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**SEEA-Energy: Progress report**

Paper prepared by UNSD

*(for discussion)*

# SEEA-Energy: Progress Report

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## A. Introduction

1. Energy accounts have been identified by the UN Committee of Experts on Environmental-Economic Accounting (UNCEEA) as an important 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 SEEA-Energy is a subsystem of the revised SEEA (in the same vein as the SEEA-Water) in the sense that it provides further elaboration of the SEEA modules with focus on energy as well as the concepts, classifications and accounts related to energy already included in the SEEA. The *System of Environmental-Economic Accounting for Energy* (SEEA-Energy) presents standard concepts, definitions, classifications, accounting rules, and tables for energy accounts.
3. The third UNCEEA meeting in June 2008 approved the scope and coverage of the SEEA-Energy<sup>1</sup> and the draft annotated outline presented in Annex I. The draft chapters of the SEEA-Energy were developed in accordance with the content and outline as approved by the UNCEEA. Progress of work in drafting the SEEA-Energy was reported to the fourth and fifth meetings of the UNCEEA.
4. The fifth UNCEEA meeting reiterated the importance of proceeding with the completion of the drafting of the SEEA-Energy. It stressed the need of ensuring that SEEA-Energy and the International Recommendations for Energy Statistics (IRES) are consistent, to the extent possible.
5. At the fifth meeting the UNCEEA received an update on the status of the drafting of the SEEA-Energy. At the time of the meeting, all the chapters of the SEEA-Energy were available in draft form, except for the chapter on applications. The UNCEEA requested that work on the drafting of SEEA-Energy, which was suspended owing to resource constraints, be resumed. The UNCEEA noted that finalizing the SEEA-Energy for adoption by the Statistical Commission in 2012 required adequate funding and welcomed the offer of the Federal Statistical Office of Germany (DESTATIS) to look into the possibility of resolving the funding situation.
6. The fifth UNCEEA meeting also concluded that due to the delay in the drafting caused by the funding situation, the timeline towards the finalization of the SEEA-Energy would need to be adjusted.

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<sup>1</sup> 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.

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. Work on the drafting of SEEA-Energy has resumed with the financial support received from the Federal Statistical Office of Germany. The consultant, Mr. Ole Gravgård Pedersen continued working on the completion of the first draft of the SEEA-Energy.

10. Revised draft texts for chapters 1-6 have been prepared by the consultant. Monetary and hybrid accounts have been combined into a single chapter – chapter 6. In addition, the first draft of the remaining parts of the publication, chapter 7 on the applications of the accounts, three annexes and the glossary have been completed by the consultant and are now available on the UNSD website <http://unstats.un.org/unsd/envaccounting/seeae/egm/lod1.htm>.

11. The revised draft takes into account comments made by the Eurostat Task Force on Energy Accounts received after the Task Force Meeting in May 2010 as well as the recommendations on the issues that were submitted to the UN Statistical Commission in February 2011.

12. At the time the draft Chapters were posted on the website, the SEEA chapters were not yet available. The SEEA-Energy will continue to serve as input in the drafting of the SEEA chapters. At a later stage, once the chapters on the SEEA are finalized, it will be necessary to ensure that the text in the SEEA-Energy and in the SEEA is fully consistent. Ideally the same text, where applicable, should be used for both documents.

### ***SEEA-Energy and IRES***

13. The International Recommendations for Energy Statistics (IRES) was adopted by the Statistical Commission in February 2011. Revisions to draft chapters 1-6 of the SEEA-Energy have been prepared and chapter 7 drafted with attention to ensuring that the recommendations of SEEA-Energy and IRES are, where applicable, consistent.

14. The SEEA-Energy will rely on concepts definitions and classifications of basic energy statistics which are presented in the recently adopted IRES prepared by UNSD in close cooperation with the Oslo Group on Energy Statistics and the InterSecretariat Working Group on Energy Statistics.

### ***CPC and SIEC***

15. The Standard International Energy Product Classification (SIEC) contained in IRES was developed based on the list of harmonized definitions prepared by the Inter-

Secretariat Working Group on Energy Statistics and developed through a wide consultation with the Oslo Group, the Inter-Secretariat Working Group on Energy Statistics as well as the Expert Group on International Economic and Social Classifications. SIEC provides a detailed classification of energy products together with their definitions. It is expected that countries will report energy statistics in physical terms according to SIEC.

16. The criteria and concepts used by CPC and SIEC are quite different and this leads to differing product definitions and hierarchy in the two classifications. In addition, the CPC does not use an explicit energy concept in its structure and energy products are therefore covered in many different categories across the CPC structure. In some cases the differences between the two classifications may be reasonably overcome. In others, it is not possible to simply reconcile the two classifications at the greatest level of detail. The problem that CPC and SIEC cannot be reconciled is particularly troubling for energy accounts as the consequence of the differences between the two classifications would imply that physical data will be available according to SIEC and monetary data according to CPC. This would make it impossible to link the physical and monetary flows in the energy accounts.

17. The issue of concordance between ISIC and SIEC was discussed by the expert group on classifications which met from 18 to 20 May 2011. A detailed analysis of the correspondence between SIEC and CPC, prepared by UNSD<sup>2</sup>, identified a possible alternative aggregation which would lead to a better correspondence between SIEC and CPC at a higher level of aggregation.. The classification expert group considered it very useful and an important basis for the development of analytically meaningful groupings of products for which it is possible to have full concordance between SIEC and CPC. These groupings could be used for the standard tables of the energy accounts, thus ensuring that both physical and monetary flows will be consistent.

18. The next steps are to revise the paper and prepare a concrete proposal for inclusion in the global consultation of the SEEA. The proposal could further be discussed during the expert group meeting on the SEEA-Energy.

### ***SEEA-Energy and the Energy Statistics Compilers Manual***

19. 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.

20. 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 the whole stages of the statistical production process from the conceptual framework, the institutional arrangements to data dissemination. The Manual is planned to be prepared in sufficient consultation with relevant Member States and institutions

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<sup>2</sup> See document ESA/STAT/AC.234/14 available online at:  
<http://unstats.un.org/unsd/class/intercop/expertgroup/2011/AC234-14.PDF>

with contributions of their experience. While the Oslo Group on Energy Statistics is expected to be the main content provider for the ESCM, consultations with the London Group on Environmental Accounting are planned to take place in order to seek contributions from countries compiling the energy accounts and to reflect their practices. The ESCM is planned to be finalized by 2013.

### **C. Towards the finalization of the SEEA-Energy**

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

22. The full draft of the SEEA-Energy consisting of seven chapters, annexes and a glossary will undergo global consultation during the months of June, July, August and part of September. 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.

23. It should be noted that some differences in style and terminology between the SEEA and the SEEA-Energy remain at this stage when the document is circulated for global consultation. Once an agreement is reached on the SEEA, the SEEA-Energy will align with the SEEA.

24. An Expert Group Meeting on energy accounts, consisting of experts from the various groups is 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.

25. 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 upon recommendation by the UNCEEA.

### **D. Questions to the UNCEEA**

26. 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 with the process outlined for the development of a limited number of energy groupings that are analytically meaningful and for which concordance between SIEC and CPC is feasible?
  - c. Does the UNCEEA agree with ensuring that the SEEA and SEEA-Energy are drafted in parallel to ensure complete harmonization between the two documents?

## Annex I

### Annotated outline of the SEEA-Energy

*Chapter 1: Introduction.* This chapter will introduce the objectives of the SEEA-E, 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-E framework.* This Chapter introduces the SEEA-E 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-E. It describes the classifications used in the SEEA-E 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 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-E standard tables for the physical asset accounts and tables populated with a numerical data set.

*Chapter 4: 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 5: 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 6: 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 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-E. It will link the energy and air emission indicators most commonly used with the SEEA-E standard tables.

*Glossary.* An agreed-upon glossary of terms and definitions relevant for SEEA-E 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-E). 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.