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**Report on the  
Global Assessment of Energy Accounts**

Prepared by the United Nations Statistics Division



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## Executive summary and main conclusions

The paper reports the results and main conclusions of the *Global Assessment of Energy Accounts* undertaken by the United Nations Statistics Division in 2008 under the auspices of the *United Nations Committee of Experts on Environmental-Economic Accounting* (UNCEEA). The assessment had three objectives: (a) to obtain an in-depth understanding of country practices in the compilation of energy accounts; (b) to contribute to the development of the System of Environmental-Economic Accounting for Energy (SEEA-E); and (c) to assist with the development of targeted technical cooperation activities in this area.

Approximately 20 of the 38 responding countries compile energy accounts - comprising energy asset accounts and energy flow accounts in physical and/or monetary terms - on a regular basis. In addition 5 responding countries plan to start compiling energy accounts within the next 2 years and 12 among the countries that compile them plan to expand their existing accounts.

The integration of physical information in the energy accounts as well as the compilation of monetary accounts is the domains of national statistical offices (NSOs) as opposed to the collection of basic statistics and compilation of energy balances for which other agencies play a significant role.

The lack of agreed methodology was ranked as one of the most pressing impeding factors in the implementation of energy accounts. This was substantiated by the answers received from countries on specific compilation questions: the definitions and classifications used for energy resources, energy products as well as the valuation methods used vary considerable across countries.

The definition of reserves used for the compilation of asset accounts varies widely across countries. There is convergence of country practices with regard to using a definition which is broader than the proven reserves, however different terminologies and different definitions seem to be used making the cross-country comparisons difficult to make.

The valuation methods used for the valuation of the energy reserves which are often reported in the national accounts balance sheet varies considerably across countries. Although the net present value, as recommended by the SNA, is the most applied method, other methods are still used. Furthermore, the underlying assumptions for the calculation of NPV (e.g. discount rates used, resource rent calculations etc.) differ across countries. Decommissioning costs which the 2008 SNA recommends recording, are only calculated by one of the responding countries.

The classification of energy products used, as well as the recording of losses and the recording of energy products used as inputs in the production of energy vary considerably across countries. Renewables are recorded explicitly in the energy flow accounts of a large number of respondents. This is expected to increase given the policy relevance of this information especially when linked to the investments being made for renewable energy technology.

The number of countries compiling energy accounts is expected to increase as a result of the increasing policy relevance of linking energy statistics to economic information in particular in the context of climate change policy analysis. Furthermore, the completion of the standard methodology for energy accounts of the SEEA-E and the International Recommendations for Energy Statistics (IRES) as well as the on-going efforts to harmonize the energy statistics questionnaires will promote the development of basic energy statistics consistent with the concepts of the national accounts. This would facilitate their integration into the energy accounts.



## A. Introduction

1. The Global Assessment of Environment Statistics and Environmental-Economic Accounting is an activity of UNSD under the auspices of the UN Committee of Experts on Environmental-Economic Accounting (UNCEEA). It aims to assess the status of national implementation of environment statistics and environmental-economic accounting in countries. In order to reduce the reporting burden on countries, the Global Assessment was designed in two phases. Phase 1 was carried out in October 2006 and the results were presented to the United Nations Statistical Commission at its thirty-eight session. A detailed report can be found at: <http://unstats.un.org/unsd/envaccounting/ceea/assessment.asp>

2. Phase 2 consists of several in depth follow-up questionnaires. Focusing on specific subject areas identified in Phase 1. It was dispatched to those countries that have indicated in Phase 1 that they collect/compile or disseminate statistics or accounts in the specific subject area.

3. The Global Assessment of Energy Statistics and Balances was developed by UNSD in close cooperation with the Oslo Group on Energy Statistics and was launched in June 2007. A preliminary report on this Assessment has been prepared as a background document for the thirty-ninth session of the United Nations Statistical Commission and can be found at: <http://unstats.un.org/unsd/envaccounting/ceea/survey.asp>

4. The Global Assessment of Energy Accounts was launched in May 2008. Its objectives were: (a) to obtain an in-depth understanding of country practices in the compilation of energy accounts; (b) to contribute to the development of the System of Environmental-Economic Accounting for Energy (SEEA); and (c) to assist with the development of targeted technical cooperation activities in this area.

5. The Global Assessment of Energy Accounts focuses exclusively on energy accounts (flows and stocks) in physical and monetary terms. Mineral accounts were not covered.

6. In order to avoid confusion with so-called energy balances, energy accounts were explicitly defined in the assessment in the following manner:

**Energy accounts** comprise energy asset accounts and energy flow accounts.

**Energy asset accounts** are asset accounts for energy resources such as coal, oil and natural gas. In particular, they describe the opening and closing stocks of energy resources and the changes therein. They can be compiled in physical and/or monetary terms.

**Energy flow accounts** describe the supply of energy products (e.g. production, imports) and their use by economic categories (intermediate and final consumption, exports and gross capital formation) in the economic territory of a country. They can be compiled in physical and / or monetary terms.

*Please note that, as satellite accounts of the System of National Accounts (SNA), energy accounts follow the concepts (such as residence), definitions and classifications (such as ISIC) and the accounting rules of the SNA.*

7. The structure of the assessment is as follows: section 1 aims to get an overview of the types of energy accounts currently being compiled in countries as well as the agencies involved. Section 2 covers energy asset accounts and Section 3 covers energy flow accounts. The latter two sections focus in great depth on various methodological aspects of compilation, definitions and classifications used; valuation principles; data sources; and dissemination and uses of the accounts.

8. The surveys were dispatched to 55 national statistical offices (NSOs) selected on the basis of the following criteria:

- a. Respondents indicated in Phase 1 of the Global Assessment that their agency compiled energy and emission accounts and/or mineral accounts or were planning to expand into these areas;

- b. Respondents indicated that there were plans to start compiling accounts in these areas in the near future in their country;
- c. Responses from the Global Assessment of Energy Statistics and Balances;
- d. Countries that did not respond to Phase 1 but were expected to possibly compile energy accounts.

## B. Overview

9. From the 55 targeted countries (of which 23 OECD) 38 countries provided a response to the questionnaire (of which 21 OECD).<sup>1</sup> The countries that responded to the Global Assessment are listed in Annex I. One country sent two separate responses that have been combined. With one exception all responses came from the NSOs. In 20 out of these 38 responding countries indicated that at least one type of energy account is currently being compiled.<sup>2</sup>

10. Table 1 provides an overview of the types of energy accounts currently being compiled in countries. The table includes accounts that are currently being compiled as a pilot project, but excludes accounts that were compiled by countries in the past. The table shows that energy accounts in physical terms are compiled more frequently than accounts in monetary terms. Six countries compile all four types of energy accounts; one country compiles three different types; three compile two types; and the rest compile one type only.

**Table 1. Types of energy accounts compiled in countries**

	<i>Currently compiled by NSO</i>	<i>Currently compiled by other agencies</i>	<i>of which exclusively</i>	<i>Total in countries (no double counting)</i>
Physical energy asset accounts	11	5	0	<b>11</b>
Monetary energy asset accounts	8	0	0	<b>8</b>
Physical energy flow accounts	15	4	3	<b>18</b>
Monetary energy flow accounts	8	0	0	<b>8</b>
Total different countries	19	8	3	<b>20</b>

\* In this report one response obtained from the Federal Planning Agency is included under NSO.

11. The compilation of energy accounts appears to be the domain of the NSOs: in only two countries - one through a pilot project - the NSO is not involved at all. In 7 countries both the NSO and another agency compile energy accounts. In only two of those countries the NSO and another agency are each responsible for different types of accounts; in the remaining five countries the respondent indicated that both the NSO and another agency compile the same account meaning that there exists a data sharing arrangement: 12 out of 28 respondents indicated that their agency cooperates with other agencies in the compilation of energy accounts, often with the Energy Department.

12. It should be noted that this report only covers the accounts currently compiled by the NSOs; it excludes the energy accounts compiled by other agencies.

<sup>1</sup> Five out of these 38 countries did not fill out the questionnaire itself but indicated by email that they do not compile energy accounts.

<sup>2</sup> Four more respondents indicated that they compile energy accounts, but during the validation it became clear that they referred to energy balances and are therefore not included in the analysis.

13. 18 NSOs have plans to start or expand compilation in the next two years with physical energy flow accounts being mentioned most frequently. Five out of these respondents plan to compile energy accounts for the first time. This would bring the total of energy accounts compiling countries to 25 in the next two years.

14. Table 2 shows that the guidance material most commonly used for the compilation of energy accounts is the SEEA-2003 followed by the 1993 SNA. The Eurostat manuals were also mentioned, namely the draft NAMEA Air Compilation Guide (two respondents) as well as the publication ‘Accounts for subsoil assets – Results of pilot studies in European countries (European Communities 2000)’.

**Table 2: Guidance material**

System of National Accounts 1993	12
Integrated Environmental-Economic Accounting 2003 (SEEA-2003)	16
Integrated Environmental and Economic Accounting – An Operational Manual (2000)	3
Eurostat Manuals	5
Other countries’ experience	5
Other	4
Not applicable	7

### C. Energy Asset accounts

15. Asset accounts are compiled by 11 countries. Nine out of ten respondents indicated that energy asset accounts are compiled as part of the regular work program. Regarding the resources covered by the asset accounts, five of the 11 respondents compile accounts for natural gas and oil, five respondents in addition cover coal. Other resources covered by asset accounts mentioned are gas condensates (two), hydro power resources, wood, crude bitumen and uranium.<sup>3</sup>

#### 1. Physical Asset accounts

16. It is common for energy resources to be classified into categories based on their geological certainty, their economic viability and/or their project status i.e. level of development. Countries use various classification schemes for this purpose: the so-called McKelvey box and its variations is used in four of the countries; two countries use the United Nations Framework Classification for Fossil Energy and Mineral Resources<sup>4</sup>; eight countries use their own national classification (several answers were possible). These classification schemes often use their own terminology which may even differ for different resources e.g. coal, oil and gas.

17. A clear conclusion is that in all responding countries, the total stock of reserves is broader than proven reserves, which is what is recommended in the 1993 SNA and the 2008 SNA. It must be said that it is difficult to make a precise comparison of total stocks as even in case in which the same terminology is used - e.g. proven reserves - the assessment showed that definitions of stock categories vary between countries.

#### 2. Monetary Asset accounts

18. Eight respondents compile monetary asset accounts. Table 3 shows the valuation method and assumptions made in calculating asset accounts in monetary terms. The net present value method is

<sup>3</sup> In one country uranium is included with metals and not energy resources

<sup>4</sup> [www.unec.org/ie/se/pdfs/UNFC/UNFCemr.pdf](http://www.unec.org/ie/se/pdfs/UNFC/UNFCemr.pdf)

**Table 3: Assumption made in compiling monetary asset accounts**

<i>Country</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>
Valuation method used	NPV <sup>5</sup>	Net price + 2 variations of NPV	NPV	Net price	Net price and NPV (El-Serafy variant)	NPV	Net price + NPV	NPV
Resource rent calculation based on: <i>GOS – CFC – return to fixed capital</i>	Yes	Upper boundary: operating revenues - operating costs – CFC; Lower <i>same</i> - return to fixed capital	Yes – but adjusted for taxes		Yes	Yes	Yes	Yes
Life time of the asset	Constant rate of extraction	Constant rate of extraction	Constant rate of extraction	Constant rate of extraction	Constant rate of extraction	Until 2000 constant rate, from 2001 decreasing rate	Profile obtained from Petroleum Directorate	End year stock / current extraction
Discount rate? <i>-source?</i>	Government long bonds	4% Average real provincial gov bond rate over time series of resource	4% As recommended by Eurostat guidelines		3.345% Average of long term real interest rate	4% As recommended by Ministry of Finance	4% As recommended by Ministry of Finance	4% As recommended by Eurostat guidelines
Rate of return?	Opportunity cost of capital	4.25% (real) Cost of financing	8% (real) Cost of financing			4% (real)	4% (real) Opportunity cost of capital	8% As recommended by Eurostat guidelines
Assumption made regarding future (unit) resource rent? <i>-number of years?</i>	Remains constant, value is weighted moving average 5 years centered moving average	Remains constant – as observed in most recent year	Remains constant, value is weighted moving average 3 years		Remains constant – as observed in most recent year	Remains constant, value is weighted moving average 3 years	Based on forecast of future prices and extraction costs	Remains constant, value is weighted moving average 3 years with weights
Decommissioning costs considered?	Yes – GFCF when costs occur, CFC during lifetime of the equipment	No	No	No	No	No	No	No
Joint occurrence – allocate to specific products?	Yes – value added	Yes - other <sup>6</sup>	No	Yes – based on output	Yes – value added	Yes – based on output	No	No

<sup>5</sup> Net present value: asset value is calculated as the sum of discounted future earnings.

<sup>6</sup> Cost splitting procedure for crude oil and natural gas: revenues, reserves, production - This data is available for oil and natural gas separately. Capital expenditures - The data is compiled provincially for exploratory and development expenses and then split based on the number of meters drilled by commodity. Expenses include; drilling, geological and geophysical, production facilities, non-production facilities, enhanced recovery and gas plants. Operating expenditures - The costs are split by commodity based on a percentage calculated from the number of operating wells. Expenses include; field and well operations, gas plants and other operating expenses.

widespread; one country uses exclusively the net price method<sup>7</sup>; and other countries use the net price method as part of the sensitivity analysis.

19. The resource rent is calculated by all respondents based on a breakdown of the gross operating surplus. Only one country adjusts for specific taxes and subsidies and another country takes decommissioning costs into account. Fluctuating resource rents (seven out of eight countries) was the main problem countries encountered when analyzing the resource rent, followed by negative resource rents (three countries). When negative resource rents occur, one country assumes they are zero; one country reworks its assumptions to try to avoid negative resource rents noting that negative resource rents can be a valid (short term) occurrence. Other responding countries did not provide specifics.

20. Countries indicated the following additional compilation practices in monetary asset accounts were as follows: split the value of the resource between the owner and extractor of the resource (one out of eight respondents); record mineral exploration as a separate asset (three out of five respondents); compile asset accounts in constant prices (two out of eight respondents); include them in the National Accounts balance sheets (three out of eight respondents); perform a sensitivity analysis – some elaborate including various variables others only investigate the effect of a different discount rate (four out of seven respondents). There exists a large variety in compilation practices of monetary asset accounts across countries.

### 3. Data sources

21. Table 4 details the data sources used for the compilation of asset accounts based on 11 respondents. Physical data are almost always collected by other agencies. Surveys are more often used than administrative data for gathering the monetary data needed for compiling energy asset accounts. Monetary data are more commonly collected by NSOs.

**Table 4: Data sources**

	<i>Collected by NSO</i>	<i>Collected by other agencies</i>
<b>Physical data</b>		
Total resource stock assessments	0	9
Categorization of stocks (e.g. proven probable reserves, etc)	1	9
Future profiles for resource extraction	1	8
Other – <i>Please specify:</i>	1	
<b>Monetary data</b>		
General business statistics	7	3
Specific industrial survey for extraction industry, etc.	7	4
Specific energy surveys	4	2
Price surveys	4	3
Administrative data	1	4
National accounts data	8	0
Other – <i>Please specify:</i>	1	0

### 4. Dissemination

22. The majority of countries indicated that dissemination of the energy asset accounts takes place through the environmental accounts program (seven out of eight). The frequency of dissemination is always annual. More than half of the responding countries (mainly from developed region) have at least

<sup>7</sup> The underlying assumption made is that due to scarcity price increases are expected to neutralize the effect of discounting.

10-20 years time series of energy accounts. One country has 40 to 50 years time series. Countries from developing regions normally have less than 10 years time series.

#### 5. Uses and users

23. As shown in Table 5 the energy asset accounts are most often used for deriving indicators or compiling national accounts. Sustainable development indicators (three respondents), life length (two respondents), rate of exhaustion, depletion and decoupling were examples of indicators provided. Adjusting national aggregates for depletion was indicated as an example of a policy use. The main users of energy asset accounts are academia, followed by policy makers.

**Table 5: Main uses and users**

<i>Uses</i>		<i>Users</i>	
Deriving indicators	7	Ministry of Finance	5
Modeling	1	Ministry of Environment	6
Compiling National Accounts	7	Ministry of Energy	4
Input in policy making	3	Other Government Institutions	8
Other	1	Academia	9
		Media	4
		Industries	2
		Other	1

24. Table 6 shows that the main impeding factor in the compilation of energy asset accounts is data availability followed by lack of internationally agreed methodology. Confidentiality and data quality were also indicated as impeding factors.

**Table 6: Impeding factors**

Lack of a cooperation / data sharing with other institutions	0
Lack of compilation guidance material	1
Lack of harmonized measurement units within the country	1
Lack of internationally agreed methodology	4
Lack of harmonized international classifications	2
Data availability	7
Data quality	3
Conversion factors	2
Lack of interest from users	3
Confidentiality	3
Other	2

## D. Energy Flow accounts

25. Energy flow accounts are compiled as part of the regular work program in 11 of the 15 responding countries. Different types of energy flow accounts can be compiled: physical or monetary, use tables only as supply may be concentrated in few economic activities. The Global Assessment also requested detailed information on how countries address the issue of double counting that occurs when primary energy products are transformed into secondary energy products.

### 1. Types of flow accounts

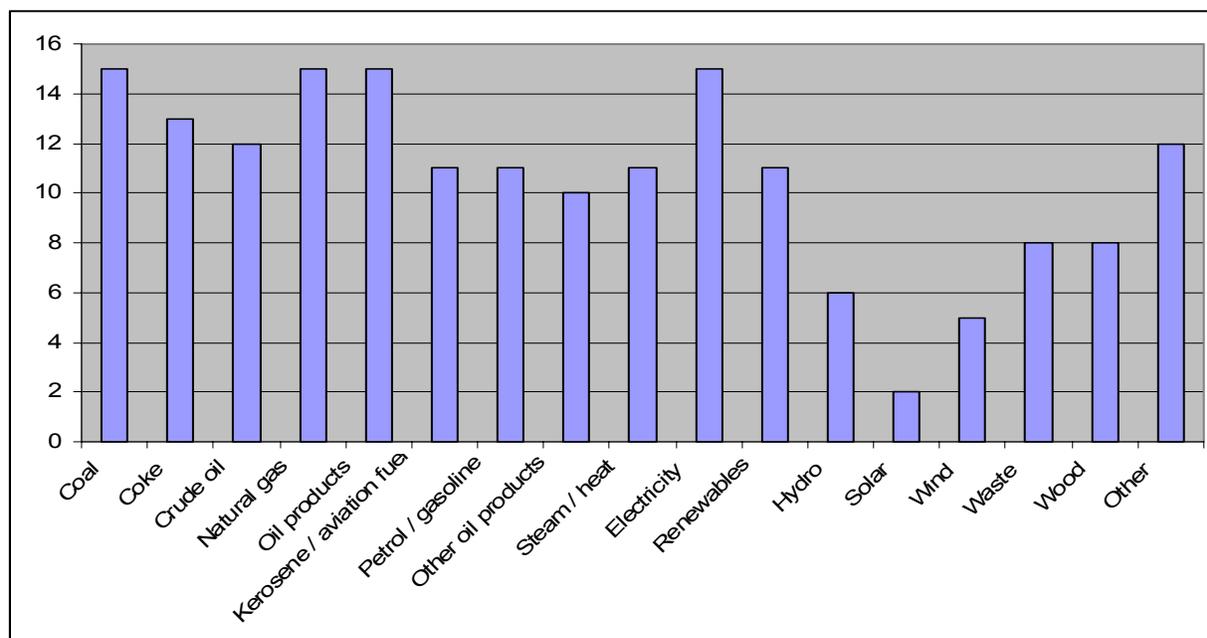
26. To get a better insight in the types of energy flow accounts the assessment distinguished between accounts in two types: ‘gross’ including double counting and ‘net’ excluding double counting. Four responding countries indicated that they compile both gross and net accounts, five countries indicated that they compile only gross accounts and five countries compile only net accounts. Although these concepts are defined in the appendix of the assessment, the responses clearly indicated that the terms gross and net are not widely used in countries and if they were, they were sometimes used with a different meaning. Therefore it is difficult to draw firm conclusions on the basis of the responses. It seems reasonable to conclude that given its policy relevance better terminology should be found to describe the difference between ‘gross’ and ‘net’ accounts.

27. The survey asked about the number of industries that are separately identified in the supply and use tables. For the supply table the answers ranged between zero and 130, indicating that some countries do not compile the supply table at all while other have symmetric supply and use tables. The use table is more commonly compiled and the number of industries separately identified ranged between six and 130. One explanation for these large differences consist in the observation that some countries provided the number of industries that is identified in the disseminated supply and use tables, while others provided the most disaggregated level at which data is available which tends to be a lot larger. The majority of respondents (12 out of 16) indicated that they use International Standard Industrial Classification of all Economic Activities; several also use their national classification.

### 2. Characteristics of flow accounts

28. Table 7 shows the number of responding countries that identified specific energy products in their energy flow accounts, based upon the breakdown of energy products that was provided in the assessment. It should be noted that five respondents did not identify products from this list, but rather provided the list of products they use. Subsequently, these lists have been tentatively matched against the suggested breakdown and are therefore included in Table 7.

**Table 7: Classification of energy products in flow accounts**



29. It is noteworthy that from the 16 responding countries, a considerable number of countries (11) include renewables explicitly. Additional information asked in the assessment shows that there is a large

variation in detail used in the supply-use tables ranging from 8 – 31 products as well as a large variation in terminology (e.g. petroleum vs. crude oil). Nonetheless, it seems that it is possible to draw a list of products at the most aggregated level that most countries compile: coal, coke, crude oil, natural gas, oil products, electricity, renewables and other. Only one respondent uses the Central Product Classification (CPC).

30. All 12 responding countries indicated that a common measurement unit is used: joule (nine), ton of oil equivalent (two), and one country indicated both ton of oil equivalent and GWh.

31. In addition responding countries indicated the following compilation practices: distinguish energy use by purpose e.g. whether energy is used for transport or heating (seven out of 16 respondents); include non-energy use of energy products (e.g. use as lubricant instead of as fuel) in the accounts (seven out of 16); include production of energy for own use (six out of 16); allocate losses in distribution to producers (six out of 16 respondents); allocate to the users (one out of 16 respondents); record losses in distribution as a separate category (three); not explicitly include losses in distribution in the accounts (five); report statistical discrepancies (five); resolve all discrepancies (one) - this is accomplished by changing the inventories).

32. The residence concept of the National Accounts is most commonly used for the energy flow accounts (11 out of 16) as opposed to the territory principle which is used by four countries.<sup>8</sup> One country indicated that it uses both concepts. Major difference between using the residence or the territory principle would arise in eight countries, one country indicated that no major difference would occur; five responding countries did not know the answer, and one country is currently investigating this issue.

### 3. Data sources

33. Surveys are used more often than administrative data for gathering monetary data for the compilation of energy flow accounts. Physical data are collected more often by other agencies, but it is less pronounced than in case of the asset accounts.

**Table 8: Data sources**

	<i>Collected by NSO</i>	<i>Collected by other agencies</i>
<b>Physical data</b>		
Energy statistics	9	8
Energy balances	5	10
Other – <i>Please specify:</i>	2	3
<b>Monetary data</b>		
National accounts data	10	0
Administrative data – <i>Please specify:</i>	1	2
Price surveys	7	2
Other – <i>Please specify:</i>	1	1

<sup>8</sup> The concept of residence can be defined as follows: “an institutional unit is resident within the economic territory of a country when it maintains a centre of economic interest in that territory - that is, when it engages, or intends to engage, in economic activities or transactions on a significant scale either indefinitely or over a long period of time, usually interpreted as one year.” [1993 SNA para 1.28] The territory principle records all activities that take place on the national territory regardless of whether they are undertaken by residents or non-residents. As some activities and transactions on the national territory will involve nonresidents, differences will occur depending on which underlying principle is followed. Standard examples for illustrating this difference are tourism and international transport.

#### 4. Dissemination

34. The majority of respondents (11 out of 13) indicated that dissemination of the energy flow accounts takes place through the environmental accounts program. The frequency of dissemination is most often annual and the time lag ranges from 7 months to 4 years. More than half of the responding countries (mainly from developed countries) have at least 10 to 20 years time series of energy accounts disseminated, with two countries having more than 30 years time series. Countries from developing regions have less than 10 years time series or data for only selected years.

#### 5. Uses and users

35. Table 9 shows that the flow accounts are most often used for modeling (10 out of 15), deriving indicators (9) and compiling national accounts (8). Indicators that countries indicated are: energy efficiency, decoupling, and energy intensities. Countries indicated inputs in policy making in particular for setting environmental goals, developing energy strategies, tax policies, input in macro economic models, input-output analysis, decomposition analysis, target setting for industries, and informing the general public about energy use in the country. Table 9 also shows that the main user of energy flow accounts is academia followed by policy makers.

**Table 9: Main uses and users**

<i>Uses</i>		<i>Users</i>	
Deriving indicators	9	Ministry of Finance	4
Modeling	10	Ministry of Environment	9
Compiling national accounts	8	Ministry of Energy	5
Compiling air emission accounts	7	Other Government Institutions	10
Calculating GHG emissions	5	Academia	12
Calculating air emissions	3	Media	6
Input in policy making	5	Industries	4
Other	3	Other	2

36. Table 10 indicates that the main impeding factor is data availability in the compilation of energy flow accounts, followed by lack of internationally agreed methodology and data quality. Other factors mentioned were: timeliness; lack of financial resources allocated to the production of energy accounts; hard to adapt to an ISIC-based industrial classification; inclusion of secondary energy sources e.g. waste.

**Table 10: Impeding factors**

Lack of a cooperation / data sharing with other institutions	1
Lack of compilation guidance material	4
Lack of harmonized measurement units within the country	2
Lack of internationally agreed methodology	7
Lack of harmonized international classifications	5
Data availability	11
Data quality	7
Conversion factors	3
Lack of interest from users	3
Confidentiality	5
Other	2

## **Annex I**

### **Countries that filled out the questionnaire as of 31 January 2009:**

Australia  
Austria  
Belgium  
Brazil  
Bulgaria  
Canada  
China  
Colombia  
Cyprus  
Denmark  
Finland  
Germany  
Greece  
Hungary  
India  
Indonesia  
Israel  
Italy  
Jordan  
Mauritius  
Mexico  
Mongolia  
Netherlands  
New Zealand  
Norway  
Romania  
Slovenia  
South Africa  
Spain  
Sweden  
Switzerland  
Turkey  
United Kingdom

### **Countries that indicated by mail that they do not currently compile energy accounts:**

Armenia  
Botswana  
Czech Republic  
Guatemala  
United States

## Annex II

## Global Assessment of Energy Accounts

Please provide your contact information  Country: _____ Name of institution: _____ Contact person: _____ Email: _____ Tel: _____ Fax: _____ Website: _____	<input type="checkbox"/> PLEASE CHECK THIS BOX if you do not wish that your response is shared with other international, regional or supranational organizations
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### Introduction

The *Global Assessment of Environment Statistics and Environmental-Economic Accounting* is an activity of UNSD under the auspices of the UN Committee of Experts on Environmental-Economic Accounting (UNCEEAA). It aims to assess the status of national implementation of environment statistics and environmental-economic accounting in countries.

In order to reduce the reporting burden on countries, the Global Assessment was designed in two phases. Phase 1 was carried out in October 2006 and the results were presented to the United Nations Statistical Commission at its 38<sup>th</sup> session. A detailed report can be found at: <http://unstats.un.org/unsd/envaccounting/ceea/assessment.asp>

Phase 2 consists of several in depth follow-up questionnaires. This assessment covers energy accounts and has been sent to those countries that reported either in Phase 1 or in the Global Assessment of Energy Statistics and Balances that they are compiling energy accounts - or are planning to compile energy accounts.

The assessment of Energy Statistics and Balances was carried out in 2007. The draft report is available at: <http://unstats.un.org/unsd/envaccounting/ceea/assessment.asp>

### Objective

The objectives of the *Global Assessment of Energy Accounts* are:

- To obtain an in-depth understanding of country practices in the compilation of energy accounts;
- To contribute to the development of the System of Environmental-Economic Accounting for Energy (SEEA-E); and
- To assist with the development of targeted technical cooperation activities in this area.

It is structured into 3 sections: Section 1 aims to get an overview of the types of energy accounts currently being compiled in countries as well as the agencies involved. Section 2 covers energy asset accounts and Section 3 covers energy flow accounts. The latter two sections focus in great depth on various methodological aspects of compilation, definitions and classifications used; valuation principles; data sources; and dissemination and uses of the accounts.

## Instructions for filling in the Global Assessment

The *Global Assessment of Energy Accounts* can be filled out either online (**preferred option**) at <http://unstats.un.org/unsd/envaccounting/ceea/survey>, or electronically by returning it to [seea@un.org](mailto:seea@un.org) or on paper by sending your response to:

Mr. Keping Yao  
 Room: DC2-1524  
 United Nations Statistics Division  
 Two UN Plaza,  
 New York, NY 10017 (USA)  
 Fax: +1 (212) 963 1374

For additional comments, please use the comment box on the last page.

We would be grateful if you could send us any supporting documents (reports, links to websites, etc.) related to the energy accounts compiled by your agency (if available in French, English or Spanish) either by email to [seea@un.org](mailto:seea@un.org) or by regular mail to the address specified above.

### Help available

Help is available at the end of the questionnaire for selected questions identified with ⑦.

If you experience problems in completing the questionnaire or have any further questions regarding this assessment please contact Mr. Keping Yao (Email: [seea@un.org](mailto:seea@un.org), Tel: +1 (917) 367 2464, Fax: +1 (212) 963 1374).

### A note on terminology:

- **Energy asset accounts** are asset accounts for energy resources such as coal, oil and natural gas. In particular, they describe the opening and closing stocks of energy resources and the changes therein. They can be compiled in physical and/or monetary units.
- **Energy flow accounts** describe the supply of energy products (e.g. production, imports) and their use by economic categories (intermediate and final consumption, exports and gross capital formation) in the economic territory of a country. They can be compiled in physical and/or monetary units.

*Please note that, as satellite accounts of the System of National Accounts (SNA), energy accounts follow the concepts (such as residence), definitions and classifications (such as ISIC) and the accounting rules of the SNA. Energy flow accounts should not be confused with **energy balances** that describe the overall supply (e.g. production, imports) and overall use (e.g. exports, input into another energy source, non-energy uses) of an energy product (e.g. coal) in the national territory during a period of time (generally a year).*

## 1. GENERAL

1. Which of the following energy accounts does your agency currently compile? <sup>?</sup> Please mark all that apply
- Physical energy asset accounts  
 Monetary energy asset accounts  
 Physical energy flow accounts  
 Monetary energy flow accounts  
 None of the above
2. Which of the following energy accounts are compiled by other agencies in your country? Please mark all that apply
- Physical energy asset accounts - Please specify name of agency: \_\_\_\_\_  
 Monetary energy asset accounts - Please specify name of agency: \_\_\_\_\_  
 Physical energy flow accounts - Please specify name of agency: \_\_\_\_\_  
 Monetary energy flow accounts - Please specify name of agency: \_\_\_\_\_  
 None of the above
3. Does your agency have plans to start – or expand – the compilation of energy accounts in the next 2 years?
- Yes – Please specify all:  
 Physical energy asset accounts  
 Monetary energy asset accounts  
 Physical energy flow accounts  
 Monetary energy flow accounts  
 No
4. Does your agency cooperate with other agencies in your country in the compilation of energy accounts?
- Yes - Please describe the cooperation mechanism and the name(s) of the institution(s) involved:  
 \_\_\_\_\_  
 No
5. Which guidance material does your agency use in the compilation of energy accounts? Please mark all that apply
- System of National Accounts 1993  
 Integrated Environmental-Economic Accounting 2003 (SEEA-2003)  
 Integrated Environmental and Economic Accounting – An Operational Manual (2000)  
 Eurostat Manuals – Please specify: \_\_\_\_\_  
 Other countries' experience – Please indicate countries: \_\_\_\_\_  
 Other – Please specify: \_\_\_\_\_  
 Not applicable

## 2. ENERGY ASSET ACCOUNTS

This section of the Global Assessment should be completed **ONLY** if energy asset accounts (physical and/or monetary) are currently compiled by your agency.

6. Are the energy asset accounts compiled as part of the regular work programme?
- Yes  
 No - as part of a pilot project
7. For which energy resources are the asset accounts compiled? Please mark all that apply
- Coal  
 Natural gas  
 Oil  
 Other - Please specify: \_\_\_\_\_
8. Which classification does your agency use for energy resources?
- United Nations Framework Classification for Fossil Energy and Mineral Resources  
 Mc Kelvey box (and its variations)  
 National classification - Please specify: \_\_\_\_\_  
 Other - Please specify: \_\_\_\_\_

### PHYSICAL ASSET ACCOUNTS

9. If applicable, which categories of Coal are explicitly included as stocks in the physical asset accounts? <sup>?</sup> Please mark all that apply
- Proven reserves – Please provide definition: \_\_\_\_\_  
 Probable reserves – Please provide definition: \_\_\_\_\_  
 Possible reserves – Please provide definition: \_\_\_\_\_  
 Measured – Please provide definition: \_\_\_\_\_  
 Indicated – Please provide definition: \_\_\_\_\_  
 Inferred – Please provide definition: \_\_\_\_\_  
 Other – Please specify name of categories and provide definition: \_\_\_\_\_
10. In terms of the categories identified in Question 9, how is the total stock of Coal defined? <sup>?</sup>
- As the sum of proven and probable reserves  
 As a weighted average of proven and probable reserves – Please specify weights: \_\_\_\_\_  
 Other – Please specify: \_\_\_\_\_
11. If applicable, which categories of Oil are explicitly included as stocks in the physical asset accounts? <sup>?</sup> Please mark all that apply
- Proven reserves – Please provide definition: \_\_\_\_\_  
 Probable reserves – Please provide definition: \_\_\_\_\_  
 Possible reserves – Please provide definition: \_\_\_\_\_  
 Measured – Please provide definition: \_\_\_\_\_  
 Indicated – Please provide definition: \_\_\_\_\_

- Inferred – Please provide definition: \_\_\_\_\_
- Other – Please specify name of categories and provide definition: \_\_\_\_\_

12. In terms of the categories identified in Question 11, how is the total stock of Oil defined? <sup>?</sup>

- As the sum of proven and probable reserves
- As a weighted average of proven and probable reserves – Please specify weights: \_\_\_\_\_
- Other – Please specify: \_\_\_\_\_

13. If applicable, which categories of Natural Gas are explicitly included as stocks in the physical asset accounts? <sup>?</sup> Please mark all that apply

- Proven reserves – Please provide definition: \_\_\_\_\_
- Probable reserves – Please provide definition: \_\_\_\_\_
- Possible reserves – Please provide definition: \_\_\_\_\_
- Measured – Please provide definition: \_\_\_\_\_
- Indicated – Please provide definition: \_\_\_\_\_
- Inferred – Please provide definition: \_\_\_\_\_
- Other – Please specify name of categories and provide definition: \_\_\_\_\_

14. In terms of the categories identified in Question 13, how is the total stock of Natural Gas defined? <sup>?</sup>

- As the sum of proven and probable reserves
- As a weighted average of proven and probable reserves – Please specify weights: \_\_\_\_\_
- Other – Please specify: \_\_\_\_\_

15. Are other energy resources included as stocks in the physical asset accounts? <sup>?</sup>

- Yes – Please specify : \_\_\_\_\_
- No

### MONETARY ASSET ACCOUNTS

Please skip to Question 33 if your agency does not compile monetary asset accounts

16. Which method is used to value the stocks? Please mark all that apply <sup>?</sup>

- Net price (Hotelling Valuation)
- Net present value
- Appropriation method
- Other methods - Please specify: \_\_\_\_\_

17. If applicable, which method is used to estimate the resource rent? <sup>?</sup>

- Based on breakdown of Gross operating surplus - Please indicate the specific formula used:
- Resource rent = Gross operating surplus – consumption of fixed capital - return to fixed capital

Resource rent = Gross operating surplus + specific taxes (less subsidies) on production – consumption of fixed capital - return to fixed capital

Other method - Please specify: \_\_\_\_\_

Capital service flow method

Appropriation method

Other method - Please specify: \_\_\_\_\_

18. If applicable, when calculating the resource rent, which taxes/subsidies are regarded as specific for the extraction industry and thus part of the resource rent? <sup>?</sup>

Please specify: \_\_\_\_\_

19. If applicable, how is the life time of the asset determined?

- Assuming a constant rate of extraction of reserves
- Assuming a variable rate of extraction of reserves
- Other method - Please specify: \_\_\_\_\_

20. If applicable, indicate the discount rate used in the valuation of the asset and what it is based upon.

Please specify:

Real discount rate: \_\_\_\_\_ % or

Nominal discount rate : \_\_\_\_\_ %

- As recommended by Ministry of Finance
- As recommended by Ministry of Environment
- As recommended by international guidelines - Please specify: \_\_\_\_\_
- Other - Please specify: \_\_\_\_\_

21. If applicable, indicate the rate of return to capital used in the asset valuation and what it is based upon.

Please specify:

Real rate of return: \_\_\_\_\_ % or

Nominal rate of return: \_\_\_\_\_ %

- Based on the opportunity cost of capital
- Based on the cost of financing
- Other - Please specify: \_\_\_\_\_

22. If applicable, in the calculation of the Net Present Value which assumption is made regarding the (unit) resource rent?

- Remains constant, value is as observed in the most recent year
- Remains constant, value is a weighted moving average of a number of years.

Please specify number of years : \_\_\_\_\_

Please specify applied weights : \_\_\_\_\_

- Based on forecast of future prices and extraction costs

Other - Please specify: \_\_\_\_\_

23. If applicable, which of the following problems (if any) are encountered when analyzing the resource rent? Please mark all that apply

- Negative resource rents
- Fluctuating resource rents
- No problems at all
- Other - Please specify: \_\_\_\_\_

Please elaborate how your agency addresses the problem(s): \_\_\_\_\_

24. When calculating the resource rent, how are decommissioning/terminal costs treated?

- Do not exist
- Exist, but are not taken into account
- Recorded as a current (intermediate) cost when they actually occur
- Recorded as gross capital formation when the costs actually occur with a corresponding recording of consumption of fixed capital in the same period
- Recorded as gross capital formation when the costs actually occur and as consumption of fixed capital during the life-time of the equipment
- Other - Please specify: \_\_\_\_\_

25. How is the value of the resource recorded in the balance sheet?

- Total (without distinguishing owner and extractor)
- All in owner's balance sheet
- All in extractor's balance sheet
- Split between owner and extractor

- Please specify how: \_\_\_\_\_

26. If applicable, is mineral exploration and evaluation treated as a separate asset or as an asset combined with the resource itself?

- Separate assets
- Combined asset

27. Does your agency calculate stock values in constant prices?

- Yes, please specify method : \_\_\_\_\_
- No

28. If applicable, please specify the breakdown of the changes in stocks in the monetary asset accounts? Please mark all that apply

- No breakdown
- Extraction
- Depletion
- Discoveries
- Reappraisals
- Holding gains/losses

- Catastrophic losses/uncompensated seizures
- Changes in classifications and structure
- Other - Please specify: \_\_\_\_\_

29. If applicable, how does your agency calculate depletion? <sup>(?)</sup>

Please specify method (e.g. El Serafy, Hotelling, Hartwick, other): \_\_\_\_\_

30. Are the energy asset values included in the balance sheet of the national accounts?

- Yes
- No

31. Does your agency perform a sensitivity analysis?

- Yes - Please describe: \_\_\_\_\_
- No

32. In case of joint occurrence (e.g. oil and gas), do you allocate resource rent to specific products?

- Yes - Please specify:
  - Based on value added
  - Based on output
  - Other - Please describe method:
- No

**DATA SOURCES**

33. Which data sources are used for the compilation of energy asset accounts? Please mark all that apply and indicate whether they are collected by your agency or other agencies.

	Collected by your agency	Collected by other agencies
<b>Physical data</b>		
Total resource stock assessments	<input type="checkbox"/>	<input type="checkbox"/>
Categorization of stocks (e.g. proven probable reserves, etc)	<input type="checkbox"/>	<input type="checkbox"/>
Future profiles for resource extraction	<input type="checkbox"/>	<input type="checkbox"/>
Other - Please specify: _____	<input type="checkbox"/>	<input type="checkbox"/>
<b>Monetary data</b>		
General business statistics	<input type="checkbox"/>	<input type="checkbox"/>
Specific industrial survey for extraction industry, etc.	<input type="checkbox"/>	<input type="checkbox"/>
Specific energy surveys	<input type="checkbox"/>	<input type="checkbox"/>
Price surveys	<input type="checkbox"/>	<input type="checkbox"/>
Administrative data	<input type="checkbox"/>	<input type="checkbox"/>
National accounts data	<input type="checkbox"/>	<input type="checkbox"/>
Other - Please specify: _____	<input type="checkbox"/>	<input type="checkbox"/>

**DISSEMINATION**

34. Through which programme are the energy asset accounts disseminated? Please mark all that apply

- As part of the national accounts programme
- As part of the environmental accounts programme
- As part of the energy statistics programme
- Other - *Please specify:* \_\_\_\_\_

35. Which asset accounts are disseminated?

- Physical accounts
- Monetary accounts
- Both

36. What is the time series of energy asset accounts disseminated by your agency? *Please elaborate if different for physical and monetary accounts*

Time series: \_\_\_\_\_

37. What is the frequency of dissemination of energy asset accounts by your agency? *Please elaborate if different for physical and monetary accounts*

Frequency: \_\_\_\_\_

### USES

38. In your country, what are the main uses of energy asset accounts? *Please mark all that apply*

- Deriving indicators - *Please indicate which indicators:* \_\_\_\_\_
- Modeling
- Compiling National Accounts
- Input in policy making - *Please list examples of policy uses:* \_\_\_\_\_
- Other - *Please specify:* \_\_\_\_\_

39. In your country, who are the main users of energy asset accounts? *Please mark all that apply*

- Ministry of Finance
- Ministry of Environment
- Ministry of Energy
- Other Government institutions
- Academia
- Media
- Industries
- Other - *Please specify:* \_\_\_\_\_

40. What are the impeding factors in the compilation of energy asset accounts in your country? *Please mark all that apply*

- Lack of a cooperation/data sharing with other institutions
- Lack of compilation guidance material
- Lack of harmonized measurement units within the country
- Lack of internationally agreed methodology
- Lack of harmonized international classifications
- Data availability

- Data quality
- Conversion factors
- Lack of interest from users
- Confidentiality
- Other - *Please specify:* \_\_\_\_\_

41. In your view, what are the methodological and compilation issues in energy asset accounts that should be addressed by the international statistical community?

### 3. ENERGY FLOW ACCOUNTS

*This section of the Global Assessment should be completed ONLY if energy flow accounts (physical and/or monetary) are currently compiled by your agency.*

42. Are the energy flow accounts compiled as part of a regular work programme?

- Yes
- No - as part of a pilot project

43. Which of the following types of flow accounts does your agency compile? *Please mark all that apply* ?

- Gross energy flow accounts -  
*Please provide your definition of gross energy use:*  
\_\_\_\_\_
- Net energy flow accounts -  
*Please provide your definition of net energy use:*  
\_\_\_\_\_

44. How many energy products are separately identified in the energy flow accounts?

Number: \_\_\_\_\_

*Please copy-paste the detailed list of products here :*

\_\_\_\_\_

**OR**

*Specify in list below :*

- Coal
- Coke
- Crude oil
- Natural gas
- Oil products
  - Kerosene/aviation fuel
  - Petrol/gasoline
  - Other oil products
- Steam/Heat
- Electricity
- Renewable energy resources
  - Hydro
  - Solar
  - Wind

- Waste
- Wood
- Other - Please specify: \_\_\_\_\_

45. Is a common measurement unit used in the physical energy flow accounts? <sup>?</sup>

- Yes - Please specify which: \_\_\_\_\_
- No

46. Which of the following classifications are used in compiling energy flow accounts? Please mark all that apply.

- Central Product Classification (CPC)
- International Standard Industrial Classification of all Economic Activities (ISIC) / Classification of Economic Activities in the European Community (NACE)
- Own national classification - Please enumerate energy related activities \_\_\_\_\_

47. How many industries are separately identified in the supply table and how many in the use table? <sup>?</sup>

Supply table (Production) : \_\_\_\_\_  
 Use table (Intermediate use) : \_\_\_\_\_

48. Do the flow accounts disaggregate energy use by purpose (e.g. heating, transport)?

- Yes - Please specify breakdown: \_\_\_\_\_
- No

49. Are the non-energy uses of energy products accounted for in the energy flow accounts? <sup>?</sup>

- Yes
- No

50. Do the energy flow accounts explicitly identify consumption of energy (e.g. electricity) for own use?

- Yes - in monetary and physical flow accounts
- Yes - in monetary flow accounts only
- Yes - in physical flow accounts only
- No
- Other - Please describe: \_\_\_\_\_

51. To whom are the "losses in distribution" in the physical flow accounts allocated? <sup>?</sup>

- Energy users
- Energy producers
- Separate category
- Not explicitly included in the accounts
- Other - Please describe: \_\_\_\_\_

52. When applicable, is a statistical discrepancy reported in the energy flow accounts?

- Yes - reported separately in the flow accounts
- No - all discrepancies are resolved - Please specify method: \_\_\_\_\_

53. Are the energy flow accounts compiled according to the residence principle as applied in the System of National Accounts or according to the territory principle normally used in energy statistics? <sup>?</sup>

- Residence principle
- Territory principle
- Both

54. In your country, is there a major difference between using the residence and territory principle?

- Yes - Please indicate main reason(s) :
  - International transport by air
  - International transport by sea
  - International transport by road
  - Tourism
  - Other - Please describe: \_\_\_\_\_
- No
- Do not know

**DATA SOURCES**

55. Which data sources are used for the compilation of energy flow accounts? Please mark all that apply and indicate whether data are collected by your agency or other agencies?

	Collected by your agency	Collected by other agencies
<b>Physical data</b>		
Energy statistics	<input type="checkbox"/>	<input type="checkbox"/>
Energy balances	<input type="checkbox"/>	<input type="checkbox"/>
Other - Please specify: _____	<input type="checkbox"/>	<input type="checkbox"/>
<b>Monetary data</b>		
National accounts data	<input type="checkbox"/>	<input type="checkbox"/>
Administrative data - Please specify: _____	<input type="checkbox"/>	<input type="checkbox"/>
Price surveys	<input type="checkbox"/>	<input type="checkbox"/>
Other - Please specify: _____	<input type="checkbox"/>	<input type="checkbox"/>

**DISSEMINATION**

56. In your country, through which programme are the flow accounts disseminated? Please mark all that apply

- As part of the national accounts programme
- As part of the environmental accounts programme
- As part of the energy statistics programme
- Other - Please specify: \_\_\_\_\_

57. What is the time series of energy flow accounts disseminated by your agency? Please elaborate if different for physical and monetary flow accounts

Time series: \_\_\_\_\_

58. What is the frequency and time lag (i.e. difference between publishing and reference year) of dissemination of energy flow accounts by your agency? *Please elaborate if different for physical and monetary flow accounts*

Frequency: \_\_\_\_\_

Time lag : \_\_\_\_\_

**USES**

59. In your country, what are the main uses of the energy flow accounts? *Please mark all that apply*

- Deriving indicators – *Please indicate which indicators:* \_\_\_\_\_
- Modeling
- Compiling national accounts
- Compiling air emission accounts
- Calculating greenhouse gas emissions
- Calculating air emissions
- Input in policy making – *Please list examples of policy uses:* \_\_\_\_\_
- Others - *Please specify:* \_\_\_\_\_

60. In your country, who are the main users of the energy flow accounts? *Please mark all that apply*

- Ministry of Finance
- Ministry of Environment
- Ministry of Energy
- Other Government institutions
- Academia
- Media
- Industries
- Other – *Please specify:* \_\_\_\_\_

61. What are the impeding factors in the compilation of energy flow accounts in your country? *Please mark all that apply*

- Lack of a cooperation/data sharing with other institutions
- Lack of compilation guidance material
- Lack of harmonized measurement units within the country
- Lack of internationally agreed methodology
- Lack of harmonized international classifications
- Data availability
- Data quality
- Conversion factors
- Lack of interest from users
- Confidentiality

Other - *Please specify:* \_\_\_\_\_

62. In your view, what are the methodological and compilation issues in energy flow accounts that should be addressed by the international statistical community?

\_\_\_\_\_

Please provide additional comments in the box below:

\_\_\_\_\_

## Help on selected questions

### Question 1: Which of the following energy accounts does your agency currently compile?

**Energy asset accounts** are asset accounts for energy resources such as oil and coal. In particular, they describe the opening and closing stocks of energy resources and the changes therein. They can be compiled in physical and/or monetary units.

**Energy flow accounts** describe the supply of energy products (production and imports) and their use by economic categories (intermediate and final consumption, exports and gross capital formation) in the economic territory of a country. They can be compiled in physical and/or monetary units.

Please note that, as satellite accounts of the System of National Accounts (SNA), energy accounts follow the concepts (such as residence), definitions and classifications (such as ISIC) and the accounting rules of the SNA. Energy flow accounts should not be confused with energy balances that describe the overall supply (e.g. production, imports) and overall use (e.g. exports, input into another energy source, non-energy uses) of an energy product (e.g. coal) in the national territory during a period of time (generally a year).

More information can be found in the handbook *Integrated environmental and economic accounting 2003* (SEEA-2003) available on-line at: <http://unstats.un.org/unsd/envaccounting/seea.asp> For energy flow accounts see Chapter 4 Section B p. 145; for energy asset account see Chapter 8 Section B p.314.

### Questions 9, 11 and 13: Which of the following categories of reserves/resources are explicitly included as stocks in the physical asset accounts?

Examples of categories of energy resources explicitly included in the stocks are: proven, probable, and possible reserves etc. Proven reserves refer to mineral deposits located on or below the earth's surface that are economically exploitable, given current technology and relative prices. Probable and possible reserves reflect a higher level of uncertainty on the exploitability of the reserves.

Please note that the terminology and definitions may vary considerably across countries and the list of options given in this Assessment is not comprehensive. Please, use additional space to describe the classification system used by your agency.

### Question 16. Which method is used to value the stocks?

A review of the calculation methods listed as options can be found in the Handbook of National Accounting *Integrated Environmental and Economic Accounting 2003* (SEEA-2003) - Chapter 7 Section D Valuation cf. p.270 - available on-line at: <http://unstats.un.org/unsd/envaccounting/seea.asp>

**Net price** (Hotelling valuation): the value of the resource stock is calculated as the current resource rent per unit of resource times the size of the stock;

**Net present value:** the value of the resource stock is calculated as the discounted stream of future benefits that the asset is expected to yield (using an appropriate discount rate);

**Appropriation method:** often energy resources are legally owned by governments, while the extraction is carried out by separate companies. Through taxes and royalties the government appropriate part of the resource rent from extraction. If the government's appropriation can be assumed to be a large part of the resource rent, it can be used as a proxy for the resource rent itself. Based on the resource rent the value of the stock can be calculated.

### Questions 17 and 18: If applicable, which method is used to estimate the resource rent?

**Specific taxes and subsidies** are those taxes and subsidies that apply only to the oil and gas extraction industry or the mining of coal and lignite industry, while **non-specific taxes and subsidies** apply to other industries as well. Specific taxes can be considered as part of the resource rent (appropriated by the government).

**Appropriation method:** often energy resources are legally owned by governments, while the extraction is carried out by separate companies. Through taxes and royalties the government appropriate part of the resource rent from extraction. If the government's appropriation can be assumed to be a large part of the resource rent, it can be used as a proxy for the resource rent itself. Based on the resource rent the value of the stock can be calculated.

### Question 21: If applicable, how does your agency calculate depletion?

Depletion is defined as the decrease in value of natural resource stocks due to extraction.

**Question 24: In case of joint occurrence (e.g. oil and gas, silver and zinc), do you allocate resource rent to specific products?**

Joint occurrence refers to the case when energy and/or mineral resources occur together and are extracted together (e.g. the extraction of natural gas associated with crude oil). In these cases, the resource rent has to be allocated to the different resources in order to value them separately.

**Question 43: Which of the following types of flow accounts does your agency compile?**

The distinction between gross and net energy flow accounts has to do with the problem of double counting that occurs when primary energy products are transformed into secondary energy products.

There appear to be various country practices in using the terms and in compiling accounts: we would like to find out exactly which concepts are being used by your agency, and if applicable how the double counting is avoided (e.g. how are the conversion losses allocated?)

**Question 45: Is a common measurement unit used in physical energy flow accounts?**

Examples of common units are tera joule (TJ), ton of oil equivalent (TOE), Giga Watt hour (GWh).

**Question 49: Are the non-energy uses of energy products accounted for in the energy flow accounts?**

Not all energy products are consumed as fuels or transformed into other fuels. Examples of non-energy uses of energy products are: energy products that are incorporated into products (for instance as raw materials); energy products used for their physical properties (lubricants), or for their solvent properties (white spirit). The treatment and recording of non-energy uses may differ in energy flow accounts and energy statistics and balances.

**Question 52: To whom are the "losses in distribution" in the physical flow accounts allocated?**

"Losses in distribution" refer to the losses of fuels and electrical energy, which occur outside the utilities or plants before reaching the final consumer.

**Question 53: Are the energy flow accounts compiled according to the residence principle as applied in the System of National Accounts or according to the territory principle normally used in energy statistics?**

The concept of **residence** can be defined as follows: "an institutional unit is resident within the economic territory of a country when it maintains a centre of economic interest in that territory - that is, when it engages, or intends to engage, in economic activities or transactions on a significant scale either indefinitely or over a long period of time, usually interpreted as one year." [1993 SNA para 1.28]

The **territory principle** records all activities that take place on the national territory regardless of whether they are undertaken by residents or non-residents.

As some activities and transactions on the national territory will involve nonresidents, differences will occur depending on which underlying principle is followed. Standard examples for illustrating this difference are tourism and international transport.