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Energy Balances

- An overall energy balance is an accounting framework that shows all energy products entering, exiting and used within the **national territory** of a given country during a reference period.
- It must express all forms of energy in a common accounting unit and show the relationship between the inputs to and the outputs from the energy transformation processes.
- Balances can also be compiled for any particular energy product (energy commodity)

- Provide information on energy supply and demand in the national territory in order to understand the energy security situation
- Ensure comparability between different reference periods and between different countries
- Calculate efficiencies of transformation processes occurring in the country (e.g., refining, electricity production by combustion of fuels, etc.)
- Calculate the relative shares of the supply/consumption of various products (including renewables versus non-renewables) of a country's total supply/consumption
- ...

- Territory boundary—defined by the boundary of the national territory of the compiling country
- Product boundary—defined by the scope of all energy products shown in the balance columns
- Flow boundary—defined by the scope of energy flows shown in the balance rows

Product and flow boundaries are fixed in the short term. However, as technology advances, new sources of energy may become available and should be reflected in the balances when used.

- Passive energy, e.g. solar energy falling on the land to grow crops
- Energy resources and reserves (can be considered in additional tables)
- Extraction of any materials not covered in primary energy production (e.g. natural gas flared or vented) (can be considered in an additional tables)
- Peat, waste and biomass used for non-energy purposes.

- The energy balance is a matrix represented by rows and columns
- Columns represent energy products that are produced and/or are available for use in the national territory
- Rows represent energy flows
- A separate row is reserved for statistical difference, calculated as the numerical difference between the total supply of an energy product and the total use of it

Three main blocks of rows as follows:

- Top block—flows representing energy entering and leaving the national territory, as well as stock changes to provide information on the supply of energy on the national territory during the reference period
- Middle block—flows showing how energy is transformed, transferred, used by energy industries for own use and lost in distribution and transmission
- Bottom block—flows reflecting final energy consumption and non-energy use of energy products.

Energy Balance

Primary Production

+ Imports

+/- Stock changes

-Exports

- International bunkers

Total Energy Supply

+/- Statistical differences

(Transfers)

+/-Transformation processes

-Energy industries own use

-Losses

-Non energy use

Final Energy Consumption (FEC)

Consumption of sectors:

- HH

- Services

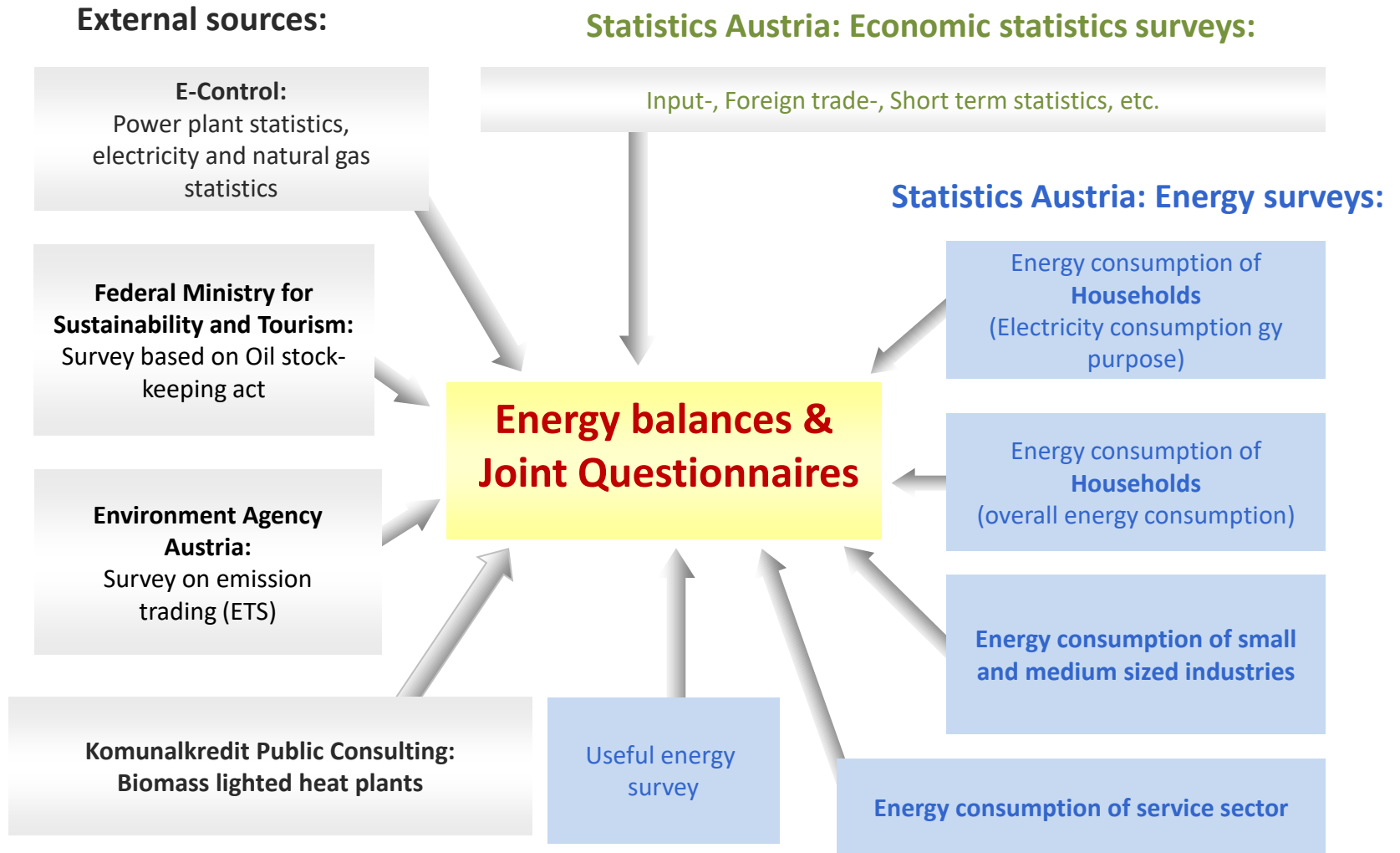
- Industry

- Agriculture/Forestry/Fishing

- Transport

Cornerstones of the Energy Balance

Transport defined functionally



Indigenous production (top block):

- Coals: not applicable
- Oil: Federal Ministry of Science, Research and Economy
- Gas: E-control (Regulator of electricity and gas market)
- Wastes non-renewable.: Calculated from “consumption side”
- Other liquid biofuels: Environment Agency Austria
- Geothermal Energy: Produced heat modelled based on installed thermal capacity
- Solar thermal, photovoltaic electricity (non-grid connected plants), (ambient heat): Market study
- Primary Electricity: E-control
- Briquettes/Pellets: Short term statistics (Statistics Austria)
- Other renewables (non-standardized biofuels): Calculated from “consumption side”

Imports/Exports (top block):

- Coals: Foreign Trade Statistics (Statistics Austria)
- Oil: Federal Ministry of Science, Research and Economy
- Gas:
 - Import: Foreign Trade Statistics
 - Exports: Calculation
- Liquid biofuels: Federal Ministry of Science, Research and Economy
- Electricity: E-control

Transformation sector (middle block):

- Statistics on electricity and combined heat and power (CHP) plants provided by E-Control
- Coke oven: reported by coke oven operator
- Blast furnace: reported by blast furnace operator
- Refinery inputs: reported by refinery
- Charcoal: estimated

Transformation input of energy products cross-checked with Emissions Trading Scheme data and Material Input Statistics (total consumption)

Final Energy Consumption (bottom block)

- Household survey (biennial)
- Services Sector survey (annual)
- Industry survey:
 - Small and medium sized industries (biennial)
 - Material Input Statistics (annual) – large industries
 - Use energy analysis (annual) – voluntary survey, connected to MIS

- Time series starting in 1970
- Overall energy balance and 82 commodity balances (energy products and aggregates of energy products)
- Published annually at the end of November for Austria and 9 regions
- Early estimates of energy balances published annually at the end of May (on country level only, preliminary data)

Comparison Balance vs. Accounts

Energy Balance

Primary Production
+ Imports
+/- Stock changes
-Exports
- International bunkers
Total Energy Supply
+/- Statistical differences
(Transfers)
+/-Transformation processes
-Energy industries own use
-Losses
-Non energy use
Final Energy Consumption (FEC)
Consumption of sectors

Energy Accounts

Primary Production
+ Secondary Production
+ Imports
Supply = Use
-Exports
-Stock Changes
-Losses
-Non Energy Use
-Consumption of private
Households
Intermediate Consumption
Consumption of NACE 64/99



**National
Accounts**

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Thank you for your attention!