

Joint Research Centre

the European Commission's in-house science service

*Serving society
Stimulating innovation
Supporting legislation*

*The use of the JWEE data
in the JRC Biomass Assessment Study*

Bioeconomy Unit,

Sustainable Resources Directorate



ec.europa.eu/jrc



Framework



A new **bioeconomy** strategy for a sustainable Europe



EC Communication (COM(2018) 673) updated the **Bioeconomy strategy and Action Plan**



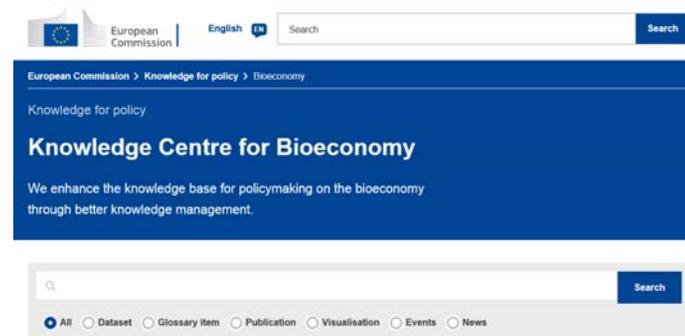
Request to improve the understanding of **current availability and demand** of biomass across sectors for the development and review of policies

BIOMASS mandate to JRC agreed with EC services



on the provision of data and analysis on **biomass supply and demand** on a long term basis

Selected outcomes are available on the EC Knowledge Centre for Bioeconomy website



ec.europa.eu/knowledge4policy/bioeconomy_en

Working tools (Forest-based sector)

Wood resource balance

quantify and *compare* sources (primary and secondary) and uses (material and energy) of woody biomass

Sankey diagram

depict the woody biomass *flows* among the wood-based sectors from domestic and imported sources, highlighting *circularities*

We developed WRB and Sankey diagrams *for all EU Member States and for EU-28 from 2009 to 2015.*

Analysis is still ongoing; some general initial remarks:

- Gaps are present, but available information is raising.
- Non-negligible differences between reported sources and uses are always evident (up to tens of millions m³ depending on the country).
- Uses of woody biomass for both material and energy are steadily growing in EU-28.

EU-28

Wood Resource Balance 2015

(all units in SWE)

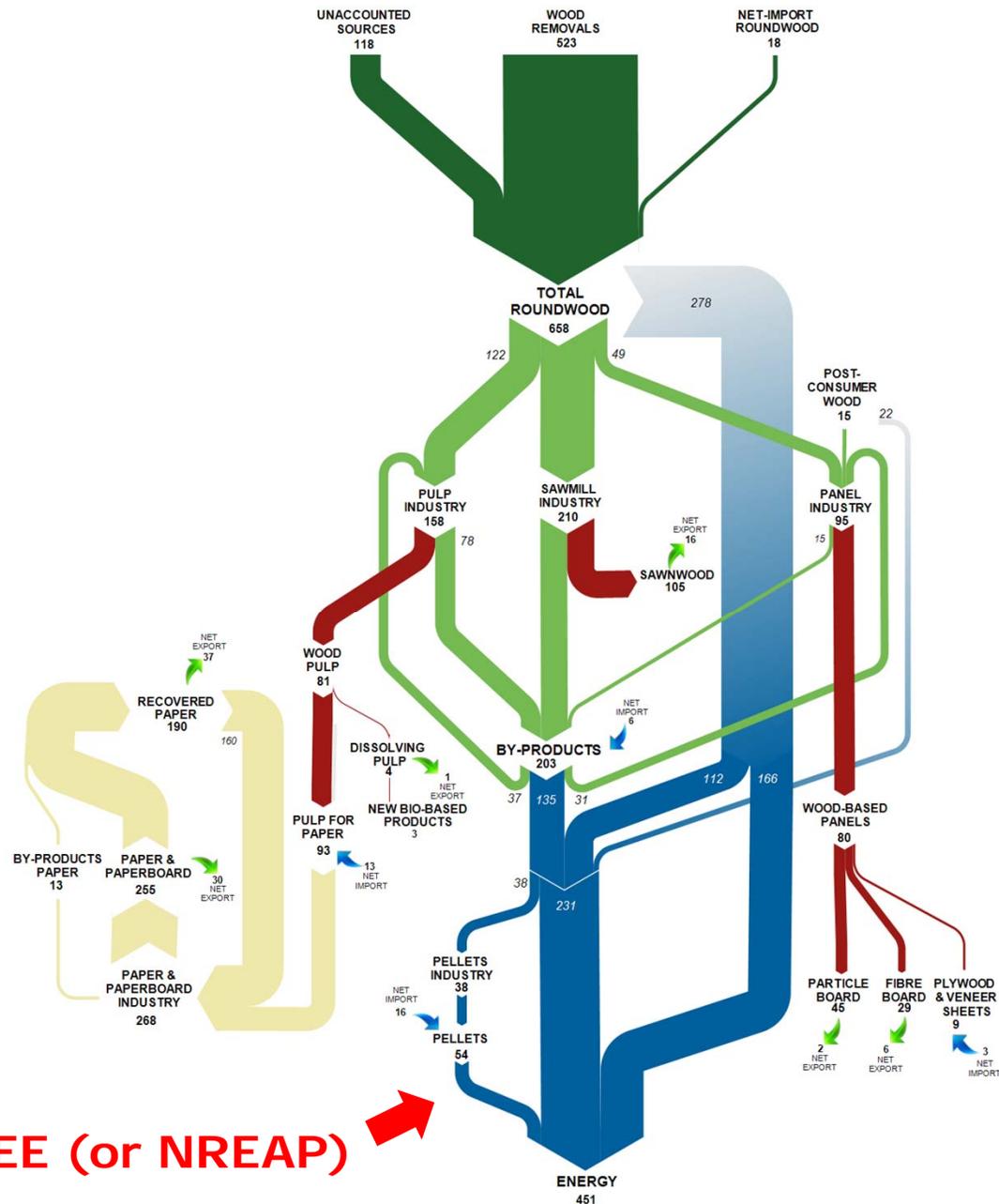
SOURCES		1000m³	%	%	1000m³	USES
PRIMARY	Industrial roundwood (conifer): Removals	271,449	29.5%	18.9%	174,100	Sawmill industry (conifer)
	Industrial roundwood (non-conifer): Removals	79,224	8.6%	2.1%	18,885	Sawmill industry (non-conifer)
	Industrial roundwood (conifer): Net-trade *	9,410	1.0%	0.3%	2,873	Veneer sheets industry
	Industrial roundwood (non-conifer): Net-trade *	6,815	0.7%	1.1%	10,001	Plywood industry
	Fuel wood (conifer): Removals	34,780	3.8%	5.2%	47,734	Particle board industry
	Fuel wood (non-conifer): Removals	73,811	8.0%	3.3%	30,281	Fiberboard industry
	Fuel wood: Net-trade *	-535	-0.1%	2.2%	20,324	Mechanical pulp industry
	Bark	65,731	7.1%	12.5%	114,861	Chemical pulp industry
SECONDARY	Sawmill residues	87,508	9.5%	0.3%	2,880	Semi-chemical pulp industry
	Other industrial residues	11,128	1.2%	1.1%	9,848	Dissolving pulp industry
	Wood chips and particles: Net-trade *	2,982	0.3%	1.4%	37,059	Wood pellets industry
	Other wood residues: Net-trade *	3,218	0.3%	18.0%	165,930	Direct Wood
	Wood pellets	37,958	4.1%	24.1%	222,287	Indirect Wood
	Wood pellets: Net-trade *	15,698	1.7%	6.8%	62,864	Unknown Wood
	Black liquor	67,153	7.3%			
Post-consumer wood		39,744	4.0%	JWEE (or NREAP)		
Unaccounted sources		117,782	12.8%			
Total sources		920,826		920,826		Total uses

Energy uses (H&P)	1000m³	%
Energy transformation	NA	-
Industrial internal consumption	NA	-
Residential sector	NA	-
Other	NA	-
Unaccounted sources	117,782	12.8%

Wood use	1000m³	%
Material use	405,744	51.0%
Energy use	451,082	49.0%

Source: Cazzaniga N.E., Jonsson R., Pilli R., Camia A. (2019). *Wood Resource Balances of EU-28 and Member States*. EC Joint Research Centre, Publications Office of the European Union, Luxembourg, doi: 10.2760/020267.





JWEE (or NREAP)

Source: Cazzaniga N.E., Jonsson R., Palermo D., Camia A. (2019). *Sankey diagrams of woody biomass flows in the EU-28*. EC Joint Research Centre, Publications Office of the European Union, Luxembourg, doi: 10.2760/227292.

JWEE data usage

JWEE	2009	2010	2011	2012	2013	2014	2015
Belgium							
Bulgaria							
Czechia							
Denmark							
Germany							
Estonia							
Ireland							
Greece							
Spain							
France							
Croatia							
Italy							
Cyprus							
Latvia							
Lithuania							
Luxembourg							
Hungary							
Malta							
Netherlands							
Austria							
Poland							
Portugal							
Romania							
Slovenia							
Slovakia							
Finland							
Sweden							
United Kingdom							

JWEE data:

- ✓ only odd years
- ✓ high detail
- ✓ uniform units (Country-specific conversion factors)
- ✓ many gaps

JWEE data usage

NREAP	2009	2010	2011	2012	2013	2014	2015
Belgium							
Bulgaria							
Czechia							
Denmark							
Germany							
Estonia							
Ireland							
Greece							
Spain							
France							
Croatia							
Italy							
Cyprus							
Latvia							
Lithuania							
Luxembourg							
Hungary							
Malta							
Netherlands							
Austria							
Poland							
Portugal							
Romania							
Slovenia							
Slovakia							
Finland							
Sweden							
United Kingdom							

NREAP data:

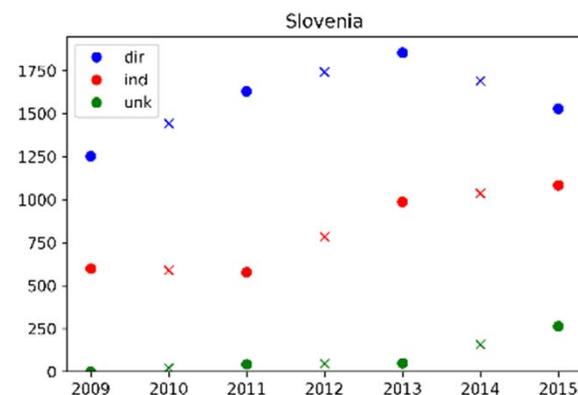
- ✓ larger country and time coverage
- ✓ less detail (different purpose)
- ✓ frequent problems with unit conversions
- ✓ heterogeneous definitions
- ✓ non-negligible differences from JWEE (up to some million m³)

JWEE data usage

FINAL	2009	2010	2011	2012	2013	2014	2015
Belgium	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Bulgaria	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Czechia	Green	Light Green	Green	Light Green	Green	Light Green	Green
Denmark	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Germany	Green	Light Green	Green	Light Green	Green	Light Green	Green
Estonia	Green	Light Green	Green	Light Green	Green	Light Green	Green
Ireland	Green	Light Green	Green	Light Green	Green	Light Green	Green
Greece	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Spain	Orange	Orange	Orange	Orange	Orange	Orange	Orange
France	Green	Light Green	Green	Light Green	Green	Light Green	Green
Croatia	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Italy	Green	Light Green	Green	Light Green	Green	Light Green	Green
Cyprus	Green	Light Green	Green	Light Green	Green	Light Green	Green
Latvia	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Lithuania	Green	Light Green	Green	Light Green	Green	Light Green	Green
Luxembourg	Green	Light Green	Green	Light Green	Green	Light Green	Green
Hungary	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Malta	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Netherlands	Light Green	Light Green	Green	Light Green	Green	Light Green	Green
Austria	Green	Light Green	Green	Light Green	Green	Light Green	Green
Poland	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Portugal	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Romania	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Slovenia	Green	Light Green	Green	Light Green	Green	Light Green	Green
Slovakia	Green	Light Green	Green	Light Green	Green	Light Green	Green
Finland	Green	Light Green	Green	Light Green	Green	Light Green	Green
Sweden	Green	Light Green	Green	Light Green	Green	Light Green	Green
United Kingdom	Green	Light Green	Green	Light Green	Green	Light Green	Green

Decision rules:

- priority to JWEE (when available)
- possibility to interpolate the time series
- availability of conversion factors for NREAP values
- lowest unbalance in WRB



JWEE data used for 16 Countries

Final considerations

- JWEE data is really important and unique in providing in depth stats on the usage of wood for energy in EU-28, for an interesting time span (2009-2015).
- We consider essential that the exercise is continued and to any possible extent reinforced to fill the existing gaps.
- We found some issues with Units for heterogeneous materials, since m^3 solid volume doesn't represent the actual fiber content.
- We suggest to further strengthen the linkages between NREAP and JWEE to improve consistency between data sources.
- Possible path to explore might consider the use of some JWEE figures to improve the underreported Wood Fuel stats in JFSQ.
- JRC should process the data with different levels of aggregation. Would it be possible to have country-specific conversion factors for the JWEE 2015, as it was done in JWEE 2013?

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Thank you!



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