Some comments to the InterEnerstat flow paper, by Ann Christin Bøeng

The papers on flows and products are very comprehensive and well written papers, taking into account many different aspects in the description of different energy commodities and flows. I have some comments, but these are more related to points that could have been better explained. Because I work with energy statistics, questionnaires and energy balances, I am mainly concerned about how to interpret and use this information directly in the work.

The introduction notes in the paper on general points, on definition emphasize that "*Points which relate to reporting have been avoided wherever possible as this is the responsibility of those who prepare the questionnaires.*"

There exist many different questionnaires, and many people preparing questionnaire. This point will in practice leave the interpretation and use of the definition to those preparing the questionnaire (or fill it in). However, inconsistence in statistics and data reporting is often a result of different interpretation of the same thing. Will these papers be followed up by a guidance paper on how to interpret and use these definitions in data reporting, that will be distributed to people who prepare questionnaires? Or will this be covered by the new UN manual on energy statistics?
I think it is important to avoid the uncertainty that appear from leaving interpretation to the people who prepare or fill in the questionnaire. Everyone interpret things a bit differently, and this is an uncertain factor by itself. If points related to reporting is omitted, there has to be developed an additional guidance and recommendations for how to use these definitions in data reporting.

Alternatively, the papers have to be extended with several explanatory notes. The flow paper contains many helpful remarks and explanatory notes already, but there are still a few points that could be clarified better, preferable in the paper but alternatively in a follow up guidance.

Another general comment to the flow paper: Which flows does it define? Is it flows related to the energy balance? Flows can vary from statistics to statistics, and the energy balance contains categories that not are used in other statistics or should be defined different in other statistics. I would prefer to have a note on which statistics the definitions refer to. If it is the energy balance only, please be clear on that. If it's meant to cover other statistics too, this could be mentioned.

Primary energy
There is a discussion in the introduction notes in the papers, in the session "primary energy form" which concludes with: *"for statistical purposes, follow a fuel or energy commodity no further upstream than is necessary to capture all of its uses"*.

This is an interesting discussion, but could have included some examples to make it clearer. For instance, Norwegian electricity production is based on hydro power. In the energy balance, we have assumed that waterfalls are the primary energy source for electricity produced in hydro power stations (that is regarded as secondary production, derived from hydro). We assume that 15 per cent of the potential energy in the water falls is lost in the production, and due to this, we calculate the waterfall energy as 15 per cent higher than the electricity that actually is generated from hydro power.
A remark, saying that the figure for hydro power should equal the actual amount of electricity produced from hydro power could have been helpful, it this is how this discussion should be interpreted.

Losses
There is also an interesting discussion in the introduction on what to include in "losses". According to the revised definition on production, losses should be treated differently for primary and secondary products
To take another example from Norway: We have plenty of oil and gas industry, and due to this there are also a lot of gas flared on the fields, as I suppose will be regarded as technical losses of security

reasons, according to the paper. This flaring made up about 42,6 Petajoule or 12 TWh in 2007 (unusual much this year). In the Norwegian energy balance, we have included flaring of natural gas in the production of natural gas, and also as consumption in oil and gas extraction. This is not exactly "consumption", but it causes a lot of emission, and due to this we want to make it visible in the energy statistics. Also because the energy balance is the basis for emission statistics.

A more specific recommendation for how to treat flaring from natural gas extraction in an appropriate way in the energy balance, could have been included. By omitting the figure for flaring, we loose information that is relevant for emission calculation purposes, and get a wrong picture of how much energy that is actually burnt.

Revised definition on production
From the original definition, there is a division on primary and secondary production, but this has been removed in the revised version. No the definition is as the following:

- the extraction or capture, within the national territory, of primary fuels (including biofuels) or heat and electricity which are retained for sale or use, and
- the manufacture of secondary fuels or energy from the primary (or secondary)sources.

This seems to be a half-hearted attempt to explain the difference between primary and secondary production, that are concepts in the energy balance, without using the concepts primary and secondary production. It could have been better to keep the concepts primary and secondary production, and explain each of this, but underline that this is concepts in the energy balance (and energy account). We seldom talk about primary and secondary production in other statistics. For other statistics, a more general definition on production could be: Extraction or manufacture of fuels, heat and electricity.

Could it be relevant to include a list of primary and secondary energy carriers respectively in the definition of production, or will a more specific list on this be addressed other places (in IRES)?

Biofuels are a part of primary energy according to the definition in the paper (that is quoted above). However, biofuels contains also pellets and liquid biofuels, such as biogasoline and biodiesel. Should this also be counted as primary energy? This is really <u>not</u> primary energy according to how primary energy usually is defined.

What is "production from other sources" supposed to include? In the introduction notes on flow and products, is mentioned that this catch "additions to supply from production in previous periods". This is a bit unclear, because all fossil fuels could be stored for many years before this is used. A list of energy carriers belonging to this category could have been helpful.

Condensate and crude oil
In the introduction note on products, it is written that condensate could be included in NGL or crude oil. Is this recommendation for classification in the energy balance or other statistics as well? Please be clear on where condensate should be placed, on NGL or crude oil and if this is recommendation for the energy balance only, or also for other statistics.

International marine and aviation bunkers
The definitions in the paper are now as the following
REVISED DEFINITION
Definition: Quantities of fuels delivered to and consumed by all ships during international voyages transporting goods or passengers. Quantities of fuels consumed by ships during domestic transportation, fishing or military use are not included here.
Explanation: International voyages take place when the ports of departure and arrival are in different national territories.

NEW ADDITIONAL DEFINITION
International aviation bunkers

Definition: Quantities of aviation fuels delivered to all civil aircraft for consumption during international flights transporting passengers or goods.
Explanation: An international flight occurs when take off and landing occur in different national territories.

It this meant to cover fuels delivered from national harbours to ships and aviation with destination point in another national territory? The specification "from national harbours" could be added in the definition, because this would give a clarification on that fuels purchased abroad not should be included, and also that fuels consumed in national water until the ship/flight reaches territory abroad, should be included. If this should be included. The comment "Quantities of fuels consumed by ships during domestic transportation, fishing or military use are not included here" makes me unsure if this is the case

For emission purposes, it could have been an advantage to know how much is used and emitted in national territory before the ship or flight reaches foreign territory. But this could be difficult to get exact numbers on, and has to be based on calculations. This is an issue that could have been discussed as a potential improvement of energy statistics as a basis for emission calculation (but maybe not in this paper.)

Energy sector
The term "Energy sector" could be misunderstood. Of that reason we have started to use the term "energy producing industries" instead of energy sector, especially in contexts outside the energy balance.
Are there any differences in industries covered by the "energy sector" and "transformation sector"? In principle there should not be. A remark on the link or difference between these sectors / categories could be considered.

Final consumption,
I can see from the definition that "non energy consumption" should be included. Of some reason, we have used to exclude this from the final consumption of energy in the energy balance, but have included it as a separate post above final consumption in the energy balance. I think that practices for where to place non-energy consumption in the energy balance vary much, both between countries and organizations, so a clear recommendation on this could be useful.

According to the principles for the energy balance, the "non-energy consumption" should be specified in a separate category, and this could have been mentioned, either in the definition of final consumption or in the definition of non-energy use. (There are other principles in for instance the energy account, where this is distributed on the sector using it, together with other energy consumption)

Transport sector
Does pipeline transport related to oil and gas extraction activities belong to the transport sector (as a part of final consumption) or in consumption within oil and gas extraction? I wonder, because the practices on how to treat this kind of pipeline transport in the energy balance vary between countries. Be very clear on this point, perhaps with some argumentation for the recommended category.

What about "transport supporting activities" and "post and telecommunication"? This is more a kind of stationary consumption, but is in a borderland between transport sector and services, and could need a specific note. This belongs to sector 63,64 in NACE2002. In the new NACE 2007: sector 79,53.