# System of Environmental-Economic Accounting 2012

## Implementation Guide

**Draft version prepared for the London Group meeting on Environmental Accounting**

**London, UK, 12-14 November, 2013**

**Prepared by Carl Obst on behalf of UNSD**

# Cover note

**Background for London Group members**

In February 2013 the UNCEEA presented an implementation strategy for the SEEA to the UNSC meeting. The strategy was endorsed at that meeting and, since that time, work has progressed on "rolling out" the implementation strategy through various means.

One part of the implementation strategy is the preparation of relevant supporting materials and the version of the SEEA Implementation Guide presented here is one such supporting material. The SEEA Implementation Guide aims to provide a generic overview of the components of implementation recognising that the specifics of implementation in any country will vary. This is particularly so when it is considered that SEEA is composed of many modules and each of the modules will involve different groupings of stakeholders, different source data, different analytical outputs, etc.

This version of the SEEA Implementation Guide was developed using work completed by Michael Bordt (formerly of Statistics Canada) in early 2013. Michael developed draft material which was presented under the titles of a diagnostic tool and a rapid diagnostic tool. In April 2013, through discussion with UNSD and Michael, Carl Obst was tasked with taking that material and adding some additional structure and content to create an implementation guide. An outline of the proposed implementation guide, together with the draft diagnostic tools, was discussed by a small group at the SEEA Implementation Conference held in New York in June 2013.

Using feedback from this discussion a first draft of the SEEA Implementation Guide was completed in time for the regional workshop on SEEA implementation held in Apia, Samoa in August 2013. The discussions at that workshop tested the diagnostic tool (an earlier version of the material in Annex II presented here) and also helped to clarify some of the important aspects of implementation in the context of Pacific island countries.

An updated version was informed through discussions in Malaysia with participants of a regional training course on the SEEA and separate discussions with the Department of Statistics Malaysia who are seeking to implement the SEEA there.

The current version being presented to the London Group also incorporates a round of consultation with members of the small group who discussed the outline of the implementation guide in June 2013. This feedback has been important in clarifying some of the key messages to be conveyed with respect to implementation of the SEEA.

An important general observation about the content of the guide is that because of the many variations of implementation that are likely in practice, it would be unwise to overinvest in the SEEA Implementation Guide by seeking to cover all possible eventualities in a single document. Rather, it is suggested that a more generic style, produced relatively quickly, would be more conducive to its use and adaptation to individual countries and regions.

With this in mind, the views of London Group members are sought on whether the key messages outlined in the document are the most appropriate, whether the general coverage, structure and tone of the document is appropriate and useful, and what additional aspects might be included or covered in more detail. Using this feedback a SEEA Implementation Guide will be finalised.

Please send your feedback to the United Nations Statistics Division (seea@un.org) by Friday 29 November.

DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS
STATISTICS DIVISION
UNITED NATIONS

# SEEA Implementation Guide

**Draft version 3.0**

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# Preface

**To be completed**

The preface is intended to provide context and background to the work on SEEA implementation including international drivers for the improvement of information on integrated economic, environmental and social issues, for example the Post-2015 development agenda and green economy/green growth initiatives.

# Key Messages

The SEEA Implementation Guide is designed to provide an overview of steps likely to be required to introduce a national programme of work on environmental-economic accounting. It does not provide detailed advice since there are a wide variety of situations and starting points, taking into account national policy priorities, institutional arrangements and statistical development, that will impact on the most appropriate implementation strategy. At the same time there are some general messages that should be considered by all countries based on experience in the implementation of SEEA and other statistical programmes in a number of countries.

The eight key messages are:

1. That implementation should be advanced following the completion of a general awareness and advocacy campaign concerning the potential of environmental-economic accounting to inform policy development, monitoring and evaluation.

2. That implementation should aim to define a co-ordinated, long-term, national programme of work involving a range of users of information and a number of different source data agencies.

3. That an essential part of developing a long-term implementation of SEEA is the development of supporting environment and economic statistics and the underpinning national statistical system.

4. That SEEA is not a single account but a series of modules on different aspects of the environmental-economic relationship. All of the modules are connected through common classifications and measurement boundaries but can be compiled separately and incrementally integrated and improved.

5. That the analytical potential of the SEEA comes from its use of accounting techniques based in the System of National Accounts and from its integration of environmental and economic information in both monetary and physical terms.

6. That the implementation of the SEEA requires strategic planning and the establishment of appropriate institutional mechanisms and arrangements for the ongoing compilation of accounts and the supporting environment and economic statistics. In this, the national statistical office has an important role to play.

7. That the implementation of the SEEA can be linked to many different international initiatives, both statistical and policy related. Implementation strategies should seek synergies between these initiatives and any relevant national initiatives.

8. That successful implementation will require development and testing, and improvements in the accounts will be generated through their dissemination (possibly in preliminary form) and ongoing discussion with users and source data providers.

# 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 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 across countries as endorsed by the Statistical Commission. Because of (i) the variety of environmental and economic situations faced by countries; (ii) differences in the availability of information and the strength of national statistical systems, and (iii) the diversity of institutional arrangements and mechanisms; 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 and the management of related information sources. It is important that these managers are aware of the full scope of implementation requirements beyond purely technical and data considerations.

1.6     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. These agencies also have a particular role in articulating the specific needs and priorities for accounts and related indicators.

1.7     In general, the SEEA Implementation Guide considers the situation in which a country has limited or no experience in the compilation of SEEA based environmental-economic

accounts and is seeking to establish an ongoing program of work in this area. At the same time, many of the messages in this guide are likely to be relevant to countries seeking to improve the co-ordination and availability of environmental-economic data (such as data on natural resources, water, land use and environmental activities) to answer cross-cutting policy questions. The organization of such information is a fundamental pre-cursor to the compilation of SEEA based accounts and hence such ambitions should be considered jointly with SEEA implementation efforts.

1.8     Also, there are an increasing number of countries with established or growing environmental-economic accounting programs. While some aspects described in the SEEA Implementation Guide may have already been achieved by these countries, it will generally be relevant to consider the various implementation phases in the light of country experience. In that regard, the guide may provide a template for assessment and review. Also, given the global breadth of the implementation program it is likely that experts from those countries with established environmental-economic accounts will be involved in implementation in other countries and an appreciation of the general approach that is recommended here would be beneficial.
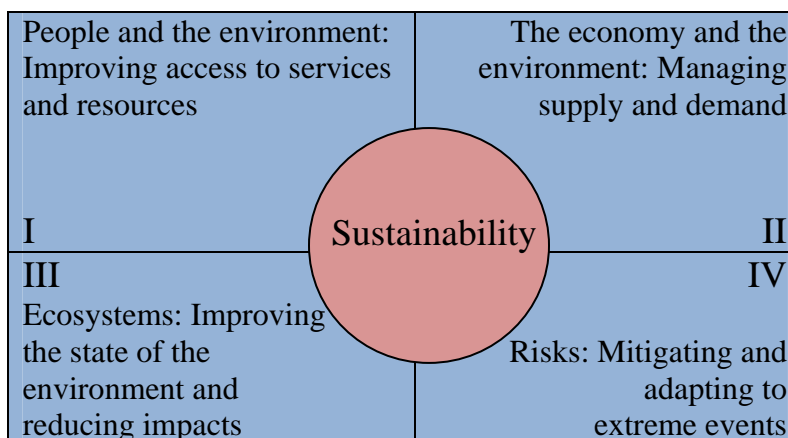
## 1.2 Motivation for implementation of the SEEA

1.9     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.

1.10    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.

1.11    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.

1.12    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.

1.13    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.

1.14    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.

1.15    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.

1.16    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.

1.17    Finally, countries may be seeking to develop so-called State of Environment reports which provide national level assessments of a country's environment. The SEEA provides a measurement framework that may be applicable in organising the relevant information.

1.18    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.

1.19 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**

| People and the environment: Improving access to services and resources | The economy and the environment: Managing supply and demand |
| --- | --- |
| I | II |
| III | IV |
| Ecosystems: Improving the state of the environment and reducing impacts | Risks: Mitigating and adapting to extreme events |

Sustainability

1.20 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.

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

*What is environmental-economic accounting?*

1.21 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 Rio de Janeiro 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.

1.22 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]

1.23    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]

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

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

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

   iii.    Integrating 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) with flows of products (e.g. fuel, steel, food)

   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.

*The scope of environmental-economic accounting*

1.25    Environmental-economic accounting 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.

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[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.

1.26    While ecosystem accounting is an important, albeit new, component of the SEEA, this implementation guide does not specifically cover the testing and development of ecosystem accounting in countries. At the same time, many of the considerations around implementation of the accounts of the SEEA Central Framework will be relevant in the testing and development of ecosystem accounting at the national level.

1.27    Environmental-economic accounting encompasses the more commonly referred to field of natural capital accounting. Although its scope is not usually defined specifically, natural capital accounting generally includes accounting for physical and monetary stocks of environmental assets (including natural resources) as described in the SEEA Central Framework and accounting for ecosystems.

1.28    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*

1.29    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.

1.30    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.

1.31    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,

iii.  links and organises a wide variety of basic data and statistics,

iv.  enables the comparison of different activities and sectors (e.g. across agriculture and tourism) and

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

      a. the total monetary wealth of mineral and energy resources;

      b. the greenhouse gas intensity of economic activities;

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

1.32  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.

1.33  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.

1.34  SEEA can provide a very detailed set of data within an integrated structure if the requisite source data are 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 in efficiency, productivity and decoupling (e.g. water use and energy use in mining relative to their value added). 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*

1.35    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.

1.36    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.

1.37    Given the more generic nature of the SEEA Implementation Guide, 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. 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. They are not compilation guides per se and it may well be relevant for countries, as they work through the implementation and compilation process, to generate a country specific compilation guides. (See Annex 4 for more details concerning SEEA Technical Notes.)

1.38    An important aspect of the SEEA Implementation Guide is the diagnostic tool described in Chapter 4 and Annex 2. The diagnostic tool is intended to be used to lead relevant parties within a country through a discussion of the implementation process and required steps, including determining priority accounts, and identifying relevant constraints and opportunities.

*Structure of the SEEA Implementation Guide*

1.39    The SEEA Implementation Guide is a relatively short document comprising four chapters and a number of annexes. Chapter 1 provides background and context to environmental-economic accounting and the development of the SEEA Central

Framework as an international statistical standard, and also a description of the intent of the SEEA Implementation Guide itself.

1.40   Chapter 2 provides a brief description of the global implementation strategy of the SEEA, including the connections to many other international policy and information related initiatives.

1.41   Chapter 3 provides an overview of the suggested approach to implementation at the country level. The approach comprises four phases: (i) strategic planning, (ii) building mechanisms for implementation, (iii) compiling and disseminating accounts, and (iv) strengthening national statistical systems.

1.42   Chapter 4 provides details on the types of issues that need to be covered in undertaking assessments and constructing plans for the implementation of SEEA. The chapter is structured following the logic of the diagnostic tool (presented in Annex II) which is a short template that may be used for structuring discussions with relevant stakeholders.

# 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.

## 2.2 Current situation with regard to SEEA implementation

Proposal to incorporate results from 2013 survey of national practices and compare to earlier surveys – when complete.

## 2.3 A regional approach to implementation

To be drafted by UNSD. (Could include discussion of ECLAC strategy for SEEA implementation in Latin America.)

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[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 (not only environmental or economic data) 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.

2.4     The first six initiatives are predominantly statistical initiatives aimed at improving the quality of information from national statistical systems. The remaining four initiatives relate to varying policy drivers in the environmental-economic space, at the national, international and corporate levels. 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.

2.5     2008 SNA 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.

2.6     Framework for the Development of Environment Statistics (FDES): In 2013 the UNSC endorsed the revised FDES and work is underway to support countries in improving and strengthening their environment 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.

2.7     European Union Strategy for Environmental Accounts: In 2012 legislation was adopted through the EU requiring the compilation of certain environmental-economic accounts (based on the SEEA framework) 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     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)

2.10    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)

2.11    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.

2.12    OECD Green Growth initiative: This broad OECD policy project incorporates substantial measurement and assessment across many areas of the environmental-economic relationship and, in this context, the SEEA has been identified as the key measurement framework for the standardization of relevant data, the definition of indicators and the basis for reporting.

2.13    Projects aimed at the measurement of ecosystems, biodiversity, and ecosystem services: In the wake of the Millennium Ecosystem Assessment in 2005 there have been an increasing number of initiatives aimed at quantifying the relationship between ecosystems and economic and social activity. A particular initiative of this type is TEEB – The Economics of Ecosystem and Biodiversity – initiated in 2009. In addition SEEA has been linked to varying degrees to projects such as the Aichi Target 2 of the Convention on Biological Diversity, the recently established Inter-governmental Platform on Biodiversity and Ecosystem Services (IPBES) and UNEP's ProEcoServ project..

2.14    Corporate initiatives: In addition to initiative targeting information at the national and international level, there are an increasing number of initiatives aimed at improving the incorporation of environmental information into corporate decision making. Among these initiatives is the Natural Capital Declaration – a Work Bank sponsored project launched at the Rio +20 summit in 2012 – that has brought together well over 50 countries and 50 corporations signing on to advance natural capital accounting as part of the broader sustainable development agenda. Although SEEA has not been designed for reporting at a corporate level, many of the concepts are relevant and are likely to be applicable.

# 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    It is assumed in the following overview that the overall ambition is to establish an ongoing program of compiling SEEA based accounts and supporting data that may be increased in scope over time. If the ambition is to compile a single account for a single year, then it is likely that the institutional arrangements can be managed in a more ad hoc fashion. However, it should be recognized that the benefits of one-off, single module, implementation are distinctly limited. Indeed, the increasing recognition of environmental issues within economic and other policy discussions over the past 20-30 years has been unsupported by the many one-off environmental accounting and related 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, SEEA implementation 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. Although it is recognized that wide awareness of the SEEA is an important initial step ahead of implementation, this guide will provide only a few materials relevant for "making the case". It is likely that other materials – for example various briefing notes on the SEEA[4] – will be more important materials for the purpose of raising awareness of the potential benefits 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

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

      i. Strategic planning

      ii. Building mechanisms for implementation

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[4] For example, see *The SEEA: Measurement Framework in Support of Sustainable Development and Green Economy Policy*. Available at http://unstats.un.org/unsd/envaccounting/Brochure.pdf

iii. Compiling and disseminating accounts

iv. Strengthening national statistical systems

3.7 The following description is based on a country starting implementation without any existing SEEA based accounting program. However, 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 environment and economic statistics should be taken into consideration.

3.8 A particular consideration in this respect is the level of development of the national statistical system as a whole. In general, implementation of the SEEA will not be possible without the involvement of a range of government and related agencies that hold and manage different data sets. Establishing the arrangements for these data to be organized and shared in the context of a national statistical system is thus essential. In addition, developing and applying statistical tools and capacity (such as establishing a central business register and developing skills in surveys and classifications) will be important in supporting national statistical systems. The extent to which these aspects of national statistical systems are in place will affect the way in which SEEA implementation should be taken forward.

3.9 Another key factor that will impact on the nature of SEEA implementation is the level of development of a country's economic statistics and national accounts. With well-established economic statistics underlying a range of areas of national accounts it is likely that implementation of SEEA accounts can be achieved in more straightforward fashion by building on systems and experience already gained in national accounting.

3.10 Where experience and the level of national accounting is more limited, it may be necessary to improve the underlying economic statistics in order to gain the full benefits of SEEA implementation. In this regard, for many countries, combining projects on the implementation of SEEA and improvement in SNA may be a useful way forward.

3.11 In addition to national accounts and economic statistics, the level of development of a country's environment statistics is equally important. Where the experience and development of environment statistics is not well advanced, it is important to develop programmes through which environment statistics can be firmly anchored in national statistical systems. Programmes to implement the SEEA may be an important catalyst for this activity. Ultimately, successful long-term implementation of SEEA is dependent upon soundly based environment and economic statistics programmes.

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

3.13 There are many potential areas and themes that can be the target of SEEA implementation. Often, this broad scope can lead to fears of complexity, or confusion over whether implementation should be considered to relate to compiling all possible accounts or to just one or two modules.

3.14    There are no recommendations concerning which areas or themes should be of highest priority for initial implementation since the situations vary tremendously between countries. However, it is recommended that only a limited number of accounts or modules be considered in early phases of implementation. This is so for a number of reasons.

- First, each account or module 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.

- Second, each theme and set of related accounts will require the use or development of technical accounting capacity. This capacity is generally quite limited at the commencement of implementation. Thus, in the initial stages of implementation it is likely to be most useful to direct available resources to a small number of target accounts.

- 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 initial 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.

3.15    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

3.16    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.

3.17    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. Overall, strategic planning is central to building and maintaining the high-level of commitment to SEEA implementation that will be required for success.

3.18    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*

3.19    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. (Note that this core group may also form the basis for the proposed senior board or group – see sect. 3.4.)

3.20    As a whole, the group's members should be familiar with national sustainability, economic and environmental policies, national accounts and environment 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. Ideally, the sponsoring agency should play a co-ordinating and integrating role across government, have the capacity to access and mobilise required resources when needed, and demand the completion of relevant implementation and compilation work.

3.21    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). While statistical agency may have limited expertise in environmental information itself, they can bring essential skills of managing and integrating national data sets, applying standards and classifications, and providing independently authorised official statistics. (It is recognised that there may be a range of other relevant institutional "solutions" depending on the circumstances of the country.)

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

3.23    Special mention must be made of environmental ministries and associated agencies. These ministries and agencies will often be key users and supporters of environmental-

economic accounting as a means of mainstreaming environmental information into integrated decision making processes. As well, they will often hold a number of important databases for SEEA purposes, noting that these databases may well be developed and maintained quite independently. Thus from both a user and producer perspective of SEEA implementation environmental ministries and agencies should be closely involved.

3.24    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.

3.25    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.

3.26    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 or national development plans.


*Step 2: Complete a national assessment report*

3.27    As its initial focus, the core group should complete an initial 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, targets and indicators

    iii.   Data sources

    iv.   Existing accounts and previous studies

     v.    Constraints

    vi.   Opportunities

   vii.   Recommendations for priority accounts and next steps

3.28    It is likely that preparation of an assessment report will take some iteration and ongoing discussion between relevant key users and producers. Thus, it may be that some areas of the report are covered in varying degrees of detail. The aim should be to prepare sufficient information to determine appropriate courses of action. Much will be gained by starting the assessment process and "learning by doing". Benefits are also likely to be gained from sharing experiences across countries in similar situations.

3.29    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.

3.30 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 organizations and donors to support implementation following a variety of approaches within the broad framework outlined here.

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

3.32 The preparation of a 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 takes place on a regular basis.

### 3.4 Phase 2: Building mechanisms for implementation

3.33 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 overseeing and facilitating the development of a national environmental-economic accounts programme of work. This group should be accountable for the progress of work and should maintain and develop the strategic plan and associated recommendations. Wherever possible and appropriate, it is suggested that the group be established and work within existing policy development and legislative processes.

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

3.35 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 conjunction with developing a vision statement for the implementation of the SNA and/or the implementation of an environment statistics program.

3.36    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, an initial draft 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.

3.37    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**

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

| | performance<br>**The upgrading of statistical infrastructure**<br>   • SEEA compliance<br>   • Strengthening the use of standard classifications, registers and frames | sector<br>• Surveys of household environmental activities (energy and water consumption, recycling, etc.)<br>• Surveys of waste production and management<br>• Linkages to water and air emissions<br>• Administrative data |
|---|---|---|

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, attainable, 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.


3.38　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 an implementation team for water accounts would have a somewhat different membership from an 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.

3.39　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.

3.40　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. For this purpose it may be relevant to use available tools

for the assessment of economic statistics and environmental statistics (for example, the environment statistics self-assessment tool that uses the basic set contained in the Framework for the Development of Environment Statistics (FDES).) 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.)

3.41    By involving all relevant stakeholders, 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 agencies 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.

3.42    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.

3.43    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.

3.44    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.

3.45    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 may be advantageous to use existing mechanisms to the extent possible and appropriate. At the same time, to the extent that existing mechanisms have not engaged with issues surrounding the relationship between the environment and economic activity, new mechanisms may need to be established.

## 3.5 Phase 3: Compiling and disseminating accounts

*Introduction*

3.46    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. Experience of countries with well-established environmental-economic accounting programs suggests that the greatest advances can be made in this phase through "learning by doing", i.e. attempting compilation, building skills and experience, and improving the range and quality of data over time.

3.47    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.

3.48    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 be useful in targeting initial assessments of data sources.

3.49    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*

3.50    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.

3.51    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.

3.52   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. There may be important benefits from the confrontation of physical and monetary data in the SEEA framework in terms of improved data quality of national accounts, environment statistics, and other supporting statistics.

3.53   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.

3.54   As noted, the ambition in implementation of the SEEA is to set up an ongoing compilation and dissemination program. As part of this longer-term process, extensions to the initial work program could include:

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

- Establishing the nature and frequency of the accounts and related key indicators 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,

- Establishing a dissemination process including communicating key findings and making datasets broadly available, and

- Undertaking risk assessments of the ongoing compilation of accounts particularly with respect to the availability of critical supporting statistics.

3.55   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*

3.56    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.

3.57    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.

3.58    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.

3.59    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

3.60    Once the initial 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.

3.61    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.

3.62    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.

3.63    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 broader public, including the media and non-government organisations.

3.64    Based on the experience of developing the initial accounts for a particular theme, it may be feasible to consider the development of accounts for other themes. In this situation, the processes described in this guide can be revisited to establish priorities for these accounts. This would benefit from good documentation on the experience, lessons learned and best practices already established.

*Improving the broader national statistical system*

3.65    The development of an ongoing programme of work on the SEEA is likely to benefit substantially from work that may be undertaken to develop a country's national statistical systems. Thus improvements in the operations for surveys, the development and improvement of business registers, efforts to improve co-ordination between agencies, and work to apply common classifications across multiple data sources, are all good examples of national statistical system initiatives providing benefits to SEEA implementation.

*Training, guidance manual and handbooks*

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

3.67    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.

3.68    Further guidance from the international community is expected to include a SEEA communications strategy and SEEA Technical Notes. As well there will be meetings of the London Group to facilitate the exchange of experiences in compilation and to guide the advancement of the research agenda of the SEEA.

3.69    Because of the strong linkages between the SEEA and the SNA, the revised manuals for SNA implementation will also benefit those implementing the SEEA. Also, guidance documents for supporting the implementation of the FDES will be relevant in the organisation of environment statistics for accounting purposes.

*Co-ordination, monitoring and reporting*

3.70   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.

3.71   To monitor national progress in implementation, the international statistical 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.

3.72   The development of required international reporting of information from SEEA accounts is not an immediate priority. However, it is expected that, over time as implementation advances across countries, discussion on the nature and content of international reporting will occur. It is noted that for countries of the European Union legislation is already in place for certain modules of the SEEA requiring the compilation of accounts. Also, because the SEEA is being considered in the context of developing monitoring and evaluation frameworks for various international initiatives (e.g. OECD Green Growth and within the Post-2015 development agenda) it may be that reporting of SEEA based indicators will advance in the short to medium term.

*Cooperation with the research community*

3.73   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.

3.74   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.

3.75   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. For success in this area, it should be recognised that establishing long term relationships with the research community should be an active area of work and one that is potentially

formalised through agreements and institutional structures (such as joint research committees).

*Advocacy and outreach*

3.76    Advocacy aims to support an ongoing dialogue among statistical producers, 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.

3.77    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: Supporting discussions and the 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. It provides details and guidance to support discussion on implementation at the national level and the subsequent preparation of reports and plans. In doing so, the chapter provides more context to the issues that should be covered.

4.2 The material in this chapter has been organized in such a way that it can support discussions between relevant stakeholders using the diagnostic tool. The diagnostic tool itself is presented in Annex II. It is a stand-alone document that summarizes key aspects and messages of SEEA implementation and then works through eight areas of discussion relevant to SEEA implementation providing questions for discussions and space for notes.

4.3 The eight areas for discussion are:

1. Stakeholders and institutional arrangements
2. Policy priorities
3. Information and knowledge
4. Progress
5. Constraints
6. Opportunities
7. Priority accounts
8. Recommendations / next steps

4.4 Two key outputs of the planning process that were identified in chapter 3 were an assessment report and an implementation plan. The diagnostic tool should be of direct relevance in the completion of assessment reports since the types of areas for discussion cover the initial areas that must be addressed in getting a broad understanding of the potential for SEEA to be implemented within a country. The final section of the chapter provides a template for an initial assessment report.

## 4.2 Stakeholders and institutional arrangements

4.5 This area concerns 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-economic accounts and supporting environment and economic statistics. 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.

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

4.7 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 | | | | | |
| Stakeholder category | 1 | 2 | 3 | 4 | 5 | 6 |
| | 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. This items also considers any potential issues around aligning IT systems to operate across agencies in terms of hardware, software or other considerations.

> 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.

4.8    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

4.9    This area involves an initial assessment by the relevant stakeholders of policy issues that could be informed through implementation of environmental-economic accounting. The potential policy issues can be divided into the four quadrants (described in Chapter 1) linking SEEA to policies for the environment, natural resources and economic development. The involvement of policy experts and senior ministerial officers is likely to be relevant in reaching firm conclusions regarding the relative priority of different policies.

4.10   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.

4.11   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**

| SEEA and sustainable development policy quadrant | Column | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| | 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 Information and knowledge

4.12    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.

4.13    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.

4.14    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.

4.15 A possible structure of a Statistical System Information Fact Sheet is presented 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 | | | SEEA | |
| | | | FDES | |
| | | | STATCAP (World Bank) | |
| | | | Global Agricultural Statistics Strategy (FAO) | |
| 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 | OECD | Country reports | | |
| 47 | UN DESA, UNCSD, UNDP | Relevant documents | Rio+20 Synthesis of National Reports for Rio+20 | |
| 48 | | | 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 or guidelines in use (e.g., 2008 SNA; SEEA-2003; ISIC Rev 4., etc.) and links to further information.

24-48     Provide names and links to relevant country-level reports submitted to the international agencies listed.

4.16     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.

4.17     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.

4.18     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 compared to estimates of other emissions. Applicable country-specific data sources should be added to the list in Table 3.

4.19     It is necessary to recognise that the initial assessment of data sources is aimed to get a general idea as to what data are available within a country and may be useful for implementing SEEA. At this initial stage a complete assessment of the suitability of data for accounting purposes need not be completed. In due course it will be necessary to undertake a more detailed assessment. It is at this later point that issues of fitness for purpose may arise. Thus, for example, data may be available and be of high-quality, but if definitions are not aligned with the required SEEA measurement boundaries then adjustment may be required for accounting purposes. Such adjustment does not imply

that the source data are of poor quality, only that they may not be completely fit for the purposes of accounting.

**Table 4.4 Initial assessment of data sources**

| | | Column | | | |
|---|---|---|---|---|---|
| | | **1** | **2** | **3** | **4** |
| **Row** | **Data source** | **Status** | **Responsible organizations** | **Accessibility** | **Statistical standard** |
| **Environment statistics (generally in physical terms)** | | | | | • |
| 1 | Emissions inventory (Pollutant release and transfer registry), Greenhouse gas inventory | | | | • OECD PRTR <br> • Industry classification <br> • IPCC |
| 2 | Water statistics | | | | IRWS |
| 3 | Energy statistics | | | | IRES |
| 4 | Waste statistics | | | | |
| 5 | Natural resource statistics | | | | |
| 6 | Land and geospatial statistics | | | | |
| 7 | Other environment statistics | | | | • UN FDES 1984 <br> • UN FDES 2013 |
| **Economic statistics (generally in monetary terms)** | | | | | • |
| 8 | National accounts | | | | • SNA 1993 <br> • SNA 2008 |
| 9 | International trade statistics | | | | • SITC <br> • HS |
| 10 | Business statistics | | | | • Industry classification: (ISIC rev), |
| 11 | Government finance statistics | | | | GFS |
| 12 | Other economic data (e.g., administrative data, specific household or business surveys) | | | | |
| **Other statistics** | | | | | |
| 13 | e.g. Population and Census 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 (Note that the groupings of different statistics are a guide only and may overlap. They are intended to assist conversation and do not represent a classification of data sources).

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 and hazardous wastes.
5. **Natural resource statistics** include statistics on physical quantities of various natural resources including mineral and energy resources, timber resources, aquatic (incl fish) resources and soil resources.
6. **Land and geospatial statistics** include statistics on land use and land cover and may extend to other information that has been organised following GIS techniques
7. **Other environment 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.
8. **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.
9. **International trade statistics** are used to identify the physical flows of goods (such as fuels, minerals and forestry products) between countries.
10. **Business statistics** are a source of information on industrial consumption as well as expenditures on environmental protection.
11. **Government finance statistics** can be used to better assess the payments to and from government (taxes and subsidies) for environmental purposes.
12. **Other economic statistics** 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, censuses 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).
13. **Other statistics** includes particularly population and employment data (including census data) and any other data relevant for the analysis of resource and development issues not included above.

## 4.5 Existing accounts and previous studies

4.20    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, non-government organisations or research centres.

4.21    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.

4.22    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.

4.23    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

4.24   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.

4.25   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.

4.26   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%)

4.27   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%)

4.28 The results suggest that, from the perspective of producers of accounts and statistics, resource limitations are among 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.

4.29 More broadly, institutional coordination and the lack of interest by users are substantial barriers at all stages. Indeed, the major factor in the successful implementation of SEEA is likely to be strong national commitment to the accounts and supporting statistics. Considering all of these factors at an early state of strategic planning should help ensure that the implementation and eventual ongoing production of environmental accounts will be as free as possible from these limiting factors.

## 4.7 Opportunities

4.30 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.

4.31 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.

4.32 The available opportunities within a country are unlikely to be standard in nature. In particular they will vary depending on the timing of discussions, the nature of the policy and political cycle in a country, the stage of economic, social and statistical development, and other factors. Finding opportunities is largely a function of identifying a relevant and diverse group of stakeholders and also having a strong, national commitment to the implementation of SEEA and similar measurement initiatives.

## 4.8 Recommendations for priority accounts

4.33    This area guides the user through a process of assessing the priority of all potential SEEA accounts and the feasibility of accounts selected as high priority.

4.34    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.

4.35    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 |  |  |  |  |
| 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 |  |  |  |  |
| **Monetary flow accounts** |  |  |  |  |
| Environmental protection expenditure accounts (EPEA) |  |  |  |  |
| Resource use and management accounts (RUMEA) |  |  |  |  |
| 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 |  |  |  |  |
| Costs related to termination of fixed assets |  |  |  |  |
| **Experimental, extensions and applications** |  |  |  |  |
| Ecosystem condition and extent |  |  |  |  |
| Physical flows of ecosystem services |  |  |  |  |
| Carbon stocks |  |  |  |  |
| Biodiversity |  |  |  |  |

Instructions by column:

1. **Status:** Transcribe the **Status** rating for each account from Table 4.5.
2. **Highest policy priority addressed:** From Table 4.2, 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.

4.36    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 4.4, Column 3.
2.  **Data quality and standards:** This is the average rating of the status of the data sources from Table 4.4, 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 4.1.
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 4.1.
5.  **Capacity:** This is the average capacity of stakeholders (providers and users) taken from Column 4 in Table 4.1. 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 Next steps

4.37    The description of next steps in the concluding sections of either an assessment report or an 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.

4.38    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 and require 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

4.39    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 policy overview
2. Policy applications of environmental accounts and the role of SEEA
    a. SEEA principles and components
    b. Steps to SEEA Implementation
3. Results of initial discussions using the SEEA Diagnostic Tool
    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
5. Next steps

       a.   Meeting with stakeholders and experts

       b.   Establishing an implementation team

       c.   Determining specific goals, required activities, costs and sources of funding

# Annexes

## Annex I. Possible sequence of implementation events

This annex provides some suggestions as to how a SEEA implementation process might be started within a country. There is no ideal or recommended approach and each country will need to consider the different options and issues outlined through the SEEA Implementation Guide and tailor them to their circumstance.

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. via the 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.

Assuming that a broad strategy is in place and a suitable degree of commitment has been found, 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 a particular theme or area.
    b. Secure funding to produce a prototype account within 2 years.
    c. Establish a team of statistical and subject-matter experts to produce a prototype account within 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 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 (as appropriate) to confront available data
   b. Revise the classifications used to be compatible with international classifications (ISIC) and concepts.
   c. Advance the development and improvement of business registers to serve as a common basis for the organisation and collection of information across multiple agencies.
   d. Fill data gaps for example by initiating a survey of environmental protection expenditures in business; and reviewing government finance statistics to determine if these are sufficient to develop estimates of government expenditures on environmental protection.

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. Identifying the stakeholders including producers and users of statistics but also other groups that can benefit from improved information,

2. Documenting national priorities for natural resource, development and environmental policies,

3. Identifying key national data sources that can be used for environmental accounting,

4. Understanding what progress has already been made in environmental accounting,

5. Assessing the constraints to understand the feasibility of specific SEEA accounts,

6. Identifying related statistical development activities that could benefit environmental accounting initiatives (and vice versa), and

7. Determining the priorities for action to develop selected SEEA accounts.

It has been designed for use in a one – two 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 detailed discussions and further investigation. It should thus be seen as providing a starting point for engagement and collaboration.

**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[5]). This is a coherent and integrated measurement framework for linking environment and economic statistics and applying them to decision-making on environmental, natural resource and development issues.

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 economic and environment statistics, and can be linked to information on population and employment, it

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

provides a broad measurement framework to understand the longer-term effects of development initiatives.

SEEA adheres to the principles of the System of National Accounts (SNA), and expands its scope by:

- providing standard terminology, definitions and classifications for environmental-economic accounting,

- including measures of the physical stocks of natural capital and their values,

- integrating physical measures of flows of natural inputs and residuals (land, metals and minerals, timber, energy, water, fish, air emissions, water emissions, solid waste) with flows of products, and

- linking these to economic activities (producers and consumers).

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,

3. Activities across sectors are well coordinated,

4. There is a clear use of the accounts,

5. Capacity (in terms of resources, knowledgable staff, and relevant systems) to compile accounts within the country is developed.

## Area 1: Stakeholders and institutional arrangements

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

*It is also important to describe policy development processes, interdepartmental mechanisms, strategies and plans in place to make natural resource, development and environment related decisions.*

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## Area 2: 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; 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 approach to determining the most important and systemic issues requiring consideration, particularly around natural resource, development and environment related issues? If so, summarize the approach and the current outcomes here.*
*If not, perhaps you could draft a statement here based on your understanding of your national development strategy.*

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## Area 3: Information and knowledge

*What are the main data sources related to the policy priorities and what is their availability?*

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)
- Natural resource statistics
- Land and geospatial statistics (incl land cover; land use statistics)
- Other Environment statistics (for example, 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 economic statistics (e.g., administrative data, specific household or business surveys)
- Other statistics (e.g. population census, employment data)

*Describe any key documents or research initiatives that are related to the priority sources identified. Provide as much detail as possible for example in terms of when data have been released, their frequency, data owner/producer.*

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## Area 4: Existing accounts and previous studies

Existing accounts
*Are any environmental-economic accounts already being produced? Have any been prototyped in the past? Consider the possibility of work having been completed in academic institutions.*
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)

- o Waste (physical)
  - o Environmental protection expenditure accounts (EPEA) (monetary)
  - o Resource use and management accounts (RUMEA) (monetary)
  - o Environmental goods and services sector (EGSS) (monetary)
  - o Environmentally-related payments to and by government (monetary)
- Asset accounts
  - o Mineral and energy resources (physical and monetary)
  - o Land cover (physical and monetary)
  - o Soil resources (physical)
  - o Timber resources (physical and monetary)
  - o Aquatic resources (fish and crustaceans) (physical and monetary)
  - o Water resources (physical)
- Experimental ecosystem accounts
  - o Extent and quality of specific ecosystems such as forests, wetlands, grasslands, coastal zones, etc. (physical)
  - o Physical flows of ecosystem services (physical)
  - o Carbon stocks (physical)
  - o Biodiversity (physical)

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## Area 5: Constraints

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).

Type of account:

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Constraints:

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## Area 6: Opportunities

What opportunities are there in terms of policy or measurement initiatives / projects that can be used to promote the SEEA or which SEEA implementation can take advantage of?

Include a description of any national development planning processes that may be an opportunity for promoting SEEA and seeking resources.

Identify related international statistical initiatives such as support for the development of the NSS (e.g. the development of National Statistics Development Strategies, SNA implementation, FDES, FAO Agricultural Statistics program, etc).

Identify related international policy initiatives that may provide additional support for the task of implementation of SEEA (e.g. Post-2015 development agenda, Convention on Biological Diversity)

Consider also opportunities for highlighting work / potential at national and international forums and the potential to share resources across countries.

Account:

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Opportunity:

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Account:

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Opportunity:

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## Area 7: Recommendations for priority accounts

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

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## Area 8: Next steps

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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 |
|---|---|
| **Environment statistics** ||
| Emissions inventory (Pollutant release and transfer registry) | • Air emissions<br>• Water emissions |
| Water statistics | • Water emissions<br>• Water PSUT<br>• Water stock |
| Energy statistics | • Air emissions<br>• Energy PSUT<br>• Mineral and energy assets |
| Waste statistics | • Waste accounts |
| Other environment statistics | • Land cover<br>• Forest |
| **Economic statistics** ||
| National accounts | • Energy PSUT<br>• Mineral and energy assets<br>• Environmental protection expenditures<br>• Environmental taxes and subsidies<br>• Environmental goods and services sector |
| International trade statistics | • Material flow accounts |
| Business statistics | • Environmental protection expenditures<br>• Environmental goods and services sector |
| Government finance statistics | • Environmental protection expenditures<br>• 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.

*3. Core accounts*

Two elements are relevant here. The first is presenting the relevant standard accounts from the SEEA CF but at the appropriate level of industry, product and asset detail. 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

To be included pending development of core tables for various themes / topics

# References

==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
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World Bank WAVES Global Partnership: http://www.wavespartnership.org/waves/

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