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**DRAFT ANNOTATED OUTLINE OF VOLUME 1 OF THE REVISED SYSTEM
OF INTEGRATED ENVIRONMENTAL AND ECONOMIC ACCOUNTING
(SEEA)**

Paper prepared by Peter Comisari

(for discussion)

DRAFT ANNOTATED OUTLINE OF VOLUME 1 OF THE REVISED SYSTEM OF INTEGRATED ENVIRONMENTAL AND ECONOMIC ACCOUNTING (SEEA)

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Interim editor, SEEA2003 revision

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EXECUTIVE SUMMARY

1. The London Group on environmental accounting is moving to quickly resolve outstanding matters on the list of issues related to the revision of the SEEA2003. Following discussion at the fortieth session of the UN Statistical Commission in February 2009 on the project management framework for the revision of the SEEA, it is timely to propose an outline of the structure and content of Volume 1 of the revised SEEA.
2. This paper is presented to UNCEEA as a report of progress in developing the structure of Volume 1 of the revised SEEA and as a broad indication of what individual chapters will cover. Among UNCEEA's broad objectives of mainstreaming environmental-economic accounting and of elevating and promoting the SEEA, this paper relates to the stated work program function of 'furthering methodologies'—in particular, to identifying and prioritising issues that need to be addressed, to establishing mechanisms to address those issues and to monitoring progress made.
3. The draft annotated outline is a work-in-progress and serves as a basis for the editor and London Group to further develop and refine the content and structure of the revised SEEA. UNCEEA and the London Group have discussed a number of papers related to the structure and nature of the revised SEEA—this paper substantially reflects official decisions and thinking on the revision of the SEEA2003. In particular, that the fundamental principles and approach of the SEEA2003 reflect sound thinking and will be maintained into the revised SEEA. The proposed structure of the revised SEEA broadly follows that of the SEEA2003, with flows appearing before stocks and with the full sequence environmentally-adjusted monetary flow accounts developed toward the end of the document. Nevertheless, the revised SEEA will provide singular recommendations on required accounting treatments, rather than multiple possible treatments. It will also remove country examples, the use of boxes and discussion of implementation and compilation issues.
4. This paper has two parts. The paper itself lists chapters proposed for the revised SEEA, along with a brief description of chapter content. The second part of the paper takes the form of a series of attachments providing greater detail. Attachment 1 provides a more detailed breakdown of the sections/topics proposed for inclusion in each of the chapters. Attachment 2 suggests a list of accounts and tables for inclusion in the revised SEEA. These attachments provide a more technical presentation, perhaps of greater interest and use to the SEEA editor and to the London Group as a basis for developing the work program and chapter text for the revised SEEA. Finally, Attachment 3 provides a preliminary overview of inclusions in Volume 2 (Non-standard Accounts) and Volume 3 (Applications) of the revised SEEA.

SUGGESTED STRUCTURE AND CONTENT FOR VOLUME 1 OF THE REVISED SEEA

Chapter summary: Volume 1 of the revised SEEA

Chapter 1	Introduction to the SEEA
Chapter 2	Accounting structure and concepts of the SEEA Volume 1
Chapter 3	Physical flow accounts
Chapter 4	Accounts for environmentally-related economic activities, products and other transactions
Chapter 5	Hybrid flow accounts
Chapter 6	Asset accounts and the valuation of natural resource assets
Chapter 7	The full sequence of environmentally-adjusted monetary flow accounts

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Relationship between the SEEA and the 2008 SNA

List of indicators in the SEEA Volume 1

Classifications

Products, including waste

Industries

Land cover, land use, land function

Functional classifications

List of accounts and tables in SEEA Volume 1

Chapter 1 Introduction to the SEEA

5. Chapter 1 commences with an overview of the three volume presentation of the revised SEEA, including a brief description of the content and purpose of each volume and why this approach has been adopted. An overview of each chapter in Volume 1 of the revised SEEA is provided here.

6. This chapter provides an opening comment on the use of the SEEA as a sustainable development information system. Country responses to the document UNCEEA/1/5 *Strategic Questions on Environmental-Economic Accounting* reveal a widespread view that natural capital occupies a central place in environmental-economic accounting and that maintaining natural capital is the goal function of the SEEA. But this chapter will clarify that the SEEA—like the System of National Accounts (SNA)—is nevertheless a multi-purpose information system that does not follow any particular school of thought. Rather, the SEEA can be used as a basis for monitoring and reporting in support of various policy frameworks, including sustainable development, climate change and other more specific frameworks (such as, SCP, integrated resource management and so on). These elements will be developed more fully in Volume 3 of the revised SEEA.

7. It is considered important to state in this chapter the key features of the SEEA. In particular, its relationship to other important statistical frameworks (especially the SNA) and the power of the SEEA framework in understanding and explaining the interaction of the economy and the environment.

Chapter 2 Accounting structure and concepts of the SEEA Volume 1

8. It is proposed that chapter 2 contain three elements to convey an understanding of the type of information produced using the SEEA and the basic concepts and classifications underpinning this information.

9. Firstly, chapter 2 needs to introduce the key concepts and classifications used throughout the SEEA in order to provide the reader with an appreciation of the basic building blocks underpinning various SEEA accounts. Secondly, it should describe the sequence of accounts and tables of the revised SEEA (it will also refer to the annexe containing a full list of accounts and tables). Finally, chapter 2 needs to provide a descriptive overview of the various monetary, physical and hybrid accounts relating to the types flows and assets in scope of the revised SEEA.

10. In short, chapter 2 provides an overview of the whole SEEA accounting system. This is an important feature when we acknowledge that few readers of a statistical standard will read the document from cover to cover. For those with a basic familiarity with the SEEA, this chapter also provides a concise synoptic view of the interconnections between the various accounts and tables described throughout the subsequent chapters.

Chapter 3 Physical flow accounts

11. This is the main chapter dealing with the compilation of physical flow accounts in the revised SEEA. As in the SEEA2003, physical flow accounts and hybrid flow accounts are addressed in stand-alone chapters (chapters 3 and 4, respectively, of the SEEA2003). Similarly, following the SEEA2003, it is not proposed to create a stand-alone chapter providing comprehensive discussion of monetary flow accounts in the revised SEEA.

12. This chapter shows how the use of the environment can be measured and assessed in physical terms but using accounting concepts and classifications consistent with the economic accounting structure of the SNA. It also sets out general accounting rules relating to physical flows. This chapter then provides a separate discussion for each of the main types of physical flows i.e. material, energy, water and emissions. Issues related to each particular type of physical flow are addressed in separate sections of this chapter i.e. issues related to classifications, supply and use of products, various aggregations and relevant bridging issues and accounts (for example, bridge tables for energy accounts to energy balances to IPCC).

Chapter 4 Accounts for environmentally-related economic activities, products and other transactions

13. London Group has proposed that the SEEA2003 chapters 5 (Accounting for economic activities and products related to the environment) and 6 (Accounting for other environmentally related transactions) be combined into one chapter in the revised SEEA.

14. This chapter addresses two main areas of interest. Firstly, it shows how expenses related to protecting the environment, as well as expenses related to managing natural resources, can be identified within SNA accounts. It also discusses statistical outputs related to the production of environmental goods and services (i.e. services related to environmental protection and resource management). The explicit identification of these expenses allows an assessment of the costs associated with public and private efforts to undertake environmental protection and resource management. Measuring the production of environmental goods and services allows us to assess the direct value of this type of activity to the economy (i.e. value added, employment etc.).

15. The second area of interest relates to the various economic and related tools increasingly being used to achieve environmental outcomes. Again, the SEEA is essentially drawing out transactions that are included in the SNA but not necessarily made explicit within SNA accounts. It includes taxes and subsidies with an environmental base. It also includes the treatment of quotas / licenses / permits to access natural resources or to emit to the environment.

16. Much of the accounting for environmentally-related economic activities, products and other transactions (including concepts, definitions and key classifications) in the revised SEEA will be based work delivered recently and which therefore reflects contemporary thinking. In particular, it utilises the European System of Environmental Goods and Services Accounts, the Classification of Environmental Protection Expenditure (CEPA) and the Classification of Resource Use and Management (CRUMA).

17. This chapter also describes the identification of redistributive effects of environmentally-related economic activities and products on key SNA aggregates.

18. Note that under the proposed chapter structure, discussion of monetary flows spans chapters 2 and 4. Chapter 2 introduces the standard monetary flow accounts of the SNA. Chapter 4 returns to address those monetary accounts designed to draw out environmentally-relevant details not provided in standard SNA accounts i.e. it adds the environmental goods and services industry, environmental protection expenditure accounts, natural resource management expenditure accounts and so on.

Chapter 5 Hybrid flow accounts

19. Hybrid flow accounts are a powerful analytical tool in reporting and understanding the interaction of the economy and the environment and are therefore a vitally important component of the set of SEEA accounts. The SEEA2003 (para 4.3) states emphatically that *“it is the bringing together of environmental accounts and economic accounts which is the motivation of this entire handbook”*. Hybrid accounts can take a number of different forms, including: a simple juxtaposition of monetary and physical supply and use for product(s) of interest; energy accounts showing associated emissions; or input-output based modelling of embedded resource use (or emissions) associated with economic activity.

20. The most appropriate placement of hybrid accounts within the revised SEEA is not immediately obvious. For example, among London Group members it has alternatively been suggested that hybrid accounts should sit in a chapter alongside physical flow accounts; that they be part of a chapter that brings together the full range of hybrid accounts and depletion-adjusted SNA accounts; or, as is the case in the SEEA2003, that they occupy a stand-alone chapter. To emphasise the importance of hybrid flow accounts in the SEEA framework, it is proposed to continue with a separate chapter devoted to these accounts.

Chapter 6 Asset accounts and the valuation of natural resource assets

21. This chapter examines natural resource assets in general and the measurement of levels and changes to levels for these assets—in both physical and monetary terms. The way we understand and measure natural resource assets is vitally important because in assessing whether economic activity is sustainable or not, it is the natural capital base that we are seeking to maintain over time.

22. The notion of a SEEA asset is described (including the criteria used to determine a SEEA asset) along with asset classifications used in the revised SEEA. This is compared to the SNA asset definition and relevant classifications.

23. This chapter also examines how these general SEEA accounting principles apply to various specific natural resource asset types. For each type of natural resource asset it therefore describes such things as: measurement units; relevant conversion factors; relevant classifications and frameworks; how to account for changes to asset levels; and issues unique to each asset type. Specific types of natural resource assets addressed include: land; mineral and energy resources; biological resources (both cultivated and non-cultivated); water and other resources.

24. Chapter 6 provides a full accounting for natural resource assets in monetary terms—including approaches to valuation of these assets, as well as an accounting for all changes between opening and closing balance sheet positions. It commences the discussion (carried forward in the next chapter) on resource rent, depletion and income. Techniques for measuring resource rent are outlined.

25. The chapter concludes with a section on measuring changes in net worth—in particular, the impact of various forms of asset change on measured net worth.

Chapter 7 Full sequence of environmentally-adjusted monetary flow accounts

26. This chapter outlines the sequence of SNA current and accumulation accounts and describes the various environmentally-related adjustments (principally depletion-related adjustments) applied to these accounts within the revised SEEA. Depletion-adjusted measures of production, income, saving and so on provide a more appropriate basis to account for the use of a country’s natural capital and therefore provide a more appropriate view of the sustainability of present levels and types of economic activity.

27. Chapter 7 further develops the accounting for changes to natural resource assets commenced in the previous chapter. In particular, it defines depletion and describes the range of assets subject to depletion. It contrasts the notion of depletion with degradation. It also discusses resource rent, income and depletion—their nature and their inter-relationships—for both non-renewable and renewable natural resources. It describes the treatment of mineral exploration and its relationship with (and implications for) treatment of discoveries of new mineral resources.

28. The case of shared ownership of a natural resource asset is examined and the required accounting treatment is described for both flow and stock accounts.

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Functional classifications

List of accounts and tables in SEEA Volume 1

ATTACHMENT 1

DRAFT ANNOTATED OUTLINE OF REVISED SEEA VOLUME 1: OVERVIEW OF PROPOSED STRUCTURE AND CONTENT

This draft annotated outline indicates a proposed structure for Volume 1 of the revised SEEA, the topics that need to be included and additional material that may be required. Annotations are provided in [square brackets].

Chapter 1 Introduction to the SEEA

1.1 Introduction and objectives of the chapter

1.2 Sustainability and the SEEA

1.2.1 Sustainable development and the SEEA [London Group agreed at its 11th meeting to outline policy relevance of the SEEA in Volume 1 and to further elaborate within Volume 3.]

1.3 Structure of the SEEA

1.3.1 Volumes 1, 2 and 3 of the SEEA—description and purpose

1.3.2 Chapter 2 Accounting structure and concepts of the SEEA Volume 1

1.3.3 Chapter 3 Physical flow accounts

1.3.4 Chapter 4 Accounts for environmentally-related economic activities, products and other transactions

1.3.5 Chapter 5 Hybrid flow accounts

1.3.6 Chapter 6 Asset accounts and the valuation of natural resource assets

1.3.7 Chapter 7 Full sequence of environmentally-adjusted monetary flow accounts

1.4 An overview of the SEEA accounting system

1.4.1 Physical and hybrid flow accounts

1.4.2 Monetary accounts and environmental transactions

1.4.3 Asset accounts in physical and monetary terms

1.4.4 Extending SNA aggregates to account for depletion and defensive expenditures

1.4.5 SEEA Volumes 1, 2 and 3

1.4.6 The SEEA and SEEA-W, SEEA-E, SEEA-F and SEEA-MFA

1.4.7 The SEEA and the 2008 SNA

1.5 Key features of the system

1.5.1 Linkages between the SEEA and other statistical frameworks, including the SNA

1.5.2 Relationship between the SEEA and 2008 SNA

1.5.3 The SEEA as a coordinating framework for statistics

1.5.4 Flexibility of implementation

1.5.5 The progression of the system

1.5.6 Comparing accounts in physical and monetary terms

1.5.7 Integration of the SEEA framework

1.6 Index

1.7 Glossary

1.8 Annexes

Classifications

Other annexes

Chapter 2 Accounting structure and concepts of the SEEA Volume 1

2.1 Introduction and objectives of the chapter

2.2 Key concepts and classifications of the SEEA

- 2.2.1 Accounting units
- 2.2.2 Transactions and other flows
- 2.2.3 Producing units and products
- 2.2.4 Sectors and industries
- 2.2.5 Stocks of natural resources
- 2.2.6 Assets and liabilities
- 2.2.7 Accounting rules
- 2.2.8 Valuation
- 2.2.9 Classifications
 - Products
 - Materials
 - Waste
 - Energy
 - Water
 - Industries
 - Activities, including emissions
 - Land
 - Energy assets
 - Water assets
 - Other assets
- 2.2.10 Production boundary
- 2.2.11 Asset boundary
- 2.2.12 National boundary
- 2.2.13 The sequence of SEEA accounts [this section will refer to the annexe containing a list of all accounts and tables in the revised SEEA]

2.3 Physical flow accounts

- 2.3.1 Physical flows of products
- 2.3.2 Physical flows of natural resources
 - Flow accounts for materials (kilograms)
 - Flow accounts for energy (peta joules)
 - Flow accounts for water (cubic metres)
- 2.3.3 Emission accounts
 - Emissions to air
 - Emissions to water
 - Emissions to soil [Provided emissions to soil can be reliably measured]
- 2.3.4 Product-specific recording issues
- 2.3.5 Physical flows of residuals, including emissions
- 2.3.6 Physical supply and use and input-output
- 2.3.7 Material flow accounts
- 2.3.8 Physical flows, national boundaries and timing of flows

2.4 Monetary flow accounts

- 2.4.1 The SNA sequence of current accounts, accumulation accounts and balance sheets
- 2.4.2 Role of SNA accounts in the SEEA
- 2.4.3 Accounts in volume terms
- 2.4.4 Linkages between physical and monetary flow accounts
- 2.4.5 Supply and use tables
 - Supply and use of products
 - Supply and use of energy products
 - Supply and use of water products
- 2.4.6 Input output tables
- 2.4.7 Pricing
- 2.4.8 Identifying environmental transactions within the accounts
- 2.4.9 Economic activities and products related to the environment

- Environmental protection expenditures
- Natural resource management expenditures
- Production of environmental goods and services
 - Specialist and non-specialist producers
- 2.4.10 Other environmentally-related transactions
 - Environmental taxes and subsidies
 - Property income and property rights
 - Permits to access natural resources
 - Permits to produce or dispose of emissions
 - Environmental aspects of disposal of fixed capital

2.5 Hybrid flow accounts

- 2.5.1 Hybrid accounts defined
- 2.5.2 Scope and uses of hybrid accounts
- 2.5.3 Product flows as the link between physical and monetary accounts
 - Hybrid supply and use tables
- 2.5.4 Input-output analyses
- 2.5.5 Aggregates derived from hybrid accounts

2.6 Asset accounts

- 2.6.1 SNA balance sheets and asset accounts
 - Links to the SNA flow accounts and accumulation accounts
 - SNA definition of assets
 - Relationship between assets in the SNA and the SEEA
- 2.6.2 Asset stocks in the SEEA
 - Defining assets in the SEEA
 - Criteria to determine SEEA assets
 - Ownership of assets
 - Shared ownership of assets
 - Attributing income under shared ownership arrangements
 - Asset accounts in physical terms
 - Unique physical characteristics of specific asset types
 - Measurement units
 - Classifications and frameworks
 - Estimating stock levels in physical terms
 - Accounting for changes in the stock levels
- 2.6.3 Valuation and value changes
 - Valuation of assets and natural resources
 - Changes in the value of assets
 - Accounting for depletion
 - Other environmentally-related adjustments in the flow accounts
- 2.6.4 Measuring changes in net worth
 - Natural resource accounts and the complete balance sheet
 - Key aggregates related to net worth valuation

2.7 Full sequence of environmentally-adjusted monetary flow accounts

- 2.7.1 Depletion within the SEEA
 - Differences between the SNA and the SEEA
 - Ownership of the natural resource
 - Renewable and non-renewable natural resources
- 2.7.2 SEEA depletion adjustments through the full sequence of SNA accounts

Chapter 3 Physical flow accounts

[Second meeting of UNCEEA requested the revised SEEA proceed with a presentation of flows before stocks.]

3.1 Introduction and objectives of the chapter

3.2 Accounting rules for physical flows

- 3.2.1 Accounting units
- 3.2.2 Types of flows
- 3.2.3 Measurement units
- 3.2.4 Identifying economic activities
- 3.2.5 Determining origin and destination of flows
- 3.2.6 Gross and net distinction
- 3.2.7 Relation to economic transactions

3.3 Physical supply and use tables

- 3.3.1 Supply and use of products, natural resources [i.e. non-water, non-energy physical flows]
 - Use table for natural resources
 - Supply and use of products
 - Aggregation and aggregates
 - Accounting for losses
 - Classifications
 - CPC (EWC for residuals)
 - ISIC
 - Linkages to waste accounts
 - Linkages to emission accounts
- 3.3.2 Energy flow accounts
 - Use of energy resources
 - Supply and use of energy products
 - Aggregates and net energy use
 - Accounting for losses
 - Classifications
 - Energy flows classification – Oslo Group
 - SEEA-E [SEEA needs to recognise non-material energy flows e.g. electricity]
 - CPC
 - Bridge tables:
 - Energy accounts to energy balances to IPCC
- 3.3.3 Water flow accounts
 - Use of water resources [water intake]
 - Supply and use of water products
 - Aggregates and net water use (water consumption)
 - Accounting for losses
 - Classifications
 - SEEA-W classification of water products
- 3.3.4 Physical Input-output tables
 - Input-output identities
- 3.3.5 Material flow accounts
 - Material flow accounts
 - Accounting for losses
 - Classifications
 - CPC (EWC for residuals) [some modifications required for MFA-specific issues]
 - ISIC
 - Issues on bridging to other SEEA accounts
 - Net harvest approach
 - Other bridging issues
 - Linkages to waste accounts
 - Linkages to emission accounts

3.4 Emission accounts

3.4.1 Emissions to air

Classification and other issues

Supply and use of residuals to air

Net residual output

Bridge tables

[emphasis on greenhouse gas emissions]

ISIC

Territory and residence principle bases

Production emissions to UNFC

Transboundary pollution

3.4.2 Emissions to water

Classification and other issues

Supply and use of water residuals (flows)

[wastewater, pollutants in water]

Other tables

Transboundary pollution

3.4.3 Emissions to soil

Classification and other issues

Tables

Chapter 4 Accounts for environmentally-related economic activities, products and other transactions

[London Group agreed at its 11th meeting to combine chapters 5 and 6 of the SEEA2003]

4.1 Introduction and objectives of the chapter

4.2 Environmental goods and services industry

- 4.2.1 Environmental activities and purpose classifications
- 4.2.2 Environmental protection activities
 - Relationship to EPEA
- 4.2.3 Environmental products
 - Environmental protection services
 - Other environmental products
- 4.2.4 Environmental domain
 - CEPA and CReMA classifications
- 4.2.5 Environmental goods and services industry and EPEA
 - Relation between environmental purpose and environment industry
- 4.2.6 Principal, secondary and ancillary activities
- 4.2.7 Classifications
 - Resource management activities CReMA [CRUMA, adapted for EGS]
 - Environmental protection CEPA
- 4.2.8 Key economic aggregates
- 4.2.9 Linkages to supply and use frameworks

4.3 Environmental protection expenditure accounts (EPEA)

- 4.3.1 Environmental protection expenditure and the environmental goods and services industry
 - 4.3.2 Environmental protection expenditure accounts
 - Supply and use tables for environmental protection [intimately linked to EGSS, above]
 - National expenditure on environmental protection
 - Financing environmental protection
 - Net cost of environmental protection
 - 4.3.3 Classifications and links to other systems
- [There will be greater detail on household expenditure related to both EPE and NRM compared to the SEEA2003.]

4.4 Natural resource management expenditure accounts

- 4.4.1 Natural resource management activities
- 4.4.2 Classifications
 - Resource management activities CReMA
 - Environmental protection CEPA
- 4.4.3 Environmental domain
- 4.4.4 Key economic aggregates
- 4.4.5 Linkages to supply and use frameworks

4.5 Other environmentally-related transactions

- 4.5.1 Environmental taxes
 - Environmental taxes defined
 - Environmental taxes and specific taxes
 - Environmental taxes and sales of environmental protection products
 - Environmental taxes and the SNA framework
 - Environmental taxes and permits to use a natural resource [discusses borderline between these devices]
- 4.5.2 Environmental subsidies
 - Environmental subsidies defined
 - Environmental subsidies and the SNA framework
 - SEEA current transfers related to the environment
 - SEEA capital transfers related to the environment
 - Preferential taxes
 - Environmental motivation as a defining characteristic

- Classifications
 - NACE / ISIC industry
 - Final demand categories and type of environmentally-related transaction
- 4.5.3 Property income and property rights
 - Licences and permits to access natural resources
- 4.5.4 Permits to produce or dispose of emissions
 - Permits to use natural resources
 - Nature of the underlying asset used as a sink
 - Treatment of payments related to the permit
- 4.4.5 Environmental aspects of disposal of fixed capital

4.6 Framework of environmentally-related economic activities and products, linked to SNA accounts

- 4.6.1 Environmentally-related economic activities and products – identified within SNA framework
 - Environmental protection expenditures
 - Production of the environmental goods and services industry
 - Natural resource management expenditures
 - Environmental taxes
 - Environmental subsidies
 - SEEA current transfers related to the environment
 - SEEA capital transfers related to the environment
 - Preferential taxes
 - Other economic instruments
- 4.6.2 Identifying redistributive effects of environmentally-related economic activities and products on key SNA aggregates
 - Sectoral saving
 - Gross value added of EGSS
 - Sectoral net worth
 - Bridge between SEEA and SNA treatments
 - Permits to use natural resources as a sink [in the event that SEEA and SNA differ]
 - Other environmentally-related activities and products [if required]

Chapter 5 Hybrid flow accounts

5.1 Introduction and objectives of the chapter

5.2 Hybrid accounts

- 5.2.1 Concepts and definitions
- 5.2.2 Product flows as the link between physical and monetary accounts
 - Material flows
 - Energy products
 - Water products
 - Emissions
 - Implied prices of products
 - Basic prices and purchaser's prices
- 5.2.3 Hybrid supply and use tables
 - Material products
 - Energy products
 - Water products
- 5.2.4 Hybrid input output tables
 - Environmental requirements of products
 - Environmental requirements of consumption
 - Decomposition of production-related emissions
- 5.2.5 Physical and monetary aggregates [as inputs for decoupling and material productivity analyses]
- 5.2.6 Aggregates derived from hybrid accounts
 - Comparing economic and environmental indicators

Chapter 6 Asset accounts and the valuation of natural resource assets

6.1 Introduction and objectives of the chapter

6.2 Balance sheets and asset accounts

6.2.1 SNA balance sheets and asset accounts

6.2.2 SNA – SEEA asset boundaries

Criteria to determine SEEA assets

SEEA asset classification

Ownership of assets

Split ownership [Describing also differences in treatment to 2008 SNA]

Renewable natural resources: produced and non-produced

6.2.3 SEEA: environmental assets versus natural resources

Asset functions – benefits and uses

Boundary between SEEA Volumes 1 and 2

6.3 Asset accounts for natural resources – physical terms

6.3.1 Land

Land characteristics

Measurement units

Classifications and frameworks

Land use, land cover and land function

Land cover: Corine (CLC) [London Group is developing an integrated

Land use: FAO classification Land cover, use, function classification]

Land function: FAO

Accounting for changes in stock levels

6.3.2 Mineral and energy resources

Asset characteristics

Measurement units and conversion factors

Classifications

United Nations Framework Classification for fossil energy and mineral resources

[Classification of renewable energy assets is subject to work in progress within London Group]

[Water contained in a reservoir and used for hydropower is recorded both as a water asset and as an energy asset]

McKelvey Box

Estimating stock levels in physical terms

Accounting for changes in stock levels

6.3.3 Biological resources (cultivated and non-cultivated)

Asset characteristics

Measurement units

Classifications

FAO Global Forests Assessment (FRA)

SEEA Asset Classification for Aquatic Resources

Others

Estimating stock levels in physical terms

Accounting for changes in stock levels

Cultivated biological resources

Non-cultivated biological resources

6.3.4 Water resources (water reservoirs)

Asset characteristics

Defining the stock of water assets

Measurement units

Classifications

SEEAW water asset classification

Estimating stock levels in physical terms

Accounting for changes in stock levels

6.3.5 Radio spectrum

Asset characteristics

Measurement dimensions

Quantifying stock levels in physical terms

- 6.3.6 Other resources [Ideally, measure *stocks* of carbon, as well as related flows]
 - Asset characteristics
 - Measurement units
 - Classifications
 - SEEA assets classification
 - Estimating stock levels in physical terms
 - Accounting for changes in stock levels

6.4 Asset accounts for natural resources – monetary terms

- 6.4.1 Asset account entries
 - Opening balance sheet
 - Changes in net worth, total
 - Depletion-adjusted saving
 - Capital transfers
 - Other changes in volume of assets
 - Nominal holding gains and losses (revaluations)
 - Closing balance sheet
- 6.4.2 Valuation of natural resources
 - Market values
 - Use of tradeable quotas and other economic instruments
 - Net present value of future resource rents as a proxy for market valuation
- 6.4.3 Resource rents
 - Defined
 - Income and depletion components
- 6.4.4 Measuring resource rents
 - Production account ‘residue’ method
 - Valuation based on harvest quota systems: fish quotas
 - Other renewable natural resources

6.5 Measuring changes in net worth

- 6.5.1 Natural resource asset accounts and the complete national balance sheet
- 6.5.2 Constant price estimates
- 6.5.3 Key aggregates
 - Saving
 - Depletion and consumption of fixed capital
 - Gross fixed capital formation
 - Capital transfers
 - Other changes in volume of assets
 - Economic appearances [including discovery of mineral and energy resources]
 - Economic disappearances
 - Natural growth [including growth of uncultivated natural resources]
 - Catastrophic losses
 - Changes in classification
 - Other volume changes
 - Changes in net worth

Chapter 7 Full sequence of environmentally-adjusted monetary flow accounts

7.1 Introduction and objectives of the chapter

7.2 Depletion

- 7.2.1 Defining depletion
 - Depletion and degradation [Degradation is defined, in contrast to depletion]
- 7.2.2 Depletion and consumption of fixed capital
 - SEEA depletion definition: impact on SNA consumption of fixed capital
- 7.2.3 The range of assets subject to depletion
 - SNA assets subject to depletion
 - Determining additional assets subject to depletion in the SEEA
- 7.2.4 Economic rent and resource rent
- 7.2.5 Treatment of mineral exploration expenditure and discoveries of mineral and energy resources
- 7.2.6 Depletion of non-renewable natural resources
- 7.2.7 Depletion of land
- 7.2.8 Depletion of renewable natural resources

7.3 Accounting for depletion

- 7.3.1 Depletion within the SNA accounts
- 7.3.2 SEEA depletion adjustments through the full sequence of SNA accounts
 - Depletion adjustments for the SNA production account
 - Depletion adjustments for the SNA income accounts
 - Depletion adjustments for the SNA capital account
- 7.3.3 Depletion and notions of sustainability
 - Extraction and natural growth
 - Bio-economic modelling

7.4 Depletion, ownership of the asset and the balance sheet

- 7.4.1 Natural resource ownership in the SNA
- 7.4.2 Natural resource ownership in the SEEA
 - Owner and use of the resource are different
 - Shared ownership of natural resource assets
 - Accounting for shared ownership of natural resource assets
 - Attributing ownership under shared ownership arrangements
 - Attributing flows under shared ownership arrangements

7.5 Monetary current and accumulation accounts

- 7.5.1 Flow accounts of the SNA
- 7.5.2 Accumulation accounts of the SNA
- 7.5.3 The full sequence of environmentally-adjusted SNA current and accumulation accounts

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- Central Product Classification (CPC), version 2
- European Waste Classification (EWC)
- Energy flows classification – Oslo Group
- SEEA-E classification of energy flows
- SEEAW classification of water products
- UNFC classification of emissions

Industries

- International Standard Industrial Classification of All Economic Activities (ISIC) Rev.4
- Statistical Classification of Economic Activities in the European Community (NACE)

Purpose/activities

Emissions

- Classification of Environmental Protection Activities and Expenditure (CEPA) [Based on the European System of Environmental Goods and Services Accounts]
- Classification of Natural Resource Management Expenditures [to be formed from the merger of CEPA and CRUMA, as agreed at the 14th meeting of the London Group]
- Environmental subsidies
- Environmental taxes

SNA functional classifications

- Classification of Individual Consumption by Purpose (COICOP)
- Classification of the Purposes of Non-profit Institutions Serving Households (COPNI)
- Classification of the Functions of Government (COFOG)
- Classification of Outlays of Producers by Purpose (COPP)

Assets - general

- SEEA Asset Classification

Land

- Corine Land Cover Classification – [London Group currently working on an integrated Land cover, use and function classification]
- Land use - FAO
- Land function – FAO

Energy assets

- SEEA classification of Energy Resources [Will follow the to-be-updated IRES; and will align with UNFC]
- United Nations Framework Classification (UNFC) for fossil energy and mineral resources [Classification (and definition) of renewable energy assets is a work in progress within London Group]

Water assets

- SEEAW water assets classification

Other assets

- SEEA assets classification
- FAO Global Forests Assessment (FRA)
- SEEA Asset Classification for Aquatic Resources

List of accounts and tables in the SEEA

[See Attachment 2 to this paper for a full list of accounts and tables.]

ATTACHMENT 2

LIST OF ACCOUNTS AND TABLES: VOLUME 1 OF THE REVISED SEEA

This attachment suggests a list of tables for inclusion in the revised SEEA. Detailed for inclusion in the revised SEEA tables (and their sequencing) can be specified after broad agreement is reached on the list of tables required.

Physical flow accounts

Supply and use tables for products [comprehensive and/or in respect of selected products of interest]

- Supply and use of products (kilograms)
- Supply and use of energy (peta joules)
- Supply and use of water (cubic metres)

Supply and use table for natural resources

- Supply and use of natural resources (kilograms)
- Supply and use of energy resources (peta joules)
- Supply and use of water resources (cubic metres)

Supply and use table for residuals

Emissions accounts

- Emissions to air
- Emissions to water
- Emissions to soil
- Emissions (CO₂) bridge table to UNFC basis
- Net emissions of (selected) emissions

Matrix presentation of physical flows between the economy and environment

Physical input-output tables

- [comprehensive and/or in respect of selected products /industries of interest]

Material flow accounts

- Economy-wide material flow accounts
- Detailed physical flows and material balances [can also be produced in respect of selected products and/or industries]

Monetary flow accounts

SNA accounts

Production account

- [Identify production of environmental goods & services
- Identify natural growth in renewable natural resources as 'production']

Income accounts

- [Identify environmental taxes
- Identify environmental subsidies
- Identify environmental protection expenditures
- Identify natural resource management expenditures
- Identify flows related to emission permits
- Identify depletion of non-produced environmental assets
- Property income transfers related to shared ownership of non-produced environmental assets
- Identify compensation of employees (and employment) re production of environmental goods and services
- Identify rent related to non-produced environmental assets]

Capital account

- [Identify depletion-related adjustments
- Identify environmentally-related capital transfers, capital formation, capital disposals etc)

Financial account

- Financial leases related to shared ownership non-produced environmental assets
- Transactions related to emission permits

Impact on changes in assets / liabilities and net worth]

Environmental protection expenditure account
Production of environmental goods and services account
Natural resource management expenditure account

Hybrid accounts

Hybrid supply and use of products, [for economy, selected products]

- Hybrid supply and use of products
- Hybrid supply and use of energy products
- Hybrid supply and use of water products

Hybrid account of economic production and flows of residuals

Hybrid industry-by-industry input-output tables

Input-output identities

- Environmental requirements of products
- Environmental requirements of consumption
- Decomposition of production-related emissions

Table of aggregates derived from hybrid accounts

- Table comparing economic and environmental indicators

Asset accounts

SNA asset accounts

- Balance sheet account
- Other changes in assets account

SEEA physical asset account [similar to SNA balance sheet, though with a wider range of asset inclusions.
Presented in both monetary and physical terms]

- Land
- Biological resources
 - Produced
 - Non-produced
- Mineral and energy resources
- Water resources
- Other resources

SEEA physical changes in assets account

- Land
- Biological resources
 - Produced
 - Non-produced
- Mineral and energy resources
- Water resources
- Other resources

Hybrid asset accounts

Balance sheet – juxtaposing monetary and physical measures

- [For water resources, price per cubic metre of water can support comparisons across various types of water resources]

- [For energy resources, price per peta joule of energy can support comparisons across different types of energy resources]

Changes in assets account - monetary and physical measures

Accounting matrix, including asset accounts

ATTACHMENT 3

VOLUMES 2 AND 3 OF THE REVISED SEEA

Borderline issues for inclusion in Volume 2 of the revised SEEA (Non-standard Accounts)

The following is a list of major areas for inclusion in revised SEEA Volume 2. It is not an exhaustive list and does not suggest a structure for this volume.

Valuation techniques for environmental degradation.

Accounting adjustments for environmental degradation.

Depletion/degradation of soil—distinction between the two notions is somewhat unclear and this area is problematic to measure.

Environmentally-damaging subsidies (as opposed to environmentally-motivated subsidies)

SEEA physical asset account [Similar to SNA balance sheet, though with a wider range of asset inclusions. Can be presented in both monetary and physical terms]

- Soil resources
- Ecosystems

Asset accounts describing quality of natural resources, and accounts to record changes in quality over time. To apply to water, land, forests, fish etc. Economic impact of these quality changes (i.e. degradation)

Outline of Volume 3 of the revised SEEA (Applications)

Section 1: Climate change and other environmental issues

Section 2: Resource management

Section 3: Cross-cutting and other issues

Sustainable development and the SEEA

- The capital approach to sustainable development
- Other approaches to sustainable development
- The SEEA as a framework for measuring sustainable development

Key features of the SEEA

- Relationship between the SEEA and environmental statistics
- The SEEA and changes in human welfare
- Limitations of present work
- An assessment of the current positions

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