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Unit E2: Environmental accounts and climate change



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Proposal for new modules for inclusion in Regulation 691/2011

Energy accounts

Eurostat – Unit E2

**Joint meeting of the Working Groups Environmental Accounts and
Environmental Expenditure Statistics**

Joint Eurostat/EFTA group

**Meeting of 27 March 2012
BECH Building – Room Quetelet**

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1. Background

This document presents the final draft proposal for a module on energy accounts for inclusion into Regulation 691/2011 on European environmental economic accounts.

A first draft of the proposal was sent for written consultation to the members of the WG on 10 January 2012.

From the written consultation, Eurostat received valuable comments and suggestions from the countries, which allowed further simplification and improvement of the proposal.

A pilot data collection was launched on 9 January 2012 with deadline for replies 1 March. Results are currently being evaluated.

The DIMESA Preparatory meeting that took place on 14 February 2012 was informed about the comments received through the written consultation.

In section 2, a summary of the comments received is presented; section 3 describes lessons learnt from a pilot data collection on energy accounts launched in January 2012; section 4 also describes lessons learnt from the ESTP training course on energy accounts held in Vienna on 13-14 February 2012; section 5 summarizes the main changes in the current version as compared with version for written consultation; the revised legal text will be presented in section 6.

Members of the Working Groups on environmental expenditure statistics and environmental accounts are asked to approve the legal text presented in section 6 or provide further comments and/or suggestions.

The final draft will be submitted to the DIMESA for its meeting of 24-25 April 2012.

2. Summary of comments from the written consultation

This document presents a proposal for a module on Physical Energy Flow Accounts (PEFA) for inclusion into Regulation 691/2011 on European environmental economic accounts.

Following a written consultation launched on 10 January 2012, 26 countries expressed their opinion about including the module on PEFA in the regulation. 14 countries expressed clear support to including the module, 11 did not clearly express either support or opposition and one country expressed clear opposition.

The most commonly made comment concerns the level of detail:

- Countries are concerned that the level of detail required for data transmission is too high:
 - On one hand in terms of natural energy inputs, energy products and energy residuals,
 - On the other hand in terms of NACE Rev. 2 divisions (A*64). NACE divisions associated with services were mentioned as a special case where detail will not bring value added in terms of energy accounts.
- This level of detail would entail a high number of empty or confidential cells.
- This problem seems to have stronger effects in smaller countries and was mentioned more frequently by them than by bigger countries.

Other comments made by one or two countries include:

- Include complete list of natural energy inputs, energy products and energy residuals into the text of the regulation.
- Conversion factor to apply for each energy flow included in the reporting should be made explicit.
- Table B.o: "Physical use table for energy flows – of which, own use" should not be part of the regulation.
- Table D including vectors of key energy indicators should be centrally compiled by Eurostat.
- Deadline for reporting should be 21 months after the reference year (the same as for air emissions accounts) instead of the 18 months as proposed by Eurostat.

3. Lessons learnt from pilot data collection

On 9 January 2012 Eurostat launched a pilot data collection on PEFA with the intention to test the tables as developed by the NAMEA Task Force dedicated to Energy Accounts. This pilot data collection was restricted to the members of the Task Force with deadline for reporting 1 March.

Eurostat is receiving now (end February) the replies and is analysing the results. A summary will be presented to the Working Groups on Environmental Accounts and on Environmental Expenditure Statistics.

At first sight there are some gaps in data reported to Eurostat not only in terms of natural energy inputs, products and residuals but also in the NACE Rev 1.1. However, these gaps are to be interpreted carefully as in some cases it only means that certain energy carriers do not exist in a certain country.

Aggregating energy products may be tricky and produce erroneous data: in some cases one energy product (especially primary products) are embedded into other energy products (secondary energy products) and merging two energy products or simplifying the level of detail of energy products may not constitute a reasonable solution. Problems of double counting can occur.

Another outcome is that guidelines need to be improved in order to become unambiguously and uniformly interpreted by all data compilers across member states.

4. Lessons learnt from ESTP training course

An ESTP training course dedicated to energy accounts was held in Vienna on 13-14 January 2012. Main lessons learnt from this course are:

- There is no unique classification of energy products uniformly applied in all countries; each country has its own classification. Eurostat's list of energy commodities is a kind of harmonised list.
- Countries do not report energy balances to Eurostat. Actually they only report a set of five questionnaires, from which Eurostat compiles energy balances. Countries asked for having access to these balances for compiling energy accounts.
- The proposals for energy accounts are not asking more details than countries can report under energy statistics, especially for energy products.
- It is estimated that countries can report around 90% of energy accounts data based on current reporting of energy statistics. The remaining 10% relate to resident vs. territorial principle. These percentages vary from country to country.

5. Main changes to proposed annex on energy accounts and justification

Having in mind what was said in previous sections, it is proposed to introduce (or not) the following changes to the version sent out for written consultation:

- Keep reporting NACE divisions in A*64 breakdown to allow consistency with national accounts' Supply and Use Tables (SUT) and air emissions accounts reporting.
- Keep the existing level of detail for natural energy inputs, energy products and energy residuals (as reported by energy statistics to Eurostat). Countries are asked to offer and discuss alternatives in the Working Group.
- The complete list of natural energy inputs, energy products and energy residuals will not be included into the text of the regulation. We agree that this would make the legal text clearer but on the other hand much more rigid (carved in stone) and is against Eurostat's legal policy of lightening legal documents and leaving this kind of annexes to be agreed in committee. The list is given in annex 1 for information.

- Change transmission deadline from 18 to 21 months.
- Drop table "Table B.o: Physical use table for energy flows – of which, own use". It can be reported on a voluntary basis but this does not need to be said in the text of the regulation.
- Table D including vectors of key energy indicators will be compiled by Eurostat. This table is dropped from the regulation.
- Table E showing differences between the key energy indicators 'Total Energy Use by Resident Units' contained and the common key energy indicator as presented by energy statistics 'Gross Inland Energy Consumption' is renumbered Table D.
- We believe that conversion factors to apply for each energy flow included in the reporting can be better addressed in the manual than in a legal text. Therefore we do not include them in the regulation.
- Eurostat could pre-fill the questionnaires using data from our energy statistics but we believe that there is high interest in keeping reporting in countries as energy accounts should be recognised as a product of the NSI with importance for national policy.
- Eurostat will assist countries in compiling the complete set of energy accounts by developing an IT tool to facilitate producing energy accounts from the set of five questionnaires reported for energy statistics, as well as calculate key indicators to include in table D.

6. Draft module for physical energy flow accounts for Regulation 691/2011 – text of new Annex

Section 1

Objectives

Physical energy flow accounts present data on the physical flows of energy in a way that is fully compatible with the concepts, principles, and data reported under the European System of Accounts (ESA). They record energy data in relation to the economic activities of resident units of national economies in a breakdown by economic activity. They present the supply and use of natural energy inputs, energy products and energy residuals in delineation fully in accordance with the ESA. Economic activities comprise production, consumption, and accumulation.

This Annex defines the data to be collected, compiled, transmitted and evaluated for physical energy flow accounts by the Member States. Those data will be developed in a way that links supply and use of natural energy inputs, energy products, and energy residuals to economic production and consumption activities by industries and households. The physical energy flow accounts data reported under this Regulation will be combined with the economic input-output tables, supply and use tables and household consumption data that are already reported to the Commission (Eurostat) as part of ESA reporting.

Energy accounts as described in this Annex refer only to physical energy flow accounts (PEFA); they exclude monetary energy flow accounts and energy asset accounts (monetary and physical).

Section 2

Coverage

Physical energy flow accounts have the same system boundaries as ESA and are also based on the residence principle.

In accordance with ESA, the concept of residence is based on the following principle: a unit is said to be a resident unit of a country when it has a centre of economic interest in the economic territory of that country, that is, when it engages for an extended period (1 year or more) in economic activities in that territory.

Physical energy flow accounts record physical energy flows arising from the activities of all resident units, regardless of where these flows actually occur geographically.

Physical energy flow accounts record the physical flows of energy from the environment to the economy, within the economy, and from the economy back to the environment in a way consistent with National Accounts. The system boundary relates to the borderlines between the national economy and the environment.

Section 3

List of characteristics

Member States shall produce physical energy flow accounts according to the following characteristics:

- The physical energy flows grouped into three generic categories:
 - (i) natural energy inputs,
 - (ii) energy products,
 - (iii) energy residuals.
- The origin of the physical energy flows, grouped into five groups: production, consumption, accumulation, rest of the world and environment,
- The destination of the physical flows, grouped into the same five groups as the origin of the physical energy flows.

All data shall be reported in Terajoules.

Section 4

First reference year, frequency and transmission deadlines

1. Statistics shall be compiled and transmitted on a yearly basis.
2. Statistics shall be transmitted within 21 months of the end of the reference year.
3. In order to meet user needs for complete and timely datasets, the Commission (Eurostat) shall produce, as soon as sufficient country data becomes available, estimates for the EU-27 totals for the main aggregates of this module. The Commission (Eurostat) shall, wherever possible, produce and publish estimates for data that have not been transmitted by Member States within the deadline specified in point 2. EN L 192/10 Official Journal of the European Union 22.7.2011
4. The first reference year is the year in which this Regulation enters into force.
5. In the first data transmission, Member States shall include annual data from 2011 to the first reference year.
6. In each subsequent data transmission to the Commission, Member States shall provide annual data for the years $n-4$, $n-3$, $n-2$, $n-1$ and n , where n is the reference year.

Section 5

Reporting tables

1. For the characteristics referred to in Section 3, data shall be reported through a set of 5 tables per year:
 - Table A: Physical supply table for energy flows. This table records the supply of natural energy inputs, energy products, and energy residuals (row-wise) by origin (column-wise).
 - Table B: Physical use table for energy flows. This table records the use of natural energy inputs, energy products, and energy residuals (row-wise) by destination, i.e. 'user' (column-wise).

- Table C: physical use table of emission-relevant use of energy flows. This table records the emission-relevant use of natural energy inputs and energy products (row-wise) by the using and emitting unit (column-wise). Emission-relevant use of energy denotes the use of energy carriers resulting in physical flows of emissions to air as defined in Annex 1 (Air Emissions Accounts).
- Table D: Key energy indicator 'total energy consumption by resident units' in a breakdown by industries and households. This indicator can be derived from Tables A, B and C.
- Table E: Bridge table showing the various elements making up the difference between the key energy indicator 'Total Energy Use by Resident Units' contained in Table D and the common key energy indicator as presented by energy statistics 'Gross Inland Energy Consumption'.

2. The European Commission (Eurostat) will lay down in accordance with the examination procedures referred to in Article 11(2) further vectors of energy indicators to be included in Table D as well as the corresponding bridging items to include in table E.

3. Tables A, B and C (physical supply and use tables) have a common layout in terms of rows and columns:

	industries	households	accumulation	rest of the world	environment
natural energy inputs					
energy products					
energy residuals					

4. The columns denote the origins (Supply for table A) and destinations (Use for tables B and C) of the physical flows. The columns are identical in both tables and are broadly grouped into five groups. The first three relate to economic activities: production (industries), consumption (households), and accumulation. The two additional columns concern the rest of the world economy and the environment.

- Production relates to the production of output of products (= goods + services). Production activities, i.e. industries are classified employing the NACE Rev. 2 classification and data is reported in A*64 aggregation level.
- Consumption activities are presented in one column for private households' consumption.
- Accumulation refers to the possibility that products are stocked within the economy. According to national accounts conventions, changes in inventories are recorded net in the Use Table (i.e. the Supply Tables remains empty in the accumulation column).
- The column 'rest of the world' records the flows of imported and exported products. It is further disaggregated with regards to certain transactions connected to international transport activities.
- The column 'environment' records the origin of natural input flows and the destination of residual flows.

5. The rows describe the type of physical flows classified as follows:

- a) natural energy inputs (A),
- b) energy products (B),
- c) energy residuals (C).

6. The classification of natural energy inputs, energy products, and energy residuals is a nested hierarchical classification organised as follows:

- **Natural energy inputs** are grouped into two broader groups on level 2 of the hierarchical classification of natural energy inputs used in European energy statistics.: non-renewable natural energy inputs (AA), and renewable natural energy inputs (AB). Level 2 is further detailed into level 3.
- **Energy products** are grouped according to 2-digit divisions of the Classification of Products by Activity (CPA) which is the classification for products used in National Accounts and monetary supply and use tables.
- The classification for **energy residuals** is intended to accommodate all potential energy residual flows necessary to balance Tables A and B column-wise for industries and private households.

7. The European Commission (Eurostat) will lay down in accordance with the examination procedures referred to in Article 11(2) the final list of natural energy inputs, energy products and energy residuals for which data has to be transmitted by Member States.

8. In table E, the 'bridge' from the resident principle indicator to the territory based indicator is presented for the entire national economy (no breakdown by industries) and is obtained as follows:

total energy use by resident units (row-wise sum of vector in Table D)

– energy use by resident units abroad

+ energy use by non-residents on the territory

= Gross Inland Energy Consumption (territory based)

Section 6

Maximum duration of the transitional periods

For the implementation of the provisions of this Annex, the maximum duration of the transitional period is 2 years from the first transmission deadline.

Annex 1: List of natural energy inputs, energy products and energy residuals:

Level	Code	Label
1	A	NATURAL INPUTS (Resource flows)
2	AA	Non Renewables
3	AA.5100	Uranium and thorium ores (resource: energy content of nuclear fuels, i.e. equivalent to nuclear heat)
3	AA.2111	Hard coal (resource)
4	AA.2115	Anthracite (resource)
4	AA.2116	Coking coal (resource)
4	AA.2117	Other bituminous coal (resource)
4	AA.2118	Sub-bituminous coal (resource)
3	AA.2210	Lignite/Brown Coal (resource)
3	AA.2310	Peat (resource)
3	AA.3105	Crude oil (resource)
3	AA.3106	Natural gas liquids (resource)
3	AA.3193	Other hydrocarbons (resource: Natural bitumen, extra heavy oil, shale oil, sandoil and others n.e.c. etc. excl. bio)
3	AA.4100	Natural gas (resource)
2	AB	Renewables
3	AB.5510	Hydro power (resource)
3	AB.5520	Wind power (resource)
3	AB.5532	Solar thermal (resource: solar radiation)
3	AB.5534	Solar PV (resource: solar radiation)
3	AB.5535	Tide, Wave and Ocean (resource)
3	AB.5550	Geothermal energy (resource)
3	AB.5541x	Biomass for energy use (resource)
1	B	PRODUCTS (Product flows)
2	CPA.01	Products of agriculture
3	BA.55412.CPA.01.11.60	Other vegetal material and waste (straw and forage)
2	CPA.02	Products of forestry
3	BA.55411.CPA.02.01.14	Wood (fuel wood)
2	CPA.10	Coal and lignite; peat
3	BA.2111.CPA.10.10.11	Hard coal
4	BA.2115.CPA.10.10.11	Anthracite
4	BA.2116.CPA.10.10.11	Coking coal
4	BA.2117.CPA.10.10.11	Other bituminous coal
4	BA.2118.CPA.10.10.11	Sub-bituminous coal
3	BA.2112.CPA.10.10.12	Patent fuel
3	BA.2200.CPA.10.20.10/10.30.10	Lignite, Peat and Derivatives
4	BA.2210.CPA.10.20.10	Lignite/Brown Coal
4	BA.2230.CPA.10.20.10	BKB/PB
4	BA.2310.CPA.10.30.10	Peat
2	CPA.11	Crude petroleum and natural gas
3	BA.3105.CPA.11.10.10	Crude oil
3	BA.3106.CPA.11.10.10	Natural Gas Liquids
3	BA.3193.CPA.11.10.10	Other hydrocarbons (excl. bio)
3	BA.4100.CPA.11.10.20	Natural gas
2	CPA.12	Uranium and thorium ores
3	BA.5100a.CPA.12.00.10	Uranium and thorium ores (energy content of nuclear fuels, i.e. equivalent to nuclear heat)

2	CPA.20	Wood and products of wood and cork (except furniture); articles of straw and plaiting materials
3	Ba.55413.CPA.20.10.40	Wood waste (Sawdust and wood waste and scrap)
2	CPA.21	Pulp, paper and paper products
3	Ba.55414.CPA.21.11.11	Black liquor (residuals from paper pulp)
3	Ba.55415.CPA.21.12.60	Other wood & wood waste (Waste and scrap of paper and paperboard)
2	CPA.23	Coke, refined petroleum products and nuclear fuels
3	BA.2120.CPA.23.10.10	Coke
4	BA.2121.CPA.23.10.10	Coke oven coke
4	BA.2122.CPA.23.10.10	Gas coke
3	BA.2130.CPA.23.10.20	Coal tar
3	BA.3191.CPA.23.20.11-17	Refinery Feedstocks
3	BA.3230.CPA.23.20.11	Motor spirit
4	BA.3234.CPA.23.20.11	Motor Gasoline (exclud. bio)
4	BA.3235.CPA.23.20.11	Aviation Gasoline
3	BA.3240.CPA.23.20.14	Kerosenes & jet fuels
4	BA.3244.CPA.23.20.14	Other Kerosene
4	BA.3246.CPA.23.20.14	Gasoline Type Jet Fuel
4	BA.3247.CPA.23.20.14	Kerosene Type Jet Fuel
3	BA.3250.CPA.23.20.13/16	Naphtha
3	BA.3260.CPA.23.20.15	Gas/Diesel Oil (exclud. bio)
4	BA.3265.CPA.23.20.15	Transport diesel
4	BA.3266.CPA.23.20.15	Heating and other gasoil
3	BA.3270A.CPA.23.20.17	Residual Fuel Oil
4	BA.3271.CPA.23.20.17	Fuel Oil - Low Sulphur (< 1%)
4	BA.3272.CPA.23.20.17	Fuel Oil - High Sulphur (>= 1%)
3	BA.3210.CPA.23.20.22	Refinery gas & Ethane
4	BA.3214.CPA.23.20.22	Refinery gas
4	BA.3215.CPA.23.20.22	Ethane
3	BA.3220.CPA.23.20.21	LPG
3	BA.3280.CPA.23.20.13/18-32	Other Petroleum Products
4	BA.3281.CPA.23.20.13	White spirit and SBP
4	BA.3282.CPA.23.20.18	Lubricants
4	BA.3283.CPA.23.20.32	Bitumen
4	BA.3285.CPA.23.20.32	Petroleum Coke
4	BA.3286.CPA.23.20.31	Paraffin Waxes
4	BA.3295.CPA.23.20.32	Other Oil Products
3	BA.5100b.CPA.23.30.11-13	Nuclear Fuels (equivalent for nuclear heat)
2	CPA.24	Chemicals, chemical products and man-made fibres
3	BA.5544.CPA.24.14.72	Charcoal
3	BA.3192.CPA.24.66.32	Additives / Oxygenates
3	BA.5545.CPA.24.66.48	Liquid biofuels (= Biofuels)
4	BA.5546.CPA.24.66.48	Biogasoline
4	BA.5547.CPA.24.66.48	Biodiesel
4	BA.5548.CPA.24.66.48	Other liquid biofuels
2	CPA.40	Electrical energy, gas, steam and hot water
3	BA.6000.CPA.40.11.10	Electrical energy
4	BA.5510.CPA.40.11.10	Electricity from hydro power
4	BA.5520.CPA.40.11.10	Electricity from wind power
4	BA.5532.CPA.40.11.10	Electricity from solar thermal (Note that the energy product with the code 5500 is used for production of

		electricity and heat. Here, only the electricity output based on natural solar thermal input is recorded)
4	BA.5534.CPA.40.11.10	Electricity from solar PV
4	BA.5535.CPA.40.11.10	Electricity from tide, wave and ocean
4	BA.5550.CPA.40.11.10	Electricity from geothermal energy (Note that the energy product with the code 5500 is used for production of electricity and heat. Here, only the electricity output based on natural geothermal input is recorded)
4	BA.21x/31x/41x.CPA.40.11.10	Electricity from combustible fuels
4	BA.5100c.CPA.40.11.10	Electricity from nuclear heat
4	BA.554xx.CPA.40.11.10	Electricity from other sources (incl. waste incineration, heat from chemical sources, etc)
3	BA.4200.CPA.40.21.10	Derived gases (= Manufactured gases excl. biogas)
4	BA.4210.CPA.40.21.10	Coke oven gas
4	BA.4220.CPA.40.21.10	Blast furnace gas
4	BA.4240.CPA.40.21.10	Ox. steel furnace gas
4	BA.4230.CPA.40.21.10	Gasworks gas
3	BA.5542.CPA.40.21.10	Biogas
4	BA.55421.CPA.40.21.10	Landfill gas
4	BA.55422.CPA.40.21.10	Sewage Sludge gas
4	BA.55423.CPA.40.21.10	Other biogas
3	BA.5200.CPA.40.30.10	Derived heat
3	BA.5532.CPA.40.30.10	Solar thermal heat (Note that the energy product with the code 5532 is used for production of electricity and heat. Here, do only record the part of the solar thermal energy produced (by NACE 40.30) as heat and immediately forwarded to final use by services, households etc.)
3	BA.5550.CPA.40.30.10	Geothermal heat (Note that the energy product with the code 5500 is used for production of electricity and heat. Here, do only record the part of the geothermal energy produced (by NACE 40.30) as heat and immediately forwarded to final use by services, households etc.)
2	CPA.90	Sewage and refuse disposal services, sanitation and similar services
3	BA.55431.CPA.90.02.20	Municipal wastes (renewables)
3	BA.55432.CPA.90.02.20	Municipal wastes (non-renewables)
3	BA.7100.CPA.90.02.20	Industrial wastes
1	C	RESIDUALS (Residual flows)
2	CA	Waste (without monetary value)
2	CB	Losses during extraction / abstraction
2	CC	Losses during distribution / transport
2	CD	Losses during storage
2	CE	Balancing item: Losses during transformation (only in so called energy sector)
2	CF	Balancing item: Dissipative heat or end use losses
2	CG	Balancing item: Energy incorporated in products for non-energy use
1		TOTAL SUPPLY /TOTAL USE