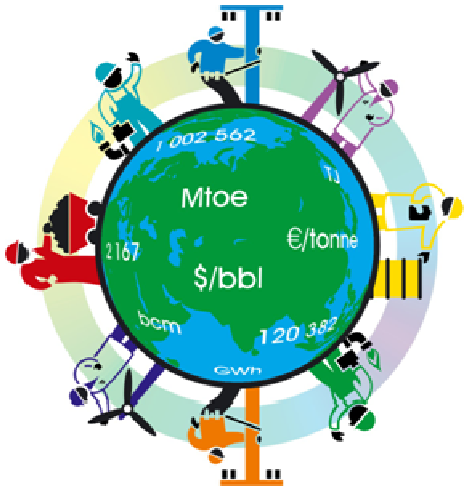
InterEnerStat

Harmonisation of Definitions of Energy Products and Flows



THIRD REVISION OF THE DEFINITIONS
Part 1: Flows

IEA, Paris, 21 December 2009

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Note by Tim Simmons

FLOWS

Recycled products

A definition, separate from transfers, has been introduced to cover the returns of product to its supply.

Nuclear industry

Fuels and energy used in mining uranium and thorium ores is already part of Energy Industry Own Use, however, there is no explicit mention of energy use for nuclear fuel processing. This has now been added.

PRODUCTS

Solid fuels and derived products

Gas Works Gas (and other conversion to gases)

The growth of gas industry practices involving the gasification of a widening range of feedstocks, the blending of methanated gases and petroleum gases with natural gas and the decline of the historical gas making processes have led to a mixture of reporting practices covering the new information. Definitions for Gas Works Gas and Natural Gas Blending Plants have been rewritten to make clearer which industry processes go where.

Synthesis gas and hydrogen

Synthesis gas (syngas) and hydrogen have not been introduced as an energy products but syngas is defined within a remark accompanying Gas Works Gas. Both hydrogen and syngas are produced for use as intermediate feedstocks or fuels within industrial and chemical processes *on site*. They may be manufactured from biomass or fossil materials or, for hydrogen, from water. Gasification of underground fuels and the developments in the gasification of wastes are likely to increase. Equally, significant production of hydrogen for fuel uses beyond the manufacturing site can be confidently predicted. In short, the case for adding the gases to the list of energy products will become strong within a few years when their incorporation within the commodity and energy balances will need careful consideration as they can be produced from products within energy statistics and from materials which are not.

Renewables

Renewable fuels and energy

The definition has been revised to avoid the need to define the ‘recent’ effects of solar radiation in order to ensure that only renewable biofuels are included and that fossil fuels are excluded.

Solar Energy

The definition has been revised to include definitions for Concentrated Solar Thermal and Non Concentrated Solar Thermal.

Biogasoline and biodiesel

The October meeting requested that the products currently named biogasoline and biodiesel be brought under more generic headings which included liquid biofuels other than transport fuels. The names bioalcohols and biooils were suggested. Despite the attractions of this change contact with the Swedish Energy Agency, who are studying the matter and have a draft classification of biofuels, revealed that at present they have not been able to design a classification of the liquid biofuels which can accommodate naturally the MTBE and ETBE components. Further searching within the various programmes and projects presented in the European Biofuels Technology Platform has strengthened the view that a simple classification into bioalcohols and biooils is not possible. As a consequence the current definitions have been left unchanged.

Electricity, Heat and Nuclear Energy

New definitions have been inserted as requested by the meeting.

Flow Structure

1 Supply
- 1.1 Production
- 1.2 Receipts from other sources
- 1.3 Imports
- 1.4 Exports
- 1.5 International marine bunkers
- 1.6 International aviation bunkers
- 1.7 Stock changes

2 Transfers
- 2.1 Products transferred
- 2.2 Interproduct transfers
- 2.3 Product recycling

3 Statistical difference

4 Transformation processes
- 4.1 Electricity plants
- 4.2 Combined heat and power plants
- 4.3 Heat plants
- 4.4 Coke ovens
- 4.5 Patent fuel plants
- 4.6 Brown coal briquette plants
- 4.7 Coal liquefaction plants
- 4.8 Gas works (and other conversion to gases)
- 4.9 Blast furnaces
- 4.10 Peat briquette plants
- 4.11 Natural gas blending plants
- 4.12 Gas to liquid (GTL) plants
- 4.13 Oil refineries
- 4.14 Petrochemical plants
- 4.15 Charcoal plants
- 4.16 Other transformation processes

5 Energy industry own use
- 5.1 Electricity and heat plants
- 5.2 Coal mines
- 5.3 Coke ovens
- 5.4 Patent fuel plants
- 5.5 Brown coal briquette plants
- 5.6 Coal liquefaction plants
- 5.7 Gas works (and other conversion to gases)
- 5.8 Blast furnaces
- 5.9 Gas separation plants
- 5.10 Gas to liquid (GTL) plants
- 5.11 LNG plants / regasification plants
- 5.12 Oil and gas extraction
- 5.13 Oil refineries
- 5.14 Pumped storage plants
- 5.15 Charcoal plants
- 5.16 Biogas production plants
- 5.17 Nuclear fuel extraction and fuel processing

- 5.18 Energy industry own use not elsewhere specified
- 6 Losses
- 7 Final consumption
  - 7.1 Industry
    - 7.1.1 Iron and steel
    - 7.1.2 Chemical and petrochemical
    - 7.1.3 Non-ferrous metals
    - 7.1.4 Non-metallic minerals
    - 7.1.5 Transport equipment
    - 7.1.6 Machinery
    - 7.1.7 Mining and quarrying
    - 7.1.8 Food and tobacco
    - 7.1.9 Paper, pulp and print
    - 7.1.10 Wood and wood products (other than pulp and paper)
    - 7.1.11 Textile and leather
    - 7.1.12 Construction
    - 7.1.13 Industries not elsewhere specified
  - 7.2 Transport
    - 7.2.1 Domestic aviation
    - 7.2.2 Road
    - 7.2.3 Rail
    - 7.2.4 Domestic navigation
    - 7.2.5 Pipeline transport
    - 7.2.6 Transport not elsewhere specified
  - 7.3 Residential
  - 7.4 Commercial and public services
  - 7.5 Agriculture/forestry
  - 7.6 Fishing
  - 7.7 Not elsewhere specified

Note: **non-energy use** should be collected separately and can either be incorporated in the consumption above or be shown separately for presentational purposes

DEFINITION OF NATIONAL TERRITORY (not in flow classification)

SECOND REVISION

Definition: The national territory for the purposes of energy statistics consists of the geographic territory within the effective economic control of the national government and it comprises:

(a) the land area;

(b) airspace;

(c) territorial waters, including areas over which jurisdiction is exercised over fishing rights and rights to fuels or minerals; and

(d) in a maritime territory, islands that are subject to the jurisdiction of the national government.

Explanation: The national territory includes any free trade zones, bonded warehouses or factories operated by enterprises under customs control within the areas described above.

Territorial enclaves (embassies, consulates, military bases, scientific stations, etc.) are part of the national territory where they are physically located.

DECISION

Change “within” to “under”

Definition: The national territory for the purposes of energy statistics consists of the geographic territory ~~within~~ under the effective economic control of the national government and it comprises:

(a) the land area;

(b) airspace;

(c) territorial waters, including areas over which jurisdiction is exercised over fishing rights and rights to fuels or minerals; and

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1 SUPPLY

SECOND REVISION

Definition: The net flow of fuel or energy into the national territory from its various sources of production, external trade, international bunkers and changes in stocks during the statistical reporting period.

Remark: For the purposes of constructing balances for fuels, electricity and heat, supply is calculated using the formula:

Supply = Production + Imports - Exports - International Bunkers ± Stock Change.

where International Bunkers = International Marine and Aviation Bunkers

The sign of the stock change will depend on the convention used for stock build and stock draw.

Consultant's comments:

The formula for supply has been qualified to make clear that it is for use in constructing commodity balances. It is hoped that this will meet the point relating to the possible sensitivity of apparently recommending a definition of supply of general applicability.

The possible misreporting of deliveries of fuels for International Bunkers as Exports has not been mentioned in the definition. It is strictly a reporting point but will mentioned in the definitions for the specific flows.

DECISION

Add "Receipts from other sources"

Delete "its various sources of"

Make clear that this is referring to commodity balances and not energy balances

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Commodity balances express the various elements of the balance in the units of measure usually used to express the trade in the product.

1.1 PRODUCTION

SECOND REVISION

Definition: The capture, extraction or manufacture of fuels or energy in forms which are ready for general use.

Explanation: In energy statistics two types of production are distinguished, primary and secondary.

Primary production is the capture or extraction of fuels or energy from natural energy flows, the biosphere and natural reserves of fossil fuels within the national territory in a form suitable for use. Inert matter removed from the extracted fuels and quantities reinjected, flared or vented are not included. The fuels and energy produced are termed 'primary' fuels and energy.

Production of secondary fuels or energy is their manufacture through the process of transformation of primary fuels or energy.

The quantities of secondary fuels reported as production include quantities lost through venting and flaring during and after production. In this manner the mass, energy and carbon within the primary source(s) from which the fuels are manufactured may be balanced against the secondary fuels produced.

Remark: Fuels and energy produced are usually sold but may be partly or entirely consumed by the producer.

DECISION

Make clear that secondary includes tertiary.

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Remark: Fuels and energy produced are usually sold but may be partly or entirely consumed by the producer. For convenience of expression, fuels or energy derived from secondary energy products are also referred to as 'secondary'.

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Consultant's comments:

The definition has been reduced to its essentials. The concepts of primary and secondary are introduced in the explanation and the difference in the treatment of vented and flared gases between primary and secondary gases is also explained. The term 'marketable' has been removed in favour of plainer language because some fuels are not marketed or marketed in negligible quantities.

1.2 RECEIPTS FROM OTHER SOURCES

REVISED DEFINITION

Definition: Additions to supply from hydrocarbons or other substances which are not recognised fuels within the energy statistics or which arise from recoveries of fuels produced in an earlier reporting period.

Explanation: Examples:

Substitute Natural Gas (SNG)

SNG from methanation of Coke Oven Gas would not be added to Natural gas production in the commodity balance but added to supply of Natural Gas through "Receipts from other sources".

The energy content of the Coke Oven Gas has its origins in the energy content of the coal from which it was made. If the SNG were added to Natural Gas production and total energy in coal and gas production were summed a double count of the SNG contribution would take place. (Simplifying assumption is that the coal came from production in the national territory).

Shale Oil

Shale oil produced (*ex situ*) from oil shale (the primary fuel) would be added to the supply of Crude Oil (or Other Hydrocarbons) as 'Receipts from other sources'. However, Shale Oil produced *in situ* would be added to Crude Oil (or Other Hydrocarbons) production.

Other examples are:

Coal from waste tips

Recycled lubricants

Consultant's comments:

The name of the flow has been changed as it is thought a more accurate description of the coverage of the definition.

The proposal that recovered coal could be included as part of production is open to the objection that double counting of the recovered quantity takes place when production figures are summed over several reporting periods. However, the objection assumes that the coal which is subsequently put to 'waste' has been recorded as produced. This is not always the case.

Inclusion of recycled lubricants in production of lubricants is open to the same objection but, unlike for waste coal, all lubricant production is reported.

Maintaining a balance with the primary oils from which lubricants are made is essential and inclusion of recycled lubricants with production would make this impossible.

Furthermore, separate identification of recycled quantities would probably be valuable for policy reasons.

DECISION

Add examples and redraft for clarification

Pending discussion on SNG

Definition: ~~Additions to supply from hydrocarbons or other substances which are not recognised fuels within the energy statistics or which arise from recoveries of fuels produced in an earlier reporting period.~~

Additions to the supply of an energy product that have already been accounted for in the production of another energy form.

~~Explanation~~Remark: Examples are:

The addition of petroleum coke to coking coal for use in coke ovens, the blending of petroleum gases with natural gas, and the incorporation in oil products of additives and oxygenates.~~Substitute Natural Gas (SNG)~~

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~~Other examples are:~~

~~Coal from waste tips~~

~~Recycled lubricants~~

~~Non-hydrocarbon chemical additives for petroleum products~~

Definition: Additions to the supply of an energy product that have already been accounted for in the production of another energy form.

Remark: Examples are:

The addition of petroleum coke to coking coal for use in coke ovens, the blending of petroleum gases with natural gas, and the incorporation in oil products of additives and oxygenates.

1.3 and 1.4 IMPORTS AND EXPORTS

SECOND REVISION

Definition:	For the purposes of energy statistics, imports comprise all fuel and energy entering the national territory and exports comprise all fuel and energy leaving the national territory with the exception that exports exclude quantities of fuels delivered for use by merchant ships and civil aircraft, of all nationalities, during international transport of goods and passengers.
Explanation:	Goods simply being transported through a country (goods in transit) and goods temporarily admitted/withdrawn are excluded but re-exports that is, foreign goods exported in the same state as previously imported, and reimports that is, domestic goods exported but subsequently readmitted, are included.

Consultant's comments:

The proposed definition makes no reference to 'General Trade' and 'Special Trade' bases for the collection of external trade statistics. The Special Trade basis is applied when reporting to customs for trade in crude oil and products which enter refineries and bonded areas but as these flows are to be reported for energy statistics the definition above does not need to distinguish between the two types of trade.

A number of the UNSD proposals have been accepted and, in particular, the suggestion that all transit trade should be excluded irrespective of the difficulty of identifying electricity in transit. The request to countries to mention explicitly when electricity in transit has not been excluded is left for the reporting instructions.

DECISION

Divide into 2 different definitions

Make mention of where exclusions go (merchant ships and civil aircraft)

Add definition of transit trade

Say that imports must originate outside the country

Say that nuclear fuel is excluded

REVISED DEFINITIONS

1.3 IMPORTS

Definition:	For the purposes of energy statistics, imports comprise all fuel (excluding nuclear fuel) and energy entering the national territory. ~~and exports comprise all fuel and energy leaving the national territory with the exception that exports exclude quantities of fuels delivered for use by merchant ships and civil aircraft, of all nationalities, during international transport of goods and passengers.~~
Explanation:	Goods simply being transported through a country (goods in transit) and goods temporarily admitted/withdrawn are excluded but ~~re-exports that is, foreign goods exported in the same state as previously imported, and~~ reimports that is, domestic goods exported but subsequently readmitted, are included.

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1.4 EXPORTS

Definition:	For the purposes of energy statistics, imports comprise all fuel and energy entering the national territory and exports comprise all fuel (excluding nuclear fuel) and energy leaving the national territory with the exception that exports exclude quantities of fuels delivered for use by merchant (including passenger) ships and civil aircraft, of all nationalities, during international transport of goods and passengers.
Explanation:	Goods simply being transported through a country (goods in transit) and goods temporarily admitted/withdrawn are excluded but re-exports that is, foreign goods exported in the same state as previously imported, ~~and reimports that is, domestic goods exported but subsequently readmitted,~~ are included.
Remark:	Fuels delivered to merchant ships and civil aircraft are classified as International Marine or Aviation Bunkers, respectively.

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Explanation:	Goods simply being transported through a country (goods in transit) and goods temporarily admitted/withdrawn are excluded but re-exports that is, foreign goods exported in the same state as previously imported, are included.
Remark:	Fuels delivered to merchant ships and civil aircraft are classified as International Marine or Aviation Bunkers, respectively.

1.5 INTERNATIONAL MARINE BUNKERS

SECOND REVISION

Definition:	Quantities of fuels delivered to merchant ships, of any nationality, for consumption during international voyages transporting goods or passengers.
Explanation:	International voyages take place when the ports of departure and arrival are in different national territories.
Remark:	Fuels consumed by ships during domestic transportation, fishing or military use are not included here. For the purposes of energy statistics Internal Marine Bunkers are not classified as exports

DECISION

Change “internal” to “international”

??? In the remark, change to “fuels delivered for consumption by ships” instead of “fuels consumed” – contact UNSD for clarification.

Definition:	Quantities of fuels delivered to merchant (including passenger) ships, of any nationality, for consumption during international voyages transporting goods or passengers.
Explanation:	International voyages take place when the ports of departure and arrival are in different national territories.
Remark:	Fuels delivered for consumption consumed by ships during domestic transportation, fishing or military use are not included here. For the purposes of energy statistics International Marine Bunkers are not classified as exports.

Definition:	Quantities of fuels delivered to merchant (including passenger) ships, of any nationality, for consumption during international voyages transporting goods or passengers.
Explanation:	International voyages take place when the ports of departure and arrival are in different national territories.
Remark:	Fuels delivered for consumption by ships during domestic transportation, fishing or military use are not included here. For the purposes of energy statistics International Marine Bunkers are not classified as exports

1.6 INTERNATIONAL AVIATION BUNKERS

SECOND REVISION

Definition:	Quantities of fuels delivered to civil aircraft, of any nationality, for consumption during international flights transporting goods or passengers.
Explanation:	International flights take place when the ports of departure and arrival are in different national territories.
Remark:	For the purposes of energy statistics Internal Aviation Bunkers are not classified as exports

DECISION

Put same remark as on marine bunkers concerning the domestic and military.

Change “internal” to “international”.

Definition:	Quantities of fuels delivered to civil aircraft, of any nationality, for consumption during international flights transporting goods or passengers.
Explanation:	International flights take place when the ports of departure and arrival are in different national territories.
Remark:	Fuels delivered for consumption by aircraft undertaking domestic or military flights are not included. See ‘Domestic Aviation’. For the purposes of energy statistics International Aviation Bunkers are not classified as exports.

Definition:	Quantities of fuels delivered to civil aircraft, of any nationality, for consumption during international flights transporting goods or passengers.
Explanation:	International flights take place when the ports of departure and arrival are in different national territories.
Remark:	Fuels delivered for consumption by aircraft undertaking domestic or military flights are not included. See ‘Domestic Aviation’. For the purposes of energy statistics International Aviation Bunkers are not classified as exports.

STOCKS (not in flow classification)

REVISED REVISION

Definition: For the purposes of energy statistics, stocks are quantities of fuels that can be held and used to

- maintain service under conditions where supply and demand are variable in their timing or amount due to normal market fluctuations, or
- supplement supply in the case of a supply disruption.

Remark: Stocks used to manage a supply disruption may be called 'Strategic' or 'Emergency' stocks and are often held separately from stocks designed to meet normal market fluctuations.

DECISION

In definition, change “can be’’ to “are”

Don’t mention 2nd bullet point

Change the Remark to be “Stocks for emergency purposes are included.”

1.7 STOCK CHANGES

REVISED DEFINITION

Definition:	The increase (*stock build*) or decrease (*stock draw*) in the quantity of stock over the reporting period.

Consultant's comments:

The definitions of stocks and stock change have been separated.

Emergency stocks have been included in order to ensure that oil product balances can be constructed.

Final consumers' stocks are not normally included. The conditions under which they are included should be specified in the reporting instructions.

DECISION

No change

2 TRANSFERS

SECOND REVISION

Definition: Transfers are essentially statistical devices to overcome practical classification and presentation issues resulting from changes in use or identity of a product.

- Products transferred

  Covers the reclassification (renaming) of petroleum products which is necessary when finished petroleum products are imported for use as feedstock in refineries.

- Inter product transfers

  Covers the movements of fuels between product categories because of reclassification of a product which no longer meets its original specification.

Consultant's comments:

Recycled products have been removed from the definition and are now included within 'Receipts from other sources'.

Wastes (Municipal/Industrial) are not identifiably recycled products because (in contrast to recycled lubricants) they do not contribute again to one of the recognised fuels or non-energy products made from fuels.

DECISION

Change to "usually imported"

Separate into 2 independent definitions

In the 2nd bullet point, add phrase saying that they are blended into other products.

Look again at recycled products

Definition: Transfers are essentially statistical devices to overcome practical classification and presentation issues resulting from changes in use or identity of a product.

Transfers comprise Products Transferred and Inter Product Transfers.

2.1 PRODUCTS TRANSFERRED

NEW DEFINITION

Definition:	The reclassification (renaming) of petroleum products which is necessary when finished petroleum products are used as feedstock in refineries.

2.2 INTERPRODUCT TRANSFERS

NEW DEFINITION

Definition:	The movements of fuels between product categories because of reclassification of a product which no longer meets its original specification.
Remark:	The transferred product is often blended with its host.

2.3 PRODUCT RECYCLING

NEW DEFINITION

Definition:	The return of a delivered product to supply without reclassification as another product.
Remark:	An example is, the recovery of used lubricants.

3 STATISTICAL DIFFERENCE

SECOND REVISION

Definition:	The numerical difference between the total supply of a fuel/energy and the total use of it.
Explanation:	It arises from various practical limitations and problems related to the collection of the data which make up supply and demand. The data may be subject to sampling or other collection errors and/or be taken from different data sources which use different time periods, different spatial coverage, different fuel specifications or different conversions from volume to mass or from mass to energy content in the supply and demand sides of the balance.

DECISION

No change

4 TRANSFORMATION PROCESSES

SECOND REVISION

Definition: From the point of view of energy statistics, a transformation process is the transfer of part or all of the energy content of a product entering the process to one or more different products leaving the process.

Explanation: There are two groups of processes.

(a) The physical or chemical conversion of a product into another product or products whose intrinsic properties differ from those of the original product.

Examples are:

- Chemical or physical changes to the input product(s) resulting in the creation of products containing new chemical compounds. (For example, refining)
- Physical changes to the input which involve separation into several different products with intrinsic physical properties which are different from those of the input material. (For example, Coke oven carbonisation of coal).
- Conversion of heat into electricity.
- Production of heat from combustion, fission or electricity.

and

(b) The separation or blending of products sometimes involving a change of physical shape.

Examples are:

- Separation of the component gases and liquids in wet natural gas.
- Blending gases to meet safety and quality requirements before distribution to consumers.
- Briquetting of peat and brown coal.

Remark: The transformation processes are currently identified by the plants in which they occur.

Electricity only plants
Combined heat and power plants
Heat only plants
Coke Ovens
Patent fuel plants
Blast furnaces
Gas Works (Gas coke and Town gas plants)
Petroleum refineries
Petrochemical plants
Coal liquefaction plants
Gas to Liquid (GTL) plants
Charcoal plants
Brown coal briquette plants
Peat briquette plants
Natural Gas blending plants.
Gas separation plants.
Other transformation processes.

Consultant's comments:

The definition specifies the nature of the various processes which fall within the scope of transformation and, for electricity and heat generation, the types of plant within which these energies are produced. The two-way classification of electricity and heat generation by plant type and type of producer does not further define the processes involved but permits division of the generation across plant types and the isolation of heat supplied to third parties.

Separation and blending processes are no longer a separate classification as no statistical or clarifying advantages were seen in the separation. Use of the word 'sector' has been avoided.

The transformation processes are usually identified by the names of the plants in which they occur but it is the processes themselves which should be defined. The plant names were used in the first proposals made for the October 2008 meeting, the January report and have been maintained here. However, the revised definitions proposed here describe the process involved and it is suggested that the names used to identify the processes should reflect this.

DECISION

Remove "Separation of the component gases and liquids in wet natural gas" and remove gas separation plants form the list

Find a synonym for "transfer" in the context of having transfers elsewhere

Replace "town gas plants" with "gas works gas"

Definition: From the point of view of energy statistics, a transformation process is the ~~transfer~~ movement of part or all of the energy content of a product entering the process to one or more different products leaving the process.

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Peat briquette plants
Natural gas blending plants
Gas to ~~L~~liquid (GTL) plants
~~Petroleum~~ Oil refineries
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Charcoal plants
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(a) The physical or chemical conversion of a product into another product or products whose intrinsic properties differ from those of the original product.

Examples are:

- Chemical or physical changes to the input product(s) resulting in the creation of products containing new chemical compounds. (For example, refining)
- Physical changes to the input which involve separation into several different products with intrinsic physical properties which are different from those of the input material. (For example, Coke oven carbonisation of coal).
- Conversion of heat into electricity.
- Production of heat from combustion, fission or electricity.

and

(b) The separation or blending of products sometimes involving a change of physical shape.

Examples are:

- Blending gases to meet safety and quality requirements before distribution to consumers.
- Briquetting of peat and brown coal.

Remark: The transformation processes are currently identified by the plants in which they occur.

Electricity plants
Combined heat and power plants
Heat plants
Coke ovens
Patent fuel plants
Brown coal briquette plants
Coal liquefaction plants
Gas works (and other conversion to gases)
Blast furnaces
Peat briquette plants
Natural gas blending plants
Gas to liquid (GTL) plants
Oil refineries
Petrochemical plants
Charcoal plants
Other transformation processes

4.1 ELECTRICITY PLANTS

SECOND REVISION

Definition: Electricity plants produce electricity only.

Explanation: The electricity may be generated

- from turbines driven by steam or from gas turbines or internal combustion engines. The steam may be produced from the combustion of fuels, from nuclear reactors or from solar and geothermal sources.
- from the conversion of kinetic energy in moving water and wind or from the direct conversion of sunlight into electricity.

Remark: If one or more of the generating units in an electricity plant is a CHP unit then the whole plant is designated a CHP plant (see below).

Consultant's comments:

The revision takes into account the wish to see primary electricity included in the definition of Electricity Plants. The *Remark* could be removed a sit sits poorly in the definition and is really a warning against misclassification better suited to reporting instructions.

DECISION

Remove the remark on units and deal with it in the CHP definition

Add fuel cells in the first bullet point

OLADE has said that he will provide text

Definition: Plants in which only electricity is produced.~~Electricity plants produce electricity only.~~

Explanation: The electricity may be obtained directly from natural sources such as hydro, geothermal, wind, tidal, marine, solar energy or from fuel cells or from the heat obtained from the combustion of fuels or nuclear reactions. ~~The electricity may be generated~~

- from turbines driven by steam or from gas turbines or internal combustion engines. The steam may be produced from the combustion of fuels, from nuclear reactors or from solar and geothermal sources.
- from the conversion of kinetic energy in moving water and wind or from the direct conversion of sunlight into electricity.

~~Remark: If one or more of the generating units in an electricity plant is a CHP unit then the whole plant is designated a CHP plant (see below).~~

Definition:	Plants in which only electricity is produced.
Explanation:	The electricity may be obtained directly from natural sources such as hydro, geothermal, wind, tidal, marine, solar energy or from fuel cells or from the heat obtained from the combustion of fuels or nuclear reactions.

4.2 COMBINED HEAT AND POWER PLANTS

SECOND REVISION

Definition:	Combined heat and power (CHP) plants produce both heat and electricity from at least one generating unit.
Remark:	They are sometimes referred to as ‘co-generation’ plants.

DECISION

Add remark about units.

Definition:	Combined heat and power (CHP) plants produce both heat and electricity from at least one generating unit in the plant.
Remark:	They are sometimes referred to as ‘co-generation’ plants.

Definition:	Combined heat and power (CHP) plants produce both heat and electricity from at least one generating unit.
Remark:	They are sometimes referred to as ‘co-generation’ plants.

4.3 HEAT PLANTS

REVISED DEFINITION

Definition:	Heat plants refers to plants (including heat pumps and electric boilers) designed to produce heat only for disposal to third parties.
Remark:	Heat generated by an establishment for its own use is classified within final consumption.

DECISION

Change disposal to deliveries

Change remark to be “Fuel inputs in these plants, used to generate heat for their own use are classified within the sector where they are consumed.

Definition:	Heat plants refers to plants (including heat pumps and electric boilers) designed to produce heat only for deliveries~~disposal~~ to third parties.
Remark:	Deliveries of fuels for ~~H~~heat generated by an establishment for its own use are~~is~~ classified within the branch of final consumption where they are consumed.

Definition:	Heat plants refers to plants (including heat pumps and electric boilers) designed to produce heat only for deliveries to third parties.
Remark:	Deliveries of fuels for heat generated by an establishment for its own use are classified within the branch of final consumption where they are consumed.

PRODUCER TYPES (not in flow classification)

SECOND REVISION

Principal Activity Producers

Definition: Enterprises which produce electricity or heat as their principal activity.

Remark: Formerly known as *public utilities* the enterprises may be privately or publicly owned companies.

Autoproducers

Autoproducers (Electricity)

Definition: Enterprises which produce electricity but for whom the production is not their principal activity.

Autoproducers (Heat)

Definition: Enterprises which produce heat for sale but for whom the production is not their principal activity.

DECISION

Change “principal” to “main”

For autoproducers, add a remark under heat “Fuel inputs in these plants, used to generate heat for their own use are classified within the sector where they are consumed.

Main~~Principal~~ Activity Producers

Definition: Enterprises which produce electricity or heat as their main~~principal~~ activity.

Remark: Formerly known as public utilities the enterprises may be privately or publicly owned companies.

Autoproducers

Autoproducers (Electricity)

Definition: Enterprises which produce electricity but for whom the production is not their main~~principal~~ activity.

Autoproducers (Heat)

Definition: Enterprises which produce heat for sale but for whom the production is not their main~~principal~~ activity.

Remark: Deliveries of fuels for heat generated by an establishment for its own use are classified within the branch of final consumption where they are consumed.

Main Activity Producers

Definition: Enterprises which produce electricity or heat as their main activity.

Remark: Formerly known as *public utilities* the enterprises may be privately or publicly owned companies.

Autoproducers

Autoproducers (Electricity)

Definition: Enterprises which produce electricity but for whom the production is not their main activity.

Autoproducers (Heat)

Definition: Enterprises which produce heat for sale but for whom the production is not their main activity.

Remark: Deliveries of fuels for heat generated by an establishment for its own use are classified within the branch of final consumption where they are consumed.

4.4 COKE OVENS

SECOND REVISION

Definition:	Large ovens within which coke oven coke, coke oven gas and coal tars are produced by high temperature carbonisation of coking coal.

DECISION

No change

4.5 PATENT FUEL PLANTS

REVISED DEFINITION

Definition: → Plants manufacturing patent fuels.

DECISION

No change

4.6 BROWN COAL BRIQUETTE PLANTS

SECOND REVISION

Definition: Plants manufacturing brown coal briquettes.

DECISION

No change

Consultant’s comments:

The section on **‘Separation and Blending’** has been removed.

4.7 COAL LIQUEFACTION PLANTS

SECOND REVISION

Definition:	Coal Liquefaction plants are where coal is used to produce liquid fuels (usually for vehicles) by hydrogenisation or carbonisation.

DECISION

Delete “(usually for vehicles)

Change to be “coal is used as feedstock to produce”

Definition:	Coal Liquefaction plants are where coal is used as a feedstock to produce liquid fuels ~~(usually for vehicles)~~ by ~~hydrogenisation~~hydrogenation or carbonisation.

Definition:	Coal Liquefaction plants are where coal is used as a feedstock to produce liquid fuels by hydrogenation or carbonisation.

4.8 GAS WORKS (and other conversion to gases)

Formerly GAS WORKS

SECOND REVISION

Definition:	Gas works produce Gas Works Gas and Gas Works Coke by the high temperature carbonisation of coal for distribution to consumers.
Remark:	Gas Works Gas is also known as Town Gas. The process is very similar to that used for the production of Coke Oven Coke but the quality of coal used differs from the coking coal used for Coke Oven Coke as the primary purpose is to produce gas and coke produced does not have to be of metallurgical quality.

Consultant's comments:

The previous definition for Gas Works Gas, given in the section 'Solid fuels and derived products', grouped together two types of gas production and blending activities. The revised definition in that chapter limits Gas Works Gas to the gas produced as described above. Consequently, the second type of process requires definition as 'Substitute Natural Gas (SNG)" plants.

DECISION

"Gas works coke" should be changed to "Gas coke" throughout

REVISED DEFINITION

Definition:	~~Gas works produce Gas Works Gas and Gas Works Coke by the high temperature carbonisation of coal for distribution to consumers.~~ Plants manufacturing gases for distribution to the public either directly or after blending with natural gas.
Remark:	~~Gas Works Gas is also known as Town Gas. The process is very similar to that used for the production of Coke Oven Coke but the quality of coal used differs from the coking coal used for Coke Oven Coke as the primary purpose is to produce gas and coke produced does not have to be of metallurgical quality.~~The gases are collectively referred to as 'Gas Works Gas and other distributed gases'; short name - Gas Works Gas. Some GasWorks may produce coke as well as gas.

Definition:	Plants manufacturing gases for distribution to the public either directly or after blending with natural gas.
Remark:	The gases are collectively referred to as ‘Gas Works Gas and other distributed gases’; short name - Gas Works Gas. Some Gas Works may produce coke as well as gas.

4.9 BLAST FURNACES

SECOND REVISION

Definition:	Blast furnaces produce blast furnace gas as a by-product when making pig iron from iron ore.
Explanation:	Carbon, mainly in the form of coke, is added to the blast furnace to support and reduce the iron oxide charge and provide heat. Blast furnace gas is produced from the carbon monoxide and other gases formed during the heating and reduction process.

Consultant's comments:

Basic oxygen steel furnace (BOSF) gas is a recognised fuel within the energy statistics. However, gas produced from arc furnaces is not recognised within the energy statistics. In integrated steel plants all recovered gases (blast furnace gas, BOSF gas and arc furnace gas) are usually combined within the gas and dust collection system and cleaned for use and so, for such plants, arc furnace gas appears as the production of another gas, probably as blast furnace gas. The carbon input into arc furnaces comprises small amounts of coke and the carbon anodes. The coke use is recorded but, as carbon anodes are not a 'fuel', their consumption by the iron and steel industry is not apparent within the energy statistics. The carbon used to make them will appear as final consumption of (usually) petroleum coke by the manufacturer.

DECISION

Change remark to be "Blast furnace gas comprises carbon monoxide..."

Definition:	Blast furnaces produce blast furnace gas as a by-product when making pig iron from iron ore.
Explanation:	Carbon, mainly in the form of coke, is added to the blast furnace to support and reduce the iron oxide charge and provide heat. Blast furnace gas comprises ~~is produced from the~~ carbon monoxide and other gases formed during the heating and reduction process.

Definition:	Blast furnaces produce blast furnace gas as a by-product when making pig iron from iron ore.
Explanation:	Carbon, mainly in the form of coke, is added to the blast furnace to support and reduce the iron oxide charge and provide heat. Blast furnace gas comprises carbon monoxide and other gases formed during the heating and reduction process.

4.10 PEAT BRIQUETTE PLANTS

REVISED DEFINITION

Definition:	Plants manufacturing peat briquettes.

DECISION

No change to definition but it will be moved out of coal for the classification

4.11 NATURAL GAS BLENDING PLANTS

SECOND REVISION

Definition:	Plants where the calorific value and density of natural gas for distribution is adjusted through blending with nitrogen, gases from oil and/or coal, Substitute Natural Gas or with biogases.

DECISION

Pending discussion on SNG

REVISED DEFINITION

Definition:	Plants, separate from Gas Works, in which substitute natural gas.(see Gas Works Gas) or petroleum gases are mixed with natural gas for distribution in the gas mains. Plants where the calorific value and density of natural gas for distribution is adjusted through blending with nitrogen, gases from oil and/or coal, Substitute Natural Gas or with biogases.
Remark:	Where blending of substitute natural gas with natural gas takes place within Gas Works the blending is considered part of the Gas Works process.

4.12 GAS TO LIQUIDS (GTL) PLANTS

SECOND REVISION

Definition:	Plants in which natural gas is used as feedstock for the production of vehicle fuels.
Remark:	Note that the gas-to-liquid plants are quite different from LNG plants which convert gaseous natural gas into liquid natural gas.

DECISION

Change definition to production of liquids and put reference to use for vehicles in the remark

Definition:	Plants in which natural gas is used as feedstock for the production of ~~vehicle~~liquid fuels.
Remark:	The liquid fuels are usually used as vehicle fuels. Note that the gas-to-liquid plants are quite different from LNG plants which convert gaseous natural gas into liquid natural gas.

Definition:	Plants in which natural gas is used as feedstock for the production of liquid fuels.
Remark:	The liquid fuels are usually used as vehicle fuels. Note that the gas-to-liquid plants are quite different from LNG plants which convert gaseous natural gas into liquid natural gas.

4.13 OIL REFINERIES

Formerly PETROLEUM REFINERIES

SECOND REVISION

Definition:	Petroleum refineries are plants which transform the feedstock of crude oil and other hydrocarbons into finished petroleum products.
Explanation:	Typical finished products are Liquefied Petroleum Gases, Naphtha, Motor Gasoline and Gas Oils for diesel engines and heating, Aviation fuels and other kerosenes and Fuel Oils for heating.

DECISION

Change to oil refineries

Remove “feedstock of”

Take uses out of explanation

REVISED DEFINITION

Definition:	~~Petroleum~~ Oil refineries are plants which transform ~~the feedstock of~~ crude oil and other hydrocarbons into finished petroleum products.
Explanation:	Typical finished products are Liquefied Petroleum Gases, Naphtha, Motor Gasoline~~, and~~ Gas Oils for ~~diesel engines and heating~~, Aviation fuels and other kerosenes and Fuel Oils ~~for heating~~.

Definition:	Oil refineries are plants which transform crude oil and other hydrocarbons into finished petroleum products.
Explanation:	Typical finished products are Liquefied Petroleum Gases, Naphtha, Motor Gasoline, Gas Oils, Aviation fuels and other kerosenes and Fuel Oils.

4.14 PETROCHEMICAL PLANTS

SECOND REVISION

Definition:	Petrochemical plants convert hydrocarbon feedstock into organic chemicals, intermediate compounds and finished products such as plastics, fibres, solvents and surfactants.
Explanation:	Feedstock used by the plant is usually obtained from the refinery and includes naphtha, ethane, propane and middle distillate oils (for example, gas oil). The carbon and hydrogen in the feedstock is largely transferred to the basic chemicals and products subsequently made from them. However, certain by-products are also created and returned to the refinery (such as pyrolysis gasoline) or burned for fuel to provide the heat and electricity required for the cracking and other processes in the petrochemical plant.

DECISION

No change

4.15 CHARCOAL PLANTS

SECOND REVISION

Definition:	Plants in which wood or other vegetal matter is carbonised through slow pyrolysis.

DECISION

Add “to produce charcoal” at the end of the definition

Definition:	Plants in which wood or other vegetal matter is carbonised through slow pyrolysis to produce charcoal.

Definition:	Plants in which wood or other vegetal matter is carbonised through slow pyrolysis to produce charcoal.

4.16 OTHER TRANSFORMATION PROCESSES

REVISED DEFINITION

Other separation and blending

Definition: Separation and blending activities not elsewhere specified.

DECISION

Change “separation and blending” to “transformation”

Definition: ~~Separation and blending~~ Transformation processes ~~activities~~ not elsewhere specified.

Definition: Transformation processes not elsewhere specified.

5 ENERGY INDUSTRY OWN USE

Formerly ENERGY SECTOR

SECOND REVISION

Definition:	Consumption of fuels and energy for the direct support of the production, and preparation for use of fuels and energy.
Explanation:	Quantities of fuels which are transformed into other fuels or energy are not included here but within the transformation use. Neither are quantities which are used within parts of the energy industry not directly involved in the activities listed in the definition. These quantities are reported within final consumption.
Remark:	The headings listed in Energy Industry Own Use are:

Coal mines
Oil and Gas extraction
Patent fuel plants
Coke Ovens
Gas Works
Blast furnaces
Brown Coal Briquette plants
Petroleum refineries
Coal liquefaction plants
LNG regasification plants
Gas to Liquids plants
Biogas production plants
Electricity and Heat plants
Pumped storage plants
Nuclear fuel manufacture
Charcoal plants
Not elsewhere specified

Consultant's comments:

It has not been possible to provide a complete listing of ISIC/NACE codes which define the specific parts of the enterprises involved in the plant activities with sufficient precision to make them helpful.

Fuels and energy used at SNG plants would be reported under 'Not Elsewhere Specified' as the use is assumed very small at present.

'Biogas production plants' is proposed as a more accurate description of 'Gasification plants for biogas' used in the previous report. The category covers the use of fuels to maintain the temperature of anaerobic fermentation of wastes for the production of biogas.

DECISION

Rename to be "Energy Industry Own Use"

In the list, put a slash in LNG plants / regasification plants

NEW DEFINITION

Definition:	Consumption of fuels and energy for the direct support of the production, and preparation for use of fuels and energy.
Explanation:	Quantities of fuels which are transformed into other fuels or energy are not included here but within the transformation use. Neither are quantities which are used within parts of the energy industry not directly involved in the activities listed in the definition. These quantities are reported within final consumption.
Remark:	The headings listed in Energy Industry Own Use are: Electricity and Heat plants Coal mines Coke Ovens Patent fuel plants Brown Coal Briquette plants Coal liquefaction plants Gas Works (and other conversion to gases) Blast furnaces Gas separation plants Gas to Liquids (GTL) plants LNG plants / regasification plants Oil and Gas extraction Oil ~~Petroleum~~ refineries Pumped storage plants Charcoal plants Biogas production plants Nuclear fuel extraction and fuel processing~~manufacture~~ Energy industry own use n~~N~~ot elsewhere specified

Definition:	Consumption of fuels and energy for the direct support of the production, and preparation for use of fuels and energy.
Explanation:	Quantities of fuels which are transformed into other fuels or energy are not included here but within the transformation use. Neither are quantities which are used within parts of the energy industry not directly involved in the activities listed in the definition. These quantities are reported within final consumption.
Remark:	The headings listed in Energy Industry Own Use are: Electricity and Heat plants Coal mines Coke Ovens Patent fuel plants Brown Coal Briquette plants Coal liquefaction plants Gas Works (and other conversion to gases) Blast furnaces Gas separation plants Gas to Liquid (GTL) plants LNG plants / regasification plants Oil and Gas extraction Oil refineries Pumped storage plants Charcoal plants Biogas production plants Nuclear fuel extraction and fuel processing Energy industry own use not elsewhere specified

6 LOSSES

Formerly DISTRIBUTION LOSSES

SECOND REVISION

Definition:	Losses during the transmission, distribution and transport of fuels and electricity. Distribution losses also include venting and flaring of manufactured gases and pilferage of fuels or electricity.
Remark:	Production of secondary gases includes quantities subsequently vented or flared. This ensures that a balance can be constructed between the use of the primary fuels from which the gases are derived and the production of the gases.

DECISION

Rename to be “Losses”

REVISED DEFINITION

Definition:	Losses during the transmission, distribution and transport of fuels, heat and electricity. ~~Distribution l~~Losses also include venting and flaring of manufactured gases, losses of geothermal heat after production and pilferage of fuels or electricity.
Remark:	Production of secondary gases includes quantities subsequently vented or flared. This ensures that a balance can be constructed between the use of the primary fuels from which the gases are derived and the production of the gases.

Definition:	Losses during the transmission, distribution and transport of fuels, heat and electricity. Losses also include venting and flaring of manufactured gases, losses of geothermal heat after production and pilferage of fuels or electricity.
Remark:	Production of secondary gases includes quantities subsequently vented or flared. This ensures that a balance can be constructed between the use of the primary fuels from which the gases are derived and the production of the gases.

7 FINAL CONSUMPTION

SECOND REVISION

Definition: Final consumption is all fuel and energy that is delivered to consumption sectors for both their energy and non–energy needs. Consumption sectors comprise:

- Industry (excluding the energy industry)
- Transport
- Residential
- Commerce and public services
- Agriculture, Forestry
- Fishing
- Not elsewhere specified (includes military consumption)

Explanation: Energy needs are for heat raising, transportation and electricity. Non-energy needs are those for fuels used for chemical feedstocks and non-energy products.

- Chemical feedstocks are fuels used as raw materials for the manufacture of products which contain the hydrogen and/or carbon taken from the fuel.
- Non-energy products are fuel products used for their physical and chemical properties. Examples are lubricants, paraffin waxes, coal tars and oils as timber preservatives, etc.

Remark: Any fuel use for a transformation process should not be classified as final consumption.

Studies of the non-energy use of fuels also classify reductants as non-energy use.

- Reductants are carbon from fuels (usually cokes) which are heated with metal oxides. During the process the formation of carbon monoxide removes the oxygen from the metal oxides and produces the pure metal.

This use (mostly for the manufacture of iron and steel) is considered as use for energy purposes within energy statistics because the gases created by the reduction process, and which contain most of the carbon from the reductant, are used as fuels to sustain the process or for other heat raising purposes.

Consultant's comments:

1. In an ideal world the lower part of the statistical boundary would be actual consumption of fuels and energy, that is the point of use where the energy content is finally lost as irrecoverable heat. In practice deliveries of stockable fuels are used as a proxy for their consumption as data for consumption of stockable fuels are available for only a few classes of consumer. For distributed gas and electricity deliveries closely approximate consumption.

2. The use of the term ‘final consumption’ instead of ‘intermediate consumption’ reflects the main uses for fuels and energy.
3. When considering the use of fuels for energy purposes 'intermediate consumption' occurs only for transformation processes in which fuels or heat are transformed to other fuels, heat or electricity. These processes (including autoproducer generation) are not part of final consumption. Within almost all industry fuels and electricity are finally consumed in the sense that they do not enter other products but are dissipated into the atmosphere after they have done their work. In this respect industrial use of fuels and energy is identical to households’ use.
4. Final consumption of fuels for chemical feedstock use and for non-energy products is a mixture of intermediate and final use as described above. A significant portion of the fuel supplied to the petrochemical plants is used for heat and electricity and the remainder embodied in products sold for non-energy purposes.
5. The definition needs to define the non-energy uses. It seems appropriate and natural to do it here rather than define it separately elsewhere and introduce a cross reference. Nevertheless, a separate definition has been provided for consideration if it is thought desirable to have one.
6. The *remark* has been edited to make explicit the use of reductants for the manufacture of iron and steel.

DECISION

Change “needs” to “use”

Clarify the description to define more accurately the final consumption

Definition: Final Cconsumption is all fuel and energy that is delivered to users ~~consumption sectors~~ for both their energy and non–energy ~~needs~~uses not involving Transformation Processes. The main user groups~~Consumption sectors~~ comprise:

- Industry (excluding the energy industry)
- Transport
- Residential
- Commerce and public services
- Agriculture, Forestry
- Fishing
- Not elsewhere specified (includes military consumption)

Explanation: Energy uses~~needs~~ are for heat raising, transportation and electrical services~~ity~~. Non-energy uses~~needs~~ are those for fuels used for chemical feedstocks and non-energy products.

- Chemical feedstocks are fuels used as raw materials for the manufacture of products which contain the hydrogen and/or carbon taken from the fuel.
- Non-energy products are fuel products mainly used for their physical and chemical properties. Examples are lubricants, paraffin waxes, coal tars and oils as timber preservatives, etc.

Remark: Any fuel use for a T~~t~~ransformation P~~p~~rocess should not be classified as F~~f~~inal C~~c~~onsumption.

Studies of the non-energy use of fuels also classify reductants as non-energy use.

- Reductants are carbon from fuels (usually cokes) which are heated with metal oxides. During the process the formation of carbon monoxide removes the oxygen from the metal oxides and produces the pure metal.

This use (mostly for the manufacture of iron and steel) is considered as use for energy purposes within energy statistics because the gases created by the reduction process, and which contain most of the carbon from the reductant, are used as fuels to sustain the process or for other heat raising purposes.

Definition: Final Consumption is all fuel and energy that is delivered to users for both their energy and non–energy uses not involving Transformation Processes. The main user groups comprise:

- Industry (excluding the energy industry)
- Transport
- Residential
- Commerce and public services
- Agriculture, Forestry
- Fishing
- Not elsewhere specified (includes military consumption)

Explanation: Energy uses are for heat raising, transportation and electrical services. Non-energy uses are those for fuels used for chemical feedstocks and non-energy products.

- Chemical feedstocks are fuels used as raw materials for the manufacture of products which contain the hydrogen and/or carbon taken from the fuel.
- Non-energy products are fuel products mainly used for their physical and chemical properties. Examples are lubricants, paraffin waxes, coal tars and oils as timber preservatives, etc.

Remark: Any fuel use for a Transformation Process should not be classified as Final Consumption.

Studies of the non-energy use of fuels also classify reductants as non-energy use.

- Reductants are carbon from fuels (usually cokes) which are heated with metal oxides. During the process the formation of carbon monoxide removes the oxygen from the metal oxides and produces the pure metal.

This use (mostly for the manufacture of iron and steel) is considered as use for energy purposes within energy statistics because the gases created by the reduction process, and which contain most of the carbon from the reductant, are used as fuels to sustain the process or for other heat raising purposes.

7.1 INDUSTRY

SECOND REVISION

Definition: Use of fuels within the manufacturing and construction industries.

Remark: Energy industry own use is excluded as is fuel use for coke manufacture and in blast furnaces within the iron and steel sector. Consumption of fuels for transport of goods is classified under transport.

Branch	**Activity Classification**
Iron and steel	ISIC Group 241 and Class 2431 (NACE Groups 24.1, 24.2, 24.3, and Classes 24.51, and 24.52). Consumption in coke ovens and blast furnaces are defined as part of the transformation sector and the energy sector.
Chemical and petrochemical	ISIC/NACE Divisions 20 and 21
Non-ferrous metals	ISIC Group 242 and Class 2432 (NACE Group 24.4, and Classes 24.53 and 24.54).
Non-metallic minerals	ISIC/NACE Division 23. Report glass, ceramic, cement and other building materials industries.
Transport equipment	ISIC/NACE Divisions 29 and 30.
Machinery	ISIC/NACE Divisions 25, 26, 27 and 28. Fabricated metal products, machinery and equipment other than transport equipment.
Mining and quarrying	ISIC Divisions 07 and 08 and Group 099. This excludes the mining of uranium and thorium ores (Class 0721) and the extraction of peat (Class 0892).
Food and tobacco	ISIC/NACE Divisions 10, 11 and 12.
Paper, pulp and print	ISIC/NACE Divisions 17 and 18. Includes production of recorded media.
Wood and wood products (Other than pulp and paper)	ISIC/NACE Division 16.
Textile and leather	ISIC/NACE Divisions 13, 14 and 15.
Construction	ISIC/NACE Divisions 41, 42 and 43.
Industries not elsewhere specified	ISIC Divisions 22, 31, 32 as well as any manufacturing industry not listed above.

DECISION

Find an alternative to “Branch”

In the definition, add mining to manufacturing and construction

In the remark, change to “Transformation and energy industry own use...”

Activity~~Branch~~	Activity Classification
Iron and steel	ISIC Group 241 and Class 2431 (NACE Groups 24.1, 24.2, 24.3, and Classes 24.51, and 24.52). Consumption in coke ovens and blast furnaces are defined as part of ~~the~~ T~~t~~ransformation Processes~~ector~~ and ~~the e~~Energy Industry Own Use~~sector~~.
Chemical and petrochemical	ISIC/NACE Divisions 20 and 21, excluding 2011.
Non-ferrous metals	ISIC Group 242 and Class 2432 (NACE Group 24.4, and Classes 24.53 and 24.54).
Non-metallic minerals	ISIC/NACE Division 23. Report glass, ceramic, cement and other building materials industries.
Transport equipment	ISIC/NACE Divisions 29 and 30.
Machinery	ISIC/NACE Divisions 25, 26, 27 and 28. Fabricated metal products, machinery and equipment other than transport equipment.
Mining and quarrying	ISIC Divisions 07 and 08 and Group 099. This excludes the mining of uranium and thorium ores (Class 0721) and the extraction of peat (Class 0892).
Food and tobacco	ISIC/NACE Divisions 10, 11 and 12.
Paper, pulp and print	ISIC/NACE Divisions 17 and 18. Includes production of recorded media.
Wood and wood products (Other than pulp and paper)	ISIC/NACE Division 16.
Textile and leather	ISIC/NACE Divisions 13, 14 and 15.
Construction	ISIC/NACE Divisions 41, 42 and 43.
Industries not elsewhere specified	ISIC Divisions 22, 31, 32 as well as any manufacturing industry not listed above.

Activity	Activity Classification
Iron and steel	ISIC Group 241 and Class 2431 (NACE Groups 24.1, 24.2, 24.3, and Classes 24.51, and 24.52). Consumption in coke ovens and blast furnaces are defined as part of Transformation Processes and Energy Industry Own Use.
Chemical and petrochemical	ISIC/NACE Divisions 20 and 21, excluding 2011.
Non-ferrous metals	ISIC Group 242 and Class 2432 (NACE Group 24.4, and Classes 24.53 and 24.54).
Non-metallic minerals	ISIC/NACE Division 23. Report glass, ceramic, cement and other building materials industries.
Transport equipment	ISIC/NACE Divisions 29 and 30.
Machinery	ISIC/NACE Divisions 25, 26, 27 and 28. Fabricated metal products, machinery and equipment other than transport equipment.
Mining and quarrying	ISIC Divisions 07 and 08 and Group 099. This excludes the mining of uranium and thorium ores (Class 0721) and the extraction of peat (Class 0892).
Food and tobacco	ISIC/NACE Divisions 10, 11 and 12.
Paper, pulp and print	ISIC/NACE Divisions 17 and 18. Includes production of recorded media.
Wood and wood products (Other than pulp and paper)	ISIC/NACE Division 16.
Textile and leather	ISIC/NACE Divisions 13, 14 and 15.
Construction	ISIC/NACE Divisions 41, 42 and 43.
Industries not elsewhere specified	ISIC Divisions 22, 31, 32 as well as any manufacturing industry not listed above.

7.2 TRANSPORT

SECOND REVISION

Definition:	Consumption of fuels and electricity used in transport of goods or persons between points of departure and destination within the national territory irrespective of the economic sector within which the activity occurs.
Remark:	Classification of the consumption of fuels by merchant ships and civil aircraft undertaking transport of goods or persons beyond the national territory is covered under the definitions for International Marine and Aviation Bunkers and are therefore excluded from this definition. However, deliveries of fuels to road vehicles going beyond national borders cannot be readily identified and by default are included here.

DECISION

Change “used in transport of goods” to “used to transport goods”

Consider whether to put a note that for “World”, bunkers would be part of transport.

Consultant’s comment:

The addition of a remark in the definition concerning the inclusion of ‘bunker fuels’ in Transport for world totals is not appropriate for a definition of the activity or for the reporting of national transport consumption. An accompanying explanatory remark, however, is essential for a table presenting world totals.

7.2.1 DOMESTIC AVIATION

SECOND REVISION

Definition:	Quantities of aviation fuels delivered to all civil aircraft undertaking a domestic flight transporting passengers or goods or for purposes such as crop spraying and the bench testing of aero engines.
Explanation:	A domestic flight takes place when the departure and landing airports are on national territory. In cases where distant islands form part of the national territory this may imply long flights through the air space of other countries but the flights are, nevertheless, part of domestic aviation.
Remark:	Military use of aviation fuels should not be included in domestic aviation but included under 'not elsewhere specified'. The use of fuel by airlines for ground transport is also excluded here but included under 'Commerce and Public Services'. Domestic aviation is part of ISIC Division 51.

DECISION

In the remark, the classification of ground transport at airports is under discussion between IEA and Eurostat.

Definition:	Quantities of aviation fuels delivered to all civil aircraft undertaking a domestic flight transporting passengers or goods or for purposes such as crop spraying and the bench testing of aero engines.
Explanation:	A domestic flight takes place when the departure and landing airports are on national territory. In cases where distant islands form part of the national territory this may imply long flights through the air space of other countries but the flights are, nevertheless, part of domestic aviation.
Remark:	Military use of aviation fuels should not be included in domestic aviation but included under 'not elsewhere specified'. The use of fuel by ~~airlines~~airport authorities for ground transport *within* airports is also excluded here but included under 'Commerce and Public Services'. Domestic aviation is part of ISIC Division 51.

Definition:	Quantities of aviation fuels delivered to all civil aircraft undertaking a domestic flight transporting passengers or goods or for purposes such as crop spraying and the bench testing of aero engines.
Explanation:	A domestic flight takes place when the departure and landing airports are on national territory. In cases where distant islands form part of the national territory this may imply long flights through the air space of other countries but the flights are, nevertheless, part of domestic aviation.
Remark:	Military use of aviation fuels should not be included in domestic aviation but included under 'not elsewhere specified'. The use of fuel by airport authorities for ground transport *within* airports is also excluded here but included under 'Commerce and Public Services'. Domestic aviation is part of ISIC Division 51.

7.2.2 ROAD

SECOND REVISION

Definition:	Fuels and electricity delivered to vehicles using public roads.
Explanation:	Fuels delivered for 'off-road' use and stationary engines should be excluded. Off-road use comprises vehicles and mobile equipment used primarily on commercial, industrial sites or private land, or in agriculture or forestry. The deliveries of fuels related to these uses are included under the appropriate final consumption heading. Deliveries for military uses are also excluded here but included under 'not elsewhere specified'. The road fuel use by ISIC 4923 (Freight transport by road) is included here.

Consultant's comments:

The purpose of this definition is to obtain data for fuels used to transport goods and people on roads open for general use. Fuels delivered for similar use on sites dedicated to an economic activity are part of the fuel consumption for that activity. As the ISIC Class 4923 is only part of this transport mode its mention may not help.

DECISION

No change

7.2.3 RAIL

SECOND REVISION

Definition:	Fuels and electricity delivered for use in rail vehicles, including industrial railways.
Remark:	This includes urban rail transport (including trams) and is part of the fuel and energy consumption by ISIC Group 491 (Transport via Railways).

Consultant's comments:

Urban rail transport has been included as the case for continuing to omit it is not evident.

DECISION

No change

7.2.4 DOMESTIC NAVIGATION

SECOND REVISION

Definition:	Fuels delivered to vessels transporting goods or people and undertaking a domestic voyage
Explanation:	A domestic voyage is between ports of departure and destination in the same national territory without intermediate ports of call in foreign ports. Note that this may include journeys of considerable length between two ports in a country (e.g. San Francisco to Honolulu).
Remark:	Fuels delivered to fishing vessels are excluded here but included under 'Fishing'. Domestic navigation is part of ISIC Division 50.

DECISION

No change

7.2.5 PIPELINE TRANSPORT

SECOND REVISION

Definition:	Fuels and electricity used in the support and operation of pipelines transporting gases, liquids, slurries and other commodities between points within the national territory.
Explanation:	It comprises the consumption at pumping stations and for maintenance of the pipeline. Consumption for maintaining the flow in pipelines carrying water, natural gas, manufactured gas, hot water and steam in *distribution* networks is excluded here but included under the appropriate heading within 'Energy Industry Own Use'. Consumption for the transport of natural gas in *transmission* networks is included.
Remark:	Pipelines carrying fuels may use some of the fuel carried to provide the energy required for the transport. Pipeline transport is classified as ISIC Group 493 (Transport via pipeline).

DECISION

Add in transit lines - Mieke to provide explanation of difference between transit, transmission and distribution lines

Delete the 1st remark

Definition:	Fuels and electricity used in the support and operation of pipelines transporting gases, liquids, slurries and other commodities between points within the national territory.
Explanation:	It comprises the consumption at pumping stations and for maintenance of the pipeline. Consumption for maintaining the flow in pipelines carrying water, natural gas, manufactured gas, hot water and steam in distribution networks is excluded here but included under the appropriate heading within 'Energy Industry Own Use'. Consumption for the transport of natural gas in transmission networks is included.
Remark:	~~Pipelines carrying fuels may use some of the fuel carried to provide the energy required for the transport.~~ A transmission pipeline transports its contents to distribution pipelines for eventual delivery to consumers. Transmission pipelines for gas usually operate at pressures considerably higher than those used in the distribution pipelines. Pipeline transport is classified as ISIC Group 493 (Transport via pipeline).

Definition:	Fuels and electricity used in the support and operation of pipelines transporting gases, liquids, slurries and other commodities between points within the national territory.
Explanation:	It comprises the consumption at pumping stations and for maintenance of the pipeline. Consumption for maintaining the flow in pipelines carrying water, natural gas, manufactured gas, hot water and steam in distribution networks is excluded here but included under the appropriate heading within 'Energy Industry Own Use'. Consumption for the transport of natural gas in transmission networks is included.
Remark:	A transmission pipeline transports its contents to distribution pipelines for eventual delivery to consumers. Transmission pipelines for gas usually operate at pressures considerably higher than those used in the distribution pipelines. Pipeline transport is classified as ISIC Group 493 (Transport via pipeline).

7.2.6 TRANSPORT NOT ELSWHERE SPECIFIED

SECOND REVISION

Definition:	Deliveries of fuels or electricity used for transport activities not covered within the modes of transport defined elsewhere.
Remark:	Most of the forms of transport listed in ISIC Class 4922 (Other land transport) are included in the modes of transport defined elsewhere. However, consumption of electricity for téléphériques (telfers), and ski and cable lifts would be included here.

DECISION

Pending airport decision

7.3 RESIDENTIAL

SECOND REVISION

Definition:	Fuels and energy consumed by all households.
Remark:	Includes households with employed persons or producing undifferentiated goods and services. (ISIC/NACE Divisions 97 and 98).
	Exclude fuels and electricity used by households for transport.

DECISION

Clarify that households with employed persons is only a small part of this

Definition:	Fuels and energy consumed by all households.
Remark:	Also ~~I~~includes those households with employed persons or producing undifferentiated goods and services. (ISIC/NACE Divisions 97 and 98).
	Exclude fuels and electricity used by households for transport.

Definition:	Fuels and energy consumed by all households.
Remark:	Also includes those households with employed persons or producing undifferentiated goods and services. (ISIC/NACE Divisions 97 and 98).
	Exclude fuels and electricity used by households for transport.

7.4 COMMERCIAL AND PUBLIC SERVICES

SECOND REVISION

Definition:	Fuels consumed by business and offices in the public and private sectors.
Explanation:	The activities covered are those listed within the following ISIC divisions: 33, 36-39, 45-47, 52-53, 55-56, 58-66, 68-75, 77-82, 84-88, 90-96 and 99.

DECISION

Change to “Fuels and energy”

Exclude ISIC Class 8422 Defense activities – put in not elsewhere specified

Definition:	Fuels and energy consumed by business and offices in the public and private sectors.
Explanation:	The activities covered are those listed within the following ISIC divisions: 33, 36-39, 45-47, 52-53, 55-56, 58-66, 68-75, 77-82, 84-88, 90-96 and 99.

Definition:	Fuels and energy consumed by business and offices in the public and private sectors.
Explanation:	The activities covered are those listed within the following ISIC divisions: 33, 36-39, 45-47, 52-53, 55-56, 58-66, 68-75, 77-82, 84-88, 90-96 and 99.

7.5 AGRICULTURE/FORESTRY

Formerly AGRICULTURE

SECOND REVISION

Definition:	Deliveries of fuels and energy for agriculture, hunting and forestry.
Remark:	It includes fuels and energy consumed for traction or for power or heating (ISIC Divisions 01 and 02).

DECISION

Exclude fuels used for aerial crop spraying

REVISED DEFINITION

Definition:	Deliveries of fuels and energy for agriculture, hunting and forestry.
Remark:	It includes fuels and energy consumed for traction or for power or heating (ISIC Divisions 01 and 02). Exclude fuels used for aerial crop spraying. See 'Domestic Aviation'.

Definition:	Deliveries of fuels and energy for agriculture, hunting and forestry.
Remark:	It includes fuels and energy consumed for traction or for power or heating (ISIC Divisions 01 and 02). Exclude fuels used for aerial crop spraying. *See* 'Domestic Aviation'.

7.6 FISHING

SECOND REVISION

Definition:	Deliveries to all vessels engaged in ocean, coastal and inland fishing as well as for aquaculture and fisheries (ISIC/NACE Division 03). Include also fuel and energy use in gathering of marine materials; natural pearls, sponges, coral and algae; and service activities incidental to fishing.

DECISION

No change

7.7 NOT ELSEWHERE SPECIFIED

SECOND REVISION

Definition:	Consumption for activities not classified elsewhere.
Remark:	This category includes fuels and electricity delivered to military services based in the national territory. The energy consumption is for all mobile and stationary consumption (e.g. ships, aircraft, road and energy used in living quarters), regardless of whether the fuel delivered is for the nation's military services or for the military services of another country based on the national territory.

DECISION

Add that bunker fuel delivered to military ships and aircraft should be included here.

Definition:	Consumption for activities not classified elsewhere.
Remark:	This category includes fuels and electricity delivered to military services based in the national territory. The energy consumption is for all mobile and stationary consumption (e.g. ships, aircraft, road and energy used in living quarters), regardless of whether the fuel delivered is for the nation's military services or for the military services of another country based on the national territory. Bunker fuels for military ships and aircraft is included here. ISIC Class 8422.

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Remark:	This category includes fuels and electricity delivered to military services based in the national territory. The energy consumption is for all mobile and stationary consumption (e.g. ships, aircraft, road and energy used in living quarters), regardless of whether the fuel delivered is for the nation's military services or for the military services of another country based on the national territory. Bunker fuels for military ships and aircraft is included here. ISIC Class 8422.

NON-ENERGY USE (not in flow classification)

SECOND REVISION

Definition: Fuels used for chemical feedstocks and non-energy products.

- Chemical feedstocks are fuels used as raw materials for the manufacture of products which contain the hydrogen and/or carbon taken from the fuel.
- Non-energy products are fuel products used for their physical and chemical properties. Examples are lubricants, paraffin waxes, coal tars and oils as timber preservatives, etc.

Remark: Studies of the non-energy use of fuels also classify reductants as non-energy use, however, in energy statistics the use of reductants is considered an energy use.

- Reductants are carbon from fuels (usually cokes) which are heated with metal oxides. During the process the formation of carbon monoxide removes the oxygen from the metal oxides and produces the pure metal.

This use (mostly for the manufacture of iron and steel) is considered as use for energy purposes within energy statistics because the gases created by the reduction process, and which contain most of the carbon from the reductant, are used as fuels to sustain the process or for other heat raising purposes.

DECISION

Find a formulation to address the concern that there may be energy consumption of non-energy products

Definition: Fuels used for chemical feedstocks and non-energy products.

- Chemical feedstocks are fuels used as raw materials for the manufacture of products which contain the hydrogen and/or carbon taken from the fuel.
- Non-energy products are fuel products used mainly for their physical and chemical properties. Examples are lubricants, paraffin waxes, coal tars and oils as timber preservatives, etc.

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This use (mostly for the manufacture of iron and steel) is considered as use for energy purposes within energy statistics because the gases created by the reduction process, and which contain most of the carbon from the reductant, are used as fuels to sustain the process or for other heat raising purposes.