# A FRAMEWORK FOR INDICATOR-BASED REPORTING ON SUSTAINABLE CONSUMPTION AND PRODUCTION

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**Abstract**

The policy area of sustainable consumption and production (SCP) takes a holistic perspective on how society and the economy can be changed and better aligned with the goals of sustainability. This paper presents a framework developed for the selection of Indicators for use by the European Environment Agency (EEA) for assessing and reporting on progress towards SCP at European and national level. The approach taken by the EEA and its European Topic Centre on SCP includes a number of aspects which are new to the field of SCP indicator development. The first is the development of the framework itself including a vision of SCP which is used to guide both the initial selection of indicators but also provides impetus to the future development of improved indicators for measuring progress. A second novel aspect is the interim step of formulating a set of policy questions to which an indicator set can provide answers. In practice, this entails that the indicator set becomes forward looking and not limited by current data availability. A final novel element is the integration of indicator communication and evaluation directly into the framework. The EEA indicator framework links policy questions and answers to form narratives to better communicate progress in SCP and allow easier and more interesting interpretation of the indicator set as a whole for the end user.

**Keywords**

*Sustainable, consumption, production, indicator, framework*

## 1. Introduction

The policy area of sustainable consumption and production (SCP) takes a holistic perspective on how society and the economy can be changed and better aligned with the goals of sustainability. At the World Summit on Sustainable Development in Johannesburg 2002, all governments agreed on a Plan of Implementation that contained a strong focus on SCP, stating that fundamental changes in the way societies produce and consume are indispensable for achieving global sustainable development (UNCSD, 2002). The following year the global Marrakesh Process was initiated to respond to the specific call of the Plan of Implementation to develop of a 10-year framework of SCP programmes beginning in 2012.

In 2008 the European Commission met commitments made in Johannesburg by adopting an SCP Action Plan for the European Union (European Commission, 2008). At the Member State (MS) level a number of countries have also developed and adopted of SCP strategies and/or action plans as a first step towards integration of SCP goals and concepts into environmental and economic policy development (EEA, 2008a). Other EEA member countries are only just beginning, or yet to begin, engaging actively in coordinated SCP policy and action, although most have policies which address some aspects of SCP (Watson *et al*, 2009).

The selection and use of indicators to measure whether countries or regions are moving towards strategic and thematic policy goals is a crucial element of the policy cycle, and this is equally true for SCP policy development.

A number of international organisations as well as an increasing number of governments have developed sets of indicators for SCP, mostly as part of wider ranging indicator sets for sustainable development but also as part, or in support, of dedicated SCP strategies (ETC/SCP, 2010).

A brief review of the available indicator sets found that many of them lacked an underlying rigorous framework for selection of indicators and for reporting on these indicators (ETC/SCP, 2010). Without such a framework indicator selection can be haphazard, guided more by comitology than a grounded understanding of SCP, and be sourced only from already operational indicators which may not be those best suited to answering the key SCP policy questions. For example, SCP indicators which are a part of a larger set of sustainable development indicators (SDI) often comprise only those indicators which do not have relevance elsewhere under other sustainable development themes such as energy and transport. As a result they are often limited to some ‘leftovers’ comprising material flows,

some sector specific eco-efficiency indicators and consumption-based indicators (i.e. sales of eco-labelled goods) (ETC/SCP, 2010).

In addition, without an underlying framework for selection there is little impetus for further improvements of the indicator set to better measure real progress towards SCP. A fundamental gap seems to be a lack of consensus and clarity in what SCP actually comprises, in what the goals of SCP are and how SCP is differentiated from sustainable development (ETC/SCP, 2010). According to Karlsson et al. (2007), the usefulness of any indicator intended to measure how sustainable an economy is depends on how well the goal against which progress is being measured is defined.

The European Environment Agency (EEA) has an analytical, information provision and capacity building role to play in the area of SCP policy and action development by EEA member and collaborating countries. Indicator based reporting also plays a core role in EEA communication on the state of the European environment. Following discussions with EEA member countries, DG Environment, Eurostat, UNEP and UNDESA, the EEA identified a gap for a stand-alone set of SCP indicators that would enable the EEA to regularly assess and report on progress towards SCP in Europe. It was agreed that these indicators should reflect the environmental focus of the Agency and be based on a carefully chosen framework for selection and presentation of indicators, with a starting point in definitions and understanding of SCP. The development of SCP indicators was subsequently identified by participants at the European regional SCP conference – Time for Action - held in Slovenia, 2007, as a key facilitating factor in progressing towards SCP in Europe (EEA, 2008).

In 2007 the EEA launched an SCP Indicator Project in cooperation with its Topic Centre on Resource and Waste Management which was superseded by the European Topic Centre on SCP in 2009. The main objective of this project is to develop a set of indicators for the EEA to assess and report on progress in SCP in Europe and make available the framework and the indicators for use by EEA member and collaborating countries.

An important additional objective is for the indicator set to contribute towards developing a common understanding in EEA member and collaborating countries of what SCP actually entails. The indicator set should both paint a picture of SCP, from the perspective of the EEA-Eionet[1], and then measure progress against it. This requires a well-grounded approach with a starting point in current definitions and understandings of SCP and the development of an underlying indicator framework which sets out a vision and scope of SCP, as viewed by the EEA. The development of such a framework is identified by the updated Bellagio

[1] European environmental information and observation network

principles as an essential underlying element of sustainable development indicators (IISD, 2009). The indicator EEA framework will guide the selection of indicators for reporting and the subsequent assessment and communication of indicators. The framework should also include for the regular review and revision of both the selected indicators and the central vision and scope of the framework since it is unlikely that these will present a fully satisfactory picture of SCP in the first attempt. It is expected that definitions and understanding of SCP and the SCP indicator set will evolve together over time.

More specifically the framework and indicators should:

a) allow measurement of real progress towards more sustainable European consumption and production patterns;
b) contribute to SCP policy and understanding by presenting a clear picture of the vision and scope of SCP as interpreted by the EEA & ETC/SCP team;
c) create a communication tool whose overall value is greater than the sum of its parts; and
d) take a long term view not constrained by current availability of indicators and data

The key target group would be policy makers and policy implementers but reporting mechanisms should also cater for politicians, the general public, businesses and civil society.

This paper describes the indicator reporting framework which emerged from the first crucial stage of the project.

## 2. Approach and Methodology

### 2.1 Review of Existing Indicator Sets

The project began with a knowledge gathering stage in which a review of existing indicator sets was carried out. This review has helped the EEA and ETC-SCP team to revise the objectives and approach of the project.

A number of international organisations as well as a handful of governments have developed sets of indicators for SCP, mostly as part of wider ranging indicator sets for sustainable development (SD) but also as part, or in support of, dedicated SCP strategies.

International organisations involved in the development of SCP Indicators and Indicator sets include the UN Commission for Sustainable Development, its Secretariat in UNDESA who developed an SCP indicator set under the UN Work Programme on Changing Consumption and Production Patterns (UNDESA, 1998), and the OECD who developed a set of

sustainable household consumption indicators (OECD, 1999). More recently UNEP has been involved in providing guidance for developing countries in developing SCP action plans including the development of a model SCP Indicator framework for use by developing countries (UNEP, 2008).

At the EU level the EU Sustainable Development Strategy requires Eurostat to develop a set of Sustainable Development Indicators (SDI). The first SDI monitoring report was published in 2007 (Eurostat, 2007) and includes a theme area and associated indicators on SCP. The Joint Research Centre, together with Eurostat, is developing LCA-based indicators for monitoring the environmental impacts of resource use of selected products and of waste management options (JRC, 2010).

A number of EU Member States have also developed national SCP indicators either as stand alone sets or indicators embedded in a broader set of indicators used to monitor national sustainable development strategies. Finally, SCP indicator sets have been developed by a number of research groups (e.g. Heyerick and Mazijn, 2002; Lorek and Spangenberg, 2001). A detailed review of existing international and European SCP indicator sets was carried out to identify gaps and strengths/weaknesses in current indicator sets and fine-tune the objectives and approach of the project (ETC/SCP, 2010).

The main findings of the review were as follows:

- Existing SCP indicator sets vary significantly in terms of vision, thematic and geographical scope, reflecting a general lack of consensus on what SCP entails. The indicator sets appear in general to have emerged from independent processes without reference to any common goals or visions other than loose definitions of SCP emerging from international conferences.
- Most indicator sets are limited to available data and do not give room for, or impetus to drive future development of indicators.
- Efficiency and Performance-type indicators have been included in most indicator sets showing clearly in which direction trends should move towards greater SCP, but few indicators consider absolute SCP end goals, or global environmental thresholds.
- Most of the existing sets take little account of environmental pressures embodied in traded goods, limiting their scope rather to direct environmental pressures occurring in their own countries. Since pressures embodied in trade represent a significant proportion of total pressures attributable to consumption, this is considered to be an important gap.

- Few of the indicator sets appear to have included interpretation and communication of indicators as an integral part of the indicator framework. The linkage of indicators through reporting text has occurred in some cases (e.g. Eurostat's SDI indicators) but these narratives have not been considered prior to indicator selection. It is felt that for the indicators to be able to inspire change, communication and narratives linking the final indicators need to be considered at an early stage, and should be integrated directly into the indicator framework.

### 2.2 Approach Used for the EEA SCP Indicator Framework

The findings from the review of existing SCP indicator sets as summarised above provided important contributions in framing the development of an SCP indicator set for EEA reporting.

According to the original Bellagio principles (IISD, 1997) assessment of progress towards sustainable development should be guided by a clear vision of sustainable development and goals that define that vision[2]. The same is true of SCP. The lack of such a vision appeared to weaken most existing SCP indicator sets. Therefore a crucial element of the EEA/ETC-SCP approach would be to develop a vision of SCP as the central core of their SCP indicator framework.

The Vision was developed following a review of definitions of, and policy statements on, SCP as they appear in key international and European policy and strategy documents on SCP including, for example, the Johannesburg Plan of Implementation, the Renewed EU Sustainable Development Strategy, the European Commission's SCP Action Plan and the conclusions of the European Stakeholders Meeting on SCP at Ostend. These were synthesised and further developed and structured into a vision which could guide the development of the remainder of the framework taking into account the perspective and mandate of the EEA.

The revised Bellagio principles also identify the need for a defined thematic and geographical scope within an indicator framework (IISD, 2009). The EEA SCP indicator framework contains such a scope which takes its starting point in the vision. One principle within the EEA's vision is that the set needs to consider absolute SCP end goals, e.g. in the form of environmental thresholds. The scope operationalises this through a dual approach where trends in both direct environmental pressures from a territorial perspective and direct

[2] The updated BellagioSTAMP principles go one step further and defines the guiding goal as the delivery of well-being within the capacity of the biosphere to sustain it for future generations (IISD, 2009)

*and indirect* global pressures caused by European/national consumption (including pressures embodied in traded goods and services) are reported on and, where possible, assessed against relevant environmental thresholds.

With a view to optimising the selection and communication of indicators, the team opted for an approach which has earlier been used successfully by the EEA for indicator-based reporting on the environmental effects of transport (EEA, 2009) and energy (EEA, 2008b) but which, so far, has not been used in the field of SCP. The approach is to guide the reporting structure for SCP indicators and resulting narratives through the formulation of a set of policy relevant questions, which form an integral part of the indicator framework (Stanners et al, 2007). The formulation of questions are guided by the vision and scope of the framework. The question based approach has a number of useful advantages over other methods for organising and communicating on indicators:

- It takes as its point of departure the needs of the user.
- It helps identify and direct precisely the stories that need to be told with the indicators in order to answer the questions helping to guide the overall thread of the indicator based narratives.
- The question formulation stage need not be limited by knowledge of what types of indicators are currently available. The questions will rather reflect the long-term *wishes* for an indicator set. The questions can be answered using continually improving indicators at consecutive reporting stages.
- The questions can act to guide the selection of indicators for reporting. Each question can be answered using one or more indicators.
- Full interpretation of the implications of trends in each indicator are provided directly within the assessment of the indicators reducing the risk of their misinterpretation and allowing clear communication of messages.

The use of a question-based approach further accommodates another principle of the approach of the EEA/ETC-SCP: that of integrating the communication and interpretation of indicators directly into the indicator framework. This is further applied by providing within the framework guidance for the interpretation of observed trends in indicators.

## 3. The SCP Indicator framework

The result of the work described above is the SCP indicator framework that will subsequently be used by the EEA to guide the selection of a set of indicators to measure progress on SCP in Europe. The framework can be broken into the following elements:

1. Vision and Scope
2. Organisation of Indicator questions
3. Selection of Indicator Questions
4. Guidance for the selection of indicators
5. Interpretation of Indicator Trends in Reporting.

### 3.1 Vision and Scope

#### 3.1.1 The SCP Vision

In like manner to the concept of sustainable development, the sustainable consumption and production paradigm, provides on its own no concrete targets on what to sustain, to what extent and under what time scales (Stengers, 1996, Bartelmus 2003, Parris and Kates 2005). However, central concepts of SCP can be drawn from a review of statements made on SCP as they appear in some key SCP international and European policy and strategy documents.

According to the Johannesburg Plan of Implementation, fundamental changes in the way societies produce and consume are indispensable for achieving global sustainable development (UNCSD, 2002). Sustainable consumption and production (SCP) can, therefore, be considered as the practical means by which society and economies can be re-aligned so that we achieve the key goals of sustainable development (European Council, 2007).

The overriding goal of sustainable development is to improve the quality of human life while living within the carrying capacity of supporting eco-systems (IUCN *et al*, 1991) and to meet the needs of the present (global) generation without compromising the ability of future generations to meet their own needs (European Council, 2006). In other words without overstretching the natural renewal rates and absorption limits of the earth's biosphere, without causing unacceptable degrees of permanent change in the biosphere, and without depleting non-renewable resources to an extent which jeopardises future generations' access to a reasonable quality of life.

Other principles of sustainable development which are particularly relevant for SCP are: accepting responsibility at the local level for global social development; increasing equity in

well-being within and between societies; ensuring a more equal access to services and a fairer distribution of the environmental and health impacts resulting from our activities.

There is considerable evidence that current patterns of consumption in European and other OECD countries, and the production forms that they are driving, are not sustainable. We are responsible for a high per capita use of renewable resources and output of emissions and wastes that, if followed by all of humankind, would exceed ecological limits several times over (European Commission, 2008a; UK Government, 2005). Our heavy demand on global non-renewable resources is leading to scarcity in some key resources and limiting access to these, both to developing countries today and for future generations.

Moreover, much of the negative environmental and health effects of unsustainable consumption and production in rich countries are being experienced by the less well off within our society and particularly in economically less developed regions who are themselves not benefiting to the same extent from increasing wealth. This leads to increasing global and local inequalities.

Some specific goals and principles for Europe to tackle these problems through the application of SCP can be identified from the literature:

- Europe should reduce absolute levels of renewable and non-renewable resource use, and outputs of key emissions and wastes associated with its consumption and production while maintaining or improving the well-being of its citizens (UK Government, 2005).
- Following on from the principle of distributional equity (Harris, 2001), European countries should take a share in responsibility for ensuring that all global citizens have access to basic needs. They should encourage fairer distribution of environmental, social and economic impacts of consumption and production between different societies and within those societies.
- European countries should take responsibility for, and reduce, the negative impacts of their consumption and the global value chains its consumption activates, on environment, health and well-being in other regions of the world (European Commission, 2008b; UK Government, 2005).
- Where thresholds of renewable resources and limits in absorption capacity of the global biosphere are understood, European per capita resource use and emissions

should be benchmarked against a global equitable 'fair share' i.e. global threshold limits divided by global population[3].

- Europe should aim for production processes which minimise material and energy inputs and minimise outputs of emissions and unusable or damaging wastes; products which require low energy input during their use phase and which are designed for reuse, repair or recyclability and make use of more environmentally friendly materials (UNCSD, 2002); and lifestyles and consumption patterns with reduced direct and indirect environmental pressures and which favour products and services with low life cycle impacts, reduced energy use, resource use and reduced production of hazardous wastes (UNCSD, 2002).

SCP is considered in this Vision as encompassing ***both*** the goals included in the bullet points above ***and*** the setting up of the framework conditions that will ensure their achievement. These framework conditions need to address the underlying drivers of unsustainable consumption and production patterns.

A review of available literature identified a number of framework conditions and measures for a transition towards SCP which the EEA & ETC/SCP further defined and grouped as follows:

- The integration of sustainability thinking into all policy development (UNCSD, 2002; UNEP, 2004) and in particular in policy areas with particular relevance to SCP: transport, energy, urban planning, agriculture, foreign aid and education. In addition, the application of life-cycle and holistic thinking to policy assessment where exchanges of environmental impacts between media, over time and between regions are considered (UNEP and EEA, 2007). Promoting SCP globally at government level but also through support of SMEs towards greater sustainability in developing and transition countries (UNEP, 2004).

- Encouragement and enforcement of reductions in resource and emissions intensity of consumption and production through both regulation and through economic measures and incentives (UNEP, 2004; UK Government, 2005; European Council, 2008). Appropriate regulation will include environmental regulation of key polluting industries, minimum environmental standards for products, restricting or banning the use of hazardous substances etc. (European Council, 2008). Economic measures and incentives will include: a shift from labour tax towards taxes on emissions and on

[3] The global 'fair share' approach has been proposed in the form of the *converge and contract* model by, for example, den Elzen and Mennhausen (2005) as a model for post-Kyoto national greenhouse gas emissions targets. The converge and contract model has formed the basis for the European Council's adoption in February 2009 of an 80% non-binding target for reductions in greenhouse gases by 2050 as Europe's contribution to keeping global temperature increases to under the 2 deg C 'tipping point'.

wasting high impacting or scarce resources (UNEP, 2004); setting up or creating better conditions for investment in eco-innovative business and low carbon technologies (UNEP, 2004; European Council, 2008), and for new business models; and using economic incentives to reward energy conservation and dematerialisation both in business and for private consumers.

- Active leadership and trail blazing by public administration and business through greater transparency of their environmental and social impacts (UNCSD, 2002), efforts to decrease these impacts (UNEP, 2004) and through more sustainable procurement along their supply chains and more sustainable business plans (UNCSD, 2002), thus seeding and expanding markets for greener goods, services and eco-innovation (European Council, 2008).
- Engagement of citizens in more sustainable consumption through the inclusion of sustainable consumption in national educational programmes and providing information to the general public over the environmental consequences of different lifestyle choices (UNEP, 2004; European Council, 2008).
- Enabling consumers to follow less energy and resource intensive lifestyles and make better choices through providing less energy and resource intensive infrastructure and products; requiring environmental information on products (European Commission, 2008b); making greener products more visible (UNEP, 2004); promoting more sustainable business-marketing plans (UNEP, 2004); and making sustainable behaviour affordable and attractive both economically and socially.

The SCP Indicator set should monitor progress in how well these necessary framework conditions are being put in place.

It should also, however, include indicators which '*test the temperature´* by monitoring the extent to which the changing framework conditions are moving us closer towards achieving absolute reductions in resource use, reductions in environmental pressures under conditions of maintained or improved well-being etc. If they are not moving us closer then additional or stronger framework conditions may be necessary.

### 3.1.2 Thematic and geographical scope

Sustainable development is often described as comprising three main pillars: the economic, the environmental and the social[4]. However, the relative weighting which a government or institution gives to these pillars can vary depending on local circumstances and the mandate of the institution.

The EEA's own mandate lies principally within environmental reporting. The scope of the SCP indicator reporting described in this paper focuses on environmental pressures crossing the interface between the economy and the environment: emissions and wastes in one direction and the extraction of natural resources in the other, on the drivers of those environmental pressures within the economy and on responses and actions aimed at adjusting these drivers towards greater sustainability[5].

Links between the three pillars of sustainability will be made more specific through decoupling indicators. Economic growth is recognised by the EEA as a goal of member and collaborating countries and the European Union as laid down, for example, in the Lisbon Strategy. To this end, indicators which measure the extent to which further economic progress can be made under conditions of reduced environmental pressure will be included. However, the seeds are already evident of a possible long term shift in the way progress of nations is benchmarked; a shift from economic measures, such as GDP, to measures also covering social and environmental elements (European Commission, 2009).

With respect to elements of the economy, the indicator framework makes use of a life-cycle approach including resource extraction, production, products, consumption and waste. Emphasis is placed on those production sectors, products and consumption clusters which have been identified (Tukker et al, 2006; ETC/SCP, 2009) as having greatest environmental implications.

A further important element of the scope for the indicator set is a definition of the geographic reach it should cover. The EEA will use the indicator set for measuring progress towards SCP in European countries. However, SCP is a global challenge and actions taken by European governments, business and consumers can have environmental and social consequences stretching far beyond national borders.

With respect to environmental pressures, a state or region can take responsibility for direct pressures arising nationally and/or indirect pressures arising globally as a result of national

[4] Both an institutional pillar (UNCSD, 1996) and a cultural pillar (Hawkes, 2001) have been variously suggested as additional pillars of sustainable development

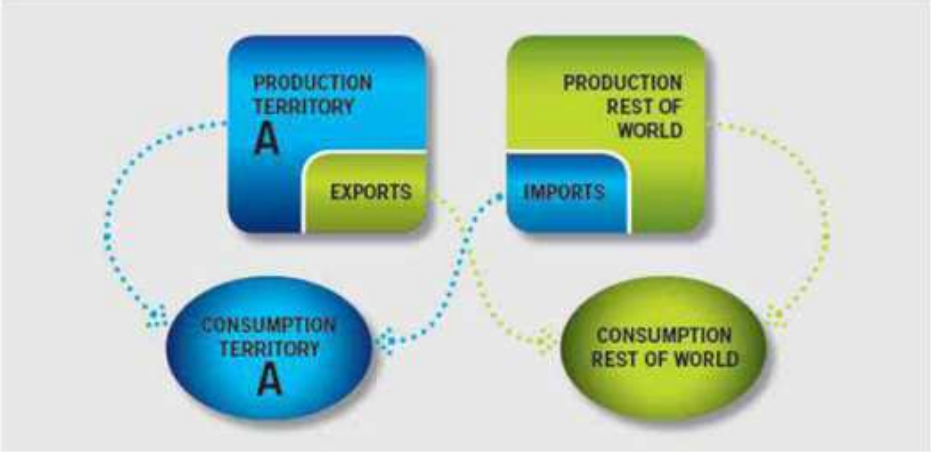
[5] Environmental State and Impact elements of the EEA's DPSIR framework are not included since these are covered more than adequately by the EEA's thematic environmental indicators

consumption (see Figure 1). In an increasingly global market place the environmental pressures arising in each case can be markedly different. However, to date most monitoring systems only include the direct pressures arising in a country i.e. the *production perspective*. This can give a false picture respect to trends in environmental pressures when seen from a global perspective. A development which reduces direct pressures in Europe can potentially give increases in global pressures e.g. if pressure-intensive production shifts to regions where the production is less environmentally efficient but cheaper than in Europe.

National policy aimed at reducing direct and indirect environmental pressures caused by national *consumption,* meanwhile, should normally give SCP benefits at whatever geographic scale action is viewed. Thus false positives can be avoided by monitoring pressures caused by national consumption i.e. taking *a consumption perspective (*Watson & Moll, 2008*)*.

**The Production and Consumption perspectives**

In a global economy there can be large differences between the products and services that a single country or region produces and the products and services which its households and the government consume. Similarly there can be significant differences between the environmental pressures associated with a country's total production and the pressures associated with the products and services it consumes (see Watson and Moll, 2008).




***Source: Carbon Trust (2006)***

We term the first scenario the ***production perspective.*** This focuses on *direct* pressures arising from national production (including public and private services) and from households (in the diagram identified by the Production Territory A square including the green Exports corner).

The alternative perspective for viewing nationally or regionally caused pressures can be described as the ***consumption perspective*** (in the diagram identified by all the blue elements). This comprises all environmental pressures caused directly or indirectly by national consumption. This includes pressures from national production (including public and private services) for the home market and pressures occurring in other countries to produce our imported goods. Finally it also includes direct pressures from private households.

Figure 1: Two alternative perspectives for viewing national environmental pressures

On the other hand, national government's arguably have greater influence over production taking place in their own country than over production taking place overseas.

As a result, the EEA SCP Indicator set will include both perspectives: direct pressures arising from European production and the direct and indirect global pressures arising from European consumption. It will consider responses, which can both influence production processes in Europe and European consumption behaviour and its implications on the rest of the globe. Finally, it will include investments and aid from Europe to developing and transition trading partners aimed at improving eco-efficiency of global product chains ending in Europe.

### 3.2 Organisation of Indicator questions

Indicator questions and the indicators used to answer them require some greater organisation and framing to aid communication and reporting. Guidance for this organisation can be taken from the SCP vision and scope. The organisational structure for the questions and resulting indicators is given in Figure 2.

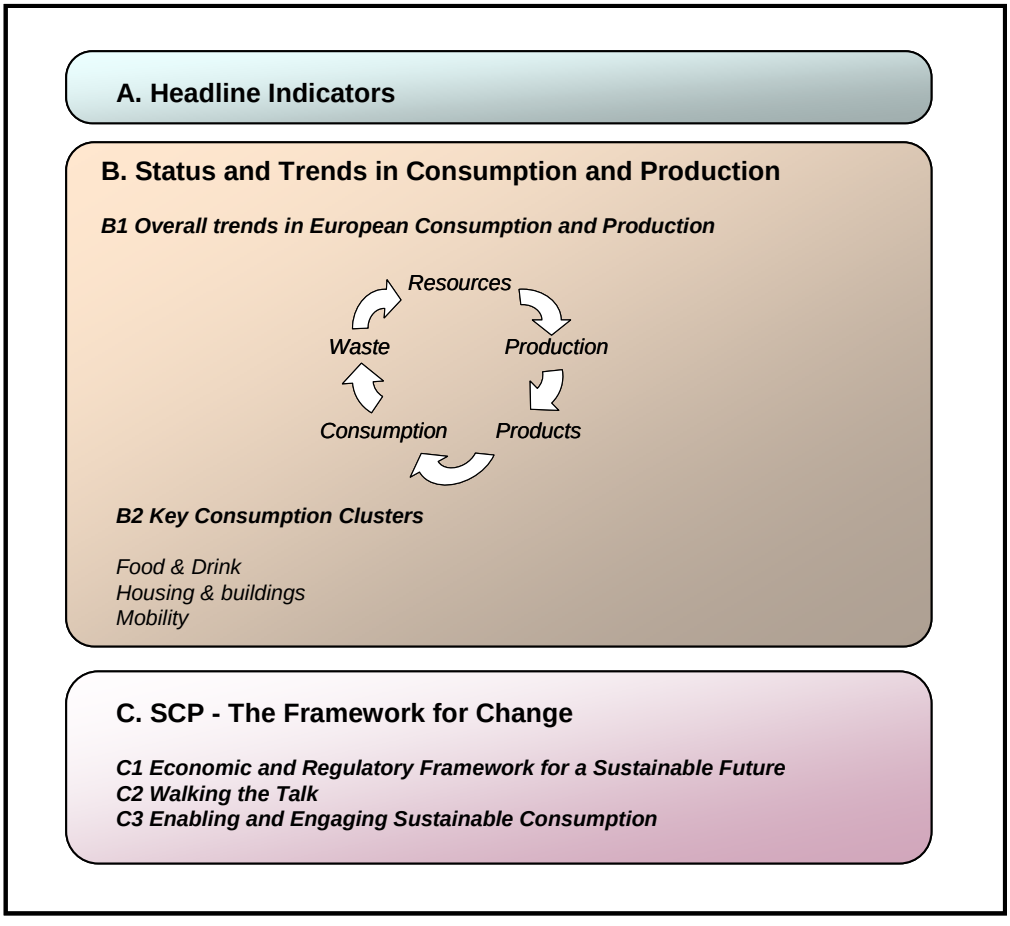



Figure 2: The organisational structure for indicator questions

Firstly, for the sake of communication to politicians and members of the public, a handful of indicator questions and indicators taking a broad overview of SCP are to be selected under the heading: **A. Headline Indicators.**

The second main theme, **B. Status and Trends in Consumption and Production**, will monitor to what extent environmental pressures and resource use from European consumption and production are decreasing, and whether the immediate drivers of these pressures are moving in the "right" or "wrong" direction. This provides the '*Testing the temperature'* area of the indicators.

The third theme, **C. The Framework for Change**, will monitor how far key actors have progressed in changing the *framework conditions* which can engender change and bring us closer to SCP.

A number of sub-sections have been included under each of the two main areas, i.e. B and C. The Status and Trends area includes two subsets.

- ***B1. Overall trends in European Consumption and Production*** will provide a brief overview of progress in each of the key life-cycle-thinking elements identified within the scope: resources, production, products, consumption, and waste.

- ***B2. Key Consumption Clusters*** will focus on those individual consumption clusters, which have been shown to activate the greatest environmental pressures. Questions under these clusters will look at overall pressures caused by European consumption by each cluster along the global value chains supplying it. They will also consider the main drivers contributing to trends in these life-cycle pressures. Work by the EEA and others have identified that these key consumption clusters in Europe are *Food & Drink, Housing & Buildings* and *Mobility* (Tukker et al, 2006; ETC/SCP, 2009).

The Framework for Change area includes three main subheadings. For these, inspiration has been drawn from the publication 'I Will if You Will' by the UK Sustainable Consumption Roundtable (2006), which presents a concept called the 4Es for creating conditions for more sustainable consumption under the elements of Encouraging, Exemplifying, Engaging and Enabling.

The EEA & ETC-SCP team has further adapted them as a set of conditions for bringing about the wider goal of sustainable consumption and production. This has led to three distinct areas as follows:

- ***C1. Economic and Regulatory Framework for a Sustainable Future:*** This includes the use of regulatory and economic instruments for encouraging more sustainable consumption and production patterns. It covers amongst others regulation of product and production standards, the removal of unhelpful or damaging subsidies and shifts in taxes from labour to emissions and resources. It also covers availability of investments for sustainable and innovative technologies and for improved eco-efficiency in production overseas.
- ***C2. Walking the Talk***: This relates to Government and Business taking direct SCP action to act as forerunners to inspire and seed more SCP action in the remainder of society. This can include sustainable procurement, environmental management, the environmental performance of public services, new types of business models etc. It also can include transparency of the environmental performance of government and individual business, and possibly public involvement.
- ***C3. Enabling and Engaging Sustainable Consumption***: This area has two main prongs. Firstly increasing the awareness amongst citizens of the impacts of their activities and secondly enabling and empowering them to make subsequent changes to more sustainable lifestyles. Enablement and empowerment of sustainable lifestyles will include providing them with product information, access to and promotion of sustainable products via, for example, choice editing by retailers and making sustainable lifestyles affordable and attractive both economically and socially.

### 3.3 Selection of Indicator Questions

The formulation of questions for each themes and sub-themes presented above constituted the next stage of the development of the EEA SCP indicator set. The selection of questions has been guided by the SCP vision and scope and also the broad organisational structure described above. The questions form an integral part of the framework.

A set of principles or criteria were developed for the selection of questions. Normally one talks about selection criteria for indicators. However, the use of a question-based approach to the indicator set and indicator reporting requires two sets of selection criteria: one for the questions and one for the indicators to answer them.

These criteria can be quite different. Many of those for the selection of questions have a broad focus aiming to ensure consistency, correct balance and focus on different pillars, themes and types of indicators, and completeness, clarity and usefulness of the full set of questions i.e. these can be described as *collective* criteria or principles. The selection criteria

for indicators can be described more as *filter* criteria focusing on the suitability of an individual indicator to answer the question.

The principles for selection of questions are given in Figure 3. The first nine are collective principles derived from the central elements of the framework including the scope and vision of SCP. Following these are three principles for the formulation of individual questions.

The full set of questions should:

1. **Be limited in number but provide a clear picture** of the SCP Vision and scope as interpreted by the EEA
2. **Be based on lifecycle thinking**, i.e. include questions/indicators on resources, production, consumption and waste
3. **Cover production sectors and consumption areas** with greatest environmental implications
4. **Include indirect pressures abroad** related to European consumption, as well as direct pressures related to European production
5. **Include policy relevant questions** i.e. for example with respect to the EU SCP Action Plan
6. **Include pressure, driver and response-based questions** but not Impact and State questions[1] from the Driving Force – Pressure – State - Impact – Response (DPSIR) framework
7. **Include questions requiring pressure/driver indicator pairs** showing both efficiency (eco-efficiency, energy intensity, resource productivity) and absolute levels of pressure or resource use (of energy and resources)
8. **Include decomposition type questions** showing the relative contribution of *technological developments* and *behavioural developments* to reductions in pressures
9. **Avoid including incompatible questions/indicators** i.e. questions should not work against each other and at the same time avoid telling the same story twice

Individual questions should be:

10. **Understandable – i.e.** simple, clear and unambiguous
11. **Direct** so that they can be answered with a detailed yes or no type answer
12. **Phrased positively** so that a positive answer is in the direction of greater SCP.

Figure 3: Principles for selection of indicator questions

Under Principle 8, a key distinction between types of drivers is identified of pressures caused by consumption clusters: that between *technological trends* and *behavioural trends*. These drivers can be destructively linked. Technological improvements along the production chain of products, or within the products themselves (for energy using products) may be partly or wholly offset by increasing demand for, or use of that good, released by reduced purchase or running costs resulting from the technological improvements. This is known as the rebound effect (Hertwich, 2008). Achieving significant reductions in overall pressures arising from a given consumption cluster will require both technological improvements *and* changes in behaviour towards the consumption of less pressure-intensive types of goods and

services: for example, within Food and Drink, a shift to less environmental pressure-intensive diets. It will be of key interest for policy makers to see to what extent technological development and changes in consumption behaviour are complementing or competing with one another.

According to Principle 5 the selected questions have been checked against the main elements of the EU SCP Action Plan and no major gaps were found. The final selected questions are given in Figure 4 below.

## Headline Indicators

1. Are levels of environmental pressures and resource use activated by European consumption currently sustainable?
2. Are we having success in reducing direct pressures from European production and simultaneously reducing global environmental pressures and resource use activated by European consumption?
3. Is European production and consumption leading to improved welfare in Europe and in developing countries, and increasing universal access to basic needs?

## Status & Trends in Consumption & Production

| | | | |
|---|---|---|---|
| Resources | 4. Are we reducing our rates of depletion of key non-renewable resources?<br>5. Is our use of key renewable resources (including land) being reduced to sustainable limits? | | |
| Production | 6. Are key production sectors and public services reducing their overall pressures and improving eco-efficiency? | | |
| Products | 7. Are environmental pressures along the lifecycle of key products decreasing? | | |
| Consumption | 8. Are global environmental pressures activated by key household consumption categories decreasing?<br>9. Are European's switching consumption patterns to less intensive groups of goods and services? | | |
| Waste | 10. Is the total generation of non-hazardous and hazardous waste in Europe<br>11. Is Europe moving towards a closed loop society? | | |
| Key Consumption Clusters | Food & Drink | Housing & Buildings | Mobility |
| | 12. Are global environmental pressures and resource use associated with European consumption of food and drink decreasing?<br>13. Are we shifting towards a more environmentally favourable and healthier diet and wasting less food? | 14. Are global environmental pressures and resource use activated by European use of housing and buildings decreasing?<br>15. Are we using energy and resources more efficiently in construction and are these gains being more than offset by increased demand for living, working and shopping space?<br>16. Are we seeing rapid transfer of eco-efficiency technology into building design and household appliances, and are resulting gains being complemented or offset by changing behaviour? | 17. Are global environmental pressures associated with European mobility for work, leisure and tourism decreasing?<br>18. Has demand for mobility been decoupled from economic growth and is it shifting to more sustainable transport modes?<br>19. Are we seeing rapid transfer of eco-efficiency technology into vehicles and are resulting gains being complemented or offset by changing behaviour? |

## Framework for Change

| | |
|---|---|
| Economic and Regulatory Framework for a Sustainable Future | 20. Is sustainability being integrated into policy and regulatory instruments across key policy sectors?<br>21. Are regulatory instruments increasingly being used to reduce the environmental pressures from consumption and production?<br>22. Is spending on R&D in eco-innovations and environmental technologies increasing its share in GDP?<br>23. Are economic instruments increasingly being used to encourage to encourage greener products, services and investments and are environmentally harmful subsidies being removed?<br>24. Is the share of pension funds, investments funds and savings accounts with ethical/sustainability criteria increasing?<br>25. Are investments on environmental/energy efficiency projects overseas increasing? |
| Walking the Talk | 26. Is procurement by the public and private sector increasingly subject to sustainability criteria?<br>27. Are private companies and public institutions increasingly engaging in environmental management and CSR?<br>28. Do government and private business increasingly disclose externally assured information about their sustainability performance?<br>29. Are businesses increasingly offering product service systems and other sustainable solutions to households as an alternative to material goods? |
| Enabling and Engaging Sustainable Consumptioon | 30. Are Europeans being made aware of the environmental implications of their consumption and possible actions towards living sustainable lifestyles?<br>31. Are consumers being actively directed towards products with reduced environmental impacts and are there more of these products on offer?<br>32. Are sustainability issues increasingly being prioritised in town/city planning decisions?<br>33. Are sustainable products becoming more affordable than their less sustainable alternatives?<br>34. Have more sustainable lifestyles become more socially acceptable and enjoying positive media attention?<br>35. Are groups engaged in social innovation and are they, and civil society in general, increasingly receiving government support? |

Figure 4: Questions in the Indicator Organisational Structure

### 3.4 Indicator Selection

The framework provides detailed guidance notes to guide the selection of indicators for each question. This forms an integral part of the indicator framework and can be viewed in the main framework document (ETC/SCP, 2010).

In addition, a set of more general indicator selection criteria has been formulated. These are similar to criteria used by the EEA and other organisations for indicator selection and are not repeated in this paper (ETC/SCP, 2010).

It is unlikely that indicators, which meet all the indicator selection criteria will be available to answer all 35 questions in the first round of indicator selection. Filter criteria concerned with whether indicators are '*monitorable'* and '*reliable and consistent'* - are likely to be the most problematic. In such cases '***best-available'*** indicators which do meet these quality criteria - but which are possibly not entirely satisfactory with respect to criteria such as *relevancy* and *representativeness* - should be temporarily selected.

In addition, '***Best-needed'*** indicators will be suggested which are more relevant to the question but don't meet quality or availability standards as yet. This will be indicators on which effort should be focused to improve methodology, data collection and reliability in the future.

Indicator types to be used for the EEA SCP set will be in line with the general indicator typology (Stanners et al, 2007) used by the EEA.

**Indicators chosen to answer questions under Part A** of the SCP Indicator reporting are likely to include composite Performance indicators measured against known global sustainability thresholds on which consensus is reached.

**Indicators chosen to answer questions under Part B** of the SCP Indicator reporting are most likely to be restricted to Performance indicators, Efficiency indicators and Descriptive indicators. Performance indicators will be used where policy targets exist or absolute limits in for example global thresholds for environmental pressures are well understood. For environmental pressure questions where no policy target exists and global thresholds for particular pressures are not known Efficiency (i.e. decoupling) indicators are likely to be used *in tandem* with Descriptive indicators showing development in *absolute* pressures over time.

Life-cycle based indicators will be relevant to estimate pressures caused by each final consumption cluster, as and when the methodology and data availability exceeds

acceptability thresholds. The indicators should include global direct and indirect pressures arising from national consumption of these final consumption groups. In the interim period until such indicators meet methodology and data availability thresholds, individual pressure indicators may be used for each life cycle stage.

**Indicators chosen to answer questions under Part C** of the SCP Indicator reporting are likely to be limited to Descriptive indicators or Performance indicators where a policy target exists. Currently few policy targets exist relating to changing framework conditions, but it is hoped that this will change over time. Policy-effectiveness indicators linking responses directly to drivers and pressures require high levels of quantitative analysis and expert knowledge and are unlikely to be available to answer SCP related questions for the time being. However, an alternative type of response indicators called "policy implementation indicators" may be used. This type measures how many actions within a program or action plan have been implemented over a period of time.

### 3.5 Interpretation of Indicator Trends in Reporting

It is of key importance that trends seen in any indicators used in the SCP indicator set can be readily interpreted. The question-based approach to indicator selection and reporting will ensure this to a certain extent. To aid simple communication, all questions have been formulated such that a 'yes'-based answer demonstrates a positive trend towards SCP.

In addition a 'smiley' award system has been developed for visually communicating the success or failure of trends shown by individual indicators in moving towards SCP. Smiley systems have been used in a number of publications by the EEA and are similar to traffic light systems used by the UK DEFRA in sustainable development progress reporting and by the Swedish EPA among others.

A more detailed underlying system has been developed to define more precisely under what circumstances the three smileys or traffic lights should be awarded for developments in different indicator types within the EEA typology. The elaborated system can be found in the indicator framework (ETC/SCP, 2010).

Some organisations have dropped smiley systems in favour of alternative visual communication systems[6]. The EEA and ETC/SCP plan to review alternative systems with a view to adoption in their SCP Indicator framework.

6 For example the 'pie' visual system developed by UNEP, UNESCO and the Intergovernmental Oceanographic Commission for their 'Assessment of Assessments' reporting on the global marine environment from 2009 http://www.unga-regular-process.org/index.php?option=com_frontpage&Itemid=1

## 4. Discussion and conclusions

The SCP indicator framework developed by the EEA and its Topic Centre on SCP is intended to provide a well-grounded basis for both the selection of a structured set of indicators to measure real progress on SCP in Europe and the subsequent interpretation and communication of trends in those indicators. The approach contains a number of aspects which are new to the field of sustainable production and consumption indicators and avoids some of the weaknesses of other indicator sets.

While most SCP indicator sets organise indicators according to some key SCP themes, the reasons for the selection of these themes is often missing. In accordance with the updated Bellagio principles for sustainable development indicators (IISD, 2009), the EEA SCP indicator framework includes at its core a clear vision against which the indicator set should attempt to measure progress and which guides the design of the remainder of the framework.

The vision, which takes its starting point in statements made in key international and European policy documents and strategies on SCP, identifies that SCP is both a means and an end. In other words SCP encompasses end goals such as absolute reductions in resource use and environmental pressures under conditions of maintained or improved well-being, but also comprises the setting up of the framework conditions that will ensure the achievement of these long term sustainable development goals. Indicators are subsequently organised according to these two complimentary aspects of the vision.

The second novel approach taken by the indicator framework is to make use of policy questions which can further guide the selection of indicators. The questions have been selected within the boundaries of the vision and scope and are designed to reflect the needs of the users of the indicator reporting.

The question-based approach ensures that interpretation and communication of indicator trends are integrated directly into the indicator framework, a relatively new concept within SCP indicator development. The indicator framework links policy questions and answers to form narratives to better communicate progress in SCP and allow easier and more interesting interpretation of the indicator set as a whole for the end user.

A further advantage of the policy question approach is that it provides impetus for a continual review and improvement of the indicator set. It encourages the development of new indicators which can more satisfactorily answer the policy questions and measure progress against the central vision. Many other indicator sets take a starting point in the availability of

operational indicators, a pragmatic approach which risks losing sight of the central goals of SCP.

A potential criticism of the approach is that applying such a long-term perspective could lead in the short term to an indicator set which is not fully populated. Many of the questions which are felt to be central to SCP will not be answerable by current operational indicators. To cope with the inadequacy in currently available indicators in the short term, the indicator framework distinguishes between best-available and best-needed indicators, with the latter superseding the former as they become operational.

It is not only the indicators themselves which the EEA's SCP indicator framework perceives as requiring continual review and improvement. It is expected that the vision and policy questions will also need to be developed as definitions and understanding of SCP in the international community evolve. It is unlikely that the indicators and underlying framework developed by this project will present a fully satisfactory picture of SCP in the first attempt.

One potential area of weakness, which could be tackled in future versions of the EEA SCP indicator framework is a limited focus on the social pillar of sustainability. This in part reflects the mandate of the EEA which lies principally within environmental assessment, but it also reflects the lack of maturity in the integration of social concepts into SCP by the scientific community and policy makers.

With the exception of the social pillar, therefore, the EEA SCP framework presented aims to cover the most important elements of SCP. The framework is by no means fully comprehensive due to the great breadth of SCP, so that for example, potentially important consumption-production clusters such as ICT, tourism and textiles are not specifically covered. Nevertheless, as with all indicator sets, this one aims to strike a balance between scope and depth on the one hand and clarity of purpose and communication on the other. The present result, we believe, manages to achieve a reasonable balance between the two.

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