Biomass - Exercise

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Biomass

- In a certain year, 25 kt of agricultural waste was produced, and used as follows:
  - 10 kt were exported to neighboring countries
  - 5 kt were used as fertilizer by crop growers
  - 5 kt were used as input to produce 1.5 kt of biodiesel
    - (note that 0.1 Gwh of electricity was consumed in the production process)
  - 5 kt were burned directly as fuel by households

- How to account for this info in energy statistics?

- How to fill the energy balance with this info?
  - Note: Default calorific value of agricultural waste: 12.5 MJ/kg
  - Default calorific value of biodiesel: 36.8 MJ/kg

How to account for this info in energy statistics?

- 10 kt were exported to neighboring countries
  - Was it for energy or non-energy purposes?

- 5 kt were used as fertilizer by crop growers
  - Clearly not for energy purposes (out of scope)

- 5 kt were used as input to produce 1.5 kt of biodiesel
  - Because this is biomass, this is not accounted as transformation, but as primary production of biodiesel
  - Biomass is exception to the general rule

- 0.1 Gwh of electricity consumed in the production process
  - This is counted as own use, as this energy was used to support production of an energy product (biodiesel), but was not transformed in this product

- 5 kt were burned directly as fuel by households
  - Primary production of solid biomass
  - Final energy consumption by households

Reference

- *2.11 Boundary of energy products*. The description of the boundary of the universe of energy products is not always straightforward.

- For example, *corncobs* can be:
  - (1) combusted directly to produce heat;
  - (2) used in the production of ethanol as a biofuel,
  - (3) consumed as food, or
  - (4) thrown away as waste.

- According to the scope of SIEC, corncobs, as such, are considered energy products for the purpose of energy statistics only in case (1) above, that is when they are combusted directly to produce heat (c.f. paragraph 3.10).

- In all other cases, they either do not fall within the boundary of energy statistics (when used as a source of food), or they enter the boundary of energy statistics as a different product (e.g. ethanol).

Leaving out what is outside the scope

- 5 kt were used as input to produce 1.5 kt of biodiesel
  - primary production of biodiesel
  - 1.5 kt x 36.8 MJ/kg = 55.2 TJ

- 0.1 GWh of electricity consumed in production process
  - Energy industries own use
  - 0.1 GWh x 3.6 TJ/GWh = 0.36 TJ

- 5 kt were burned directly as fuel by households
  - Final energy consumption by households
  - Primary production of solid biomass
  - 5 kt x 12.5 MJ/kg = 62.5 TJ