of buildings" may result in research which will expand the knowledge base for the development and use of relevant indicators. The research activities to be funded are intended to address the remaining unresolved issues which would enable the sustainability assessment of buildings complementing existing methodologies for assessing the energy performance and overall sustainability of buildings. Sustainability performance targets and benchmarking are intended to be used as a basis for development of policy instruments responding to needs identified in the LEAD MARKETS initiative on Sustainable Construction.

Finally, the area SSH-2009 - 6.2.1 "Indicators for the European service sector" should be mentioned in this review, because this presents an opportunity to orient research towards SDIs which may not be properly seized. As worded in the SSH WP, the indicators to be developed pursuant to this call are primarily intended to facilitate the proper measurement of productivity and growth in the services sector. Indicators should be proposed that "measure different aspects such as integration, competition, efficiency, and innovation together with models to analyse the link between different features", but sustainability is regrettably not mentioned as a relevant aspect. The development of indicators must "allow input-output and producer-user relationships to be analysed with the object of understanding the production processes and the output characteristics in individual service industries", but the social and environmental impacts of these processes and outputs are not specifically mentioned as factors worthy of analysis.

3.4.3 Social Inclusion

The review did not find specific indicator-related research topics in this area.

3.4.4 Demographic Changes

The review did not find specific indicator-related research topics in this area.

3.4.5 Public Health

The review did not find specific indicator-related research topics in this area, but identified to topics with some relevance to the public health objectives of the SDS.

Topic HEALTH-2009-3.2-2 "Healthcare outcomes and cost-benefits" is aimed at investigating the relationship between quality of care with costs, efficiency, and accessibility by identifying and assessing existing approaches. This approach focuses on the economic and social dimensions of sustainable development. The call specifies that research findings should inter alia aim to support development of the European Community Health Indicators managed by DG SANCO.

Topic HEALTH-2009-4.3.1-3 "Human immune responses to co-infections of poverty-related (HIV, malaria, TB) and neglected infectious diseases" is relevant to the public health and global partnership challenges of the SDS. Special emphasis is put on the severe disease burden in developing countries, especially ACP Countries. Though the call focuses on specific medical and scientific aspects of responding to poverty-related diseases, the results may be relevant in the context of monitoring progress on the MDGs and developing EU cooperation with developing countries to address these public health challenges.

3.4.6 Climate Change and Energy

Not surprisingly, the 2009 WPs contain many topics relevant to this key challenge of the SDS, though few with an explicit link to indicators. Most of the topics are related to the SDS objective of increasing the share of renewable sources of energy, with a special focus on biofuels.

These topics include KBBE-2009-3-1-02 "*Jatropha curcas* – towards a sustainable crop for biomaterials and biofuels"; KBBE-2009-3-2-02 "Sustainable use of seas and oceans - Biomass from micro- and macro-algae for industrial applications" and KBBE-2009-3-7-01 "Sustainable Biorefineries" (a joint call with the NMP and Energy WPs). The wording of the calls highlights the anticipated environmental advantages of these new energy technologies, but also includes references to the need to take broader sustainable development considerations into account.

The *Jatropha* topic specifies that "sustainability of the production systems should be evaluated including energy balance and environmental/economical analysis". This may be relevant for the development of proper indicators. Apart from the climate change and energy policy aspects, the call also refers to the potential contribution to poverty reduction under the MDGs, though this aspect does not seem to be a major focus of the expected projects which have a heavy emphasis on technological development.

The algae topic stresses "the optimisation of the technologies and economics of using algae or algal products as an alternative to fossil raw materials for fuels and/or industrial products." It calls for the potential of using algae for mitigating climate change to be explored and quantified. But again the emphasis lies on the techno-economic aspects rather than a wider sustainability assessment.

Finally the joint call on biorefineries focuses on "sustainable processing of biomass into building blocks for the production of bio-based chemicals, materials, second generation biofuels, power and heat." All proposals are to "address the entire value chain from biomass feedstock production, logistics and pre-treatment to the development of thermo-chemical and bio-chemical technologies, including biotechnological routes, for the conversion of different types of biomass feedstock into bio-based products and energy." More specifically: "With regard to sustainability, all proposals shall assess for the entire value chain the environmental, economic and social sustainability, including consequences due to the competition for food and biomass resources, the impact on water use and quality, changes in land-use, soil

carbon stock balance and fertility, net balance of greenhouse gases, impact on biodiversity, potential toxicological risks, energy efficiency." Impacts on international and regional dynamics, end-users and consumer needs "may", but must not be considered, which is somewhat surprising taking into account the global partnership objective of the SDS.

Finally, topic ENERGY.2009.2.9.1 "Deep off-shore multi-purpose renewable energy conversion platforms for wind/ocean energy conversion" focuses in wind and wave energy, which it recognises "will raise new challenges in maritime planning and permitting in Europe and in the sustainable development of Europe's marine resources." Project are primarily designed to "bring off-shore renewable energy applications closer to the market." Again, the importance of adequately incorporating non energy and climate change related impacts into the design of such energy systems in order to avoid negative trade-offs should be stressed.

3.4.7 Sustainable Transport

The review did not find specific indicator-related research topics in this area.

3.4.8 Natural Resources

The review identified quite a few research topics of relevance to this area in the Environment and KBBE WPs. Due to their sheer variety, they can only be briefly listed here with a view to a possible more detailed assessment of their potential specific relevance to SDIs:

- ENV.2009.2.1.2.1 Water management and climate change impacts in the long-term perspective
- ENV.2009.2.1.3.1 Soil processes and modelling
- KBBE-2009-1-2-09: Impact and development of Conservation Agriculture techniques in developing countries
- KBBE-2009-1-2-10: Improving fisheries assessment methods by integrating new sources of biological knowledge
- KBBE-2009-1-4-02: Spatial analysis of rural development measures for effective targeting of rural development policies
- KBBE-2009-2-3-03: Sustainable food and feed processing

3.4.9 Global Partnership

The review identified quite a few research topics of relevance to this area in different WPs, though not a single one has an explicit indicator component. Due to their number and variety, they will again simply be listed here with a view to a possible more detailed assessment of their potential specific relevance to SDIs, or possibly to the inclusion of an SDI-related aspect in the final design of the projects at the stage of contract negotiation with the successful applicants:

- SPA.2009.3.2.01 International Cooperation (space applications such as Earth observation or satellite communications as a tool to support Africa in its sustainable economic and social development)
- SSH-2009 - 7.1.1. The World and Europe in 2025
- SSH-2009 - 7.1.2. Foresight on the long term challenges for the Mediterranean area.
- ENV.2009.2.1.3.2 Desertification process and land degradation
- ENV.2009.2.1.5.1 Sustainable development of coastal cities
- KBBE-2009-1-4-05: Policy and institutional aspects of sustainable agriculture, forestry and rural development in the Mediterranean partner countries – SICA (Mediterranean Partner Countries)

3.4.10 Good Governance

As pointed out elsewhere in this report, this theme is still seriously underdeveloped as far as operational indicators are concerned. This is an area where a lot of further research will be required for the development of SDIs. A number of activities, areas and topics under several WPs present potential for such research, though the relevance of the projects called for to indicator development could be increased by targetting this aspect more directly. The main relevant projects are listed below for reference and further consideration from this perspective:

- SSH-2009 - 8.3. ERA-Net in the field of statistics
- ENV.2009.4.2.3.2 Enhancing connectivity between research and policymaking in sustainable development
- SSH-2009 - 2.1.1. New socio-economic concepts, paradigm shift and territorial dynamics in a long term perspective
- SSH-2009 - 2.1.2. Cities and sustainable development
- ENV.2009.2.2.1.1 Options for Ecosystem-based management
- KBBE-2009-1-4-12: Supporting governance in aquaculture research and innovation

4 THE USE OF SUSTAINABLE DEVELOPMENT INDICATORS AND RELEVANT ACTIVITIES WITHIN THE EUROPEAN COMMISSION

4.1 Introduction

The European Commission uses a range of indicators to support policy making and evaluation. Indicators can provide input throughout the policy cycle, from problem recognition, policy formulation and decision-making to monitoring implementation. The Commission's use of indicators is dynamic with more indicators being used and existing indicators being updated and developed. Many of these indicators can be related to the EU's progress on sustainable development. Some sets of indicators, such as Eurostat's SDIs, have been specifically designed to monitor this progress while others, such as those used in DG Environment's Environmental Policy

Reviews, focus on certain aspects of sustainable development, ie the environmental dimension. This section of the report sets out the Commission’s main uses of SDIs as well as some relevant activities within this field.

4.2 Eurostat Sustainable Development Indicators

The EU SDS requires the Commission to develop indicators at the appropriate level of detail to monitor progress with regard to each particular challenge. These indicators have been developed by Eurostat, with the help of a group of national experts known as the Task Force on Sustainable Development Indicators. A first set of indicators was adopted by the Commission in 2005 and then updated in 2007 in order to adjust to the renewed SDS. The SDIs are used to monitor progress on the EU SDS in a report to be published by Eurostat every two years. This report, along with national reports from the Member States, feeds into the Commission’s overall report on the progress on the SDS to be submitted to the December European Council every other year.

The SDIs are structured in a ‘hierarchical theme framework’. The indicators are divided into ten themes, reflecting the seven ‘key challenges’ of the strategy, as well as the key objective of economic prosperity, and guiding principles related to good governance. These are further divided into sub-themes to reflect the operational objectives and actions of the SDS.

The indicators are also built as a three-level pyramid (see figure 4.2.1). The three levels of indicators reflect the structure of the renewed SDS (overall objectives, operational objectives, actions) and also responds to different kinds of user needs, with the headline indicators having the highest communication value. In addition, the three-levels are complemented with contextual indicators, which provide valuable background information but which do not directly monitor progress towards the achievement of the strategy’s objectives.

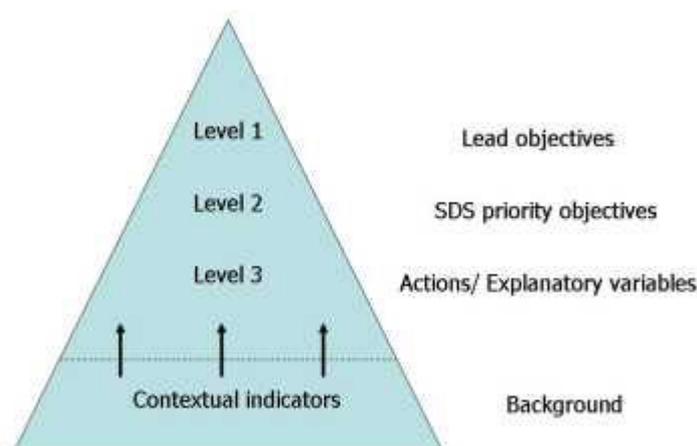


Figure 4.2.1 The SDI pyramid.

Source: Eurostat (2009)

The three levels of indicators are the following:

- **Level 1 indicators** which monitor the ‘overall objectives’ of the SDS. These indicators are well-known with a high communicative and education value. They are also robust and available for most EU Member States. They are aimed at high-level policy-making and the general public and are sometimes referred to as ‘headline’ indicators.
- **Level 2 indicators** correspond to the sub-themes of the framework (and so the operational or priority objectives of the SDS) and, together with Level 1 indicators, monitor the progress in achieving the headline policy objectives. They are robust and available in most Member States for a period of at least three years.
- **Level 3 indicators** relate to various implementing actions mentioned in the SDS. These indicators are aimed at further policy analysis and better understanding of the trends and complexities of the issues associated with the theme. They are intended for a more specialized audience.

The SDS covers several priority areas for which there is no information or only partial data at the present time. Therefore the indicators were developed on the basis of existing data. These are the ‘best available indicators’ which are used to monitor the SDS and are listed in Appendix 2. However, 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. These ‘best needed indicators’ are differentiated between indicators that are expected to become available within two years, with sufficient quality (‘indicators under development’), and those to be developed in the longer term (‘indicators to be developed’).

The Commission, Eurostat and the research community are investigating the feasibility of these ‘best needed indicators’. In the annex to its biennial report to the Commission on the progress on the SDS, Eurostat also reports on progress in ensuring the availability of the ‘best needed indicators’ which are feasible. Indicators under development according to Eurostat’s contribution to the 2007 (and most recent) Commission report on the progress on the SDS included: a ‘Genuine Savings’ indicator, an ‘eco-innovation’ indicator, an indicator to measure ‘Green Public Procurement and an indicator for ‘Total Material Consumption’ (CEC 2007).

4.3 Structural Indicators

Structural Indicators are a horizontal indicator set which are used to monitor the Lisbon Strategy for Growth and Jobs. This strategy was first adopted by the Council in 2000 and later renewed in 2005 and sets out Europe’s 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 indicators are used as the basis to form the Commission's analysis in the Annual Progress Report on the Lisbon Strategy to the European Council. The Structural Indicators cover six areas: General Economic Background, Employment, Innovation and Research, Economic Reform, Social Cohesion and the Environment.

The indicator set currently comprises 79 indicators (Eurostat 2009b). The majority of indicators stem from the European Statistical System but there are also indicators that come from sources outside the system. The list is dynamic and changes occur as new indicators are added to the list and some indicators are replaced. A shortlist of indicators was agreed to allow for a more concise presentation and a better assessment of achievements over time. There are currently 14 indicators on this shortlist. In the fields of social cohesion and environment these indicators include: long-term unemployment rate by gender; at-risk-of-poverty rate after social transfers by gender; greenhouse gas emissions; energy intensity of the economy; volume of freight transport relative to GDP.

As discussed in the introduction, there has been a tension between SDS and the Lisbon Strategy in terms of the review process and the use of indicators. This has been resolved for the time being by the separation of the review of the renewed SDS. However, a debate continues on the ambiguous relationship between these two strategies. The renewed SDS states that the two strategies complement each other but that ‘the EU SDS forms the overall framework within which the Lisbon Strategy, with its renewed focus on growth and jobs, provides the motor of a more dynamic economy’ (Council of the European Union 2006, 6). However, in practice, priority is given to the Lisbon Strategy where as the SDS has received relatively low political emphasis. The Lisbon Strategy is scheduled to be re-launched again in 2010 which sets the scene for another opportunity to readdress this ambiguity. Within this debate are calls for the two strategies to be merged though this scenario is not favoured by all stakeholders.

4.4 Social Indicators

4.4.1 Indicators for the Social Inclusion Process

In 2000 EU leaders established the Social Inclusion Process to work towards eradicating poverty by 2010. The overall goal, set by the Lisbon European Council, was to make a decisive impact on the eradication of poverty by 2010, to improve the understanding of poverty and social exclusion in the European context and to identify and exchange good practice. Since then, the EU has provided a framework, based on an approach known as the ‘Open Method of Coordination’ (OMC), for policy coordination between the Member States on issues relating to poverty and social exclusion. Key elements of this approach include the definition of commonly agreed objectives for the EU, the development of national action plans to meet these objectives, and periodic reporting and monitoring of progress made. Therefore, the use of the OMC means that indicators are often prominent in benchmarking and assessment of progress made by individual Member States.

In December 2001 the Laeken European Council endorsed a first set of 18 common indicators for social inclusion (European Council 2001b). These were developed by the Social Protection Committee and were designed to monitor progress towards the achievement of the EU poverty eradication and social inclusion objectives set in 2000 (SPC 2001). They covered four important dimensions of social inclusion: financial poverty, employment, health and education.

In June 2006, the Social Protection Committee adopted a new set of common indicators for the social protection and social inclusion process (CEC 2009a). These indicators consist of

- 14 overarching indicators (+11 context indicators) meant to reflect the newly adopted overarching objectives (a) ‘social cohesion’ and (b) ‘interaction with the Lisbon strategy growth and jobs objectives’; and
- 3 strand portfolios of indicators for social inclusion, pensions, and health and long-term care.

These indicators are used for the overall National Reports on Strategies for Social Protection and Social Inclusion and the specific National Reports on the different strands (social inclusion, pensions, health and long-term care) as well as for the joint report presented by the European Commission and the Council.

4.4.2 The European Foundation for the Improvement of Living and Working Conditions

The European Foundation for the Improvement of Living and Working Conditions (EUROFOUND) has developed a number of indicator sets to monitor and assess the general social situation in Europe. The role of EUROFOUND is to provide information, advice and expertise on living and working conditions, industrial relations and managing change in Europe for key actors in the field of EU social policy on the basis of comparative information, research and analysis. The Foundation is an EU agency set up by a Council Regulation (No. 1365/75/EEC of 26 May 1975), to contribute to the planning and design of better living and working conditions in Europe. The indicators which have been developed cover the following topics: health; employment; income deprivation; education; family; social participation; housing; environment; transport; safety; leisure; life satisfaction (Eurofound 2009). These are used within the Foundation’s EurLIFE database on quality of life in Europe which provides data drawn from EUROFOUND surveys and from other published sources on the living conditions and well-being of European citizens. All 27 EU Member States as well as the candidate countries Croatia and Turkey, are covered in the database.

4.4.3 European Observatory on the Social Situation and Demography

The European Observatory on the Social Situation and Demography consists of four multi-disciplinary networks of independent experts established for the European Commission in 2005. The role of this observatory is to analyse social and demographic trends and to assist the Commission in its duty to report on the social situation. Indicators are used to underpin this analysis within the four networks covering the following topics: demography; social inclusion and income distribution; social capital (trust in society and its institutions, participation in formal and informal networks etc); and health status and living conditions (CEC 2008a). The results are used to produce an overview of the social and demographic situation through monitoring reports as well shorter policy briefs on specific issues of high policy relevance. This input helps the Commission in its duty to report on the Social Situation and links to the above-mentioned Social Inclusion Process.

4.5 Environmental Indicators

4.5.1 *The Environmental Policy Review*

The Annual Environment Policy Review (EPR) is a report designed to highlight the main policy developments in EU and national level environmental policy as well as monitor recent environmental trends within the EU and Member States and the progress towards the EU's key environmental goals as set out in the 6th Environment Action Programme (EAP). The report also indicates the main issues likely to come up on the policy agenda in the next year.

The assessment of environmental trends at EU and Member State level is based on the use of indicators. For the most recent EPR, covering 2008, 30 indicators were used to assess the environmental trends across the EU 27. These covered the key environmental issues and were divided into the following themes: climate change and energy; nature and biodiversity; environment and health; natural resources and waste; environment and economy; and implementation (CEC 2009b). The indicators are categorised as state/pressure/response/efficiency/ or driving force indicators. This approach allows the full causal chain to be assessed. For example it allows an assessment of whether a policy response actually materialises in an improvement in the state of the environment. These indicators of environmental trends are used to communicate the progress being made on environmental issues to the public in a leaflet of environmental indicators illustrating progress on ten key indicators using a traffic light format (CEC 2009c).

The assessment of the major policy developments in the Member States is also underpinned by indicators. Countries are assessed against a set of ten indicators which correspond to particular targets and objectives established under various items of EU environmental legislation or policy (CEC 2009b). For example, the indicator of 'average CO₂ emissions from new passenger cars sold (grams CO₂/km)' is given in relation to the new passenger cars and CO₂ regulation (Regulation (EC) No. 443/2009). Also, 'recycling of packaging waste (as per cent total packaging waste)' is given as an indicator of progress on Directive 94/62/EC as amended by Directive 2004/12/EC.

4.5.2 *European Environment Agency Core Indicators*

The European Environment Agency (EEA) adopted a core set of 37 indicators in March 2004 in order to: provide a manageable and stable basis for indicator-based reporting by the EEA; prioritise improvements in the quality and geographical coverage of data flows; and, streamline the Agency's contributions to other European and global indicator initiatives, for example, EU Structural Indicators, EU SDIs and OECD environment indicators. The EEA indicators cover the following themes: agriculture; air pollution; biodiversity; climate change; energy; fisheries; land management; transport; waste; and water (EEA 2009a). Behind the core list of 37 indicators are other more detailed indicators which monitor individual environmental fields. However there is a need for this shorter and more accessible core list that summarises and simplifies the picture of environmental change. The (latest) EEA

European State and Outlook report (2005) includes the most relevant environment-related indicators (EEA 2005).

Therefore, the core set of indicators were selected from a pool of 350 according to a number of criteria. The indicators had to be: policy relevant; monitor progress towards quantified targets; based on readily available and routinely collected data from EEA member countries; consistent in space and time coverage; primarily national in scale and representative for countries; understandable and simple; conceptually and methodologically well founded; of priority in the EEA management plan; timely; well documented and of a known quality.

4.6 Sectoral Environmental Indicators

There are also a number of other environmental indicators used by the European Commission focusing on the integration of environment into particular sectoral policies, as well as specific environmental issues. The Cardiff European Council in June 1998 endorsed the principle that the environmental dimension should be integrated in all EU policies. It also stressed the importance of developing appropriate environmental indicators to assess the impact of different economic sectors – including agriculture – on the environment, and to monitor progress in integrating environmental concerns. Although the IRENA operation is one of the only sets of sectoral indicators in relation to the environment which specifically mentions this request, there are a number of sectoral indicator sets which look at the environmental impacts.

Indicators relating to the integration of environment into sectoral policies are briefly reviewed below:

4.6.1 The Transport and Environment Reporting Mechanism (TERM),

The Transport and Environment Reporting Mechanism (TERM) was set up at the request of the EU transport ministers in 1998. The main aim of TERM is to monitor the progress and effectiveness of transport and environment integration strategies on the basis of a core set of indicators (EEA 2009b). The results of the monitoring are presented in the EEA's annual TERM report, which tracks the environmental performance of transport in the EU Member States.

The TERM indicators were selected and grouped to address seven key questions.

1. Is the environmental performance of the transport sector improving?
2. Are we getting better at managing transport demand and at improving the modal split?
3. Are spatial and transport planning becoming better coordinated so as to match transport demand to the need for access?
4. Are we optimising the use of existing transport infrastructure capacity and moving towards a better balanced intermodal transport system?

5. Are we moving towards a fairer and more efficient pricing system which ensures that external costs are internalised?
6. How rapidly are cleaner technologies being implemented and how efficiently are vehicles being used?
7. How effectively are environmental management and monitoring tools being used to support policy- and decision-making?

The TERM indicators cover the most important aspects of the transport and environment system (Driving forces, Pressures, State of the environment, Impacts and Societal Responses — ie the DPSIR framework). They represent a long-term vision of the indicators that are ideally needed to answer the above questions.

The TERM process is steered jointly by the European Commission (Directorate-General for the Environment, Directorate-General for Transport and Energy, and Eurostat) and the EEA.

4.6.2 *Energy and Environment Indicators*

A set of 30 ‘energy and environment indicators’ is updated and published by the EEA annually (EEA 2009c). These are used to monitor the integration of environmental considerations in the energy sector. Building on this, the EEA publishes an energy and environment report on a regular basis.

The energy–environment indicators are organised around six policy questions:

- Is the use and production of energy having a decreasing impact on the environment?
- Is energy use decreasing?
- How rapidly is energy efficiency increasing?
- Is there a switch to less polluting fuels?
- How rapidly are renewable energy technologies being implemented?
- Are environmental costs being better incorporated into the pricing system?

The indicators are also important for monitoring the EU SDS, preparing the EU greenhouse gas inventory report to the United Nations Framework Convention on Climate Change (UNFCCC), and reporting on the greenhouse gas emission trends and projections in Europe under the Kyoto Protocol.

4.6.3 *IRENA*

The IRENA operation (Indicator Reporting on the Integration of Environmental Concerns into Agriculture Policy) was a joint exercise between several Commission DGs (DG Agriculture and Rural Development, DG Environment, Eurostat and the JRC) and the EEA to develop agri-environmental indicators to monitor the integration of environmental concerns into the Common Agricultural Policy (CAP) in the European Union (EU-15) (EEA 2005b). The initiative was launched in September 2002 in response to the request of the Agricultural Council (in relation to the Cardiff

process of environmental policy integration) and was finalised at the end of 2005 (CEC 2006). The Commission reported on the initiative in a Communication with a corresponding annex setting out the indicators and the process of their development (CEC 2006) specifically placing IRENA in the context of the Cardiff process of integration as well as the SDS.

An indicator framework was developed on the basis of DPSIR indicators which consists of a set of over 35 'indicator fact sheets' and corresponding data sets. Indicators include: areas under agri-environment support (response); consumption of pesticides (driving force); emissions of methane and nitrous oxide (pressures and benefits); population trends of farmland birds (state); agricultural share of water use (impact). The Commission recognised that there were large gaps in the definition and development of certain indicators (in particular in the areas of farm management, landscape and biodiversity) and that indicators needed to be supported by appropriate and reliable statistical information.

The IRENA indicators were used as the basis of an indicator report published by the EEA (2005): "*Agriculture and environment in EU-15 – the IRENA indicator report*". This provided an overview of the interactions between agriculture and the environment in the EU-15 based on the indicators developed as well as an assessment of the progress made in their development and interpretation. Several thematic agri-environmental topics were used to illustrate indicator results and to review the effects of farming on the environment. These were: water use and water resources; water quality and the agricultural fertiliser and pesticide use; land use and soil; climate change and air quality and, landscape and biodiversity. A second report was produced in 2006 (EEA 2006).

4.6.4 Indicators of Fishing Capacity and Effort

Indicators are taking a prominent and legitimate role in monitoring, assessing, and understanding ecosystem status, impacts of human activities, and effectiveness of management measures in achieving objectives; and may have a growing role to play in rule-based decision-making (Rice and Rochet 2005). Many international bodies with an interest in aquatic or marine systems have endorsed indicator-based approaches to management. In Europe, indicators are increasingly used to assess the efficacy of EU policies, including the extent to which environmental aspects are integrated into sectoral policies (Anon 2006).

The exploitation of fish stocks under the Common Fisheries Policy (CFP) is assessed and monitored by indicators of fishing capacity and effort. Since 2003, EU Member States are required to report annually on their efforts to balance fishing capacity with fishing opportunities. The Commission launched a debate in 2007 on how to improve these indicators (CEC 2007b). Capacity was measured in terms of vessel tonnage and engine power, and effort by the product of capacity and actual fishing activity, expressed as the number of days spent at sea. However, in its 2007 Communication the Commission looked at alternative indicators, such as the type and size of fishing gear used. Particular concern was directed to the difficulties of certifying vessel power and the need to measure not just days at sea but actual time spent fishing. In view of the shortcomings of indicators based on vessel characteristics, the Commission made a number of proposals in an action plan including continuing

consultation with Member States, stakeholders and experts in order to determine technical solutions to some of the issues raised as well as case studies and pilot projects to gather information on potential new indicators.

In March 2008 DG Fisheries and Maritime Affairs (DG MARE) issued new 'Guidelines for an improved analysis of the balance between fishing capacity and fishing opportunities' (CEC 2008b) to assist Member States with their reporting. This was in response to difficulties in Member States' reporting on the links between fishing capacity and fishing opportunities highlighted in the 2004–2006 reports. However, since the use of these guidelines is not mandatory, very few Member States are using them in assessing levels of capacity in their fisheries.

Two research projects (one FP6 – INDECO; the other funded by DG MARE INDENT), focused on the development of indicators to support the CFP and two Scientific Technical and Economic Committee for Fisheries, Subgroup on Research Needs meetings also focused on the development of indicators that might underpin the implementation of an ecosystem approach to fisheries. These indicators underwent testing and review and a set of 'operational indicators' were identified and data requirements for these indicators have been incorporated into the EU Data Collection Regulation which was adopted in 2008. This Regulation entered into force in 2009.

Indicators relating to specific environmental issues:

4.6.5 SEBI 2010

SEBI 2010 ('Streamlining European 2010 Biodiversity Indicators') responds to the 'Message from Malahide' and the EU Council Conclusions of 28 June 2004 by developing, testing and finalising a first set of EU headline biodiversity indicators. It also underpins and ensures consistent biodiversity indicators and information required under the Lisbon Strategy, the SDS, the Habitats (92/43/EEC) and Birds (79/409/EEC) Directives and the EU Biodiversity Strategy. In particular, the indicators aim to assess and inform about progress towards the EU objective of halting the loss of biodiversity on its territory by 2010.

The initiative is a collaboration between the EEA, DG Environment, the European Centre for Nature Conservation (ECNC), UNEP/Pan-European Biological and Landscape Diversity Strategy (PEBLDS) Secretariat with the lead of the Czech Republic and UNEP's World Conservation Monitoring Centre (WCMC) (ECCHM 2009). In 2005 the Coordination Team and expert groups involving more than 100 experts nominated by European countries as well as NGOs started working for the compilation of a First European Set of Biodiversity Indicators for assessing the 2010 target.

The technical report containing specifications of the 26 indicators selected was published in 2007 (EEA 2007). Selection criteria were derived from those adopted by the CBD and those used for the EEA Core Set of Indicators to evaluate the suitability and feasibility of the final indicators and the set. In most cases the EU headline could not be reduced to a single indicator and was therefore represented by a small set of indicators or sub-indicators. Indicators included: abundance and distribution of selected species; ecosystem coverage; invasive alien species; freshwater quality; and European commercial fish stocks (EEA 2007). The first assessment of progress

towards 2010 based on the SEBI 2010 indicators was published in May 2009 (EEA 2009d).

4.6.6 Sustainable Consumption and Production

The Commission is currently engaged in further developing indicators of SCP for the monitoring of the Thematic Strategy on the Sustainable Use of Natural Resources drawn up pursuant to the 6th EAP (CEC 2005).

The Thematic Strategy on the Sustainable Use of Natural Resources launched in 2005 is one of seven Thematic Strategies implementing the goals of the 6th EAP. In the EAP, the over-use of renewable and non-renewable resources is identified as one of the main European environmental problems. Consequently, the overall goal of the thematic strategy is ‘to reduce the negative environmental impacts generated by the use of natural resources in a growing economy’ (CEC 2005, 5). In order to achieve this, the strategy aims to undertake a number of action including to ‘develop tools to monitor and report progress in the EU, Member States and economic sectors’ and to ‘raise awareness among stakeholders and citizens of the significant negative environmental impact of resource use’ (CEC 2005, 5-6).

The lack of suitable indicators of SCP is apparently contributing to the current lack of quantitative targets and goals for resource efficiency improvements or reductions of resource use in the 6th EAP and thematic strategy. In this regard the thematic strategy states that ‘it is not possible to do so [i.e. to set targets] with the current stage of knowledge and state of development of indicators. Neither the data underpinnings nor the indicators allow targets to be set that would clearly serve the purpose of reducing environmental impacts in a growing economy’ (CEC 2005, 6).

Therefore, one key area of action is the development of appropriate indicators. The strategy states that it will develop ‘indicators to measure progress in efficiency and productivity in the use of natural resources, including energy, resource-specific indicators to evaluate how negative environmental impacts have been decoupled from resource use, and an overall indicator to measure progress in reducing the ecological stress of resource use by the EU’ (CEC 2005, 9). Originally, the Commission aimed at agreeing on a measurement system and related indicators by the end of 2008. However, this process has been delayed.

As an intermediate step, the Commission proposes to apply a basket of existing aggregated indicators, which have been suggested in a project, funded by DG Environment.³ Under the lead of the EEA and in cooperation with DG Environment, EUROSTAT, JRC (called “the group of Four – Go4”) and a group of external experts, this first suggestion for a basket of indicators will be further elaborated in 2009

³ In 2007, the Commission (DG Environment) funded a first project, which evaluated different indicators of resource use regarding their suitability to illustrate the related negative environmental impacts. The research team, including SERI, suggested a basket of four indicators, which should be further improved and integrated: Ecological Footprint and Environmentally-weighted Material Consumption (EMC) reflecting the different impacts of materials and products as well as Human Appropriation of Net Primary Consumption (HANPP) and Land and Ecosystem Accounts (LEAC) reflecting the spatial impacts on land use, ecosystems and biodiversity.

(Giljum et al 2009). The Commission aims to review the progress made in achieving the Strategy's objective in 2010 and then every five years.

4.6.7 *Waste Framework Directive*

As a first step in the implementation of the thematic strategy on the prevention and recycling of waste, the Commission proposed revising the 1975 waste framework Directive (75/442/EEC) to set recycling standards and to include an obligation for Member States to develop national waste prevention programmes. This revision was also intended to merge, streamline and clarify legislation, contributing to the EU's better regulation objectives. After initial proposals by the Commission in 2005 the revised waste framework Directive (2008/98/EC) was eventually adopted in October 2008.

Directive 2008/98/EC introduces a new approach to waste management that encourages the prevention of waste. Member States must design and implement waste prevention programmes and the Commission is to report periodically on progress concerning waste prevention including the development of indicators. The Commission is also to produce guidelines and a system for sharing best practice; and to assess contribution of national programmes to overall stabilisation and reduction objectives. Work is now under way within Eurostat looking into how to monitor the implementation and assess progress towards the targets of the 2008 Directive (eg to recycle 50 per cent of household waste and 70 per cent of construction and demolition waste by 2020).

4.6.8 *Indicators for Biofuel Criteria*

Work is currently also underway to develop of indicators to monitor compliance with biofuels sustainability criteria under the new renewable energy Directive (Directive 2009/28/EC), which sets the target of 10 per cent of the final energy consumed in all forms of transport to be from renewable sources by 2020. The biofuels target has been the topic of heated debate amongst stakeholders and within the European Parliament. Binding sustainability criteria were agreed along with the Directive in December 2008 to ensure that biofuels would only contribute to the target if they met certain environmental and social standards. The details of the indicators for the criteria are to be decided by the relevant comitology committee made by of representatives from Member States. Particular attention is currently underway for indicators for grasslands of high biodiversity value and for heavily contaminated and degraded land which is not being used for agriculture. Both of these land-use types feature in the criteria. The Directive also requires the Commission to monitor the impact of the EU's biofuel policy and, if necessary, to propose corrective action - especially if increased biofuels production leads to rising food prices or is shown not to comply with social criteria.

4.7 *The Beyond GDP Initiative*

In November 2007, the European Commission (DG Environment and Eurostat), in cooperation with the European Parliament, the Club of Rome, OECD and WWF, hosted a high-level conference on indicators going 'Beyond GDP' (Beyond GDP

2009). This conference, and ongoing initiative, aims to help develop indicators which can better measure progress and determine how these can be integrated into the decision-making process as well as taken up by public debate. The conference brought together over 650 policy makers, experts and civil society representatives. Preceding the main conference, an expert workshop was held, in which leading practitioners discussed the development and application of indicators of progress, true wealth, and well-being.

The ‘Beyond GDP’ concept is based on the premise that economic indicators such as GDP were never designed to be comprehensive measures of well-being. Complementary indicators are needed that are as clear and appealing as GDP but more inclusive of other dimensions of progress – in particular environmental and social aspects. Adequate indicators are required to address global challenges such as climate change, poverty, resource depletion and health. Thus the ‘Beyond GDP’ initiative attempts to further align mainstream economic performance indicators with the objectives of the renewed SDS.

The conference highlighted some potential key approaches and indicators to measure progress that go beyond GDP, including: Adjusted GDP; Environmental Accounts; quality of life measures; the UNDP Human Development Index (HDI); Ecological Footprints; and Genuine Savings. The conference also identified areas where policy making processes can include such measures and where more regular reporting can help improve public awareness of progress, true wealth and well-being.

Building on the results of the 2007 ‘Beyond GDP’ conference, the Commission has recently published a Communication to the Council and European Parliament in which it proposes a roadmap for developing new environmental and social indicators to measure the real prosperity and wellbeing of nations beyond traditional GDP. (CEC 2009e)

5 SELECTED NATIONAL ACTIVITIES RELATING TO SUSTAINABLE DEVELOPMENT INDICATORS

5.1 France

In 2004, as a consequence of the French National Sustainable Development Strategy (SDS) 2003-2008, a set of 45 SDIs was proposed in a report by the inter-ministerial task force. This set of indicators aimed at measuring the state of the environment, economy, health, quality of life and social cohesion. The French SDS was updated in 2006 (for 2009-2012) and the task force shortened the set of SDIs to 11 in order to link it better with the Eurostat set to facilitate communication and to obtain ease of interpretation to decision-makers and general public (Hak 2007).

The French 11 headline indicators are therefore based on the nine themes of (Hak 2007):

- economic development;
- climate change and clean energy;

- sustainable transport;
- production and consumption patterns;
- management of natural resources;
- public health;
- social exclusion demography and migration;
- global poverty and development challenges; and
- good governance.

The French Institute for the Environment (IFEN)⁴ also developed a set of national SDIs on behalf of the Environment Ministry. The central aim of the indicators proposed by IFEN was to compile, for each question, a set of assumptions that are sufficient for the purpose of making a global assessment as to whether France is developing in a sustainable way. The structure had ten modules consisting of 45 SDIs (different from those developed by the inter-ministerial task force). These modules were defined to help assess ‘how far a given aspect of development dynamics (modules 1 and 2) is likely to satisfy the needs of present and future generations (modules 7 and 8) thanks to the timely renewal of different kinds of capital and heritage (modules 3 and 4)’ (IFEN 2003). Geographical aspects as such were taken into account through dual linkages between national and global scales (module 6) and national and local scales (module 5). Long term impacts are covered by measurements of the implicit preference given to the future (module 9) and an attempt to assess individual or collective capacities to react to unforeseen circumstances (vulnerability to risks) (module 10) (IFEN 2003). This test of the ecological footprint is now complete and the SOeS is now undergoing an evaluation study for the ‘hidden costs’ for the environment. A conference on SDIs will be organised in December 2009.

5.2 Sweden

The Swedish Government made sustainable development the overall goal of Government policy and published a revised National Sustainable Development Strategy in March 2006. As part of this overall goal 16 Environmental Quality Objectives (EQOs) have been developed with the overall goal of passing on to the next generation a Sweden where the major environmental problems have been solved. In effect it tends to be the EQOs, and the corresponding environmental indicators, that are given the most emphasis in the pursuit of sustainable development in Sweden.

The EQOs have an important role in Swedish politics. The EQOs are reviewed every year with the help of indicators reflecting progress towards the various EQOs and interim targets. There are currently around 100 such indicators, based on regular sampling, questionnaires and other studies on the state of the environment. They are updated annually on the Environmental Objectives Portal (Environmental Objectives Portal 2009a) and a list of current indicators is also available at the site (Environmental Objectives Portal 2009b).

The system of EQO indicators has been developed on national, regional and in some cases local level. The environmental objective indicators reflect different aspects of the target or objective and the state of the environment, based on the DPSIR approach.

⁴ Now the SOeS (Service de l’observation et des statistiques du Ministère de l’écologie)

On a regional level the Regional Monitoring System (RUS) plays an important role in the development of national indicators with a regional focus (Swedish Environmental Objectives Council 2008).

Each agency is responsible for coordinating, developing and assuring the quality and operational reliability of indicators relating to its own particular environmental quality objective(s), and deciding how these indicators are to be used. The Environmental Objectives Council is currently reviewing the possible duplication of different indicator systems with the aim of providing guidelines on which environmental and sustainability indicators should be available in which system (Swedish Environmental Objectives Council 2008).

Also, as part of Sweden's strategy for sustainable development, the Government has put together a set of SDIs in cooperation with Statistics Sweden. Based on a wide consultation a selection of 87 sustainable development indicators was narrowed down to twelve headline indicators. These indicators were then broken down into six areas: health, sustainable consumption and production patterns, economic development, social cohesion, environment and climate, and global development (Regeringskansliet 2005).

In addition to these environmental indicators for EQOs, a number of different systems of indicators are used by agencies in Sweden for reporting and monitoring purposes. For instance the Environmental Advisory Council has developed a set of green headline indicators of ecologically sustainable development, which has been used by the Government in its annual budget statement (Regeringskansliet 2005).

5.3 United Kingdom

The UK Government Sustainable Development Strategy, 'Securing the Future', (UK Government 2005) was launched by the Prime Minister in March 2005, and builds on the 1999 strategy, 'A Better Quality of Life'. The Strategy identifies 68 indicators through which to review progress, along with other evidence, in four priority areas:

- Sustainable consumption and production
- Climate change and energy
- Protecting natural resources and enhancing the environment
- Creating sustainable communities and a fairer world

On 31 July 2008 an update of the UK indicators, 'Sustainable Development Indicators in your Pocket 2008' (National Statistics 2008), was published. Many of the indicators are comprised of more than one component measurement, and in all there are 126 assessed indicator measures making up the 68 indicators.

The indicator measures are normally shown as an index, which means that the value of the measure for a base year, mainly 1990, is treated as representing 100 per cent. Subsequent or preceding values of the measure are then shown in relation to that base value - in effect as a percentage of it. This allows trends in measures with different units to be more easily compared. A traffic light assessment of the trend is shown beneath the charts.

Within the indicator set there is some variation in the geographic coverage of the indicators. Though the aim has been to cover the whole of the UK ie England, Scotland, Wales, and Northern Ireland, where it is appropriate to do so, for some indicators it has been necessary to restrict the presentation to England, England and Wales, or Great Britain (England, Wales and Scotland). Twenty 'UK Framework indicators' (all included in the UK Strategy's 68 indicators) cover key impacts and outcomes that reflect the priority areas shared across the UK

The administrations in Scotland, Wales and Northern Ireland each have their own strategy document for sustainable development and these are supported by indicators. This approach is based on 'One future - different paths' (UK Government 2005), setting out the UK's shared framework for sustainable development. The report is the outcome of negotiations between the UK Government, the Scottish Executive, the Welsh Assembly and the Northern Ireland Administration.

5.4 United States

There have been a number of SDI initiatives in the US's history linked either to sectors (urban quality indicators movement in 1960s and 1970s and Healthy People initiative in 1970s) or regions (Sustainable Seattle in 1993). However, there has been a lack in national SDIs in more recent times and in March 2002 professionals from business, nonprofits, academia, and government (federal, state, and local) came together in New York to discuss the establishment of a system of sustainability measures for the United States. These discussions led to the Pocantico Statement (Pocantico Statement 2002) on the need for national indicators of sustainability for the US, laying also down steps required for a system of US sustainability indicators. These sentiments were also echoed in 2004 by the United States Government Accountability Office (GAO 2004).

In its report GAO found that various organizations throughout the United States—including government agencies at national, state, and local levels; not-for-profit organisations; universities; and corporations—have developed hundreds of environmental indicator sets to address environmental issues on a variety of geographic scales. Some environmental indicator sets are limited to political jurisdiction, such as county, state, or nation; others are limited to natural areas, such as watersheds, lake basins, or ecosystems. Cities, such as New Orleans and Pittsburgh, have developed indicator sets including economic prosperity, social equity, and environmental quality to measure and sustain the quality of life for the citizens in the community. Hence the report calls for a better co-ordination in developing environmental/sustainability indicators that inform decision-making.

More recently the Environmental Protection Agency (EPA) has been most active in developing environmental indicators further. The 2008 Report of the Environment (EPA 2008) compiles 85 reliable indicators currently available to answer 23 questions that EPA believes are of critical importance to its mission and the nation's environment. The indicators are supported by data gathered from federal and state agencies and non-governmental organizations. In addition EPA's environmental indicator projects are available on EPA's Gateway (EPA 2009). These projects provide information on environmental conditions and trends over a range of

geographic scales and time periods. The Gateway provides summaries of the indicator projects and links to the related reports and web sites developed by each project.

In June 1993, President Clinton established the President's Council on Sustainable Development (PCSD) with a mandate to develop recommendations on steps the United States could take to realize sustainable development. Based on PCSD recommendations the US Interagency Working Group on Sustainable Development Indicators (SDI Group) was developed in 1996. Currently the website lists a number of sources of sustainability indicators but the website has not been updated since June 2007 (SDI 2007).

PCSD was terminated after the end of President Clinton's term of office but its resurrection has been recently called for in a report by the Centre for Sustainable Development (Talberth 2008) in order for the Obama Administration to be able to develop a US sustainable development strategy with measurable indicators.

6 INTERNATIONAL ACTIVITIES RELATING TO SUSTAINABLE DEVELOPMENT INDICATORS

6.1 UNCSA

Chapter 40 of Agenda 21 adopted by the 1992 Rio Summit, calls for countries and the international community to develop and use SDIs. This message was then further emphasised in the Johannesburg Plan of Implementation adopted by the WSSD and by the UN Commission for Sustainable Development (CSD) at its 11th and 13th session (UNSD 2009). The UNSD's work programme on indicators was launched in 1995 in response to this call. It is coordinated by the Division for Sustainable Development within the UN Department for Economic and Social Affairs (DESA).

The third, revised set of CSD indicators was finalized in 2006 by a group of experts from developing and developed countries and international organizations. The revised set contains 96 indicators, including a subset of 50 core indicators. The CSD indicator set is based on the previous two editions (1996 and 2001).

Core indicators fulfil three criteria: 1) They cover issues that are relevant for sustainable development in most countries; 2) They provide critical information not available from other core indicators; 3) They can be calculated by most countries with data that is either readily available or could be made available within reasonable time and costs. The core indicators serve as a reference for countries to develop national SDIs while the larger set of indicators allow for a more comprehensive and differentiated assessment of sustainable development by countries.

The indicator set has a thematic/sub-thematic framework which was originally adopted in 2001. This is intended to make it consistent with the practice of most countries applying national SDI sets. The themes are: poverty; governance; health; education; demographics; natural hazards; atmosphere; land; oceans, seas and coasts; freshwater; biodiversity; economic development; global economic partnership; consumption and production patterns. Indicators include eg: the proportion of

population living below national poverty line (poverty); percentage of population having paid bribes (governance); population growth rates (demographics); and adult literacy rates (education) (UN DESA 2007).

The division of indicators along the lines of four ‘pillars’ (social, economic, environmental and institutional) has been dropped in the third edition of the SDIs. This change is intended to emphasise the multi-dimensional nature of sustainable development and to reflect the importance of integrating its pillars. Consequently, new cross-cutting themes such as poverty and natural hazards were introduced and existing cross-cutting themes such as consumption and production patterns are better represented.

6.2 OECD

6.2.1 *Environmental Indicators*

Together with its member countries, the OECD has established a common approach and framework for developing, measuring and using environmental indicators. The OECD’s work on environmental indicators was initiated in 1989 and is designed to contribute to the harmonisation of individual initiatives of OECD Member countries as well as support the OECD’s policy analysis and evaluation work. The work focuses mainly on indicators to be used in national, international and global decision making. The actual measurement of indicators at these levels is encouraged and lies within the responsibility of individual countries (OECD 2003).

The OECD’s environmental indicators include several categories of indicators, each corresponding to a specific purpose and framework (OECD 2003):

- **Core Environmental Indicators:** help track environmental progress and the factors involved in it, and analyse environmental policies. The OECD Core Set of about 50 indicators is a set commonly agreed upon by OECD countries for OECD use and reflect the main environmental concerns in OECD countries. It includes core indicators derived from sectoral sets and from environmental accounting. Indicators are classified following the PSR model. The indicators are divided into themes which include: climate change; ozone depletion; eutrophication; acidification, toxic contamination, urban environmental quality; biodiversity; cultural landscapes; waste; water resources; forest resources; fish resources; soil degradation; soil degradation; material resources; and socio-economic sectoral and general indicators.
- **Key Environmental Indicators:** are a smaller set of core indicators, selected from the Core Set, that serve wider communication purposes to the public and policy makers.
- **Sectoral Environmental Indicators:** help integrate environmental concerns into sectoral policies with each set focuses on a specific sector (transport, energy, household consumption, tourism, agriculture). Indicators are classified following an adjusted PSR model reflecting.
- **Indicators Derived from Environmental Accounting:** help integrate environmental concerns into economic and resource management policies. The focus is on: environmental expenditure accounts; physical natural resource accounts, related to sustainable management of natural resources; and

physical material flow accounts, related to the efficiency and productivity of material resource use.

- Decoupling Environmental Indicators: measure the decoupling of environmental pressure from economic growth. In conjunction with other indicators used in OECD country reviews, they are tools for determining whether countries are on track towards sustainable development. Most DEIs are derived from other indicator sets and further broken down to reflect underlying drivers and structural changes.

In addition to developing this indicator framework, the OECD has outlined a set of guiding principles for their use, measurability and data quality, and analysis.

6.2.2 *Global Project on Measuring the Progress of Societies*

The OECD-driven project ‘Measuring the Progress of Societies’ was the subject of the OECD’s second World Forum held in Istanbul, 27-30 June 2007. The project’s mission is ‘to foster the development of sets of key economic, social and environmental indicators and their use to inform and promote evidence-based decision-making, within and across the public and private sector and civil society.’ (OECD 2007, 1).

The World Forum on ‘Statistics, Knowledge and Policy’ included numerous sessions directly relevant to the development of SDIs. These sessions covered the following topics: whether measuring progress makes a difference for policy making and democracy; measuring happiness; the role of official statistical offices; the way in which indicators and information can empower the public; what progress means to different countries and communities; the use and abuse of indicators; building a global statistical infrastructure; information needed to enable the world to make progress on various specific issues such as biodiversity loss, conserving water resources and climate change.

At the end of the Istanbul Forum, six international and supranational organisations (European Commission, OECD, Organisation of the Islamic Conference, UN, UNDP, World Bank) signed a declaration setting out their commitment to measuring and fostering the progress of societies in all dimensions, with the ultimate goal of improving policy making, democracy and citizens’ wellbeing. Many other organisations have since also signed this ‘Istanbul Declaration’ (OECD et al 2007).

6.2.3 *Work on Material Flows*

The OECD work programme on material flows (MF) and resource productivity (RP) supports the implementation of the OECD Council Recommendation on Material Flows and Resource Productivity adopted in April 2004, and the OECD Council recommendation on Resource Productivity adopted in March 2008 (OECD 2008). The purpose of the work programme is to develop a better understanding of the physical resource base of member countries’ economies, including its international and environmental dimensions, to foster the implementation of effective policy mixes that improve resource productivity, reduce negative environmental impacts of materials and product use, and promote integrated life-cycle oriented approaches to

natural resource, waste and materials management (eg 3R policies - Reduce, Reuse, and Recycle), sustainable materials management, sustainable manufacturing).

The work has progressed with a sequence of workshops hosted by member countries (Helsinki, June 2004; Berlin, May 2005; Rome, May 2006; Tokyo, September 2007), that brought together environmental administrations, statistical services, material flow experts and researchers.

The main outputs include a series of guidance documents on measuring material flows and resource productivity that have been drafted in a joint effort by a group of experts from OECD countries led by the OECD Secretariat. They have benefited from contributions by members of the OECD Working Group on Environmental Information and Outlooks and the Working Group on Waste Prevention and Recycling, the Eurostat Task Force on Material Flows, and the London Group on Environmental Accounting.

6.3 Compendium of SDI Initiatives

The Compendium of Sustainable Development Indicator Initiatives is a worldwide directory of initiatives on sustainability indicators. The original edition of the Compendium was carried out with several partners and donors, including the International Institute for Sustainable Development (IISD), Environment Canada, Redefining Progress, the World Bank and the UN Division for Sustainable Development (IISD 2009). The current and second version was initiated in 2002 and is a collaboration between IISD and the International Federation of Environmental Health (IFEH).

The Compendium is an interactive database and indicator practitioners are invited to submit information on their own work through a web- interface and take ownership of their entries. IISD staff review and approve new entries. Information is held in the Compendium on initiatives carried out at international, national, provincial/territorial/state, regional, sectoral, ecosystem and local/community levels worldwide.

The main objectives of the Compendium are to: improve communication among the SDI stakeholders; help harmonize indicator development; avoid duplicating efforts and facilitate the integration of monitoring data; provide access to SDI experts; identify areas of future research; and to provide information on SDI information.

The Compendium has over 800 entries and can be searched through eight fields: a general search by key words; location (by country); geographic scope (eg global, state, provisional); initiative type (eg statistical report, sustainable development initiative); initiative goal (eg policy development; adaptive management, education); issues area (by policy area); initiative framework (eg DPSIR; Pressure-state-response; capital based approach); organisation type (eg international NGO; grassroots; academic; international governmental organisation).

6.4 UNDP Human Development Index

The Human Development Index (HDI) is the original and best-known human development composite index. It is used as the basis for the Human Development Report compiled by the United Nations Development Programme (UNDP). The first such report which introduced the HDI was published in 1990. The latest Human Development Report was published in 2008 (UNDP 2008)

The HDI is a summary measure of a country's average achievement in attaining: 1) a long and healthy life (as measured by life expectancy at birth); 2) access to knowledge (measured by the adult literacy rate and the combined gross enrolment ratio in primary, secondary and tertiary education); 3) a decent standard of living (as measured by the GDP per capita expressed in purchasing power parity in US dollars). These three dimensions are standardized to values between 0 and 1, and the simple average is taken to arrive at the overall HDI value in the range 0 to 1. Thresholds are used to classify HDI values as high, medium or low (at or above 0.800; between 0.500 and 0.800; and below 0.500, respectively) (UNDP 2008).

The indicators used to calculate the HDI are provided by the international agencies with expertise and mandate in each of the component areas: the United Nations Population Division for life expectancy estimates; the United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute for Statistics for literacy and enrolment rates; and the World Bank for data on GDP per capita.

The HDI has been a useful tool to measure human development across different countries and regions. However, it uses equal weights across dimensions - an arbitrary if commonly used assumption. This leads to questions of what would happen if the weights were allowed to vary. The robustness of the HDI ranks under differing weightings of dimensions has been tested and this has shown that most rankings would not be affected by small changes in the relative weights of the three dimensions (UNDP 2008).

A major shortcoming was that the HDI relies only on national averages; it does not reflect differences in human development within countries, the effects of inequality on human development, nor insights into the status of the poorest and most deprived members of society. New measures were introduced to address these drawbacks. The 1995 *Human Development Report* presented two new composite indices on gender - the Gender-related Development Index (GDI) and the Gender Empowerment Measure (GEM) - and the 1997 report introduced the Human Poverty Index (HPI).

6.5 Millennium Development Goal Indicators

In September 2000, leaders from 189 nations signed the Millennium Declaration agreeing on a vision for the future which subsequently took the shape of eight Millennium Development Goals (MDGs) (UNstats 2009a). These goals provide a framework of time-bound targets by which progress on the agreed vision can be measured. International and national statistical experts selected relevant indicators to be used to assess progress over the period 1990-2015, when targets are expected to be

met. The eight MDGs are: eradicate extreme poverty and hunger; achieve universal primary education; promote gender equality and empower women; reduce child mortality; improve maternal health; combat HIV/AIDS, malaria and other diseases; ensure environmental sustainability; develop a global partnership for development.

The United Nations Statistics Division coordinates the preparation of data analysis to assess progress made towards the MDGs and maintains the database containing the data series related to the selected indicators, as well as other background series intended to supplement the official indicators. The figures presented in the database are compiled by specialized agencies within their area of expertise. They are drawn from national statistics provided by governments to the UN Statistics Division and the statistical offices of the various agencies and usually adjusted for comparability. The availability of data needed to calculate the indicators in each country depends on the capacity of the national statistical services to produce the necessary data and/or to report them in a timely manner to the relevant international agencies. In some instances, countries do not produce the data required for the compilation of the indicators and estimates have to be made based on data available on related variables or other methodologies. There is a particular concern about the lack of adequate data in many parts of the developing world.

Data on the indicators aggregated at global and regional levels are used each year to base a report from the Secretary-General to the UN General Assembly on progress achieved towards implementing the MDGs. In 2007 the MDG monitoring framework was revised to include four new targets agreed by member states at the 2005 World Summit. There are 60 indicators operational as of January 2008 which are categorised according to the eight MDGs, as well as various targets within these goals. Indicators include: proportion of population with access to affordable essential drugs on a sustainable basis; adolescent birth rate; poverty gap ratio; and proportion of land area covered by forest (UNstats 2009b).

A Handbook contains information on the concepts, definitions, implementation and sources of data for the 48 original official MDG indicators (UN 2003). For each indicator this handbook provides a simple operational definition, the rationale for the indicator's selection, the method of computation, sources of data, references including Internet sites for data and methodologies, limitations and notes on gender issues and national and international agencies concerned with each topic.

6.6 World Bank Adjusted Net Savings

Adjusted net savings (also known as genuine savings) is a sustainability indicator developed by the World Bank building on the concept of green national accounts. It measures the true rate of savings in an economy after taking into account investment in human capital, depletion of natural resources and damage caused by pollution. The World Bank keeps an adjusted net savings time series for 140 countries for the period 1970 – 2006 and has been publishing estimates of adjusted net saving since 1999 (World Bank 2009).

Adjusted net savings are calculated from standard national accounting measures of gross national savings by making four types of adjustments (see Figure 6.6.1):

- 1) Estimates of capital depreciation are deducted to obtain net national savings.
- 2) Expenditures on education are added to net domestic savings as an appropriate value of investments in human capital.
- 3) Estimates of the depletion of natural resources are deducted to reflect the decline in asset.
- 4) Pollution damages are deducted eg the estimates of damages from carbon dioxide emissions.

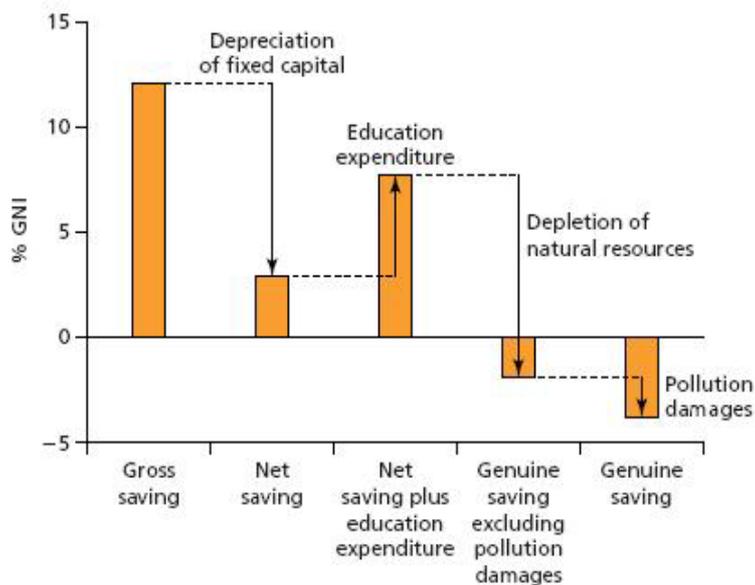


Figure 6.6.1 How to calculate adjusted net saving

Source: World Bank 2009

According to the World Bank, the ANS has several advantages as a sustainability indicator: it presents resource and environmental issues within a framework that finance and development planning ministries can understand; it reinforces the need to boost domestic savings; it highlights the fiscal aspects of environment and resource management; and it makes the growth-environment trade-off quite explicit (World Bank 2009).

6.7 Integrated Environmental and Economic Accounting (SEEA) System

The so-called System of Environmental Economic Accounting (SEEA) is a satellite system of the System of National Accounts (SNA) (UNstats 2009c). The system is set out in the 'Handbook of National Accounting: Integrated Environmental and Economic Accounting 2003' (UN et al 2003) which was originally published by the UN in 1993. The system was the result of the discussion on environmental-economic accounting in international workshops organized by UNEP and the World Bank but was not at that time finalised and work to develop the system has been ongoing.

SEEA brings together economic and environmental information in a common framework to measure the contribution of the environment to the economy and the impact of the economy on the environment. The UN Committee of Experts on Environmental-Economic Accounting (UNCEEA), created in 2005 to raise the profile of the accounts, is now looking to mainstreaming environmental-economic accounting, elevate the SEEA to an international statistical standard by 2010 and advance the SEEA implementation in countries (UNstats 2009d).

The SEEA is made up of four categories of accounts:

- *The physical flows of materials into the economy* as inputs into production and the generation of waste.
- *Environmental protection and resource management expenditure accounts* which show expenditures incurred to protect the environment.
- *Natural resource asset accounts* record stocks and changes in stocks of natural resources such as land, fish, forest, water and minerals. (This is measured in physical and monetary terms.)
- *Valuation of non-market flow and environmentally adjusted aggregates* which consider how the existing SNA might be adjusted to account (in monetary terms) for the impact of the economy on the environment. Three sorts of adjustment are considered: those relating to depletion, those concerning so-called defensive expenditures, and those relating to degradation.

Much of the work of the current revision of the handbook was done by the London Group on Environmental Accounting and published by the UN, Eurostat, IMF, OECD and the World Bank, who were responsible to undertake the revision of the handbook. Two complementary handbooks have also been produced: the SEEA for Water and the SEEA for Fisheries (UNstats 2009d).

6.8 The Living Planet Index and Ecological Footprints

Various initiatives by green NGOs have developed composite or aggregate indicators which attempt to capture complex information about the state of the planet and or human use of the planet in an accessible way for the public and policy makers. Examples of these types of indicators include the Living Planet Index (an indicators designed to assess the state of the world's biodiversity and human consumption) on which WWF, the Zoological Society of London, and Global Footprint Network base a 'Living Planet Report' every two years (eg WWF et al 2008). Numerous ecological foot print models also exist which quantify human use of the Earth's biological productivity by aggregating demand and supply for bioproductivity in a constant bio-spatial unit.

6.9 Indicators for the Convention on Biological Diversity

The Convention on Biological Diversity (CBD) established a work programme to identify a suitable set of indicators that could be used to assess progress towards the conservation of biodiversity and the attainment of the CBD biodiversity target. In 2004, the Conference of the Parties (COP) agreed on a provisional list of global

headline indicators, to assess progress at the global level towards the 2010 target and to effectively communicate trends in biodiversity related to the three objectives of the Convention (ie to conserve biological diversity; the use biological diversity in a sustainable fashion; to share the benefits of biological diversity fairly and equitably). Subsequently a decision made at the 2006 COP distinguished between: indicators considered ready for immediate testing and use, and indicators confirmed as requiring more work. The indicators are divided into the following themes: Status and trends of the components of biological diversity; Sustainable use; Threats to biodiversity; Ecosystem integrity and ecosystem goods and services; Status of traditional knowledge, innovations and Practices; Status of access and benefit-sharing; and Status of resource transfers.

A number of criticisms of the CBD indicators have been raised including that they tend to rely on existing datasets, rather than identifying future needs and devising monitoring programmes accordingly which leads to compromises in comparison to an the ideal (Balmford et al 2005). Consequently, most of the CBD indicators relate to pressures or responses rather than the actual status of biodiversity. Furthermore, the CBD set of indicators do not fully address the key attributes of biodiversity namely, genes (i.e. diversity), species (diversity and abundance) and ecosystems (diversity, quantity and quality). The most significant gaps in the set of CBD indicators are with regards to the measurement of the genetic diversity of wild species, species diversity and the ecosystem quality.

However, the main gap in the CBD set that currently needs to be filled, and can in practice be filled, is with respect to the quality of ecosystems (biotopes and habitats). Discussion is underway as part of The Economics of Ecosystems and Biodiversity (TEEB) project towards developing a monitoring framework for ecosystems (CEC 2009d). This project is an initiative of the German government which is currently in its second phase and is expected to report on its findings in the autumn of 2009 and again in 2010. The final results will be presented at CBD COP-10 in 2010.

6.10 The Commission on the Measurement of Economic Performance and Social Progress

One of the most recent SDI initiatives is the Commission on the Measurement of Economic Performance and Social Progress which was created at the beginning of 2008 on the initiative of the French government. The scope of the initiative is global and aims to: identify the limits of GDP as an indicator of economic performance and social progress; consider what additional information is required to produce a more relevant picture; discuss how to present this information in the most appropriate way; and assess the feasibility of measurement tools proposed by the Commission (CMEPSP 2009a). The Commission is chaired by Professor J. Stiglitz (Columbia University).

In June 2009, just over one year from starting its work in April 2008, the Commission published the provisional summary of its work with the intention of collecting comments and suggestions (CMEPSP 2009b). The structure of the report reflects the organisation of the work within the Commission which was split into three main focus

areas. These areas correspond to three of the already identified main causes of divergences between perceptions and measures. The study areas are:

- 1) *Classical GDP issues*. Limits of GDP as an indicator of socio-economic progress or economic performance can be addressed by investigating possible extensions or modifications of the current conceptual framework;
- 2) *Quality of life*. This study area approaches the measurement of social progress from a broader perspective on well-being, taking also into account metrics derived from asking people about how they themselves feel; and
- 3) *Sustainable Development and Environment*. One of the biggest concerns about current measures of economic performance and social progress is related to sustainability and one of the areas where sustainability is most questioned is the environment.

The first section on classical GDP issues suggest five ways of dealing with some of the deficiencies of GDP as an indicator of living standards: 1) inside the national accounts emphasize other, and normally well-established – indicators than GDP; 2) improve the empirical measurement of key production activities, in particular the provision of health and education services; 3) bring out the household perspective which is most pertinent for considerations of living standards; 4) add information about income and wealth distribution to data on the average evolution of income and wealth; 5) think about widening the scope of what is being measured. In particular, a significant part of economic activity happens outside markets and is often not reflected in established national accounts. However, when there are no markets, there are no market prices and valuing such activities requires estimates.

The second section, on quality of life, considers the concepts and various features which shape quality of life such as health, education political voice and governance etc. It then considers various challenges to measuring these features including assessing the links across the quality of life dimensions, assessing the inequalities in quality of life, and aggregating across quality of life dimensions.

The discussion of the latter section on sustainable development and environment reviews the initiatives and literature on indicators and distinguishes between 1) large and eclectic dashboards; 2) composite indexes; 3) indexes consisting in correcting GDP in a more or less extensive way and 4) indexes that essentially focus on measuring how far we currently ‘over consume’ our resources.

Ultimately the Commission aims to suggest alternative indicators which may provide a better description of economic performance and social progress.

7 CONCLUSIONS: GAPS AND POSSIBLE STEPS FORWARD

In this concluding chapter, the results of the review of FP6 projects and selected FP7 projects and work programmes in chapter 3 are analysed against the background of the survey of EU, national and international SDI activities which formed the subject of chapters 4, 5 and 6. This analysis aims to identify gaps and overlaps in SDI

research and the development and use of SDIs by EU institutions and bodies, and formulates some recommendations for consideration by DG Research in its future activities under FP7 and FP8.

In order to bring out as clearly as possible the relationship between our findings and the SDS, this chapter is structured in accordance with the structure of the renewed SDS itself, rather than according to the SDI themes identified by Eurostat for the purpose of its current monitoring and reporting practice. For each of the 'key challenges' of the SDS, the 'overall objective' as well as the 'operational objectives and targets' as set out in the strategy will be reproduced at the beginning of the relevant section. In addition to these thematic sections, a final section will be devoted to cross-cutting objectives of a more general nature which are set out in other parts of the SDS.

7.1 Climate Change and Clean Energy

***Overall Objective:** To limit climate change and its costs and negative effects to society and the environment*

Operational objectives and targets:

- ***Kyoto Protocol commitments** of the EU-15 and most EU-25 to targets for reducing greenhouse gas emissions by 2008 – 2012, whereby the EU-15 target is for an 8% reduction in emissions compared to 1990 levels. Aiming for a global surface average temperature not to rise by more than 2°C compared to the pre-industrial level.*
- *Energy policy should be consistent with the objectives of **security of supply, competitiveness and environmental sustainability**, in the spirit of the Energy Policy for Europe launched in March 2006 by the European Council. Energy policy is crucial when tackling the challenge of climate change.*
- ***Adaptation** to, and **mitigation** of, climate change should be **integrated** in all relevant European policies.*
- *By 2010 12% of energy consumption, on average, and 21% of electricity consumption, as a common but differentiated target, should be met by **renewable sources**, considering raising their share to 15% by 2015.*
- *By 2010 5,75% of transport fuel should consist of **biofuels**, as an indicative target (Directive 2003/30/EC), considering raising their proportion to 8% by 2015.*
- *Reaching an overall saving of 9% of **final energy consumption** over 9 years until 2017 as indicated by the Energy End-use Efficiency and Energy Services Directive.*

The above extract from the SDS illustrates that the concept of 'operational objectives and targets' has been used rather loosely in the formulation of the strategy. Some of the so-called 'operational objectives' are not much more operational than the 'overall objectives' and not all 'targets' are formulated in a quantified and time-bound manner. This applies in particular to the second and third bullet points: the energy policy objectives of security of supply, competitiveness and environmental sustainability are not operationalised, making it difficult to monitor progress towards their achievement with the use of indicators; neither is the objective of integration of climate change mitigation and adaptation in all EU policies. The Kyoto targets for GHG emission limitation and reduction in the period 2008-2012 are quantified and time-bound, as are the targets with respect to renewables, biofuels in transport and final energy consumption, which each derive from legislative instruments in force at the time of adoption of the renewed SDS.

The FP6 projects identified in the review analyse many indicators relevant to the SDS objectives and targets under this key challenge, both within the EU and beyond, either at a global (WETO) or regional (RECIPES, focusing on developing countries) level. Due to the perspective taken, the data generated appear more relevant to monitoring and informing the further development of the EU's *external* policy with respect to climate change and clean energy than to monitoring progress towards the achievement of the specific SDS objectives as they relate to the EU itself. The FP7 2009 WP topics discussed in section 3.4.6 are of a rather specialised nature and focused on the development of specific clean energy technologies. Their aims include an assessment of the sustainability of those emerging technologies, including the quantification of particular aspects of sustainability.

However, one general observation that can be made is that there is a strong tendency, both in the SDS itself and in the related FP funded research, to reduce sustainability to its economic and environmental dimensions, while disregarding social aspects. As regards environmental sustainability, it remains necessary to stress that greenhouse gas (GHG) emissions and removals are not the sole determinant of environmental sustainability. Having regard to the stated objectives of EU energy policy referred to in the SDS, it may be worthwhile to devote increased attention to the non-GHG related environmental effects of different energy technologies and to aim to further operationalise the objective of sustainability beyond its climate change related aspects.

Further areas deriving from the operational objectives of the SDS which may require future attention include: indicators for end-use energy efficiency and savings; biofuel sustainability 'criteria'; and indicators for the integration of adaptation to and mitigation of climate change into policies (a topic which is also related to the cross-cutting theme of governance).

7.2 Sustainable Transport

***Overall Objective:** To ensure that our transport systems meet society's economic, social and environmental needs whilst minimising their undesirable impacts on the economy, society and the environment.*

Operational objectives and targets:

- ***Decoupling economic growth and the demand for transport** with the aim of reducing environmental impacts.*
- *Achieving sustainable levels of transport energy use and **reducing transport greenhouse gas emissions.***
- ***Reducing pollutant emissions from transport** to levels that minimise effects on human health and/or the environment.*
- *Achieving a balanced **shift towards environment friendly transport modes** to bring about a sustainable transport and mobility system.*
- ***Reducing transport noise** both at source and through mitigation measures to ensure overall exposure levels minimise impacts on health.*
- ***Modernising the EU framework for public passenger transport services** to encourage better efficiency and performance by 2010.*
- *In line with the EU strategy on **CO₂ emissions from light duty vehicles**, the average new car fleet should achieve CO₂ emissions of 140g/km (2008/09) and 120g/km (2012).*
- ***Halving road transport deaths** by 2010 compared to 2000.*

Similar comments can be made with respect to most of the 'operational objectives and targets' under this key challenge. Only the last two bullet points state quantified and time-bound targets. The objective relating to CO₂ emissions from new cars has meanwhile been superseded by a new objective established by a Regulation adopted in April 2009 (Regulation (EC) No. 443/2009). The objectives relating to modal shift and modernisation of public transport services are not operationalised. Neither is it defined what a 'sustainable level of transport energy use' would be. The other objectives can be operationalised since the relevant parameters are measurable and quantifiable: economic growth; transport demand; GHG emissions from transport; emissions of other air pollutants from transport; transport noise and exposure levels.

The FP6 projects reviewed in section 3.3.7 cover most of the indicators required to measure progress under this key challenge of the SDS. The reviewed list of SDIs included in the Eurostat 2007 monitoring report does not include any indicators under development, but does mention some indicators to be developed. It does not seem that the related R&D needs are addressed by any ongoing FP funded research. Overall, this research places more emphasis on modelling for the prediction of transport trends and impacts than on measuring progress towards specific sustainable development objectives or the potential impact of particular policy instruments. As indicated above, some SDS objectives such as improving the efficiency and performance of public transport services require further operationalisation, to which future FP funded research might usefully contribute.

7.3 Sustainable Consumption and Production

Overall Objective: To promote sustainable consumption and production patterns

Operational objectives and targets:

- *Promoting sustainable consumption and production by addressing social and economic development within the **carrying capacity of ecosystems and decoupling economic growth from environmental degradation.***
- *Improving the **environmental and social performance for products and processes** and encouraging their uptake by business and consumers.*
- *Aiming to achieve by 2010 an EU **average level of Green Public Procurement (GPP)** equal to that currently achieved by the best performing Member States.*
- *The EU should seek to increase its **global market share in the field of environmental technologies and eco-innovations.***

There is an obvious and significant gap in SCP indicator research. None of the FP6 projects reviewed was mainly focused on SCP and only one new FP7 project (with a relatively limited focus on fair trade issues rather than reducing overall consumption). Nor did any of the 2009 WPs specifically call for such research. To be sure, as discussed in sections 3.3.2 and 3.4.2, particular aspects of either sustainable production or sustainable consumption are addressed in a piecemeal fashion by individual projects or topics, but there is obviously a need for a more comprehensive and integrated approach to SCP research to address the well-recognised lack of operational SCP indicators for practical use by EU institutions, as recognised in the ongoing debate on suitable indicators to monitor progress in the implementation of the Thematic Strategy on the Sustainable Use of Natural Resources (see section 4.6.6). It

is also important to ensure that opportunities to include an SDI indicator component in projects yet to be funded under FP7 - such as, for instance, in area SSH-2009-6.2.1 - are not missed. Eurostat's reviewed list of SDIs (2007) for the SCP theme includes several indicators under development, and the same Eurostat report contains a long list of indicators to be developed in order to be able to ensure more adequate monitoring under this theme.

When comparing the 'operational objectives and targets' of the SDS under the SCP 'key challenge' with the 2007 reviewed list of SDIs, it is quite clear that further efforts are required, both on the policy and research front, to operationalise SCP objectives, formulate quantified targets and monitor them. Key aspects such as the carrying capacity of ecosystems, the market share and uptake of environmental technologies, products and services, and more comprehensive and representative data on the environmental performance of products and services than the number of EU eco-label awards, are not adequately covered by existing indicators.

The gap in SCP indicator research is significant because the under-development of SCP indicators for practical use by the Commission is already recognised. The renewed SDS includes SCP as one of its key objectives. It refers to the need to 'promote sustainable consumption and production to break the link between economic growth and environmental degradation' (Council of the European Union 2006, 3). Concrete targets for reducing overall resource use in the EU were notably absent from the operational objectives of the strategy. However, these operational objectives included 'promoting sustainable consumption and production by addressing social and economic development within the carrying capacity of ecosystems and decoupling economic growth from environmental degradation' (Council of the European Union 2006, 12). Indicators in this area are proving particularly difficult and existing indicators tend to focus on energy use and efficiency rather than absolute use of natural resources.

It is important that the issue of SCP indicators is tackled because it lies at the heart of the concept of sustainable development: SCP was one of the priorities of the World Commission on Environment and Development (WCED) report *Our Common Future* in 1987. Without addressing this concept other priorities of the EU SDS such as halting biodiversity loss and tackling climate change become even more difficult and in some cases impossible to achieve. Tackling SCP is also a fundamental basis for addressing the global partnership priorities because without striving to curb the EU's use of resources from developing countries, the Union risks undermining the legitimacy of its own global green leadership ambitions. The issue of global natural resource depletion has also been given an added sense of urgency in the last few years with the rapid development of China and India which are increasingly competing with the EU and other regions of the world for access to scarce natural resources.

7.4 Conservation and Management of Natural Resources

Overall Objective: To improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services

Operational objectives and targets:

- *Improving resource efficiency to **reduce the overall use of non renewable natural resources** and the related environmental impacts of raw materials use, thereby using renewable natural resources at a rate that does not exceed their regeneration capacity.*
- *Gaining and maintaining a competitive advantage by **improving resource efficiency**, inter alia through the promotion of eco-efficient innovations.*
- *Improving management and **avoiding overexploitation of renewable natural resources** such as fisheries, biodiversity, water, air, soil and atmosphere, restoring degraded marine ecosystems by 2015 in line with the Johannesburg Plan (2002) including achievement of the Maximum Yield in Fisheries by 2015.*
- ***Halting the loss of biodiversity** and contributing to a significant reduction in the worldwide rate of biodiversity loss by 2010.*
- *Contributing effectively to achieving the **four United Nations global objectives on forests** by 2015.*
- ***Avoiding the generation of waste** and enhancing efficient use of natural resources by applying the concept of life-cycle thinking and **promoting reuse and recycling**.*

A number of these operational objectives and targets are related to those on SCP and suffer from the same shortcomings of not being formulated in a quantified and time-bound manner. This especially applies to the first three on improving resource efficiency and avoiding the over-exploitation of renewable resources. Similar to the research projects on SCP, research in these areas is particularly lacking, although there has been some work on eco-innovation which falls under socio-economic development according to the Eurostat indicator structure.

FP6 projects cover biodiversity and fisheries issues more widely but there are still many issues to be resolved under these topics. The number of projects exploring fisheries indicators may reflect the difficulties and debate which are ongoing within the Commission and between stakeholders on monitoring and indeed *governing* the fisheries as a common European resource. The relevance to the SDS is clear in the operational target (in line with the Johannesburg Plan of Implementation of 2002) to achieve the Maximum Yield in fisheries by 2015. However, in general the SDS has not been high profile in the ongoing debate on the CFP or indeed its current reform proposals. For fisheries, issues of data collection and compilation appear to be the main barrier to indicator use in the EU and there is evidence that this is inhibiting the use of indicators, in part, developed through the FP6 funded project INDECO.

In terms of biodiversity two FP6 projects focused on this field but further focus on this topic may be appropriate as the debate on biodiversity indicators at both an EU and international level is receiving a high profile (see sections 4.6.5 and 5.9). In addition, the EU's ambitious target (set out in the SDS since 2001 and reiterated in 2006) of 'halting the loss of biodiversity and contributing to a significant reduction in the worldwide rate of biodiversity loss by 2010' (although now not likely to be met), calls for serious focus on both actions to prevent biodiversity loss and rapid improvements in monitoring and measuring such loss. There appear to be significant indicator development gaps with regards to measurement of the genetic diversity of wild species, species diversity and ecosystem quality. However, the main interest in biodiversity indicators at present revolves around the development of indicators for ecosystems quality. The work of 'The Economics of Ecosystems and Biodiversity' (TEEB) project developing a monitoring framework for ecosystems is relevant here.

7.5 Public Health

Overall objective: *To promote good public health on equal conditions and improve protection against health threats*

Operational objectives and targets:

- *Improving protection against health threats by **developing capacity** to respond to them in a co-ordinated manner.*
- *Further **improving food and feed legislation**, including review of food labelling.*
- *Continuing to promote high **animal health and welfare standards** in the EU and internationally.*
- ***Curbing the increase in lifestyle-related and chronic diseases**, particularly among socioeconomically disadvantaged groups and areas.*
- ***Reducing health inequalities** within and between Member States by addressing the wider determinants of health and appropriate health promotion and disease prevention strategies. Actions should take into account international cooperation in fora like WHO, the Council of Europe, OECD and UNESCO.*
- ***Ensuring that by 2020 chemicals**, including pesticides, are produced, handled and used in ways **that do not pose significant threats to human health and the environment**. In this context, the rapid adoption of the Regulation for the registration, evaluation, authorisation and restriction of chemicals (REACH) will be a milestone, the aim being to eventually replace substances of very high concern by suitable alternative substances or technologies.*
- ***Improving information** on environmental pollution and adverse health impacts.*
- ***Improving mental health** and tackling suicide risks.*

The 'operational objectives and targets' under this key challenge are extremely diverse. They include both objectives with respect to the development of legislation and other policy instruments as well as objectives of a substantive nature, albeit often not very clearly defined. Legislative and standard-setting objectives are set out with respect to food and feed, animal health and welfare, and the adoption of REACH. Objectives relating to policy instruments of a non-legislative nature are stated as regards the development of response capacity and the improvement of information on the adverse health impacts of pollution. Substantive objectives are set out with respect to lifestyle-related and chronic diseases, health inequalities, mental health and chemical risk reduction, though they are largely not time-bound and often rather vague and difficult to translate in terms that are amenable to be measurable by indicators.

As noted in section 3.3.5, none of the FP6 and FP7 research projects reviewed focused mainly on the SDS 'key challenge' of public health. Although some projects under other themes did include some consideration of public health indicators, the wide range of aspects of public health covered in the SDS is not reflected in FP funded research, leaving public health indicators as one of the least researched areas in the review. It appears that the sub-theme 'determinants of health' is the most researched group of indicators within the overall public health theme, but further efforts will be required to ensure that such research is properly linked to SDI development. Full coordination with the European Community Health Indicators work of DG SANCO, as well as with relevant international activities in fora like WHO, the Council of Europe, and the OECD, should be ensured.

As to those objectives and targets expressed in terms of adoption of legislative or other policy instruments, it should be noted that the mere adoption of such instruments, in and of itself, does not automatically ensure a certain result in terms of improved public health or animal welfare. The implementation and effectiveness of

adopted instruments should also be monitored, and this presents particular methodological challenges of an interdisciplinary nature. REACH can be mentioned here as a case in point. Though this new and important legislation has been enacted and has entered into force since the adoption of the renewed SDS, its implementation is a complex enterprise involving both EU institutions and bodies (in particular the European Chemicals Agency (ECHA)), competent authorities in the Member States, and a wide range of stakeholders. One of the outputs of the REACH regulatory system will be the generation and collection of a significant volume of data on production, use and toxicity of chemicals. One challenge that would be well worth addressing in future FP funded research is how full use could be made of this data in order to improve knowledge of and information on the links between patterns of chemical production and use, chemical pollution, exposure of users and the general public, and health effects.

On a wider note, it appears that there was early criticism from some academics that public health research in general was ‘a blind spot’ in the FP6 funding framework (Saracci 2004).

7.6 Social Inclusion, Demography and Migration

Overall Objective: *To create a socially inclusive society by taking into account solidarity between and within generations and to secure and increase the quality of life of citizens as a precondition for lasting individual well-being*

Operational objectives and targets:

- *Pursuing the EU objective that steps have to be taken to make a decisive impact on the **reduction of the number of people at risk of poverty and social exclusion** by 2010 with a special focus on the need to reduce child poverty.*
- *Ensuring a **high level of social and territorial cohesion** at EU level and in the Member States as well as respect for **cultural diversity**.*
- *Supporting the Member States in their efforts to **modernise social protection** in view of demographic changes.*
- *Significantly increasing the **labour market participation of women and older workers** according to set targets, as well as increasing **employment of migrants** by 2010.*
- *Continuing developing an EU migration policy, accompanied by policies to strengthen the **integration of migrants** and their families, taking into account also the economic dimension of migration.*
- ***Reducing the negative effects of globalisation on workers** and their families.*
- *Promoting **increased employment of young people**. Intensifying efforts to reduce early school leaving to 10% and to ensure that at least 85% of 22 year olds should have completed upper secondary education. By the end of 2007 every young person who has left school and is unemployed should be offered a job, apprenticeship, additional training or other employability measure within six months, and within no more than 4 months by 2010.*
- *Increasing the **labour market participation of disabled persons**.*

The ‘operational objectives’ under this key challenge are broad and often very abstract, for example ‘reducing the negative effects of globalisation on workers and their families’ or ‘ensuring a high level of social and territorial cohesion’. Only one operational objective, ‘increased employment of young people’, has been quantified in terms of both the target and the time horizon. While many of the indicators needed to monitor these objectives may have already been developed, for example under the Laeken indicators (see section 4.1.1), FP funded research has not been contributing

significantly to the field of social indicators. Only one new FP7 project, AMELI, focuses on poverty and social inclusion indicators and no specific indicator topics were found in the field of social inclusion or demographic changes in the 2009 Work Programme. In the FP6 projects these indicators were only included in some of the more horizontal and general research projects on SDIs such as DECOIN and the social surveys ESS3 and ESS4. Many of the indicators that are included in the research projects appear to focus on the poverty and inequity aspects of social inclusion. Obvious gaps in the research are indicators relating to social and territorial cohesion at the EU level; cultural diversity; modernising social protection; and migration.

This gap in research activities on social indicators rather than economic or environmental ones may in part reflect the lack of emphasis on the social aspect of the EU SDS but it is an area of research which might be given further priority in future.

7.7 Global Poverty and Sustainable Development Challenges

***Overall objective:** To actively promote sustainable development worldwide and ensure that the European Union's internal and external policies are consistent with global sustainable development and its international commitments*

Operational objectives and targets:

- *Make significant progress towards meeting the commitments of the EU with regard to **internationally agreed goals and targets**, in particular those contained in the **Millennium Declaration** and those deriving from **The World Summit on Sustainable Development** held in Johannesburg in 2002 and related processes such as the **Monterrey Consensus on Financing for Development**, the **Doha Development Agenda** and the **Paris Declaration on Aid Harmonisation**.*
- *Contribute to **improving international environmental governance (IEG)**, in particular in the context of the follow-up to the 2005 World Summit outcome, and to **strengthening multilateral environmental agreements (MEAs)**.*
- *Raise the **volume of aid** to 0,7% of Gross National Income (GNI) by 2015 with an intermediate target of 0,56% in 2010,*
 - *Member States which have not yet reached a level of 0,51% ODA/GNI undertake to reach, within their respective budget allocation processes, that level by 2010, while those that are already above that level undertake to sustain their efforts;*
 - *Member States which have joined the EU after 2002 and that have not reached a level of 0,17% ODA/GNI will strive to increase their ODA to reach, within their respective budget allocation processes, that level by 2010, while those that are already above that level undertake to sustain their efforts;*
 - *Member States undertake to achieve the 0,7% ODA/GNI target by 2015 whilst those which have achieved that target commit themselves to remain above that target; Member States which joined the EU after 2002 will strive to increase by 2015 their ODA/GNI to 0,33%.*
- *Promote **sustainable development in the context of the WTO** negotiations, in accordance with the preamble to the Marrakech Agreement establishing the World Trade Organisation which sets sustainable development as one of its main objectives.*
- *Increase the **effectiveness, coherence and quality** of EU and Member States **aid policies** in the period 2005–2010.*
- ***Include sustainable development concerns in all EU external policies**, including the Common Foreign and Security Policy, inter alia by making it an objective of multilateral and bilateral development cooperation.*

The 'operational objectives' for this key challenge are once again only loosely 'operational' and in many cases the objectives are essentially qualitative and extremely hard to quantify, so that recourse must be had to contextual or proxy indicators. In this way, indicators for this key challenge face many of the same problems as measuring the 'good governance' key challenge below. For example, 'measuring the effectiveness, coherence and quality of EU Member States' aid policies in the period 2005-2010' does not easily lead to a quantitative indicator. Perhaps then it is not surprising that the indicators included in Eurostat's list of SDIs do not well address this dimension of the SDS. They cover only those aspects that can be easily quantified such as trade flows and EU financing of developing countries. It is clear, therefore, that this is an area where further efforts could be made in terms of indicator development. However, no FP research project has made this the focus of their enquiries and only a few projects have included an indicator in this field at all. A number of research topics of relevance to this area were identified in the WP but none has a specific indicator component.

The lack of inclusion of this theme in the general research projects on SDIs perhaps reflects the lack of integration in practice between the social, environmental and developmental dimensions of sustainable development. In particular, the SDS has never been taken up as an important process in the international development policy field at an EU level. The original SDS published in 2001 was highly criticised for neglecting this aspect and an 'external SDS' was rushed out in time for the Johannesburg WSSD in 2002, though never formally endorsed by the European Council. Although the internal and external SDS policy statements were officially integrated into a single document in the 'renewed' SDS in 2006, environmental concerns have continued to dominate the sustainable development discussions within the EU.

The work towards the development of indicators for the MDGs (see section 6.5) at an international level will be of interest here but there is also a need for more specific indicators related directly to the EU SDS.

7.8 Cross-cutting Objectives

Under this heading we will discuss those objectives of the SDS which do not fall under one of the seven 'key challenges' mentioned above. The renewed SDS does not clearly identify those cross-cutting objectives in the same way as the thematic objectives, which are categorised as 'overall objectives' or 'operational objectives and targets'.

The following provisions of the SDS in other parts of the document than the section headed 'Key challenges' can be identified as stating objectives. Only those SDS provisions are reproduced here which are formulated in normative terms, are addressed to EU institutions and/or to Member States and state a substantive objective related to the achievement of sustainable development. Provisions of a procedural or institutional nature which provide for instruments or processes to be put in place (even when formulated as concrete, time-bound targets) have been considered less relevant for this review focusing on SDIs. The 'Policy Guiding Principles' have not

been reproduced either because they are qualified as principles rather than objectives, even though they are formulated in normative terms. They are too general in their formulation to be considered as operational objectives in their own right. However, the SDS states, in its para. 13, that the future design and implementation of the operational objectives, targets and actions under the 'key challenges' "will be guided by" those principles. Therefore they have to be taken into account in the interpretation of those other SDS provisions and in the design of appropriate indicators.

OUR COMMITMENT TO SUSTAINABLE DEVELOPMENT

5. *The overall aim of the renewed EU SDS is to identify and develop actions to enable the EU to achieve continuous improvement of quality of life both for current and for future generations, through the creation of sustainable communities able to manage and use resources efficiently and to tap the ecological and social innovation potential of the economy, ensuring prosperity, environmental protection and social cohesion.*

KEY OBJECTIVES

ENVIRONMENTAL PROTECTION

Safeguard the earth's capacity to support life in all its diversity, respect the limits of the planet's natural resources and ensure a high level of protection and improvement of the quality of the environment. Prevent and reduce environmental pollution and promote sustainable consumption and production to break the link between economic growth and environmental degradation.

SOCIAL EQUITY AND COHESION

Promote a democratic, socially inclusive, cohesive, healthy, safe and just society with respect for fundamental rights and cultural diversity that creates equal opportunities and combats discrimination in all its forms.

ECONOMIC PROSPERITY

Promote a prosperous, innovative, knowledge-rich, competitive and eco-efficient economy which provides high living standards and full and high-quality employment throughout the European Union.

MEETING OUR INTERNATIONAL RESPONSIBILITIES

Encourage the establishment and defend the stability of democratic institutions across the world, based on peace, security and freedom. Actively promote sustainable development worldwide and ensure that the European Union's internal and external policies are consistent with global sustainable development and its international commitments.

CROSS CUTTING POLICIES CONTRIBUTING TO THE KNOWLEDGE SOCIETY

14. *Education is a prerequisite for promoting the behavioural changes and providing all citizens with the key competences needed to achieve sustainable development. Success in reversing unsustainable trends will to a large extent depend on high-quality education for sustainable development at all levels of education including education on issues such as the sustainable use of energies and transport systems, sustainable consumption and production patterns, health, media competence and responsible global citizenship.*

16. *On the basis of the Communication "i2010 - A European Information Society for Growth and Employment", the Commission and Member States should address issues such as equal opportunities, ICT skills and regional divides.*

17. (...) [Member States] should also **implement the UNECE Strategy for Education for Sustainable Development** adopted in Vilnius in 2005. Education for sustainable development should also be promoted at EU level. (...)

18. **Research into sustainable development** must include **short-term decision support** projects and **long-term visionary concepts** and has to tackle problems of a global and regional nature. It has to promote inter- and transdisciplinary approaches involving social and natural sciences and **bridge the gap between science, policy-making and implementation**. The **positive role of technology** for smart growth has to be further developed. (...)

FINANCING AND ECONOMIC INSTRUMENTS

22. The EU will seek to use the full range of policy instruments in the implementation of its policies. **The most appropriate economic instruments should be used** to promote market transparency and prices that reflect the real economic, social and environmental costs of products and services (**getting prices right**). (...)

23. Member States should consider further steps to **shift taxation from labour to resource and energy consumption and/or pollution**, to contribute to the EU goals of increasing employment and reducing negative environmental impacts in a cost-effective way. In this context, the Commission should gather relevant information by 2007.

24. By 2008, the Commission should put forward a roadmap for the **reform, sector by sector, of subsidies that have considerable negative effects on the environment** and are incompatible with sustainable development, with a view to **gradually eliminating** them.

25. In order to ensure that EU funding is used and channelled in an optimum way to promote sustainable development, Member States and the Commission should co-ordinate to **enhance complementarities and synergies between various strands of Community and other cofinancing mechanisms** such as cohesion policy, rural development, Life+, Research and Technological Development (RTD), the Competitiveness and Innovation Program (CIP) and the European Fisheries Fund (EFF).

COMMUNICATION, MOBILISING ACTORS AND MULTIPLYING SUCCESS

29. With regard to the important role of local and regional levels in delivering sustainable development and building up social capital, it is the overall aim to **build sustainable communities in urban and rural areas** where citizens live and work and jointly create a high quality of life. (...)

31. (...) In accordance with the European Alliance for Corporate Social Responsibility (CSR), **awareness and knowledge of corporate social and environmental responsibility and accountability should be increased**.

32. The EU welcomes civil society initiatives which aim at creating more ownership for sustainable development and will therefore intensify dialogue with relevant organisations and platforms that can offer valuable advice by drawing attention to the likely impact of current policies on future generations. In this context, the **EU will also continue to promote full implementation of the Aarhus Convention** on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters.

In order to monitor progress on the cross-cutting objectives of the SDS, the reviewed list of SDIs as established by Eurostat in 2007 includes a number of indicators of socio-economic development, addressing such horizontal themes as economic development, innovation, competitiveness and eco-efficiency, and employment, as well as another set of indicators lumped together under the theme 'Good Governance'. This concept as such is, however, not used in the SDS, though it was articulated by

the Commission in its 2001 White Paper on European Governance (COM(2001) 428 final), which was presented only a few weeks after the adoption of the SDS at the Göteborg European Council. The Eurostat report also refers to this White Paper in explaining its approach to governance-related SDIs. The concept of 'good governance' was apparently chosen as an overarching framework for objectives such as policy coherence and effectiveness, openness and participation and the use of economic instruments, which are either specifically mentioned as cross-cutting objectives in the SDS or addressed in its 'Policy guiding principles'. However, it should be recalled that the White Paper actually sets out five 'Principles of good governance' in the following terms:

• **Openness.** *The Institutions should work in a more open manner. Together with the Member States, they should actively communicate about what the EU does and the decisions it takes. They should use language that is accessible and understandable for the general public. This is of particular importance in order to improve the confidence in complex institutions.*

• **Participation.** *The quality, relevance and effectiveness of EU policies depend on ensuring wide participation throughout the policy chain – from conception to implementation. Improved participation is likely create more confidence in the end result and in the Institutions which deliver policies. Participation crucially depends on central governments following an inclusive approach when developing and implementing EU policies.*

• **Accountability.** *Roles in the legislative and executive processes need to be clearer. Each of the EU Institutions must explain and take responsibility for what it does in Europe. But there is also a need for greater clarity and responsibility from Member States and all those involved in developing and implementing EU policy at whatever level.*

• **Effectiveness.** *Policies must be effective and timely, delivering what is needed on the basis of clear objectives, an evaluation of future impact and, where available, of past experience. Effectiveness also depends on implementing EU policies in a proportionate manner and on taking decisions at the most appropriate level.*

• **Coherence.** *Policies and action must be coherent and easily understood. The need for coherence in the Union is increasing: the range of tasks has grown; enlargement will increase diversity; challenges such as climate and demographic change cross the boundaries of the sectoral policies on which the Union has been built; regional and local authorities are increasingly involved in EU policies. Coherence requires political leadership and a strong responsibility on the part of the Institutions to ensure a consistent approach within a complex system.*

Source: European Commission, *European Governance - A White Paper*, COM(2001) 428 final, 25.7.2001, p. 10.

It should be noted that the set of six indicators included by Eurostat in its reviewed list of SDIs do not address all dimensions of the governance-related objectives of the SDS, nor even all dimensions of 'good governance' as defined by the Commission itself in its 2001 White Paper. Obviously, the authors of the monitoring report were faced with a clear lack of operational indicators in this area. Some of the dimensions of 'good governance' are essentially qualitative and extremely hard to quantify, so that recourse must be had to contextual or proxy indicators. Within the scope of this review, we cannot explore this complex issue in any detail. However, it is clear that this remains an area in which substantial further work will be required, either in order to develop and operationalise a wider range of more relevant indicators, or to assess

progress otherwise than through the use of indicators. We will only make a few comments and general suggestions.

Our review found only a single FP6 funded project focusing on governance indicators. This project concerned the integration of environmental concerns into agricultural policy, a subject which relates to several SDS objectives, both thematic and cross-cutting, but was categorised under the heading 'good governance' because of its focus on policy integration and coherence, which are objectives reflected in the SDS 'Policy guiding principles' as well as the Commission's 'Principles of good governance'. However, since the results of this project were not accessible, we could not assess more precisely its relevance to SDI development in this field.

Some FP6 and FP7 projects and WPs focusing on other themes also include a governance dimension or even make some use of specific governance-related indicators. Research under the SSH WP, such as the topics and areas identified in section 3.4.10, will address issues of direct relevance to SDS governance-related objectives, but they seldom include an explicit SDI component. In some cases, the lack of reference to indicators probably simply reflects the fact that indicators are less suited to measuring progress in these areas than others. This is the case, for instance, of environmental policy integration, a complex, qualitative and subjective notion which does not fit in well with an indicator-based approach, though it is the focus of a number of other FP6 projects (such as EPIGOV).

In addition, one new FP7 funded research project, PASSO, is now setting out to look at governance issues relating to indicators so the results of this project will be watched keenly. This and future research in the governance area should address more squarely the conceptual and methodological challenges of developing new, relevant indicators, or, where this is found not to be possible or useful, explore the other approaches that would enable policy-makers to better assess progress on these issues.

DG Research may find some inspiration in non FP funded projects in this area, such as the work of the Bertelsmann Foundation on *Sustainable Governance Indicators* (SGI) which examines the need for governance reform in 30 OECD countries, using quantitative data from international organizations, supplemented by evaluations made by country experts.⁵ These indicators cover a wider range of relevant objectives than Eurostat's current set. Another interesting exercise, directly related to the SDS objective of promoting full implementation of the Aarhus Convention on access to information, public participation in decision-making and access to justice in environmental matters, which has laid down international standards of openness, accountability and participation in the field of environmental policy-making to which both the Member States and the EU institutions are committed, is the work of *The Access Initiative*, a project of the US-based World Resources Institute, under which civil society organizations in their respective countries conduct national level assessments of government policies and practices, performing legal research and case study analysis according to an internationally harmonised research method, which is designed to measure access to information, public participation and access to justice in environmental matters based on Principle 10 of the Rio Declaration on Environment and Development.

⁵ <http://www.sgi-network.org/>

Looking at the current set of SDIs under the theme 'Good Governance' as well as the indicators listed as 'to be developed' in the 2007 Eurostat monitoring report, we wonder whether a more fundamental rethinking and restructuring of the SDI landscape is not called for to properly address the governance-related and cross-cutting dimensions of the SDS.

The pertinence of the number of new Article 226 infringement cases opened by the Commission and of the quantitative data on transposition of Community law extracted from the annual reports compiled by the Secretariat General of the Commission as indicators of "policy coherence and effectiveness" is highly questionable. Anyone familiar with the legal and administrative aspects of Article 226 infringement proceedings knows that the number of new cases opened is, at best, a very rough indicator of national- or sub-national level problems in the transposition, practical implementation and enforcement of EC law. Many such problems never lead to the opening of infringement proceedings, or, in other cases, proceedings that are opened and reported in the Commission's statistics are settled before any judicial determination of compliance or non-compliance with Community law. The Commission enjoys full discretion in deciding whether or not to pursue proceedings and a decision to discontinue them does not necessarily indicate that the underlying problem has been resolved and the full effectiveness of Community law ensured in the Member State in question.

Similarly, the other indicator only measures whether Member States have officially notified to the Commission the national legislative and administrative measures taken to transpose Directives. It does not cover the full range of EC legislative instruments, since Regulations do not require transposition and are not covered by these statistics. Moreover, formal transposition is only the first step in the process of implementation and enforcement of Community law. In many cases, the Commission, after examining a notified transposition measure, will find that a Directive has been incorrectly transposed and open infringement proceedings under Article 226. Yet the Member State in question would still be recorded in the statistics as having notified its transposition measures, even though these are not adequate to ensure the effectiveness of Community law. Even if the transposition measures notified formally comply with the requirements of a Directive, that does not mean that the effectiveness of that Directive is guaranteed in that Member State, since the actual effectiveness of law depends on a whole range of other factors such as practical application by administrative authorities and enforcement in the event of non-compliance by the regulated persons or entities, as the large number of complaints to the Commission about instances of 'bad application' of Community law shows. More sophisticated ways and means of measuring the effectiveness of EU and national policies clearly need to be developed, taking into account the latest findings of legal, economic and social science research in this area.

The indicators under the sub-theme 'openness and participation' are also of questionable relevance when one examines the definition of those principles in the Commission's White Paper on European Governance. Voter turnout is an indicator of participation in the mechanisms of representative democracy, but the concept of participation clearly extends well beyond the realm of representative democracy into the area of participatory democracy, which will become the subject of an explicit

provision in the TEU upon the entry into force of the Lisbon Treaty. Similarly, the availability and use of e-government tools in Member States is only one of many approaches to increasing openness and participation. While effective for some social groups, they are well-recognised to be ineffective for others, as the SDS itself acknowledges where it calls on the Commission and Member States to "address issues such as equal opportunities, ICT skills and regional divides" in the context of the EU's policy on a European Information Society.

Finally, it is somewhat surprising to find an indicator concerning the use of economic instruments under the theme 'Good Governance', since there is no direct link between these instruments and the 'Principles of good governance' as defined by the Commission. The indicator measures the share of tax revenue derived from environmental taxes as a proportion of total fiscal revenue in the Member States. It should be noted that while this indicator reflects the extent to which Member States are implementing the SDS objective to "shift taxation from labour to resource and energy consumption and/or pollution", and to make more use of economic instruments in environmental policy, it does not allow any inferences to be made about the *effectiveness* of the use of those instruments in terms of achieving the environmental objectives of the SDS. We do not intend to question the relevance of this indicator to the objectives of the SDS, but consider that it would be more appropriately placed under another theme, possibly 'Sustainable Consumption and Production'.

Ultimately, the achievement of the objectives of the SDS depends on complex processes of social transformation which are necessary to ensure a transition from unsustainable to sustainable patterns of production and consumption. Such processes need to be studied in all their complexity in accordance with the objective of the SDS (para. 18) to ensure that research into sustainable development includes not only "short-term decision support projects" but also contributes to the development of "long-term visionary concepts" by "promot[ing] *inter- and transdisciplinary approaches involving social and natural sciences* and bridg[ing] the gap between science, policy-making and implementation." (emphasis added) SDIs are useful as instruments for short-term decision support, but a more conceptual approach to the management and measurement of social transformation and transition processes seems required to complement the insights that can be derived from the use of indicators. We recommend that this be given full attention in the development of FP8.

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APPENDIX 1: REVIEW OF FP6 (AND SELECTED FP7) PROJECTS RELEVANT TO INDICATORS FOR THE EU SUSTAINABLE DEVELOPMENT STRATEGY

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
General SDI Projects					
<p><i>INDI-LINK</i></p> <p>Indicator-based evaluation of inter-linkages between different sustainable development objectives</p>	<p>Project Reference: 44273</p> <p>Duration: 30 months End Date: 2009-04-30 Project Cost: 936625.00 euro</p> <p>Project Funding: 768655.00 euro</p> <p>Action Line: POLICIES-3.4 Forecasting and developing innovative policies for sustainability in the medium and long term.</p>	<p>Sustainable Development</p> <p>DG Environment</p>	<p>The INDI-LINK project aims to improve EU Sustainable Development Indicators (SDIs), assess the interlinkages between the different priorities of the renewed EU Sustainable Development Strategy (SDS) and derive policy conclusions for its implementation. The project has reviewed the state of the art in SDIs and used this to develop a set of 9 indicators which should received top priority for methodological and data development (see key indicators). The project has also evaluated methods suitable for assessing the inter-linkages between sustainable development aspects (economic, social and environmental). This has identified a set of appraisal methods (such as SEA and European Commission Impact Assessment Guidance), evaluation methods (such as Cost Benefit analysis) and indicator methods (such as the Living Planet Index and the Human development Index). These methodologies are used to assess inter-linkages between different aspects of sustainable development.</p> <p>Project website: http://www.indi-</p>	<ul style="list-style-type: none"> • Child well being: Social inclusion (t) monetary poverty and living conditions (st) • Environmentally weighted indicator of material consumption: SCP (t); consumption patterns (st) • Green Public Procurement: SCP (t); consumption patterns (st) • Unmet needs for health care by cause: Public health (t); health inequalities. (st) • External costs of transport activities: Sustainable transport (t); Contextual indicator (st). • Total material consumption and GDP at constant prices: SCP (t); consumption patterns (st) • Proportion of environmentally harmful subsidies: Good governance (t); Economic instruments (st) 	<p>To SDS:</p> <p style="text-align: center;">☺</p> <p>Project entirely geared towards supporting the SDS. Indicators cover a number of themes.</p> <p>To Policy Makers:</p> <p style="text-align: center;">☺</p> <p>Indicators were chosen according to careful criteria including policy relevance, credibility and technical considerations</p>

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
			link.net/index.php?option=com_content&task=view&id=29&Itemid=42		
<p><i>DECOIN</i></p> <p>Development and comparison of sustainability indicators</p>	<p>Project Reference: 44428 Contract Type: Specific Targeted Research Project Duration: 36 months End Date: 2009-10-31 Project Funding: 354700 euro Project Cost 364300.00 euro Action Line: POLICIES-3.4 Forecasting and developing innovative policies for sustainability in the medium and long term.</p>	<p>Sustainable development</p>	<p>DECOIN focuses on sustainable development indicators and the methodology of analyzing inter-linkages between different trends in the EU. To this end the project is built around 3 main objectives;</p> <ul style="list-style-type: none"> ○ Evaluate the existing methods and analytical frameworks in order to assess the progress towards sustainable development. ○ Elaborate on forecasts and scenarios, and to identify inter-relationships between selected unsustainable trends in the EU. ○ 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. <p>To this end the project developed new analytical tools. Using in part these tools, project members examined, decomposed and tested a number of existing Sustainable Development Indicators (SDI) including the <i>Climate Change and Energy</i> and <i>Social Inclusion</i> indicator headings. The forecasting capacities of the existing sets of SDIs were assessed as was their reliability</p>	<p>Indicators used to model unsustainable trends, some linked to SDIs.</p> <ul style="list-style-type: none"> • GDP/Capita: Socio-Economic Development (t) Economic Development (st) • Poverty and Social Inclusion: Social Inclusion (t) Monetary poverty and living conditions (st) • CO₂ intensity of primary energy use: Climate Change and Energy (t) Climate change (st) • Ageing Society: Demographic Changes (t) Contextual Indicators (st) • At-risk-of poverty productivity of the aging society: Demographic Changes (t) Old-age income adequacy (st) 	<p>To SDS:</p> <p style="text-align: center;">😊</p> <ul style="list-style-type: none"> • The DECOIN project contributes directly to the development of the EU framework of Sustainable Development Indicators that are directly linked to the EU SDS. • Examines, decomposes and tests existing SDIs currently in place in the SDS <p>To Policy Makers:</p> <p style="text-align: center;">😊</p> <ul style="list-style-type: none"> • Project contributes to

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
			<p>and timelines (newest year for which data is presented). Results show that the SDIs used as part of the renewed SDS possess capacities that limit their forecasting potential as well as their ability to give data for extended timeframes (more than 5 years).</p> <p>Project Website: http://www.decoin.eu/?id=intro</p>		<p>EU SDS + 6th EAP</p> <ul style="list-style-type: none"> • Direct link to INDI-LINK project • Tools developed are to be tested and if successful used by Statistics Finland
<p><i>SMILE</i></p> <p>Synergies in multi-scale inter-linkages of eco-social systems</p> <p>FP7 Project</p>	<p>Project Reference: 217213 Duration: 42 months End Date: 2011-06-30 Project Cost: 1510000 euro Project Funding: 1160000 euro Research Area (Action Line): SSH-2007-2.1-02 The extent to which trade-offs or synergies exist between the different aspects of sustainable development.</p>	Sustainable Development	<p>This project is following on from DECOIN. The objective of the SMILE project is to apply and further develop the tools used in the DECOIN project to analyse the trade-offs and synergies between different aspects of sustainable development.</p> <p>Project website: http://www.smile-fp7.eu/</p>	The project is still in its initial phase, no changes to DECOIN indicators made as of yet.	Too early to assess - FP7 Project
	Project Reference: 505358	Sustainable development	The main objective of the project is to combine a methodological approach for	No results found	No results found

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
<p><i>INSURE</i></p> <p>Flexible framework for Indicators for Sustainability in Regions using system dynamics modelling</p>	<p>Contract Type: Specific Targeted Research Project Duration: 34 months End date: 2007-01-31 Budget: 899464 (cost 1130000 euro) Action Line: SUSTDEV-2002-3.VIII.2.b Combined ecological, environmental and social indicators</p>		<p>carrying out a sustainable indicator system with the development of a System Dynamics application that supports in representing sustainability. This is intended to develop a common flexible European framework for sustainable indicators aimed at monitoring progress towards Sustainable Development at regional scale. This project aims to place the concept of sustainability at the centre of the indicator system whilst building on existing networks to further develop sustainability indicators at a regional level.</p> <p>Project website: http://www.insure-project.net/ (no information available)</p>		
<p><i>FORESCENE</i></p> <p>Development of a Forecasting Framework and Scenarios to Support the EU Sustainable Development Strategy</p>	<p>Project Reference: 22793 Contract Type: Specific Targeted Research Project Duration: 36 months End date: 2008-11-30 Project Funding: 790810 euro Project Cost: 828076 euro Action Line: POLICIES-3.4 Forecasting and developing innovative policies for sustainability in the medium and long</p>	Sustainable development	<p>The aim of the project is to devise a forecasting framework and scenarios to support the EU Sustainable Development Strategy.</p> <p>In doing so, it focuses on the environmental areas of resource use and waste, water and water use, and landscape, biodiversity and soils. The project aims to establish cross-cutting drivers for these three fields by determining and reviewing the main drivers (or underlying factors) of environmental change in a number of economic activities. Results in the report determining underlying factors of environmental change show that</p>	<p>The project builds and measures the impact on the environment of a number of major underlying factors including:</p> <ul style="list-style-type: none"> • Economic Development: Socio-Economic Development (t) <ul style="list-style-type: none"> ○ Economic Growth ○ Investment Patterns • Economic Development: Global Partnership (t) Globalisation of trade (st) <ul style="list-style-type: none"> ○ Global Trade • Production Patterns: Socio Economic Development (t) Innovation, competitiveness and Eco-Efficiency (st): <ul style="list-style-type: none"> ○ Innovation 	<p>To SDS:</p> <p style="text-align: center;">😊</p> <ul style="list-style-type: none"> • Geared towards supporting SDS and further develops/fine-tunes existing SDIs. <p>To Policy Makers:</p> <p style="text-align: center;">😊</p> <ul style="list-style-type: none"> • Extensive

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
	term		energy supply, agriculture, water supply and construction appear to be the activities most susceptible to cause pressures and impacts on the three environmental themes studied whilst production and consumption patterns as well as economic development act as major cross-cutting drivers. Project website: www.forescene.net	<ul style="list-style-type: none"> • Production Patterns: SCP (t) <ul style="list-style-type: none"> Production Patterns (st) ○ Resource Intensity • Consumption Patterns: SCP (t) <ul style="list-style-type: none"> Resource Use and Waste (st) ○ Food/Leisure/Housing/Transport • Demography: Demographic Changes (t) Demography (st) <ul style="list-style-type: none"> ○ Population Density ○ Ageing Population • Demography: Public Health (t) Health and Health Inequalities (st) <ul style="list-style-type: none"> ○ Population Growth • Natural System: Climate Change and Energy (t) <ul style="list-style-type: none"> ○ Climate Change • Natural System: Natural Resources (t) <ul style="list-style-type: none"> ○ Depletion of resources 	<ul style="list-style-type: none"> communication with Commission (organisation of workshops...) • As this project aims to improve sustainability scenario building it reviews and refers to numerous existing and future policies including the 6th EAP, Water Framework Directive, CAP, Soils Directive, EIA Directive...
<p><i>TISSUE</i></p> <p>TRENDS AND INDICATORS FOR MONITORING THE EU THEMATIC</p>	<p>Project Reference: 502427</p> <p>Contract Type: Specific Targeted Research Project</p> <p>Project Cost: 1.14 million euro</p> <p>Project Funding: 579710.00 euro</p> <p>Duration: 14 months</p>	<p>Urban environment</p> <p>DG: ENV; REGIO</p>	<p>This project supports the 6EAP and Thematic Strategy (TS) on the Urban Environment. The overall goal of the project is to analyse trends which should be measured to properly to determine progress towards sustainable development of the urban environment at local level; to carry out comparative research on existing sets of indicators; to define the set-up needed for a</p>	<p>Many of the indicators developed relate to urban environment and not SDS so have not been included here:</p> <p>Sustainable Transport (t)</p> <p>Mobility (st)</p> <p>Passenger transport demand</p> <p>Modal split (share of trips)</p> <p>Pedestrian infrastructure and Bicycle</p>	<p>To SDS:</p> <p>😊</p> <p>Project geared towards supporting the Urban Thematic strategy which is not a topic of the SDS.</p>

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
STRATEGY ON SUSTAINABLE DEVELOPMENT OF URBAN ENVIRONMENT	End Date: 2005-02-28 Action Line: Action Line: POLICIES-3.4 Forecasting and developing innovative policies for sustainability in the medium and long term		<p>harmonised set of indicators; to analyse the conditions how to increase the acceptance of harmonised sets of indicators through Europe and motivate the cities to use them and to collect indicators and structure the indicators into a online database. The first stage of TISSUE provided an outline of the trends that should be considered in relation to the TS on Urban Environment. These trends were categorised as: Sustainable Urban Management (SUM), Sustainable Urban Design (SUD), Sustainable Urban Transport (SUT) and Sustainable Urban Construction (SUC). The next stage of the project assessed the available indicators from the view point of measuring the trends in these areas. From this assessment the project produced theoretical indicators that could be applied and existing indicators that were being used in practice. On this basis the project defined the set up needed for a harmonised set of indicators. The indicators in the final report are recommended for a harmonised application throughout Europe. However, a gradual approach is suggested, by defining two categories according to the relevance of the indicator for monitoring purposes in the short-term - CORE 1 indicators, or in the medium/long term- CORE 2 indicators, when more advanced indicators could become feasible.</p> <p>Final Report:</p>	<p>infrastructure Freight transport demand Modal split (share of kms) Quality of public transport</p> <p>Transport impacts (st) Traffic safety</p> <p>Natural Resources (t) Biodiversity (st) Urban biodiversity</p> <p>Social Inclusion (t) Monetary Poverty and Living Conditions (st) Accessibility to basic services Poor quality housing</p> <p>Social Inclusion (t) Access to Labour Markets (st) Population and jobs density Jobs / housing ratio</p> <p>Climate Change and Clean Energy (t) Climate Change (st) Green house gases emissions</p> <p>Climate Change and Clean Energy (t) Energy (st) Energy consumption of buildings Share of sustainability-classified buildings Renewable energy consumption Intensity of energy use in transport</p> <p>SCP (t) Resource use and Waste (st)</p>	<p>However many of the indicators are relevant to the SDS.</p> <p>To Policy Makers:</p> <p style="text-align: center;">😊</p> <p>The project is geared towards supporting the Thematic Strategy and reviews the feasibility of existing indicators as well as recommends a set for use.</p> <p>The project liaises heavily with policy groups including the Expert Group on the Urban Environment and their Thematic Working Groups. At the 2nd TISSUE Workshop the indicators were discussed with representatives of the main European city networks.</p> <p>The premise of the</p>

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
			<p>http://www.vtt.fi/inf/pdf/publications/2007/P643.pdf</p> <p>Project Data Base: http://ce.vtt.fi/tissuebrowser_public/index.jsp</p>	<p>Construction and demolition waste Municipal solid waste generation, Municipal waste separately collected, Municipal solid waste treatment</p> <p>SCP (t) Production Patterns (st) Adoption of environmental management systems Share of certified enterprises and public agencies</p> <p>SCP (t) Consumption Patterns (st) Water consumption</p> <p>Public Health (t) Determinants of Health (st) Air quality; Number of days with exceeding PM10 and O3 Air quality; Annual average concentration of NO2 Share of population exposed to excessive noise</p> <p>Good Governance (t) Openness and Participation (st) Citizens' engagement with environmental and sustainability oriented activities Legal framework for active public participation</p> <p>Good Governance (t) Adoption of integrated urban plans (environment,</p>	<p>project is to support the monitoring of the 6EAP and Thematic Strategy on Urban environment.</p>

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
				transport, land use)	
<p><i>STATUS</i></p> <p>Sustainability tools and targets for the urban thematic strategy</p>	<p>Project Reference: 513689 Contract Type: Project Cost: 598624.00 euro Project Funding: 495861.00 euro Duration: 15 months End Date: 2006-03-31 Action Line: Policies -3.4 Forecasting and developing innovative policies for sustainability in the medium and long term.</p>	<p>Urban environment</p> <p>DG: ENV; REGIO</p>	<p>This project aims to contribute to the effective implementation of the Thematic Strategy on the Urban Environment. It develops a tool which gives local governments from across Europe the opportunity to self-assess their own progress with sustainable development, through inputting their own target values against a package of local sustainability indicators. These indicators have been selected from a number of European and national data sources, and have been specifically adapted to be relevant at the local level. The indicators are also designed to be usable by local authorities at different stages of sustainability implementation. For each indicator presented in the Tool, there is a set unit of measurement, and an indicative target.</p> <p>Project Website: http://status-tool.iclei.org/content.php/frontpage/?p=1</p>	<p>The project develops a set of over 60 indicators under ten themes. Only examples of the most relevant are given below:</p> <p>Conservation and management of natural resources (t); Fresh Water resources (st):</p> <ul style="list-style-type: none"> ○ Proportion of rivers classified at least as of 'good' status (according to EU classification) ○ Compliance with EU standards on wastewater treatment ○ Proportion of population connected to a wastewater treatment plant <p>Conservation and management of natural resources (t); Biodiversity (st)</p> <ul style="list-style-type: none"> ● Local trend in EU threatened/protected species ● Trend in locally relevant species and/or habitats (birds/ trees/other species) <p>Public Health (t); Determinants of Health (st):</p> <ul style="list-style-type: none"> ○ Number of days per year EC limit 	<p>To SDS:</p> <p>😊</p> <p>Although this project is geared towards local authorities, many of the indicators are still applicable to SDS.</p> <p>To Policy Makers:</p> <p>😊</p> <p>This project presents its indicators as a easy to use tool with links to a definition and method of calculating each indicator.</p> <p>This project is designed to implement the Urban Thematic Strategy.</p>

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
				<p>value was exceeded for PM10</p> <ul style="list-style-type: none"> ○ Number of days per year EC target value/long-term objective was exceeded for Ozone (8h mean) ○ Annual mean concentration of NO2 ○ Annual mean concentration of PM10 <p>Sustainable Consumption and Production (t); Resource use and Waste (st)</p> <ul style="list-style-type: none"> ○ Per capita amount of waste ○ Proportion of total/biodegradable waste production sent to landfill ○ Share of Municipal waste collected separately <p>Sustainable Consumption and Production (t); Consumption Patterns (st)</p> <ul style="list-style-type: none"> ○ <u>Percentage of the food purchased by the local authority which is EC certified as organic production</u> ○ <u>Proportion of urban water supplies subject to water metering</u> ○ <u>Domestic consumption</u> ○ <u>Water loss in pipelines</u> 	

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
				<p>Sustainable Transport (t); Transport and Mobility (st)</p> <ul style="list-style-type: none"> ○ Length of dedicated cycle lanes ○ Share of population living within 300 m from an hourly (or more frequent) public transport service ○ Proportion of all journeys under 5 km by private car use ○ Proportion of public transportation classed as low emission <p>Climate Change and Energy (t); Climate Change (st)</p> <ul style="list-style-type: none"> ○ Total CO2 equivalent emissions per capita <p>Climate Change and Energy (t);Energy (st)</p> <ul style="list-style-type: none"> ○ Total electricity consumption per capita ○ Share of energy consumption produced by renewable sources ○ Capacity installed for renewable energy production <p>Public Health (t); Health and Health</p>	

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
				inequalities (st): <ul style="list-style-type: none"> ○ Proportion of dwellings classed as being of adequate or decent standard ● Access to Green Areas ○ Share of population exposed to noise values of L (den) above 55 dB (A) A full set of indicators developed can be found at the following website: http://status-tool.iclei.org/content.php/demo	
<p><i>CLEANTECH</i></p> <p>Clean technologies: prospective techno-economic analyses and scenarios</p>	<p>Project No.: 4113 Funding Type: JRC Project Cost: Project Funding: Duration: End Date: 2003 Action Line: 2.1.5 Integration of sustainability into other policy areas</p>	<p>Environment; eco-innovation</p> <p>DG: ENV; ENTR; EMPL</p>	<p>This project supports the implementation and further development of the EU strategy for sustainable development as well as the integration of environmental concerns in other European policy areas through socio- and techno-economic research. This includes: exploring the future development of the structural indicators used to track the EU sustainable development strategy, in particular of the environmental headline indicators. Deliverables include: Qualitative and quantitative assessment of the influence of ICT on environmental sustainability, in particular in relation with the environmental headline indicators.</p> <p>Project Website: http://projects-2003.jrc.ec.europa.eu/show.gx?Object.objec</p>	<p>No results found.</p>	<p>To SDS:</p> <p>☹</p> <p>No results found so hard to assess but the project relates to the structural indicators used to monitor the SDS within the Spring Summits and the Lisbon Process.</p> <p>To Policy Makers:</p> <p>😊</p> <p>Project objectives and deliverables entirely geared to</p>

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
			t_id=PROJECTS000000000001AB52		<p>supporting policy makers mainly within the Commission.</p> <p>The project Explicitly links to Integrated Product Policy; the implementation of the WFD. But will also relate to many more specific policies.</p>
<p><i>ECO DEV</i></p> <p>Sustainable development at local and regional levels: methods and techniques to support Ecosites and monitor urban sustainability</p>	<p>Project reference no: 2151 Contract type: Joint Research Centre (JRC) Project Cost: Project Funding: Duration: End date: Action line: 2.1.5 Integration of sustainability into other policy areas.</p>	<p>Urban environment</p> <p>DG: ENV; REGIO</p>	<p>The main objective of this project is to produce monitoring tools (including indicators) for the evaluation of sustainable development at local level with emphasis on urban and regional processes. This is in order to develop and implement the concept of Ecosites at EU level. Although the project is focused on the local level it includes the objective to define sustainability criteria in urban development policies, by developing and implementing integrated approaches for the environmental at different administrative level (EU, National, Regional)</p> <p>Project Website: http://projects-</p>	<p>Results not found but indicators expected include 'terrestrial indicators to support the environmentally sustainable implementation of the European Spatial Observatory Network.</p>	<p>To SDS:</p> <p></p> <p>This project is targeted at producing tools to monitor sustainable development at a local level. Therefore the indicators developed may be less appropriate for use at the EU level for monitoring the SDS. Also, the urban environment is not a</p>

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
			2003.jrc.ec.europa.eu/show.gx?_app_page=s%20how-printable.html&Object.object_id=PROJEC%20TS000000000001AD84		<p>theme of the SDS.</p> <p>To Policy Makers:</p> <p style="text-align: center;">😊</p> <p>The project has objectives and deliverables relating to specific policies such as the Urban Thematic Strategy on Urban Environment. The project explicitly aims to support the European Spatial Development Perspective; the Urban Thematic Strategy and monitoring of environmental protection in the Structural Funds.</p>
<p><i>SENSOR</i></p> <p>Sustainability Impact</p>	<p>Project Reference: 3874 Contract Type: Integrated Project Duration: 54 months End date: 2009-05-31</p>	<p>Agriculture, Forestry Policy: LULUCF</p>	<p>The technical objective of SENSOR is to build, validate and implement sustainability impact assessment tools (SIAT), including databases and spatial reference frameworks for the analysis of land and human</p>	<p>Project, after review, found 50-100 relevant indicator sets and frameworks that could be used for describing different aspects of sustainable development in relation to landscape at European level:</p>	<p>To SDS:</p> <p style="text-align: center;">😊</p> <ul style="list-style-type: none"> • Many indicators across many

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
Assessment: Tools for Environmental, Social and Economic Effects of Multifunctional Land Use in European Regions	Project Funding: 10210000 euro Project Cost: 13630000 euro Action Line: SUSTDEV-2004-3.V.1.1.a Enhanced impact assessment and management tools for sustainable land-use with a multifunctional approach		<p>resources in the context of agricultural, regional and environmental policies. The project aims to establish relationships between different environmental and socio-economic processes as characterised by indicators considered to be quantitative measures of sustainability. Scenario techniques will be used within an integrated modelling framework, reflecting various aspects of multifunctionality and their interactions. The focus is on European sensitive regions, particularly those in accession countries, since accession poses significant questions for policy makers regarding the socio-economic and environmental effect of existing and proposed land use policies. SIAT uses the statistical and spatial data continuously collected by European and regional agencies. SENSOR will deliver novel solutions for integrated modelling, spatial and temporal scaling and aggregation of data, selection of indicators, database management, analysis and prediction of trends, education and implementation.</p> <p>Project Website: http://www.sensor-ip.org/</p>	<ul style="list-style-type: none"> • Ammonia emission from agriculture, Nitrogen oxide (NOx)emissions: Public Health (t) Determinants of Health (st) • Soil erosion risk by water, soil sealing, wind erosion, soil carbon content: Natural Resources (t) Land Use (st) • CO2 emission, methane emission, nitrous oxide emission, carbon sequestration in biomass, soil and dead organic matter: Climate Change and Energy (t) • Terrestrial habitats at risk from eutrophication, population trends of farmland birds, deadwood, spatial cohesion, pesticide use: Natural Resources (t) Biodiversity (st) • Generation of municipal waste by tourists, discharge of sewage water due to tourism: SCP (t) Resource Use and Waste (st) • Unemployment rate, employment by sector (both sectoral and total): Socio-Economic Development (t) Employment (st) • Deviation of regional unemployment, deviation of regional income: Socio-Economic Development (t) Employment (st) • Exposure to air and water pollution, exposure to fire risk: Public Health (t) Determinants of public health (st) 	<p>fields</p> <p>To Policy Makers:</p> <p style="text-align: center;">😊</p> <ul style="list-style-type: none"> • Consulted with policy makers when developing indicator framework in order to make it demand-driven. • Develops a toolkit for impact assessment

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
<p><i>POINT</i></p> <p>Policy Influence of Indicators</p> <p>FP7 Project</p>	<p>Project Reference: 217207</p> <p>Duration: 36 months</p> <p>End Date: 2011-03-31</p> <p>Project Cost: 1920000 euro</p> <p>Project Funding: 1460000 euro</p>	<p>Sustainable development</p>	<p>The overall aim of the POINT project is to help find better ways of using indicators in all aspects of policy, by enhancing the understanding of the factors that condition the successful use and influence of indicators in policymaking. The focus will be on the processes through which indicators enter into policymaking, but the project also seeks new ways of improving the conceptual validity and reliability of indicators, so as to improve their relevance for policy. Sustainable development will act as the main thematic focus. This is because challenges remain in making the concept operational and measurable. The project has two key objectives:</p> <ul style="list-style-type: none"> - Design a coherent framework of analysis and generate hypotheses on the use and influence of indicators, by pulling together the disparate strands of research and practical experience of indicator use and influence, focusing broadly on European policies, but with a special emphasis on fostering change towards sustainability - Test the analytical framework and hypotheses used in developing sustainability indicators. <p>Project website: http://point.pbworks.com/Objectives</p>	<p>No indicators have yet been clearly reviewed or developed.</p>	<p>Too early to assess - FP7 Project</p>

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
<p><i>IN-STREAM</i></p> <p>INtegrating MainSTREAM Economic Indicators with those of Sustainable Development</p> <p>FP7 Project</p>	<p>Project Reference: 211759 Duration: 36 months End Date: 2008-10-01 Project Cost: 1510000 euro Project Funding: 1210000 euro</p>	<p>Sustainable Development</p>	<p>The IN-STREAM project aims to provide insight into the synergies and trade-offs implicit in Europe’s pursuit of economic growth and environmental sustainability. In doing so, the project will perform quantitative and qualitative assessments in order to link mainstream economic indicators with key well-being and sustainability indicators whilst also recommending new indicator approaches (and sets of indicators) based on their robustness, feasibility and suitability to EU policy objectives.</p> <p>Project website: http://www.in-stream.eu/index.html</p>	<p>No indicators have yet been clearly reviewed or developed.</p>	<p>Too early to assess - FP7 Project</p>
<p><i>OPEN-EU</i></p> <p>One Planet Economy Network – Europe</p> <p>FP7 Project</p>		<p>Sustainable Development</p>	<p>The goal of the project is to develop an academically robust ‘footprint family’ of sustainable development indicators, place these in a scenario modelling tool for evidence-based policy, and create a new forum for the visions, knowledge and interests of different stakeholders to help transform the EU to a One Planet Economy by 2050. The specific objectives and outputs of this project are below.</p> <p><i>Building the evidence base</i></p> <ul style="list-style-type: none"> • By 2012 the footprint family of 		

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
			<p>indicators (ecological, carbon and water) is used by policy makers in the EU-27 to develop policy towards a One Planet Economy</p> <ul style="list-style-type: none"> • Outputs: An academically robust set of high level footprint indicators covering Ecological, Carbon and Water footprints. <p><i>Building the applications</i></p> <ul style="list-style-type: none"> • By 2012 EU decision-makers are using a scenario modelling and indicator analysis tool to develop evidence-based policy for the transformation to a One Planet Economy • Outputs: EUREAP (European Resource and Energy Analysis Programme) - a fully developed, customer tested, scenario modelling tool is made freely available to EU decision-makers and is used by at least 5 member states and 3 departments within the EU so as develop better and more relevant policy for the renewed SDS. <p><i>Building the capacity and dissemination</i></p> <ul style="list-style-type: none"> • By 2012 a network of decision-makers, CSO's and business leaders share and agree on solutions to the challenges of transforming to a One Planet 		

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
			<p>Economy</p> <ul style="list-style-type: none"> Outputs: An online network of at least 30 CSO's, EU member states, EU departments, businesses and decision-makers is launched and maintained to facilitate dialogue and debate on how the EU is to achieve a One Planet Economy. The network will enable further interactions between the participating CSOs and policy makers to further research and development and hasten the transition to a One Planet Economy. 		
Socio-economic Development					
<p><i>ESS4</i></p> <p>European Social Survey Round 4 - Improving Social Measurement in Europe.</p>	<p>Project Reference: 2836 Contract Type: Specific Targeted Research Project Duration: 27 months End date: 2009-08-31 Project Funding: 1700000 euro Project Cost: 1740000 euro Action Line: CITIZENS-2004-8.2.2 Promotion and support for comparative research, methodologies and data</p>	<p>Policy: Social Sciences?</p>	<p>This project is the fourth round of the European Social Survey series, a biennial multi-country survey covering over 30 nations and designed to chart and explain the interaction between Europe's changing institutions and the attitudes, beliefs and behaviour patterns of its diverse populations.</p> <p>Project Website: http://www.europeansocialsurvey.org/</p>	<ul style="list-style-type: none"> Any period of unemployment and work seeking lasted 12 months or more: Socio-Economic Development (t) Employment (st) 	<p>To SDS:</p> <p></p> <ul style="list-style-type: none"> Social Science research survey, main focus is individual variables on a number of societal and cultural value-sets rather than on sustainable development itself.

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
	generation,CITIZENS Citizens and governance in a knowledge-based society				<ul style="list-style-type: none"> Only one relevant indicator <p>To Policy makers:</p> <p></p> <ul style="list-style-type: none"> This project aims to facilitate measuring certain trends for social science research
<p><i>ESS3</i></p> <p>European social survey round 3</p>	<p>Project Reference: 1615 Contract Type: Specific Targeted Research Project Duration 36 months End date: 2007-12-31 Project Funding: 1440000 euro Project Cost: 1630000 euro Action Line: SOCIETY-1.1 Science and governance: analyse and support best practice, develop new consultation mechanisms</p>	<p>Social Sciences?</p>	<p>This project is the third round of the European Social Survey series, a biennial multi-country survey covering over 30 nations and designed to chart and explain the interaction between Europe's changing institutions and the attitudes, beliefs and behaviour patterns of its diverse populations.</p> <p>Project Website: http://www.europeansocialsurvey.org/</p>	<ul style="list-style-type: none"> Any period of unemployment and work seeking lasted 12 months or more: Socio-Economic Development (t) Employment (st) 	<p>To SDS:</p> <p></p> <ul style="list-style-type: none"> Social Science research survey, main focus is individual variables on a number of societal and cultural value-sets rather than on sustainable development itself. Only one relevant

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
					<p>indicator.</p> <p>To Policy makers:</p> <p>☹</p> <ul style="list-style-type: none"> This project aims to facilitate measuring certain trends for social science research
<p><i>MEI</i></p> <p>Measuring Eco-innovation</p>	<p>Project Reference: 44513 Contract Type: Specific Targeted Research Project Duration: 14 months End date: 2008-03-31 Project Funding: 199983 euro Project Cost: 223590 euro Action Line: POLICIES-1.6 Assessment of environmental technologies for support of policy decisions</p>	<p>Eco-innovation</p>	<p>MEI offers a conceptual clarification of eco-innovation (developing a typology) and discusses possible indicators, leading to proposals for eco-innovation measurement. The project results list a number of methods and indicators that can be used to measure eco-innovation and concludes that no-one method or indicator perfectly grasps the complex concept that is eco-innovation rather an extensive use of varying methods is required.</p> <p>Project Website: http://www.merit.unu.edu/MEI/</p>	<ul style="list-style-type: none"> Total investment in R&D+i: Socio Economic-Development (t) Innovation, Competitiveness and Eco-Efficiency (st) Number of R&D+i projects achieved: Socio Economic-Development (t) Innovation, Competitiveness and Eco-Efficiency (st) Training expenses: Socio Economic-Development (t) Innovation, Competitiveness and Eco-Efficiency (st) New processes (number of new processes involving the implementation of a new or significantly improved production or delivery method): SCP (t) Production patterns (st) Sales due to the innovation: Socio Economic-Development (t) Innovation, 	<p>To SDS:</p> <p>☺</p> <ul style="list-style-type: none"> Numerous indicators developed for various fields, overwhelming majority used to measure Innovation, competitiveness, and Eco-efficiency. <p>To Policy Makers:</p> <p>☺</p> <ul style="list-style-type: none"> Eco-innovation

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
				<p>Competitiveness and Eco-Efficiency (st)</p> <ul style="list-style-type: none"> • Innovation expenditures (% of turnover): Socio Economic-Development (t) Innovation, Competitiveness and Eco-Efficiency (st) • Environmental performance indicators/goals? Yes/No: SCP (1) Production patterns (2) <p>The following indicators are also put forward in order to help build and use eco-efficiency performance indicators</p> <ul style="list-style-type: none"> • GHG emissions: Climate Change and Energy (t) • Energy consumption: Climate Change and Energy (t) Energy (st) • Consumption of materials: SCP(t) Consumption patterns (st) 	<p>high on the policy/political agenda</p> <ul style="list-style-type: none"> • Project contributes to expanding and improving the Community Innovation Survey
<p><i>KEI</i></p> <p>Knowledge Economy Indicators: Development of Innovative and Reliable Indicator Systems</p>	<p>Project Reference: 502529</p> <p>Contract Type: Specific Targeted Research Project</p> <p>Duration: 30 months</p> <p>End date: 2007-02-28</p> <p>Project Funding: 1580000</p> <p>Project Cost: 2140000 euro</p> <p>Action Line: POLICIES Supporting policies and anticipating scientific and technological needs</p>	<p>Innovation</p>	<p>The purpose of the KEI project is to identify key indicators for knowledge economies and methodologies for constructing composite indicators to measure and compare national knowledge-based economies' performance.</p> <p>To this end, simulation methods are extensively employed to investigate the robustness of indicators and the conclusions based on them. The study evaluates the quality and accuracy of indicators and the underlying data and assesses the innovative use of additional information to improve</p>	<p>The project reviews and then puts to use 64 different indicators of which the following can be used to monitor the SDS:</p> <ul style="list-style-type: none"> • Percent individuals who use the internet to interact with public authorities (e-government): Good Governance (t) Openness and Participation (st) • Participation in life long learning per working age population (25-64): Social Inclusion (t) Education (st) • GERD expenditure/GDP: Socio-Economic Development (t) Innovation, 	<p>To SDS:</p> <p style="text-align: center;">😊</p> <ul style="list-style-type: none"> • Many indicators from many themes used <p>To Policy Makers:</p> <p style="text-align: center;">😐</p> <ul style="list-style-type: none"> • Project builds on EU Lisbon

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
			<p>indicator quality.</p> <p>Project website: http://www.uni-trier.de/index.php?id=26661.</p>	<p>Competitiveness and Eco-Efficiency (st)</p> <ul style="list-style-type: none"> • Share of total sales from new-to-market products: Socio-Economic Development (t) Innovation, Competitiveness and Eco-Efficiency (st) • Real GDP growth rate: Socio-Economic Development (t) • Total employment rate: Socio-Economic Development (t) • Energy intensity of the economy: Socio-Economic Development (t) • Employment rate of older workers: Demographic changes (t) • Inequality of income distribution: Social Inclusion (t) Monetary poverty and living conditions (st) 	<p>and Barcelona objectives</p>

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
<p><i>MEADOW</i></p> <p>Measuring the dynamics of organisations and work: proposed guidelines for collecting and interpreting data on organisational change and its economic and social impacts</p>	<p>Project Reference: 28336 Contract Type: Coordinated Action Duration: 36 months End date: 2010-02-28 Project Funding: 1200000 euro Project Cost: 1200000 euro Action Line: CITIZENS Citizens and governance in a knowledge-based society.</p>	<p>Employment; innovation;</p>	<p>The MEADOW project sets out guidelines for collecting and interpreting data on the dynamics of organizations and their economic and social impact. The Guidelines provide a framework within which existing European surveys on organisational change and work restructuring might evolve towards comparability, as well as providing norms for the construction of new survey instruments in the field. It provides an instrument for improving the empirical basis of research and policy on the relation between organisational change and key economic and social indicators.</p> <p>Project Website: http://www.niesr.ac.uk/projects/projectdetail.php?ProjectID=14</p>	<p>The deliverable on indicators still pending. But the indicators to be proposed are summarised by other project material as to be in the field of: the knowledge-based economy, including productivity growth and innovative performance, and sustainable social equality in terms of access to jobs, work environments, and influence at the workplace.</p> <p>Socio-economic development (t) Economic development (st); innovation, competitiveness and eco-efficiency (st); and employment (st)</p>	<p>To SDS: No results found so hard to assess.</p> <p>To policy Makers: No results found.</p>
<p><i>MERIPA</i></p> <p>Methodology for European regional innovation policy assessment</p>	<p>Project Reference: 517558 Contract Type: Specific Support Action Project Cost: 1.74 million euro Project Funding: 1.03 million euro Duration: 30 months End Date: 2007-11-30 Action Line: INNOVATION-2002-2.1</p>	<p>Innovation; Regional Development</p> <p>DG: ENT; REGIO</p>	<p>The MERIPA project focuses on the role of innovation in regional development. It seeks to boost innovative thinking and to assess the existing regional approaches for innovation in order to propose a common European innovation methodology based on case studies in 5 different European regions. The overall objective of the project is to develop a comprehensive and coherent methodology for assessing different regional policies on research and innovation, which can contribute to</p>	<p>Socio-Economic Development (t) Innovation, competitiveness and eco-efficiency (st)</p> <p>The Regional Summary Innovation Index: it considers basic dimensions of innovation and relates regional performances with the national and European averages.</p> <p>The Regional Innovation Capacity Index: it is referred to four fundamental capacities that a regional innovation system should</p>	<p>To SDS: </p> <p>Only relevant to economic element of SD which is largely dealt with in the Lisbon Strategy. However Economic Prosperity does feature on the Eurostat SDIs so included here.</p>

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
	Development of regional innovation strategies		<p>improving the regional understanding of effective innovation policy measures in a European context. In relation to this, a set of composite benchmarking indicators is defined in the form of five innovation indexes in order to allow the trans-regional comparison of the impact of different strategies and policies on innovation performance.</p> <p>Project Website: http://www.meripa.org/en/home.htm</p>	<p>have.</p> <p>The Regional Incubation of Innovation Index: this index measures the capacity of a region to incubate innovation, that is to cultivate innovation seeds provided by the scientific and technological worlds.</p> <p>The Regional Helices of Innovation Index: it considers the main channels of innovation and how these works relative to other regional innovation systems; it measures the relative solidity of the channels of innovation.</p> <p>The Regional Excellence in Innovation Index: this is an output-oriented index focused on the existence of “cases of excellence” in innovation, accordingly to the common view that to innovate means to get first to a new idea.</p>	<p>To Policy Makers:</p> <p>☺</p> <p>The project claims to be a project will be a mutual learning platform bringing together actors from different sectors (research institutions, public authorities, the business community) from across European regions.</p>
<p><i>QSI</i></p> <p>Quality of Scientific Information in the E.U. Governance</p>	<p>Project Reference: 4334 Contract Type: JRC Project Cost: Project Funding: Duration: End Date: Action Line: 4.3.3 Technological and natural</p>	<p>Internal Market</p> <p>DG: Enterprise; Ecofin;</p>	<p>This project focuses on facilitating a knowledge based society and specifically on the role and use of scientific knowledge. The project aims at the development, testing and deployment of assessment methodologies of knowledge used to underpin EU policies having a possible impact on sustainability and e-governance.</p>	<p>No results found</p> <p>Indicators likely to link to Economic prosperity (t)</p>	<p>To SDS:</p> <p>☹</p> <p>Difficult to tell since no results found. However, the indicators are likely to relate to Lisbon,</p>

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
Process	risks		<p>These assessment methodologies include: stakeholder mapping, scoping and scenarios, multi-criteria evaluation methods, extended quality assurance and scientific pedigree. Secondly, the project aims at contributing to the development of a risk assessment platform. In terms of indicators the project aims to perform (similar to tasks of the STAT-ECON project below) specific work on internal market indicators (including the internal market scoreboard) and for the Structural Indicators initiative. The project also performs basic statistical work on indicators. In addition it combines formal methods (such as sensitivity, institutional and multi-criteria analyses) and informal ones (e.g. participatory) for the construction of composite indicators.</p> <p>Project Website: http://projects-2003.jrc.ec.europa.eu/show.gx?Object.object_id=PROJECTS0000000000017431</p>		<p>i.e. economic objectives, more than SDS.</p> <p>To Policy Makers:</p> <p style="text-align: center;">☹</p> <p>Project is related to specific EU policy but does not explicitly link each element to the needs of different DGs.</p> <p>The project makes explicit links to the White Paper on Governance (COM (2001) 428)</p>

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
<p><i>STAT-ECON</i></p> <p>Statistical and Econometric Tools for Economic Analysis</p>	<p>Project Reference: 4131 Contract Type: JRC Project Cost: Project Budget: Duration: End Date: end 2005 Action Line: 4.1.3 Economic analysis</p>	<p>Internal market; education;</p> <p>DG: Enterprise; ECOFIN; Internal Market; Eurostat; Education and Cultural Affairs</p>	<p>This project uses applied statistic and econometrics to provide support for key EU policies such as common market services, employment and cohesion. The project contributes to research on indicators in several ways: Development of indicators of a knowledge based economy including indicators to assess the impact of structural reforms of the Lisbon Strategy; calculation of the Internal Market Index in the Internal Market Scoreboard; and a conceptual revision of the e-business readiness index. The project also focused on composite indicators for example by combining formal (such as sensitivity, institutional and multi-criteria analyses) and informal methods (e.g. participatory) for the construction of composite indicators; The project also included the creation of a new laboratory at the JRC for indicator based evaluation and monitoring of education and training systems.</p> <p>Project Website: http://projects-2005.jrc.ec.europa.eu/show gx?Object.object_id=PROJECTS000000000019FF3</p>	<p>No results found</p> <p>Indicators likely to link to Socio-Economic Development (t)</p>	<p>To SDS:</p> <p></p> <p>Difficult to tell since no results found. However, the indicators are likely to relate to Lisbon, i.e. economic objectives, more than SDS.</p> <p>To Policy Makers:</p> <p></p> <p>Project designed to specifically assist several DGs in economic and statistical analysis.</p> <p>This project provides broad support rather than for one or two specific policies.</p>

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
<p><i>ACE Tech</i></p> <p>New and clean energy technology assessment systems</p>	<p>Project Reference no.: 2311 Funding type: JRC Project Cost: Project Funding: End Date 2003 Action Line: 2.3.1 The Sustainable Energy Technologies Reference & Information System</p>	<p>Energy; industry; eco-innovation</p> <p>DG: ENTR; ENV; TREN</p>	<p>This project supports the development of the ‘Sustainable Energy Technologies Reference & Information System’ (SETRIS). This system aims to become the coordination, communication and dissemination focus for customers involved with the energy policy process and concerned with energy technology options in the context of sustainable development. Specific activities include: providing expert advice on clean energy technologies, developing a technologies database, provide techno-economic Sustainability Impact Assessment on clean technologies and to update a set of indicators for DG Research.</p> <p>Project Website: http://projects-2003.jrc.ec.europa.eu/show.gx?Object.object_id=PROJECTS000000000001A7C0</p>	<p>No results found but objectives include: to support and expand the existing indicators datasheets, with special emphasis on carbon sequestration, fuel cells, hydrogen technologies, biomass and natural gas</p> <p>Indicators are likely to relate to: Socio-Economic Development (t) Innovation, Competitiveness and Eco-efficiency (st)</p>	<p>To SDS: No results found so hard to assess</p> <p>To Policy Makers:</p> <p style="text-align: center;">😊</p> <p>No results found so hard to assess but likely to be relevant as the project aims to support policy makers, especially within the Commission eg DG TREN and to establish working partnership with Eurostat, EEA. As well as support and expand indicator set ‘as required and agreed with DG RTD’.</p> <p>Policy explicitly mentioned to support: IEE, follow up to Green Paper on security of energy supply, EU strategy on alternative fuels.</p>

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
<p><i>ECODRIVE</i></p> <p>Measuring ECO-innovation: ecological and economic performance and derived indicators</p>	<p>Project Reference: 44391 Contract Type: Specific Targeted Research Project Duration: 12 months End Date: 2007-12-31 Project Cost: 198370.00 euro Project Funding: 198370.00 euro Action Line: Policies 1.6 Assessment of environmental technologies for support of policy decisions</p>	<p>Eco-innovation; environment. DG Enterprise; DG Environment</p>	<p>This project explores how best to measure eco-innovation which is defined through a result-oriented approach as ‘a change in economic activities that improves both the economic performance and the environmental performance of Society’. Eco-innovation indicators are proposed to measure progress, both of economic performance, as in terms of cost reduction and enhanced functionality, and environmental performance, from reduced emissions and resource depletion and other environmental improvements. The project distinguishes five types of derived eco-innovation indicators. The first involves changes in economic activities at a macro level like the share of R&D expenditure in national income. Second, there are the socio-economic indicators at a meso level like sectors, showing the development path. Third, are the economic developments at a micro level, especially in the firm. Fourth are the cultural developments in science, invention, innovation and development, and values as related to entrepreneurship and to long term views on sustainability. Fifth, are the institutions which shape the behaviour of firms and consumers. Project website: http://www.eco-innovation.eu/wiki/index.php/Ecodrive_Wi</p>	<ul style="list-style-type: none"> • Global Warming Potential per unit of GDP*: Socio-economic Development (t) Innovation, Competition, and Eco-efficiency (st) <p>(GWP is where methane, carbon dioxide and nitrous oxide are added up as to their time integrated climate forcing, as global warming potentials)</p> <p>* While eco-innovation performance is not eco-efficiency, eco-efficiency measures can be developed where an environmental and economic measures on performance are available. So information on value created per unit of environmental impact, as one option for specifying eco-efficiency, is one quite relevant eco-innovation indicator</p>	<p>To SDS: </p> <ul style="list-style-type: none"> • Project documents make explicit links to SDS and Lisbon. • SDS lacks resource use/eco-efficiency indicators <p>To Policy Makers: </p> <ul style="list-style-type: none"> • Eco-innovation is high on the political agenda especially DG Enterprise. • But indicators mainly conceptual rather than assessed from policy relevance, credibility and technical issues etc.

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
			ki Mainpage		
<p><i>WORKCARE</i></p> <p>Social quality and the changing relationships between work, care and welfare in Europe</p>	<p>Project reference: 28361 Contract Type: Specific Targeted Research Project Duration: 36 months End date: 2009-09-30 Project Funding: 1180000 euro Project Cost: 1180000 euro Action Line: CITIZENS Citizens and governance in a knowledge-based society</p>	<p>Social Welfare?</p>	<p>Social science project looking at the link between structural changes in individual attitudes and welfare type (macro-level) and work and care trends (micro-level). At the macro level the project measures the quality of society and at the micro level the quality of life by analysing them in terms of Social Quality in Europe. The project develops an analytical framework that takes into account the orientation, actions, capabilities and satisfaction of actors within the work and care systems in constructing a work-life balance. The project looks at the different actors involved in balancing work and care: the household, individuals and the state. The work is based on the analysis of relevant indicators from existing sources which are supplemented by qualitative interviews from five countries: Austria, Italy, the UK, Hungary and Denmark.</p> <p>Project Website: http://www.abdn.ac.uk/socsci/research/nec/workcare/</p>	<ul style="list-style-type: none"> • Male employment rate/Female employment rate: Socio-Economic Development (t) Employment (st) • Population Aged 65 and more: Demographic Changes (t) Demography (st) • Old Age dependency ratio: Demographic Changes (t) Old-Age Income Adequacy (st) • Total fertility rate: Demographic Changes (t) Demography (st) 	<p>To SDS:</p> <p style="text-align: center;">☹</p> <ul style="list-style-type: none"> • A few indicators across 2 fields <p>To Policy Makers:</p> <p style="text-align: center;">☹</p> <p>The project aims to contribute to European policy debates by providing a better understanding of the impact of social policies on work and care, the effects of the competing demands of work and care on fertility decisions and the consequences of flexibility and working times on the organisation of work, care and welfare.</p>

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
<p><i>HEATCO</i></p> <p>Developing harmonised European approaches for transport costing and project assessment</p>	<p>Project Reference: 502481 Contract Type: Specific Support Action Duration : 27 months End date : 2006-05-30 Project Funding: 1300000 euro Project Cost: 1340000 euro Action Line: POLICIES-3.2 The development of tools, indicators and operational parameters for assessing sustainable transport and energy systems performance</p>	<p>Transport DG: TREN</p>	<p>This support action project aims to fill a policy-gap by developping harmonised, common guidelines for evaluating the costs and benefits of transport investments and policies across EU Member States. Current project assessment practice in the EU member states was reviewed and analysed. Then, existing practice in the assessment of the value of time and congestion, accident risk reduction, health impacts and nuisances from pollutant and noise emissions, and infrastructure costs was compared to the theoretical and empirical evidence from the literature.</p> <p>Project Website: http://heatco.ier.uni-stuttgart.de/</p>	<p>Project considers a set of sustainability indicators in order to measure goal achievement as part of a wider policy appraisal component of the work package.</p> <ul style="list-style-type: none"> • Employment: Socio-Economic Development (t) Employment (st) • Contribution to technical progress: Socio-Economic Development (t) Innovation, competitiveness and Eco-efficiency (st) • Competitiveness of Industries: Socio-Economic Development (t) Innovation, competitiveness and Eco-efficiency (st) 	<p>To SDS: ☹️</p> <ul style="list-style-type: none"> • Not many indicators mentioned and all in one policy field <p>To Policy makers: 😊</p> <ul style="list-style-type: none"> • Project aimed to develop a set of harmonised guidelines for project assessment (=tool like impact assessment??) • Regular meetings with policy-makers and

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
					stakeholders undertaken as part of a cyclical approach because this was needed to ensure convergence of guidelines within an international framework.
Sustainable Consumption and Production					
<p><i>GEO FAIR TRADE</i></p> <p>Geotraceability for Fair Trade</p>	New FP7 Project	SCP	<p>The main objective of the project is to bring together Fair Trade Civil Society Organisations (CSOs) and Research and Technology Developers (RTD). The project objectives are to: 1) select sustainable development indicators with a spatial component and related to the three dimensions of Fair Trade (social, economic and environmental); 2) adapt and trial the Geo-Traceability Integrated System, set-up in the previous research projects, enabling finding and browsing of all relevant information. The project emphasises communication between the RTD performers and the CSOs. The expected result is a reference framework built on the</p>	Indicators are not yet developed but will include social, economic and environmental indicators related to SCP	Too early to assess - FP7 Project

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
			<p>sustainable development Geo-Indicators that can be used in all the traceability systems already implemented in Fair Trade to improve the certification of the best practice.</p> <p>Project website: http://www.geofairtrade.eu/index.php?option=com_frontpage&Itemid=1</p>		
Social Inclusion					
<p><i>AMELI</i></p> <p>Advanced methodology for European Laeken indicators</p> <p>FP7 Project</p>	<p>Project Reference: 217322</p> <p>Duration: 36 Months</p> <p>End date: 2011-03-31</p> <p>Project Cost: 1410000 euro</p> <p>Project Funding: 1090000 euro</p> <p>Research Area: SSH-2007-6.2-01 Improved ways of measuring both the potential for and impact of policies</p>	Social Inclusion	<p>The main target of the project is to review the state-of-the-art of the existing indicators monitoring the multidimensional phenomena of poverty and social exclusion - the Laeken indicators including their relation to social cohesion. Special emphasis will be put on methodological aspects of indicators and especially on their impact on policy making. This will include quality aspects as well as mathematical and statistical properties within a framework of a complex survey in the context of practical needs and peculiarities.</p>	<p>Indicators include:</p> <ul style="list-style-type: none"> • Persistent At-Risk-of Poverty Rate: Social Inclusion (t) Monetary Poverty and Living Conditions (st) • Long-term unemployment rate: Socio-Economic Development (t) Employment (st) • Persons living in jobless households: Socio-Economic Development (t) Employment (st) • Life expectancy at birth: Demographic Changes (t) Demography (st) 	Too early to assess - FP7 Project
Demographic Changes					
Public Health					

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
Climate Change and Energy					
<p><i>RECIPES</i></p> <p>Renewable energy in developing countries: current situation, market potential and recommendations for a win-win-win for eu industry, the environment and local socio-economic development</p>	<p>Project Reference: 513733 Contract Type: Specific Support Action Duration: 24 Months End Date: 2006-12-31 Project Cost: 500000 euro Project Funding: 500000 euro Action Line: POLICIES-3.2 The development of tools, indicators and operational parameters for assessing sustainable transport and energy systems performance</p>	<p>Renewable Energy</p> <p>DG: TREN, ENV, RTD</p>	<p>The RECIPES project aims to provide the European Commission and other stakeholders with pragmatic recommendations facilitating appropriate action to further the implementation of renewable energy (RE) in developing countries, taking into account a number of factors including; local and global environmental impacts and effects on the local socio-economic situation.</p> <p>The project developed a website with an integrated database section including information regarding the current situation and technical potential for RE options in each of the 114 developing countries.</p> <p>Project Website: http://www.developingrenewables.org/energyrecipes/index.php</p>	<ul style="list-style-type: none"> • Variability of income/capita GINI index: Social inclusion (t) Monetary poverty and living conditions (st) • Population Below Poverty line: Social inclusion (t) Monetary poverty and living conditions (st) • Growth of Economy: Socio-Economic development (t) • Traditional Fuel Consumption: Climate Change and Energy (t) Energy (st) • Oil Consumption: Climate Change and Energy (t) Energy (st) • Coal Consumption: Climate Change and Energy (t) Energy (st) • Natural Gas Consumption: Climate Change and Energy (t) Energy (st) • Renewable Energy Situation: Climate Change and Energy (t) Energy (st) • Energy Consumption for various sectors: Sustainable Consumption and Production (t) Consumption patterns (st) • Coal Production: Sustainable Consumption and Production (t) Production patterns (st) • Natural Gas Production: Sustainable Consumption and Production (t) Production Patterns (st) • Electricity Production: Sustainable Consumption and Production (t) Production Patterns (st) 	<p>To SDS:</p> <p style="text-align: center;">😊</p> <ul style="list-style-type: none"> • RE now a has a key role in any sustainable development strategy. Numerous Sustainable Development indicators included • But Sustainable development not pictured as the main driver of any given rise in RE production and capacity (investment and job opportunities play key role) and there is no mention of SDS. Policy recommendations made to EU all focused on

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
				<ul style="list-style-type: none"> • Electricity Production from geothermal: Climate Change and Energy (t) Energy (st) • Electricity Production from Solar thermal and PV: Climate Change and Energy (t) Energy (st) 	<p>promoting better market conditions.</p> <p>To Policy Makers:</p> <p>😊</p> <ul style="list-style-type: none"> • Reports built in part on information from actual policy makers as part of a strong consultation procedure
<p><i>WETO-H2</i></p> <p>World Energy Technology Outlook - 2050 (WETO-H2)</p>	<p>Project Reference: 501669</p> <p>Contract Type: Coordination action</p> <p>Duration: 24 months</p> <p>End date: 2005-12-31</p> <p>Project Funding: 394000</p> <p>Project Cost: 460600 euros</p> <p>Action Line: POLICIES-3.2 The development of tools, indicators and operational parameters for assessing sustainable</p>	<p>Energy, RTD</p> <p>DG: TREN, RTD</p>	<p>The WETO-H2 coordination action has produced a reference book presenting a world energy/technology outlook by 2050 paying special attention to the role of Hydrogen-generated energy. This projection adopts exogenous forecasts for population and economic growth in the different world regions and it makes consistent assumptions for the availability of fossil energy resources and for the costs and performances of future technologies. It uses a world energy sector simulation model – the POLES model – to describe the development to 2050 of the national and</p>	<ul style="list-style-type: none"> • GDP/Capita: Socio-Economic Development (t) Economic Development (st) • Transport fuels per capita: Sustainable Transport (t) Transport Impacts (st) • CO2 emissions/capita: Climate Change and Energy (t) • Share of renewables in electricity: Climate Change and Energy (t) Energy (st) • Coal Production: Sustainable Consumption and Production (t) Production Patterns (st) 	<p>To SDS:</p> <p>😊</p> <ul style="list-style-type: none"> • Many indicators developed from different fields <p>To Policy Makers:</p> <p>😊</p> <ul style="list-style-type: none"> • Project is the build up to a reference book on the energy

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
	transport and energy systems performance		regional energy systems and of their interactions through international energy markets, under constraints on resources and from climate policy. Project website : http://www.enerdata.fr/enerdatafr/news/wet_o.html	<ul style="list-style-type: none"> • Natural Gas Production: Sustainable Consumption and Production (t) Production Patterns (st) • Oil Production: Sustainable Consumption and Production (t) Production Patterns (st) • GHG Emission for Industry sector: Climate Change and Energy (t) Climate Change (st) • GHG Emission for Electricity generation: Climate Change and Energy (t) Climate Change (st) • GHG Emission for Household, Service, Agriculture: Climate Change and Energy (t) Climate Change (st) • GHG Emission for Transport: Climate Change and Energy (t) Climate change (st) or Sustainable Transport (t) Transport Impacts (st) 	<p>outlook for 2050, both DG TREN and DG RTD have funded and now link this report.</p> <ul style="list-style-type: none"> • Hard to say how much of an influence this will have on policy-making within both these DGs as the time horizon is so large and policy-making is more short-sighted.
Sustainable Transport					
<p><i>TRANSFORUM</i></p> <p>Scientific forum on transport forecast validation and policy assessment</p>	<p>Project Reference: 502002</p> <p>Contract Type: Coordination action</p> <p>Duration: 36 months End date: 2007-02-14</p> <p>Project Funding: 899657 euro</p> <p>Project Cost: 899657 euro</p> <p>Action Line: POLICIES-</p>	<p>Transport</p> <p>DG: TREN</p>	<p>TRANSFORUM focuses on policy support and assessment tools for the EU's Common Transport Policy (CTP). Specifically, the project looks at transport policies dealing with the interurban and international mobility of goods and passengers. It addresses the need to verify the scientific consistency and transparency of these tools, and their ability to match the needs and expectations of policy-makers, users and</p>	<p>The TRANSFORUM project developed a number of indicators measuring transport policy impacts, those relevant to the SDS are listed below:</p> <ul style="list-style-type: none"> • Expenditures on transport: Sustainable Transport (t) Contextual indicator (st) • Number of fatalities in transport by cause and mode: Sustainable transport 	<p>To SDS:</p> <p style="text-align: center;">😊</p> <ul style="list-style-type: none"> • Indicators developed with a view to measure the impacts of transport policies in terms

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
	3.2 The development of tools, indicators and operational parameters for assessing sustainable transport and energy systems performance		<p>stakeholders.</p> <p>In order to fulfil this ambition, the project tries to develop commonly accepted indicators used in measuring transport policy impacts. These indicators must also be suitable for monitoring the various impacts of transport policies in terms of the different dimensions of sustainable development.</p> <p>Project website: http://www.transforum-eu.net/.</p>	<p>(t) Transport Impacts (st)</p> <ul style="list-style-type: none"> • GHG emissions (by mode): Sustainable transport (t) Transport Impacts (st) • Emissions affecting local air pollution (tonnes of NOx and PM10/2.5 by mode): Sustainable transport (t) Transport Impacts (st) • People exposed to noise: Public Health (t) Determinants of Health (st) • Share of substitute fuels: Sustainable Transport (t) • Passenger and vehicle kilometres per mode and freight tonne kilometres per mode: Sustainable Transport (t) Transport and mobility (st) • Energy consumption of transport: Sustainable Transport (t) • GDP per zone, year: Socio-Economic Development (t) Economic Development (st) • Trade and tonnes of freight per zone, year: Sustainable Transport (t) Transport and Mobility (st) • Income (GDP/Population): Socio-Economic Development (t) 	<p>of the different dimensions of sustainable development</p> <ul style="list-style-type: none"> • Numerous indicators developed that can be used to monitor the SDS • But project geared towards supporting CTP not SDS. Sustainable development in itself not key driver but rather an auxiliary target to that of enhancing coherence and efficiency of transport policy. <p>To policy Makers:</p> <p style="text-align: center;">😊</p> <ul style="list-style-type: none"> • The project develops indicators designed to

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
					<p>support the work of DG TREN. It synthesises the results of other research projects. Scientific validation by researchers, policy makers and stakeholders to form commonly accepted results.</p> <ul style="list-style-type: none"> • Supports the EU's CTP through best practice recommendations and policy recommendations.
				•	
<p><i>TRANS-TOOLS</i></p> <p>Tools for transport forecasting and scenario testing</p>	<p>Project Reference: 502644 Contract Type: Specific Support Action Duration: 24 months End date: 2006-09-30 Project Funding: 1200000</p>	<p>Transport</p> <p>DG: TREN</p>	<p>TRANS-TOOLS aims to produce a European transport network model covering both passengers and freight, as well as intermodal transport, which overcomes the shortcomings of current European transport network models.</p> <p>This project resulted in one of the largest</p>	<ul style="list-style-type: none"> • Accident rates for the year xxxx: Sustainable Transport (t) Transport Impacts (st) • Emission factors (g/vkm) for the transport mode (car, train, bus...): Sustainable Transport (t) Transport Impacts (st) 	<p>To SDS:</p> <p></p> <ul style="list-style-type: none"> • Some SDS indicators used, all focus on sustainable transport

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
	<p>euro Project Cost: 1200000 euro Action Line: POLICIES-3.2 The development of tools, indicators and operational parameters for assessing sustainable transport and energy systems performance</p>		<p>existing transport models in terms of number of countries covered, population covered, geographical scale, as well as the complete coverage of both freight and passenger transport, and of a number of other transport modes.</p> <p>Project website: http://www.inro.tno.nl/transtools/.</p>	<ul style="list-style-type: none"> • Supplier Operating Costs public transport: Sustainable Transport (t) Contextual Indicators(st) 	<ul style="list-style-type: none"> • Very much geared towards transport policy, sustainable development mentioned very little and measuring sustainability is not an objective of the model <p>To Policy Makers:</p> <p></p> <ul style="list-style-type: none"> • Builds on and uses existing EU information instruments such as ETIS database • But, very little mention/reference to existing policies (only one is E White paper on Transport Policy for 2010) , rather a model-building exercise aimed at one specific

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
					research area.
<i>REFIT</i> Refinement and test of sustainability indicators and tools with regard to European transport policies	Project Reference: 22578 Contract Type: Specific Support Action Duration: 30 months End date: 2008-09-30 Project Funding: 951420 euros Project Cost: 951420 euros Action Line: POLICIES-3.2 The development of tools, indicators and operational parameters for assessing sustainable transport and energy systems performance	Transport DG: TREN	The REFIT project aims to provide the European Commission with a comprehensive methodology for assessing the impact of various transport policies and strategies on sustainability through incorporating the economic, the environmental and the social dimensions of sustainability. Initially, a comprehensive assessment framework was developed that links European transport policy objectives and indicators to the growing pool of tools and expertise accumulated within various European research projects. By combining an existing Europe-wide transport demand network model (like SCENES or Transtools) with the environmental REMOVE model and the spatial economic CGEurope model, REFIT offers a quantitative tool to evaluate transport policies. The final report is yet to be made public. Project Website: http://refit.bouw.tno.nl/dels.htm	Indicators calculated within the REFIT operational framework: Sustainable Transport (t) Transport and mobility (st): <ul style="list-style-type: none"> • Rail freight transport • Road freight transport • Inland waterways freight transport • Road passenger transport • Rail passenger transport Others: <ul style="list-style-type: none"> • Freight transport costs: Sustainable Transport (t) contextual indicators (st) • Car ownership rate: SCP (t) Consumption patters (st) • Passenger transport costs: Sustainable Transport (t) contextual indicators (st) • Total emissions of NOx/SO2/CO2/CO/PM: Climate Change and Energy (t) Climate Change (st) • Emissions of NOx/SO2/CO2/CO/PM from road, rail, air, inland waterways traffic: Sustainable Transport (t) Transport Impacts (st) • Population exposure to PM10 emissions: Public Health (t) Determinants of health (st) • Population exposure to noise: Public 	To SDS: ☺ <ul style="list-style-type: none"> • A lot of indicators developed that could be used to monitor SDS with the vast majority encompassed in the sustainable transport theme but a few from 3 other themes To Policy Makers: ☺ <ul style="list-style-type: none"> • Project end result is a quantitative tool designed to be used by policy makers to evaluate transport policies • Linked to

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
				Health (t) Determinants of health (st)	specific policy problem of fitting transport policy in with sustainable development. White Paper of 2001, Lisbon Strategy and Gothenburg Strategy referenced in detail.
Natural Resources					
<p><i>RUBICODE</i></p> <p>Rationalising biodiversity conservation in dynamic ecosystems</p>	<p>Project Reference: 36890 Contract Type: Coordination action Duration: 36 Months End Date: 2009-08-31 Project Funding: 1990000 euro Project Cost: 2160000 euro Action Line: SUSTDEV-3 Global change and ecosystems,SUSTDEV-2005-3.III.2.1 Shaping biodiversity conservation strategies for terrestrial and fresh water</p>	<p>Biodiversity and Nature Conservation DG Environment</p>	<p>RUBICODE aims to contribute to solving the problem with translating biodiversity threats into a tangible factor for decision-making. It does this by examining what biodiversity does for society. Biological units that provide specific services to society are identified and their services valued, so that they can be compared with more traditional economic valuations. This aims to give decision-makers a more rational base and will help the understanding of the need for adequate conservation policies, which are essential to halting biodiversity loss. The project is a coordinated action and so focused on workshops to coordinate research and</p>	<p>The project reviews indicator approaches in different ecosystems rather than individual indicators (eg forest; grassland; soils; rivers; lakes). The aim is to develop indicators for ecosystems services.</p> <p>Possibly relevant to Conservation and management of natural resources (t) biodiversity (st) Freshwater resources (st)</p>	<p>To SDS:</p> <p></p> <p>Relevant to one of the ten themes and possibly more. But it does not identify indicators which could be easily transferable to the SDS, rather more detailed ecosystem services indicators.</p>

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
	ecosystems		<p>review results from previous projects. Indicators featured heavily in the first workshop. This reflected on indicator approach used in the EU soil thematic strategy, water framework Directive as well as using aspects of biodiversity as indicators such as genetic diversity as indicators. The workshop also reviewed the criteria for good indicators which were used to assess several indicator types such as abiotic, genetic, biochemical. Various indicator approaches in different ecosystem types were then reviewed e.g. indicators of grassland ecosystems. Indicator approaches for different ecosystems were then assessed in relation to what specific parameters of ecosystem health they help indicate e.g. do they indicate services, stressors, spatial scale etc? They are also assessed against the criteria developed on what makes a good indicator.</p> <p>Project Website: http://www.rubicode.net/rubicode/index.html</p>		<p>To Policy Making:</p> <p>☺</p> <p>The project aims to facilitate decision-making in the field of biodiversity. Stakeholders mainly involved in dissemination. Biodiversity and ecosystems services are rising up the political agenda.</p>
<p><i>INDECO</i></p> <p>Developing</p>	<p>Project Reference: 513754</p> <p>Contract Type: Coordination action</p> <p>Duration: 24 months</p>	<p>Fisheries (CFP)</p> <p>DG: MARE</p>	<p>The purpose of this Co-ordination Action is to ensure a coherent approach to the development of indicators at EU level, in support of environmental integration within the CFP and in the context of international</p>	<ul style="list-style-type: none"> • Abundance of commercial fish stocks: Natural Resources (t) • Fleet capacity: Natural Resources (t) • Number of fishermen: Socio- 	<p>To SDS:</p> <p>☹</p> <ul style="list-style-type: none"> • Sustainable development now playing a

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
indicators of environmental performance of the common fisheries policy	End Date: 2006-11-30 Project Funding: 500000 euro Project Cost: 538413 euros Action Line: POLICIES-1.3 The modernisation and sustainability of fisheries policies		work on indicators. The principal objectives of INDECO are: <ul style="list-style-type: none"> ○ Identify quantitative indicators for the impact of fishing on the ecosystem state, functioning and dynamics, as well as indicators for socio-economic factors and for the effectiveness of different management measures. ○ Assess the applicability of such indicators. ○ Develop operational models with a view to establishing the relationship between environmental conditions and fishing activities. A consortium of 20 research organisations from 11 EU Member States is implementing INDECO. Project's website: http://www.ieep.org.uk/research/INDECO/INDECO_home.htm	Economic Development (t) Employment (st) <ul style="list-style-type: none"> • Number of unemployed: Socio-Economic Development (t) Employment (st) • Work Injuries: Public Health (t) Determinants of Health (st) • Quality (level of heavy metals): Natural Resources (t) Marine ecosystems (st) 	bigger role in current CFP reform <ul style="list-style-type: none"> • Some indicators linked to EUROSTAT SDI • But SDS never mentioned and all the focus is on the CFP itself To Policy Makers:  <ul style="list-style-type: none"> • The project seeks ways of ensuring that agreed indicators are used in the policy process. The results are targeted at fisheries managers and other stakeholders. An Advisory User Group has been set up to

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
					<p>this end.</p> <ul style="list-style-type: none"> Aim is to contribute to developments taking place in CFP, heavily linked to CFP.
<p><i>ELME</i></p> <p>European lifestyles and marine ecosystems</p>	<p>Project Reference: 505576</p> <p>Contract Type: Specific Targeted Research Project</p> <p>Duration: 39 months</p> <p>End date: 2007-03-31</p> <p>Project Funding: 2500000 euro</p> <p>Project Cost: 3080000 euro</p> <p>Action Line: not given</p>	<p>Marine affairs</p> <p>DG: MARE</p>	<p>The ELME project aims to highlight the link between the declining state of the marine environment and European human lifestyles.</p> <p>The project focused on four major European sea areas (the Baltic Sea, Black Sea, Mediterranean Sea and North-East Atlantic) and on four cross-cutting environmental issues: habitat change, eutrophication (over fertilisation of the sea), chemical pollution and fishing.</p> <p>Results show that ecosystems in each of the four sea areas covered had their own ‘winners’ and ‘losers’ as a result of human activity. In almost every case the winners are either species that are low in the food chain or opportunistic, undesirable species.</p> <p>Project website: http://www.elme-eu.org/public/home.aspx.</p>	<ul style="list-style-type: none"> Shipping Activity: Natural Resources (t) Marine Ecosystems (st) Livestock Production: SCP (t) Production patterns (st) Fossil fuel energy generated: Climate Change and Energy (t) Climate Change (st) Fishing Effort: Natural Resources (t) Pesticide Use: SCP (t) Resource Use and Waste (st) Industrial Discharge: SCP (t) Resource Use and Waste (st) Shipping and Transport Activity: Sustainable Transport (t) Transport Impacts (st) Municipal Waste: SCP (t) Resource Use and Waste (st) Urbanisation: Natural Resources (t) Land Use (st) Land Use – erosion: Natural Resources (t) Land Use (st) 	<p>To SDS:</p> <p>😊</p> <ul style="list-style-type: none"> Numerous indicators developed across many different fields <p>To Policy Makers:</p> <p>😊</p> <ul style="list-style-type: none"> Strong consultation with policy-makers and policy specialists with a view to impacting of the future scenarios resulting from Community

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
					<p>policies.</p> <ul style="list-style-type: none"> • With CFP reform now on table and making it more sustainable they overarching objective of reform, sustainability of fisheries is high on policy agenda.
<p><i>INCOFISH</i></p> <p>Integrating Multiple Demands on Coastal Zones with Emphasis on Aquatic Ecosystems and Fisheries</p>	<p>Project Reference: 3739 Contract Type: Integrated Project Project Cost: 5.39 million euro Project Funding: 4.9 million euro Duration: 36 months End Date: 2008-04-30 Action Line: INCO Specific measures in support of international co-operation</p>	<p>Fisheries DG: MARE</p>	<p>This project aims to reconcile multiple demands on coastal zones. It brings together 200 researchers from 35 research organisations based in 22 countries, including 15 developing countries, to evaluate and integrate data, tools and concepts suitable to contribute to the goals set by the World Summit for Sustainable Development in Johannesburg, such as restoring healthy fish stocks and ecosystems by 2015. The research activities are numerous and include: documenting historical performance of ecosystems to deal with the 'shifting baselines' syndrome and providing sound reference points for resource restoration; providing electronic maps for</p>	<p>The deliverables for the WP7 on indicators concentrates on the development of 'fish rules' illustrating the minimum sizes to be respected when purchasing fish in order to discourage the trade in juvenile fish at the market. Physical fish rulers were developed in Germany, Peru, Senegal, and the Philippines, and an online "Fish Ruler tool" was made available on the INCOFISH web portal.</p>	<p>To SDS: </p> <p>Indicators developed are more more the public in purchasing fish than for policy makers. Also concentrate on individual fish rather than fisheries or ecosystems as a whole.</p> <p>To Policy Makers: </p>

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
			<p>all coastal species to establish authoritative species inventories and explore scenarios of global change and invasive species; create spatial ecosystem models for all coastal systems treated in this project as a basis for understanding the resource; providing guidelines and tools for best sizing and placement of marine protected areas; research impact of ecotourism on coastal ecosystem and providing best-practice guidelines; and identifying suitable simple indicators to promote and monitor sustainable fisheries.</p> <p>Project Website: http://www.incofish.org/index.php</p>		<p>The tools developed are more for the public than for policy makers.</p>
<p><i>THRESHOLDS</i></p> <p>Thresholds of Environmental Sustainability</p>	<p>Project Reference: 3933 Contract Type: Integrated Project Project Cost: 7.88 million euro Project Funding: 5 million euro Duration: 48 months End Date: 2008-12-31 Action Line: SUSTDEV-2004-3.VIII.1.b Thresholds of sustainability,SUSTDEV-</p>	<p>Marine; fisheries</p> <p>DG: ENV; MARE</p>	<p>The project emphasises the formulation of a generic theory of thresholds in nature, encompassing the understanding of alternative stable states and regime shifts in ecosystems, nonlinear and cascading responses in ecosystems. The project aims to contribute to the development of Sustainability Science by developing, improving and integrating tools and methods that can deal with complex behaviour of ecosystems. The project uses the concept of thresholds of indicators of</p>	<p>The project suggests fine level indicators of ecosystem function and benthic biodiversity including:</p> <p>Conservation and management of natural resources (t); Biodiversity (st)</p> <p>Marcophyte cover and biomass; Benthic pelagic biomass ratio; Seagrass to macroalge ratio; Species richness; Presence of invasive species; Community stability.</p>	<p>To SDS: ☹️</p> <p>This project is not targeted at the SDS and produces more detailed indicators than will be useful in this context.</p> <p>To Policy Makers: 😊</p> <p>Ultimately this</p>

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
	2004-3.VIII.1 Testing networks for environmental technologies		<p>environmental sustainability to feed scientific knowledge into policy making and for sustainable resource management. The tools developed to do this are applied to a number of case studies on the sustainable management of European coastal zones. As part of this project indicators of marine ecosystem function and biodiversity are developed.</p> <p>Project Website: http://www.thresholds-eu.org/</p>		<p>project could be useful as it concentrates on integrating scientific knowledge into policy making tools.</p> <p>The project specifically refers to its potential contribution to: SDS; wFD; IPPC; and landuse and planning policies.</p>
<p><i>ECOWAT</i></p> <p>Monitoring and assessment of the ecological quality of inland and marine waters</p>	<p>Project Reference: 2121 Contract Type: JRC Project Cost: Project Funding: Duration: End Date: 2003 Funding Call: 2.1.2 Water quality and aquatic ecosystems</p>	<p>Water; marine; DG: Environment; Enterprise; Agriculture; MARE</p>	<p>This project supports the Commission and national and international authorities to implement and monitor various items of EU legislation relating to water policy (both inland surface waters and coastal marine waters). To do this the project develops comparable assessments systems to monitor water quality and ecosystem health including the development and testing of indicators. The following types of indicators are developed:</p> <ul style="list-style-type: none"> • biological quality indicators for WFD compatible classification of coastal waters; • coastal/marine indicators to support the assessment of eutrophication phenomena for all 	<p>No results found</p> <p>Indicators likely to relate to: conservation and management of natural resources (t); Biodiversity (st); Fresh Water Resources (st); Marine resources (st)</p>	<p>To SDS:</p> <p style="text-align: center;">😊</p> <p>Indicators likely to be relevant to three subthemes of SDS.</p> <p>To Policy Makers:</p> <p style="text-align: center;">😊</p> <p>Objectives and deliverables specifically targeted at supporting particular items of legislation.</p>

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
			<p>European regional seas;</p> <p>Project Website: http://projects-2003.jrc.ec.europa.eu/show.gx?_app.page=s-how-printable.html&Object.object_id=PROJEC TS000000000001A5B6</p>		<p>Collaboration and coordination with (and of) Commission, Member States and international bodies.</p> <p>Explicit links made to: Water Framework Directive; the Nitrates Directive; the Urban Waste Water Treatment Directive; the European Marine Strategy; the 6th Environmental Action Program; and Integrated Coastal Zone Management (A Strategy for Europe).</p>
<p><i>FOREST</i></p> <p>Information and monitoring of the</p>	<p>Project Reference: 2141 Contract Type: JRC Project Cost: Project Funding: Duration: End Date:</p>	<p>Forestry</p> <p>DG: ENV; AGRI; REGIO</p>	<p>This project aims to support an integrated approach to aspects of forest monitoring such as biodiversity, carbon sinks, soil conditions, forest pollution and forest fires. It is geared towards preparation of pan-European data sets for the integrated</p>	<p>No results found.</p> <p>Potentially the indicators relate to: Natural resources (t); Land use (st)</p>	<p>To SDS:</p> <p></p> <p>This project is more to do with data sets and detailed monitoring of forests</p>

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
forest environment	Action Line: 2.1.4 Land resources		<p>analysis of forest condition data/cause and effect relationships. Specific objectives include: Research and development of advanced modelling techniques, indicators and scenario analysis in relation to forest and forest biomass mapping, biodiversity and climate change.</p> <p>Project website: http://ies.jrc.ec.europa.eu/index.php?page=92</p>		<p>than developing indicators to support the SDS.</p> <p>To Policy Makers:</p> <p style="text-align: center;">😊</p> <p>The project has objectives and deliverables relating to specific policies and information systems and data sets such as CORINE etc.</p> <p>The project explicitly states that it aims to support LIFE+ 6EAP, civil protection fund, the EU Forest Strategy and ESDP, Habitats Directive (amongst others).</p>
	Project Reference: 22661 Contract Type: Specific	Biodiversity	A key tool for monitoring progress in achieving the EU target to halt the loss of	This project develop threshold indicators for different species. These do not equate	To SDS: 😞

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
<p><i>BIOSCORE</i></p> <p>Biodiversity impact assessment using species sensitivity scores</p>	<p>Targeted Research Project Duration: 36 months End Date: 2009-01-31 Project Funding: 911169.00 euro Project Cost: 1.58 million euro Action Line: POLICIES-1.5 Environmental assessment</p>		<p>biodiversity by 2010 is the set of EU headline biodiversity indicators. An EU requirement is to complement the indicator set and the development of biodiversity monitoring frameworks with tools to assess the impacts of Community policies on biodiversity in a cost-effective way. BioScore developed a tool for linking pressures from policy sectors to the (change in the) state of biodiversity as measured by the presence and abundance of individual species. The tool contains indicator values on the ecological preferences of more than 1000 species of birds, mammals, amphibians, reptiles, fish, butterflies, dragonflies, aquatic macro-invertebrates and vascular plants. These values are linked to policy-related pressures and environmental variables. This tool can be applied for assessing possible impacts of changes in selected environmental conditions. The database is able to assess more detailed impacts and the effectiveness of biodiversity conservation policies based on historic data as well as forecast future impacts based on existing scenario studies.</p> <p>Project Website: www.bioscore.eu.</p>	<p>directly with SDS indicators but might be used to build such indicators for the theme of Natural resources (t)</p>	<p>These do not equate directly with SDS indicators but might be used to build such indicators for the theme of Natural resources.</p> <p>To Policy Makers:</p> <p style="text-align: center;"></p> <p>The project is designed as a tool for policy makers to assess impacts of policies on biodiversity.</p>
Global Partnership					

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
Good Governance					
<u>Integration of Environment Concerns into Agriculture</u>	Project Reference: 2153 Contract Type: JRC Project Cost: Project Funding: Duration: Action Line: 2.1.5 Integration of sustainability into other policy areas	Agriculture	<p>This project deals with the provision of expertise, techniques and tools for assessing, quantifying and monitoring the evolution of agri-environmental conditions. The project focuses on the spatial dimension (i.e. integration of geographical information, mapping, spatial analysis, elaboration and provision of basic layer geographical data sets) in particular to develop indicators to assess the integration of environmental concern into the agricultural policy. The project argues that the challenge to monitoring this integration is to meet the objectives of providing information on the current state and changes in the conditions of the environment in agriculture; and using indicators for policy definition, implementation, monitoring, evaluation, and also for scenario development.</p> <p>Project website: http://ies.jrc.ec.europa.eu/index.php?page=79</p>	<p>No results found</p> <p>Indicators likely to relate to:</p> <p>Good governance (t) policy coherence and effectiveness (st)</p> <p>Natural resources (t); biodiversity (st); land use (st)</p>	<p>To SDS:</p> <p></p> <p>No results found so difficult to assess. However, the project covers only a small aspect of the SDS i.e. Environmental Policy Integration, and even then only one sector of this, i.e. how environmental considerations are integrated into agricultural policy.</p> <p>To Policy Makers:</p> <p>No results found so difficult to assess.</p> <p>Policies explicitly mentioned: CAP; 6EAP; wFD; 2010 target to halt the loss of biodiversity.</p>

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
<p><i>PASSO</i></p> <p>Participatory Assessment of Sustainable Development indicators on good governance from the Civil Society perspective</p>	<p>New FP7 Project</p>		<p>PASSO will assess Sustainable Development Indicators on Good Governance and its cross-cutting features from a social perspective. The starting point will be the list of SDIs adopted in the context of the EU Sustainable Development Strategy on the Good Governance Theme. Alternative sets of governance indicators from international initiatives (eg United Nations) will be considered too.</p> <p>These sets of indicators will be subject to a participatory assessment process allowing CSOs members to react to RTD performers, statisticians and experts' views in an iterative manner. The aim of the overall assessment will be:</p> <ul style="list-style-type: none"> • to appraise the relevance and efficiency of the existing indicators from the Civil society perspective in combination with experts views; • to identify gaps and suggest how to fill them, with possible amendments or development of new indicators; • to produce a priority list of such amendments/new developments based on a multi-criteria assessment of their relevance from the CSOs perspective • to draft recommendations for the improvement of SDS/SDIs. 	<p>Indicators are not yet developed but will be in the field of Good Governance.</p>	<p>Too early to assess - FP7 Project</p>

Project	Background information	Sector	Synopsis	Key indicators and link to SDS (indicators in bold font/ potential theme and sub-theme in normal font)	Policy Relevance
			Project Website: http://www.passo-project.org/index.php?option=com_content&view=article&id=49&Itemid=27		

APPENDIX 2: EUROSTAT SUSTAINABLE DEVELOPMENT INDICATORS

Theme 1: Socio-Economic Development

Level 1	Level 2	Level 3
1. Growth rate of GDP per inhabitant	Sub-theme: ECONOMIC DEVELOPMENT	
	2. Total investment	5. Dispersion of regional GDP per inhabitant
	3. Public investment	6. Net national income
	4. Business investment	7. Gross household saving
	Sub-theme: INNOVATION, COMPETITIVENESS AND ECO-EFFICIENCY	
	8. Growth of labour productivity per hour worked	9. Total R&D expenditure
		10. Real effective exchange rate
		11. Turnover from innovation
		12. Effects of innovation on material and energy efficiency
		13. Energy intensity of the economy
	Sub-theme: EMPLOYMENT	
	15. Employment rate	16. Employment rate, by gender
		17. Employment rate, by highest level of education attained
		18. Dispersion of regional employment rates, by gender
		19. Unemployment rate, by gender
20. Unemployment rate, by age group		

Theme 2: Sustainable Consumption and Production

Level 1	Level 2	Level 3	
1. Resource Productivity	Sub-theme: RESOURCE USE AND WASTE		
	2. Municipal waste generated	3. Components of domestic material consumption	
		4. Domestic material consumption by material	
		5. Municipal waste treatment, by type of treatment method	
		6. Generation of hazardous waste, by economic activity (<i>not yet available</i>)	
		7. Emissions of acidifying substances by source sector	
		8. Emissions of ozone precursors by source sector	
	10. Electricity consumption by households	9. Emissions of particulate matter by source sector	
		Sub-theme: CONSUMPTION PATTERNS	
		11. Final energy consumption by sector	
	14. Organisations with an environmental management system	12. Consumption of certain foodstuffs per inhabitant	
		13. Motorisation rate	
		Sub-theme: PRODUCTION PATTERNS	
15. Eco-label awards			
16. Area under agri-environmental commitment			
Contextual indicators	17. Area under organic farming		
	18. Livestock density index		
	- Number of households		
	- Household expenditure per inhabitant, by category		

Theme 3: Social Inclusion

Level 1	Level 2	Level 3
1. At-risk-of-poverty rate, by gender	Sub-theme: MONETARY POVERTY AND LIVING CONDITIONS	
	2. At-persistent-risk-of-poverty rate	3. At-risk-of-poverty rate, by age group
		4. At-risk-of-poverty rate, by household type
		5. Relative at-risk-of-poverty gap
		6. Inequality of income distribution
	Sub-theme: ACCESS TO LABOUR MARKET	
	7. People living in jobless households, by age group	8. In-work poverty
		9. Total long-term unemployment rate
		10. Gender pay gap in unadjusted form
	Sub-theme: EDUCATION	
	11. Early school leavers	12. At-risk-of-poverty rate, by highest level of education attained
		13. Persons with low educational attainment, by age group
		14. Life-long learning
		15. Low reading literacy performance of pupils
		16. Individuals' level of computer skills
		17. Individuals' level of internet skills
	Contextual indicator	- Public expenditure on education (for sub-theme Education)

Theme 4: Demographic Changes

Level 1	Level 2	Level 3
1. Employment rate of older workers	Sub-theme: DEMOGRAPHY	
	2. Life expectancy at age 65, by gender	3. Total fertility rate
		4. Net migration including corrections
	Sub-theme: OLD-AGE INCOME ADEQUACY	
	5. Aggregated replacement ratio	6. At-risk-of-poverty rate of elderly people
	Sub-theme: PUBLIC FINANCE SUSTAINABILITY	
	7. General government debt	8. Average exit age from the labour market
	Contextual indicators	<ul style="list-style-type: none"> - Old age dependency ratio (for sub-theme Demographic changes) - Projected old age dependency ratio (for sub-theme Demographic changes) - Public expenditure on care for the elderly (for sub-theme Public finance sustainability)

Theme 5: Public Health

Level 1	Level 2	Level 3	
1. Healthy life years and life expectancy at birth, by gender	Sub-theme: HEALTH AND HEALTH INEQUALITIES 2. Death rate due to chronic diseases, by gender	3. Healthy life years and life expectancy at age 65, by gender	
		4. Suicide death rate, total by age group	
		5. Suicide death rate, males by age group	
		6. Suicide death rate, females by age group	
		7. Self reported unmet need for medical examination or treatment, by income quintile	
		8. Dispersion of regional death rates (not yet available)	
		Sub-theme: DETERMINANTS OF HEALTH	
		9. Index of production of toxic chemicals, by toxicity class	10. Population exposure to air pollution by particular matter
	11. Population exposure to air pollution by ozone		
	12. Population living in households considering that they suffer from noise		
	13. Serious accidents at work		

Theme 6: Climate Change and Energy

Level 1	Level 2	Level 3	
1. Greenhouse gas emissions	Sub-theme: CLIMATE CHANGE 3. Greenhouse gas emissions by sector (including sinks)	4. Greenhouse gas emissions intensity of energy consumption	
		5. Projections of greenhouse gas emissions	
		6. Global surface average temperature	
	Sub-theme: ENERGY		
	2. Share of renewables in gross inland energy consumption	7. Energy dependency	8. Gross inland energy consumption by fuel
			9. Electricity generated from renewable sources
10. Share of biofuels in fuel consumption of transport			
11. Combined heat and power generation			
12. Implicit tax rate on energy			

Theme 7: Sustainable Transport

Level 1	Level 2	Level 3
1. Energy consumption by transport mode	Sub-theme: TRANSPORT AND MOBILITY	
	2. Modal split of passenger transport	4. Volume of freight transport
	3. Modal split of freight transport	5. Volume of passenger transport
		6. Investment in transport infrastructure by mode (<i>not yet available</i>)
	Sub-theme: TRANSPORT IMPACTS	
	7. Greenhouse gas emissions by transport mode	8. People killed in road accidents
	9. Emissions of ozone precursors from transport	10. Emissions of particulate matter from transport
		11. Average CO ₂ emissions per km from new passenger cars
	Contextual indicator	
		- Price indices for transport

Theme 8: Natural Resources

Level 1	Level 2	Level 3
1. Common Bird Index	Sub-theme: BIODIVERSITY	
	3. Sufficiency of sites designated under the EU Habitats directive	4. Deadwood (<i>not yet available</i>)
	Sub-theme: FRESH WATER RESOURCES	
	5. Surface and groundwater abstraction as a share of available resources	6. Population connected to urban wastewater treatment with at least secondary treatment
		7. Biochemical oxygen demand in rivers (<i>not yet available</i>)
Sub-theme: MARINE ECOSYSTEMS		
2. Fish catches taken from stocks outside safe biological limits	8. Concentration of mercury in fish and shellfish (<i>not yet available</i>)	9. Size of fishing fleet
	Sub-theme: LAND USE	
	10. Built-up areas	12. Forest trees damaged by defoliation
	11. Forest increment and fellings	13. Land at risk of soil erosion (<i>not yet available</i>)

Theme 9: Global Partnership

Level 1	Level 2	Level 3
1. Official Development Assistance as share of gross national income	Sub-theme: GLOBALISATION OF TRADE	
	2. EU imports from developing countries, by income group	3. EU imports from developing countries by group of products
		4. EU imports from least-developed countries by group of products
		5. Aggregated measurement of support (<i>not yet available</i>)
	Sub-theme: FINANCING FOR SUSTAINABLE DEVELOPMENT	
	6. Total EU financing for developing countries, by type	7. Foreign direct investment in developing countries, by income group
		8. Official development assistance, by income group
		9. Untied official development assistance
		10. Bilateral official development assistance by category
	Sub-theme: GLOBAL RESOURCE MANAGEMENT	
11. CO ₂ emissions per inhabitant in the EU and in developing countries		
Contextual indicators	<ul style="list-style-type: none"> - Population living on less than 1USD a day (for sub-theme Financing for SD) (<i>not yet available</i>) - Official development assistance per inhabitant (for sub-theme Financing for SD) - Population with sustainable access to an improved water source (for sub-theme Global Resource Management) (<i>not yet available</i>) 	

Theme 10: Good Governance

Level 1	Level 2	Level 3
	Sub-theme: POLICY COHERENCE AND EFFECTIVENESS	
	1. New infringement cases, by policy area	2. Transposition of Community law, by policy area
	Sub-theme: OPENNESS AND PARTICIPATION	
	3. Voter turnout in national and EU parliamentary elections	4. E-government on-line availability
		5. E-government usage by individuals
	Sub-theme: ECONOMIC INSTRUMENTS	
6. Shares of environmental and labour taxes in total tax revenues		
Contextual indicator	- Level of citizens' confidence in EU institutions (for sub-theme Policy coherence and effectiveness)	

EUROPEAN COMMISSION

Directorate-General for Research
Directorate I – Environment
Unit I.2 – Sustainable Development

Contact: Nicole Dewandre

*European Commission
Office CDMA 03/10
B-1049 Brussels*

Tel. (32-2) 29-94925

Fax (32-2) 29-84686

E-mail: nicole.dewandre@ec.europa.eu

