UNEP

SCP INDICATORS FOR DEVELOPING COUNTRIES

A Guidance Framework

UNITED NATIONS ENVIRONMENT PROGRAMME

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1. Introduction

> “The objective of this document is to provide guidance to policy-makers in developing countries on development of indicators that measure progress towards more sustainable patterns of consumption and production.”

It is increasingly evident that current economic growth and development patterns cannot be sustained without significant innovation in both the supply (production) and demand (consumption) sides of the market.[1] Decoupling economic growth from environmental impact will require producers to change design, production and marketing activities, while consumers will need to provide for environmental and social concerns – in addition to price, convenience and quality – in their consumption decisions.

Policy-makers in both developed and developing countries have a crucial role to play in stimulating the recognised need for “fundamental changes in the way societies produce and consume”[2]. The concept of sustainable consumption and production (SCP) encompasses this need. SCP has been defined as:

“The production and use of goods and services that respond to basic needs and bring a better quality of life, while minimising the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardise the ability to meet the needs of future generations.”[3]

Responding to this challenge, many countries are developing and implementing policies and programmes relating to sustainable consumption and production. While some countries have dedicated SCP policies and programmes, in other countries their SCP-related commitments may form part of broader sustainable development and/or national economic programmes. The development of SCP initiatives has received particular encouragement following the 2002 Johannesburg World Summit on Sustainable Development, and the subsequent launch in June 2003 of the “Marrakech Process” on SCP.[4] The impact of these programmes can only be measured if appropriate performance indicators are available; furthermore, effective indicators are critical in assessing current production and consumption patterns and informing the design of effective SCP programmes.

While several existing initiatives have identified sets of SCP-related indicators, at both an international and national level, concerns have been expressed that most of these have failed “to spark interest among politicians and members of the public.”[5] This failure is seen to stem not so much from technical weaknesses in the definitions of the indicators themselves, but from a failure to combine indicators into individual ‘narratives’ that explain progress towards SCP, as well as a failure to provide insights into the key areas where action should be applied.[6] In addition, there is seen to be a need for clear guidance on developing relevant indicators that are tailored to the specific information requirements and sustainability priorities of developing countries. This guidance document has been prepared by UNEP to address these needs.

1.1. Objectives of this Guidance Framework

The objective of this document is to provide guidance to policy-makers in developing countries on development of indicators that measure progress towards more sustainable patterns of consumption and production. Although reference is made throughout the report to SCP-related indicators, it is important to appreciate that these indicators could form part of a subset of sustainability indicators or poverty-environment indicators of countries – they do not need to be part of a discrete SCP initiative, but can be integrated within existing monitoring activities. In addition to encouraging and facilitating reporting on progress, a critical supporting goal of this document – and a feature that seeks to distinguish it from simply using an existing indicator set – is to contribute to an enhanced understanding of what sustainable consumption and production means in practice in the developing country context. Without a clear understanding of the practical implications of sustainable consumption and production, it is not possible to meaningfully measure progress against it.

To achieve this objective, this document includes a combination of a top-down and bottom-up approach. The document proposes a structured framework for understanding SCP and creating indicators (theory-based or “top-down”: Table 1), and then tests this against a list of existing SCP-related indicators that are being used in a range of developing countries (practice-based or “bottom-up”: Table 2).

This document is not intended to be prescriptive, but rather aims to provide policy-makers and stakeholders with a framework that

guides their decision-making around the development and/or selection of indicators. The document provides the thinking framework within which multi-stakeholder dialogues on these indicators can take place. It seeks to facilitate this process by formulating pertinent questions that focus the discussion in context, and by providing specific examples that may be explored or interrogated. It does not present a prescribed set of indicators, nor does it suggest that the current set of examples is necessarily the most appropriate set; such a set will necessarily only be developed over time, ideally with some form of structured engagement process, resulting in indicators that are tailored to particular policy contexts.

While this guidance document is intended primarily for policy-makers, it is recognised that the indicator set itself will be intended for use by a broader set of stakeholders, including politicians, citizens and consumers. This has implications for the nature of the final indicator set.

1.2. This Guidance Framework in Context

The Guidance Framework has been developed by UNEP as part of a project[7] that seeks to demonstrate the benefits of SCP in terms of poverty reduction, and to develop capacity for integrating SCP objectives into development plans and their implementation. An important activity within the project is the development of tools to support developing countries to reduce poverty and achieve the Millennium Development Goals. An indicator set that assists developing countries to monitor their progress towards more sustainable patterns of consumption and production is one such tool.

The Guidance Framework includes a detailed overview and analysis of existing SCP-related indicators currently used in twenty developing countries (Appendix 1).[8] An Executive Summary of this document, outlining the main conclusions and findings, is available separately. These documents complement UNEP's recently published international guidelines for developing, implementing and monitoring national SCP programmes, Planning for Change: The UNEP Guidelines for National SCP Programmes.[9] The UNEP guidelines provide guidance to governments and other stakeholders on how to plan, develop, implement, monitor and sustain national programme for sustainable production and consumption. The guidelines provide a flexible approach to developing SCP programmes that is intended to be adapted to local circumstances. The guidelines contain nine case studies and several other examples of good practice that illustrate how governments are implementing SCP programmes worldwide.[10]

Underlying this Guidance Framework is the belief that there is an increasingly urgent need to shift current production and consumption patterns and to find practical solutions to current global challenges, and a recognition that this constitutes a particular challenge for developing countries. Together with the UNEP Guidelines for National SCP Programmes, this Guidance Framework constitutes a call for action.

BOX 1:
SCP: A particular challenge for developing countries

Sustainable production and consumption forms a critical means for achieving sustainable development. Cross-cutting in character, SCP requires the effective intervention of government and the active involvement of a range of actors throughout product and service value chains. The achieve-ment of SCP requires significant technological innovation – to optimise the design, develop-ment, production, distribution, sale and marketing of products and/or services – as well as changes in social behaviour, most notably in terms of changed consumption patterns.

It is increasingly evident that the current production and consumption patterns of the wealthy developed world cannot be replicated in the rapidly industrialising nations of the developing world. The morally defensible desire of developing countries to enjoy the (more resource-intensive) consumption patterns of the developed world, and the reluctance of those in the North to reduce their increasing material consumption, presents significant political challenges. In the developing country context, policy-makers are faced with the challenge of meeting basic needs (by increasing economic development and consumption), while at the same time reducing the associated environmental burden.

This requires the development and implementation of policy measures that decouple economic growth from environmental pressures, and that prevent the rebound effect in terms of which growing consumption outstrips technology improvements and efficiency gains. SCP requires innovative approaches, both socially and technologically, that enable developing countries to eradicate poverty whilst respecting the natural constraints to consumption and production. A pragmatic, far-sighted set of indicators can be of significant support to decision makers in developing countries, helping to identify national risks and opportunities in time and promote sustainable growth and development of their economy.

2. Sustainable Development and SCP – a conceptual framework

> “The development of an understanding of what sustainable consumption and production actually means is a critical first step in developing an indicator set, since this will both stake out the ground that should be covered by the indicators (i.e. the scope of the framework) and hopefully describe an end goal against which indicators can be benchmarked.”

(European Environment Agency’s Topic Centre on Resource and Waste Management)[11]

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The primary function of an indicator is to assist decision-makers track progress on the goal or objective. The effectiveness of an SCP indicator is thus dependent on there being a clear understanding as to what is meant by sustainable consumption and production. As a recent working paper by the European Environment Agency (EEA) recognises, defining the target against which an indicator set should measure progress is “one of the most crucial, and possibly most difficult elements of an SCP indicator framework (particularly as)… sustainable consumption and production, similarly to sustainable development, has historically been very loosely defined and provides few concrete targets on what to sustain, to what extent and under what time scales.”[12]

While to some extent the loose definitions of sustainable development and SCP are a function of the desire to ensure widespread political acceptance, there are also some practical technical and scientific challenges in defining concretely what these concepts mean in terms of specific outcomes. This lack of clarity obviously impedes the identification of clear indicators for SCP.

Although the indicator framework for developing countries needs to be informed by international definitions and commitments, it is necessary also that it provides for the specific needs and priorities of developing countries, including in particular the goal of meeting basic needs while protecting the natural resource base. Defining a clear vision of the specific implications of SCP is essential for defining the scope of the indicator framework, and for identifying and interpreting the individual indicators.

2.1. Developing a vision for SCP

2.1.1. Overview

This section seeks to provide a useful conceptual basis for understanding the practical implications of SCP, which in turn is necessary for identifying meaningful indicators. The approach presented in this section draws explicitly on the concepts of capital and income, concepts that underpin the economic activities of consumption and production. Central to this approach is the understanding that economic income represents the flow of goods and services that can be consumed, while keeping a constant stock of capital.[13] Maximum income (or the level of "sustainable consumption") for a given society is that amount of consumption that can occur without depleting stocks of capital.

This understanding of the role of capital stocks forms the basis for presenting a vision of SCP that is sufficiently robust as to allow for the identification of meaningful quantitative indicators of performance. The guidance in this document is informed by the belief that while it may be tempting to side-step the thinking associated with the complex conceptual aspects, and to focus instead on simply selecting from a list of indicators (developed by those who have done this thinking), this will not result in the informed application of SCP policy, or the development and identification of meaningful indicators.

For indicators to be usefully developed and applied by developing country policy-makers, these policy-makers need to have considered some of these more complex conceptual aspects. The challenge here is to maintain a focus both on the detail of the indicators, with a good understanding of the context of that indicator (How does the indicator contribute to the desired end goal? What is it actually measuring? How is this useful for making decisions more consistent with SCP?). To answer these questions requires a clear understanding of the objectives against which progress towards SCP can be measured.

2.1.2. Understanding SCP in the context of capital stocks

A useful means for understanding the practical implications of sustainable development and SCP is to visualise these concepts in terms of capital and income. Using this approach, sustainability can be seen as depending upon maintaining and, where possible, increasing stocks of capital assets, so that we can succeed in living off the income without depleting the capital.

The Five Capitals model (Box 2) suggests that there are five types of capital assets from which we draw the goods and services needed to improve our lives. An underlying principle of this model is to recognise the relationship and dependencies between these capital stocks. Manufactured and financial capital stocks are essentially products of, and dependent on, human and social capital stocks, which in turn are products of and dependent on natural capital.

Significantly, all capital stocks – and thus in turn the potential to generate income – are dependent upon maintaining a critical minimum stock of natural capital. If natural capital is depleted such that ecosystem services are no longer provided at the required level, then the capacity to generate income (and thus to sustain development) will be undermined. This understanding has significant implications for current economic development patterns, which are generally characterised by a transformation of natural capital – through the institutions, networks and efforts of social and human capital – into financial and manufactured capital.

A pivotal question in the sustainability debate is the extent to which certain kinds of capital stocks may substitute for the depletion of others. "Strong" and "weak" definitions of sustainability diverge here, with strong sustainability requiring a constant level of "critical natural capital", versus weak sustainability, which requires only that the total capital stock (natural, human, social and financial) remain constant.

Underpinning the thinking behind SCP is the belief that unlimited substitutability of capital stocks is a wish, rather than a systemic reality. In clarifying the dependence of social, human, financial and manufactured capital on the natural capital at its base, the five capitals model makes a compelling case for countries to look to a concept of critical natural capital, however daunting the idea of measuring it.

The acceptance of the concept of maintaining a constant stock of critical natural capital has profound implications for the development of meaningful indicators of SCP. In effect it requires the identification of a "constant capital stock benchmark against which a consumption level can be defined as sustainable, if and only if it does not reduce the capital itself."[14] Recognising the inherent difficulties and uncertainties associated with quantifying this critical capital stock, there has understandably been a greater tendency to focus on the direction of change by adopting an "efficiency-based approach."

While the "efficiency-based approach" may be more achievable than the "critical stock approach"[15], on their own, efficiency-based indicators may be misleading. In terms of the rebound effect, for example, increasing efficiencies in resource use may in fact coexist with an increase in the total level of resource use. Furthermore, even while efficiency measures might suggest progress in the right direction, they frequently do not indicate when a particular threshold

BOX 2:
The Five Capitals Model of Sustainable Development

The practical implications of sustainable development and SCP are best understood in terms of capital and income. Maximum income (or the level of "sustainable consumption") for a given society is the level of consumption that can occur without depleting that society's capital. The goods and services needed to improve the quality of our lives are derived from five types of capital assets:

- **Natural Capital** refers to the natural resources (matter and energy) and processes that are needed to maintain life and produce and deliver goods and services. They include renewable resources (such as freshwater, fisheries and wood), non-renewable resources (such as mineral deposits), sinks (that absorb, neutralise or recycle wastes) and ecological processes such as climate regulation and disease regulation.

- **Human Capital** includes people's health, knowledge, skills, motivation and capacity for relationships, all essential for productive work and the creation of a better quality of life. Human capital can be fostered through improving opportunities for learning, creativity, stimulation and enhanced health.

- **Social Capital** concerns the institutions that help us maintain and develop human capital in partnership with others. It includes such institutions as families, communities, businesses, labour unions, schools and voluntary organisations. A critical component of social capital is the development of trust.

- **Manufactured Capital** is material goods, or fixed assets that contribute to the production process or the provision of services, rather than being part of the output itself. It includes for example tools, machinery, buildings and infrastructure.

- **Financial Capital** plays a critical role in our economy, enabling the other types of capital to be owned and traded, for example through shares, bonds or banknotes. Unlike the other types of capital, it has no intrinsic value itself, but is representative of natural, human, social or manufactured capital.

Figure 1 illustrates the relationship between these five capital stocks. This diagram should be visualised in 3-D, as a cone viewed from above.

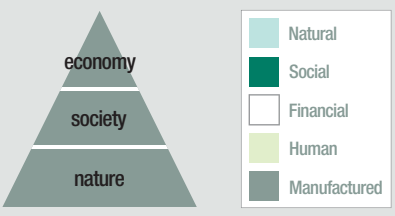
- The outer circle (or base of the cone) represents the **environmental** component and represents the natural capital – resources (matter and energy) and eco-system services – necessary to maintain life and to produce goods and services. A key policy focus here is on ensuring the long-term sustainable use of ecosystem services.

- The second circle represents the **social** component – which comprises human and social capital; a principal policy concern here relates traditionally to social equity.

- The inner circle (top of the cone) represents the **economic** component – comprising manufactured and financial capital; a traditional policy focus here is on promoting greater efficiency.

An underlying principle of sustainable development is to recognise the relationship and dependencies between these capital stocks. Manufactured and financial capital stocks are products of, and dependent on, human and social capital stocks, in turn products of and dependent on natural capital. The crisis of sustainability is that current production and consumption patterns are depleting stocks of natural capital – and to a lesser extent human and social capital – because we don't sufficiently value these capital stocks.

SCP indicators should be based on this understanding of maintaining a minimum stock of "critical natural capital".



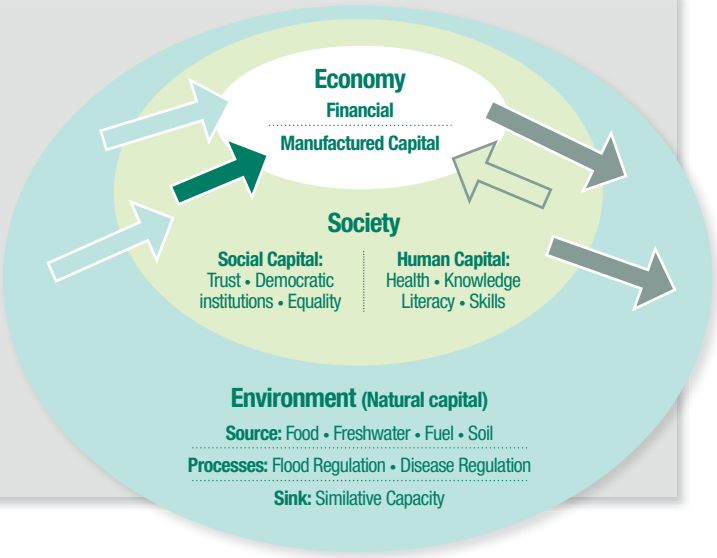


Figure 1: Inter-relationship between the five capital stocks

Figure 2: The SCP Compass

might be crossed.

While it is acknowledged that efforts to develop systems of national green accounts have dropped off in the past ten years – one of the reasons being that measuring the market and non-market values of all capital stocks is "a hard, if at all possible, task" – it is nevertheless argued that this difficulty in measurement should not justify dropping what is conceptually the most critical underpinning of SCP in favour of the more easily measured (but potentially misleading) efficiency-based approach. On this basis it is suggested that a genuine commitment to sustainability requires indicators that track increased efficiency (relative performance) and, as far as possible, measure progress in terms of a defined end state (absolute performance).

2.1.3. Providing for the developing country context: The SCP Indicator Compass

In addition to these two predominant perspectives for developing measurable SCP objectives – the "critical stock approach" and an "efficiency-based approach", both of which have a strong environmental focus – it is suggested there is merit in introducing an additional two perspectives that are of particular (though not exclusive) relevance to developing countries:

- **Compliance:** this relates to the institutional aspects that are a constraint in many countries, particularly (though not exclusively) in developing countries, which often face capacity and resource constraints. In many cases, initial steps towards sustainable production and consumption are achieved as producers respond to legal requirements. The "compliance-based" perspective of SCP provides an important focus for ensuring adequate coverage of SCP-related issues in terms of legislation (e.g. on pollution, waste, and human rights), the provision of adequate staffing of state or local inspectorates, and increasing levels of compliance by companies. A particular area of concern in developing countries, often requiring particular attention, is the performance of SMEs and the informal sector, much of which is not regulated.
- **Connectivity:** this refers to a complex array of issues relating to access, knowledge, ability and networks. Connectivity enhances the ability to forge relationships of mutual benefit, and vice versa. It includes the personal level (e.g. access to Internet services), the organisational level (e.g. providing information to stakeholders) and the country-level (e.g. the rate of rural / migration). Many socio-economic indicators will have an influence on people's abilities to connect. This brings to the fore a focus on social and human capital, which is of particular relevance in developing countries.

When one considers the interaction of a complex system (for example an organism, an organisation or an entire society) within its natural and social environment, it is apparent that from an evolutionary perspective its long-term survival is a factor of its ability to change its way of doing things (its adaptability) and its capacity to develop, deepen and sustain a broadening range of mutually-beneficial relationships.

Depicted in graphical form, four perspectives emerge from the above analysis, producing a suggested "compass" for sustainable production and consumption. More guidance on the implications and potential application of this compass is provided in Section 4 and Appendix 2.

2.2. Understanding contexts: Government policy and the individual actor

The underlying objective of an indicator is to inform a decision-making process, with the aim of effecting change towards the achievement of a particular objective. To meaningfully inform public policy, indicators should provide information at both the macro-level (at the level of the country as a whole) and the micro-level (at the level of the individual producer or consumer).

A key constraint with many existing SCP-related indicators is that they tend to be the preserve of national governments and associated regional/local structures. Yet to be effective, indicators need to drive changes – influence decision-making – that impacts at the level of the individual producer and consumer. With this understanding it is suggested that in developing indicators, in addition to having a set of overarching "macro-level" indicators relating to performance in the country or region as a whole, it is important also to develop indicators that reflect the activities of the individual producer and consumer in terms of each of the above four perspectives.

For **producers**, their mindsets could consist of:

- **Compliance** – a minimum contribution, where the firm ensures compliance with the law and merely acts to sustain its right to operate.
- **Efficiency** – where a firm is prepared to look at changes in products or processes, minimising the throughput of resources (material, energy, water) in both process and the product life-cycle.
- **Connectivity** – where a firm recognises its interdependence on social and human capital and takes conscious steps to build this.
- **Critical stock** – where a firm recognises the need to maintain a critical stock of natural capital and takes conscious steps to restore it, or at least avoid its systematic degradation; this is of a transformative nature as they are trading off short-term financial gain for longer-term resilience.

For **consumers** (including producers and governments as consumers), their mindsets could consist of:

- **Compliance** – where consumers simply purchase on the basis of price and utility, without a conscious sense of influencing producer actions on the basis of their purchase choice.
- **Efficiency** – where a consumer purchases a product based on its greater efficiency or ability to reduce resource use while retaining utility.
- **Connectivity** – where a consumer recognises that their ability to influence producers through their purchase decisions will depend on their access to social networks (knowledge, transportation, health service), their income levels and even self-esteem.
- **Critical stock** – where a consumer consciously decides to purchase or not to purchase in favour of contributing to the maintenance of a critical stock of natural capital; it is transformative because they are consciously considering trading off short-term, individual gain for longer term, communal values.

When considering the existing indicator sets (see Section 3.3 and Table 2) in the context of the above discussion and the resulting proposed framework, the following observations can be made:

- most of the existing indicators relate primarily to efficiency (and to some extent connectivity);
- there are few compliance indicators (perhaps appropriately – although arguably compliance-related issues are of relevance in the context of the institutional constraints of developing countries);
- there are few absolute measures of "critical stock" (as noted earlier, while the identification of absolute measures may be technically challenging, this should not prevent there from being an in-principle understanding of the underlying importance of this objective); and
- the focus seems to be predominantly on macro-level measures without overt consideration being reflected on the manner in which they exert influence on producers and consumers.

In the belief that a meaningful move towards sustainable consumption and production requires action at all levels (from the state to the individual firm and consumer), and that this action ultimately requires a focus on the maintenance of critical natural capital, these observations are of concern.

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2.3. SCP Indicators: Stimulating a fundamental rethink

> “Sustainable consumption and production requires a fundamental rethinking of the way societies produce, use and dispose of products. The resource-intensive consumption and production patterns of the developed countries cannot be replicated worldwide[16].”

The increasingly recognised (but insufficiently addressed) need for a “fundamental rethinking” of current consumption and production patterns is the underlying vision that should inform the development of national SCP policies and their supporting indicators. This rethinking requires a combination of radical innovation in terms of efficiency and connectivity that, together, will result in the transformation required to ensure the maintenance of critical natural capital. Without such innovation, current stocks of natural capital will continue to be diminished. In the context of growing population and increased consumption, particularly in the newly industrialised developing world, this declining natural capital stock will be insufficient to sustain current consumption and production patterns.

Acknowledging some of the concerns regarding the unintended consequences of efficiency innovations – such as the rebound effect, the increasing cycle of product substitution and the accelerated dismissal of functional products – it is argued that a distinction should be made between innovation (that results in a more radical shift) and continual improvement. Arguably the rebound effect should be more accurately seen through the lens of “continual improvement”, and distinct from “radical innovation”. Most current examples of product/service substitution, and greater resource efficiency, tend to operate in the context where the increasing cycle of better/faster/newer products is an important consideration, and where efficiency / connectivity improvements contribute to increasing financial capital (profitability).

It is suggested that where innovation is really exciting (and worth promoting) is where radical efficiency improvements are linked with radical increases in connectivity, resulting in real opportunities to decouple material use from value growth. In many instances, the achievement of truly sustainable production and consumption patterns will require “disruptive innovation”: innovation that eventually overturns the existing dominant technology or status quo product in the market. If innovation is explored in the context of a critical level of natural capital – and with a focus on both efficiency and connectivity – then innovation itself should become a key goal of SCP policy, with indicators being developed to track its emergence.

Further examples of SCP-related indicators relating to “disruptive innovation” – and greater clarity on the underlying conceptual thinking and potential role of the SCP Indicator Compass – are provided in Appendix 2.

3. Using indicators to measure progress on SCP

> “Indicators enable decision-makers to assess progress towards the achievement of intended outputs, outcomes, goals, and objectives. As such, indicators are an integral part of a results-based accountability system [17]. ”

Indicators are a valuable tool for tracking progress against policy targets and objectives, for promoting greater accountability and public engagement in the implementation of programmes, and for analysing and understanding social conditions, trends and change. They assist decision-makers and the public to monitor whether and in what form change is happening, and – if the indicators were established in relation to a clear goal and target – to evaluate whether that change is good or bad. Indicators also facilitate comparison with the performance of others.

While these attributes of indicators apply to all policies and programmes, they are of particular relevance to sustainability in general – and to sustainable consumption and production in particular – as these are issues at the heart of which rests the concept of social change, and on which there is often a lack of clarity regarding the intended outcomes. To be effective, there are some important challenges relating to indicators (particularly sustainability indicators) that need to be addressed.

This section[18] briefly introduces some general considerations relating to the use of indicators. After outlining some of the common benefits and constraints with SCP-related indicators, it briefly summarises some of the main frameworks for SCP indicators. A number of existing international, regional and national SCP-related indicator initiatives are reviewed, and some reflections are shared on the key implications of these. This serves as a basis for identifying some key challenges and some possible responses to these challenges, including specifically the need for a set of selection criteria.

3.1. Indicators for Sustainable Consumption and Production: An introduction

Chapter 40 of Agenda 21 calls on countries and the international community to develop indicators of sustainable development. Such indicators are needed to increase focus on sustainable development and to assist and encourage decision-makers at all levels to adopt sound national sustainable development policies. [19] This sub-section provides a brief introduction to some of the concepts, benefits and constraints associated with sustainability indicators in general, and SCP-related indicators in particular.

3.1.1. What are SCP-related indicators?

Indicators are an important tool for analysing change in society, and for focusing attention on key priorities. The primary focus of SCP-related indicators is on measuring progress towards more sustainable patterns of production and consumption. Properly applied, performance indicators are commonly the first, most basic, tool for analysing change in society.[20] Recognising that what goes unmeasured is often ignored, indicators are an important tool both for indicating progress – of the lack of it – towards the specific objectives of a particular programme, and for prompting appropriate response strategies. In the context of SCP, indicators can also indicate whether a society's consumption and production patterns are bringing about more socially equitable and environmentally sustainable development. In that regard, indicators of SCP are inextricably linked to broader sets of indicators on environment and sustainable development, including poverty reduction.

3.1.2. Benefits of SCP-related indicators

Properly developed and implemented, indicators can make a critical contribution towards decision policy development. The benefits of effective SCP-related indicators include:[21]

- facilitating the monitoring and review of progress in achieving key objectives and targets;
- allowing effective reporting to decision-makers and the public, thus encouraging accountability;
- clarifying the meaning and application in practice of sustainable production and consumption;
- contributing to the revision of existing strategies and action plans,

and the development of new plans;
- raising the political and public profile of SCP-related issues;
- encouraging meaningful dialogue on sustainable consumption and production.

The full realisation of these benefits, however, is often constrained by certain institutional, technical and political conditions, many of which are apparent in developing countries (see Box 4 in Section 5.1).

3.2. Frameworks for SCP Indicators

Indicator frameworks "provide the means to structure sets of indicators in a manner that facilitates their interpretation".[22]

In light of the broad interdisciplinary scope of SCP, and bearing in mind the diversity of potential users and the breadth of issues to be addressed across developing countries, it is likely that a reasonably large number of indicators will be necessary to provide guidance on SCP to developing country policy makers. To facilitate interpretation and ready analysis, it is useful for indicators to be organised into a particular structure or set of themes and concepts. This will assist those developing their own indicator sets to more easily identify key gaps and avoid potential overlaps.

Many of the current initiatives relating to sustainability indicators organise these indicators in a two or three dimensional matrix. In terms of SCP indicators, various approaches to presenting indicators have been used. In its recent investigation of this issue, the EEA identifies the following four approaches:[23]

- **Theme/cluster areas** – A predominant approach is to present the indicators in the context of the three or four pillars of sustainability (i.e. economic, social, environmental and institutional), Frequently these themes are then broken down into a series of sub-themes. The UN Commission on Sustainable development (CSD) has divided its proposed indicators into 14 themes, a number of which are based on the eight pillars found within the Millennium Development Goal (MDG) indicators, which are expanded to include a broader suite of environmental themes as these are not well covered in the MDGs. The most predominantly used SCP themes generally (at the national and international level) are material and energy consumption / throughput, waste generation and atmospheric emissions, reflecting the predominant focus on environmental efficiency issues. In finalising the developing-country set of indicators, it will be important to ensure that due weighting is to given to those themes of particular relevance to developing countries. The use of a thematic approach is useful in that it is inherently easy to understand and can be adapted to the circumstances of a particular region.
- **Position in the policy cycle** – One of the most frequently used policy-cycle approaches is the PSR (Pressure, State, Response) framework, expanded by some users to DPSIR (Driver, Pressure, State, Impact, Response). In terms of this approach, indicators are organised according to which area of the PSR (or DPSIR) cycle they belong to. The PSR frame distinguishes between three different angles of environmental issues:[24]
- **Pressure variables** describe human activities that exert pressures on the environment, and that are seen to be the underlying causes (the use of Driver indicators is seen to extend the scope to include social, economic and institutional measures).
- **State variables** describe some physical measurable characteristic of the environment that results from the pressure (some users have added Impact as an category of indicators that capture the change in the state).
- **Response variables** measure the extent to which society is responding environmental concerns.

Several organisations such as the EEA and UNEP use the DPSIR model to report on the environment.[25] For instance, UNEP's Global Environment Outlook indicators provide an overview of the main environmental developments over the past three decades and how social, economic and other factors have contributed to the changes that have occurred.[26] However, the DPSIR framework is typically not used for sustainable development indicator sets as indicators may simultaneously describe drivers, pressure, state, impact or response for the varying dimension of sustainable development. Interestingly, while the first set of UNCSD indicators were presented in the context of the DPSIR, this was later dropped due to inconsistencies in determining whether an indicator was driving force, pressure or state.[27]

- **Life-cycle stages** – Another potential method for organising indicators is according to the stage in the life-cycle of a product or process. This approach for presenting indicators is usually accompanied by a horizontal thematic division according to the final consumption goods clusters (such as food, household energy use, transport and so on), with indicators being provided for each part of the life-cycle of these clusters. Such organisation could be used until single life-cycle aggregated indicators have matured. While this approach has been mooted in an EEA working paper, thus far no national or international SCP indicator frameworks has organised indicators on the basis of life-cycle stages.
- **Indicator types and indicator hierarchies** – An alternative

approach is to organise indicators by different indicator types (e.g. decoupling indicator, aggregated indicator, composite indicator, or disaggregated indicator) and to present these types in a hierarchy of indicators that allows different user types to be catered for. Using this hierarchy approach, a small number of high-level indicators could be used for politicians and citizens, with a larger number of more detailed lower level indicators being used for policy makers and policy implementers.

While each of the above framework approaches clearly have merit – and should be considered by policy-makers – it is important that in whatever manner indicators are perceived, they are consistently placed in the context of the over-arching understanding of the goals of SCP. It is this discipline that will ensure that the value of the indicators for policy and decision-makers is not undermined. As highlighted earlier, key to appreciating the context is the understanding that all activities are dependent on a limited (and depleting) stock of natural capital that is already significantly degraded.

Building on the above four approaches, the EEA has recently been examining different options for a preferred framework for presenting SCP indicators. Following an initial proposal to develop a complex matrix of consumption clusters, DPSIR elements and life cycle stages to organise indicators, the EEA-ETC/RWM now proposes to dispense altogether with a formal organisational structure of indicators, and is moving instead in the direction of using policy questions to frame the SCP vision and to guide SCP indicator-based reporting. These questions will cover various elements of the policy cycle and life cycle stages for key consumption clusters and provide a driving force for the development of future indicators necessary to answer these questions.

The guidance provided in this document is similarly framed in the context of a series of questions for consideration by policy-makers seeking to develop SCP-related indicators. These questions are supplemented however by a proposed SCP Indicator Compass (Table 1), aimed at giving some general direction to the process of identifying context-specific indicators.

3.3. Brief review of SCP indicator initiatives

A 2002 UNEP survey to assess the level of implementation of national sustainable consumption policies, found that more than half of the governments surveyed had not intentionally measured progress towards sustainable production and consumption.[28] Following the World Summit on Sustainable Development and the Marrakech Process, there has been an increase in the development of integrated national SCP programmes, which has brought with it greater efforts to measure progress on SCP. This in turn has led to the more widespread development and use of SCP indicators at the national level. This section provides a very brief overview of some of these, highlights some recent concerns regarding the development and implementation of these indicators, and suggests some considerations for addressing these concerns.

3.3.1. International and developed country regional SCP work

At an international and developed-country regional level, the principal sustainable development indicator frameworks that have been developed include: UNDESA (1998), OECD (1999), UNCSD (2006) and Eurostat (2007).[29] In addition, the European Environmental Agency is currently developing a European-relevant stand-alone set of SCP indicators.

- **UN Commission on Sustainable Development (UNCSD)**
  From a developing country perspective the most directly applicable indicator set is the third, revised set of UNCSD sustainable development indicators that was finalised in 2006 by a group of indicator experts from developing and developed countries and international organisations.[30] This set consists of 50 core indicators that form part of a larger set of 96 indicators of sustainable development and 13 major themes, of which SCP is one. The SCP theme comprises the 12 specific indicators (each of which has an exclusively environmental focus – see table on page 13), while another 34 indicators from other themes are characterized as being linked to SCP.
- **Organisation for Economic Cooperation and Development (OECD)**
  In 1999 the OECD developed a set of sustainable household consumption indicators. The emphasis in these indicators was on final household and government consumption, as opposed to intermediate consumption and production, which is undertaken by companies.[31] The OECD framework, includes a total of 45 indicators, includes three overriding themes: i) environmental significant consumption trends and patterns; ii) interactions between consumption and the environment; and iii)

economic and policy aspects. Specific indicator topics include socio-economic trends, resource use and economic and trade aspects. At the time of the writing (early 2008) the OECD is working on a new report on sustainable consumption indicators, which should be available soon. In 2002, the OECD also developed a detailed framework of 31 decoupling indicators covering a broad range of environmental issues.[32] Sixteen indicators relate to the decoupling of environmental pressures from total economic activity under the headings of climate change, air pollution, water quality, waste disposal, material use and natural resources. The remaining 15 indicators focus on production and use in four specific sectors: energy, transport, agriculture and manufacturing.

- **The European Commission (EC)**

  Eurostat, the European Commission's statistics office, has developed a set of sustainable development indicators linked to the EU Sustainable Development Strategy. The indicator framework includes 10 themes that reflect major sustainable development priorities, one of which relates specifically to sustainable consumption and production. The indicators are structured in a pyramid with a headline indicator for each lead objective and second and third level indicators as well as conceptual indicators, which do not directly monitor the objective in the SDS objective. There are a total of 122 indicators, 14 of which are still under development, with around 50 additional indicators anticipated.

- **The European Environment Agency (EEA)**

  The EEA's Topic Centre for Resource and Waste Management is currently developing a European-relevant stand-alone set of SCP indicators, with the intention of improving progress reporting and clarifying an understanding of what SCP means in practice. A draft indicator framework has been developed to serve as the basis for an expert consultation process. As noted earlier (section 3.2) following an initial proposal to develop a complex matrix of consumption clusters, DPSIR elements and life cycle stages to organise indicators, the EEA-ETC/RWM is now moving in the direction of using policy questions to frame the SCP vision and to guide SCP indicator based reporting. These questions will cover various elements of the policy cycle and life cycle stages for key consumption clusters and provide a driving force for the development of future indicators necessary to answer these questions.

In addition to the above sets of international and developed-country regional SCP indicators, a number of developed countries have developed national level indicators for SCP, either as part of efforts to develop complete frameworks of SCP indicators, or to develop individual SCP-related indicators that form of wider indicator frameworks on sustainable development.[33]

3.3.2. National SCP-related indicators in developing countries

As part of the process of developing this Guidance Framework, a detailed review was undertaken of the existing SCP-related indicators currently used in twenty developing countries. Even though only three countries sampled in this study currently have a specific set of Sustainable Development or Sustainable Consumption and Production indicators, a considerable number of SCP-type indicators could be identified for all countries. The key challenge was to select those indicators that are directly relevant to

UNCSD Indicators

Consumption and Production Patterns

Sub-theme	Core indicator	Other indicator
Material consumption	Material intensity of the economy	Domestic material consumption
Energy use	Annual energy consumption, total and main by main user category	Share of renewable energy sources in total energy use
	Intensity of energy use, total and by economic activity	
Waste generation and management	Generation of hazardous waste	Generation of waste
	Waste treatment and disposal	Management of radioactive waste
Transportation	Modal split of passenger transportation	Modal split of freight transport
		Energy intensity of transport

SCP, cover a broad range of themes, are focused on the priorities of developing countries and either are, or have the capacity to be, measurable.

The 20 developing countries chosen for this study were selected across a range of sizes, from less developed to more developed economies, cutting across all developing country regions, comprising:

- **Africa:** Egypt, Ethiopia, Mauritius, Senegal, South Africa and the United Republic of Tanzania
- **Latin America and Caribbean:** Brazil, Chile, Colombia, Cuba and Jamaica
- **Asia-Pacific:** China, Indonesia, Malaysia, Papua New Guinea and Thailand
- **Western and Central Asia:** Jordan, Lebanon, Kazakhstan and Yemen

Out of the countries reviewed, one country (Brazil) has a specific set of dedicated SCP indicators, with three more countries (Senegal, the United Republic of Tanzania and Thailand) intending to follow. Three countries (Brazil, Chile and South Africa) have a defined set of sustainable development indicators, and seven others (Egypt, Mauritius, China, Malaysia, Kazakhstan, Columbia and Jamaica) are developing such indicators. Seven of the countries reviewed have not developed separate dedicated sets of either SCP or SD indicators. It is important to note, however, that it is not essential for countries to develop specific sets of SCP or SD indicators, as indicators relevant to SCP issues are often incorporated into other frameworks. A detailed review of these indicators is provided in the accompanying document to this Guidance Framework.[34]

3.3.3. Reflections on existing SCP indicator initiatives

> “Overall, national efforts to monitor SCP policy and programme implementation or measure progress more generally towards SCP are inadequate. This is a problem as it greatly weakens the effectiveness of the SCP programme.[35]”

In its recently completed Guidelines for National SCP Programmes, UNEP suggests that national efforts to measure progress on SCP policy and programme implementation are generally inadequate. In its assessment of these national efforts, UNEP raises the following concerns, each of which has a bearing on the design and development of a framework for developing countries:[36]

- Most of the programmes include an emphasis on environmental and economic considerations (such as resource efficiency) with little or no attention paid to relevant social and international issues. For example, health problems related to over-consumption (such as heart disease and obesity) are rarely considered, while development concerns (such as poverty) from under-consumption tend to be treated separately in broader indicator frameworks and seldom connected to the SCP indicators.
- The indicators generally take no account of absolute environmental limits, tending to focus instead on efficiency issues. This leads to the situation where a relative positive movement in a particular indicator may nevertheless represent an unsustainable situation in absolute terms. Recognising the concern associated with the general tendency to focus on efficiency issues rather than absolute environmental limits, it is suggested that consideration be given to alternative indicator sets – such as the Ecological Footprint, the Human Development Index (HDI), the genuine progress indicator (GPI)[37], and the Human Well-being Index (HWI)[38] – that provide a clearer indication of performance in absolute terms.
- The existing indicators do not deal well with the potential social and environmental impacts that are imported and/or exported as a result of increased international trade.
- Decoupling indicators that highlight trends in the link between economic growth and environmental degradation have the weakness that the relationship with the main driver is not always immediately evident or well established.[39]

The indicator sets do not always find the right balance between aggregated indicators – that can give a clearer picture of where the country as a whole is heading – and disaggregated indicators, that focus on certain themes and sectors and may carry more methodological weight.

These shortcomings are of particular application to developing countries, and it will be important to provide for them in the design of the SCP indicator framework. The implications of this brief analysis highlight the importance for developing-country SCP indicators to, amongst other things:

- find the right balance between providing for necessary social and economic considerations, while recognising the foundational role that natural capital plays in achieving socio-economic goals;
- ensure effective integration between the indicators and the national policy context;
- make explicit provision for absolute environmental limits, not only

efficiency based indicators; and
- recognise the implications of international trade.

3.4. Developing SCP-related indicators: Critical challenges

The above analysis of indicators, and the brief review of existing SCP-related indicator sets, has helped to identify a number of specific challenges that need to be addressed in the design of an SCP indicator framework for developing countries. While some of these are challenges relate to SCP indicators in all contexts, others are challenges that are of particular relevance to developing countries. The challenges should be considered in the context of the institutional, technical and political constraints identified in earlier in section 3.1.3.

The critical challenges include:
- Keeping the indicators small in number, while at the same time covering an adequate spectrum of issues or challenges.
- Finding indicators that operate at a national (macro) level, but that influence individual (micro) production and consumption choices
- Identifying challenges that are relevant to a country's specific challenges, yet are compatible with international commitments and facilitate comparison between states.
- Providing meaningful information on trends to decision-makers, including a clear signal on whether development is heading in the right direction.
- Identifying indicators that are measurable in the context of the resource constraints in developing countries that may impede access to useful data ("One of the biggest problems with developing indicators of sustainability is that frequently the best indicators are those for which there is no data, while the indicators for which there is data are the least able to measure sustainability.")[40]
- Finding an appropriate balance between "critical stock" indicators on absolute environmental limits (that are necessary for identifying long-term sustainability, but often very difficult to quantify and measure) and "efficiency-based" indicators (which may suggest a movement in a particular direction, yet fail to portray a sufficiently accurate picture of actual state of what is being monitored).
- Understanding the information that should be deduced from the direction the indicator is moving in: sometimes there may be different signals suggested by the trend (for example, an increase in agricultural fertilizer may suggest enhanced agricultural productivity, with obvious short-term benefits for wellbeing, yet this also has implications for water quality and human health).
- Recognising that there may be conflicting political priorities that seek to drive indicators in different directions (for example an increase in fossil-fuel prices may be positive in terms of reducing carbon consumption, yet negative in terms of meeting short-term

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targets for economic development).

- Ensuring that there are sufficient resources for regular monitoring of the indicator, so that appropriate response measures can be undertaken.
- Being able to identify the underlying driver for the trend – this is not always readily apparent.

3.4.1. Overcoming these challenges: Some suggested guiding principles

With the aim of addressing some of the above common challenges, the following principles have been identified as recommended principles for informing the development of SCP indicators:[41]

- **Link to existing indicator sets:** Indicators selected to measure progress toward SCP should be in-line with existing national indicator frameworks. Often indicators for SCP are incorporated within broader sets of development, poverty reduction, environment or sustainable development indicators. Sometimes the SCP indicators will be a subset of the broader national indicators or interspersed within the framework. If they are fully integrated they should be at least identifiable as indicators of SCP, so that progress towards SCP can be independently tracked. The indicators also need to be owned by policy makers responsible for SCP-related activities, and linked as far as possible to specific (groups of) policies on SCP.
- **Develop comprehensive framework:** The organisation of the indicators within a clear framework is important in assisting meaningful performance review. As noted earlier there are a number of methodologies available to categorise SCP indicators. Some specific guidance on this is provided in the final section of this document.
- **Agree on level of aggregation:** Making a decision on the level of aggregation of the various indicators is another important consideration. Aggregated indicators can give a clearer picture of where the country as a whole is heading with respect to SCP. Disaggregated indicators relating to certain themes and sectors may carry more methodological weight. However, they can tell a mixed story when some indicators are moving in one direction and some are moving in another direction. Finding a balance between aggregated and disaggregated indicators is often the best option.[42]
- **Recognise the limitations:** It is useful to provide detailed explanations for each indicator to ensure that they are not misunderstood or used inappropriately. It is also important to be clear about the potential limitations and uncertainties of the different indicators.[43] Appendix 1 of this document provides a review of some of the potential limitations with each of the example indicators listed in Section 4.
- **Recognise the need to balance absolute or directional targets:** As highlighted earlier (Section 2) it is typically not easy to define the absolute target against which the indicator measures progress, hence the predominant use of directional targets that seek to provide a general indication as to whether movement is towards or away from sustainability. To be meaningful it is important that different types of SCP indicators – that includes examples of both "efficiency-based" and "critical stock" indicators – are employed to give a better account of progress toward SCP.
- **Adopt a structured screening and selection process:** The identification of relevant indicators should be undertaken as part of a careful screening and selection process to ensure that indicators are selected based on context-specific conditions and that they comply with collective and individual filter criteria (see Section 3.5 and Box 5).[44]

3.5. Selection criteria for SCP indicators

As suggested by the above review, a key component of developing an indicator set is the definition and use of appropriate selection criteria aimed at narrowing down the indicators. Useful guidance on appropriate criteria is provided by the Bellagio Principles, the UN CSD and in the proposed indicator set for EEA countries.[45] Following the approach suggested within the ETC/RWM's working paper, it is recommended that there is merit in dividing the selection criteria into two groups:

- **Collective criteria** – these relate to the full set of proposed indicators
- **Filter criteria** – these should inform the selection of individual indicators

While these two different kinds of criterion are usually blended together in most indicator frameworks, the EEA working paper makes a compelling case that they are in fact quite different: "The second set is exclusive, acting as a filter for potential indicators, whilst the first is inclusive, aimed at ensuring consistency between indicators, correct balance and focus on different pillars, themes and types of indicators, and completeness, clarity and usefulness of the full set. As such the first set reflects much of the decisions made for central elements of the framework including scope and vision of SCP and organisational structure."[46]

These selection criteria are described in Section 5, as part of the process of developing and using the SCP indicator framework (see Box 5).

4. An SCP Indicator Framework for developing countries

> "A framework for organizing the selection and development of indicators is essential. Nevertheless, it must be recognized that any framework, by itself, is an imperfect tool for organizing and expressing the complexities and interrelationships encompassed by sustainable development. Ultimately, the choice of a framework and a core set of indicators must meet the needs and priorities of users, in this case national experts, civil society groups and decision-makers responsible for the development and use of indicators to monitor progress towards sustainable development. It should be stressed that any country wishing to use indicators, in any systematic way, must develop its own programme drawing on the resources currently available." (UNCSD)[47]

Given the challenges identified in Section 3, it is considered not useful to simply provide a definitive list of indicators from which policy-makers can pick and choose. Instead, they need to develop their own set of indicators based on an informed understanding of the practical implications of SCP, and with the goal of ensuring that the indicators are specifically tailored to the information needs, sustainability priorities and national frameworks and strategies of their own country. With this in mind, this section seeks to give some general guidance on the direction that should be taken in developing and identifying indicators.

4.1. The SCP Indicator Compass: An Example Set of SCP-related indicators

The main guidance provided in this Section is presented in the form of a structured set of examples of indicators that are presented using the SCP Indicator Compass (Table 1) that has been developed on the basis of the conceptual framework proposed in Section 2. The suggested set of indicators that are provided in Table 1 include indicators identified on the basis of a bottom-up review of indicators in 20 developing countries (Table 2), as well as indicators that are suggested by the (top-down) analysis undertaken in developing the conceptual framework (Section 2).

The identification of these indicators has also been informed by the considerations and criteria reviewed in Section 3. While it is recognised that some of the proposed indicators will nevertheless be impacted by certain constraints – relating for example to data availability and monitoring capacity – it is nevertheless suggested that this proposed indicators provide a useful set of examples that can inform the development of national SCP indicator sets in developing countries.

In considering these indicators, it is important to recognise the potential limitations associated with each indicator. A review of these limitations is provided in Appendix 1. An understanding of these limitations should inform the development of the country-specific indicator frameworks, together with the more detailed guidance on using the indicator framework presented in Section 5.

4.2. The baseline study: Existing SCP-related indicators in developing countries

To assist in the development of an SCP-indicator framework for developing countries, a detailed review was undertaken of existing SCP-related indicators in 20 developing countries across all developing country regions, comprising six countries from Africa, five from Latin America and the Caribbean, five from the Asia-Pacific region and four in Western and Central Asia (see Appendix 1). A summary set of core examples, based on this review, is provided in Table 2.

Even though not all countries that were reviewed have a specific set of sustainable development or SCP indicators, a considerable number of SCP-related indicators could nevertheless be identified for each of these countries (e.g. as part of national economic development plans). The key challenge was to select those indicators that are directly relevant to SCP, cover a broad range of themes, are focused on the priorities of developing countries and either are, or have the capacity to be, measurable.

For the purposes of the preliminary study the indicator sets for each country in the overview were divided into three broad themes covering the three main pillars of sustainability, with the environmental pillar being divided into a further four themes. These themes were identified on the basis of a review of the indicator sets

Table 1:
The SCP Indicator Compass:
An example set of SCP-related indicators for developing countries

This table presents some examples of indicators that are intended to inform the development of SCP indicator frameworks within developing counties. The identification of these indicators has been informed by the analysis undertaken earlier, and by a review of the current status of SCP-related indicators in 20 developing countries across all developing country regions (Table 2). The indicators are presented in the format of the SCP Indicator Compass, the structure of which has been developed based on the conceptual analysis provided in Section 2. Further guidance is provided in Appendix 2.

Increasing ability to adapt

Efficiency-based

Macro-Level:
- Waste and hazardous waste to landfill per GDP (D)
- Energy consumption per capita and GDP (D)
- Emissions (GHG, NOx, SO2, PM10) per GDP by sector (D)
- Investment in renewables as % total energy investment (D)
- Water use and water withdrawals per GDP (D)
- Land used for organic farming as % total agricultural land (D)
- Fertiliser and pesticide use per agricultural production (D)
- Subsidies or incentives for applying life-cycle design principles (R)
- Use of hazardous and ozone-depleting substances per GDP (D)
- "Green" taxes, subsidies, caps that decouple growth per resource use (R)
- Imports and exports by product group (tonnes and US$) (C)

Producers:
- Waste and hazardous waste per unit product or turnover and by sector (D)
- % of waste or by-product recycled or reused (including as energy feedstock)
- Energy consumption per unit product or turnover (D)
- Emissions (GHG, NOx, SO2, PM10) per unit product and by sector (D)
- Water use per unit product and turnover (D)
- Fertiliser and pesticide use per unit of agricultural production (D)
- Agricultural productivity (tonnes of product / ha of land) (C)
- No. of companies applying life cycle principles in product design (R)
- nputs and consumption of hazardous (incl. persistent) and ozone depleting substances per GDP (D)

Consumers:
- Collected domestic waste per capita (D)
- % of post-consumer waste recycled (D)
- Domestic energy consumption per capita (D)
- Average petrol or diesel consumption (litres per 100km) (D)
- Domestic water consumption per capita (D)
- Market share of labelled (or otherwise classified) "sustainable" goods and services (R)
- Material intensity of consumption (tonnes per capita) (D)
- Nature of domestic food consumption (D) (track general dietary and consumption patterns, impacting environmental efficiency and human health such as malnutrition and obesity)

Compliance

Macro-Level:
- No. of instances of non-compliance with permit conditions (D)
- No. of government pollution control or waste or water control officers per number of companies and GDP (S/D)
- Government or provincial or local policies on SCP 0 - note re the budget size (R)

Producers:
- No. of instances of non-compliance with permit conditions (D)
- Investment share in GDP (C)
- Investment in improved environmental performance share in GDP (C)

Consumers:
- No. of community complaints regarding environmental and working conditions (R)

LESS SUSTAIN-ABLE

Baseline indicators for developing SCP indicators: GDP Growth (%) per Capita **(C)** */ GDP by industry (% GDP)* **(C/D)**

MORE SUSTAIN -ABLE

Critical stock/Resilience

Macro-Level:

- CO2 per capita (note e.g. the IPCC target of 2 tonnes per capita by 2050)
- Annual withdrawals of ground and surface water as a percent of total available water (S/D)
- Biocapacity (cropland, grazing land, forests, fisheries) (S/D)
- Proportion of renewable energy sources per total supply of primary energy (S/D)
- Population growth rate (%) (C)
- Land use by category (C)
- Land affected by degradation and desertification (%) (S)
- Annual net deforestation of land (S/D)
- Depletion rate of minerals and non-renewable resources (S/D)
- Water quality of fresh water and drinking water sources (S)
- Concentration of specified air pollutants (S/D)

Producers:

- Production volumes of persistent, non-natural substances (S/D)
- Expenditure on renewables as % energy expenditure (D)
- Investment in restoration of natural systems (R)
- Percentage of total environmental protection investment per GDP (D)
- Investment in alternative production methods (e.g. biomimicry systems and industrial) as a % industrial process research (D)

Consumers:

- % contribution of small scale, local-level renewable energy initiatives to national energy supply (R)

Connectivity

Macro-Level:

- Income per capita & GINI co-efficient (C/S/D)
- % below or at poverty line (S/D)
- Rate of rural to urban migration
- Literacy levels (%) (S)
- Access to basic services (%) (S/D)
- Access to transport & communications networks (%) (D)
- Access to schools % (S)
- Employment creation per GDP growth (D)

Producers:

- No. of annual reports containing social or environmental information (R)
- Social or environmental investment as % of profit or turnover (R)
- % company employees attending sustainability oriented courses (R)
- Company participation in SD-oriented indices (R)
- Growth in the SME contribution to GDP and employment (C)
- No. of companies certified to ISO 14001 (R)

Consumers:

- No. of membership in social or environmental organisations (S)
- No. of registrations for SD oriented courses (R)
- % of transport using public transportation networks (D)
- Establishment of local markets, barter, exchange networks (R)
- Internet subscribers % (S/D)
- Graduation from tertiary institutions % (C)

Increasing capacity to sustain mutually-beneficial relationships

used in the international arena, most notably the UNCSD and EEA indicator sets. The key themes are:

- **Environmental:**
  Material consumption and resource use
  Energy use
  Land use and biodiversity
  Waste and pollution
- **Socio-economic** – including economic baseline indicators, housing, basic services, health. It was felt that the social and economic pillars needed to be included given the developing country context.
- **Institutional** – these indicators monitor structures and mechanisms of social order that govern the behaviour of sets of individuals.

In addition, indicators regarding transport, communication and other issues were captured in a broad catch-all theme 'other'. All the country indicators were classified according to whether they serve as direct or indirect indicators. Direct indicators are defined as those that show either a direct change in consumption or production patterns or a direct effect of changes in consumption and production. Indirect indicators are those whose change does not in and of itself indicate a change in production or consumption patterns, but which can be used either to provide context for change or which could provide a 'clue' that change is occurring (but not necessarily an answer as to the cause of that change). It should be noted that the distinction between 'direct' or 'indirect' may be grey, leading to decisions regarding classification being subjective.

The core indicators were distinguished according to the following characteristics (see Section 3.2):

- **Contextual:** these provide the context to the indicators and provide a logical basis for the comparison of indicators to determine their performance.
- **Drivers** – these measure patterns in production or consumption expressed, for example, as material throughput, embedded energy, resource use and connectivity. Specific examples include indicators of resource use, energy generation, pollutant emissions, and access to heath care.
- **State** – this refers to the actual measure of human, social or natural capital, expressed as amount and/or quality. If compared to a baseline, this state indicator will show the actual decreases or increases in aspects of human, social or natural capital (providing for constant or increasing level of "critical natural capital"). Specific examples include bio-capacity, the acidity levels of lake, poverty levels and so on.
- **Response** – this refers to the policies, actions, investments, expenditure or degree of compliance towards SCP-oriented goals. This is really a measure of the commitment, expressed in action.

To put the filtered core set of indicators in perspective, the identified indicators were benchmarked with two sets of international indicators, namely the Johannesburg Plan of Implementation (JPOI) and the Millennium Development Goals (MDG). The primary gaps in alignment with the MDG indicator set are around agriculture, energy use, waste and pollution (MDG only includes an indicator for greenhouse gases). The indicator set selected is, however, closely aligned with JPOI.

Table 2:
Examples of Existing SCP-related indicators

This table presents some examples of SCP-related indicators that are used in many of the 20 developing countries that were reviewed in the first phase of this project. These 20 countries came from all developing country regions, comprising six African, five Latin American and Caribbean, five Asia-Pacific and four countries in Western and Central Asia.[48]

Direct Indicator | Indirect Indicator

Theme	International Indicator Sets		State (S) Driver (D) Response (R) Context (C)
	JPOI	MDG	
Material Consumption and Resource Use			
Average Water Consumption per Unit Product	IV.25 (d+e) / IV.26 (c)	(7.4 Total water)	D
Consumption of Ozone Depleting and Hazardous Substances per Unit Product	III.23 (c+d)	7.2	D
Ratio of Fertilizer & Pesticide Consumption to Agricultural Produce	(III. 23 (a))	n/a	D
Agricultural Productivity (tonnes of product / ha of land)	IV.40	n/a	C
Materials Consumption per Capita (tonnes)	n/a	n/a	D
Depletion Rate of Minerals and Non-Renewable Resources	n/a	n/a	S / D

Theme	International Indicator Sets		State (S) Driver (D) Response (R) Context (C)
	JPOI	MDG	
Energy Use			
Energy Consumption per Capita / GDP	II.9/III.20	n/a	D
Average Energy Consumption per Unit Product	n/a	n/a	D
Electricity Generation per Capita	II.9/III.20	n/a	D
Proportion of Renewable Energy Sources of Total Supply of Primary Energy (%)	IV.38 (f)	n/a	S / D
Land Use and Biodiversity			
Annual Deforestation of Land (ha)	IV.45	(7.1 Forests)	S / D
Land Use by Category (%)	III.21/X.132	(7.1 Forests)	S / D
Land Affected by Land Degradation and Desertification (%)	IV.41	n/a	S
Number of Threatened and Extinct Species	V.44	7.6	S
Land Conservation (% Total Territory)	V.44	7.5	S / D
Waste and Pollution			
Average of Solid Waste Generated per Unit Product	(III.22)	n/a	S / D
Waste Recycling and Re-use (%)	III.22	n/a	D
General Waste Produced per Capita per Year (tonnes)	III.22	n/a	S / D
Hazardous Waste Produced by Sector per Year (tonnes)	III.23	n/a	D
Emissions of CO2 / Greenhouse Gases per GDP / per Capita	IV.38	7.2	S / D
Concentration of Criteria Air Pollutants in Urban Areas	IV.39	n/a	S / D
Water Quality of Fresh Water and Drinking Water Sources	IV 25, VIII.66	n/a	S
Socio-Economic			
GDP Growth per Annum (%) / per Capita	III.15	1.4 (GDP growth per employee)	C
GDP by Industry (% GDP) / GDP Agriculture (% GDP)	n/a	n/a	C / D
Investment Share in GDP	n/a	n/a	C
Imports / Exports by Product Group (tonnes and US$)	V.47	n/a	D
Unemployment Rate (%)	II.7(e)/10(b)/11(c)	1.5 (Employment/population ratio)	C
Gini Coefficient	V.47	1.2 (Poverty gap ratio)	S
Population at Poverty Level (%)	II.7(a)	1.1	S / C
Population Growth	n/a	n/a	C / D
Literacy Rate (%)	X.123	2.3	S / D
Population with Access to Safe Water (%)	IV. 25 (a)	7.7	S
Population with Access to Sanitation (%)	IV. 25 (a)	7.8	S
Population with Access to Healthcare System (%)	VI.54	n/a	S
Kcal Consumed per Day per Adult (Food Security)	IV.40 (a)	1.9	S
Formal-Informal Housing Ratios (%)	II.11 (b)	7.9	S
Numbers of Professionals Participating in On-Job Training, Workshops and Seminars on Sustainable Buildings and Construction	n/a	n/a	D
Percentage of SMEs Contribution to GDP / Employment	IV.43 (e)	(1.7 Own Account)	S / D
No. of Working Children	(II.7 (g))	n/a	S
Institutional			
Number of Establishments Holding ISO 14001	III.18(a)	n/a	S
School Curriculum Containing Sustainable Consumption Concept	X.124	n/a	D
Change in Expenditure on Research and Development as a Percentage of GDP (%)	e.g. III.20(k)/28/33(a)/37(c)/ 40(g)/42(f)/44(q)	n/a	D
The Percentage of Total Environmental Protection Investment over GDP (%)	n/a	n/a	D
Others			
Change in Access to Public Transport (%)	III.21 (a)	n/a	S / D
Acreage of Land Used for Road Transport Infrastructure	III.21	n/a	S
Main Telephone Lines per 1000 Inhabitants	V.52	8.14	S
Number of Internet Subscribers per 1000 Inhabitants	V.52	6.16	S / D

5. Guidance on using the SCP Indicator Framework

> “Clearly there is a need to further develop and expand the set of available indicators that reflect the ecological, social, economic and international dimensions of consumption and production patterns from which countries could select, as appropriate, and adapt in creating their own indicator sets. Indeed at the Third International Expert Meeting on SCP, held in Stockholm from 26 - 29 June 2007, it was acknowledged that there is no need for harmonised (or a set of global) SCP indicators, given the different needs and circumstances in developed and developing countries. (UNEP) [49] ”

UNEP’s recently published Guidelines for National Programmes on SCP provide a structured approach for developing and implementing national SCP programmes, a key element of which includes the development of SCP indicators. It is strongly recommended – though not essential – that the guidance below on using the indicator framework is read in conjunction with these UNEP Guidelines, which provide a useful over-arching framework in which to understand the role of SCP-related indicators.

In terms of the UNEP Guidelines, the process of developing SCP-related indicators falls within Step 5 (“Define objectives and set targets”) of the proposed ten-step structured approach for national SCP programmes. Following the UNEP Guidelines, by this stage of the process policy-makers have already:

1. established a multi-stakeholder advisory group;
2. undertaken a scoping exercise;
3. clarified the institutional framework; and
4. identified and selected priority areas.

The focus of Step 5 is on defining objectives and targets, and identifying suitable indicators of progress in respect of these objectives and targets.

The final section of this Guidance Framework presents a proposed approach for undertaking the process of developing and using SCP-relevant indicators. This approach for using the Indicator Framework is informed by the following key assumptions:

- At the risk of being overwhelmed into complacency, if the indicators (and the national SCP programme itself) are to be effective in achieving the required “fundamental changes in the way societies produce and consume”,[50] then it is critical that policy-makers maintain the bigger picture context in undertaking this task, and that they are reminded in particular of the need to maintain a critical stock of natural capital. It is important also to develop indicators that drive change – or influence decision-making – from the level of the state down to the individual producer and consumer. The proposed “indicator compass” is intended to provide guidance on both these issues.
- As outlined at the Third International Expert Meeting on SCP, it must be recognised that there is no single universal set of indicators that is equally applicable to all countries, but that indicators need to be tailored to the different needs and interests of individual countries.
- In doing so, it is important that policy-makers and stakeholders are familiar with the spectrum of identified themes, have identified the relevance of these themes to their country or region, and have thoroughly explored the nature of the different types of indicators to do the required job.

In providing guidance to policy-makers that allows for the differing contexts in which they operate, the suggested approach is for policy-makers to consider a series of questions, the answers to which will assist them in providing direction on the effective application of the indicator framework. In line with the four phases used in the UNEP Guidelines for describing the Ten-Step approach for national SCP programmes, the questions and guidance have been structured as follows:

- **Plan:** Clarifying the context for SCP-related indicators
- **Develop:** Identifying the indicators and indicator framework
- **Implement:** Implementing the SCP framework

• **Monitor:** Evaluating the efficacy of the indicators

The guidance provided below for each of these four phases draws from and builds on the recommendations contained in the UNEP Guidelines for National Programmes on SCP.

5.1. Plan: Clarifying the context

The first step in using the SCP Framework is to clarify the context in which the indicators are to be used and applied. This involves considering the key goals and objectives for the indicators, identifying the target end-user, and assessing the nature of existing resources.

In considering these issues, policy-makers would benefit in asking themselves the following questions.

• **What is the underlying scope and purpose of the indicators?**
– Are we clear about the key goals and objectives for these indicators?
– What existing policy frameworks should inform the design of these indicators?
– Is the thematic scope of the indicators clearly defined?

• **Who are the target end-users?**
– Are we clear about the target end-user for the indicators (e.g. policy-makers, politicians and/or consumers)?
– Who should consider this information? For what purpose?
– What are the implications of the target user-group and end-purpose for designing the indicators?

• **Where are these indicators to be applied?**
– Is the geographic scope of the indicator framework clearly defined?
– Does it relate to reporting at the national, local or regional level?

Box 3:
Common constraints with using SCP-related indicators

In designing a framework for indicators aimed at promoting the adoption of sustainable production and consumption in developing countries, it is important that provision is made for the following commonly-observed institutional, technical and political constraints that hinder the effective use of sustainability indicators in general and SCP-related indicators in particular.[52] An assessment of these potential constraints – and the identification of possible means for addressing them – should be undertaken as part of the structured scoping exercise that assesses the context for SCP-related indicators.

Institutional constraints
- General institutional constraints – limitations in resources, personnel and equipment.
- Data reporting units – difficulties with the aggregation and comparison of data sets.
- Data management – lack of central compiling systems.
- Relevance – lack of relevance of certain issues for some countries result in incomplete global data sets.

Technical constraints
- Definitional differences – vague definitions, and differences in definitions between countries, risk resulting in misinterpretations.
- Coverage of monitoring networks – the lack of monitoring networks results in gaps in data time series.
- Different reporting periods – difficult to compare countries' collected time series.
- Gap filling – using various estimates, instead of real data, can lead to misinterpretation.
- Conceptual and technical difficulties of measurement – certain aspects of sustainable development are difficult to monitor over large geographic areas or to determine the cause and effect relationship.
- Differences in measurement method – data that are incompatible risk ending up in the same aggregated data set without detailed analysis of data collection and measurement methods.

Political constraints
- Environmental issues are typically not very high on the list of priorities for governments, particularly in developing countries where there are more obvious social considerations.
- Compounding this is the fact that environmental and sustainability considerations typically (though not always) demand long-term investments, sometimes with short-terms costs the benefits of which are not immediately evident.
- These constraints of low priority and political willingness have thus often led to small budgets for effective monitoring, reporting and acting on longer-term social and environmental issues.
- The consequent lack of readily available data impedes the level of awareness of the public, which in turn reduces public opinion and thus political willingness to act.

The framework of indicators should be developed in such a manner that – to the extent that this is possible – sufficient provision is made for these constraints within the design of the framework and in the selection of indicators. A key consideration in this regard is to ensure that the indicators are selected against a set of key selection criteria (see section 3.5).

– Is there a need to make provision for the indirect effects associated with international trade, and if so how should this be done?

- **When (over what time frame) are they applicable?**
  – What are the timeframes for monitoring and reporting on the indicators?
  – Have appropriate baselines dates been defined? Are these consistent across indicators?
- **How are they to be applied?**
  – What existing resources can be drawn on for accessing data?
  – What partnerships would make this easier?
  – Would it make sense to introduce a pilot programme?

These questions should be considered as part of a formal scoping exercise, which ideally provides for a multi-stakeholder process (include, for example, the possible establishment of a multi-stakeholder advisory group). In considering the above questions the scoping exercise might include, for example:[51]

- an assessment of the ecological, economic and social impacts of current consumption and production patterns in the target region, including careful consideration of the possible nature of the critical stock of natural capital;
- a review of the nature of the potential costs and benefits of SCP initiatives in the local context;
- an overview of recently completed and ongoing SCP-related policies and activities particularly those at the international/regional level and those included in existing national policies

Box 4:
Criteria for selecting SCP-related indicators

The identification of relevant indicators should be undertaken as part of a careful selection process to ensure that indicators are selected based on context-specific conditions. As noted in Section 3.5, useful guidance on appropriate criteria for selecting indicators is provided by the Bellagio Principles, the UNDESA and in the proposed indicator set for EEA countries.

In identifying appropriate indicators for developing countries, it is recommended that policy-makers consider the following criteria proposed by the ETC/RWM:[53]

Collective criteria – *informing the full set of indicators*
It is recommended that the final set of indicators in a given country or region should be:

- Limited in number, but address the full scope of SCP issues
- Directly relevant to the national policy context, summarising information that is required for effective decision-making
- Theoretically well-founded and based on a degree of international consensus
- Relevant to the intended target group, recognising that different groups could have different needs and uses for the information provided by the indicators.
- Inclusive of intensity/efficiency indicators (e.g. Eco-efficiency, energy intensity, resource productivity) and absolute indicators (e.g. Total energy and resource use).
- Mutually compatible, not working against one another and not telling the same story twice.
- Based on an appropriate spatial and temporal scale

Individual filter criteria – *informing the selection of each individual indicator*
At the level of the individual indicator, it is recommended that each indicator should be:[54]

- Understandable – the indicator should be clear, simple and unambiguous. The less interpretation that is required, the more effective the indicator.
- Relevant – it should contribute to the vision of SCP as articulated earlier in this guidance framework.
- Graphically representable – it should be possible to represent the indicator, and any trends associated with the indicator, in a graphical manner.
- Readily interpretable – it should be clear in which direction the indicator should develop to indicate more sustainable production and consumption patterns.
- Relevant in most developing countries – it should be sufficiently general as to apply to most developing countries, while at the same time recognising the particular needs of developing as opposed to industrialised countries.
- Monitorable – it should be based on data that is readily available in most developing countries or that could be made available at a reasonable cost-benefit ratio and with regularity within the time frame of an appropriate policy cycle (i.e. updated each year and with maximum four year time delay)
- Reliable and consistent – the data collection and analysis methodologies associated with the indicator should be consistent from country to country and at the very least be consistent within a given country from year to year.
- Representative – the indicator can be taken to represent current SCP trends within a given sector or final consumption cluster.

It is important of course to recognise that it will not always be feasible for indicators to meet all of the above criteria, particularly in developing countries where technical, institutional and political constraints are most apparent. At the same time, it is suggested that rather than tailoring the indicators to meet each of these criteria, there is merit in including aspirational indicators in the hope that some of the existing constraints may be addressed.

and strategies, with the aim of ensuring synergy between these initiatives and the proposed indicators;

- the identification of possible stakeholders to be involved in the process of informing the identification of the indicators;
- the identification and review of possible priority / focus areas and policy responses; and
- an assessment of the required enabling conditions – and possible constraints – for the development of effective SCP indicators (see e.g. Box 4). [52]

This structured assessment of the SCP context is an important foundation for informing the identification of indicators.

5.2. Develop: Identifying the indicators and indicator framework

The second phase of the process relates to the development and identification of the SCP-related indicators and the preferred indicator framework. This requires a good understanding of the vision and rationale for the indicators, founded on clear agreement as to the policy priorities and the intended direction of the development path.

With the aim of providing clarity on the direction of the change that should be signalled by the SCP-related indicators, the Guidance Framework has proposed an "SCP indicator compass" that is intended to provide the basis for an improved conceptual understanding of the practical implications of SCP, and on the nature of the change and direction required to promote SCP.

Recognising that the final choice of indicators will be informed by the local policy context (as assessed in Phase 1 above), it is suggested that the following questions will be useful in assisting in the development and identification of the SCP-related indicators and indicator framework.

- **Scope and vision**
  - – What SCP objectives are needed to move towards a more sustainable society?
  - – Is this informed by a good appreciation of the potentially profound implications of sustainable production and consumption?
  - –Where is the SCP programme focused? Is this the most appropriate focus?
  - – Consider the conceptual framework presented in Section 2, and summarised in Figure 2
- **Identifying the indicators**
  - – Which indicator/s will contribute to an enhanced understanding of the scope and vision?
  - – Which indicator/s will assist in tracking progress towards the attainment of this vision?
  - – Does the indicator set as a whole comply with the collective filter criteria (see Box 5)
  - – Does the indicator comply with the individual filter criteria (see Box 5)
  - – Consider the examples of possible indicators provided in Table 1 and Table 2
- **The SCP indicator framework**
  - – What framework for organising the indicators is most effective for communication and managing the indicator sets?
  - – Consider the guidance in Table 3 and the four broad framework options presented in Section 3.2

The primary outcome of this second phase of the process is a clear set of SCP-related indicators, and a useful framework aimed at facilitating interpretation and ready analysis of these indicators. The Indicator Compass presented in Table 1 is intended to provide decision-makers with a useful basis for developing their own indicators; it is not intended to be adopted as it is, without consideration to the local context.

5.3. Implement: Implementing the SCP framework

The implementation phase of the SCP framework involves a range of activities aimed at ensuring the effective application and use of the indicators. These activities include identifying and addressing possible constraints, identifying opportunities for greater leverage, and ensuring effective communication and reporting on the indicators.

- **Identifying and addressing key constraints:**
  - – What constraints impede the possible implementation of the framework? (See Box 4)
  - – What are the implications of these constraints on those indicators that have been identified?
  - – What activities can be taken to overcomes these constraints?
  - – What is the difference between our "ideal" and what is realistic today?
  - – When might we review this gap? Can we establish and commit to a mechanism?
  - – What incentives might be provided to assist producers / consumers in meeting this objective?
- **Identifying opportunities for leverage:**
  - – What related data is already being collected?
  - – How can we integrate this data and make use of the linkages?
- **Communication and reporting:**
  - – How might the identified indicators be communicated?
  - – How do we turn this data into information?
  - – How can we present the indicators in a manner that tells a story?

Table 3:
Analysing SCP indicators by theme: Examples for developing countries

The following table presents a possible framework for organising and analysing the SCP-related indicators by theme, and an illustration of how possible indicators may relate to the proposed SCP Compass and to the indicator type (driver, state or response). The table also includes some examples of possible targets and measurement units.

Theme	Priority areas	Objective	Target (examples)	SCP Compass perspective	Indicator type (DSR)	Indicator example
Waste and pollution	Industrial – solid waste	Reduce industrial waste to landfill	15% by 2010	Efficiency	Driver	Solid waste/unit product; solid waste /turnover
Material consumption and resource use	Industrial – water use	Reduce water demand	5% reduction by 2020	Efficiency	Driver	Water use / unit product
Energy use	Domestic consumption	Reduce domestic energy consumption	10% reduction by 2012	Efficiency	Driver	Domestic energy consumption per capita
	Renewable energy	Increase share of renewables in energy supply	4% renewables by 2015	Critical stock (non-renewables)	Response	Investment in renewables as % total energy investment
Land use and biodiversity	Forest area	Reduce deforestation rates	80% reduction by 2008	Critical stock (biocapacity)	Driver	Annual net deforestation of land
	Soil fertility	Increase use of organic farming methods	15% increase by 2009	Critical stock (biocapacity)	Driver	Land used for organic farming as % of total agricultural land
Transport and communication	Transportation	Increase % population with access to public transportation networks	60% access by 2010	Connectivity	Driver	Population with access to public transportation
	Communications	Increase % population access to Internet	30% by 2010	Connectivity	State	# internet subscribers
Socio-economic	Employment	Reduce unemployment rates	50% reduction by 2008	Connectivity	Driver	Employment creation / GDP growth
	Social investment	Increase rates of social investment	Ave CSI spend at 2% post tax profits	Connectivity	Response	Social / environmental investment as % of profit
Institutional	Air quality	Reduce smog	Zero exceedances	Efficiency	Driver	# exceedances of air pollution permit conditions
	Promoting innovation	Increase research capacity in sustainability aligned research	10% increase from previous year	Efficiency / connectivity	Response	Total expenditure on sustainability aligned research

Key target (State / Producer / Consumer)	Units	Direction	Is there an existing base-line?
Producer	tons	↓	Yes/No
Producer	Kilolitres	↓	Yes/No
Consumer	KWH	↓	Yes/No
State / Producer	% share	↑	Yes/No
Producer	Ha	↓	Yes/No
Producer	Ha	↑	Yes/No
Consumers	%	↑	Yes/No
Consumers		↑	Yes/No
Producers	# jobs per GDP unit increase	↑	Yes/No
Producers	%	↑	Yes/No
Producers	#	↓	Yes/No
State / producers	Local currency / US$	↑	Yes/No

Effective implementation of the indicator framework is dependent upon the existence of an appropriate institutional structure and on access to sufficient human, technical and financial resources. While the nature of the most appropriate institutional structure will depend on the goals and objectives of the indicator framework, and on the local political and social context, as a general principle it is suggested that efforts be taken to establish a partnership based approach involving the participation of government, business and civil society organisations.

5.4. Monitor: Evaluating the efficacy of the indicators

The final phase seeks to promote continuous improvement in the indicator framework and in the choice of indicators, through a process of regular monitoring and evaluation. Monitoring and evaluation of the impact and efficacy of the indicator framework is a critical step: it fosters accountability in the parties involved and provides an indication of the achievements and value of the identified indicators.

Possible questions to consider as part of the monitoring and evaluation of the indicators and the indicator framework include:

- Have the underlying objectives of the indicator framework been addressed?
- Is the indicator framework providing a meaningful assessment of the progress being made?
- Is progress being tracked across an adequate spectrum on the compass?
- Are both producers and consumers being sufficiently engaged in the process?

The nature of the monitoring and evaluation programme will be informed by the scope and objectives of the indicator framework, and by the local context in which the indicators are being applied. Providing detailed guidance on the scope of a monitoring and evaluation initiative for SCP-indicators is seen to be beyond the remit of this guidance document. Various options – and more detailed guidance – for SCP-related monitoring and evaluation programmes are provided in UNEP Guidelines for National Programmes on SCP.

In many instances there will be existing monitoring and evaluation programmes that relate to different aspects of the SCP-related policies that are fall within the remit of the SCP-related indicators. Steps should be taken to build on these existing programmes and ensure appropriate synergy with them.

6. Conclusion

The underlying objective of this Guidance Framework is to assist decision-makers to identify SCP-related indicators that are specifically tailored to the information needs and sustainability priorities of their respective countries or regions, and to provide some broad guidance on the process to be followed in developing and using SCP-related indicators. In addition to encouraging and facilitating reporting on progress, a critical supporting goal of this document is to contribute to an enhanced understanding of what SCP means in practice in the developing country context.

The proposed set of indicators presented in this document are presented as examples only, with the aim of stimulating internal dialogue and debate regarding the identification of locally relevant indicators. These should be further interrogated in terms of their ambiguity / clarity, measurability, acceptability by governments as input into policy decisions relating to the priorities of the countries in question, and any further limitations. Ultimately, it is hoped that this document will be used as means of developing policy that recognises and responds to the need for "fundamental changes in the way societies produce and consume."[55]

Appendix 1

Existing SCP-related indicators in developing countries

This Appendix provides a summary of the outcomes of a comprehensive review of SCP-related indicators in twenty developing countries. This developing country review was undertaken with the aim of informing the development of the SCP Indicator Guidance Framework (this document) by providing a "bottom-up" perspective of existing SCP-related indicators in developing countries. A key outcome of this review is presented in Table 2 - Examples of Existing SCP-related indicators (see page 20).

In addition to providing an important stimulus to policy-makers for identifying locally relevant SCP-related indicators, the review also seeks to illustrate that countries can have and use SCP-related indicators, even in the absence of specific SCP strategies. The review also seeks to provide encouragement to those developing countries that are interested in reflecting SCP thinking in their new or revised indicator sets (whether these sets be SCP-specific or not).

Scope of the developing country review

The following twenty developing countries were selected for the review, representing a range of geographical sizes, from less developed to more developed economies, cutting across all developing country regions, including small island developing states:

- **Africa:** Egypt, Ethiopia, Mauritius, Senegal, South Africa and the United Republic of Tanzania
- **Latin America and Caribbean:** Brazil, Chile, Colombia, Cuba and Jamaica
- **Asia-Pacific:** China, Indonesia, Malaysia, Papua New Guinea and Thailand
- **Western and Central Asia:** Jordan, Lebanon, Kazakhstan and Yemen

The review includes countries in which UNEP is piloting the development of SCP-related strategies, as well as countries that are either well advanced in developing SCP strategies or those that are in the initial stages. Of the countries reviewed, one country, Brazil, has a particular set of SCP indicators in place, with three more countries intending to follow (Senegal, the United Republic of Tanzania and Thailand). Sustainable Development Indicators (SDI) are more common, with three countries having a defined set of indicators (Brazil, Chile and South Africa), and seven others currently developing such indicators (Egypt, Mauritius, China, Malaysia, Kazakhstan, Columbia and Jamaica). Seven of the countries reviewed have not developed specific sets of either SCP or SD indicators. It must be noted, however, that it is not necessary for countries to develop specific sets of SCP or SD indicators, but that indicators relevant to SCP and SD could rather be incorporated into other relevant frameworks.

While recognising that the SCP priorities of certain rapidly industrialising emerging economies (such as China and those in South East Asia) might differ from 'base of the pyramid' economies (such as many of those in Africa), this overview nevertheless includes all these countries under the one banner of "developing countries", in the belief that their SCP priorities generally have more in common than those of developed countries.

Even though not all countries have a specific set of SD or SCP indicators, a considerable number of SCP-related indicators could be identified for each of these countries. The key challenge was to select those indicators that are directly relevant to SCP, cover a broad range of themes, are focused on the priorities of developing countries and either are, or have the capacity to be, measurable.

Indicator selection criteria

As outlined in Box 4 (page 24) the identification of an indicator set should be informed by the use of a set of selection criteria. The indicators selected from each country were chosen with consideration to the Bellagio Principles as adapted by the UN Commission on Sustainable Development:

(i) national in scale
(ii) relevant for measuring progress
(iii) simple, clear and unambiguous
(iv) realizable within capacities of national governments *
(v) conceptually well founded
(vi) limited in number, but broad in coverage
(vii) represent international consensus
(viii) based on readily available data or could be made available at reasonable cost *
(ix) of known quality and updated at regular intervals. *

* While most of these criteria were applied in the selection of the country-specific indicators in this overview, the criteria (iv), (viii) and (ix) were less strictly applied due to the practical realities within developing countries.

The indicators presented in the country lists attached were selected from a large number of indicators found in various national strategies and frameworks, using the above-listed indicator selection criteria. The listed indicators do not necessarily cover all the possible SCP indicators for the countries in question, but rather provide a targeted selection for illustrative and guidance purposes. Those indicators that have been selected as core indicators (see Table 1) have also been captured in the country lists to give an indication of which countries already include certain core indicators in their strategies and monitoring systems (often taken from statistical reviews).

Indicator themes

For the purposes of this review, the indicator sets for each country in the overview were divided into three broad themes covering the three main pillars of sustainability, with the environmental pillar being divided into a further four themes. These themes were identified in the basis of a review of the indicator sets used in the international arena, most notably the UNCSD and EEA indicator sets. The key themes are:

- **Environmental:**
  Material consumption and resource use
  Energy use
  Land use and biodiversity
  Waste and pollution
- **Socio-economic:** These include indicators relating to economic baseline issues, housing, basic services, and health, all issues that are of particular importance to developing countries
- **Institutional:** These indicators monitor structures and mechanisms of social order governing the behaviour of individuals
- **Other:** These include indicators relating for example to transport and communication issues

Classification of direct and indirect indicators

The indicators in each country were further classified according to whether they serve as direct or indirect indicators. (The distinction between 'direct' or 'indirect' can be blurred, resulting in decisions regarding classification being somewhat subjective).

Direct indicators are defined as those that show either a direct change in consumption or production patterns or a direct effect of

changes in consumption and production.

Indirect indicators are those whose change does not in and of itself indicate a change in production or consumption patterns, but which may be used either to provide context for change or to provide a 'clue' that change is occurring (but not necessarily an answer as to the cause of that change).

Difference between developed and developing country indicators

This review of SCP-related indicators for developing countries highlights the importance of socio-economic and institutional aspects as vital elements of effective SCP-related policies and programmes. Each of the countries reviewed includes a set of socio-economic indicators, reflecting the particular importance in developing countries of issues such as employment, income distribution, and access to basic services such as water, waste collection, sanitation and health. Some of the developing country indicators also reflect particular ingenuity – such as using the number of crows in urban areas as a proxy for poor waste management practices.

Conclusion: Informing the identification of SCP-related indicators

Even though only a few of the developing countries sampled in this study currently monitor a specific set of sustainable development or SCP indicators, many SCP-type indicators could nevertheless be identified for all countries. An important challenge for the purposes of this study was to select those indicators that are directly relevant to SCP, cover a broad range of themes, are focused on the priorities of developing countries and either are, or have the capacity to be, measurable.

- In assessing the merit of each of these indicators, it is important to appreciate some of the challenges and potential constraints associated with some of these indicators:
- Firstly it is questionable how many of the listed indicators are being actively monitored by the countries in whose strategies or frameworks these are included
- Some of the UNCSD criteria for selecting indicators have not been strictly followed in the selection of indicators; it is recognized that a number of the selected indicators may thus be aspirational for certain developing countries.
- The identification of the indicators was constrained by the fact that data gathering from certain countries proved to be challenging with data not always readily available and attempts at personal contact often proving unfruitful; it is thus possible that some relevant indicators used by certain countries have been omitted.

Furthermore, some of the indicators that have been gathered for certain countries are from data sets that are not necessarily part of endorsed strategies or frameworks; this may raise issues in the implementation phase of the SCP indicators for developing countries.

Notwithstanding these challenges, the list of indicators presented in this document is nevertheless seen to constitute a valuable basis for the "bottom-up" aspect of this study, providing a useful set of examples and inspiration for policy-makers across developing countries. This "bottom-up" review is intended to accompany the "top-down" analysis undertaken in Section 3 of this document, the implications of which are presented in Table 1 (page 20). Combined, the top-down and bottom-up approaches constitute the key elements of the Guidance Framework on SCP Indicators for Developing Country Policy-makers.

This Guidance Framework is intended to assist decision-makers to identify SCP-related indicators specifically tailored to the information needs and sustainability priorities of developing countries and that could be integrated into national frameworks and strategies. The proposed set of indicators are regarded as drafts that will be further interrogated in terms of their ambiguity / clarity, measurability, acceptability by governments as input into policy decisions relating to the priorities of the countries in question and any further limitations.

EGYPT Africa

The existence of a "National Commission on Sustainable Development", established by the government, proves that the case for sustainability has been made at the political level of Egypt, one of the more developed countries in Africa. Given this context, it is surprising that integrated reporting activities on SCP and Sustainable Development themes are currently still limited. The country's efforts of developing a set of Sustainable Development Indicators - initiated as early as 1995 - seem to have led to no clear result, and the openly available documentation of the development process is very limited. No SCP-focused programme is currently envisaged by the Egyptian government.

Available information and statistics on SCP-related issues in Egypt suggest that the country's current indicators do not consider the full range of sustainability issues. In particular, environmental themes such as land use, waste and pollution have been neglected. In addition, on the socio-economic side, available indicators remain rather general and "one-dimensional" (i.e. they do not integrate inter-linked economic, social, and environmental issues into true sustainability indicators). Since the documentation of relevant information and indicators is incomplete, Egypt might in fact use a better monitoring system than the indicators presented here may reflect. A more integrative approach and increased accessibility to relevant documents may make Egypt's SCP-related efforts more efficient. This could be driven by the National Commission on Sustainable Development.

Framework/Policy source	Relevance to SCP / Comments	Year / Status	Links
Egypt National Development Plan	Five-year development programme.	2008 - 2012	Not available online
National Sustainable Development Strategy	Sustainability Strategies for different areas of concern and focus.		Not available online
National Urban Observatory	National Programme to develop/use indicators for Sustainable Development (SD). Draft Set of SD Indicators covers themes such as Shelter, Social and Economic Development, and Environment. Indicators are prepared at the national and municipal level.	1990 / 1995	Not available online
National Environmental Action Plan (NEAP)	Introduction of a participatory and demand-driven environmental planning process, favourable to SCP.	2002 - 2017	Environmental Affairs Agency: www.eeaa.gov.eg
National Urban Development Strategy for Egypt	Sustainable Development principles are integrated in various urban and regional strategies and policies.	up to the year 2017	not available online
Strategy and Action Plan for Cleaner Production in Egyptian Industry	Strategy to encourage the adoption and implementation of CP in the Egyptian industry sector. Contains Sustainable Production Indicators (CPI).	2004	Environmental Affairs Agency: http://industry.eeaa.gov.eg/english/main/info-cleaner.asp
Further Sectoral Strategies	SCP-relevant sectoral strategies include e.g.: • Renewable Energy Strategy • National Water Resources Plan (NWRP) • National Strategy for Integrated Municipal • National Strategy and Action Plan for Biodiversity Conservation • Solid Waste Management		
Statistics	Statistical indicators (mainly economic and social) to support governmental decisions at the national and local level.	2007	Information & Decision Support Centre (IDSC): www.idsc.gov.eg

SCP-related Indicators	Indicator Set	Core Indicators
Material Consumption and Resource Use		
Local Consumption of Petroleum and Petrochemical Products	IDSC	
Average Water Consumption per Unit Product	CPI	•
Average Consumption of the Different Raw Materials per Unit Product	CPI	
Average Consumption for the Different Types of Hazardous Substances (Containing Hazardous Components) per Unit Product	CPI	•
Available Capacity for Potable Water	IDSC	
Use of Fertilizers per Hectare of Agricultural Land	SDI	•
Consumption of Ozone Depleting Substances	SDI	
Energy Use		
Average Energy Consumption per Unit Product in Tonnes of Oil Equivalent	CPI	•
Industrial Consumption of Electric Energy	IDSC	
Land Use and Biodiversity		
Waste and Pollution		
Average Emissions of Air Pollutants per Unit Product Depending on the Type of Industry	CPI	
Average of Solid Waste Generated per Unit Product	CPI	•
Average Quantity of Hazardous Waste Generated per Unit Product	CPI	
Average Quantity of Wastewater Generated per Unit Product	CPI	
Socio-Economic		
Gross Domestic Product (GDP) at Market Prices (Current Prices)	IDSC	•
Population Growth Rate	SDI	•
Value Added of Industrial Production	IDSC	
Employment Rate	SDI	•
Institutional		
Number of Establishments Holding ISO 14001	IDSC	•
Percentage of Non-Complying Establishments (CP) per Industrial Sector	CPI	
Harmonization of relative subsidies for inputs and services with the environmental goals	CPI	
Others		
Revenues of Cargos/Passenger Transportation by Railway	IDSC	
No. of Registered Vehicles (Per Vehicle Category)	IDSC	

Direct Indicator Indirect Indicator

ETHIOPIA Africa

Through the "Sustainable Development and Poverty Reduction Program", Ethiopia has formally recognized the case for sustainability at a national level. However, the document appears focused on economic development and poverty alleviation, perhaps at the expense of the environmental component of sustainability. This is also reflected in the assortment of indicators currently monitored in Ethiopia. The indicators mainly refer to basic consumption patterns and agricultural production in an economy that is still largely characterized by (self-subsistent) farming. There is a distinct lack of indicators relating to land use and biodiversity, and waste and pollution, and all selected indicators, bar one, are indirect indicators. In recent years however, the country's environmental lobby has become stronger: The recently adopted Environmentally Sound Development Vision looks to monitor the country's environmental performance at a regional and national level. It is anticipated that Ethiopia's SCP-specific programme will be developed in due course. Given Ethiopia's focus on economic development and social affairs, the country's recent political interest in environmental sustainability may partly be rooted in the possibility of attracting foreign capital through environmental / cleaner production projects.

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Framework / Policy / Source	Relevance to SCP / Comments	Year / Status	Links
Sustainable Development and Poverty Reduction Program (SDPRP)	PRSP - Includes poverty and development related indicators.	2002	Ministry of Finance and Economic Development: www.mofaed.org
SDPRP Report 2005	Progress report on governmental programme. Includes poverty and development related indicators.	2005	Ministry of Finance and Economic Development: www.mofaed.org
Environmentally Sound Development Vision	EPA's contribution to "Sustainable Development Vision of Ethiopia"; National SCP programme envisaged as part of the Environmentally Sound Development Vision. Vision covers eight thematic areas aimed at ensuring social, economic and environmental sustainability. Vision does not include targets.	2008	Environmental Protection Authority: http://www.epa.gov.et/epa/home2.asp
Strategy Papers and Standards	With different thematic focus areas; Include development targets / indicators.		Not available online

SCP-related Indicators	Indicator Set	Core Indicators
Material Consumption and Resource Use		
Quantity of Fertilizer Consumption	SDPRP - Report 2005	•
Energy Use		
Electricity Generation per capita	SDPRP	•
Land Use and Biodiversity		
Waste andPollution		
Socio-Economic		
Growth Rate by Industry (%)	SDPRP	•
Real Agricultural Value Added per capita	SDPRP	
Gini Coefficient	SDPRP	•
Population Growth (total)	SDPRP - Report 2005	•
Trends in Literacy Rate (%)	SDPRP	•
Access to safe potable water (%)	SDPRP	
Access to Health Service (%)	SDPRP - Report 2005	•
Kcal Consumed per Day per Adult	SDPRP	•
Institutional		
Others		
Telecom Density (lines per 100 inhabitants)	SDPRP	
Traffic Growth (%)	SDPRP	

Direct Indicator Indirect Indicator

SENEGAL AFRICA

Senegal has several national policies in place that focus on development and sustainability. The country's government also approved a National SCP Action Plan (NSCP) in 2006. However, the complementing set of indicators to measure and report on future developments has not yet been defined. This research therefore mainly referred to indicators used to inform Senegal's PRSP. The result is nonetheless a broad set of indicators that touches on the identified main themes around SCP.

Senegal's reporting system can therefore be considered already well advanced. What is missing is a formalised approach; this also became apparent through the lack of online-availability of most SCP-relevant documents. The nature of indicators reflects the importance of agriculture for the economy, in that other industries are not separately monitored.

Framework / Policy / Source	Relevance to SCP / Comments	Year / Status	Links
Document de Stratégie pour la croissance et la Réduction de la Pauvreté (DSRP II)	Poverty Reduction Strategy Paper. Includes Indicators.	2006	The World Bank: http://www.worldbank.org/
National Millennium Development Goal (MDG) Action Plan	Analysing different sectors concerned by the environment and suggesting an Action and Investment Plan for up to 2015 to support environmentally sustainable development. Contains Indicators.	2004 - 2015	
SCP Strategy Paper with PRSP perspective (Opérationnalisation des objectifs de Production et de Consommation Durables à travers la mise en œuvre du DSRP)	Includes several SCP-related indicators.	2007	
Strategie Nationale Initiale de Mise en Oeuvre (SNMO) de la Convention Cadre des Nations Unies sur les Changements Climatiques (CCNUCC)	Initial Implementation Strategy for the UN's Convention on Climate Change.	1999	Ministre de l'Environnement et de la Protection de la Nature: www.environnement.gouv.sn/
10-Year National SCP Action Plan (Plan d'Action National décennal sur les Modes de Production et de Consommation Durables au Senegal 2006)	Promoting an institutional framework that works towards improved environmental management and the promotion of SCP in order to preserve natural resources: Multiple sector approach. Includes monitoring and loose set of indicators.	2006	

SCP-related Indicators	Indicator Set	Core Indicators
Material Consumption and Resource Use		
Consumption of Pesticides, Consumer Goods (tonnes)	National SCP Action Plan	•
Utilisation of Water-Efficient Irrigation Technology (%)	National SCP Action Plan	
Annual Production of Economically Useful Plants	National SCP Action Plan	•
Consumption of Petroleum Products (tonnes)	National SCP Action Plan	
Annual Catch Marine Fisheries (tonnes)	National SCP Action Plan	
Energy		
Electricity Production (GWh)	National SCP Action Plan	•
Renewable Energy (%)	National SCP Action Plan	•
Land Use and Biodiversity		
Annual Deforestation of Land (ha)	National SCP Action Plan	•
Land prone to desertification (ha) & Degraded land (ha)	National SCP Action Plan	•
Number of Reappeared Plants / Animals	MDG	
Area of Land put under Protection	MDG	•
Area and Functionality of Marine Protection Areas (MPA)	MDG	
Area of Irrigated Land (% Total Land)	DSRP II	
Waste and Pollution		
Domestic Waste Production per Capita	National SCP Action Plan	•
Quantity of Product Waste	National SCP Action Plan	
Waste Products per Industry (tonnes, litre, m^3)	National SCP Action Plan	
Recycling Rate of Used Water	MDG	
Greenhouse Gas Emissions by Source, e.g. Energy, Agriculture, Forests, Garbage (tonnes)	CCNUCC	•
Reduction of Pollutant Emissions to the Air (%)	MDG	•
Socio-Economic		
GDP Growth Rate (%)	SCP Strategy Paper	•
Growth rate of fishers, tourism, agriculture	National SCP Action Plan	•
Agriculture (%GDP)	National SCP Action Plan	•
Exports of Agricultural Products (Tonnes)	DSRP II	
Unemployment Rate (%)	SCP Strategy Paper	•
Poverty Rate (% of Population)	SCP Strategy Paper	
(Rural / Urban) Households with Access to Drinking Water	National SCP Action Plan	•
% of Rural / Urban Population with Access to Sanitation Facilities	DSRP II	•
Rate of Primary Care Consultation	DSRP II	•
Population in Urban Areas (% of Total Population)	National SCP Action Plan	
Proportion of Children who Work (6-14 years)	SCP Strategy Paper	•
Institutional		
Number of Companies Conforming to Environmental Norms	National SCP Action Plan	
Construction Projects Rated with "High Environmental Quality" (No.)	National SCP Action Plan	
Environmental Impact Control for Economic Activities	SCP Strategy Paper	
Others		
Private Cars (%)	MDG	

Direct Indicator Indirect Indicator

MAURITIUS Africa

Whilst Mauritius currently already monitors a thorough mix of cross-cutting SCP-related indicators, there is no specific set of SCP indicators. The indicators selected are from the Central Statistics office and are not necessarily included in the national strategies and action plans. For the island state of Mauritius, care for the environment plays a significant role, naturally including the marine environment and fisheries. This is reflected in a wide range of environmental indicators, with some exceptional ones such as the "Rating of the State of the Environment by Head of Households Surveyed". Underlining the importance of the sea for the country's economy, the only SCP-related trade indicator to be currently monitored is "Import, export and trade balance of fish and fish products". While the above summary mainly focuses on environmental indicators, it should be noted that detailed information is also available on additional socio-economic indicators, covering the generic themes of the economy, development, and poverty (Refer to CSO website). In cooperation with UNEP, Mauritius is currently developing a national SCP programme that could build on the solid foundation of development and environment related policy frameworks.

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Framework / Policy / Source	Relevance to SCP / Comments	Year / Status	Links
National Development Strategy (NDS)	Supporting improved land planning services / Land Management. Includes indicators on SCP-related issues (provided by CSO).	2003	Ministry of Housing & Lands: www.gov.mu/portal/site/housing?content_id=2721675ffa058010VgnVCM100000ca6a12acRCRD
White Paper: National Environment Policy (NEP)	Policy to promote the management of ecosystems which support economic growth and contribute to the improvement of the quality of life of the population. Presents NEAP2. SCP is one of NEP's 17 "Priority Thematic Areas".	1999	Ministry of Environment and National Development Unit: www.gov.mu/portal/site/menvsite
	Sustainable Development Indicators: Mentioned as of NEP's priority thematic areas ("Environmental Governance", chapter 7.12).	to be developed	N/A
National Environmental Strategy and Action Plan (NEAP2)	Implementing NEP to promote sustainable economic growth. Assesses environmental pressures and outlines programme for implementation of environmental strategy.	2000 - 2010	Ministry of Environment and National Development Unit: www.gov.mu/portal/site/menvsite
SCP Action Plan	Promotion of SCP with focus on key thematic areas (i.e. Energy, Water, Buildings, Waste Management, Sustainable Government Practices and Education/Communication). Development through consultative process with all key stakeholders. Official UNEP demonstration project.	under development (to be finalised by July 2008)	N/A
	SCP indicators: Planned as part of the SCP programme.	to be developed	N/A
Statistics	Central Statistics Office (CSO): Statistical information and reports to inform decisions at a national and regional level; themes covered include e.g. Productivity & Competitiveness, Environment, Agricultural & Fish Production, Road Transport, Energy & Water etc.	regular (mainly yearly) publications	CSO: www.gov.mu/portal/sites/ncb/cso/index.htm

> "For the island state of Mauritius, care for the environment plays a significant role, naturally including the marine environment and fisheries. This is reflected in a wide range of environmental indicators, with some exceptional ones such as the 'Rating of the State of the Environment by Head of Households Surveyed'."

MAURITIUS

SCP-related Indicators	Indicator Set	Core Indicators
Material Consumption and Resource Use		
Domestic per capita consumption of water, 1996 – 2005	CSO: Environment Statistics	•
Water Utilization by Source of Water	CSO: Energy and Water Statistics	
Consumption of fertilisers, 1996– 2005	CSO: Environment Statistics	•
Consumption of Controlled Ozone-Depleting Substances by Sector, 1996 -2005	CSO: Environment Statistics	•
Local Production, Imports and Consumption of Timber, Poles and Fuel Wood, 1996 – 2005	CSO: Environment Statistics	
Changes in Production of Sugar Cane / Tea / Tobacco / Food Crops / Poultry / Fish (%)	CSO: Agricultural and Fish Production Statistics	
Catch per Fisherman-Day, 1996 – 2005	CSO: Environment Statistics	
Total number and type of fishing vessels calling at Port Louis, 1996 – 2005	CSO: Environment Statistics	
Energy Use		
Energy Intensity (toe per Rs.100,000 GDP)	CSO: Energy and Water Statistics	•
Energy - Annual increase (%)	CSO: Energy and Water Statistics	
Per capita final energy consumption	CSO: Energy and Water Statistics	•
Energy Balance (supply and final uses of electricity and the different types of fuel)	CSO: Energy and Water Statistics	•
Final Energy Consumption by Sector and Type of Fuel (Physical Unit), 1996 - 2005	CSO: Environment Statistics	•
Imports of Energy Sources (Energy Unit), 1996 - 2005	CSO: Environment Statistics	
Private Households Using Wood and Charcoal for Cooking	CSO: Environment Statistics	
Land Use and Biodiversity		
Changes in Forest Land Cover (1996 and 2005)	CSO: Environment Statistics	•
Land use by category, 1986 and 1995	CSO: Environment Statistics	•
Waste and Pollution		
Percentage distribution of private households by method of refuse disposal	CSO: Environment Statistics	
Total emissions and removal of greenhouse gases, 2001 - 2005	CSO: Environment Statistics	•
Sectoral carbon dioxide emissions from fuel combustion activities, 2002 – 2005	CSO: Environment Statistics	
Ambient air quality monitoring at the fixed and mobile stations	CSO: Environment Statistics	•
Respiratory diseases registered in government hospitals, 1996 – 2005	CSO: Environment Statistics	
Water Quality	MoE & CSO: Environment Statistics	•
Socio-Economic		
GDP per capita (market prices) - Growth Rate (%)	CSO: Productivity and Competitiveness Indicators	•
Multifactor productivity - Growth Rate (%)	CSO: Productivity and Competitiveness Indicators	
Import, export and trade balance of fish and fish products, 1996 – 2005	CSO: Environment Statistics	
Selected Employment Growth by Sector	NSD	•
Income Distribution	NSD	
Population growth in intercensal periods, 1851 - 2000	CSO: Environment Statistics	•
Private Households - Water Tank and Connection Sewage System	CSO: Energy and Water Statistics	
Housing Unit Growth by Urban / Rural Areas	NSD	
Institutional		
No. of EIA and PER licenses granted by type of project, 2001 – 2005	CSO: Environment Statistics	
Others		
Motor Vehicles Registered	NSD	
Rating of the State of the Environment by Head of Households Surveyed, 2001	CSO: Environment Statistics	
Telephone services, 1996 – 2005	CSO: Environment Statistics	

Direct Indicator Indirect Indicator

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SOUTH AFRICA Africa

Economic development and social and environmental sustainability have been on the political agenda of South Africa for several years. South Africa has a sophisticated set of SCP-related indicators in place thanks to its environmental reporting activities and its "National Framework for Sustainable Development" which includes a large range of SD indicators. However, the concept of SCP as such has not yet been established in South Africa. Some indicators reflect on issues that are particularly relevant or problematic for South Africa's society characterised by large income-gaps (e.g. "Change in Population of urban formal and informal settlements"). This shows that due thought has been given to country-specific challenges by those driving sustainability policies in the country.

The rather extensive set of available indicators reflects on the sustainability issues of one of the most developed countries sampled in this study. Interestingly, many indicators are dynamic, i.e. they measure change and not the state of specified parameters. Assessing the above list of South Africa's SCP-related indicators, one has to take into account that some of the sampled indicators currently still appear to be aspirational, with limited available resources to reliably measure and report on all issues raised by the indicators (e.g. "Change in % of Households Satisfied with their Quality of Life").

Framework/Policy/Source	Relevance to SCP / Comments	Year / Status	Links
Accelerated and Shared Growth Initiative - South Africa (ASGISA)	Promoting sustainable economic growth to reduce poverty.	2006	The Presidency: www.thepresidency.gov.za
National Framework for Sustainable Development (NFSD) - Strategic Framework for Sustainable Development in South Africa	Coherent national strategy for sustainable development, overarching South Africa's different independent sustainability programmes and initiatives. Includes indicators (NFSD).	2006	Department of Environmental Affairs and Tourism (DEAT): www.environment.gov.za/
	Core Set of Environmental Performance Indicators (EPI's).	2004	
	(Regional and national) State of the Environment Report (SoER).	regular	
South Africa's National Biodiversity Strategy and Action Plan (NBSAP)	Promoting conservation. Includes indicators.	2005	DEAT: www.environment.gov.za/

SCP-related Indicators	Indicator Set	Core Indicators
Material Consumption and Resource Use		
Change in Annual withdrawal of ground and surface water as a percent of total available water	NFSD	
Change in Ratio of Fertilizer & Pesticide Consumption to Agricultural Produce	NFSD	•
Change in Consumption of Ozone Depleting Substances	NFSD	•
Energy Use		
Change in Annual Energy Consumption per Capita/GDP	NFSD	•
Change in Proportion of Renewable Energy Sources of Total Supply of Primary Energy	NFSD	•
Land Use and Biodiversity		
Change in Land affected by land degradation and desertification	NFSD	•
Number of threatened and extinct species	EPIs	•
% of land of 'conservation importance' in the municipal area under protected area status	EPIs	•
Waste and Pollution		
General Waste Produced per Capita per Year	EPIs	•
Hazardous Waste Produced per Sector per Year	EPIs	•
Change in Waste recycling and re-use	NFSD	•
Change in Emissions of Greenhouse Gases as Ratio of GDP/per Capita	NFSD	•
Change in Concentration of Criteria Air Pollutants in Urban Areas	NFSD	•
Degree of Exceedence of National Standards for Ambient Concentrations of Key Pollutants	EPIs	
Ambient Concentrations of Key Pollutants	EPIs	
Change in Water Quality (Salinity Levels and Concentration of Fecal Elements in Freshwater)	NFSD	
Socio-Economic		
Change in Unemployment Rate: Narrowly or Widely Conceived	NFSD	•
Change in Role of Investments in GDP	NFSD	
Change in Gini-Index of Income Inequality	NFSD	•
Change in Population Growth Rate	NFSD	•
Change in % of Poor Households (< R1 100 pm) Access to Free Basic Services: Water, Sanitation - Including Solid Waste Removal, Health & Electricity	NFSD	
Change in Adult Literacy Rate	NFSD	•
Change in % of population with access to basic health services	NFSD	•
Changes in formal-informal housing ratios	NFSD	•
Institutional		
Change in Number of ISO 14 001 Certificates Issued	NFSD	•
Change in Expenditure on Research and Development as a Percentage of GDP	NFSD	•
Change in % of Businesses that Implement Measures for Clean Production	NFSD	
% Exceedence of Department of Water Affairs and Forestry (DWAF) Guidelines for Selected Groundwater Quality Variables	EPIs	
% Exceedence of DWAF Guidelines for Selected Surface Water Quality Variables	EPIs	
% of Licensed Industries with did not Comply with License Conditions	EPIs	
Others		
Change in Access to Public Transport	NFSD	•
Change in Main Telephone Lines per 1000 Inhabitants	NFSD	

Direct Indicator Indirect Indicator

TANZANIA Africa

MKUKUTA, Tanzania's National Strategy for Growth and Reduction of Poverty, provides the guiding framework for the identification of poverty-environmental indicators, through its goals and targets. There are three clusters in the MKUKUTA: (i) growth and income poverty reduction, (ii) improvement of quality of life and social well-being, and (iii) governance and accountability. Tanzania's 'Development of Indicators of Poverty-Environment Linkages' provide a very thorough cross-cutting list of one hundred and twenty-nine indicators which monitor aspects at both a poverty strategy level (poverty monitoring system (PMS) as well as at a sectoral level

The 34 'PMS level' indicators are concerned with the changes in the extent, depth or nature of poverty (i.e. outcomes and impacts). While the 95 sectoral level indicators give guidance as to whether particular sectoral strategies are delivering the PMS impact and provide an intermediate measure of progress. It is unclear as to whether the indicators in the list that were taken from the pilots of Tanzania's 10 year Programme on Sustainable Consumption and Production are aspirational or whether they are already being measured..

Framework/Policy/Source	Relevance to SCP / Comments	Year / Status	Links
The National Development Vision	This is a long-term development plan elaborating Tanzanians aspirations in economic and social development arena by the year 2025. The vision is based around the concept of sustainable development (and thus inferred SCP).	1995 - 2025	www.tanzania.go.tz/vision.htm
The National Strategy for Growth and Reduction of Poverty (NSGRP/ MKUKUTA)	Identifies factors that are a cause of poverty in Tanzania (incl. degradation of the environment and climate variability, a manifestation of climate change); equivalent to PRSP. Includes Indicators.	2007	www.tzdpg.or.tz/index.php?id=5
Development of Indicators of Poverty-Environment Linkages	Government of Tanzania and UNDP: Indicator initiative as part of a programme on integrating environment into the poverty reduction strategy process. Identifies a set of 95 indicators and proposes a set of 34 indicators for inclusion in Tanzania's MKUKUTA Monitoring System (MMS) which are highly relevant to the development of SCP indicators.	2005	www.unpei.org/PDF/Blandina-Final-PEIrpt.pdf
Pilots of Tanzania's 10 Year Programme on Sustainable Consumption and Production	Overall objective: to act as a pilot to promote the further elaboration and implementation of the African 10 Year Framework Programme on Sustainable Consumption and Production at national and city level and generate region-specific experience that could be replicated in other countries and cities in the region.	2007 (draft)	Not available online
Various national sectoral policies related to Environment, Energy, Water, Human Settlements, Sustainable Industrial Development and SME Development	Overall objectives: to improve the sustainability of resource use and minimise negative and maximise positive environmental and social impacts of consumption and production	Various: 1996 - 2007	www.tanzania.go.tz/sectoralpol.htm#Environmental%20Policy

SCP-related Indicators	Indicator Set	Core Indicators
Material Consumption and Resource Use		
Amount of savings in terms of resources (e.g. energy, water) realized through improvement programmes	Pilots	
Number of marine/aquatic reserves created and properly managed to sustain production	MKUKUTA	
% Change in food crop production	MKUKUTA	
% Small holders using modern methods of farming (irrigation, fertilizers and improved seed)	MKUKUTA	
Energy Use		
GDP per Unit of Energy Use	MKUKUTA	•
The percentage of Tanzania's electricity being generated by renewable sources (solar, wind, biomass, and mini hydro sources)	MKUKUTA	•
Total electricity generating capacity and utilisation	MKUKUTA	•
% Increase in number of customers connected to the national grid and off-grid electricity	MKUKUTA	
Total KWh of electricity saved through implementing measures	Pilots	
Rate of adoption of efficient energy saving technologies for different categories of energy users	MKUKUTA	
Land Use and Biodiversity		
Increased area of forest biodiversity under effective management	MKUKUTA	
Forest Area Percentage of Total Area	National Environmental Policy	
Waste and Pollution		
Volume of waste taken out of the stream	Pilots	•
Levels of employment generated in recycling/reuse sector	Pilots	
Number of industrial units that have installed technologies that reduce levels of pollutants reaching the environment (cleaner production technologies).	MKUKUTA	
CO2 Emissions per Capita	National Environmental Policy	•
Socio-Economic		
GDP growth per annum	MKUKUTA	•
Unemployment rate	MKUKUTA	•
Gini Co-efficient	MKUKUTA	•
Literacy rate of population aged 15+	MKUKUTA	•
Numbers of Graduates in Architecture and Construction/Civil Engineering with Sufficient Knowledge of Sustainable Buildings and Construction	Pilots	
Institutional		
Number of companies that adhere to ISO 14000 standards	MKUKUTA	•
Number of SCP Clubs Established	Pilots	
Number of SCP-Related Initiatives Undertaken	Pilots	
Proportion of the agriculture budget spent on educating farmers and livestock keepers in best practices for conserving the environment.	MKUKUTA	

Direct Indicator Indirect Indicator

CHINA Asia Pacific

While most developing countries tend to prioritise socio-economic concerns over environmental issues, China seems to attribute special importance to environmental matters. The review of SCP-related national policies suggests that this developing country with extraordinary economic growth rates has created a good base for monitoring its development from an environmental point of view. Weaknesses prevail with respect to the themes of Energy and Land Use and Biodiversity and indicators relating to access to basic services and health.

From a socio-economic perspective, indicators are mainly based on generic data without pinning down country-specific problems and developments. Interestingly, the current indicator set includes the monitoring of a rather large number of institutional SCP-related aspects of the economy. It remains questionable, however, as to what extent the reviewed indicators are measurable (e.g. 'Efficient Utilization Coefficient of Agricultural Irrigation Water'), and if so, to what extent they will guide the political decision making process.

Framework/Policy/Source	Relevance to SCP / Comments	Year / Status	Links
Eleventh Five-Year Plan for National Economic & Social Development of the People's Republic of China	Economic development, (rural) social upliftment; also mentions environmental issues.	2006 - 2010	National Development and Reform Commission (NDRC): http://en.ndrc.gov.cn
	Eleventh Five-Year Plan period indicators of economic and social development (5-Year Plan).	2006 - 2010	
White Paper on China's Population, Environment, and Development in 21st Century	China's Sustainable Development Strategy. Endorses SCP-related concepts and national Sustainable Development indicators (6.9).	1994	
Program of Action for Sustainable Development in China in the Early 21st Century	Implementation of China's Sustainable Development Strategy.	2005	
Environmental Protection Law of the People's Republic of China	Legal Foundation for Environmental Sustainability. Introduced State of the Environment Reports for monitoring reasons.		
State of the Environment Report (SoER)	State Environmental Protection Administration (SEPA). Includes environmental indicators.	2005	SEPA
Indicators for environmental enforcement and compliance	Compliance Measurement, SEPA.		SEPA
Yunnan Province People's Republic of China: National Environmental Performance Assessment (EPA) Report	Yunnan Provincial Environment Protection Bureau (and UNEP): Regional Environmental Monitoring, acknowledging the importance of environmental responsibility to sustain economic growth.	2006	http://ekh.unep.org/?q=taxonomy_menu/9/28/17/82&cf=9/28/17/82
Law on Circular Economy	Promoting a low-impact and effective economy to boost environmental sustainability of economic growth; Includes SCP concepts (e.g. Recycling / EPR).	2007	Environmental Protection and Resource Conservation Committee of the NPC
Also relevant: * China's National Climate Change Programme CNCCP (2007) * Policy Framework Study: Policy Reinforcement for Environmentally Sound and Socially Responsible Economic Development in China (PRODEV) (2006)			
Statistics	National Bureau of Statistics of China: Statistical information mainly on Socio-Economic and Environmental Issues.	Mainly yearly publications	www.stats.gov.cn/english/

SCP-related Indicators	Indicator Set	Core Indicators
Material Consumption and Resource Use		
Reduction of Water Consumption per Unit Industrial Added Value (%)	5-Year Plan	•
Efficient Utilization Coefficient of Agricultural Irrigation Water	5-Year Plan	
Energy Use		
Coal Consumption for Energy Generation	EPA	
Land Use and Biodiversity		
Land use by type of land use	SoER	•
Water and Soil Erosion - Area Affected (km²)	SoER	
Grassland Productivity and Pasture Deterioration (in tons)	SoER	
Waste and Pollution		
Volume of Municipal/Industrial Waste	EPA	
Change in Industrial Solid Waste Production (%)	SoER	
Percentage of solid wastes being comprehensively utilized (%)	SEPA compliance	•
Hazardous Waste Disposal Rate (%)	SEPA compliance	
Reduction of Total Major Pollutants Emission Volume (%)	5-Year Plan	•
Reduction Rate of Total Volume of Wastewater and Total Load of COD Discharge (%)	SEPA compliance	
Grade of Air Quality (in Cities)	SoER	•
Water Quality of Fresh Water and Drinking Water Sources	SoER	•
Urban Regional Environmental Noise	SoER	
Socio-Economic		
Registered Urban Unemployment Rate (%)	5-Year Plan	•
Institutional		
Ratio of Expenditures on R&D to GDP (%)	5-Year Plan	•
The percentage of total environmental protection investment over GDP (%)	SEPA compliance	•
EIA Compliance of Companies (% implementation rate)	EPA	
Other		
Compliance rate of automobile exhaust gas (%)	SEPA compliance	

Direct Indicator Indirect Indicator

INDONESIA Asia Pacific

Indonesia is in the process of developing a national SCP programme as part of a UNEP demonstration project. This programme should build onto the country's two main development policies, the Poverty Reduction Strategy Paper and the Mid-Term Development Plan. The country's Statistical Agency (BAPPENAS) covers a thorough list of indicators, many of which relate to SCP issues. A separate and specific SCP indicator set as such is, however, neither available nor in preparation and the indicators collected by BAPPENAS are not necessarily included in national strategies or frameworks.

Accounting for the country's problems of poverty, a good selection of indicators with social focus are available, whilst institutional indicators have largely been neglected in Indonesia's current reporting efforts. A number of official documents refer to a set of environmental indicators, but these could not be located online. The fact that a number of advertised statistics on BAPPENAS's website were not available (dead links) further confirms that the accessibility of Indonesia's official information websites needs improvement. This might also be the reason for the complete lack of Waste & Pollution indicators in an otherwise rather comprehensive list.

Framework / Policy / Source	Relevance to SCP / Comments	Year / Status	Links
Poverty Reduction Strategy Paper (PRSP)		2005 (?)	Not available online
Interim Poverty Reduction Strategy Paper (PRS)	PRS and RPJM are related: same time frame, macro economic targets, and action plan from various ministries and regions.	2003	http://planipolis.iiep.unesco.org/upload/Indonesia/PRSP/Indonesia_I-PRSP.pdf
National Mid Term Development Plan / Medium Term Development Plan (Rencana Pembangunan Jangka Menengah / RPJM)	National Sustainable Development Strategy.	2004 - 2009	Not available online
Law No. 25/2004: National Development Planning System (NDPS)	Legal basis for establishing an institution that could comprehensively monitor and evaluate NDPS. Local and National Development Planning Board tasked to monitor RPJM.	2004	Not available online
BAPPENAS National Development Indicators	Diverse SCP-related areas covered: e.g. Industry, Agriculture, Forestry, Maritime and Fishery, Watering, National Business Development, Transportation, Mining and Energy, Tourism, and Telecommunication.		BAPPENAS: www.bappenas.go.id
Sustainable Consumption and Production Programme	Official UNEP demonstration project; Guidance Framework under development (to be finalised by February 2008).	Under Development	Not available online
Statistics	Badan Pusat Statistik (BPS) - Statistics Indonesia: Statistical Information on Socio-Economic and Environmental Issues (Key Indicators).	Mainly yearly publications	BPS: www.bps.go.id/index.shtml

SCP-related Indicators	Indicator Set	Core Indicators
Material Consumption and Resource Use		
Development and Conservation of Water Resources	Key Indicators	
Fishery Production Growth (Tonnes) - Fish / Freshwater Fish	BAPPENAS	
Development of the Using of Fertilizer on Food Plants Program	BAPPENAS	
Paddy Production: Yield Rate (Ha/Qt)	Key Indicators	
Number of Establishments by Province: Mining and Quarrying	Key Indicators	
Energy Use		
Consumption of Primary Energy by Fuel	BAPPENAS	•
Manufacturing: Consumption of Electricity, LPG and Natural Gas	Socio-Economic Indicators	
Land Use and Biodiversity		
The Developing and Management of Swamp	BAPPENAS	
Waste and Pollution		
Socio-Economic		
GDP Growth Rate	Key Indicators of Indonesia	•
Percentage of GDP by Industrial Sector	Key Indicators of Indonesia	•
Imports by category	Key Indicators of Indonesia	•
Export volumes for agriculture, plantations & livestock	Key Indicators of Indonesia	•
Open Unemployment Rate	Key Indicators of Indonesia	•
Gini Index	Key Indicators of Indonesia	•
Population by Age Group	Key Indicators of Indonesia	•
Adult Literacy Rate by Province and Sex	Key Indicators of Indonesia	•
Percentage of Households Using Pump/Well/Spring Water as Source of Drinking Water by Province	Socio-Economic Indicators	•
Average Consumption of Calorie (cal/day)	Key Indicators of Indonesia	•
Institutional		
Others		
Development of Railway Transportation Service Production	BAPPENAS	

Direct Indicator Indirect Indicator

MALAYSIA Asia Pacific

Malaysia's politics at the national level focuses on successful economic development and poverty alleviation, but acknowledges the concept of three-dimensional sustainability. At the same time, sophisticated initiatives like the 'Sustainable Penang Initiative' (SPI) from 1997 - 1999 proved strong commitment and awareness at a regional level, with the leaders of the initiative "[hoping] to promote a state-wide movement for holistic development and sustainability" (p.7 SERI report on SPI). Realistically, the identified set of complementing SCP indicators took into account that local conditions of data measurement are in some cases rather poor. An example for alternative country-specific indicators is the observation of the "No. of Crows" in different areas, to measure the amount of unmanaged waste (which attracts crows). Using such simplified indicators allows data capturing even in poorly developed areas where the generation of complex statistical data generally proves difficult.

To date, the SPI has had little impact on nation-wide politics. Neither a national SCP policy nor a set of SCP indicators have been established. The SPI also seems to have lost momentum at the regional level due to insufficient results.

Malaysia's efforts to develop a national set of Sustainable Development Indicators have not yet yielded any definite results, even though different sets have been suggested to the government. The above list of indicators includes some indicators taken from the list suggested by LESTARI. Indicators included in this list are not necessarily monitored in Malaysia, but reflect a number of SCP-related issues that should be monitored according to LESTARI. Given that the availability of other SCP-indicators is rather limited, some of these were included in this study. The SCP-related indicators identified for Malaysia reflect the importance of marine and agricultural harvesting for the country's consumption and production patterns. At the same time, institutional indicators are in place and allow for the monitoring of more formalised aspects of the economy.

Framework / Policy / Source	Relevance to SCP / Comments	Year / Status	Links
Ninth Malaysia Plan	Five-Year Plan with focus on development and economic growth while simultaneously focusing on socio-economic issues (upliftment of the poor); Sustainable Management of resources envisaged.	2006	Not available online
Vision 2020	Long term objectives of becoming a 'fully developed nation' by 2020, complementing the NDP (National Development Policy) from 1991.		Not available online
Third Outline Perspective Plan of Malaysia (OPP3)	National, longer-term strategy paper addressing SCP-related issues such as socio-economic development and poverty alleviation.	2001 - 2010	Not available online
Sustainable Penang Initiative (SPI)	Provincial initiative to promote SD and a state-wide movement for sustainability; pioneering policy in the Malaysian context (1997 - 1999). Includes Sustainable Development Indicators (SPI): not the whole set is still monitored.	1997 (Indicator set: 1999)	Socio-Economic and Environmental Research Institute (SERI): www.seri.com.my
Sustainable Development Indicators	Suggested to Economic Planning Unit (EPU) by: • Federal Town and Country Planning Department / JPBD-F sustainable cities project: Went through test phase; All indicators obtained from existing sources in all relevant government agencies. • Institute for Environment and Development (Lestari), University Kebangsaan Malaysia, Bang (unofficial status). In relation to Agenda 21, Malaysia started developing a set of SDIs in 1995. No set outcome has been produced yet.	1999	www.epu.jpm.my/
Statistics	Department of Statistics (DoS), Malaysia: Key socio-economic indicators.		DoS: www.statistics.gov.my/

SCP-related Indicators	Indicator Set	Core Indicators
Material Consumption & Resource Use		
Water Use per 1000 people	JPBD-F	•
Extent of Fertiliser and Pesticides Use per Unit Amount of Produce	Lestari	•
Total Landings of Marine Fish	SPI indicators	
Energy Use		
Renewable Energy vs. Total Energy Use	Lestari	•
Land Use and Biodiversity		
Totally Protected Area vs. Total Forest Area vs. Total Land Area	Lestari	•
% Agricultural Land for Food Production vs. Total land area	Lestari	
Waste and Pollution		
Total Solid Waste	JPBD-F	•
Total Solid Waste Recycled	JPBD-F	•
No. of Crows (Unmanaged Waste)	SPI indicators	
pH Value of Rainfall (Acid Rain)	SPI indicators	
Trends in Emission of Greenhouse Gases	Lestari	•
SOx and NOx Emission Intensities	Lestari	
Air Pollution Index	SPI indicators	•
Water Quality Index (River Water Quality)	SPI indicators	•
Equivalent-A-weighted sound level (Environmental Noise)	SPI indicators	
Socio-Economic		
Unemployment rate	JPBD-F	•
Gini coefficient	Lestari	•
Population growth rate	JPBD-F	•
Proportion of population with tertiary education	JPBD-F	
Institutional		
No of Companies Certified MS ISO 14 001	SPI indicators	•
Expenses on Environmental Improvements vs. Annual Budget	Lestari	•
Others		
Percent of public transport users at peak hours	JPBD-F	

Direct Indicator Indirect Indicator

PAPUA NEW GUINEA Asia Pacific

Papua New Guinea already has a good set of SCP-related indicators in place, even though the concept of sustainability is not explicitly mentioned in the country's policies. MTDS considers a solid base of indicators linked to the MDGs, and the reporting activities of the National Statistical Office contribute further information with regards to the country's SCP performance. Gaps exist however in terms of waste indicators, and it is conspicuous that - given that PNG is an island state - there are currently no indicators around (sea) water quality and marine exploitation.

On the other hand, the exceptional biodiversity endowment of the island state is taken into account through a number of rather high-level biodiversity and land use indicators. Interesting indicators monitored in PNG are for example the "Percentage of Land Used for Commercial Purposes" and the "Percentage of Commercial Operations Using Sustainable Practices". Such original SCP-related indicators imply that the issue of sustainability has been understood by the country's monitoring authorities and hence creates hope that existing gaps regarding SCP themes might be filled soon with additional indicators.

Framework / Policy / Source	Relevance to SCP / Comments	Year / Status	Links
Poverty Reduction Strategy Paper	National Development Plan, developed with the assistance of the Asian Development Bank (ADB). Provided the basis for MTDS.		Not available online
Medium Term Development Strategy (MTDS)	Policy framework designed to guide the government's budgeting decisions: Strong poverty focus and adaptation of SCP-related Millennium Development Goals. This is reflected in the Strategy's targets and indicators.	2005 - 2010	www.aciar.gov.au/system/files/node/777/PNG+medium+term+development+strategy+2005-2010.pdf
The Environment Act	Enhances environmental sustainability. Integration of three previous pieces of legislation (Environmental Planning Act, Environment Contaminants Act, Water Resources Act). It provides for SCP-relevant regulations regarding the use and discharge of chemicals and wastes to the environment.	2000	Not available online
Government's Green Revolution Policy	Development Policy with Environmental Drive		Not available online
PNG's National Assessment Report on the Implementation of the Barbados Programme of Action (BPoA) for the Sustainable Development of Small Island Developing States	Objective: to reflect on (SCP-related) achievements PNG had made in the implementation of the BPoA.	2004	www.sidsnet.org/docshare other/20040819112958_PNG_2004_Part1.doc
Papua New Guinea – Australia Development Cooperation Strategy (PNG ADCS)	Aims to support PNG to reduce poverty and promote sustainable development through support for the PNG Government's efforts to implement its MTDS and Medium Term Fiscal Strategy (MTFS). Includes Indicators in Appendix.	2006 - 2010	Australian Agency for International Development
Statistics	National Statistics Office Papua New Guinea (NSO): • Key Statistics • Environment Statistics • Economic Statistics		NSO: www.nso.gov.pg

SCP-related Indicators	Indicator Set	Core Indicators
Material Consumption and Resource Use		
Litres of Water Supplied to Users	MTDS	
Quantity of fertilisers (imported & produced)	NSO - Environment	•
Quantity of agricultural pesticides and herbicides (imported & produced)	NSO - Environment	•
Energy Use		
GDP per Unit of Energy Use (as Proxy for Energy Efficiency)	MTDS	•
Proportion of population using solid fuels	NSO - Environment	
Percentage of households using wood as their primary energy source, by geographic sector	MTDS	
Land Use and Biodiversity		
Arable land per capita	NSO - Environment	
Percentage of Land Used for Commercial Purposes	MTDS	
Percentage of Cultivable Land Used for Agricultural Production	MTDS	
Proportion of land area covered by forest	NSO - Environment	
Primary Forest Depletion Rate (Percentage) per Year	MTDS	
Percentage of Land Area Protected to Maintain Biological Diversity	MTDS	•
Percentage of Marine Area Protected to Maintain Biological Diversity	MTDS	
Waste and Pollution		
Carbon Dioxide Emissions (per Capita)	MTDS	
Socio-Economic		
GDP per Capita	NSO - Economics	•
Agricultural Exports as Percentage of All Exports	MTDS	
Value of Agricultural Exports as a percentage of total GDP	MTDS	
Unemployment rate (percentage) by geographic sector and by sex	MTDS	•
Labour Force Participation Rate	NSO - Key Statistics	
Gini Coefficient	MTDS	•
Share / Percentage of Poorest Quintile in National Consumption	MTDS	
Percentage of People below Minimum Level of Dietary Energy Consumption	MTDS	
Total Population, urban / rural	NSO - Key Statistics	•
Indirectly Measured Adult Literacy Rate (over age 15) (Percentage)	MTDS	•
Percentage of households with access to electricity, safe water and sanitation, health and education services, by geographic sector, as well as by census unit (CU) type in urban areas	MTDS	•
Rural to urban net migration rate (percentage) primary energy source, by geographic sector.	MTDS	
Ratio of urban/peri-urban households with access to secure tenure	MTDS	
Population density for land area, urban / rural	NSO - Key Statistics	
Institutional		
Percentage of Commercial Operations Using Sustainable Practices	MTDS	
Percentage of Districts that have implemented a Water Policy	MTDS	

Direct Indicator Indirect Indicator

THAILAND Asia-Pacific

Thailand is currently undertaking efforts to establish a set of SCP indicators at the national level. The drafted version contains a number of interesting indicators such as "The population's behaviour towards materialism". Whilst this would allow interesting insights into the economy's SCP patterns, it is questionable as to whether it is possible to reliably report on such indicators. Considering "Curricula containing sustainable consumption concept" and other awareness-related indicators, Thailand recognises the importance of enabling broad-based SCP. In general, Thailand already has a comprehensive system of indicator reporting on different (SCP-related) subjects in place. The relevance of sustainability for the formalised economy becomes apparent through the large variety of SCP-related institutional indicators. Thailand's politics appear to try to keep a balance between pressing social issues and environmental sustainability which is also reflected in the summarised list of indicators.

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Framework/Policy source	Relevance to SCP/Comments	Year/Status	Links
Poverty Reduction Strategy (PRS)	To promote poverty reduction at the individual, community, and national level.	2007	Not available online
Tenth National Economic and Social Development Plan	Based on Philosophy of Sufficiency Economy; Includes a SCP Strategy: Vision of moderate, sustainable levels of production and consumption.	2007 - 2011	National Economic and Social Development Board (NESDB)
Policy and Prospective Plan for Enhancement and Conservation of National Environmental Quality		1997 - 2016	Not available online
Thailand National Environmental Performance Assessment (EPA) Report	National Performance Assessment and Subregional Strategic Environment Framework for the Greater Mekong Subregion.	2007	Department of Environmental Quality Promotion, Ministry of Natural Resources and Environment, and UNEP
Sustainable Consumption and Production Strategy	One of the four national strategies of the 10th National Economic and Social Development Plan.	2007 - 2011	National Economic and Social Development Board (NESDB): www.nesdb.go.th
Sustainable Consumption Indicators (Draft Set)	Study in Preparation of the Sustainable Consumption Strategy; Identified possible SC Indicators; All governmental agencies have to refine these indicators once they develop their action plans according to the strategies.	2007	
Statistics	Ministry of Finance (MoF), Office of Natural Resources and Environmental Planning and Policy: Environmental Indicators - Pressure-State-Response Framework.		MoF: www2.mof.go.th/
	NSO - National Statistical Office Thailand: • Statistical Yearbook • Economic and Social Indicators.		NSO: http://web.nso.go.th/eng/en/stat/indus/indus00.htm
	Ministry of Commerce (MoC) / Bureau of Trade and Economic Indices: Economic Business Indicators.		MoC: www.moc.go.th/
	Office of NESDB: National Income of Thailand.		NESDB: www.nesdb.go.th
	Bank of Thailand (BoT): Economic Indices.		BoT: www.bot.or.th

> "In general, Thailand already has a comprehensive system of indicator reporting on different (SCP-related) subjects in place. The relevance of sustainability for the formalised economy becomes apparent through the large variety of SCP-related institutional indicators."

THAILAND

SCP-related Indicators	Indicator Set	Core Indicators
Material Consumption and Resource Use		
Efficiency of Renewable Resource Usage	SC Indicators	•
Amount of Hazardous Substances Utilized	EPA Report	•
Proportion between the uses of non-renewable resource to total resource	SC Indicators	•
Number of Marine Capture Fishery Establishments, Fishing Boats and Fishermen During Peak Season by Coastal Zone	NSO	
Domestic Consumption of Principal Minerals by Kind of Mineral (1999 - 2002)	NSO	
Amount and variety of environmentally friendly goods and services in the market	SC Indicators	
Energy Use		
Energy intensity to the Gross Domestic Production values	SC Indicators	•
Proportion of the use of renewable energy to total energy usage	NSO	•
Average monthly fuel consumption expenditures per household by type of fuel : 1990-2000	NSO	
Electricity Sales by User Group (e.g. Residential, Commercial, Industrial etc)	NSO	
Installed Capacity and Generated Electricity (by Energy Source)	NSO	
Land Use and Biodiversity		
Loss of Forest Area	EPA Report	•
Number and area of holdings by land use / Land Use / Land Cover in Thailand (ha)	NSO / EPA Report	•
Protected Area as a Percentage of Total Land Area	EPA Report	•
Waste and Pollution		
Generation of Municipal Solid Waste (tonnes / day)	EPA Report	•
Recycling in the manufacturing sector	SC Indicators	•
Recycled products in the market	SC Indicators	
Amount of Treated Wastewater	EPA Report	
Emission of Greenhouse Gases (by Gas) (CO2-equivalent (Gg)	EPA Report	•
Estimated air pollutant emissions by sector	NSO	•
Socio-Economic		
GDP by Industrial Origin	NSO	•
Manufacturing - value added	NSO	
Employed Persons by Industry for Whole Kingdom : 2001-2005	NSO	•
Number of Population in Thailand 1911-1990 census years	NSO	•
The Gini Coefficient of Household Income Distribution by Region and Area : 1975-2001	NSO	•
Malnutrition and Over-Nutrition Rate in Adults, Youth, and Children	SC Indicators	
Community Enterprises which Invest and Generate Income in the Community	SC Indicators	
The Population's Behaviour towards Materialism (lower values/volume of imported luxurious goods)	SC Indicators	
Curriculums containing sustainable consumption concept at every educational level throughout the country	SC Indicators	•
Dissemination of information (Knowledge and facts) on consumption of goods and services through media and advertising	SC Indicators	•
Institutional		
Every Sector, Agency, and Department Conducts the Green Procurement System	SC Indicators	•
Application of Clean Technology in various business group in manufacturing and service sector	SC Indicators	
Others		
Number of Vehicles Registered by Type 2001-2002	NSO	
Statistics of ICT (Usage) Services	NSO	

Direct Indicator Indirect Indicator

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JORDAN West Asia

Among the countries in Western Asia sampled in this study, Jordan ranks among those with the best online accessibility of their SCP-related policies and information. This can be taken as an indication of a well-established information infrastructure. Jordan has a rather comprehensive range of sustainability related policies and indicators in place. While no consolidated SD or SCP indicator sets exist, SCP-related indicators from other sets of indicators (such as environmental and socio-economic indicator sets) provide a good overview of the country's SCP performance, taking all three dimensions of sustainability into account. Some interesting indicators such as "Cost of environmental degradation" and "Air Quality Index (ESI)" highlight that Jordan is trying to go beyond standard reporting practices and include the monitoring of more aspirational indicators.

Framework / Policy / Source	Relevance to SCP / Comments	Year / Status	Links
National Agenda (NA)	Promoting economic, social and political sustainability and development through effective administration. Ten Year perspective. Includes Social and Economic Targets and Indicators.	2006	Ministry of Government Performance (Prime Ministry), Council of Ministers: www.nationalagenda.jo
The National Social and Economic Development Plan (NSEDP)	Strategy to promote Social Development through sustainable economic development.	2004 - 2006	Ministry of Planning and International Cooperation: www.mop.gov.jo
Social Characteristics	DOS: Social Characteristics.	yearly	Department of Statistics (DOS): www.dos.gov.jo/home_e.htm
Environment Protection Law	Endorses Environmental Protection; Acknowledges the necessity to "Monitor and measure the environment elements & components". Resulted in numerous environmental regulations issued, e.g.: • Environment Protection from Pollution • Air Protection • Management of Solid Waste.	2003	
	Environmental Facts & Figures: Environmental Statistics.		Ministry of Environment: www.moenv.gov.jo
	Environmental Profile of Jordan: Report on the State of the Environment, compiled by National Capacity Self Assessment for Global Environmental Management (NCSA)- Jordan.	2006	Ministry of Environment: www.environment.gov.jo
	Department of Statistics (DOS): Annual Environmental Statistics.	yearly	DOS: www.dos.gov.jo/home_e.htm

SCP-related Indicators	Indicator Set	Core Indicators
Material Consumption and Resource Use		
Agriculture Output per Unit of Water (US$ per m³)	NA	
Water Allocation by User Group (Potable, Irrigation, Industry)	Environmental Facts & Figures	
Average Per Capita Water Consumption (m³)	Environmental Facts & Figures	•
Energy Use		
GDP per unit of energy use	Environmental Profile	•
Renewable Energy Sources as a Percentage of Total Energy	NA	•
Percentage of Households Using Solar Energy for Water Heating	NA	
Percentage of New Buildings that Meet Energy Conservation Standards	NA	
Land Use and Biodiversity		
Land by Land Use (% Territory)	Environmental Profile	•
Land area protected to maintain biodiversity %	Environmental Profile	•
Biodiversity Indicator (ESI)	NA	
Cost of environmental degradation (% of GDP)	Environmental Profile	
Waste and Pollution		
Per Capita Domestic Waste Production (kg/day)	Environmental Facts & Figures	•
Carbon dioxide emission per capita	Environmental Profile	•
Air Quality Index (ESI)	NA	•
Socio-Economic		
Annual Real GDP Growth (%)	NA	•
Unemployment as a Percentage of Active Population	NA	•
Poverty Rate (%)	NA	
Percentage of SMEs Contribution to GDP / Employment	NA	•
Agriculture GDP as a % of Agriculture Subsidies	NA	
Adult Literacy Rate (%)	Environmental Profile	•
Proportion of population with sustainable access to an improved water source	Environmental Profile	•
Proportion of people with access to safe sanitation	Environmental Profile	•
Institutional		
Expenditure on R&D as a % of GDP	NA	•
Control of Corruption (World Bank Governance Indicators) Percentile Ranking (%)	NA	
Percentage of Poor Population with Access to Micro Finance Services	NA	
Others		
Percentage of Citizens "Satisfied" or "Very Satisfied" with Public Transport Bus Services	NA	

Direct Indicator Indirect Indicator

LEBANON West Asia

Lebanon has national policies covering the three core fields of sustainability However, no explicit Sustainable Development or SCP policy has been developed as yet. In terms of monitoring and indicators, Lebanon's statistics mainly report on rather general socio-economic issues, while the State of the Environment Report fills the gaps regarding environmental sustainability indicators. This includes some interesting indicators such as "Environment Degradation ($ Average Cost)".

Even though there is no specific set of SCP indicators, the country's assortment of current indicators suggests that the main SCP categories are monitored. This suggests that the country indirectly recognises the importance of consumption and production-related sustainability for national development. The energy related indicators are limited to the energy consumption of households and, unfortunately, the availability of political strategies and SCP related online information is currently still limited.

Framework/Policy/Source	Relevance to SCP / Comments	Year / Status	Links
Five Year Development Plan	Focus on SCP-related social services and infrastructure, balanced development by concentrating on less developed regions and improvements of the competitiveness of industry and agriculture.	Expired in 2004. Unclear whether new plan available.	Not available online
Social Action Plan (SAP)	The government's strategy to reduce poverty, improve social indicators, and achieve the Millennium Development Goals (MDGs). Includes SCP-related indicators.	2007	Ministry of Economy and Trade (MET): www.economy.gov.lb/MOET/English/Navigation/News/SocialActionPlan2007.htm
National Environmental Action Plan	Not available online	Unclear Status; under development in 2004	Ministry of the Environment (MOE): www.moe.gov.lb/
State of the Environment Report (SoER)	Environmental Indicators.	2001	
Different thematic Five Year National Strategic Plan	e.g. Health (HIV Aids, Malaria), Mines, etc.		Different Ministries
Statistical Information	Central Administration for Statistics (CAS): Statistical Yearbook.	2006	CAS: www.cas.gov.lb/
	MET: Select Macro Economic Indicators.		MET: www.economy.gov.lb/
	Ministry of Economy and Trade (MET): Integrated Economic Account.		MET: www.economy.gov.lb/
	Presidency of the Council of Ministers (PCM); National Accounts Mission: Economic Accounts of Lebanon.	2003	PCM: http://www.pcm.gov.lb/
	Ministry of Public Health (MPH): Health Indicators.	2005	MPH: www.public-health.gov.lb/

SCP-related Indicators	Indicator Set	Core Indicators
Material Consumption and Resource Use		
Water Demand by Sector	CAS - Statistical Yearbook	
Pesticide Use Reported in kg/ha or litre/ha of Active Ingredient per Type of Culture	SoER	•
Fish Production (tons)	SoER	
Energy Use		
Households' consumption of energy (Electricity, Oil Products, Solid Combustibles) and water (Billion LBP, % Change)	Economic Accounts	
Land Use and Biodiversity		
Total Burned Forest Areas as Recorded by Mohafaza (in hectares)	SoER	
Number of Areas or Sites Legally Protected in Lebanon	SoER	•
Biodiversity - Animal and Plant Species	CAS - Statistical Yearbook	
Number of Threatened Plant Species by Type of Threat	SoER	•
Environment Degradation (Average Cost $)	CAS - Statistical Yearbook	
Waste and Pollution		
Solid Waste Production per Capita (kg/day)	SoER	•
NMVOC, SO2, CO2 and Methane Emission Sources (Energy vs. Industry vs. Land Use)	SoER	
Emissions of GHG From Energy Consumption by Sector (Energy vs. Industry) (in KTonnes)	SoER	•
Average Particulates Concentrations at 22 Locations in Beirut (TSP, µg/m3)	SoER	•
Estimated Annual Lead Emissions From All Gasoline Grades (tonnes)	SoER	
Socio-Economic		
Real / Nominal GDP Growth (%)	MET	•
Value Added by Sector (Billion LBP, and % Change)	Economic Accounts	
Agricultural Sector % GDP	SoER	•
National Unemployment Rate	CAS - Statistical Yearbook	•
Households Living in Extreme/Relative Poverty (%)	SAP	
Population Growth Rate (%)	Health Indicators	•
Basic Education Enrolment Rate (%)	SAP	
Distribution of imports by group of products (Billion LBP, % Change)	Economic Accounts	•
Potable Water Access (% Population)	CAS - Statistical Yearbook	•
Children with Acceptable Weight for Age (%)	Health Indicators	
Working Children (No.)	SAP	•
Institutional		
Others		

Direct Indicator Indirect Indicator

KAZHAKHSTAN West Asia

Kazakhstan's assorted sustainability initiatives are rooted in "Kazakhstan's Strategy of Sustainable Development 2030" from 1997 and other sustainability-related policies and strategies. Sustainability - and in particular environmental sustainability - has been recognised as an underlying concept in the development of this country. While no fixed set of SCP indicators has been designed as yet, SCP issues can be monitored indirectly through other SCP-related sets of indicators and reports.

A wide range of SCP-related subjects are currently already nationally monitored, with a wide range of interesting indicators in the institutional field. Surprisingly, Kazakhstan's statistics do not report on the theme of energy consumption and generation. By the end of 2008, the list of currently available indicators will be complemented through a specifically identified set of Sustainable Development Indicators.

Framework/Policy/Source	Relevance to SCP / Comments	Year / Status	Links
Kazakhstan's Strategy of Sustainable Development 2030	Promotes socially and environmentally sustainable economic growth.	1997 / ongoing	
Concept of Transition of the Republic of Kazakhstan to Sustainable Development for the Period 2007 – 2024: Action Plan for 2007-2009 on the Implementation of Transition of the Republic of Kazakhstan to Sustainable Development for 2007-2024	Based on 2030 Strategy. Acknowledges role of indicators and suggests the establishment of Sustainable Development Indicators. Includes set of 12 start-up parameters with intermediary target lines (2005-2024).	2006	Developed by Ministry of Environmental Protection, UNEP, et al.: www.rrcap.unep.org/projects/nsds/workshop/nsds_RWS_engppt_envmin_KZ.pdf
	System of Indicators of Sustainable Development.	to be developed by the end of 2008	
Environmental Safety Concept	Ministry of Environmental Protection: Promotes SCP indirectly through focus on environmental management system optimisation and reduction of environmental impacts of economic sectors.	2004 - 2015	http://enrin.grida.no/aral/neap/kazakh/NPD00C/Section%201-4.htm
	SCP-related environmental indicators on: • Air protection • Water protection • Land protection • Biodiversity • Socio-Economic.	Data 1990 - 2004	UNEP Environment Knowledge Hub: http://ekh.unep.org/?q=node/2306
Further Sustainability Strategies: • Mid-Term Strategy of Kazakhstan's Development to 2010. • Strategy on Industrial and Innovation. Development of the Republic of Kazakhstan to 2015. • Strategy on the Territorial Development of Kazakhstan to 2015.	Institutions: • Council for Sustainable Development of Kazakhstan • Sustainable Development Fund "Kazyna" Also note: Specific programmes for e.g. Poverty Reduction.		
Statistics	The Agency of Statistics of the Republic of Kazakhstan: Indices of main socio-economic indicators as percentage of previous year.	Data 1995 - 2006	Agency of Statistics: www.stat.kz/

SCP-related Indicators	Indicator Set	Core Indicators
Material Consumption and Resource Use		
Annual withdrawal of surface and ground water, mln m³	Environmental Indicators	
Water consumption per capita, m3	Environmental Indicators	•
Consumption of ozone depleting substance, tn-/year	Environmental Indicators	•
Use of agricultural pesticide, kg/ha	Environmental Indicators	•
Use of fertilizers: organic / mineral, tn/ha	Environmental Indicators	•
Resources Use Efficiency (RUEI)	Start-up parameters	
Energy Use		
Land Use and Biodiversity		
Deforestation, thousand ha/year	Environmental Indicators	•
Land use change by land use type	Environmental Indicators	•
Portion of agricultural land to total land area, %	Environmental Indicators	
Threatened species as a percent of total native species - Animals / Plants	Environmental Indicators	•
Protected area as a percent of total surface area	Environmental Indicators	•
Waste and Pollution		
Greenhouse gas emission per capita, tn	Environmental Indicators	•
Ambient concentration of air pollutants, mg/cu.m	Environmental Indicators	•
Socio-Economic		
Rate of GDP growth, in % to the previous year	Environmental Indicators	•
Structure of GDP, %: - share of industry	Environmental Indicators	
Structure of GDP, %: - share of agriculture	Environmental Indicators	•
Unemployment rate	Socio-Economic indicators	•
Gini index - discrepancy in earning	Environmental Indicators	•
Population, mln. People	Start-up parameters	•
Share of the population with access to the drinking water , %	Environmental Indicators	•
Share of the population with access to sanitary conditions , %	Environmental Indicators	•
Institutional		
Expenditures on air pollution abatement (% of GDP)	Environmental Indicators	
Expenditures on scientific researches (% from GDP)	Environmental Indicators	•
Expenditures on environmental. protection (% from GDP)	Environmental Indicators	
Participation in treaties and conventions	Environmental Indicators	
Others		
Index of Environmental Sustainability, Rating	Start-up parameters (Yale Center on Environmental Legislation and Policy (Yale University, USA) and Columbia Center of the World Information Network on Earth Sciences (Columbian University, USA))	

Direct Indicator Indirect Indicator

YEMEN West Asia

As a very poor developing economy with a large rural population, Yemen's SCP related indicators largely deal with poverty alleviation and the productivity and quality of the agricultural environment. While a number of the selected indicators are measured by the Central Statistics Office, it is unclear as to how or whether these are tied into particular strategies or policies. The (online) documentation and accessibility of political information and publications is rather limited.

Interestingly, no SCP-relevant indicators for the institutional theme could be found, which reflects a less institutionalised approach towards SCP within the country. Yemen's related indicators only touch on fundamental and more general SCP issues. While there is an interesting angle to some of the country's current indicators (e.g. "Oil-based economic growth"), the feasibility of gathering related data for such original indicators remains questionable. A specific SCP programme or set of indicators is not yet under development.

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Framework/Policy/Source	Relevance to SCP / Comments	Year / Status	Links
The Development Plan for Poverty Reduction	Aims to raise the standard of living through a series of planned (SCP-related) goals and objectives.	2006 - 2010	Not available online
Republic of Yemen Poverty Assessment	Assessment of the success of Yemen's three five-year economic reform plans and of policies needed to further reduce poverty. The report - published by the government of Yemen, the Worldbank, and UNDP - also aims to evaluate the role of growth and assesses the country's poverty monitoring system. Includes indicators (RYPA).	2007	http://go.worldbank.org/DZXB1DU520
Yemen MDG 7 Report	Report on the progress of four SCP-related indicator areas within MDG7. Examines e.g. the current status, challenges, supportive environment (policies and programmes), priorities for development assistance, and the monitoring and evaluation environment. Includes Indicators.	2000 (?)	Not available online
Statistics	Central Statistics Office (CSO): Different indicators that are not all measured annually and are not necessarily built into strategies or policies.		CSO: http://cso-yemen.org/content.php?do=pcat&cid=5

SCP-related Indicators	Indicator Set	Core Indicators
Material Consumption and Resource Use		
Substances that Deplete the Ozone Layer & Quantity Consumption by Sector	CSO - Environmental Indicators	•
Production / yield of each agricultural crop	CSO - Agricultural Indicators	
Quantity and value of fish and other aquatic catch	CSO - Agricultural Indicators	
Energy Use		
Energy use per $1 GDP	MDG 7	•
Main source of cooking	RYPA	
Electricity production	CSO - Industrial Indicators	•
Distribution of number and ratio of dwellings and population by means of source of cooking fuel	CSO - Building Indicators	
Land Use and Biodiversity		
Proportion of land area covered by forests	MDG 7	
Cultivable and cultivated areas	CSO - Agricultural Indicators	
Waste and Pollution		
Quantity of solid waste at government centres and number of official dumps	CSO - Environmental Indicators	
Carbon dioxide emissions (per capita) and consumption of ozone-depleting chlorofluorocarbons	MDG 7	•
Socio-Economic		
Economic growth per sector	RYPA	•
Oil-based economic growth	RYPA	
Unemployment rate	RYPA	•
Number of people seeking health care when sick	RYPA	
% Prevalence of severe malnutrition	RYPA	
Type of house	RYPA	
Proportion of population with sustainable access to an improved water source, urban and rural	MDG 7	•
Institutional		

Direct Indicator Indirect Indicator

CHILE Latin America and the Carribean

Even though Chile has a number of sustainability-related policies and programmes in place it would appear that the Chilean government is yet to embark upon devising a strategy for National SCP and its consequent measurement. Although UNEP SCP guidelines can be located on the national environment ministry information website, nothing from the Chilean government itself can be found in the way of national SCP, let alone indicators of SCP. The existence of Chile's Sustainable Development indicators proves however that the concept of Sustainable Development is recognised – especially since their scope is due to be extended from the regional to the national level. Chile's SCP-related indicators summarised in the list below cover a broad range of subjects, and only shows some weakness in terms of institutional indicators and indicators on land use and biodiversity.

Interestingly, there is a particular focus on energy-related issues: Chile has an Energy Efficiency Country Programme in place, and also the Clean Production Policy focuses on innovative and sustainable energy solutions. This issue has recently gained even more importance on the national agenda as Chile faces an energy shortage being billed as a crisis in early 2008. The fact that the issue of energy use and production is essential to the nation's overall development can, to an extent, explain why many SCP relevant indicators were available from the National Annual Environment Report.

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Framework/Policy source	Relevance to SCP / Comments	Year / Status	Links
Programa Puente	One of two main national programmes stemming from FOSIS - The Social and Solidarity Investment Fund. Highlighted by the President as the main Poverty Reduction Strategy for Chile.	2006 - 2010	1997
Chile Solidario	The other main Fosis programme. Aimed at people in extreme poverty to overcome indigent situations.	2006 - 2010	Ministry of Planning (Mideplan): www.mideplan.cl/final/categoria.php?secid=1&catid=112
Chilean Environment Law	Includes regulations for vehicles, industry and industrial waste.	1994	Ministry of Environment (CONAMA): www.conama.cl
Clean Production Policy	Financial incentives and promotion for cleaner and renewable forms of energy.	2000 - 2010	www.produccionlimpia.cl/
Environmental Policy for Sustainable Development	Promoting clean forms of production: Production and consumption as a means of preventing environmental damage.	1998	SINIA: www.sinia.cl
Sustainable Consumption Study	Research into attitudes and perceptions with regard to Sustainable Consumption with the objective of promoting sustainable consumption patterns.	2003	CONAMA: www.conama.cl/
Regional Sustainable Development Indicators	Carried out on regional scale between 1997 - 2002 and currently in progress for national scale. Developed in cooperation between Chile's Ministry of Environment and Canada's Ministry of Environment in an Environment Cooperation Agreement.	1997	Environment Cooperation Agreement: www.eclac.cl/
Further SCP related environmental strategies and programmes	* National Climate Change Strategy (2006) * National Biodiversity Strategy (2003) * Energy Efficiency Country Programme (2006): Monitored through performance indicators.		
Statistics	Annual Environment Report: Environmental Indicators Mideplan Statistics Instituto Nacional de Estadísticas (INE)- National Institute of Statistics Banco Central Macro Economic Statistics Comisión Nacional de Energía (CNE) - National Energy Commission	2005 2006 2007	National Statistics Institute, Ministry of Environment Mideplan: www.mideplan.cl/casen/ INE: www.ine.cl/ Central Bank Chile: www.bcentral.cl/ CNE: www.cne.cl

CHILE

SCP-related Indicators	Indicator Set	Core Indicators
Material Consumption and Resource Use		
Net production and Annual and Monthly consumption of drinking water in areas served by AGUAS ANDINAS water company, Greater Santiago, 2001 - 2005 (Thousands of m3)	Annual Environment Report	•
Production of Metallic and non Metallic Mining, 2004 - 2005	Annual Environment Report	
Domestic crude oil production	Annual Environment Report	
Annual essential crops: Land size planted, Production and Yield, according to type at national level, farming year 2004 – 2005	Annual Environment Report	
Change in the capture of Fish, Shellfish and Algae, 2001 - 2005 (Thousands of Tonnes)	Annual Environment Report	
Change in the consumption of Ozone Depleting substances, 1996 - 2005 (Tonnes)	Annual Environment Report	•
Sale of agricultural pesticides, by region, Jan - Dec 2003 (kg)	Annual Environment Report	•
Energy Use		
Gross production of Primary and Secondary Energetic products, 2000 - 2004	Annual Environment Report	
Electric Energy Generation month by month 2006 - 2007	INE	•
Change in the production of electricity, from 1996 to 2005 per (million KWh)	Annual Environment Report	
Consumption of Primary and Secondary Energetic products 2000 - 2004	Annual Environment Report	
Change in final consumption of secondary energy per habitant,1995 - 2004	Annual Environment Report	
Energy consumption by energy type and industry sector including residential and public sector 2006	CNE	
Renewable energy capacity on a national scale as a %	CNE	•
Land Use and Biodiversity		
Soil extraction by size of estimated damage, by region	Annual Environment Report	
Soil contamination by magnitude of estimated damage, by region	Annual Environment Report	
Change in irreversible use of soils by magnitude of estimated damage, by region	Annual Environment Report	
Waste and Pollution		
Final provision of waste services (household and similar solid waste), per region, 2001 - 2005 (tonnes/year)	Annual Environment Report	•
Dumping of Industrial Waste Liquids (Effluent) by Company and Region, 1999 (m3)	Annual Environment Report	
Main contaminating spills by port, by product, 2001 - 2005 (Litres)	Annual Environment Report	
Consequences of handling dangerous substances, by region, 2001 - 2005	Annual Environment Report	
% Distribution of Radioactive Waste, per Generator, 1997 - 2005	Annual Environment Report	
Socio-Economic		
GDP per Capita change	Banco Central Macro	•
Unemployment Rate for 2007	INE	•
Employment and Unemployment figures by five different age and income groups	Mideplan	
Line of Poverty	Mideplan	
Population Growth from 1990 with Forecast to 2010	Annual Environment Report	•
Coverage of drinking water and sewerage system on Dec, 2005 according to region	Annual Environment Report	•
Population according to gender type covered under the different health services (Public and Private)	Mideplan	•
Housing type by zone (urban/rural) and region	Mideplan	•
Number of Children in Unacceptable Employment	INE	•
Institutional		
Others		
Change in private automobile numbers in circulation 2001 - 2005	Annual Environment Report	

Direct Indicator Indirect Indicator

> “Interestingly, there is a particular focus on energy-related issues: Chile has an Energy Efficiency Country Programme in place, and also the Clean Production Policy focuses on innovative and sustainable energy solutions.”

COLOMBIA Latin America and the Carribean

Out of the five Latin American countries in this study, Colombia has the concept of Sustainable Development most deeply imbedded within its National Development Plan. This has been reflected by the creation of sustainability related government institutions in 2007 such as the Environmental Programme for Business/Industry which is to concentrate its efforts on industry and raising sustainability awareness and performance. The issue of SD indicators is relevant for Colombia, having legislation obliging the government to publish 15 such indicators, many of which could fall under the SCP umbrella. Furthermore Annual Environment Report statistics (as used in the above indicator list) are monitored on an ongoing basis.

In terms of the country's production patterns, the National Cleaner Production Policy from 1997 and following agreements with the private sector manifested the government's commitment to promote more sustainable production. The current review of the policy and the evaluation of progress will create further awareness for the key issues and opportunities around sustainable production. Government is also redefining along with UNEP support an integrated SCP policy. Despite policy aims for Energy Efficiency and Sustainable Natural Resource Use, no explicit SCP programme and strategic policy has been implemented as yet.

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Framework/Policy source	Relevance to SCP / Comments	Year / Status	Links
National Development Plan (NDP)	Poverty Reduction Strategy and draft of a policy of environmental management. Promotes sustainable development and the sustainable use of natural resources. Linked to MDGs. Resulted in creation of Sectoral Sustainable Development Department.	2006 - 2010	Departamento Nacional de Planeación (DNP): www.dnp.gov.co/
Law 99 - Environmental Law	Requested the Ministry of Environment to produce and monitor environmental information (Report on the State of the Environment).	1993	Ministry of Environment (MoE): www.minambiente.gov.co/
	Annual Report on the State of the Environment and Renewable Natural Resources in Colombia (Annual Environment Report).	2004	Colombian Environmental Information System (SIAC)
National Cleaner Production Policy	Resulted in agreements between environmental authorities and the private sector. Agreements include quantified targets, deadline dates, firms commitments, and mechanisms for monitoring and verification of results.	1997	not available online
Proposal for Sectoral Environment Strategy - Environmental Programme for Business/Industy	Examines in detail a sustainable development policy proposal for industry and how it can contribute to SD. Also analyses the indicators shown below in terms of major challenges faced in terms of improving sustainability performance.	2007	MoE: www.minambiente.gov.co/
Sustainable Development Indicators Decree 1200/2004	Six objectives with fifteen indicators to be reported on. Includes SCP aspects. Publication of SD indicators planned for December 2008. Project assisted by the World Bank.	2004 and 2007	MoE: www.minambiente.gov.co/
Other SCP-related initiatives	* UNEP Latin America and Caribbean Initiative: Sustainable Development Indicators, Colombia produced report on 26 indicators (2007). * Millennium Development Goals Report: Progress report (2002 - 2006).		
Report: Latin American and Carribbean Initiative for Sustainable Development: Monitoring Indicators - Colombia	Discusses and introduces SD Indicators.	2007	MoE, DANE and UNEP: www.minambiente.gov.co/documentos/1819_INDICADOR_ILAC.pdf
Report: Advances and Challenges for Colombian Social Policy	Analysis of expenditure on NDP programmes, focusing on the efficiency of expenditure on certain areas for poverty reduction that are partly SCP-relevant.	2008	DNP: www.dnp.gov.co/PortalWeb/Portals/0/archivos/documentos/DDS/politica%20social%20febrero.pdf
Statistics	National Administrative Statistics Department - Departamento Administrativo Nacional de Estadistica (DANE): * Population growth forecast 2006 - 2020 * Quality of Life Statistics * Child Labour Analysis * Number of Automobiles		DANE: www.dane.gov.co

COLOMBIA

SCP-related Indicators	Indicator Set	Core Indicators
Material Consumption and Resource Use		
Water shortage Index	Annual Environment Report	
Water availability per habitant	SD Indicators	•
Domestic consumption of water for each US$1,000 of GDP	SD Indicators	
Consumption of chlorofluorocarbons which affect the ozone layer	SD Indicators	
Use of Fertilisers / pesticides on agriculture	Annual Environment Report	•
Composition of national pesticide sales according to effect / toxic categories	Annual Environment Report	
Annual demand of wood by manufacturing sector	Annual Environment Report	
Index of catches per boat of coastal fish/shellfish	Annual Environment Report	•
Energy Use		
Energy consumption per capita	Annual Environment Report	•
Final energy consumption by sectors	Annual Environment Report	•
Energy intensity	Annual Environment Report	•
Growth rate of residential energy consumption	Annual Environment Report	
% of Renewable energies in the internal demand of energy	Annual Environment Report	•
Land Use and Biodiversity		
Average annual rate of deforestation	Annual Environment Report	•
Proportion of land covered by forest	SD Indicators	•
Rate of Desertification	Annual Environment Report	•
% of covered vegetation area affected by illicit crops	Annual Environment Report	
Soil erosion	Annual Environment Report	•
Salination of soil	Annual Environment Report	
Damaged area caused by mining	Annual Environment Report	
Rate of ecosystem change	Annual Environment Report	
Waste and Pollution		
Rate of solid waste generation	Annual Environment Report	•
Volume urban solid waste	Annual Environment Report	
Polluting emissions by industrial sector	Annual Environment Report	
Bogota air quality index	Annual Environment Report	•
Socio-Economic		
Population growth forecasts	DANE	•
Gini Co efficient indicator	Colombian Social Policy	•
Population with access to sanitation	SD Indicators	•
Proportion of population covered by public and private health system	DANE	•
Percentage of population with access to solid waste collection	SD Indicators	
Home ownership type (rented or owned property)	DANE	
Population density in ecosystem related areas	Annual Environment Report	
Growth rate of small company numbers	SD Indicators	
Child Labour levels	DANE	•
Satisfaction levels of human needs amongst communities in the region (Amazon and Pacific) via production systems	Annual Environment Report	•
Social vulnerability of homes in coastal area to the impacts of sea level rises as a result of climate change	Annual Environment Report	
Institutional		
Spending on poverty reduction strategy by different programme type and year 2006 - 2010	Colombian Social Policy	
Others		
Number of Automobile sales by type	DANE	

Direct Indicator Indirect Indicator

> “Out of the five Latin American countries in this study, Colombia has the concept of Sustainable Development most deeply imbedded within its National Development Plan. This has been reflected by the creation of sustainability related government institutions in 2007 such as the Environmental Programme for Business/Industry.”

CUBA Latin America and the Carribean

Compared with other developing nations in this study, Cuba stands strong both in terms of its environmental and social sustainability institutions and laws, and in the number and nature of SCP-related indicators. The country is recognised for its social performance having a comparatively high Human Development Index (HDI) rating. Cuba's national statistical agency, Oficina Nacional de Estadísticas (ONE), provides a useful database for environmental, social and economic information.

The Cuban government plans to develop an SCP strategy and complementing SCP indicators in 2008. This will be undertaken by the National Group of Cleaner Production and Sustainable Consumption, a transectoral group integrated by representatives of 11 ministries, that it is coordinated and directed by the Ministry of Science, Technology and Environment. The existing base of currently monitored indicators will facilitate the development of such a specific set of SCP indicators.

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Relevance to SCP / Comments	Relevance to SCP / Comments	Year / Status	Links
Annual Social and Economic Plan	Annual national social and economic priorities identified and budgeted accordingly.	2007	www.cubagob.cu/des_eco/mep/economia.htm
Environment Law No. 81	Emphasizes importance of Sustainable Development to countries' future development. ARTICULO 3.-"The duty of the State, Citizens and Society in general is to protect the environment through the following: a) Its conservation and rational use; b) The constant increase in knowledge of citizens about the interrelationship between man, nature and society. c) The reduction and elimination of unsustainable forms of Production and Consumption	1997	http://www.medioambiente.cu
National Environment Strategy	Vision: To reach a superior level in environmental protection and a rational use of natural resources, with an efficient use of financial and material resources which the country possesses.	2007 - 2010	http://www.medioambiente.cu
National Cleaner Production and Sustainable Consumption Strategy	The main environmental problems identified in Cuba's National Environmental Strategy 2007-2010 are also the priorities for the SCP strategy. They include the management of water resources, energy, waste and industry. Increase the use of Cleaner Production in the business sector as a way to improve their sustainable performance. Incorporation of Cleaner Production in new environmental regulation and include in National Statistics Institute.	2004 (to be reviewed and developed further in 2008)	http://www.unep.fr/scp/
Environmental Policy from the Ministry of Construction	Aims for sustainable use of non renewable natural resources, reuse and recycling, energy efficiency and promotes ISO 14000 as Environmental Management instrument.		http://www.medioambiente.cu
Environmental Strategy for Transport and Environment Policy for Ministry of Transport	Develop environmental management practices for minimizing or eliminating impact from transport and its infrastructure on the air, water, soil, flora and fauna. The policy aims to minimize polluting emissions, gas and waste by applying technologies, reusing and recycling.	1997	http://www.medioambiente.cu
Environmental Strategy for Fishing Industry	1. Guarantee the sustainable exploitation of our aquatic resources through an efficient management of fishing and rigorous compliance with legal measures established by Decree Law No.164 "Fisheries Reglament". 2.Deal appropriately with possible pollution occuring at sea or on land as a result of the fishing boats and waste. 3.Comply with Montreal Protocol on Ozone Depleting Substances.	1997	http://www.medioambiente.cu
Statistics	ONE Environment Compendium 1990 - 2004		www.one.cu
	ONE National Accounts Statistics 2006		www.one.cu
	National Development Statistics	2001 - 2006	www.one.cu

CUBA

SCP-related Indicators	Indicator Set	Core Indicators
Material Consumption and Resource Use		
Annual consumption of water per activity	Statistics of National Institute of Hydraulic Resources	
Quantity and capacity of dams in exploitation per province	ONE Environment Statistics	
Capture of fish per group of species	ONE Environment Statistics	
Total pesticides / POPs per year and sectors	ONE Environment Statistics	•
Agricultural yield per selected crops from non-sugarcane agriculture. State sector. Non-state sector	ONE Environment Statistics	
Selected indicators of cow milk production	ONE Environment Statistics	
Industrial output/production index per product origin	ONE Environment Statistics	
Total industrial production of selected products (30 product type categories)	ONE Environment Statistics	
Energy Use		
Generating devices of renewable energy and biomass used as fuel	ONE Environment Statistics	
Renewable energy offer	ONE Environment Statistics	•
National production of primary energy (Petroleum, Gas, Hydro, Wood, Sugar Cane)	ONE Environment Statistics	•
National production of secondary energy	ONE Environment Statistics	•
Electricity consumption indicators	ONE Environment Statistics	•
Consumption of other energy resources per sector	ONE Environment Statistics	
Energy consumption in households	ONE Environment Statistics	
Electric power consumption per sector	ONE Environment Statistics	
Land Use and Biodiversity		
Deforestation index per province (%)	ONE Environment Statistics	•
Forest fires per cause, year 2006	ONE Environment Statistics	
Reforested area per province	ONE Environment Statistics	
Land distribution and its use, according to tenure forms and types of economic enterprises or entities	ONE Environment Statistics	
Harvested areas and production of selected crops from non-sugarcane agriculture (state sector)	ONE Environment Statistics	
Waste and Pollution		
Volume of solid wastes gathered per province	ONE Environment Statistics	
Quantity solid waste recycled/reused per province	ONE Environment Statistics	
% of Reduction of pollutant load, per province	ONE Environment Statistics	
Recycled raw material production	ONE Environment Statistics	
Socio-Economic		
GDP per Capita	ONE National Acc Statistics	•
Distribution of the work force per occupational category and sex	ONE Work Force & Salaries	
Total population by gender, annual growth rate and gender ratio	ONE Demographic Statistics	•
Life expectancy by sex and single ages, 2001- 2003	ONE Demographic Statistics	
% of Population with drinking water and sanitation coverage	ONE Environment Statistics	•
Number of Inhabitants per doctor	ONE Public Health and Social Assistance	
Average of available beds for medical assistance per health care units	ONE Public Health and Social Assistance	
% of total and urban population with waste collection services	ONE Environment Statistics	
Main indicators of the social assistance system (including Expenditure per person, number of elderly beneficiaries, number of disabled beneficiaries)	ONE Public Health and Social Assistance	
Institutional		
Investment in Air and Climate protection (pesos)	ONE Environment Statistics	
Investment in Water Management (pesos)	ONE Environment Statistics	
Investment in Soil Protection (pesos)	ONE Environment Statistics	
No of professional receiving training in SCP/year	Ministry of Science, Technology and Environment	
Others		
Load traffic per type per km tonne	ONE Environment Statistics	
Passengers transported by specialized state companies	ONE Transport Statistics	

Direct Indicator Indirect Indicator

"The country is recognised for its social performance having a comparatively high Human Development Index (HDI) rating. Cuba's national statistical agency, Oficina Nacional de Estadísticas (ONE), provides a useful database for environmental, social and economic information."

JAMAICA Latin America and the Carribean

While most of Jamaica's development policies do not directly refer to sustainability, the three dimensions of the concept are nonetheless illustrated in the country's current policy framework. The National Sustainable Development Framework will fill this institutional gap once it has been approved. In the meantime, the National Environmental Action Plan remains the key sustainability anchor in Jamaica's political landscape.

This plan does not only relate to international sustainability frameworks such as the JPOI, but also acknowledges the concept of SCP. While no specific set of sustainable development indicators or SCP indicators currently exists, a wide range of related indicators is already monitored by the National Statistical Agency. In particular, the large variety of institutional indicators differentiates Jamaica's list of indicators from other countries.

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Framework/Policy source	Relevance to SCP / Comments	Year / Status	Links
National Development Plan (NDP) - Vision 2030	25-year development plan. Objective to achieve developed country status by 2030. Public consultation process. Draft will be tabled in Parliament for approval in April 2008. Strategies planned as part of the NDP (2007): * Mining and Quarrying Sector Plan * First Draft Tourism Sector Plan * Manufacturing Sector Plan * Transport Sector Plan * Poverty Reduction Strategy Plan * Gender Sector Plan	Ongoing development of NDP since 2005 (2005 - 2030)	Planning Institute of Jamaica (PIOJ): https://pioj.gov.jm
Medium Term Socio-Economic Policy Framework (MTF)	Three-year programme with macro-economic, social, environmental and governance policy objectives.	2004/05 - 2007/08i	PIOJ: https://pioj.gov.jm
National Sustainable Development Framework (NSDF) - Vision 2025	Overarching sustainable development framework, promoting effective mechanisms and strategic national actions for achieving sustainable development goals.	under development	Not available online
Jamaica's National Environmental Action Plan (JaNEAP)	Focus on 16 thematic areas, many of which are SCP-related (e.g. green consumerism and EMS). SCP policies are incorporated within JaNEAP. Aligned with JPoI, MDGs and regional/national information systems. It is expected that JaNEAP will be an integral part of the NSDP currently under development. JaNEAP includes indicators.	2006 - 2009	National Environment and Planning Agency (NEPA): www.nepa.gov.jm/adverts/JANEAP-2006.pdf
Other SCP-related environmental policies and strategies	* National Biodiversity Strategy and Action Plan (2003) * Jamaica Energy Policy (2006 - 2020)		https://pioj.gov.jm/JDPDownloads.aspx
Statistics	Statistical Institute of Jamaica (Statinja): * Demographic Statistics * National Accounts * Trade Indicators * Environmental Statistics * Census		Statinja: www.statinja.com
	Vulnerability index for the natural environment (EVI). Developed by the South Pacific Applied Geoscience Commission (SOPAC), and the United Nations Environment Programme (UNEP).	2005	SOPAC and UNEP

JAMAICA

SCP-related Indicators	Indicator Set	Core Indicators
Material Consumption and Resource Use		
Water demand by sector	JaNEAP	•
Ground water availability and surface water availability	JaNEAP	
Annual withdrawals of ground and surface water as a % of total renewable water [Water stress (%)]	JaNEAP	•
Annual catch by major species (Marine fish, Lobster, Conch, Crab, Shrimp etc.)	JaNEAP	
Agricultural production of all major crops	JaNEAP	•
Pesticide/herbicide/fertilizer imported per year	JaNEAP	•
Consumption of ozone depleting substances	JaNEAP	•
Energy Use		
Share of consumption of renewable energy resources	JaNEAP	•
Number of use of alternative energy technology	JaNEAP	
The number of cogeneration facilities	JaNEAP	
Amount of petroleum imports per year	JaNEAP	
Land Use and Biodiversity		
Land Use be by Land Use Category	JaNEAP	•
Annual rate of decrease/increase in forest cover	JaNEAP	•
The number of hectares of land reforested per year	JaNEAP	
Value of agriculture crop loss due to soil erosion	JaNEAP	
Extinctions	EVI	•
Land area reserved for water conservation	JaNEAP	
Waste and Pollution		
Generation of industrial and municipal solid waste and hazardous waste	JaNEAP	•
Rate of waste recycling and reuse	JaNEAP	•
Number of Sewage Treatment Plants that meet NRCA's sewage effluent standard	JaNEAP	
Reach of river polluted (%) - saline intrusion, industrial pollution, sewage pollution, agricultural pollution	JaNEAP	
Ambient concentration of air pollution in urban areas	JaNEAP	•
Number of incidences of respiratory tract infection caused by Air Pollution	JaNEAP	
Socio-Economic		
GDP per capita	Statinja	•
Imports by Product Group (US$ '000)	Statinja	•
Exports by Product Group (US$ '000)	Statinja	•
Growth in population rate	Statinja	•
Percentage of population with access to safe drinking water	Statinja	•
Percentage of population with improved sanitation	Statinja	•
Percentage of population connected to sewerage systems	Statinja	•
Unemployment Rate	Statinja	•
Employment in large establishments, by Industry group 2003 - 2006	Statinja	
% Increase in the housing stock and type of dwelling	Statinja	
Collection coverage (%) (solid waste)	JaNEAP	
Institutional		
Number of ISO14001 certified companies	JaNEAP	•
Amount of tax concession on alternative energy technology	JaNEAP	
The number of Watershed Management Plans / Strategic Action plans being implemented	JaNEAP	
Expenditure on Environmental Management as a Percentage of GDP	JaNEAP	
Percentage of environmental regulatory violations that are prosecuted	JaNEAP	
Number of companies with Action Plans for air emission quality improvement	JaNEAP	
Number of Policies subjected to a Strategic Environmental Assessment (SEA)	JaNEAP	
Number of EIAs per sector as against approved developments	JaNEAP	
The number of persons trained in Environmental Management Systems	JaNEAP	
The number of demand side management programmes	JaNEAP	
Others		
Number and types of eco-tourism facilities	JaNEAP	
Number of hotels with Green Globe Certification	JaNEAP	

Direct Indicator Indirect Indicator

"While no specific set of sustainable development indicators or SCP indicators currently exists, a wide range of related indicators is already monitored by the National Statistical Agency."

BRAZIL Latin America and the Carribean

Despite SCP issues being left out of the National Plan, which instead focuses more on poverty reduction and public safety, Brazil is specifically addressing the area of SCP and its measurement. The driver for this is mainly the Ministry of Environment. With its Sustainable Development Strategy and its Biodiversity Policy, Brazil has two national policies in place that are relevant to SCP. Moreover, Brazil recently developed a National SCP Action Plan in collaboration with UNEP, which resulted in further SCP initiatives as outlined above. As part of its sustainable development (SD) and SCP efforts, Brazil has developed sets of national SCP and SD indicators. While all countries featured in this study currently monitor SD and SCP indicators, Brazil stands out as the only country with designated sets of indicators for both, SD and SCP, in place. While acknowledging this achievement, it must be noted that some SCP core issues such as GHG emissions and land use indicators have been omitted in these sets. The reason for this may be the close alignment of the National SD Policy with Agenda 21, where the environmental sustainability focus is mainly on cleaner and renewable forms of energy production. The above list of SCP indicators identified for Brazil has therefore included several energy and economic indicators to complement the existing sets of national SCP and SD indicators and fill some thematic gaps. Nonetheless, no institutional SCP-related indicators could be identified for Brazil.

Framework/Policy/Source	Relevance to SCP / Comments	Year / Status	Links
Multi Year Plan / Pluriannual Plan	National Plan, based on the three axes of "economic growth", "quality education" and the "social agenda".	2008 - 2011	www.inesc.org.br/library/other-publications/ARTIGO%20PPA%202008%202011%20ingles.pdf
National Sustainable Development Strategy	Known as the Brazilian Agenda 21. Objective 1: - Sustainable production and consumption against the waste culture. Objective 2: Eco-efficiency and social responsibility of companies. Overseen by The Commission of Policies for Sustainable Development / À Secretaria de Políticas para o Desenvolvimento Sustentável.	2002	Ministry of Environment (MMA): www.mma.gov.br/index.php?ido=conteudo.monta&idEstrutura=18&idConteudo=4957
	Sustainable Development Indicators (SDI).	2004	MMA / Brazilian Institute of Geography and Statistics
National Action Plan for Sustainable Consumption and Production	Brazil intends to minimize environmental and social costs, improve the competitiveness of enterprises and reduce the risk for human health and the environment. Outlines seven SCP priority areas.	2007	UNEP: www.unep.fr/pc/sustain/initiatives/actionplans/documents/BRA_PlanPORT.pdf
	Sustainable Consumption and Production Indicators (SCP).	2004	MMA / Brazilian Institute of Geography and Statistics
Responsible Consumption of Packaging Campaign / Campanha Consumo Consciente de Embalagens	Promote and disseminate nationally the culture of Responsible Consumption of Packaging.	2007	MMA
Guide for Good Practices in Sustainable Consumption	Aimed at showing population how to sustainably use domestic appliances, water and be efficient with energy at home (illustrated through cartoon diagrams). Produced by Ministry of Environment and Institute for Consumers Defence.	1998	MMA: http://www.mma.gov.br/port/sds/index.cfm
National Biodiversity Policy	Promoting the conservation of biodiversity and the sustainable consumption of its components in an integrated way: "III - Component 3 – Sustainable Consumption of Components of Biodiversity".	2002	MoE: www.mma.gov.br/estruturas/conabio/_arquivos/4339ing.pdf
Decree 22 2005 added to National Hydro Policy (1997)	Promoting the formulation and implementation of policies, programmes and projects related to the management and Sustainable Consumption of water at all levels.	2002	MMA: www.mma.gov.br/estruturas/srh/_arquivos/dec-agua.pdf
Statistical Information	International Atomic Energy Agency and UNDEA: Energy Indicators for Sustainable Development.	2007	www-pub.iaea.org/MTCD/publications/PDF/Pub1247_web.pdf
	Indicators from Government Applied Economics Research Institute (IPEA DATA).	2003	www.ipea.gov.br/default.jsp

SCP-related Indicators	Indicator Set	Core Indicators
Material Consumption and Resource Use		
Consumption of Ozone Layer depleting substances	SCP	•
Consumption of pesticides and similar substances, per hectare	SDI	•
Availability of fertilizers sold by Hectare, by type of nutrient used	SCP	
Rate of Mineral Consumption per capita per mineral type	SCP	
Reserves of less abundant mineral substances	SCP	
Energy Use		
Electricity Intensity and GDP per capita	Energy Indicators for SD	•
Energy Consumption per Capita	Energy Indicators for SD	•
Final energy use of the Brazilian economy by sector	MME	•
Consumption of Gas and Petroleum per capital	SCP	
% of Renewable energies sources from total energy supply (by source)	SCP	•
% of Non Renewable energies sources from total energy supply (by source)	SCP	
Land Use and Biodiversity		
% Rate of annual deforestation in the remaining legal Amazon forest	SDI	•
Total accumulated legal deforestation in the Amazon	SDI	
Waste and Pollution		
Production of low and medium levels of nuclear waste	SCP	
% of recycled material from industrial activity per material type	SCP	
% of separated waste collected, the number of households with this service and the number of municipalities with the service	SCP	
Annual SO2 emissions 1980 -2000	Energy Indicators for SD	•
Annual NOx emissions 1980 -2000	Energy Indicators for SD	•
Annual CO2 emissions 1980 -2000	Energy Indicators for SD	•
Annual GHG emissions related to Brazil's energy system 1980 - 2000	Energy Indicators for SD	•
Socio-Economic		
GDP per Capita change 1980 - 2001	IPEA DATA	•
Gini Index 1992 -1999	Energy Indicators for SD	•
Population Growth (Rural and Urban)	IPEA DATA	•
Others		
Evolution of total distance travelled by passengers (Passenger Activity)	MME	

Direct Indicator Indirect Indicator

Appendix 2

The SCP Indicator Compass

> "(We) need to avoid the failings of other SCP indicator sets in their inability to spark interest among politicians and members of the public. The general feeling is that this inability stems not from technical weaknesses in the definitions of the indicators themselves, but from a failure to combine indicators into individual 'narratives' or overall stories on how we are fairing with respect to SCP." (EEA)[56]

The SCP Compass is an attempt to find a meaningful basis for an indicator framework that applies at all scales – individual, organisational and national – and that provides a useful delineation of action-based indicators for governments, producers and consumers.

Underpinning assumptions

When considering the interaction of a complex system (say a human being or an organisation) with its external environment, it is apparent that its long-term survival will be a factor of its ability to change its way of doing things (its adaptability), as well as its capacity to develop, deepen and sustain a broadening range of mutually-beneficial relationships. This characteristic holds over evolutionary timescales; in economic terms, it represents the "long-run" perspective.

Depicted in simple graphical form, we can envisage a compass that indicates the direction towards a more sustainable society (Figure 3). Where both adaptability and our capacity to sustain mutually beneficial relationships are high, the possibility of achieving a sustainable society is greater.

Four approaches to encouraging SCP

Drawing on our experience of sustainable production and consumption efforts, four perspectives emerge that delineate present approaches to informing the development of SCP indicators (Figure 4):

- Where both capacities are limited, a **compliance-based** approach that is driven by the minimum requirements of national (and international) legislation may result in a predominant focus on baseline social and environmental aspects of SCP (such as health and safety, pollution reduction, waste management and human rights issues).
- Where there is capacity to change products and processes, then **efficiency-oriented** approaches that reduce the throughput of resources – such as materials, energy and water – become possible, and indicators may be used create pressure to encourage these efforts.
- Where there is enhanced capacity to forge relationships that are of mutual benefit, we may explore the **connectivity** of society as an indicator of more sustainable development. Connectivity enhances the ability to forge relationships of mutual benefit, and vice versa. It includes the personal level (eg access to the Internet or transportation services), organisational level activities (eg providing information to stakeholders) and country-level activities (eg access to markets). Many socio-economic indicators will have an influence on people's abilities to connect. This brings to the fore a focus on social and human capital that is of particular relevance in developing countries.

Tracking movement towards SCP

Due to the rebound and product substitution effects, efficiency-based approaches provide no guarantee of movement towards a more sustainable society in absolute terms. There may be increasing awareness of new opportunities, but the firm-level impetus for efficiency improvements are invariably about financial capital (expressed as cost savings, avoided "hidden" costs or increased sales as efficiency improvements drive down production price).

Similarly, connectivity will not move society towards greater sustainability if enhanced connectedness simply enables people to more easily apply the unsustainable business models or consumption patterns of industrial society.

But efficiency and connectivity provide a platform from which to leverage efforts to develop production, distribution and consumption patters that take account of a critical stock of natural capital. In seeking to bridge the two quadrants (by finding more efficient ways of doing things, with new forms of partnership), an **innovation driver** is generated. This drive for innovation is key to forging economically-viable production and consumption patterns that facilitate access to post-carbon, nature-mimicking and cyclical technologies; build human and social capital; and restore (or at least do not systematically degrade) natural capital. These are the

attributes we seek to promote by indicators based on the **critical stock** approach.

Present production and consumption systems exist in the context of an unsustainable economic model that does not account adequately for the stocks of natural capital upon which all human activities depend. While the business case for compliance, efficiency and connectivity is relatively clear, efforts in the upper right quadrant will frequently be justified only with a different set of values being applied: values that allow producers or consumers to trade short-term financial gain for longer-term resilience. For this reason, indicators that track developments in this quadrant are of critical importance, but are only just emerging, and are likely to be of limited scale.

The SCP Compass

Each quadrant of the SCP compass (Figure 5) is divided into three categories relating to different scales:

- the **Macro-level** refers to measurements that reflect country-level processes and patterns (the cumulative effect of producer and consumer actions), as well as the actions of government agencies and departments;
- the **Producer** level refers to measurements that reflect actions undertaken by producer organisation;
- the **Consumer** level refers to measurements that reflect actions undertaken by individual consumers.

A national SCP indicator set would most likely consist of a **spectrum of initiatives**, ranging across each of the four quadrants. The value of the compass is in providing awareness of the **limitations** of compliance, efficiency and connectivity measures in achieving genuine progress towards more sustainable production and consumption patterns. It also provides recognition of the **importance** of such indicators in buying us time and creating leverage platforms for innovative solutions towards a more sustainable society.

By using the compass, policy-makers and relevant stakeholders will be drawn to reflect on the story that underpins their indictor set. They will be prompted to ask whether their indictor set establishes a driver towards a more sustainable society through the development of adaptive capacity. This is the "individual narrative" that must inform efforts to develop a set of realistic indictors that track the actions of government agencies, producers and consumers, as well as the longer term effects on the natural capital base that sustains their efforts.

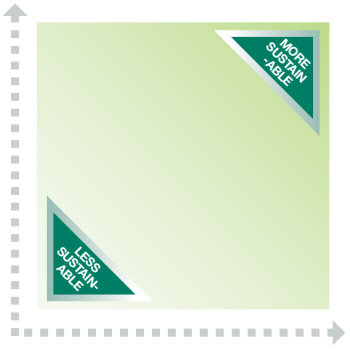

Figure 3: Characteristics of more sustainable systems

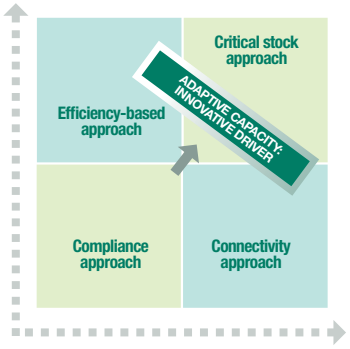

Figure 4: Increasing adaptive capacity promotes innovation for SCP

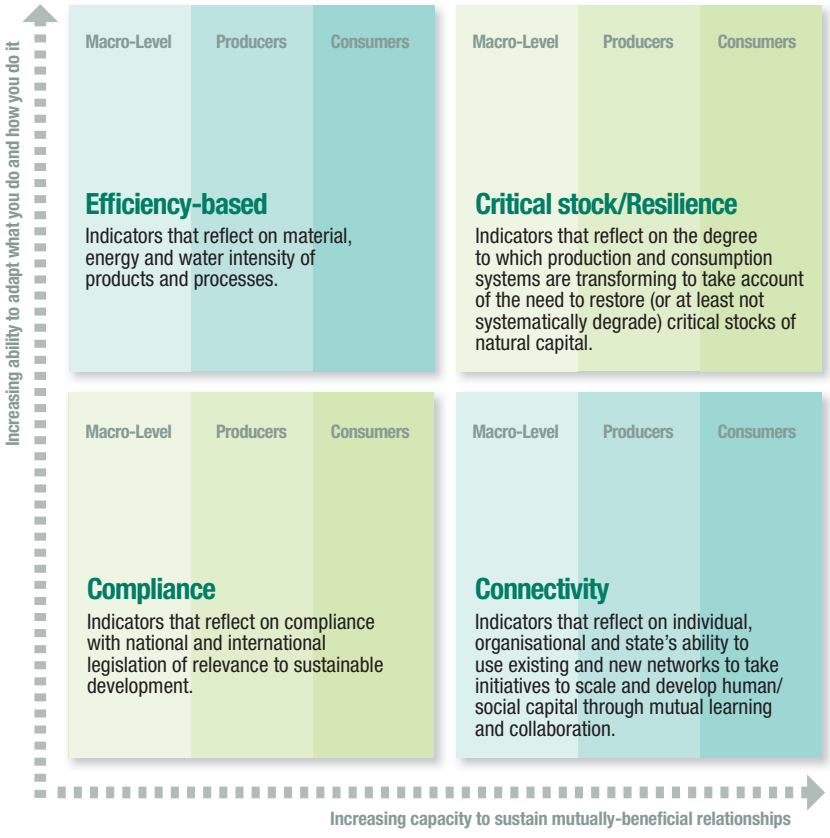

Figure 5: The SCP Compass

Appendix 3

Potential indicator-specific limitations

This table provides some brief commentary on the potential limitations relating to each of the SCP-related indicators identified in Table 2. The table explicitly focuses on the limitations and not the benefits, as it hoped that the benefits are more self-evident. The aim of this table is to provide additional guidance to decision-makers as they seek to develop and identify an appropriate set of SCP indicators.[57]

Material Consumption and Resource Use	
Average Water Consumption per GDP	• Coupling to the monetary value of production and inflation can impact the indicator without effective change in consumption patterns. • Macro-level indicator, does not explicitly consider the producer or consumer level. • Clarity needed as to whether it addresses total water consumption or only industrial water consumption.
Consumption of Ozone Depleting Substances and Hazardous Substances (including Persistent) per Unit Product	• Concerns around the availability and accuracy of data, and the possibility of timely reporting. • No indicator for current trends in the deterioration of the ozone layer because of delays in ecosystem response.
Ratio of Fertilizer & Pesticide Consumption to Agricultural Produce	**Fertiliser consumption:** • Environmental impacts of fertilizers dependant on quantity applied, and the condition of the agro-ecosystem, cropping patterns, and on farm management practices. • No specification of quality and impact of fertiliser (organic vs. chemical). • Indicator assumes an even distribution of fertilizer on the land. **Pesticide Consumption:** • Indicator is an aggregation: ignores toxicity, mobility, level of persistence, and spatial and application variances. • Excluded: Use of pesticides outside of agriculture (significant in developed world). • Data omissions and errors often occur during the transfer of the primary data to statistical authorities.
Agricultural Productivity (tonnes of product / ha of land)	• Can be influenced through pesticides and fertilisers that yield short-term increases but longer-term environmental damage and reduced productivity • Does not reflect differences between industrial / subsistence farming • Data collection restricted; difficult particularly for rural areas and small farms.
Depletion Rate of Minerals and Non-Renewable Resources	• No indication of quality of resources. • Interpretation: an increase might be initially desirable in some developing countries – as a means of developing human and social capital.
Average Petrol / Diesel Consumption (litres / 100 km) for Cars	• Increased levels of fuel efficiency might ultimately lead to overall higher consumption of petrol/diesel (increased use of individual cars due to decreased 'maintenance costs').
Number of Companies Applying LCA Principles in Product Design	• Definition and quality of scope of life-cycle assessments can differ considerably. • The lack of LCAs in product design does not necessarily mean the product is non-sustainable.
Annual Withdrawals of Ground and Surface Water as a Percent of Total Renewable Water	• Total Water: Accurate and complete data are scarce. • Indicator does not reflect the local or individual watershed situation. • Seasonal variation in water resources is not reflected. No consideration of different uses and policy options for mitigating scarcity (e.g. re-allocation from agricultural to other uses). • Not considered: water quality and its suitability for use.
Water / Material / Energy Intensity of Imports and Exports	• Data generally unavailable: Country-Specific intensities. • No indication of where the production of resource-intensive products is more resource-intensive (domestic production / abroad).

Energy Use	
Energy Consumption per Unit GDP	• Depends as much on the structure of the economy as on the energy intensities of the different sectors and their activities. • Measurement / interpretation of energy intensities are complicated by differences among products within a category, such as size, features, and utilization. • Comparison complicated by geographical factors. • Interpreting environmental impact or sustainability is complicated by different impacts of different energy sources. • Given the large number of factors that affect energy consumption, the ratio of total energy consumption to GDP should not be used as an indicator of energy efficiency or sustainability for policy-making purposes.
Energy Consumption per Unit Product	• Apparent consumption may in some cases represent only an indication of the magnitude of actual gross inland availability. The actual value of the indicator is strongly influenced by a multitude of economic, social and geographical factors. • Needs to be interpreted in connection with other indicators of economic development and energy use, as smaller or larger values of the indicator do not necessarily indicate more or less sustainable development.
Proportion of Renewable Energy Sources of Total Supply of Primary Energy (%)	• Large variety of forms of renewables and their uses: data collection difficult. • Comparability of national data is limited due to the lack of standardised methodologies.
Investment in Renewables as a Percentage of Total Energy Investment	• Does not necessarily reflect the capacity that is created due to price differences in equipment. • Looks at both, research and physical equipment. • No indication of when the investment will yield sustainable energy.
Land Use and Biodiversity	
Annual Net Deforestation of Land (ha)	• No indication of quality of forests. • No indication of reasons for deforestation (e.g. open fire vs. commercial clearing)
Land Used for Organic Farming as a Percentage of Total Agricultural Land (%)	• Definition and verification of organic farming practices: Certification required? For comparison, definitions would need to be levelled. • Land-intensive (organic) subsistence farming increases deforestation and threatens biodiversity, too.
Land Use by Category (%)	• Complexity: includes many different types of land use. • No indication of the quality of the land, its ecosystem context, resource values or management practices. • No information on the degradation of land resources (e.g.: common definition of forest area covers a very diversified range of forests (savannah to tropical forests).
Land Affected by Degradation and Desertification (%)	• Further refinement and definition needed: ecosystems undergo cyclic episodes; difficulty to separate short-term fluctuations from longer-term trends. • Different categories of degradation (e.g. UNEP: severe, moderate, slight), therefore assessment needed on national level.
Number of Threatened and Extinct Species	• Definition of timeframe (inclusion of previously extinct species). • Lacking resources and personnel for monitoring: Scarcity of suitable time-series of population data. Retrospective identification of change in biodiversity at species and habitat level. • For comparative purposes, it is important that similar parameters are measured in similar terms. • Care should be taken in interpreting the results of studies based on indicator groups, since the empirical relationship between biodiversity in different groups of organisms has been little investigated.
Waste and Pollution	
Average of Solid Waste Generated per Unit GDP	• Data collection: Not all waste is disposed of through waste management channels. • Definition of Solid Waste: Particular types of wastes (e.g. construction rubble) included? Recyclable / reusable waste to be included
Waste Recycling and Re-use by Sector (%)	• Should be expressed in terms of particular components to be useful in determining the actual recycling rate. If all components are lumped together on a weight or volume basis, the indicator is not particularly useful. • Some recycling (e.g. waste oils and solvents) is not captured by this solid waste indicator.
Waste per Unit Product / Turnover	• Does not capture waste disposed of through other channels than waste collection services or waste stored on site. • The indicator does not distinguish between hazardous wastes, and those more benign. • Volume of waste produced may be significantly affected by the presence of particular waste (e.g. construction wastes) • Method of storage of waste, its moisture content, and seasonal variations will also affect the density and composition of waste.
Collected Domestic Waste Produced per Capita	• Does not capture waste disposed of through other channels than waste collection services or waste stored on site. • The indicator does not distinguish between hazardous wastes, and those more benign. • Volume of waste produced may be significantly affected by the presence of particular waste (e.g. construction wastes) • Method of storage of waste, its moisture content, and seasonal variations will also affect the density and composition of waste.
Hazardous Waste per Sector	• Not all hazardous waste is declared so and dealt with accordingly. • Doesn't cover waste stored on site or disposed off informally.

Emissions of CO2 / Greenhouse Gases per GDP by Sector	• Does not show how much the climate will be affected by the increased accumulation of GHGs, or actual effects. • Data not usually available for developing countries.
Concentration of Criteria Air Pollutants in Urban Areas	• Problematic: Detection limits, interferences, time resolution, easy operation, cost, and place of measurement. • Evaluation of the accuracy of model results is critical before relying on model output for decision-making.
Percentage of Waste Water Undergoing Treatment (%)	• Difficult to measure total water consumption. • Differing qualities of waste water and waste water treatment.
Water Quality of Fresh Water and Drinking Water Sources	• Difficulty of measuring relevant data (equipment, timing, location). • Does not take into account large difference possible between regions and types of water sources. • No indication of whether the measured drinking water quality is widely accessible to the population.
Socio-Economic	
GDP Growth per Annum (%) / per Capita	• Not a good measure of the level of over-all well being: does not account for the social and environmental costs of production. • Does not allow for the capital used up in the production process. • Provides no information regarding the inputs and resources that growth has been achieved with.
GDP by Industry (% GDP)	• There is no clear desirable path economies and industries should develop - the local context needs to be considered. • Measurement does not necessarily reflect the actual significance of different sectors in terms of broad-based economic empowerment. • For developing countries, there might need to be a particular focus on agriculture, but production would need to be measured by other means than monetary values alone due to fluctuating market prices.
Investment Share in GDP	• Investments – as they are generally defined – constitute only investments on produced assets. Any expenditure on non-produced assets (e.g. land or payments for education and health) that enhance the quality of human capital are not included. • Does not capture whether or not the total invested capital is growing or decreasing.
Imports / Exports by Product Group (tonnes and US$)	• Data availability might be limited due to non-transparent processes. • Important to look at both - monetary value and volume - to compare data over time.
Population Growth Rate (%)	• Not all developing countries can provide constantly updated information on population growth (census vs. registration data).
Employment Creation per GDP Growth Rate	• Measure of increased utilisation of labour, but not of situation of workers (e.g. economic resources, skills). • No Indication in which sector employment creation took place.
Employment Creation per Change in Turnover	• Does not indicate whether employment creation is long-term or short-term.
Gini Coefficient	• Discriminating indicator: very different distributions (e.g. one having more inequality amongst the poor, the other having more amongst the rich) can have exactly the same Gini Index. • Different welfare measures in different countries distort international comparison (income vs. consumption). • Only a partial indicator: no indication of absolute living standards.
Population at Poverty Level and Below-Poverty Level (%)	• Based on Survey Data: methodologies not always comparable, tend to be country-specific • Different approaches of defining and measuring poverty: Relative vs. absolute poverty lines.
Average Rural / Urban Income	• Problem: Many assumptions around rural (mainly farming) income that is normally not statistically captured (e.g. size of plots, ownership, size of households, on- and off-farm income). • Does not capture informal economy. • 'Change' only indicates the development, not the livelihood an income provides.
Literacy Rate (%)	• Literacy is a relative concept: Different spheres and level of literacy. • Methodology of measuring can differ: Self-declared vs. test vs. estimates.
Population with Access to Basic Services (incl. Safe Water, Sanitation, Healthcare, Energy, and Safe Waste Collection) (%)	• Summarising different services: complexity. • Quality of services not included. • Access does not necessarily mean affordability and/or usage.
Percentage Urban Population (%)	• No indication of living standards in the city or of the reasons for urbanisation. • Not clear in which direction this indicator should develop. related to many other SCP indicators (e.g. informal housing, average m² per capita in city).
Formal-Informal-Homeless Housing Ratios (%)	• Lack of an acceptable operational definition for this indicator: Variations between countries. • Based on estimates: Informal housing and homelessness not officially registered.
Market Share of Sustainability Aligned Products and Services (%)	• Clear definition of 'Sustainability aligned' products needed, e.g. along labelling initiatives. • Informal sector can produce and use sustainable products that would not be officially registered.

Percentage of People who are Members of Social and or Environmental NGOs	• Only includes registered organisations, while informal movements remain excluded. • No distinction between active and passive membership.
Percentage of SMEs' Contribution to GDP / Employment	• Regular data collection needed. • Informal sector excluded.
Number of Working Children	• Generally not directly available data (surveys required). • No distinction of ages of children and kind of child labour.
Institutional	
Number of Establishments Holding ISO 14001	• Environmental management not exclusive to certified companies. • Environmental management should go beyond ISO 14001 'compliance'.
Percentage of Annual Reports Containing Social and Environmental Information	• Scope of and commitment to sustainability can differ. • Does not capture related action, commitment and results.
Percentage of School Curricula Including Sustainable Development (%)	• Does not measure whether it is actually taught or at what length it is taught. • No indication if it is included in other subjects or taught separately.
Percentage of Company Employees Undergoing Sustainable Development Training (%)	• Does not the quality and intensity of the training. • Data difficult and costly to capture – reliant on survey data.
Registration at Tertiary Institutions	• Does not reflect the number of successful studies. • No indication of the fields of study.
Implemented Action Plan for (A) Environmental Topics and (B) Social Upliftment	• Blurry definition of relevant 'Action Plans'. • Qualitative nature of indicator: difficult to measure
Number and Size of Subsidies for Sustainable Development Innovation Research	• Clear definition required of 'Sustainable Development Innovation' research. • Does not show the relative proportion of expenditure on sustainable development related R&D. • No indication of quality and effectiveness of research. • Data on R&D expenditure are usually obtained through special surveys. To date, most developed and a few developing countries are able to regularly collect and provide internationally comparable and timely data.
Total Expenditure on Sustainable Development Innovation Research	• Clear definition required of 'Sustainable Development Innovation' research. • No indication of quality and effectiveness of research.
Percentage of Total Environmental Protection Investment over GDP (%)	• Does not indicate the areas of investment. • No indication of effectiveness or the investment.
Others (Transport and Communication)	
Population with Access to Public Transport (%)	• Does not capture the affordability of public transport services. • No indication of reliability and safety of provided transport services.
Population with Access to Postal Services (%)	• Does not capture affordability, reliability and flexibility of provided services.
Acreage of Land Used for Road Transport Infrastructure	• Only a proxy for the reach and general accessibility of road infrastructure. • No indication for the use of the infrastructure. • Does not indicate the quality of the road infrastructure (gravel vs. tar).
Number of Eco-Tourism Related Infrastructure Units Developed	• Does not consider the overall impact of tourism development. • Social sustainability aspects of relevant developments are not included. • No evident measure – clear definition required.
Main Telephone Lines per 1000 Inhabitants	• No accurate indicator of telecommunications development: Cellular phones not included. • Lines do not mean access: Affordability, Equal accessibility across country. • Provides no measure of the quality or reliability of the telephone service.
Number of Internet Subscribers per 1000 Inhabitants	• Does not measure overall access to the internet: Public or shared internet access. • Nationwide measurement difficult; fast growth; requesting reports by ISPs would be an important national level policy consideration.

1 See for example the Millennium Ecosystem Assessment (http://www.millenniumassessment.org), UNEP's Global Environmental Outlook (GEO-4) (http://www.unep.org/geo/) and the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (http://www.ipcc.ch/ipccreports/ar4-syr.htm)

2 World Summit on Sustainable Development – Johannesburg Plan of Implementation (JPoI)

3 Norwegian Ministry of Environment, Oslo Symposium, 1994

4 The Marrakech Process on SCP (http://www.unep.fr/pc/sustain/10year/home.htm) is a global platform that brings stakeholders together to work jointly in the development and implementation of SCP activities. The Marrakech Process is currently elaborating a 10-Year Framework of Programmes on SCP that will be reviewed by the UN Commission on Sustainable Development in 2010-11.

5 ETC/RWM (2007) An SCP Indicator Set for EEA Countries (Draft Working Paper, November 2007). The European Topic Centre for Resource and Waste Management under contract to the European Environment Agency, Copenhagen

6 ETC/RWM (2007) An SCP Indicator Set for EEA Countries (Draft Working Paper, November 2007). The European Topic Centre for Resource and Waste Management under contract to the European Environment Agency, Copenhagen

7 Promoting sustainable consumption and production in developing countries for poverty alleviation

8 UNEP (2008) SCP Indicators for Developing Countries: Selected overview of existing practice. The 20 developing countries chosen for this study were selected across a range of sizes, from less developed to more developed economies, cutting across all developing country regions, comprising six African, four Latin American and Caribbean, five Asia-Pacific and four countries in Western and Central Asia.

9 UNEP (2008) Planning for Change: Guidelines for National Programmes on Sustainable Consumption and Production

10 Updated information on the existing national and regional initiatives can be found on the UNEP Clearinghouse for SCP Programmes at http://www.unep.fr/sustain/initiatives/actionplans/clearinghouse.asp

11 ETC/RWM (2007) An SCP Indicator Set for EEA Countries (Draft Working Paper, November 2007). The European Topic Centre for Resource and Waste Management under contract to the European Environment Agency, Copenhagen

12 Ibid., quoting Stengers (1996), Bartelmus (2003) and Parris and Kates (2005). They suggest that the loose nature of SD and SCP definitions and targets by international organisations such as the UN, is partly a result of the need to gain acceptance of the principles from a broad range of governments, but also a genuine lack of consensus within the scientific community of what SD and SCP means at a practical level.

13 This is the basic notion of income as developed by Fisher and Hicks; a very useful review of the practical implications of the concepts of income and capital as a basis for understanding SCP is provided in a draft working paper by Mazzanti and Zoboli that has been used to inform a working paper to design the EEA SCP indicator set; Mazzanti M. and Zoboli R. SCP: Some critical issues on objectives and processes (ETC/RWM – Internal discussion draft)

14 Mazzanti M. and Zoboli R. SCP: Some critical issues on objectives and processes (ETC/RWM – Internal discussion draft)

15 Mazzanti and Zoboli (op cit.) refer to this as the "scale/level based approach", but the authors of this report suggest that reference to the "critical stock approach" is more illustrative.

16 Marrakech Process, Third International Expert Meeting (June 2007): Background paper 2: Key Issues of Sustainable Consumption and Production

17 http://www.gse.harvard.edu/hfrp/pubs/onlinepubs/rrb/indicators.html

18 This chapter draws on: World Bank (2007), UNEP (2008), and ETC/ERM Working Paper (2007)

19 UNDESA: www.un.org/esa/sustdev/natlinfo/indicators/isd.htm

20 Segnestam, L. (World Bank Environmental Economics Series): Indicators of Environment and Sustainable Development – Theories and Practical Experience (2002), p.3.

21 UN Commission on Sustainable Development Indicators of Sustainable Development: Guidelines and Methodologies

22 Segnestam, L. (World Bank Environmental Economics Series) Indicators of Environment and Sustainable Development – Theories and Practical Experience (2002), p.4.

23 ETC/ERM Working Paper (2007) An SCP Indicator Set for EEA Countries (Draft Working Paper, November 2007)

24 A useful brief review of the PSR /DPSIR frameworks is provided in World Bank (2002)

25 European Environment Agency's Topic Centre for Resource and Waste Management (2007) "Task Description for development of an EEA/ETC SCP indicator set" Copenhagen: EEA/ETC/RWM

26 See http://www.unep.org/geo/geo3/

27 UNCSD (2006); quoted in ETC/ERM Working Paper (2007) An SCP Indicator Set for EEA Countries (Draft Working Paper, November 2007); p.20

28 UNEP-CI Tracking Progress (2002)

29 A useful overview of these is provided in UNEP (2008), from which most of this analysis is derived.

30 See http://www.un.org/esa/sustdev/natlinfo/indicators/isd.htm

31 See http://www.oecd.org/document/58/0,3343,en_2649_34289_2397498_1_1_1_1,00.html

32 OECD (2002). Indicators to measure decoupling of environmental pressure from economic growth. Paris: OECD.

33 A useful review of developed-country SCP indicators is provided in UNREP (2008) and ETC/RWM Working Paper (2007)

34 UNEP SCP Indicators for Developing Countries: Overview of existing practice (2008)

35 UNEP (2008) Planning for Change: Guidelines for National Programmes on Sustainable Consumption and Production; pg. 62

36 This is drawn heavily from UNEP (2008) SCP Indicators for Developing Countries: Overview of existing practice

37 For more information see http://www.rprogress.org/sustainability_indicators/genuine_progress_indicator.htm

38 See http://www.sustainability.ca/index.cfm?body=chunkout.cfm&k1=351

39 For example: OECD countries have shown a decoupling of SOx emissions from GDP growth. This has been due in the past to a reduction in energy intensities of the different sectors and their activities, as we as changes in the structure of the economy.

40 See http://www.sustainablemeasures.com/Indicators/Characteristics.html

41 Many key points below have been inspired by the recent work of the European Environment Agency's Topic Centre for Resource and Waste Management in preparation for the development of a new set of SCP Indicators for Europe

42 European Environment Agency's Topic Centre for Resource and Waste Management (2007) "Task Description for development of an EEA/ETC SCP indicator set" Copenhagen: EEA/ETC/RWM

43 UNESCO EOLSS (2000) Encyclopaedia of life support systems (includes 'Sustainable consumptionindicators', UNEP article) Paris: EOLSS

44 See http://esl.jrc.it/envind/theory/handb_03.htm

45 See: UNDESA (1998) 'Measuring Changes in Consumption and Production Patterns – a set of indicators' United Nations Division of Economic and Social Affairs, New York; ETC/RWM Working Paper 2007; and World Bank Environmental Economic Series (Paper No 89) Indicators of Sustainable Development: Theories and Practical Experience December 2002. The so-called Bellagio Principles have been adopted or adapted by a number of countries as guidelines for the selection of SD and SCP indicators, but also for their design, interpretation and communication. The Principles were developed at an international seminar of measurement practitioners and researchers at Bellagio in Italy in 1996 as guiding principles for the development, design and selection of indicators for measuring progress in sustainable development, and include the following considerations for indicator selection: i) policy relevance; ii) simplicity; iii) validity; iv) availability of time-series data; v) good quality, affordable data; vi) ability to aggregate information; vii) sensitivity to small changes; and viii) reliability.

46 ETC/ERM Working Paper (2007) An SCP Indicator Set for EEA Countries (Draft Working Paper, November 2007)

47 UN Commission on Sustainable Development Indicators of Sustainable Development: Guidelines and Methodologies

48 UNEP (2008) SCP Indicators for Developing Countries: Selected overview of existing practice

49 UNEP (2008) Planning for Change: Guidelines for National Programmes on Sustainable Consumption and Production; p. 63

50 World Summit on Sustainable Development – Johannesburg Plan of Implementation

51 See e.g. UNEP (2008) Planning for Change: Guidelines for National Programmes on Sustainable Consumption and Production

52 These constraints are identified in Segnestam, L. (World Bank Environmental Economics Series) Indicators of Environment and Sustainable Development – Theories and Practical Experience (2002)

53 ETC/ERM Working Paper (2007) An SCP Indicator Set for EEA Countries (Draft Working Paper, November 2007)

54 ETC/ERM Working Paper (2007) An SCP Indicator Set for EEA Countries (Draft Working Paper, November 2007)

55 World Summit on Sustainable Development – Johannesburg Plan of Implementation (JPoI)

56 ETC/ERM Working Paper (2007) An SCP Indicator Set for EEA Countries (Draft Working Paper, November 2007) (p. 9)

57 Much of the information provided here is sourced from UNCSD Indicators of Sustainable Development: Guidelines and Methodologies (undated)

Acknowledgements

Producer
This guidance framework has been produced by UNEP with the financial support of the Government of Norway.

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Contributions
The authors would like to thank everybody who has contributed to the guidance document providing valuable background, ideas, comments, examples and data, including the representatives from the 20 countries featured in the guidance document.

Design, layout and printing
Infestation, South Africa

About the UNEP Division of Technology, Industry and Economics

The UNEP Division of Technology, Industry and Economics (DTIE) helps governments, local authorities and decision-makers in business and industry to develop and implement policies and practices focusing on sustainable development.

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> adequate management of chemicals,
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This document has been developed to provide guidance to policy-makers in developing countries on the development of indicators that measure progress towards more sustainable patterns of consumption and production (SCP), a critical means for achieving sustainable development.

The document proposes a structured framework for understanding SCP and for developing indicators, crucial for monitoring and evaluating progress. This framework is then tested against existing relevant indicators that are being used in twenty developing countries. Instead of being prescriptive, this document aims to provide a thinking framework to guide the process of developing indicators and formulates pertinent questions that could help to focus the discussion.

This document complements UNEP's recently published publication 'Planning for change. Guidelines for National Programmes on Sustainable Consumption and Production'.

DTI/1085/PA