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SEEA-Energy: Progress report

Paper prepared by UNSD

(for discussion)

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A. Introduction

1. Energy accounts have been identified by the UN Committee of Experts on Environmental-Economic Accounting (UNCEEA) as a critical domain of environmental-economic accounting. The UNCEEA, at its subsequent meetings, underlined that the energy accounts are crucial for the revision of the SEEA and supported UNSD's plan to prepare a publication on energy accounts.

2. The *System of Environmental-Economic Accounting for Energy* (SEEA-Energy) is a subsystem of the SEEA Central Framework. The SEEA-Energy complements the SEEA Central Framework by elaborating and detailing the conceptual presentation for organizing information related to energy and its role in the economy. At the same time SEEA-Energy aims to be a low-cost extension of energy statistics and balances as described by the International Recommendation for Energy Statistics, IRES, by including the information collected on the basis of IRES into a framework coherent with the national accounts. SEEA-Energy and IRES are therefore two complementary and coordinated documents.

3. The third UNCEEA meeting in June 2008 approved the scope and coverage of the SEEA-Energy¹. The draft chapters of the SEEA-Energy were developed in accordance with the content and outline as approved by the UNCEEA and updated by the expert group. Progress of work in drafting the SEEA-Energy was reported to the fourth, fifth and sixth meetings of the UNCEEA.

4. At the sixth meeting the UNCEEA discussed the progress made toward the completion of SEEA-Energy. It noted that an expert group meeting was planned to review the draft of SEEA-Energy in October 2011. UNCEEA expressed strong support for holding a global consultation on the draft chapters of SEEA-Energy after the expert group meeting. It stressed that SEEA-Energy needs to be fully aligned with the SEEA Central Framework and be consistent to the extent possible with IRES. Furthermore, UNCEEA expressed support for the development of the Energy Statistics Compilers Manual (ESCM) and welcomed the decision that the ESCM will also support the implementation of SEEA-Energy.

5. The UNCEEA noted the tight timeframe and recommended adjusting the timeline as well as the adoption process of the SEEA-Energy.

¹ See SEEA-Energy: Process leading to the publication, Paper prepared by UNSD for the Third meeting of the Committee of Experts on Environmental-Economic Accounting, New York June 24-26, 2009. ESA/STAT/AC.157.

6. Also considering that concepts, tables and accounts related to energy were only finalized in March 2012, and considering the limited resources of UNSD, the timeline of the SEEA-Energy had to be extended (see section C).

7. This paper presents the progress of work in resolving the list of issues for the SEEA-Energy and the current status of drafting the chapters in Section B. Section C presents an updated timeline of next steps towards the finalization the SEEA-Energy and Section D lists questions for the UNCEEA.

B. Current status of the preparation of the SEEA-Energy

8. The United Nations Statistics Division (UNSD) has included the development of the *System of Environmental-Economic Accounting for Energy* (SEEA-Energy) as part of its regular work programme.

9. An Expert Group Meeting on energy accounts, consisting of experts on energy statistics and environmental-economic accounts from countries and international agencies was organized to discuss the results of the global consultation and the draft chapters of the SEEA-Energy on 5-7 October 2011 at the United Nations Headquarters in New York. The expert group agreed on a number of outstanding issues and proposals including (a) the reordering of the chapters to consider physical and monetary flows first, then physical and monetary assets; and (b) the presentation of tables in a form familiar to both energy statisticians and accountants. The last recommendation implied that more tables needed to be included in the SEEA-Energy as opposed to the SEEA Central Framework to elaborate on the step-by step compilation of the accounts from basic statistics as well as from energy balances. Furthermore, the Expert Group stressed the importance that SEEA-Energy be fully aligned in concepts with the SEEA Central Framework.

10. The draft of SEEA-Energy was updated during the latter part of 2011 and early 2012 based on the suggestions of the expert group. The updated draft was circulated among a small group of experts who provided further suggestions to improve the draft. Major outstanding issues are listed below:

- Improve text regarding the relationship between SEEA-Energy, SEEA Central framework and SNA with emphasis on how to achieve coherence between national accounts and energy accounts.
- Streamline the text and tables to ensure internal consistency as well as full consistency with the SEEA Central Framework white cover publication. Update and standardize tables and table titles based on the latest changes to the text of the SEEA Central Framework. Describe the tables and the data in more detail. Resolve accounting issues in physical supply and use table in regards to the treatment of secondary energy products and transfers of energy products between industries.
- Review and elaborate discussion of treatment of energy from renewable sources.
- Revise text on emissions to ensure a more comprehensive presentation.

- Elaborate and clarify the valuation of energy resources, in particular with regard to valuation beyond category A in the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009.

11. A detailed assessment of outstanding issues and comments received by the small group of expert group appears to show that there is general agreement with the scope and content of the manual.

SEEA-Energy and IRES

12. The International Recommendations for Energy Statistics (IRES) was adopted by the Statistical Commission in February 2011. They provide the recommendations on, inter alia, concepts and definitions, classifications of energy products, data sources, data compilation methods, and approaches to data quality assessment. SEEA-Energy is thus an extension of energy statistics and balances as described by IRES, by including the information collected on the basis of IRES into a framework coherent with the national accounts. SEEA-Energy and IRES are therefore two complementary and coordinated documents.

IRES, SEEA-Energy and the Energy Statistics Compilers Manual

13. Work has been initiated for the drafting of the Energy Statistics Compilers Manual (ESCM). The Oslo Group on Energy Statistics discussed at its last meeting (Canberra, Australia 2-5 May 2011) an annotated outline for the ESCM. One of the Chapters of the ESCM includes the compilation of energy accounts. The draft outline, which was presented at the last Oslo Group meeting, is attached in Annex II.

14. The ESCM is an integral part of the implementation process of both IRES and the SEEA-Energy. The Manual will provide practical guidance to countries for the implementation of the recommendations contained in IRES and the SEEA-Energy and it will cover all stages of the statistical production process, the institutional arrangements and data dissemination. The Manual is planned to be prepared in close consultation with Member States and international agencies. Their substantive contributions will be moderated through the Oslo Group on Energy Statistics and the London Group on Environmental Accounts. The ESCM is planned to be finalized by the end of 2013.

15. UNSD is in the process of preparing a list of data items needed to populate SEEA-Energy tables that are currently not included in IRES. The objective is that these data items will be part of the recommended data items in ESCM.

C. Towards the finalization of the SEEA-Energy

16. In preparing the SEEA-Energy, UNSD will continue to work in close cooperation with the Expert Group on energy accounts, the London Group on Environmental Accounting, the Oslo Group on Energy Statistics and the Eurostat Task Force on Energy Accounts.

17. The full draft of the SEEA-Energy consisting of seven chapters, annexes and a glossary will undergo global consultation during the third quarter 2012. The consultation will involve national statistical offices and regional and international organizations, to ensure universal relevance, applicability and feasibility of implementation for the SEEA-Energy.

18. The final draft of the SEEA-Energy will be submitted to the UNCEEA for its recommendation to the United Nations Statistical Commission (UNSC) for adoption in 2013.

D. Questions to the UNCEEA

19. The UNCEEA is requested to express its views on the following questions:
- a. Does the UNCEEA agree with the planned process toward the finalization of the SEEA-Energy?
 - b. Does the UNCEEA agree that the ESCM should include discussion and detail of SEEA-Energy, at a level similar to that of IRES?

Annex I

Annotated outline of the SEEA-Energy

Chapter 1: Introduction. This chapter will introduce the objectives of the SEEA-Energy, describe the target audience, present the relevance of energy accounts for policy-making including climate change and sustainable development policies, and describe the structure of the publication.

Chapter 2: SEEA-Energy framework. This Chapter introduces the SEEA-Energy accounting framework and explains the fundamental principles and features of the system. It describes how the generic asset accounts and supply-use tables are used as building blocks for SEEA-Energy. It describes the classifications used in the SEEA-Energy which form the backbone of the accounting framework and the interconnections between the different accounts. The Chapter also discusses the link with the energy balances and in particular the residence versus the territory principle.

Chapter 3: Physical flow accounts for energy. This chapter presents the physical flow accounts for energy. It will introduce classification of products by purpose, namely classification of energy products used for energy or non-energy purposes and the classifications of other products used for energy purposes (e.g. bio fuels). It will describe the standard supply and use tables for energy products populated with the data from the fictitious data set. It will also discuss the different measurement units that can be used to compile the tables. The chapter describes also the link between the standard tables and basic energy statistics and energy balances.

Chapter 4: Monetary flow accounts. This chapter describes supply and use tables of energy products in monetary terms, identifies the costs associated with the production and use of these products, the income generated by them, the cost of the infrastructure to explore and evaluate resources, to extract them and distribute them as well as the cost of maintaining them. The monetary supply and use tables can be compiled in both current and constant prices.

The chapter also describes energy-related transactions which are already in the SNA but are often not explicitly identified. These include for example (a) economic instruments such as taxes, subsidies, licenses and permits to bestow property rights over energy resources to designated users; (b) financing of energy and energy-related products (including infrastructure) through transfers; (c) emission permits. The chapter provides standard tables for the compilation of monetary accounts for energy and energy-related products, their financing, taxes subsidies, licenses and permits.

The chapter brings together the physical and the monetary accounts in the so-called hybrid accounts. This is a very useful analytical tool for analyzing the interaction between the economy and the environment and provides the basis for more in-depth analysis, including input-output modeling. It will also show the derivation of depletion-adjusted aggregates (e.g. environmentally-adjusted value added and genuine savings).

Chapter 5: Physical asset accounts for energy resources. This chapter describes the definitions and classification of energy resources. It presents the links with the United Nations Framework Classification for Fossil Energy and Mineral Resources and the classification of assets of the SNA 2008. It (a) introduces the basic structure of an asset account; (b) explains and define the asset accounts entries (e.g. stocks of energy resources, discoveries and extraction); and (c) provides recommendations on measurement units and conversion factors in order to aggregate across different energy resources. The Chapter also presents asset accounts for inventories of energy products. It presents the SEEA-Energy standard tables for the physical asset accounts and tables populated with a numerical data set.

Chapter 6: Monetary asset accounts. This chapter introduces the principle of valuation of assets. It presents the net present value method as the recommended valuation method for valuing those resources that are economic in the SNA sense, in line with the SNA2008. It further provides methodological guidance on how to compile the monetary asset accounts for the stocks and changes in stocks in current prices as well as in constant prices. It also recommends to do a sensitivity analysis for the NPV obtained using different discount rates and rates of return to capital.

The chapter also presents standard tables for monetary asset accounts for inventories of energy products as well as asset accounts for produced assets relevant for energy analysis such as equipment, buildings and exploration and evaluation.

Chapter 7 Application of energy accounts. This chapter provides examples of applications of energy and energy-related air emission accounts derived from the techniques and tables presented in the previous chapters. These include, for example, the derivation of indicators to monitor and evaluate policies, decomposition analyses of economic growth and energy use and emissions; and scenario modeling including input-output analysis to estimate for example the impact of changes in energy prices or costs of emission permits on the economy;

Annex 1. Standard tables. This annex will present the standard tables which are presented in the various chapters. The standard tables constitute the minimum data set that all countries are encouraged to compile. An Excel file with templates for standard tables and populated with the fictitious data set will be available on the UNSD web-site.

Annex 2. Classifications. This annex will present the classifications that are relevant for the compilation of energy accounts: in particular the classification of energy assets, the classification of economic activities related to energy, classification of energy products and classifications relevant for the emission accounts.

Annex 3. List of indicators. This annex will present a list of indicators that can be derived from the SEEA-Energy. It will link the energy and air emission indicators most commonly used with the SEEA-Energy standard tables.

Glossary. An agreed-upon glossary of terms and definitions relevant for SEEA-Energy will be included.

Annex II

Annotated outline Energy Statistics Compilers Manual (ESCM)

Chapter 1 Conceptual framework. The purpose of this chapter is to present to the compiler with a brief summary of the conceptual framework for energy statistics established by IRES and to explain the relationships of energy statistics with economic, environment and other relevant statistics in the preparation of energy balances and accounts, such as 2008 SNA, the SEEA and the SEEA-Energy.

Chapter 2 Legal foundations and institutional arrangements. This chapter will provide details on the existing national systems of energy statistics including the legal framework and appropriate institutional arrangements. The advantages and disadvantages of various systems will be discussed and examples of country practices will be provided. Ways to improve the national systems of energy statistics will be elaborated based on principles guiding effective institutional arrangements promoted by IRES. The chapter will contain examples of the national systems of energy statistics of several countries and describe their plans on how to move forward.

Chapter 3 Classification. This chapter will provide details on the relevant classifications for energy statistics such as the Standard International Energy Product Classification (SIEC); the classification of the economic activities for energy statistics used for the energy industries and energy consumers (based on the International Standard Industrial Classification (ISIC)); and the classification of energy resources. Specific issues in the correspondence tables with other international classifications, such as the Central Product Classification (CPC) and the Harmonized System (HS) will be discussed. Issues in the identification of relevant breakdown will be described together with example on how to address these issues.

Chapter 4 Data sources and data collection. This chapter is based on the list of data items presented in Chapter 6 of IRES. It is suggested that the presentation of data sources and data compilation be organized in this chapter by Section of SIEC (e.g. Coal, natural gas, Oil, electricity and heat, etc.). For each SIEC section, a physical description of the main processes of the products would be presented and the relevant data sources for types of data items (production/transformation, trade, stocks, bunkers, consumption) will be discussed. Data editing, imputation and validation will also be provided together with a description of methods regarding measurement units. The chapter will also include a description of any relevant adjustments that are needed for the energy accounts.

Chapter 5 Compilation of energy balances. This chapter will provide practical guidance for the compilation of energy balances. In particular, it will describe how to use the data items presented in Chapter 6 of IRES in the balances; data editing and the validation rules inherent to the energy balances. This chapter will also present secondary data sources that can be used for the compilation of balances when partial data items are available as well as data estimation and reconciliation.

Chapter 6 *Compilation of energy accounts.* This chapter will provide practical guidance on the compilation of the energy accounts of the System of Environmental-Economic Accounting for Energy (SEEA-Energy). This chapter will also describe the use of secondary sources, such as, for example, the energy balances. This chapter is also intended to provide guidance on the compilation of bridge tables between energy balances and energy accounts in order to reconcile and understand the differences between the two tabulations of energy statistics.

Chapter 7 *Energy indicators and Greenhouse gas emissions.* This chapter will provide examples of country practices in the compilation of various energy indicators including those for sustainable energy development. It will also identify the relevant energy statistics that are necessary for the calculation of greenhouse gas emissions.

Chapter 8 *Data quality and metadata.* This chapter will provide guidance on the compilation of quality indicators and the preparation of metadata for energy statistics. Examples of country practices will be provided.

Chapter 9 *Data dissemination.* This chapter is intended to describe country practices in the dissemination of energy statistics (e.g. format, time of release, dealing with data revisions, etc.) and, in particular, dealing with confidentiality.