DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS
STATISTICS DIVISION
UNITED NATIONS

SEEA Implementation Guide

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CONTENTS

Key Messages / Executive Summary

Comment: To be completed if considered a good idea

I: Introduction

1.1 Purpose of the SEEA Implementation Guide

1.1 The System of Environmental-Economic Accounting 2012 – Central Framework (SEEA Central Framework) was adopted as an international standard by the United Nations Statistical Commission (UNSC) at its forty-third session in March 2012. It is the first international statistical standard for environmental-economic accounting.

1.2 In the wake of it adoption attention has turned to the implementation of the new standard using a flexible and modular approach to implementation across countries as endorsed by the Statistical Commission. Because of the variety of environmental and economic situations faced by countries and differences in the availability of information and the strength of national statistical systems, it is necessary that implementation be considered in a tailored fashion for individual countries but within the framework outlined by the SEEA Central Framework.

1.3 The purpose of the SEEA Implementation Guide is to give broad direction and support to implementation work at a national level across all countries. While there may be differences between countries in the choice of accounts to implement and the institutional frameworks within which accounting is undertaken, there remain many areas of relevance to all implementation efforts. In particular, this guide aims to synthesise the lessons from the many countries and international agencies that have been involved in the implementation and compilation of environmental-economic accounts over the past 20 to 30 years.

1.4 The intention is therefore, that the SEEA Implementation Guide is a useful introductory and overview document as well as a reference document that provides sufficient awareness of the various steps that should be considered in implementation as well as links to relevant material and guidance.

1.5 There are two primary audiences for the SEEA Implementation Guide. The first is to managers who may be directly involved in the production and compilation of SEEA based accounts. It is important that these managers are aware of the full scope of implementation requirements beyond purely technical and data considerations. The second audience is those involved in advising central finance, planning and other policy agencies. These agencies must be key partners and sponsors of the development environmental-economic accounts and hence must be aware of their role and the need for the institutionalization and resourcing of SEEA implementation in order for the full benefits to be realized.

1.2 Motivation for implementation of the SEEA

1.6 The effect of human activity on the environment has emerged as one of the most significant policy issues. On the one hand, there has been growing concern about the

effect of each country's economic activity upon the local and global environment. On the other hand, there has been increasing recognition that continuing economic growth and human welfare are dependent upon the benefits obtained from the environment.

1.7 Questions have been asked regarding how environmental endowments are being used. For example: are resources being extracted too quickly with no prospect of replacement? is economic activity generating a level of pollution that exceeds the absorptive capacity of the environment or affects human health and well-being? These types of conditions, should they exist, could be a threat to current or future economic and social development. Such questions could lead to the development of a variety of policy responses.

1.8 The SEEA is a multipurpose system and is relevant in a number of ways for policy development and evaluation as well as decision-making. First, the summary information (provided in the form of aggregates and indicators) can be applied to issues and areas of the environment that are the focus of decision makers. Second, the detailed information, which covers some of the key drivers of change in the environment, can be used to provide a richer understanding of the policy issues. Third, data contained in the SEEA can be used in models and scenarios designed to assess the national and international economic and environmental effects of different policy scenarios within a country, between countries and at a global level.

1.9 The benefits of SEEA data to policy- and decision-making processes can be seen in specific areas such as energy and water resource management; patterns of consumption and production and their effect on the environment; and the so-called green economy and economic activity related to adoption of environmental policies. The benefits are most broadly captured in relation to policies concerning sustainable development: one of the most pressing policy issues for current and future generations.

1.10 While the SEEA Central Framework is a system conceived as an integrated, internally consistent series of accounts, its design is such that it can be implemented equally well in part or as a whole. Depending upon the specific environmental issues faced, a country may choose to implement only a selection of the accounts included in the SEEA Central Framework. Even if a country desires eventually to implement the full system, it may decide to focus its initial efforts on those accounts that are most relevant to current issues.

1.11 Resource-rich resource countries might develop asset accounts first as part of their overall management of these natural endowments. Focusing on resource depletion in relation to economic and environmental sustainability can provide a framework for policy development; and asset accounts can also provide information regarding the way in which government appropriates revenue from the extraction of natural resources.

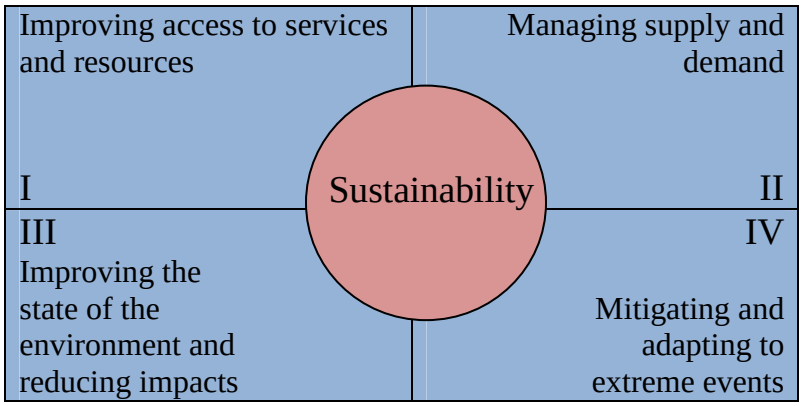
1.12 Countries with high levels of material throughput might find it useful to build physical flow accounts for materials but, again, this may be done on a selective basis, for example, by working first on accounts for specific materials, for example flows related to food production.

1.13 If a country imposes strict environmental standards, with significant costs to producers and consumers, then environmental protection expenditure accounts may be an early priority. Those countries where there is as yet little active environmental protection may prefer instead to concentrate on the measurement of flows of residuals (e.g. flows of emissions and solid waste) in order to determine the urgency of environmental protection regulation.

1.14 These examples illustrate the flexibility in respect of implementation of the SEEA Central Framework, which its structure is intended to permit. It is important to bear in mind, however, that no matter which parts of the system are implemented, they should be implemented in such a way as to be internally consistent and complementary.

1.15 A potential framework for linking the SEEA to policy initiatives is to consider different policies in the context of the figure below that contains four quadrants, each a different perspective on assessing the environmental-economic relationship.

Figure 1.1



1.16 While there is flexibility available in the implementation of the system, much of the benefit of the SEEA Central Framework will be derived from its adoption as an international statistical standard. Consequently, the ability to compare and contrast relevant information from a range of countries represents a significant advantage, as supported by the widespread adoption of the SEEA Central Framework for specific modules, particularly as this relates to environmental issues that are multinational or global in nature.

1.17 Proposal to extend here to rationalise the use of SEEA for international policy purposes e.g.

a. MDG / SDG / Beyond GDP

b. Poverty environment initiative

c. Green growth / Green economy

d. Energy for all

e. Water strategies?

1.3 Environmental-economic accounting: what is it and why is it useful?

What is environmental-economic accounting?

1.18 The 1987 report of the Brundtland Commission, entitled *Our Common Future* (World Commission on Environment and Development, 1987), made clear the links between economic and social development and environmental capacity. In 1992, Agenda 21, one of the outcome documents of the United Nations Conference on Environment and Development (United Nations, 1993) recommended that countries implement environmental-economic accounts at the earliest date.

1.19 In response, the United Nations Statistical Division published the *Handbook of National Accounting: Integrated Environmental and Economic Accounting* (United Nations, 1993), commonly referred to as the SEEA. Over the next 20 years the international statistical community developed and endorsed a range of processes and publications that culminated in the adoption of the SEEA Central Framework by the Statistical Commission in 2012.[1]

1.20 The environmental-economic accounting approach, as described in the SEEA, is a systems approach to the organization of environmental and economic information which covers, as completely as possible, the stocks and flows that are relevant to the analysis of environmental and economic issues. In applying this approach, the SEEA utilizes the accounting concepts, structures, rules and principles of the System of National Accounts (SNA). In practice, environmental-economic accounting includes the compilation of physical supply and use tables, functional accounts (such as environmental protection expenditure accounts) and asset accounts for environmental assets and natural resources.[2]

1.21 The SEEA Central Framework extends the scope of the SNA by:

i. Providing standard terminology, definitions and classifications for environmental-economic information

[1] A more detailed history is presented in the SEEA Central Framework, para. 1.8-1.15.

[2] Annex I provides an overview of the content of the SEEA Central Framework. For additional summary material see SEEA Central Framework Ch. 2.

ii. Including accounting for physical stocks of environmental assets (including natural resources) in addition to measures of their monetary value

iii. Adding physical measures of flows of natural inputs (e.g. timber, fish, minerals, energy, water) and residuals (e.g. air emissions, emissions to water, solid waste)

iv. Linking measures of stocks and flows in physical terms to associated monetary measures and to relevant economic activities and economic units (including enterprises, households and governments)

v. Detailing those standard economic transactions that can be considered "environmentally related", including environmental protection expenditure, environmental taxes and environmental subsidies.

1.22 Environmental-economic accounting also encompasses ecosystem accounting as described in SEEA Experimental Ecosystem Accounting. Ecosystem accounting is a more recent development in the environmental-economic accounting space although the issues that it addresses are long-standing relating to accounting for the degradation of ecosystems and the full suite of benefits that society obtains from the environment. Ecosystem accounting brings together recent developments in the conceptualization and measurement of ecosystem services and ecosystem condition within an accounting framework and based on a spatial approach to measurement.

1.23 Environmental-economic accounting encompasses the more commonly referred to field of natural capital accounting (NCA). Although not usually defined specifically, NCA, in broad terms, includes accounting for physical and monetary stocks of environmental assets (including natural resources) as described in the SEEA Central Framework and ecosystem accounting.

1.24 Often there is an assumption that environmental-economic accounting must necessarily involve the monetary valuation of natural resources and non-marketed environmental flows. However, the SEEA stresses that the use of an accounting approach for the organization of information on physical stocks and flows is legitimate and highly beneficial. Indeed, because of the nature of the assumptions required to undertake valuation, the compilation of accounts in physical terms may provide information that is both necessary and sufficient for analytical purposes.

Benefits of an accounting approach

1.25 An accounting approach can bring coherence and consistency across previously disparate sets of statistics. Environment statistics are often developed to address specific issues. For example, a policy to increase the contribution of the mining sector to the economy may be monitored by statistics showing the value of the minerals extracted. A "big picture" perspective on the long-term benefits and costs

of this policy would include statistics on the stocks of the resource being exploited, the cost of extraction and the residuals created.

1.26 Source data on stocks may have different statistical properties from data on their extraction. These data may have been collected using different classifications, for different periods or with incomparable units. With some effort, all these data can be brought into a single accounting framework. This can be done by changing the way the data are collected or by adjusting the data. By doing so, the stocks of non-renewable resources can be compared with the extraction of those resources so that assessments can be made of the expected lifetime and impacts.

1.27 By combining estimates of resource stocks with data on extraction and consumption, linking consumption rates with specific industries and with their production of residuals (Figure 1), this:

i. provides a "big picture" perspective,

ii. identifies missing information, and

iii. allows for the creation of new analyses and indicators, such as:

a. the total monetary wealth of mineral stocks;

b. the greenhouse gas intensity of economic activities;

c. pollutant intensity by demand categories such as households and exports.

1.28 The ability of accounting approaches to provide a "big picture" perspective is not only useful for measurement and data confrontation. Accounting frameworks can also be used effectively as part of priority setting since their coverage means that all relevant aspects must be integrated into the discussion, and they can also be used as a basis for the development of models and future scenarios. Both of these applications have underpinned the use of accounting frameworks as a core part of commercial business practice and the development and management of economic policy for many decades. The SEEA shows that the benefits obtained in these fields through the use of accounting frameworks can also be obtained when considering the relationship between the economy and the environment.

1.29 The SEEA organizes a very wide range of information about the relationship between the environment and the economy and there is no underlying or single policy to which SEEA is related. Consequently, SEEA can be used to inform multiple policy objectives by conveying an agreed history of past trends in the environment-economic interaction. The integrated nature of the SEEA also supports analysis of integrated policy objectives or those involving trade-offs between alternative policy options – for example, in assessing the potential linkages between water policy and energy policy.

1.30 SEEA can provide a very detailed set of data within an integrated structure should the requisite data bee available. Such detailed data could support rigorous analytical

and modeling work. At the same time, with more summary data, the same integrated structure is still used, and summary data on for example physical flows and related monetary transactions may be sufficient to provide useful indicators of trends (e.g. water use and energy use in mining relative to their value added) in efficiency, productivity and decoupling. Such summary indicators and aggregates that can be derived from the SEEA may be important in the context of framing policy discussions before detailed analysis is undertaken in particular areas.

1.5 Scope, style and structure of the SEEA Implementation Guide

Scope and style of the guide

1.31 It is intended that the SEEA Implementation Guide provide material that can assist countries in understanding the need for a strategic approach to implementing the SEEA and the steps that can be taken to adopt such an approach. The focus of the document is therefore not targeted towards the steps involved in the compilation of accounts in terms of data sources and methods. Rather, the guide outlines the broader requirements of implementation, including, most importantly, engagement with key policy agencies and users and the development of appropriate institutional arrangements that permit SEEA to grow beyond one-off measurement exercises.

1.32 The SEEA Implementation Guide is a summary document that conveys sufficient information regarding the steps for implementation and provides links to relevant, more detailed material as required. One reason for providing such a summary document is that while there are many aspects of implementation of the SEEA that might be considered generic, the modular nature of the SEEA means that there will be different issues that must be considered depending on the specific account that is the focus of implementation. For example, the set of policy agencies, users, and source data agencies will be different for the implementation of accounts for water resources compared to accounts for timber resources or emission accounts.

1.33 In order to support implementation for specific types of accounts it is proposed to prepare a series of SEEA Technical Notes covering the main aspects of measurement and compilation in various accounts of the SEEA. For example technical notes are proposed for water accounting, land accounting, accounting for energy, etc. First drafts of technical notes for water accounting and land accounting have been provided as background documents. The aim of these notes is to provide a starting point for implementation of specific accounts by summarizing key aspects and linking to relevant material. Thus they are not compilation guides per se. It may well be relevant for countries, as they work through the implementation and compilation process, to generate a country specific compilation guide and advice on how this may be done could be included in the higher level SEEA Implementation Guide.

1.34 An associated piece of work has been the development of a rapid diagnostic tool that could be used to lead relevant parties quickly through the implementation process

and required steps. Refinement and testing of such a tool may be an important addition to the suite of implementation materials. A draft of a rapid diagnostic tool has been provided as a background document.

1.35 Two areas of implementation, on which worked has not yet been advanced in the context of the SEEA, concern the broad question of strengthening statistical systems and the general issue of communication and dissemination. It is suggested that these topics be covered in the SEEA Implementation Guide while being cognisant of the existing work that has been done on these areas in the context of other areas of statistics. Appropriate referencing to this work would be the starting point.

1.36 Since the adoption of the SEEA Central Framework by the UNSC in February 2012, work on the conceptual framework of the SEEA has continued through the drafting of SEEA Experimental Ecosystem Accounting (SEEA-EEA). A draft of this work was welcomed at the UNSC meeting February 2013 and they also endorsed the associated research agenda and encouraged countries to test the framework. Although SEEA-EEA is not an international statistical standard and hence there is no expectation of broad implementation, there are many countries that have indicated an interest in testing ecosystem accounting approaches. It has also been supported as a potential measurement approach through a range of international initiatives including the Convention on Biological Diversity.

1.37 In this context, it seems relevant for the SEEA Implementation Guide to encompass the testing of ecosystem accounting in addition to the implementation of the SEEA Central Framework. In large part, the required steps of implementation are applicable in all contexts and hence it is not anticipated that the inclusion of ecosystem accounting with the scope of the SEEA Implementation Guide would change the general content, style or length of the document. To support ecosystem accounting work more specifically, separate materials, including a technical note, are envisaged.

Structure of the SEEA Implementation Guide

Comment: To be drafted following general agreement on the structure

II: Global implementation strategy for the SEEA

2.1 Introduction

2.1 At its 44th session in February 2013, the Statistical Commission endorsed an implementation strategy for the SEEA. The strategy was prepared by the Committee of Experts on Environmental-Economic Accounting (UNCEEA) through the second half of 2012.[3] Key features of the strategy include:

- Supporting implementation in countries using a flexible and modular approach
- Establishing, incrementally, the technical capacity for reporting on a core set of environmental-economic accounts
- Recognition of differences in the policy issues, the level of statistical development and the environmental circumstances facing each country
- Co-ordination with related international and national initiatives
- The use of a phased approach to implementation involving establishing institutional mechanisms, self-assessment of information needs and data availability and quality, and the development of targeted implementation plans.

2.2 The implementation strategy also describes a number of supporting activities. These include direct training and technical cooperation, the development of manuals and training material, ongoing cooperation with the research community and a general role of advocacy, particularly among potential users of SEEA based outputs. Finally, the implementation strategy discusses potential mechanisms for coordination, monitoring progress, facilitating cooperation and funding.

Comment: Is more needed here to summarise the UNSC Implementation Strategy Paper?

2.2 Current situation with regard to SEEA implementation

Comment: Suggestion here to incorporate results from 2013 survey of national practices and compare to earlier surveys – when complete.

2.3 The regional approach

Comment: To be drafted by UNSD if needed

[3] The full implementation strategy is available at http://unstats.un.org/unsd/statcom/doc13/BG-SEEA-Implementation.pdf

2.4 Related international measurement frameworks and implementation programs

2.3 The implementation of the SEEA must be considered in the context of a large number of other related initiatives that are currently underway either with a focus of improving statistical information at the national level or a focus on improving policy responses to environmental, development and resource related issues. This section briefly notes the initiatives that are most closely connected to SEEA implementation. It is recommended that each country determine which of these initiatives are most relevant and/or active in their country and seek co-ordination and alignment wherever possible.

2.4 SNA 2008 Implementation Programme: "The Implementation Programme for the System of National Accounts 2008 and Supporting Statistics represents a global statistical initiative with the dual objective in assisting countries in developing the statistical and institutional capacity to

(a) make the conceptual change over from the 1968 or 1993 SNA to the 2008 SNA, and

(b) improve the scope, detail and quality of the national accounts and supporting economic statistics."

2.5 Framework for the Development of Environmental Statistics (FDES): In 2013 the UNSC endorsed the revised FDES and work is underway to support countries in improving and expending their environmental statistics. Conceptually the SEEA and the FDES are well aligned and many of the statistics covered in the FDES are of direct relevance in the compilation of SEEA based accounts.

2.6 Wealth accounting and Valuation of Ecosystem Services (WAVES): WAVES is a World Bank initiative aimed at both highlighting for countries the importance of incorporating measures of natural capital into central policy decisions and supporting the development of natural capital accounting using the SEEA framework as its conceptual framework. WAVES operates by establishing partnerships with individual countries.

2.7 European Union Strategy for Environmental Accounts: In 2012 legislation was adopted through the EU requiring the compilation of certain environmental accounts by all EU countries. This implementation work will be supported by many relevant technical and training materials.

2.8 FAO Global Strategy for the Development of Agricultural Statistics: In 2010 (?) the FAO commenced a program of work aiming to overcome the lack of data to inform many aspects of sustainable agricultural policies (including forestry and fishing) in low and middle income countries The program is focused on technical capacity building and given the very close connections between statistical requirements for agricultural policy and the scope of the SEEA, implementation and progression of both projects have much overlap. A related FAO project is the development of SEEA-Agriculture and this project should highlight the many potential synergies.

2.9 Projects aimed at the measurement of ecosystems and ecosystem services: e.g. TEEB, IPBES, CBD – Aichi targets. Should these be included?

2.10 Paris21 NSDS and Busan Action Plan:

a. The National Strategies for the Development of Statistics (NSDS) provide guidance for developing statistical capacity across the entire National Statistical System (NSS) especially for low-income and lower middle-income countries.

b. The Busan Action Plan for Statistics is a "global Action Plan to enhance capacity for statistics to monitor progress, evaluate impact, ensure sound, results-focused public sector management, and highlight strategic issues for policy decisions." (Paris21, 2011)

2.11 IMF quality framework (DQAF): "Five dimensions--assurances of integrity, methodological soundness, accuracy and reliability, serviceability, and accessibility--of data quality and a set of prerequisites for data quality are the center of the IMF Data Quality Assessment Framework (DQAF). The DQAF, which is used for comprehensive assessments of countries' data quality, covers institutional environments, statistical processes, and characteristics of the statistical products." (IMF, 2012)

Comment: Others to mention? Possibly corporate initiatives, data reporting initiatives of OECD and IMF?

III: Overview of the SEEA implementation approach at the country level

3.1 Introduction

3.1 The implementation of the SEEA as part of a country's national statistical system is a valuable and significant investment. This chapter outlines the main phases and steps that should be considered in undertaking SEEA implementation recognizing that, in practice, the manner in which the implementation will be coordinated will vary from country to country.

3.2 Importantly, it is assumed in the following overview that the overall ambition is to set in place an ongoing program of compiling SEEA based accounts and related supporting data. If, on the other hand, the ambition is to, more simply, compile a single account for a single year, then it is likely that the institutional arrangements that will be required for a longer term program can be managed in a more ad hoc fashion. However, it should be recognized that the benefits of one-off implementation are distinctly limited and indeed, the broader recognition of environmental issues within economic discussions over the past 20-30 years has been unsupported by the many one-off studies that have been conducted in many countries.

3.3 In the context of developing an ongoing program of work on linking environmental and economic and social issues, the SEEA may be seen as a catalyst for action by providing a comprehensive, consistent and integrated framework around which relevant arrangements can be organized.

3.4 The following overview also assumes that there is a level of awareness and ambition within the country for the implementation of environmental-economic accounts. While this guide will provide some materials relevant for "making the case", it is likely that other processes and materials – for example international processes on development goals – will be more important in raising awareness of the potential from SEEA implementation.

3.5 Thus, assuming that there is an appropriate level of awareness and ambition to implement the SEEA, this guide provides those tasked with implementation a range of materials to support their decision making processes.

3.2 Four phases of SEEA implementation

Comment: The following description is a reworking of the logic presented in the draft Diagnostic Tool. I think the material is still all there including the seven steps but I have added some elements and brought in some clearer (in my view) decision points into the process. For example, I think there needs to be the involvement of a group authorized to decide on what accounts should be pursued. This may be the initial core group but probably not in most cases – it may well be an existing board or high level committee. Anyway – happy to get any reactions on the logic. I think

we are all in roughly the same place about what is needed but how it works in practice is something we will need to find out.

3.6 There are four broad phases of SEEA implementation. They are

i. Strategic planning

ii. Building mechanisms for implementation

iii. Compiling and disseminating accounts

iv. Strengthening national statistical systems

3.7 The following description is based on a country starting from scratch or a zero base in implementation but it is quite possible that a country has some past experience or current processes which can help inform and support the implementation process. Since, at its heart, the SEEA approach is one of integration of various data, all past and current activities that support the integration of statistics should be taken into consideration.

3.8 Across all four phases the activity of communication will be an essential component. Without fully functional communication mechanisms it will be difficult to achieve the level of integration and co-ordination necessary for effective and timely implementation.

3.9 There are many potential areas and themes that can be the target of SEEA implementation. There are no recommendations in the following concerning which areas or themes should be of highest priority for initial implementation. However, it is recommended that only a limited number of accounts be considered in a first round of implementation. This is so for a number of reasons.

3.10 First, each area is likely to involve somewhat different groups of stakeholders and hence it is likely to be more effective to develop mechanisms and processes for one or two groups of stakeholders in the first instance.

3.11 Second, each theme and set of relates accounts will require the use or development of technical accounting capacity. This capacity is generally quite limited. In the initial stages of implementation it is likely to be most useful to direct available resources to a limited number of target accounts.

3.12 Third, accounting is an approach to measurement that benefits significantly from "learning by doing". Additionally, once a basic understanding of implementing an accounting approach are appreciated, there is a significantly lower cost in adapting the approach in other circumstances. Thus the development of relevant accounting skills and systems in targeted areas is likely to be a powerful upfront investment ahead of increasing the coverage of the accounts.

3.13 Given the notion that SEEA implementation should start relatively small and build over time, it is likely that the four phases will be repeated at various points along the implementation journey. Phase 1 should be revisited on a regular basis to determine what additional areas should be incorporated into a SEEA compilation programme and it will be necessary to work through phases 2, 3 and 4 for each new area or theme that is added.

3.3 Phase 1: Strategic planning

3.14 In a general sense, the application of strategic planning in the context of SEEA implementation is no different from the application of strategic planning in other management contexts. However, since much experience in the implementation of environmental-economic accounting reveals a significant lack of strategic planning it is relevant to discuss this topic, especially in the context of aiming to institutionalize environmental-economic accounting within national statistical systems.

3.15 Strategic planning has a number of benefits. First, it is the best way to obtain political and financial support for investment in statistics. Second, it can be used to identify current strengths and weaknesses of statistical capacity in producing key environmental and economic indicators and basic source data. Third, it can be used to lay out a schedule of tasks to remedy the weaknesses. Fourth, it can be used by countries to produce the information needed for monitoring their own sustainable development and green economy programmes.

3.16 There are two key steps in the strategic planning envisioned here. First, there is a need to constitute a "core group" and second, an assessment report (generally at a national level) needs to be completed. This section examines both of these steps in more depth.

Step 1: Establish a core group on environmental-economic accounting

3.17 One person alone cannot complete a full assessment of the policy and data environment, much less create a feasible implementation plan. Consequently, it is important that a small, core group exist in the initial stages of implementation to drive the process forward. Where appropriate this core group may be formed from within existing processes related to the advancement of national statistical systems but if such a process does not exist or is not considered appropriate then a separate small group, of perhaps 4-6 members, should be formed.

3.18 As a whole, the group's members should be familiar with national sustainability, economic and environmental policies, national accounts and environmental statistics. There are two key constituencies that should be members of the group. First, the group should include a senior representative from the government agency considered to be the "sponsor" of environmental-economic accounting in the country. It is envisaged that the relevant agency would be a central agency of finance or planning or, depending on country circumstance an environmental agency. The sponsoring agency should play a co-ordinating and integrating role across government and have the capacity to access and mobilise required resources when needed.

3.19 Second, the group should include a senior representative from the government agency that will take the lead role in compiling the SEEA accounts – the "producer" agency. Countries are encouraged to allocate the role of "producer" agency to either the agency responsible for producing the national accounts or a statistical agency with a core role of integrating data (these may be the same agency in many countries). Importantly,

whichever agency is chosen, it should be recognised that there are significant advantages in having one central agency responsible for producing all SEEA accounts for different areas and themes to take advantage of investments in building accounting skills and capacity. There are significant advantages in scale in having teams of accountants working in the same agency as distinct from building these skills in a variety of contexts.

3.20 Given the intent to develop a program of environmental-economic accounts it is also important that the producer agency be able to fulfill appropriate official statistical requirements for independence concerning the compilation and release of data.

3.21 The initial core group may include a range of people including, as appropriate, experts from academia, particularly those who may have been involved in earlier studies on environmental-economic accounting.

3.22 Depending on the administrative and governance processes that exist in a particular country the core group may be established as a sub-committee or working party from a broader inter-governmental process – for example a board that oversights a national statistical system.

Step 2: Complete a national assessment report

3.23 As its initial focus, the core group should complete a national assessment report which provides a complete coverage of the institutional and data environment within which implementation of the SEEA would be undertaken. The assessment report should cover seven main areas:

i. Stakeholders and institutional arrangements/frameworks
ii. Policy priorities
iii. Data sources
iv. Existing accounts and previous studies
v. Constraints
vi. Opportunities
vii. Recommendations for priority accounts and next steps

3.24 Key aspects in preparing an assessment report are described in Chapter 4 including the provision of possible templates to document investigations. Annex II also provides a diagnostic tool which is a template for structuring and documenting discussions around the seven key areas noted above.

3.25 It will be necessary to adapt any of the proposed materials and processes to national and regional circumstances. In particular, as far as possible, the suggested approaches outlined here should be melded within existing mechanisms and the SEEA process should be a catalyst to advance relevant local and regional initiatives. In this regard there is an important role for international organisations and donors to support implementation following a variety of approaches within the broad framework outlined here.

3.26 Ultimately, a national assessment report should be able to provide a link between the relevant policy priorities and the general feasibility of compilation of particular accounts. Information on relevant financing sources and related initiatives are also likely to be particularly important parts of the report.

3.27 The completion of the national assessment report provides the basis for making a decision on the direction of SEEA implementation at the national level. While it is possible that the core group is authorized to make the relevant decisions, it is more likely that the core group will need to present the assessment report and the relevant recommendations to a higher level of government. It is therefore important that there is clear understanding in the first instance of the relevant authorizing mechanisms and that communication on progress between the core group and relevant groups and agencies take place on a regular basis.

3.4 Phase 2: Building mechanisms for implementation

3.28 There are two key parts of the mechanisms required for implementation each operating at different levels within the overall system of government agencies. First, building on the initial core group established in Phase 1, it is important that there is a clearly defined an ***authorized senior board or group*** that is capable of oversighting and facilitating the development of environmental-economic accounts as a general programme of work, i.e. not limited to specific accounts. This group should be accountable for the progress of work and should maintain and developed the strategic plan and associated recommendations.

3.29 It may be relevant to develop and release a statement of vision or strategy for the implementation (thus constituting the objectives of the group itself). A Statement of Strategy represents the overall objective for the successful implementation of the SEEA to enable the evaluation of (a) national sustainability performance and (b) progress towards national and regional sustainability policy objectives. It may be done in parallel to developing a vision statement for the implementation of the SNA.

3.30 The basic elements of a statement of strategy include a mandate, a mission statement, values, high-level goals, specific goals and required activities. For the purpose of an implementation plan for the SEEA, a mission statement could be:

> Our country will develop a statistics programme for compiling environmental-economic accounts with the required scope and detail to meet data needs of policy makers in a global socio-economic environment.

3.31 Following the model recommended for the SNA 2008 implementation Strategy, Table 3.1 shows a prototype statement of strategy followed by appropriate instructions.

Table 3.1: Prototype Statement of Strategy

<table>
<tr><th>Line</th><th colspan="3">Mandate</th></tr>
<tr><td>1</td><td>Policy needs
Regional and national policy objectives for sustainable development and green economy.</td><td>Legal mandate
• Statistics Act
• Environmental Protection Act
• Fisheries Act, (others)</td><td>International Standards
• System of environmental-economic accounting (SEEA);
• UN Fundamental Principles of Official Statistics;
• Data Quality Assessment Framework (DQAF);
• 2008 SNA, BMP6, GFSM, ISIC Rev.4</td></tr>
<tr><td>2</td><td colspan="3">Mission statement
The efficient and timely dissemination of high quality environment accounts, and supporting environment and resource statistics.</td></tr>
<tr><td>3</td><td colspan="3">Values
• Statistical professionalism
• Independence and integrity
• Excellent service to our customers
• Respect and understanding for our data suppliers
• Value for money</td></tr>
<tr><td>4</td><td colspan="3">High-level goals
• Improvement in the scope, quality and timeliness of environment and resource statistics
• Minimising the burden on respondents
• Increasing the use of administrative and regulatory data for statistical purposes
• Achieving greater efficiencies using best practices
• Raising public awareness and use of environment accounts</td></tr>
<tr><td>5</td><td colspan="3">Specific goals
• Adoption of SEEA and related internationally agreed standards for environmental accounting and statistics
• Develop a national central data hub for short term environment and resource statistics to facilitate the early detection of changes in natural resource stocks and flows,</td></tr>
<tr><td>6</td><td colspan="3">Required activities</td></tr>
<tr><td></td><td colspan="2">Modernisation of the national regulatory and institutional framework by strengthening
• Strengthening the functioning of the national statistical system, its programming, management and performance
The upgrading of statistical infrastructure
• SEEA compliance
• Strengthening the use of standard classifications, registers and frames</td><td>The upgrading or development of statistical operations
• Surveys of water consumption
• Surveys of environmental protection expenditures
• Surveys of the environmental goods and services sector
• Surveys of household environmental activities (energy and water consumption, recycling, etc.)
• Surveys of waste production and management
• Linkages to water and air emissions
• Administrative data</td></tr>
</table>

Instructions by line number:

1. The **Mandate** for SEEA implementation is driven by national policy needs, the legal mandate for collecting environmental information and the international standards guiding the implementation. The items provided may be customized or new ones may be added depending on your national situation.
2. The **Mission Statement** should describe the high-level vision for what needs to be accomplished for overall implementation. It describes the purpose, users, outputs, markets, philosophy and basic technology used to realize the strategy.

3. The **Values** need to reflect the values and principles portrayed by the UN Fundamental Principles of Official Statistics to produce useful high-quality data that will have the confidence of users of statistics.
4. **High-level goals** represent the overall accomplishments to be achieved. These goals aim to address important issues, which are identified during the assessment phase. The goals should be creative and forward-looking by being specific, measurable, relevant and time-bound.
5. The **Specific Goals** describe the ultimate results that need to be accomplished for fulfilling the vision described in the statement of strategy.
6. To reach the specific goals require specific activities. To determine these **Required Activities** an initial assessment of the national statistical system needs to be carried out to determine the adequacy of the national statistical production process to support implementation of the SEEA. The activities listed in the prototype Statement of Strategy should be revised when the draft National Assessment has been completed.

3.32 The size and membership of the group should be developed as appropriate but it is strongly recommended that the group contain senior staff from the sponsoring agency and the producing agency as described under Phase 1, Step 1. The establishment of this group should be a recommendation from the first national assessment report and the report may also provide recommendations on the appropriate membership and terms of reference for the group.

3.33 The second part of the implementation mechanisms is forming relevant ***implementation teams***. Separate teams, albeit of potentially overlapping agency membership, should be constituted for different areas of environmental-economic accounting. For example the implementation team for water accounts would have a somewhat different membership from the implementation team for forest and timber resource accounts. At the same time communication and co-ordination between teams will be important and all teams established should report regularly to the higher level group referred to above.

3.34 The implementation teams should be more technically focused on the issues involved in compiling specific sets of accounts given the direction emerging from the national assessment report. To this end, the first task of an implementation team is to take the findings of the broad assessment report and the decisions on priority accounts and formulate implementation plans for specific areas. To meet this objective it is recommended that the implementation teams should have members from a range of relevant agencies including both policy agencies and compiling agencies with the producing agency playing a leading role.

3.35 Development of implementation plans should involve more detailed assessment of the information needs and requirements for policy purposes and also a more detailed assessment of data availability. The plan should provide recommendations on potential outputs, timeframes and associated costs and resourcing requirements including the need for technical capacity building and staff development. (See also further discussion in Section 3.5 on compilation and dissemination of accounts.)

3.36 Through the envisaged multi-agency process the outcomes contained in the assessment reports and implementation plans should reflect agreement on the assessments of policy priorities, assessments of data availability and assessment of priority accounts. Further,

working across agency in the initial assessment and planning phases should support ongoing collaboration, particularly in providing data (e.g. by establishing data sharing agreements) and possibly modifying or augmenting their processes to adapt the data for the requirements of environmental accounting.

3.37 Annex I provides some suggestions for the steps that might be taken to work through the assessment process and the associated discussions. Of course, specific activities would be derived from discussions with stakeholders and solutions will be highly country-specific and successful implementation will depend on sharing best practices and lessons learned with stakeholders, nearby regional environmental accounting groups and the international community.

3.38 The implementation plans should develop further any opportunities with regard to other areas of statistical development within a country, for example concerning the improvement of national accounts, the advancement of the Framework for the Development of Environment Statistics and other international initiatives.

3.39 Overall, building mechanisms for implementation should have the ambition of creating strong networks and mechanisms across agencies and multiple levels and thereby build the institutionalization of the accounts within government. On a regular basis, these mechanisms, their terms of reference and their membership should be reviewed and considered in light of emerging policy demands and general changes in government operation.

3.40 Of course, the mechanisms described here are stylized in nature and there is likely to be a significant benefit in considering how the general objectives of the mechanisms that have been described may be best integrated within existing processes within and across government. Indeed, given the more general desire to mainstream environmentally related information within central planning and decision making contexts, it is likely to be more advantageous to use existing mechanisms to the extent possible and appropriate, rather than develop new mechanisms that do not hold the same significance or influence.

3.5 Phase 3: Compiling and disseminating accounts

Introduction

3.41 At one level, this objective of this phase is quite self-explanatory but, of course, it contains the majority of the technical and measurement challenges that must be confronted in the implementation process. The discussion here presents a range of general considerations but does not explain approaches to dealing with any of the measurement issues which relate to the compilation and dissemination of specific accounts, such as water accounts or land accounts.

3.42 Account specific information has been brought together in SEEA Technical Notes that are being progressively developed on various themes and are intended to provide an overview of the main measurement objectives and issues and links to relevant supporting materials and examples. The basic structure of SEEA Technical Notes is presented in

Annex IV and versions of SEEA Technical Notes for different themes will be available progressively on the SEEA website.

3.43 One section of the various SEEA Technical Notes will contain a description of core tables. These core tables represent a basic or minimum structure of information for a particular account (e.g. a physical flow account for water) following the structure of the account in the SEEA Central Framework. The information set should enable derivation of key aggregates and indicators. These core tables should provide a clear sense of direction for compilers of environmental-economic accounts and bee useful in targeting initial assessments of data sources.

3.44 The SEEA Technical Notes will also describe extensions to the core tables and it is reasonable to envisage that, over time, initial core tables might be extended to provide a richer set of information. Implementation plans may wish to take into account this gradual development over time.

General compilation considerations

3.45 A general ambition in the implementation of environmental-economic accounts should be to develop experimental or preliminary accounts at a summary level and available data to start the process of both displaying the potential of the approach to users and building an understanding of compilation using an accounting approach. This learning by doing is an essential aspect of implementation and should include the release of preliminary data to encourage feedback from as broad a constituency as possible.

3.46 Based on feedback and increasing confidence in compilation it should be possible to progressively develop any set of accounts to improve the data quality, the degree of detail in response to user demands, and ultimately the range of different accounts.

3.47 An important part of using an accounting approach is the potential to undertake data confrontation within a structured conceptual framework and also using the framework to identify data gaps and their significance. Filling data gaps may be completed in a number of ways including additional data collection, the use of proxy variables, or more advanced modeling.

3.48 Often the link between SEEA information and policy discussions will be reflected in the preparation of aggregates and indicators derived from a SEEA based account. Thus, while it is normal for the SEEA compiler to focus on the many detailed and varied data and measurement challenges that will be confronted, it is also important that the compiler understand and present the relevant aggregates and indicators.

3.49 As noted, the ambition in implementation of the SEEA is to set up an ongoing measurement program. As part of this longer-term process, adaptations to the initial work program could include:

- If necessary, developing legal and institutional arrangements for producing environmental accounts and related statistics,

- Establishing the nature and frequency of the accounts and related statistics to be produced,
- Establishing data sharing agreements and service level agreements between data produces and compilers of the accounts,
- Capacity building in both data producers and data users,
- Establishing or modifying data collection (surveys, registers and frames, environmental monitoring),
- Changing classification systems or creating correspondences between existing classifications,
- Developing a National Compilation Guide that provides detailed instructions to compilers on the sources of data and the procedures to be used in their compilation,
- Establishing or modifying IT infrastructure to facilitate data exchange and production of the accounts,
- Determining timelines for implementation, and
- Establishing a dissemination processes.

3.50 To provide more background and support in this area of work the references section provides a range of relevant materials including technical materials and country examples.

Resourcing requirements

3.51 The implementation of SEEA is an investment in information and the resourcing of a SEEA work program should be seen in this light. With a view to the creation of an ongoing work program there are some upfront costs around training and systems development that should be recognized as well as recognizing that these areas of expenditure need to be maintained over time.

3.52 The level of resourcing will be dependent on a range of factors. The primary driver will be the number and choice of accounts. It is noted however that there may be significant synergies across accounts (especially in the systems and capacity areas) once an agency develops a basic level of expertise and experience in compilation.

3.53 An important consideration in determining the level of resourcing is the availability of data and the extent to which existing data might need to be transformed or adjusted for use in an accounting context. This data transformation step may require significant resources but is often overlooked.

3.54 In addition to the acquisition of data of suitable quality the following are likely to be the main elements that require resources

- Staff
- Training and resource materials

- Management and organizational overheads (eg. recruitment)
- Communication and engagement with stakeholders
- Dissemination
- Information Technology
- Office equipment (e.g. chairs, desks)
- Travel

3.6 Phase 4: Strengthening national statistical systems

3.55 Once the first accounts have been produced, the challenge is to:

- make them an ongoing process,
- share best practices and lessons learned,
- ensure they are being used, and
- take advantage of opportunities to implement additional accounts.

3.56 This phase focuses on the longer-term strengthening of the institutional arrangements and each of the building blocks of the statistical production process (including related environmental monitoring) for the selected SEEA accounts.

3.57 Ensuring that the selected accounts are produced regularly will not only require a commitment of long-term funding but also a training and knowledge transfer program to ensure succession after staff turnover.

3.58 Promoting the use of the accounts will depend on a successful advocacy and outreach program. Potential users include not only government agencies but also the research community and the public.

3.59 Based on the experience of developing the first accounts, it may be feasible to implement additional accounts. The processes described here can be revisited to establish priorities for these accounts. This can benefit from good documentation on the experience, lessons learned and best practices already established.

Training, guidance manual and handbooks

3.60 Support for the implementation of the SEEA Central Framework is an ongoing priority for the international community. These training and technical cooperation programs with emphasize the integration of statistical capacity building in national planning and programming cycles to secure resources for sustainable statistical programs for environmental accounting and basic environmental statistics. Facilitating these activities at a regional level will enable regional organization and learning though sharing experiences.

3.61 However, much progress can also be made through national and regional cooperation. Country experts and practitioners are encouraged to promote the SEEA within their communities of practice and to adapt materials to their local situations.

3.62 Further guidance from the international community is expected to include:

- SEEA Communications Strategy
- SEEA Implementation Guide
- SEEA Technical Notes
- SEEA Experimental Ecosystem Accounting
- SEEA Applications and Extensions

3.63 Furthermore, because of the strong linkages between the SEEA and the SNA, the revised manuals for SNA implementation will also benefit those implementing the SEEA.

Comment: I think a sentence or reference to FDES would be sensible here.

Co-ordination, monitoring and reporting

3.64 Better coordination, monitoring and reporting collectively help meet national and regional goals. As well, it provides a means to evaluate international indicators against agreed benchmarks to assess the progress of expanding the scope and achieving compliance of the environmental accounts. Monitoring, reporting and evaluating can also be used to identify risks to the implementation process so that timely interventions can be made to keep plans on track.

3.65 To monitor national progress in implementation, the international community will provide internationally agreed monitoring tools for measuring (a) the scope and detail of implementation through the identification of core tables for specific SEEA modules, (b) the compliance with SEEA concepts for specific SEEA modules, and (c) data quality assurance frameworks for specific SEEA modules.

Cooperation with the research community

3.66 The users and producers of environmental accounts can often be found in the research community. In countries that do not produce regular accounts, researchers and consultants may have produced similar analyses on an ad hoc basis. A close cooperation with the research community can therefore be a means to recruit experienced teachers, increase the scope of users and implement the environmental accounts in a broader institutional context.

3.67 The SEEA Experimental Ecosystem accounting and SEEA Applications and Extensions will also be of interest to the research community. These handbooks deal with concepts that are the subject of much current research on ecosystem services, ecosystem function, spatial analysis and valuation.

3.68 Cooperation can be established in many ways. One proven method is for researchers and statistical offices to engage in joint work. This has proven to increase the level of understanding of the principles of statistical systems and the advantages of using statistical classifications in analyses related to environmental socio-economic issues.

Advocacy and outreach

3.69 Advocacy aims to support an ongoing dialogue among statistical produces, various levels of government, the business sector, the academic community and the public about the need for official statistics and the progress in meeting those needs. This communication can be established through targeted workshops, conferences, press releases and promotional materials that highlight the benefits of high quality official statistics and, in particular, environmental accounts. Regular engagements between the producers and users of statistics will stimulate demand, and ensure a better-funded and more effective program.

3.70 Advocacy and outreach will be supported by a forthcoming SEEA Communications Strategy. This strategy will focus on promoting information sharing with all stakeholders. It is based on the principle that high quality environmental accounts are cost-effective ways to establish sound sustainability policies.

IV: Preparation of assessment reports and implementation plans

4.1 Introduction

4.1 This chapter builds on the broad description of the four phases for implementation presented in Chapter 3. Two key outputs of the planning process that were identified in that chapter were an assessment report and an implementation plan. This chapter provides some tools to support the preparation of reports and plans and, in doing so, provides more context to the types of outputs and the issues that should be covered. The material in this chapter can be used in conjunction with the material in the annexes to this guide, for example the diagnostic tool.

4.2 Stakeholders and institutional arrangements/frameworks

4.2 This section is an initial assessment of stakeholders including their statistical capacity, data sharing arrangements, data security and other arrangements required to produce and use environmental accounts. Stakeholders are classified as producers or users (or both) of environmental data. Creating linkages between the data sources and the agencies that own and manage the relevant data is a fundamental step in developing the required networks for the co-ordination of data and the compilation of accounts.

4.3 Table 4.1 below provides the structure to assess each relevant stakeholder, followed by some relevant instructions to complete the table.

4.4 Annex III, Table 1. provides a master list of potential stakeholders. The actual stakeholders will be country-specific and this list should be adapted to your national situation.

Table 4.1 Initial assessment of stakeholders

	Column					
	1	**2**	**3**	**4**	**5**	**6**
Stakeholder category	**Stakeholder**	**Producer or user**	**Data sources**	**Statistical capacity**	**Data sharing**	**Data security and IT**
Central government agencies	National Statistics Office					
	Central Bank					
Human, industry and economic government agencies						
Environment and natural resource government agencies	Environment					
	Water					
	Energy					
	Minerals					
Universities (specify institute or centre)	University centre 1					
	University centre 2					
NGOs and private industry associations	Industry associations					
	National environmental NGOs					

	International NGO					

Instructions by column number:

1. Stakeholder: Insert the official name of the stakeholder in local language and English translation, if available. This should include all departments and other decision-making bodies mentioned in Table 3 (Initial assessment of data sources) and Table 5 (National policy priorities).

2. Producer or user: Specify if the stakeholder is a data "Producer", "User" or "Both".

3. Data sources: This lists the common data sources for which the stakeholder is responsible (if a producer of statistics). This should be consistent with Table 3 (Initial assessment of data sources).

4. Statistical capacity: This rates the capacity of the stakeholder to produce and release relevant statistics:

A rating of "1" specifies that the stakeholder produces statistics according to current international standards, adheres to national statistical legislation (for confidentiality and quality) and releases the statistics at regular and pre-announced times.

A rating of "2" indicates that the stakeholder produces statistics but lacks one or two of the criteria of international compliance, national compliance and regular releases.

A rating of "3" indicates that the stakeholder produces statistics but lacks all the criteria of international compliance, national compliance and regular releases.

5. Data sharing:

If data sharing arrangements are in place with the National Statistics Office (or other organization compiling the SEEA accounts, specify "1". These arrangements may include an MOU with service level agreements.

Specify "2" if no data sharing agreements are in place.

6. Data security and IT (Information Technology): This rates the strength of existing data security arrangements of the stakeholder. This covers not only unauthorized access but also to arrangements in place to ensure the integrity, availability and authenticity of the data within the organization. Plans may include Business Continuity Planning and Disaster Recovery Planning:

A rating of "1" indicates that the stakeholder applies sufficient data security procedures and its IT infrastructure is compatible with the NSO.

A rating of "2" indicates that the stakeholder applies sufficient data security procedures but that its IT infrastructure is incompatible with the NSO.

A rating of "3" indicates that the stakeholder does not apply sufficient data security procedures and that its IT infrastructure is incompatible with the NSO.

4.5 Although not generally identified through this type of process, it is important to recognize the important role that the media may play in helping to explain the potential of environmental accounting and as a mechanism for releasing information. Connections to the media should be considered as part of the stakeholder assessment and more generally in broader communication strategies.

4.3 Policy priorities

4.6 This step is an initial assessment of policy issues that may be informed through environmental-economic accounting and the relevant stakeholders. The issues can be

divided into the four quadrants (described in Chapter 1) linking SEEA to policies for the environment and development.

4.7 Table 4.2 below provides a structure to assess these policies in terms of priority and geographic scope. The responsible institution and specific SEEA account that addresses this issue should also be identified. This table, when completed will be useful as an overview of priorities when presenting to national or international groups.

4.8 Annex III, Table 2 provides a master list of policy types to choose from or add to as needed.

Table 4.2 Assessment of national policy priorities

	Column					
	1	2	3	4	5	6
SEEA and sustainable development policy quadrant	**Issue (select from master list)**	**Priority (1=highest, 5=lowest)**	**Scope (national or specific region)**	**Name of policy or program**	**Decision making body**	**SEEA account(s) required**
1. Improving access to services and resources						
2. Managing supply and demand						
3. Improving the state of the environment and reducing impacts						
4. Mitigating risks and adapting to extreme events						

Instructions by column number:

1. **Issue:** Select the general sustainable development or green economy policy issue from the master list in Annex Table A.3. For example, the issue within Quadrant 1: Improving Access to Services and Resources may be the Costs of Provisioning Services such as water or energy. Issues not listed in the master list may be added.
2. **Priority:** Assess the relative priority of this issue:
    a. A rating of "1" indicates the highest priority issues. These may be mentioned in sustainable development plans or other national documents listed in the Statistical Information Fact Sheet.
    b. A rating of "2" represents regional or new issues that may have not been highlighted in national documents but for which there is substantial interest.
    c. A rating of "3" represents regional or new issues for which there is some interest in pursuing that may not yet have been demonstrated across the government. For example, one agency or interest group may be advocating greater attention to an issue at this level.
    d. A rating of "4" represents issues that may have been investigated in the past but for which relevance or priority has not been demonstrated.
    e. A rating of "5" represents issues that are not currently applicable.
3. **Scope:** The issue identified may be national in scope (such as the supply and price of energy) or apply only to a sub-region of the country. For example, water supply may be an issue in parts of the country. If the issue is national in scope, identify it as "National". If it is regional, specify the region or regions for which it is important.
4. **Name of policy or program:** If there is already a specific policy (legislation, regulation, tax or other initiative) covering this issue, such as a national environmental protection policy or strategy, record its name here.
5. **Decision making body:** This reflects how decisions are made for that issue. The policy or program may be the main responsibility of one department but be monitored and implemented by

an interdepartmental working group or other organization. Record the name of the department or other decision making body here.

6. **SEEA account:** The master list in Annex Table 1 suggests SEEA accounts that can address specific policy issues. Transfer the names of the SEEA accounts corresponding to the selected issue.

4.4 Data sources

4.9 In many cases the key data required to compile the SEEA accounts can be derived from existing national data sets. Many of the monetary statistics can be derived from the national accounts. Further, many countries have pollutant release and transfer registries (PRTRs), energy statistics and water statistics.

4.10 It is useful when undertaking a data assessment to progressively compile a Statistical System Information Fact Sheet. A fact sheet allows for collating information available at the national level and at various international organizations on the national statistical system, bringing information together relevant for the development of an environmental-economic accounting programme. A similar fact sheet will have been completed by the group implementing SNA 2008.

4.11 A fact sheet should have a broad scope covering key national arrangements (e.g. national development plans, sustainable development plans, national statistical development strategies, water resource management plans, etc.). It should also support an understanding of how policies are prioritized and the existing arrangements for related statistics.

4.12 A possible structure of a Statistical System Information Fact Sheet is presented below in Table 4.3 together with relevant instructions.

Table 4.3 Statistical System Information Fact Sheet

1	Statistical System Information: Country:			
		Information Source	**Name**	**Link**
2	Country	Statistical agency	Address:	
3		Legal framework	Statistical Law:	
4		Strategic framework	NSDS/Statistical Master Plan:	
5		Relevant documents	National sustainable development plan:	
6			National development plan:	
7			National environment statistics reports:	
8			National submissions to Rio+20:	
9			Resource management plans (energy, minerals, water, etc.):	
10			Others	
11		Statistical Projects / Programmes	2008 SNA Implementation stage:	
12			STATCAP (World Bank)	
13			IBRD/IDA (World Bank)	
14			TFSCB (World Bank)	
15			Others	
16		Data	Central Statistics Office website	
17		Statistical standards in use	Environment statistics framework	
18			National accounts methodology	
19			National accounts base year	
20			Balance of payments manual in use	
21			Government financing accounting concept	
22			CPI base year	
23			Others	
24	UNSD	Relevant documents	Development of National Statistical Systems	
25			MDG Report	
26			Others	
27		Data	Country profile	
28			National accounts	
29			UN-NAQ Latest submission	
30			UN-NAQ MRDS	
31			HFI Data	
32	IMF	Relevant documents	Country report	
33			DQAF/ROSC	
34			GDSS/SDDS	
35			Others	
36		Data	World economic outlook	
37	World Bank	Relevant documents	PRSP	
38			CAS	
39			Others	
40		Data	Country data	
41	Eurostat	Relevant documents	Strategy paper	
42				
43		Data		
44	Paris21	Relevant documents	NSDS	
45			Busan Action Plan	
46	UN DESA, UNCSD, UNDP	Relevant documents	Rio+20 Synthesis of National Reports for Rio+20	
47			National report to Rio+20	

Instructions by line number:

1 Insert the country name

2 Insert the mailing address, e-mail address and Web address of national statistical agency

3 Insert the legal name of the statistical law and the English translation (if available); Insert the Web address of the statistical law (in the local language and in English if available)
4 Insert the name of the strategic framework for national statistical development (NSDS or other); provide a link
5-10 Provide the name and Web addresses of relevant documents suggested. Add others if required.
11-15 Provide the names and Web addresses of statistical development projects and programmes currently active.
16 Provide the name and Web address of the Central Statistics Office.
17-23 Provide the information on the current statistical standard in use (e.g., 1993 SNA; 2003 SEEA) and links to further information.
24-47 Provide names and links to relevant country-level reports submitted to the international agencies listed.

4.13 Table 4.4 below supports an initial assessment of data sources, their availability and who is responsible for maintaining them. It is also important to know whether the compilers of the accounts have access to the data and the standards used to collect and organize the data.

4.14 Some of these data sources will overlap with those in the Statistical System Information Fact Sheet. For these, it is an opportunity to provide more detail on status and accessibility.

4.15 Annex III Table 3 provides a master list of typical data sources that can be used to produce environmental accounts. It also suggests which common data sources could be used for each account. The data sources as listed may not be organized in the same way in your country. For example, estimates of CO_2 emissions may be produced by different organizational units from other emissions. Applicable country-specific data sources should be added to the list in Table 3.

Table 4.4 Initial assessment of data sources

		Column			
		1	2	3	4
Row	Data source	Status	Responsible organizations	Accessibility	Statistical standard
Environmental data (generally in physical terms)					•
1	Emissions inventory (Pollutant release and transfer registry), Greenhouse gas inventory	2		1	• OECD PRTR • Industry classification • IPCC
2	Water statistics	2		2	IRWS
3	Energy statistics	2		1	IRES, IEA
4	Waste statistics	2		2	
5	Other environmental statistics	3		1	• UN FDES 1982 • UN FDES 2013?
Economic data (generally in monetary terms)					•
6	National accounts	1		1	• SNA 1993 • SNA 2008
7	International trade statistics	2		1	• SITC • HS

8	Business statistics	2		1	• Industry classification: (ISIC rev),
9	Government finance statistics	2		1	GFS
10	Other economic data (e.g., administrative data, specific household or business surveys)	2		1	
Other data					
11	e.g. Population data, Employment data				

Instructions by column number:

1. **Status** refers to the general existence of the data source:
    a. A rating of "1" indicates that the data source is complete and comprehensive,
    b. A rating of "2" indicates that the data source exists but may be incomplete or partial,
    c. A rating of "3" indicates that the data source does not exist or is too incomplete to use for environmental accounting.
2. **Responsible organizations** refers to the name or the department, agency or research centre that manages this data source. The data source may be divided among two or more organizations. In this case, list all the organizations and the components for which they are responsible.
3. **Accessibility** refers to the level of access that the compilers of the environmental accounts can expect:
    a. A rating of "1" indicates that the data are readily available. Either they are published in detail or data sharing agreements are in place.
    b. A rating of "2" indicates that summary data may be published or available but that the compilers of the environmental accounts do not have access to detailed data or significant components.
    c. A rating of "3" indicates that neither summaries nor detailed data are currently accessible by the compilers of the environmental accounts.
4. **Statistical standards** indicates the international standard to which the data sources adhere. Some examples are given.

Instructions by row number:

1. **Emissions inventories** are estimates of residuals released to air, water and land from specific human activities. The list of residuals covered will vary by country. One international guideline is the OECD Pollutant Release and Transfer Registry. (link) Hazardous wastes are generally recorded in separate inventories.
2. **Water statistics** would ideally include a comprehensive measure of stock, supply and flows of freshwater.
3. **Energy statistics** would also include a comprehensive and coherent accounting for national energy supply and use by economic sector.
4. **Waste statistics** would include an accounting of waste generation and disposition (recycling, disposal, landfilling, etc.) of non-hazardous wastes.
5. **Environmental statistics** is a general term for data integrated from other sources to provide summary tables or indicators of specific aspects of the environment. These are sometimes compiled into a comprehensive national document.
6. **National accounts** are the compilation of macro-economic statistics into high-level indicators to track national production and wealth. Components of the national accounts may be produced in different national organizations but one group will be responsible for the integration of the information to produce estimates of GDP.
7. **International trade statistics** are used to identify the physical flows of goods (such as fuels, minerals and forestry products) between countries.
8. **Business statistics** are a source of information on industrial consumption as well as expenditures on environmental protection.
9. **Government finance statistics** can be used to better assess the payments to and from government (taxes and subsidies) for environmental purposes.

10. **Other.** This category is an opportunity to list other national sources of relevant statistics that are not detailed in this list. These sources, such as administrative data or specific surveys, should demonstrably contribute to the compilation of a specific SEEA account. For example, Canada conducts surveys of the Waste Management Industry. This could contribute to both the waste account (quantities) and business statistics (expenditures).

4.5 Existing accounts and previous studies

4.16 Some countries may already produce specific SEEA accounts, while others may have conducted pilot accounts or have had environmental accounts in the past. Again, it is important for the core group to know which accounts have been implemented or tested and who has done this. The work may not have been conducted in the NSO; it may have been done by academic groups, NGOs or research centres.

4.17 Information to support this section may be found in country documents such as national development plans, sustainable development plans, national statistical development strategies, water resource management plans, submissions to international meetings such as Rio+20 and environment statistics reports.

4.18 Table 4.5 provides a framework for recording the status and assessment of SEEA accounts that have already been produced. Most of the accounts listed refer to the SEEA CF but also cover accounts in the SEEA Energy and SEEA Water. In addition, four prototype accounts from the SEEA Experimental Ecosystem Accounts are listed. These are not considered part of the CF but they may address priority policy issues.

4.19 Annex III, Table 4 provides a master list of SEEA Accounts, the topics covered and links to the detailed definitions in the SEEA documents.

Table 4.5 Inventory of Current SEEA Accounts

	Column				
	1	***2***	***3***	***4***	***5***
SEEA Accounts	***Status***	***Frequency***	***Source***	***Spatial detail***	***Compliance***
Physical flow accounts					
Full set of supply and use tables for materials					
Economy-wide material flow accounts (MFA)					
Physical supply and use tables for water (PSUT water)					
Physical supply and use tables for energy (PSUT energy)					
Air emissions accounts					
Water emissions accounts					
Waste accounts					
Asset accounts					
Mineral and energy resources					
Land					
Soil resources					
Timber resources					
Aquatic resources					
Other biological resources					
Water resources					
Environmental activity accounts					
Environmental protection expenditure accounts (EPEA)					
Environmental goods and services sector (EGSS)					

Environmentally related payments by government					
Environmentally related payments to government					
Permits and licenses to use environmental assets					
Emissions permits					
Experimental ecosystem accounts					
Ecosystem condition and extent					
Physical flows of ecosystem services					
Carbon stock accounts					
Biodiversity accounts					

Instructions by column number:

Status specifies whether this account is:

1 = "Ongoing": That is, data have been produced and published.

2 = "Developmental": In the developmental stage and that completion and publication is planned.

3 = "Prototype": This indicates that the account has been attempted but is incomplete or development has been stopped.

4 = "Discontinued": This indicates the account has been produced in the past but is no longer produced.

5 = "Non-existent": The account has never been attempted.

Sub-components of an account have been attempted or completed. For example, CO_2 emissions are a sub-component of the Air Emissions Account. In this case, specify the name of the sub-component and its status.

Frequency specifies the regularity with which the account is (or has been) produced and released. Many accounts will be "Annual". Sub-annual (such as "Quarterly") accounts may have been prototyped or accounts may be produced at "5-year intervals" or "Occasionally".

Source specifies the organization that produces the account. This will often be the NSO.

Spatial detail specifies the geographic detail for which the accounts are (or have been produced). The account may be (or have been) produced only at the national level, specific states or provinces or another sub-national region.

Compliance refers to the degree of compliance with SEEA manuals (or other international or national standard).

4.6 Constraints

4.20 As might be expected a range of barriers to implementation will arise. One aim of strategic planning is to recognize and anticipate possible barriers and through understanding them find appropriate ways of either removing the barriers or working through the issues.

4.21 Since the actual barriers will be specific to any given implementation this section simply notes that understanding the challenges faced by other countries in environmental accounting may provide some guidance on the possible priorities for specific activities in your assessment report or implementation plan.

4.22 UNSD conducted a Global Assessment of Environment Statistics and Environmental-Economic Accounting in 2006. The following barriers to developing environmental accounting programmes were identified. Percentages refer to countries with

environmental accounts (n=42) or planning to implement environmental accounts in the near future (n=20).

1. Lack of human resources (69%)
2. Lack of financial resources (62%)
3. Availability of data (61%)
4. Quality of data (52%)
5. Lack of institutional set-up/coordination (39%)
6. Lack of interest by the users (34%)
7. Lack of access to training materials (31%)
8. Other (18%)

4.23 The Global Assessment also identified a separate set of factors impeding the compilation of environment accounts for countries with environment accounts programmes (n=42):

1. Availability of data (88%)
2. Quality of data (64%)
3. Lack of human resources (62%)
4. Lack of financial resources (55%)
5. Lack of institutional set-up/coordination (29%)
6. Lack of interest by the users (26%)
7. Lack of access to training materials (21%)
8. Others (14%)

4.24 The results suggest that resource limitations are the most important barriers to overcome in the initial stages of development. However, once a programme has been initiated and accounts have been produced, factors of data availability and quality take precedence. Institutional coordination and the lack of interest by users are substantial barriers at both stages. By addressing all these factors at an early state of strategic planning will ensure that the implementation and eventual ongoing production of environmental accounts will be as free as possible from these limiting factors.

4.7 Opportunities

4.25 SEEA implementation is likely to be closely linked to other international strategies for improving statistical information for policy. It is important for the core group to be familiar with not only these strategies but also to know which national agencies are concerned with their implementation. A range of relevant initiatives is listed in Chapter 1.

4.26 National level measurement initiatives are also common in many areas related to environmental-economic accounting – often in cases where analysts and researchers are developing their own databases to permit modeling and scenario analysis. Awareness of these types of specific projects (for example in the context of energy and water policy, carbon emissions, forest policy, etc.) may be helpful in understanding the potential to garner support and resources for developing the integrated dataset that the SEEA promotes.

4.8 Recommendations for priority accounts

4.27 This section guides the user through assessing the priority of all potential SEEA accounts and feasibility of accounts selected as high priority.

4.28 Table 4.6 brings together information on the status of SEEA accounts and policy priorities. Using this table, you can calculate a priority score that will help select which accounts are the most important. Note that if accounts are already produced, they will likely rate as a high priority. This is valuable since further steps will review the feasibility and the barriers to implementation and use of the accounts.

4.29 Depending on the status of the accounts and issues addressed, the list of selected accounts may be short or long. The Criteria for selection may be adjusted up or down to manage the size of this list. For example, it too many accounts are identified, the number can be reduced by selecting only accounts with a Calculated Score of less than 4 or 3.

Table 4.6 Priority SEEA accounts (example)

	Column			
	1	***2***	***3***	***4***
SEEA Accounts	***Status***	***Highest policy priority addressed***	***Calculated score (lower number is highest priority)***	***Selected***
Physical flow accounts				
Full set of supply and use tables for materials	5	2	10	
Economy-wide material flow accounts (MFA)	3	2	6	
Physical supply and use tables for water (PSUT water)	1	2	2	Yes
Physical supply and use tables for energy (PSUT energy)	1	2	2	Yes
Air emissions accounts	2	2	4	Yes
Water emissions accounts	5	3	15	
Waste accounts	2	3	6	
Asset accounts				
Mineral and energy resources	1	2	2	Yes
Land	2	2	4	Yes
Soil resources	3	3	9	
Timber resources	2	3	6	
Aquatic resources	3	3	9	
Other biological resources	3	3	9	
Water resources	3	2	6	
Monetary flow accounts				
Environmental protection expenditure accounts (EPEA)	2	2	4	Yes
Resource use and management accounts (RUMEA)	3	2	6	
Environmental goods and services sector (EGSS)	1	3	3	Yes
Environmentally related payments by government	2	2	4	Yes
Environmentally related payments to government	3	3	9	
Permits and licenses to use environmental assets	3	3	9	
Emissions permits	3	3	9	
Costs related to termination of fixed assets	4	4		
Experimental, extensions and applications				
Ecosystem condition and extent	3	2	6	
Physical flows of ecosystem services	3	2	6	
Carbon stocks	3	2	6	
Biodiversity	3	1	3	Yes

Instructions by column:

1. **Status:** Transcribe the **Status** rating for each account from Table 2.

2. **Highest policy priority addressed:** From Table 5, select highest priority rating (Column 2) corresponding to this account (Column 6).
3. **Calculated score:** Multiply Column 1 by Column 2.
4. **Selected:** Indicates "Yes" if the result in Column 3 is 5 or lower.

4.30 Based on the accounts selected in Table 4.6, Table 4.7 brings together the information to assess the feasibility of implementing and using those accounts. Feasibility refers not only to the appropriateness and quality of the source data but also to the readiness of stakeholders to provide necessary data or to use the results. This table could be completed for all accounts or for the accounts selected as highest priority in Table 4.6.

Table 4.7 Feasibility assessment (example)

	1	*2*	*3*	*4*	*5*	*6*
	Data source accessible	***Data source quality and standards***	***Stakeholder (providers) participating***	***Stakeholder (users) participating***	***Capacity***	***Calculated feasibility***
Physical flow accounts						
Physical supply and use tables for water (PSUT water)						
Physical supply and use tables for energy (PSUT energy)						
Air emissions accounts						
Asset accounts						
Mineral and energy resources						
Land						
Monetary flow accounts						
Environmental protection expenditure accounts (EPEA)						
Environmental goods and services sector (EGSS)						
Environmentally related payments by government						
Experimental, extensions and applications						
Biodiversity						

Instructions by column number:

1. **Data source available:** This is the average rating of the availability rating for the required data sources from Table 3, Column 3.
2. **Data quality and standards:** This is the average rating of the status of the data sources from Table 3, Column 1.
3. **Stakeholder (providers) participating:** This is the average rating of stakeholders (who are data providers) relevant to this account. This can be calculated from the data sharing assessment (column 5) from Table 6.
4. **Stakeholder (users) participating:** This is the average rating of stakeholders (who are data users) relevant to this account. This can be calculated from the data sharing assessment (column 5) from Table 6.
5. **Capacity:** This is the average capacity of stakeholders (providers and users) taken from Column 4 in Table 6. Note that this includes the NSO.
6. **Calculated feasibility score:** This is a synthesis of the scores in columns 1-5:

a. **Testing:** If the scores in columns 1-5 are all high (e.g., 2 or higher), the account may be feasible for testing.
b. **Capacity building:** If the scores for data accessibility (Column 1) and data quality (Column 2) are high, and stakeholders are participating, (ratings in Columns 3 and 4 are high) but capacity is low, this account may be a candidate for capacity building.
c. **Data development:** If the scores for data accessibility (Column 1) and data quality (Column 2) are low, but stakeholders are participating, (ratings in Columns 3 and 4 are high) and capacity is high, this account may be a candidate for data development.
d. **Strengthening institutions:** If the scores for data accessibility (Column 1) and data quality (Column 2) are high, but stakeholders are not participating, (ratings in Columns 3 or 4 are low) and capacity is high, this account may be a candidate for strengthening institutions.

4.9 Possible next steps

4.31 The description of next steps in the concluding sections of either the assessment report or the implementation plan will vary depending on the context within which the recommendations are being made and the outcome of the feasibility assessment. The following possible next steps are provided simply to provide a starting point for this section of a report.

4.32 If accounts are already feasible for testing (based on the feasibility assessment), then the implementation plan may focus on the steps necessary to ensure that the resources and coordination mechanisms are in place for testing, such as:

1. Establish an Implementation Team
2. Determine costs and secure funding
3. Produce selected accounts
4. Evaluate accounts (best practices and lessons learned)
5. Release accounts
6. Apply the best practices and lessons learned to further SEEA accounts through training and guidance manuals and cooperation with the research community
7. Initiate advocacy and outreach to ensure the accounts are used

If no accounts are feasible for testing but some are feasible for capacity building, then the steps may be different:

1. Establish an Implementation Team
2. Determine which institutions require capacity building, the nature of the capacity that requires improvement (statistical standards, accounting concepts, concepts and methods, interpreting data, analysis, etc.) and the best methods of providing support (workshops, training programmes, manuals, collaborations, etc.)
3. Determine costs and secure funding
4. Determine and apply the necessary adaptations (e.g., establish a training program on SEEA concepts and methods, produce a manual on statistical standards)
5. Apply the adaptations to produce the accounts
6. Evaluate the accounts
7. Apply the best practices and lessons learned to further SEEA accounts through training and guidance manuals and cooperation with the research community

8. Initiate advocacy and outreach to ensure the accounts are used

If no accounts are feasible for testing but some are feasible for data development, then the steps may be different:

1. Establish an Implementation Team
2. Determine which data sources need to be established or improved
3. Determine and apply the necessary adaptations (e.g., establish an emissions inventory according to international standards, create bridging tables between energy supply and use statistics, …)
4. Determine costs and secure funding
5. Apply the adaptations to produce the accounts
6. Evaluate the accounts
7. Apply the best practices and lessons learned to further SEEA accounts through training and guidance manuals and cooperation with the research community
8. Initiate advocacy and outreach to ensure the accounts are used

For accounts that are feasible for strengthening institutions the steps may be in a different order:

1. Engage key stakeholders to better understand their needs and to explain the benefits of environment accounts (e.g., show how their mandate has been addressed by environmental accounting in other countries, review the results of the initial diagnostic and determine the barriers to their participation or their potential use of accounts)
2. Revise the implementation plan to address specific barriers to participation for specific stakeholders (e.g., training in concepts and methods)
3. Establish an Implementation Team including the stakeholders
4. Determine costs and secure funding
5. Apply the adaptations to produce the accounts
6. Evaluate the accounts
7. Apply the best practices and lessons learned to further SEEA accounts through training and guidance manuals and cooperation with the research community
8. Initiate advocacy and outreach to ensure the accounts are used

4.10 Template for a national assessment report

4.33 A National Assessment Report presents the steps taken above to assess the priority and feasibility of accounts. A stand-alone Draft National Assessment Report may be based on the following table of contents:

1. National sustainability and green economy overview
2. Policy applications of environmental and the role of SEEA (Derived from Section 1)
    a. SEEA principles and components (Derived from Section 1)
    b. Steps to SEEA Implementation (Derived from Section 1)
3. Results of the initial SEEA Diagnostic
    a. Statistical system information fact sheet
    b. Inventory of SEEA accounts

    c. Assessment of key data sources
    d. Statement of strategy
    e. Assessment of national policy priorities
    f. Assessment of stakeholders
    g. Priority SEEA accounts
    h. Feasibility assessment
4. Draft national implementation plan (see next section)
5. Next steps
    a. Meeting with stakeholders and experts
    b. Reviewing and revising materials in initial SEEA diagnostic
    c. Establishing an implementation team
    d. Determining specific goals, required activities, costs and sources of funding

Annexes

Annex I. Stylized sequence of implementation events

Comment: This was a suggestion made to give an additional tool to support implementation efforts and to complement the planning steps outlined in the text and the diagnostic tool in Annex II. Ultimately, if supported, I'm thinking of some sort of flow chart, but in the meantime the following text is inserted as a placeholder being relevant material from the Diagnostic Tool work of Michael Bordt. Comments and ideas welcome.

One way of advancing implementation is to:

- Share the Diagnostic Tool and materials developed by the core group with the stakeholders. This initial assessment could be presented at national and international workshops and be made available to the public (e.g., by Internet).
- Convene a national workshop or series of meetings with stakeholders to:
    - Present and review the materials developed by the core group:
        - Statistical System Information Fact Sheet
        - Inventory of SEEA Accounts
        - Assessment of key data sources
        - Assessment of Policy Priorities
        - Assessment of Stakeholders
        - Statement of Strategy
        - Draft National Assessment (priority and feasibility of SEEA accounts)
        - Draft National Implementation Plan
    - Obtain advice on possible adjustments to the draft National Implementation Plan,
    - Institute a regular meeting schedule (at least annual, preferably sub-annual) to review progress and make adjustments,
    - Establish formal agreements to collaborate, and
    - Estimate costs of implementation and identify funding opportunities.
- Establish an Implementation Team consisting of the technical and policy experts for the selected accounts.

Following are some examples that illustrate the level of detail and specificity that will ensure that the activities are well defined and achievable. It is possible that capacity building, data development and strengthening institutions will be required before testing the accounts is possible. In this case, the required activities will include elements of two or more of the groups of activities:

1. Testing accounts
    a. Institute a Director-level committee between the NSO, environment department, finance department and other relevant stakeholders to guide and monitor the implementation of a prototype account for xxx.
    b. Secure funding of $xxx to produce a prototype account for xxx over 2 years.
    c. Establish a team of xxx statistical and subject-matter experts to produce a prototype account for xxx over 2 years.
2. Accounts requiring capacity building
    a. Establish an ongoing training programme in international statistical standards (SNA, SEEA, DQAF) and fundamental principles of official statistics.

   b. Produce summaries of the key international documents in the local language.
   c. Secure funding of $xxx to engage national and international experts in contributing to training
3. Accounts requiring data development
   a. Establish funding and a working group between the NSO, environment and natural resource departments to develop bridging tables between energy supply and use statistics and the economic models used to estimate impacts of energy consumption.
   b. Revise the classifications used in the national emissions inventory to be compatible with international classifications (ISIC) and concepts.
   c. Initiate a survey of environmental protection expenditures in business. Review government finance statistics to determine if these are sufficient to develop estimates of government expenditures on environmental protection. If necessary, initiate specific surveys (e.g., waste management) to collect missing information.
4. Accounts requiring strengthening institutions
   a. Revision the information requirements of key agencies making decisions on sustainability and green economy,
   b. Develop and present materials on how those information requirements are met using environmental accounts in other countries,
   c. Determine and address the main barriers to participation (funding, capacity, time-frames, etc.)

Annex II: Diagnostic Tool

What is the purpose of this tool?

This Diagnostic Tool supports discussions for the implementation of SEEA that are aimed at:

1. Documenting national priorities for natural resource, development and environmental policies,
2. Identifying the stakeholders including producers and users of statistics but also other groups that can benefit from improved information,
3. Identifying key national data sources that can be used for environmental accounting,
4. Identifying related statistical development activities that could benefit environmental accounting initiatives,
5. Understanding what progress has already been made in environmental accounting,
6. Assess the constraints to understand the feasibility of specific SEEA accounts, and
7. Determining the priorities for action to develop selected SEEA accounts.

It has been designed for use in a one-hour workshop setting with a small group of statistics producers and users. Perhaps not all questions can be answered in the first meeting. Furthermore, it is likely some of the items will need more detail.

What is SEEA?

Using statistical evidence to support national sustainability goals is an important objective of governance. However, providing that evidence in a way that is suitable, transparent and cost-effective is not a simple undertaking. In response to this need, the international community has produced the System of Environmental-Economic Accounting (SEEA[4]). This is a coherent and integrated measurement framework for organizing environmental data and applying it to sustainability and green economy decision-making.

Countries have different priorities. Their governments organize themselves and their statistical systems in different ways. Their capacities to produce and use statistical evidence vary. Therefore, implementing this framework requires a flexible and modular approach.

The objectives of development initiatives are often measured in terms of their short-term contribution to GDP. This important but solitary indicator does not take into account whether the initiatives are drawing down national wealth by depleting natural resources, damaging the health of the population or restricting their access to vital resources such as water and energy. Therefore, even if initiatives contribute to GDP, they may not be sustainable. Since SEEA links the economic, environmental and social statistics, it provides a broader accounting framework to understand the longer-term contribution of development initiatives.

[4] See: https://unstats.un.org/unsd/envaccounting/seea.asp.

Sustainability is inherently a concept that integrates economy, environment and society. SEEA provides a coherent and integrated framework for collecting, organizing, analysing, presenting environmental data and relating it to economic and social data. It adheres to the principles of the System of National Accounts (SNA), and expands its scope by:

- providing standard terminology, definitions and classifications for environment-economy statistics,
- including measures of the physical stocks of natural capital and their values,
- adding physical measures of flows of natural resources and residuals (land, metals and minerals, timber, energy, water, fish, air emissions, water emissions, solid waste), and
- linking these to economic activities (producers and consumers) and societal benefits.

Experience has shown that SEEA implementation works best when:

1. Producers and users of statistics collaborate to define their needs and opportunities,
2. Organizations are prepared to change the way they do things to provide better information and to use it effectively, and
3. Activities across sectors are well coordinated.

Area 1: Policy priorities

SEEA can inform a variety of related objectives including:

1. **Improving access to services and resources:** these may include objectives such as reducing costs of water, energy and food; improving equitability or sustainability of resource exploitation; reducing resource consumption; promoting eco-tourism.
2. **Managing supply and demand:** these may include objectives such as managing water and energy; improving resource efficiency; improving the sustainability of production and consumption.
3. **Improving the state of the environment and reducing impacts:** these may include objectives such as reducing emissions and wastes; protecting ecosystems and biodiversity; managing protected areas and endangered species.
4. **Mitigating risks and adapting to extreme events:** these may include objectives such as adapting to climate change; reducing greenhouse gas emissions; compensation for environmental damages.

Does your country already have a deliberate strategy that creates triple wins (good for the economy, society and the environment) and identifies the elements of inclusive, integrated green economy policies? If so, please summarize it here.
If not, perhaps you could draft a statement here based on your understanding of your national development strategy.

_____

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_____

Area 2: Institutions

Stakeholders

Who are the main stakeholders in natural resource, development and environmental policy? This includes not only the **producers** of the data but also the potential **users** of the data and other interests that could benefit from improved information. Groups that may be considered include:

Central government agencies

Human, industry and economic government agencies

- Environment and natural resource government agencies
- Universities (specify institute or centre)
- NGOs and private industry associations

It is also important to describe interdepartmental mechanisms, strategies and plans in place to make sustainability decisions.

_____

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_____

Area 3: Information and knowledge

Data sources

What are the main data sources and what is their availability and quality? Depending on the priority, this could include:

- Emissions inventories (air, water, greenhouse gases, solid wastes, hazardous wastes)
- Water statistics (abstraction and use)
- Energy statistics (supply and use)
- Waste statistics (generation and disposition)
- Environmental statistics (for example, land cover; land use; air quality; water quality; access to water, sanitation and energy; participation in multilateral environmental agreements and environmental conventions)
- National accounts (natural resource inputs; expenditures on environmental protection ; environmental taxes)
- International trade statistics (transborder flows of natural resources, environmental goods and services, solid wastes)
- Business statistics (expenditures on environmental protection; environmental goods and services sector)
- Government finance statistics (expenditures on environmental protection; environmental taxes and subsidies)
- Other (e.g., administrative data, specific household or business surveys)

Describe any key documents or research initiatives that are related to the priority sources identified.

_____

_____

_____

_____

Area 4: Progress

Existing accounts

Are any SEEA accounts already being produced? Have any been prototyped in the past?

The most common SEEA accounts include:

- Flow accounts
    - Supply and use for water (physical and monetary)
    - Supply and use for energy (physical and monetary)
    - Air emissions (physical)
    - Water emissions (physical)
    - Waste (physical)
    - Environmental protection expenditure accounts (EPEA) (monetary)
    - Resource use and management accounts (RUMEA) (monetary)
    - Environmental goods and services sector (EGSS) (monetary)
    - Environmentally-related payments to and by government (monetary)
- Asset accounts
    - Mineral and energy resources (physical and monetary)

    - Land cover (physical and monetary)
    - Soil resources (physical)
    - Timber resources (physical and monetary)
    - Aquatic resources (fish and crustaceans) (physical and monetary)
    - Water resources (physical)
- Experimental ecosystem accounts
    - Extent and quality of specific ecosystems such as forests, wetlands, grasslands, coastal zones, etc. (physical)
    - Physical flows of ecosystem services (physical)
    - Carbon stocks (physical)
    - Biodiversity (physical)

Are there other activities focussed on statistical development (such as a National Statistical Development Strategy, SNA 2008 implementation strategy)?

_____

_____

_____

_____

Area 5: Priorities

Priority accounts

Given the policy priorities, availability of knowledge and stakeholder interest, which SEEA accounts are of the highest priority for implementation?

_____

_____

_____

_____

Area 6: Constraints

Feasibility

Of the priority accounts, what are the constraints to implementation? Some accounts may have few constraints and are ready to test. Others may require a combination of capacity building (training, guidance documents), data development (establishing or improving sources of data) and institutional coordination (establishing or changing mechanisms, establishing funding sources).

Ready to test

Account:

_____

Constraints:

_____

Need capacity building

Account:

_____

Constraints:

_____

Need data development

Account:

_____

Constraints:

_____

Need institutional coordination, financing

Account:

_____

Constraints:

_____

Area 7: Opportunities

Priority Actions

What are immediate actions that can be taken to overcome the constraints to begin implementing priority accounts? Include a description of any national development planning deadlines that may be an opportunity for funding.

Identify related international initiatives that may provide additional support for the task of implementation of SEEA.

Account:

_____

Action:

_____

Account:

_____

Action:

_____

Area 8: Conclusions and recommendations

_____

_____

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Annex III: Master lists for assessment and planning

Table 1: Master list of potential stakeholders

Stakeholder category	Stakeholder
Central government agencies	Central banks
	Central planning
	Finance
	Government operations
	Infrastructure
	National Statistical Office
Human, industry and economic government agencies	Census
	Culture
	Economic Analysis
	Health, disease control, research
	Housing
	Industry
	Justice, Crime prevention
	Labour, Human resources
	Transport
Environment and natural resource government agencies	Agriculture
	Chemicals regulation
	Energy
	Environment
	Fisheries
	Forestry
	Geology, Geomatics
	Geomatics
	Meteorology and hydrology
	Museum of natural history
	Natural Resources
	Parks
	Water (supply)
	Water (treatment and sewage)
Universities (specify institute or centre)	University 1
	University 2
NGOs and private industry associations	Industry associations
	Agriculture associations
	Energy, petroleum
	Forest industry
	Manufacturers, plastics, chemicals
	Parks associations
	Waste management, recycling, packaging
	Water (supply)
	Water (treatment and sewage)
	National environmental NGOs
	NGO 1
	NGO 2
	International economic and environmental NGOs
	INGO 1
	INGO 2

Table 2: Master list of policy issues

SEEA and sustainable development policy quadrant	Issue sub-category	Issue detail	Account[1]
1. Improving access to services and resources	Costs of provisioning of services		Water flow, Energy flow
	Equity of natural resource exploitation		MEFA
	Losses in distribution (water, energy, food)		MEFA
	Quantity of resources used		Mineral and energy asset accounts, Land, EEA
	Sustainability of resource exploitation		Mineral and energy asset accounts, Land, EEA
	Tourism		Land, EEA
2. Managing supply and demand	Carbon and energy embedded in products		MEFA
	Coordinating land use (e.g., watershed) and activities		Land, EEA
	Decoupling indicators of emissions and resource use		Air emissions, Water accounts
	Energy supply and demand		Energy, MEFA
	Environmental goods and services sector		EGSS
	Environmentally-adjusted aggregates for depletion		Mineral and energy asset accounts, Land, EEA
	Fish stock		EEA
	Food supply		EEA
	Forest stock and use; Deforestation		Forest/Timber
	Generation of emissions and wastes		MEFA
	Green jobs		EGSS
	Investment in infrastructure		EPEA
	Natural wealth and changes in natural capital		Mineral and energy asset accounts, Land, EEA
	Resource efficiency (e.g., resource productivity)		Mineral and energy asset accounts, Land, EEA
	Resource rent		Mineral and energy asset accounts, Land, EEA
	Resource use of production and consumption		MEFA
	Sustainability of production and consumption		Land, EEA
	Sustainable agriculture		Land, EEA
	Sustainable economic development		MEFA
	Water supply and demand		Water stock

SEEA and sustainable development policy quadrant	Issue sub-category	Issue detail	Account[1]
3. Improving the state of the environment and reducing impacts	Air quality: emissions and treatment		Air emissions
	Ecosystems and biodiversity	Coastal ecosystems	Land, EEA
		Ecosystem health and condition	Land, EEA
		Ecosystem services	Land, EEA
		Forests	Land, EEA
		Freshwater (lakes, rivers, streams, groundwater)	Land, EEA
		Other ecosystems (tundra, grasslands, mangrove, desert, etc.)	Land, EEA
		Wetlands	Land, EEA
	Endangered species		Land, EEA
	Environmental impact of exploitation		All
	Environmental protection expenditures and resource management		EPEA
	Land use and land cover		Land, EEA
	Nature and recreation		Land, EEA
	Protected areas		Land, EEA
	Sea level rise		Land, EEA
	Solid waste and treatment		Waste
	Stock of natural resources		Mineral and energy asset accounts, Land, EEA
	Water quality: effluents and treatment		Water flow, Energy flow
4. Mitigating risks and adapting to extreme events	Adaptation to climate change and extreme events		EPEA, EGSS
	Capacity and capacity building		Diagnostic
	Compensation for environmental damages		Environmental taxes and subsidies, EEA
	Contaminated land (e.g., brownfields)		Land, EEA
	Coordination of sustainability policies		Diagnostic
	Education and awareness		Diagnostic
	Effectiveness of policy instruments		All
	Environmental research		Diagnostic
	Expenditures on mitigation (e.g., technologies)		EPEA
	Extreme events: floods, landslides, heat waves, droughts, etc.		EPEA
	Greenhouse gas emissions		MEFA
	Investment and incentive infrastructure		Diagnostic
	Legislative and regulatory infrastructure		Diagnostic
	Progress of societies		All
	Residuals in food		MEFA
	Urbanization and urban planning		Land, EEA

Notes:

1. Accounts acronyms are:
   - EEA – Experimental Ecosystem Accounts
   - EGSS – Environmental Goods and Services Sector statistics
   - EPEA - Environmental protection expenditure accounts
   - MEFA – Materials and Energy Flow Accounts

"Diagnostic" refers to issues of implementation to be reviewed as part of the diagnostic process.

"All" suggests that most or all SEEA accounts would be required for a comprehensive assessment of this issue.

Table 3: Common national data sources and links to SEEA accounts

Data source	SEEA Account
Environmental data	
Emissions inventory (Pollutant release and transfer registry)	• Air emissions • Water emissions
Water statistics	• Water emissions • Water flow • Water stock
Energy statistics	• Air emissions • Energy and material flow
Waste statistics	• Waste accounts
Other environmental statistics	• Land cover • Forest
Economic data	
National accounts	• Energy and material flow • Mineral and energy assets • Environmental protection expenditures • Environmental taxes and subsidies • Environmental goods and services sector
International trade statistics	• Energy and material flow
Business statistics	• Environmental protection expenditures • Environmental goods and services sector
Government finance statistics	• Environmental protection expenditures • Environmental taxes and subsidies
Other (e.g., administrative data)	• Mineral and energy assets

Table 4: List of general SEEA accounts

SEEA Accounts	*Topics covered (detailed definition)*
Physical flow accounts	
Full set of supply and use tables for materials	All resources and materials (energy, water, air emissions, water emissions, solid waste) (CF 3.45)
Economy-wide material flow accounts (MFA)	Supply and consumption of energy; air emissions, water emissions, and solid waste (CF 3.279)
Physical supply and use tables for water (PSUT water)	Supply (precipitation) and consumption of water (CF 3.186)
Physical supply and use tables for energy (PSUT energy)	Supply and consumption of energy (CF 3.140)
Air emissions accounts	Air emissions (CO_2, pollutants) (CF 3.233)
Water emissions accounts	Water emissions (CF 3.257)
Waste accounts	Solid wastes (CF 3.268)
Asset accounts	
Mineral and energy resources	Physical and monetary accounts for minerals and energy stocks (oil, natural gas, coal and peat, non-metallic minerals and metallic minerals) (CF 5.172)
Land	Physical and monetary accounts for land, land cover, land use (CF 5.235)
Soil resources	Area and volume of soil resources (CF 5.318)
Timber resources	Physical and monetary accounts for timber resources (CF 5.343)
Aquatic resources	Physical and monetary accounts for fish, crustaceans, molluscs, shellfish and other aquatic organisms such as sponges and seaweed as well as aquatic mammals such as whales. (CF 5.393)
Other biological resources	Cultivated animals and plants including livestock, annual crops such as wheat and rice, and perennial crops such as rubber plantations, orchards and vineyards. (CF 5.462)
Water resources	Stock of water resources (CF 5.471)
Monetary flow accounts	
Environmental protection expenditure accounts (EPEA)	Output of EP services in economy and expenditures on EP goods and services by resident units (CF 4.45)
Resource use and management accounts (RUMEA)	Production, supply and use, expenditures on and financing of resource management (CF 4.121)
Environmental goods and services sector (EGSS)	Characteristics of all producers of products intended for environmental protection and resource management (CF 4.95)
Environmentally related payments by government	Environmental subsidies, social benefits to households, investment grants and other current and capital expenditures (CF 4.138)
Environmentally related payments to government	Environmental taxes (taxes on products, production and income; other current taxes and capital taxes) and other payments to government (rent, sales of some goods and services, some fines and penalties) (CF 4.149, CF 4.159)
Permits and licenses to use environmental assets	Permits to extract and harvest natural resources (CF 4.174)
Emissions permits	Permits for the use of the environment as a pollution sink (emissions permits) (CF 4.182)
Costs related to termination of fixed assets	Environmental consequences of disposing of fixed assets (nuclear power plants, oil rigs and other equipment, landfills, mines, etc.) (CF 4.194)
Experimental, extensions and applications	
Ecosystem condition and extent	Characteristics of ecosystem condition and ecosystem extent (EEA 40, EEA 88, EEA 89)
Physical flows of ecosystem services	Ecosystem services by ecosystem type (EEA 39, EEA 41, EEA 60, EEA 90)
Carbon stocks	All carbon stocks, additions and reductions (EEA 95)
Biodiversity	Species abundance (EEA 102); Threatened species (EEA 111)

CF = Central Framework, white cover edition, refers to paragraph number; EEA = Experimental Ecosystem Accounting.

Annex IV. SEEA Technical Notes: Basic structure and themes

Background

The general purpose of the technical notes is to summarise for a given topic a range of relevant features and considerations within 10-12 pages. The summary nature is important since the objective should be to point people in the right direction and get them to ask the right questions rather than to try to explain point by point how to do things. Adapting the SEEA to individual country requirements, environmental characteristics and statistical circumstances should be the key to the implementation strategy.

Sections

1. Introduction and general description

Provide a basic understanding of the scope of the technical note.

2. Key questions and relevant aggregates and indicators

Motivation for why these data are relevant and the links to policy. Aim to highlight simple questions and point to the benefit of an accounting approach. Should be linked to the following section outlining core accounts – i.e. the data in the core accounts should be able to answer the questions that are posed in this section. A link to SDG / Green growth things would be good here.

3. Core accounts

Two elements here. The first is presenting the relevant standard accounts from the SEEA CF but at the appropriate level of industry, product and asset detail as appropriate. The second is outlining a combined presentation table that takes the key information from the core accounts and also information from other sources (e.g. value added, GDP, population) to provide the basic information set for the derivation of key aggregates and indicators.

4. Extensions and links

This section should describe ways in which the core accounts might be sensibly extended through additional industry or product detail, geo-spatial extensions, links to social aspects – eg by household type. Emphasis should be on modular extensions – for example geo-spatial information on abstractions of water but not necessarily on water use.

This section should also note links to other accounts not covered in this technical note. For example, the technical note on forests might mention carbon accounting.

5. Compilation

This section might cover a few things. First, a sense of the basic steps in compilation (perhaps a flow chart would be useful) and also a link to the steps in the diagnostic tool. Second, outlining the key data sources. Third, highlighting the main compilation challenges and pressures points and possible solutions. The aim here is to be summary and point people in the right directions for support linking to established materials and guides.

6. References and links

This section should provide a ready access to relevant materials with weblinks as appropriate. Links to examples of work in countries would also be of considerable benefit.

Proposed topics for technical notes series

1. Water

2. Land
3. Forests
4. Mineral and energy resources
5. Emissions
6. Waste
7. EGSS
8. EPEA
9. Energy
10. Carbon
11. Fisheries
12. Ecosystem accounting and biodiversity
13. Soil

Annex V. Examples of core tables

Comment: Pending development of core tables for various themes / topics

References

Comment: Initial listing only

Main SEEA Web site: http://unstats.un.org/unsd/envaccounting/seea.asp

- SEEA-Central Framework (UNECE 2013 edition): http://unstats.un.org/unsd/envaccounting/seearev/Chapters/SEEA_CentralFramework_Ch1-6.pdf
- SEEA-Energy: http://unstats.un.org/unsd/envaccounting/seeaE/GC_Draft.pdf
- International Recommendations for Energy Statistics (IRES): http://unstats.un.org/unsd/statcom/doc11/BG-IRES.pdf
- SEEA-Fisheries: http://unstats.un.org/unsd/envaccounting/Fish_final_whitecover.pdf
- SEEA-Water: http://unstats.un.org/unsd/envaccounting/seeaw/seeawaterwebversion.pdf
- International Recommendations for Water Statistics (IRWS): http://unstats.un.org/unsd/envaccounting/irws/irwswebversion.pdf
- SEEA Experimental Ecosystem Accounts (SEEA-EEA): http://unstats.un.org/unsd/envaccounting/seearev/Chapters/SEEA_EEA_v1.pdf
- SEEA Applications and Extensions: http://unstats.un.org/unsd/envaccounting/seearev/Chapters/SEEA_AE_v1.pdf
- SEEA Global Assessment 2006: https://unstats.un.org/unsd/envaccounting/assessment.asp.

International Monetary Fund Data Quality Assurance Framework (DQAF): http://dsbb.imf.org/pages/dqrs/dqaf.aspx
Knowledge base on economic statistics (Environmental-Economic Accounting): http://unstats.un.org/unsd/EconStatKB/KnowledgebaseCategory168.aspx
Paris21 NSDS and the Busan Action Plan: http://www.Paris21.org
Rio+20 Synthesis report on best practices: http://www.uncsd2012.org/index.php?page=view&type=400&nr=33&menu=45
SNA 2008 Implementation Plan: http://unstats.un.org/unsd/nationalaccount/docs/guidelines.pdf
World Bank WAVES Global Partnership: http://www.wavespartnership.org/waves/

Edens, B., M. de Haan and S. Shenau. 2011. *Initiating a SEEA Implementation Program – A First Investigation of Possibilities*. United Nations Department of Economic and Social Affairs, Statistics Division. Sixth Meeting of the UN Committee of Experts on Environmental-Economic Accounting, New York, 15-17 June 2011. ESA/STAT/AC.238, UNCEEA/6/19. http://unstats.un.org/unsd/envaccounting/ceea/meetings/UNCEEA-6-19.pdf.

UNSD. 2006. Global Assessment of Environment Statistics and Environmental-Economic Accounting. Background document to the 38th session of the UNSC. New York. https://unstats.un.org/unsd/statcom/doc07/Analysis_SC.pdf.