

# The Sankey Biomass Diagram

## Research Brief

### HIGHLIGHTS

- Representation of biomass flows across sectors for each EU Member State and EU-28.
- Displays supply and uses of biomass, including trade.
- Is hosted in the JRC DataM Portal as an interactive diagram to allow specific analysis.
- Is a work in progress, will be updated with additional data and further detail over time.

### What?

- A compilation of harmonised data from a joint effort of five JRC Units in the context of the Biomass Assessment study.
- Represents the flows of biomass for each sector of the bioeconomy, from supply to uses including trade.
- A dynamic diagram that accommodates user's choices.

### Why?

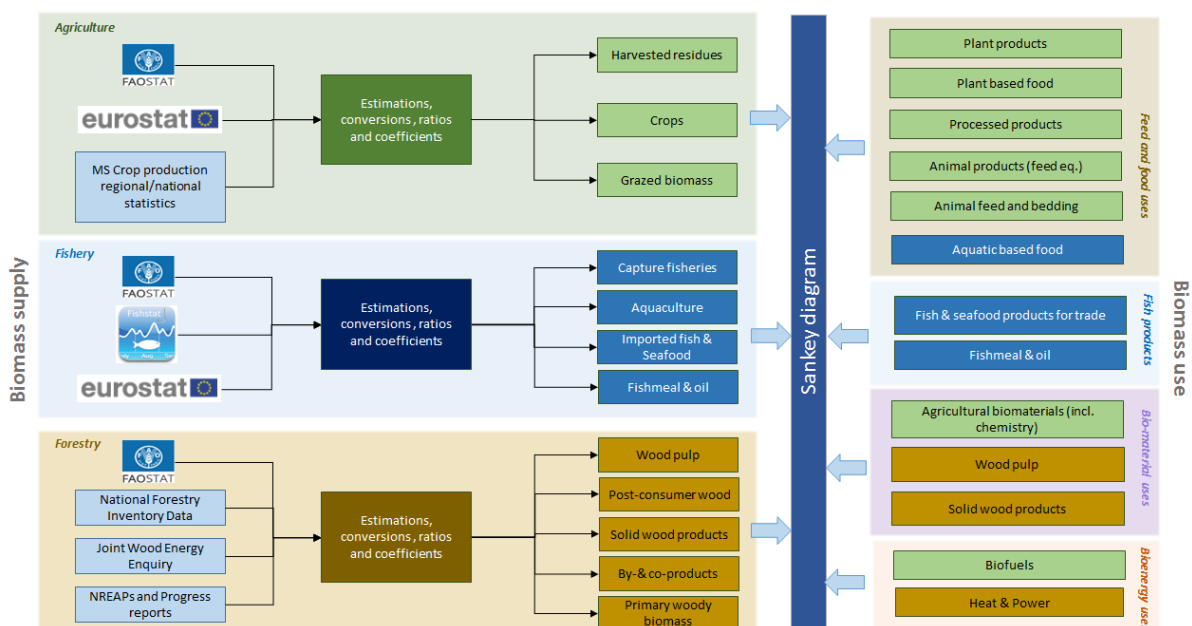
- Represents the biomass flows in addition to values, enabling analysis of the different uses of a specific biomass supply.
- Allows integration of data from different sources.
- Showcases the evolution of biomass flows over time as well as the comparisons between the EU Member States.
- Illustrates synergies and competition in the use of biomass.

### How?

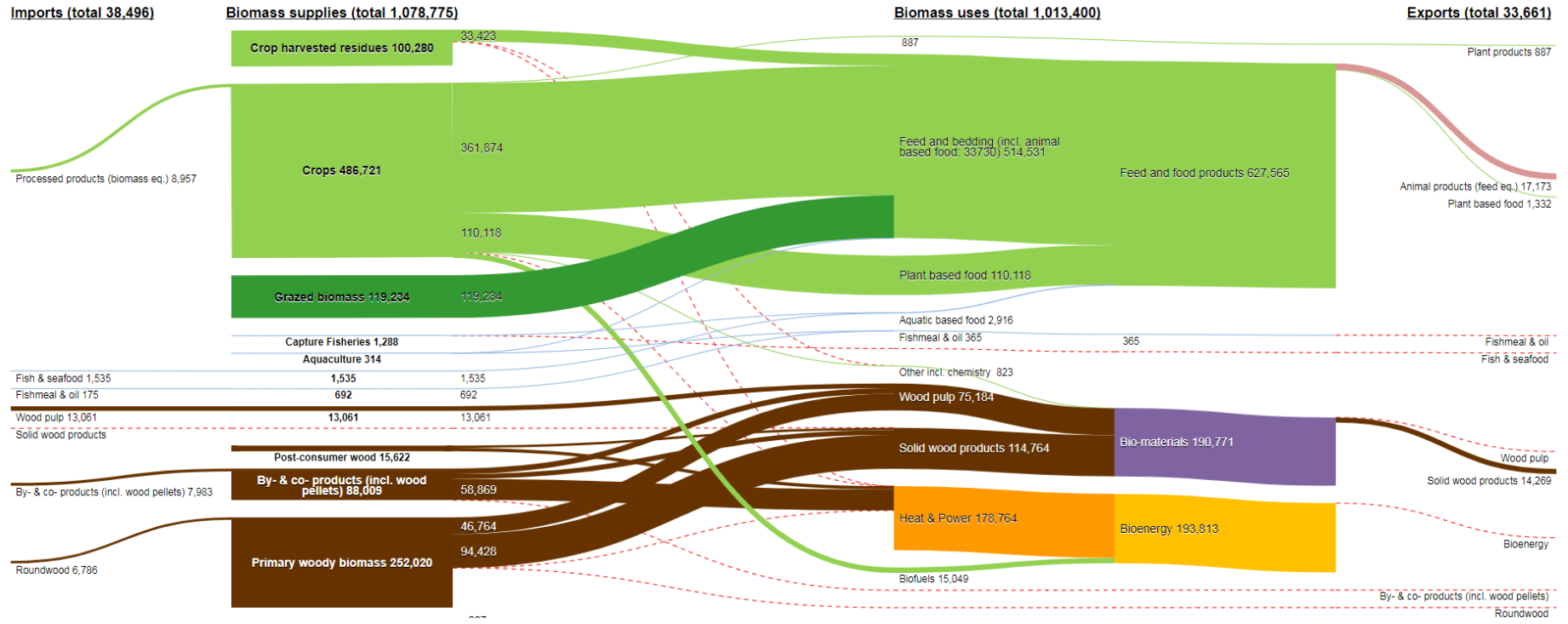
- Integration of several datasets.
- Estimation of biomass content of trade, production and residues.
- Classification of biomass into supply and uses categories.
- Conversion into a common unit (dry matter weight).

### End to end biomass flow

The Sankey biomass diagram is split into biomass supply and biomass uses. Each of these areas shows different categories: agriculture, forestry and fisheries (supply), as well as feed and food, biomaterials, bioenergy, and direct exports for each sector (uses). Multiple data sources have been used to quantify biomass.



Biomass balances in European Union (EU-28), Last data available  
1000 T of dry matter



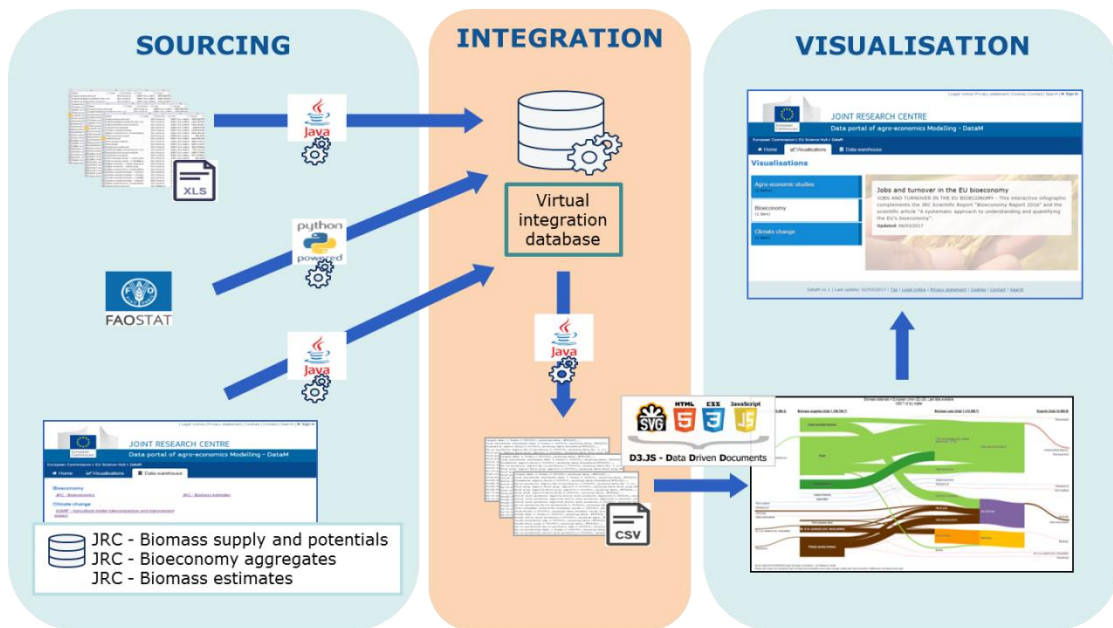
[https://datam.jrc.ec.europa.eu/datam/mashup/BIOMASS\\_FLOWS/index.html](https://datam.jrc.ec.europa.eu/datam/mashup/BIOMASS_FLOWS/index.html)



European Commission

### Interactive application

All relevant data from the different sources have been integrated into a single database hosted in the JRC DataM Portal. The published diagram enables specific analysis and comparison of the different countries and sectors across a defined time series.



### Future development

The Sankey biomass diagram as presented above can be considered pioneer work; it is the first time that an agricultural biomass balance sheet is presented at EU-28 and MS level in dry quantity of vegetal biomass equivalent that integrates food and non-food uses of agricultural biomass. As far as we are aware of, it is also the first time that dry quantities of biomass from the agriculture, forestry, fisheries and bioenergy sectors are integrated into a single study. As a pioneer diagram, there are multiple areas where it can be significantly improved.

#### Possible areas of improvement

##### Data

- Complete and expand the time series.
- Integration of modelled data to represent estimates for future periods.
- Improvement of source data and integration of additional data when available.
- Include estimation of resale data.

##### Content

- Break-down of biomass uses at commodity level and consolidation of estimates related to bioenergy and biomaterial uses.
- Estimation of biomass in other units of measure, such as monetary values or fresh matter quantities.
- Increase granularity of the categories (e.g. groups of crops such as cereals, oil crops, etc.), down to a representation of the nutrient components of the biomass.
- Include biomass not considered in this study: waste, biogas, bioelectricity, algae, etc.

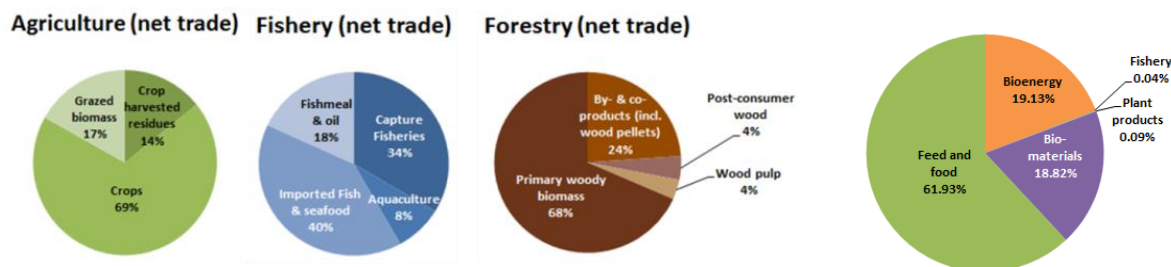
##### Visualization and analysis

- Additional representations: geographical, disaggregation, shares of total, shares of total environmental potential.
- Representation of circular flows for some commodities.

## An example of insights from the Sankey Biomass diagram

Composition of the EU-28 agricultural, fisheries and forestry biomass supply

Composition of the EU-28 biomass uses



### KNOWLEDGE GAPS

- Full time series not complete for some categories.
- Data missing, not reported or incomplete for some commodities and/or countries.
- Missing trade values. For some sectors, only net trade is available.

### References



Gurría, P., Ronzon, T., Tamosiunas, S., López, R., García Condado, S., Guillén, J., Cazzaniga, N. E., Jonsson, R., Banja, M., Fiore, G., Camia, A.; M'Barek R., 2017; Biomass flows in the European Union: The Sankey Biomass diagram- towards a cross-set integration of biomass, EUR 28565 EN, doi: 10.2760/22906

<https://ec.europa.eu/jrc/en/publication/biomass-flows-european-union-sankey-biomass-diagram-towards-cross-set-integration-biomass>

Sankey biomass diagram: [https://datam.jrc.ec.europa.eu/datam/mashup/BIOMASS\\_FLOWS](https://datam.jrc.ec.europa.eu/datam/mashup/BIOMASS_FLOWS)

JRC Biomass Assessment Study: <https://biobs.jrc.ec.europa.eu/page/biomass-assessment-study-jrc>

Bioeconomy Knowledge Centre: <https://biobs.jrc.ec.europa.eu/>

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