SEEA-Energy: Issues chapter by chapter

Expert Group Meeting on SEEA-Energy

5-7 October 2011, New York

United Nations Statistics Division

Outline of session

- Introduction
- Chapter by chapter commentary on differences between SEEA and SEEA-Energy:
  - Chapter 1 - Introduction
  - Chapter 2 – SEEA-Energy Framework
  - Chapter 3 – Physical Asset Accounts
  - Chapter 4 – Monetary Asset Accounts
  - Chapter 5 – Physical Flow Accounts
  - Chapter 6 – Monetary and Hybrid Flow Accounts
  - Chapter 7 – Presentation & Use of Energy Accounts

Introduction

- While SEEA-Energy is now well advanced, a number of issues remain to be resolved. These fall into two broad categories:
- 1) Areas where SEEA and SEEA-Energy have become misaligned (generally speaking the two systems should be consistent); and

Introduction, *continued…*

- 2) Other issues, including questions raised by Expert Group members in country responses to the pre-meeting comment form…
  - We would like to acknowledge excellent comments received (reflected in items to be discussed at this meeting)
  - Not necessarily SEEA-Energy to be changed; certain differences between SEEA and SEEA-Energy may be deemed acceptable.
    - Attempts to align with IRES may cause differences
    - And there is still opportunity to change the content of SEEA

Introduction - State of alignment SEEA and SEEA-Energy

- Draft chapters of SEEA-Energy written early 2011
- Since then, drafting of central framework of SEEA has progressed quickly…
- Although SEEA and SEEA-Energy are largely consistent, some misalignment is inevitable…
- This presentation includes, for each chapter of SEEA-Energy, an indication of where SEEA and SEEA-Energy have diverged

Introduction - State of alignment SEEA and SEEA-Energy, *continued…*

- There is a range of ways that SEEA and SEEA-Energy could become misaligned
- Many of these are essentially ‘housekeeping’ matters to be dealt with during the final drafting of SEEA-Energy
- Some differences are completely valid e.g. SEEA-Energy will address questions of policy and applications; the first volume of SEEA will not
- Our focus is on those differences that are material matters of concept, methodology and/or principle

Basis for discussion…

- Ole Gravgard Pedersen will introduce each chapter, then;
- Chapter by chapter discussion of identified issues
- Please feel free to raise issues that we have not identified
- Discussion starts now!

Chapter 1: Introduction

- *What is 'SEEA-Energy compliant'? i.e. specify important 'required' accounts?*
- Should SEEA-Energy itself set out a minimum requirement to determine 'SEEA-Energy-compliant'?
- i.e. "these tables are required…"
  - This is something that SEEA-Water does

Chapter 1: Introduction *continued…*

- *Target audience*
- What is the target audience of SEEA-Energy?
  - Is the Chapter 1 audience different again?
- Pre-meeting questionnaire identified compilers of energy accounts, policy makers and other data users – ‘new comers’ included
  - Do we agree?
  - Any implications for SEEA-Energy?

Chapter 1: Introduction *continued…*

- *'Selling' SEEA-Energy*
- In SEEA-Energy introduction: spend more time on why this type of information is useful?
- If so, who are we trying to convince?

Chapter 1: Introduction, *continued…*

- *Relationship to related manuals*
- SEEA-Energy needs to describe its relationship to relevant frameworks, manuals and International recommendations (SEEA; IRES; Energy Balances; 2008 SNA, Energy Statistics Compilers Manual etc.).
- Note that relationship of IRES to SEEA-Energy is different to IRWS to SEEA-Water

Chapter 1: Introduction, *continued…*

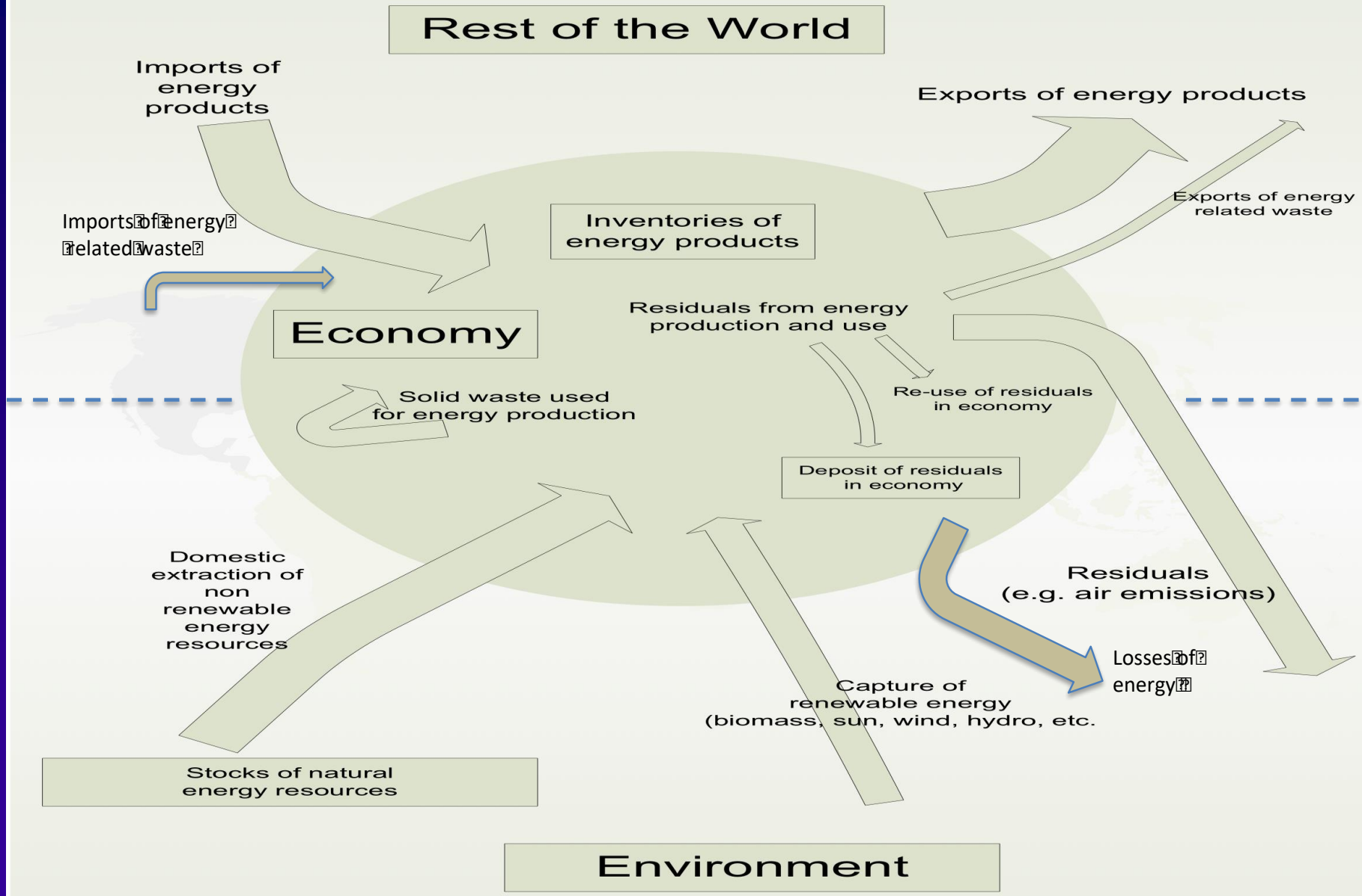
- SEEA-Energy briefly discusses indicators (Section H, chapter 7)
- Options:
  - Continue with present arrangements; or
  - Key aggregates and indicators spelled out in each chapter

Chapter 1: Introduction, *continued…*

- Any other issues to be raised for this chapter?

Chapter 2: The SEEA-Energy Framework

- *Sequence of accounts*
- Should this chapter include a summary of the sequence of accounts?
  - Or does this belong in Chapter 6?


Rest of the World
Imports of energy products
Exports of energy products
Imports of energy related waste
Inventories of energy products
Exports of energy related waste
Economy
Residuals from energy production and use
Solid waste used for energy production
Re-use of residuals in economy
Deposit of residuals in economy
Domestic extraction of non renewable energy resources
Residuals (e.g. air emissions)
Losses of energy
Capture of renewable energy (biomass, sun, wind, hydro, etc.
Stocks of natural energy resources
Environment

Chapter 2: The SEEA-Energy Framework, *continued…*

- *Include SEEA Table 2.3.4?*
- This table from SEEA provides a picture of inter-relationships between measures of flows and stocks; monetary and physical
  - Would this be a useful inclusion in SEEA-Energy chapter 2?

Chapter 2: The SEEA-Energy Framework, *continued…*

- *Meaning of 'economy' and 'environment'*
- Suggest SEEA-Energy adopt SEEA shorthand use of terms 'economy' and 'environment'
  - i.e. use of these terms for describing flows between the economy and the environment; and also for describing environmental assets and (more narrowly) economic assets

Chapter 2: The SEEA-Energy Framework, *continued…*

- *Scope of emissions: energy-related air emissions*
- SEEA-Energy currently states up-front its exclusion of emissions to air arising from energy use.
- This difference between SEEA-Energy and SEEA follows a direction from UNCEEA to exclude such emissions from SEEA-Energy.
  - SEEA-Energy nevertheless is an ideal framework to undertake analyses of energy-related emissions to air

Chapter 2: The SEEA-Energy Framework, *continued…*

- Where should SEEA-Energy describe important accounting rules and principles?
  - Including description of accounting for stocks and flows; and the notion of economic units?

Chapter 2: The SEEA-Energy Framework, *continued…*

- Should 'Section D' of Chapter 5 be moved to Chapter 2? (much of this section is generally applicable to the whole of SEEA-Energy)
  - i.e. Classifications / boundaries / residence principle / imports / exports / intermediate consumption etc etc.

Chapter 2: The SEEA-Energy Framework, *continued*…

- Any other issues to be raised for this chapter?

Chapter 3: Physical Asset Accounts

- *SEEA assets defined*
  - The general definition of an asset should be identical in SEEA and in SEEA-Energy (Para 3.2).

Chapter 3: Physical Asset Accounts

- *Energy resources defined*
  - But definition of Energy Resources should follow specific inclusions as set out in IRES:
  - i.e. Fossil fuels; Nuclear; Other…
    - [Note that IRES relates to products, while energy resources are assets – it is simply that the products in IRES provide a useful guide to defining resources in SEEA-Energy]

Chapter 3: Physical Asset Accounts, *continued…*

- SEEA Table 5.2.1 Classification of Environmental Assets in the SEEA Central Framework
  - What do you think of this classification?
  - Are the categories appropriate?
    - Including relationship to IRES categories

Chapter 3: Physical Asset Accounts

- *'Infinite' renewable energy resources*
  - Linked to chapter 5 discussion of issues…
  - SEEA-Energy excludes energy assets related to 'infinite' renewable energy resources (paragraph 2.34).
    - Should these be included?
    - If so, what should be recorded in the accounts?

Chapter 3: Physical Asset Accounts, *continued…*

- *SEEA-Energy correspondence to SEEA Classification of Natural Resources*
- Table 3.1 of Chapter 3 in SEEA-Energy presents a classification of energy resources and its correspondence to the overall SEEA classification of natural resources. The latter has evolved and the correspondence needs to be re-established.

Chapter 3: Physical Asset Accounts, *continued…*

- Do physical environmental assets include resources and product inventories?
  - Noting that inventories are not part of SEEA classification of environmental assets

Chapter 3: Physical Asset Accounts, *continued…*

- Is the discussion of UNFC i.e. paragraphs 3.17 to 3.41 in SEEA-Energy chapter 3 too detailed?

- UNECE suggestion: that SEEA-Energy paragraphs 3.38 – 3.40 be deleted and replaced with a reference to UNFC documents describing mapping CRIRSCO Temple and SPE-PRMS to UNFC.

Chapter 3: Physical Asset Accounts, *continued*…

- Any other issues to be raised for this chapter?

Chapter 4: Monetary Asset Accounts

- *Monetary energy assets: commercial and potential resources?*
  - SEEA-E classification includes
    - ‘A. Commercial Energy Resources’;
    - ‘B. Potential Commercial Energy Resources’; and
    - ‘C. Non Commercial and Other Known Deposits’
  - SEEA and SEEA-Energy agree that monetary energy assets relate only to ‘Commercial’ resources

Chapter 4: Monetary Asset Accounts, *continued…*

- *NPV techniques applied to all components of physical changes in stock levels*
- SEEA and SEEA-Energy initially misaligned on use of NPV techniques
- SEEA has now altered to follow the approach used in SEEA-Energy
  - i.e. all components of physical changes in stock levels (discoveries, reappraisals etc.) valued through NPV asset valuation model.

Component of NPV model	SEEA	SEEA-Energy
1. Returns on environmental asset	No mention of special treatment of resource-specific taxes and subsidies on production	Assumes that taxes and subsidies are included in intermediate consumption. Recommends removing resource-specific taxes less subsidies in derivation of resource rent (RR) - tending to increase the size of RR
2. Expected pattern of future resource rents	Assumes continuation of existing resource rent and extraction pattern *unless* evidence to contrary.	Much the same as SEEA, but greater emphasis on attempting to map future extractions and resource rents.

Component of NPV model	SEEA	SEEA-Energy
3. Asset life •	Asset life should be based more on immediate past experience rather than on assumed improvements in efficiencies etc.	Basically consistent with SEEA.
4. Rate of return on produced assets	Prefer industry specific rate of return, rather than general rate of return.	Prefer industry specific rate of return, rather than general rate of return.
5. Discount rate	Market-based discount rate i.e. rate should approximate the expected return on the natural asset.	Market-based discount rate.

Chapter 4: Monetary Asset Accounts, *continued…*

- When calculating resource rent, taxes less subsidies are generally excluded
- Suggestion that energy-specific subsidies and taxes be included in the derivation of resource rent
  - What is your view on this?

Chapter 4: Monetary Asset Accounts, *continued…*

- *Joint ownership of energy resources*
- Can be important for countries where governments receive payment from extractors for mineral and energy resources.
- And for SEEA which records depletion of these resources against accounts of the extractor and to show effect of depletion on the net worth of economic owners (reflecting that both are beneficiaries of the resources).
- Under certain defined circumstances, central framework of SEEA recommends partitioning of assets based on their share of future stream of resource rent.

Chapter 4: Monetary Asset Accounts, *continued…*

- *Joint ownership of energy resources*
- What is our response where the owner and extractor are same entity? (e.g. Denmark govt may be owner and extractor)
  - SEEA-Energy (and SEEA) should reflect this possibility

Chapter 4: Monetary Asset Accounts, *continued…*

- Any other issues to be raised for this chapter?

Chapter 5: Physical Flow Accounts, *continued…*

- *Form of the standard tables, continued…*
- In deciding table format for SEEA-Energy we obviously want what is most logical and useful to data producers.
- We want format used in SEEA-Energy to be compatible with SEEA; energy balances/IRES and with SNA.
  - Of course, it cannot always be all these things, and choices must be made.

Chapter 5: Physical Flow Accounts, *continued…*

- *Form of the standard tables*
- SEEA-Energy tables are a simplified version of what's in SEEA - closer in format to tables of SEEA-Water (and energy balances).
  - E.g. supply and use tables of SEEA-Energy do not include 'environment' as an agent alongside industries and households and, as a result, do not include the block presenting flows of natural inputs.

Chapter 5: Physical Flow Accounts, *continued…*

- *Form of the standard tables, continued…*
- E.g. we could consider tables 5.3 and 5.4; and tables 5.12, 5.13 and 5.15 to be ‘standard’ tables of physical flows of energy.

- Following table points out some differences in the SEEA and SEEA-Energy supply and use tables…

SEEA (e.g. SEEA Table 3.4.1)	SEEA-Energy (e.g. SEEA-Energy Tables 5.3 & 5.4)
Supply includes ‘Natural resource inputs’ – and ‘non-fuel energy inputs’ (i.e. renewables)	Energy resources are shown as “gross extractions from the environment”
‘Environment’ is shown as a separate column alongside Households, Industries etc.	No column for ‘environment’. Instead, energy resources grouped according to whether the relevant flow occurred: to/from the economy or the environment; or within the economy.

Chapter 5: Physical Flow Accounts, *continued…*

- *Form of the standard tables, continued…*
- Should SEEA-Energy standard tables include Input–Output tables in addition to Supply and Use tables?
  - Or, if needed, are these better placed in the 'Presentation and Use' chapter?

Chapter 5: Physical Flow Accounts, *continued…*

- *Double-counting of physical energy flows*
- SEEA-Energy proposes an additional recording to highlight and remove double counting related to energy transformations.
  - i.e. Tables 5.14 and 5.15
- Is this the ideal approach?

Chapter 5: Physical Flow Accounts, *continued…*

- *Treatment of physical flows of renewable energy*
  - SEEA-Energy excludes energy assets related to 'infinite' renewable energy resources (paragraph 2.34).
    - But SEEA Table 3.4.1 Physical Supply and Use describes 'Inputs from renewable energy sources' (solar, wind, hydro etc.)
  - Household production of solar etc. energy – approach of SEEA, or SEEA-Water?

Chapter 5: Physical Flow Accounts, *continued…*

- *Treatment of physical flows of renewable energy*
- What transactions should be recorded?
- E.g. would you prefer to show physical flows of renewable energy resources (natural inputs) from the environment?
  - If so, what transactions would be recorded in the tables?

Chapter 5: Physical Flow Accounts, *continued…*

- *Treatment of nuclear energy*
- SEEA-Energy table 5.2 records uranium as energy resource extracted from environment
- Then, nuclear energy is reflected as output of electricity / heat.
- SEEA records uranium as the physical flow of an energy resource from the environment; thereafter nuclear fuels recorded as an energy product moving through the economy.
  - What transactions do you think <u>should</u> be recorded?

Chapter 5: Physical Flow Accounts, *continued…*

- *Losses due to theft*
- SEEA-Energy describes these as a distinct type of physical loss – however, because there has been no loss from the economy to the environment (such flows stay within the economy) is this accurate?
- SEEA-Energy (paragraph 5.30) contains a related and relevant passage describing apparent losses (e.g. inaccurate meters etc.) and this should be retained
  - Suggest same as SNA i.e. attribute this energy use to the final (actual) consumer…

Chapter 5: Physical Flow Accounts, *continued…*

- *Consistent reconciliation of CPC and SIEC*
- Standard International Energy Classification (SIEC) is used in SEEA and SEEA-Energy for physical flows of energy products (and inventories of products in asset accounts). Both documents currently propose using the Central Product Classification (CPC) for monetary flows of such products.
- SEEA and SEEA-Energy should describe need for a consistent reconciliation between SIEC and CPC.

Chapter 5: Physical Flow Accounts, *continued…*

- *Residuals, waste and losses*
- Need consistent discussion of residuals, waste and losses between SEEA and SEEA-Energy – this area has evolved over the past few months.
  - The link between SEEA and SEEA-Energy is weak in this field
  - i.e. SEEA-Energy considers only a small number of items within scheme of residuals, waste and losses

Chapter 5: Physical Flow Accounts, *continued…*

- *Residuals, waste and losses*
- SEEA presently has no definition of residual heat (where it is simply treated as a loss)
    - an area that SEEA-Energy might provide leadership on?
    - Linking residual heat, energy losses and measurement of energy use?

Chapter 5: Physical Flow Accounts, *continued…*

- *Re-absorption of residuals*
- SEEA provides for possibility of recording re-absorption of residuals by the economy.
  - This could occur for example in response to an oil spill cleanup. SEEA-Energy does not discuss this. Should SEEA-Energy include some text on re-absorption of residuals?
  - In scope of SEEA-Energy?

Chapter 5: Physical Flow Accounts, *continued…*

- *Treatment of mining overburden*
- SEEA recommends that recording the extraction of mineral and energy resources should include the mining overburden. The quantity of overburden extracted, together with what becomes the energy product, is then returned as a residual in the item ‘natural resource residuals’.
  - (In mass only i.e. tonnes only)
  - In scope of SEEA-Energy?

Chapter 5: Physical Flow Accounts, *continued…*

- *Emissions relevant to energy use*
- How best for text in SEEA-Energy to deal with this? (e.g. based on Eurostat work in this field?)
  - Mention in chapter 2 as well?
- Would this be best dealt with in SEEA Chapter 7 *Presentation and Use of Energy Accounts*? (as is done at present?)
- Simply show energy use relevant to energy-related air emissions?

Chapter 5: Physical Flow Accounts, *continued…*

- Any other issues to be raised for this chapter?

Chapter 6: Monetary and Hybrid Flow Accounts

- *Title of the chapter?*
- In the SEEA, 'Hybrid' is now referred to as "combined physical and monetary presentations"
- Does "Chapter 6: Monetary Accounts and Combined Physical and Monetary Presentations" sound appealing?
- Or, suggestions?

Chapter 6: Monetary and Hybrid Flow Accounts

- *Form of the standard tables…*
- E.g. we could consider tables 6.1 and 6.2; and tables 6.7 and 6.8 to be ‘standard’ tables of monetary flows of energy.
  - Does this seem a reasonable minimum?

Chapter 6: Monetary and Hybrid Flow Accounts

- *Tradable permits to emit carbon*
- Should SEEA-Energy include a dedicated discussion of tradable permits to emit carbon?
- *Terminal and remedial costs*
- SEEA-Energy reflects purely the 2008 SNA text at present and needs to incorporate the latest text from SEEA (which considers a number of extensions not in the 2008 SNA).
  - Or simply refer to the SEEA for both of these?

Chapter 6: Monetary and Hybrid Flow Accounts

- *G. Environmental Activities and Expenditures*
- Should this even be included in SEEA-Energy?
- Note: This area has moved forward considerably within SEEA over the past few months. The general approach used in SEEA could usefully be adopted in SEEA-Energy. The differences are relatively minor and complete consistency will be easy to achieve.

Chapter 6: Monetary and Hybrid Flow Accounts

- Goods for processing…
- SEEA approach is to record international (physical) flows of, for example, crude oil feedstock; regardless of whether the goods are imports or not…

Chapter 6: Monetary and Hybrid Flow Accounts, *continued…*

- Any other issues to be raised for this chapter?

Chapter 7: Presentation and Use of Energy Accounts

- SEEA-Energy necessarily pre-empts the 'Applications' volume of SEEA.
  - Are there any guidelines that either SEEA or SEEA-Energy should observe in response to this situation?
- Do you think any parts of chapters 3 to 6 would be better placed in chapter 7?
  - Or vice versa?

Chapter 7: Presentation and Use of Energy Accounts

- Consider both time series and ‘one shot’ analyses?
- Any other analyses or presentations that you think should be there?

Chapter 7: Presentation and Use of Energy Accounts

- Any other issues to be raised for this chapter?