



CDG Agricultural Markets - dried
fodder & energy crops

02 June 2023

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EU Biomass liaison group: Development of an EU biomass factsheet



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Partners



Content

1. Context
2. Points to address at the EU level
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Definitions

- **Biomass** = is derived from organic material such as trees, plants, and agricultural and urban waste. It can be used for heating, electricity generation, and transport fuels. Increasing the use of biomass in the EU can help diversify Europe's energy supply, create growth and jobs, and lower greenhouse gas emissions. It is also needed in the electricity production to balance variable renewables;
- **Biofuel** = energy made from living matter, usually plants. Types of biofuels: bioethanol, biodiesel, and biogas;
- **Biogas** = created as a by-product of decomposing plant and animal waste in environments with low levels of oxygen;
- **Bioethanol** = alcohol produced from corn, sorghum, potatoes, wheat, sugar cane, even cornstalks and vegetable waste. It is commonly blended with gasoline;
- **Biodiesel** = oil from plants or animals used as an alternative to or blended with petroleum diesel in automobiles and industrial fleets with diesel engines;

Context

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- The Russian invasion of Ukraine jeopardizes both EU energy & food/feed security security.
- EU developments:
 - *Versailles Declaration, 11/03/2022 - Council*
 - *Communication on food security (COM(2022)133), 23/03/2022 – EC*
 - *Commission´s communication on the “Solidarity Lanes”, 12/05/2022*
 - *RePowerEU Plan (COM(2022)230), 18/05/2022 – EC*
 - *EU Council Declaration 31 May 2022*
 - *European Commission´s a new plan “Save Gas for a Safe Winter”, 20 July 2022*
 - *Commission proposes a temporary short-term derogation from certain agricultural policy rules to increase the production of cereals, 22 July 2022*
- The European renewable energy targets set to reach the EU climate objectives covering bioenergy production. EU developments:
 - *Recast of REDII – EC*
 - *Revision of REDIII – EP & Council*
- **As a result: need to provide accurate estimate of biomass availability and to monitor production and use for food, feed, bioenergy and other industrial uses at the EU agregate level**

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Letter from DG AGRI (November, 2022)

I value your suggestion to analyse thoroughly the EU energy autonomy objectives and their impacts on the resilience of our EU agri-food systems. In particular, your idea of developing a fully comprehensive EU biomass balance sheet covering all biomass sources for EU renewable energy and feed and food production is very interesting. This tool could indeed play an important part in a fact-based discussion on the use of biomass for energy purposes.

Yours sincerely,



Janusz WOJCIECHOWSKI

Brussels, 4.1.2023
SWD(2023) 4 final

COMMISSION STAFF WORKING DOCUMENT

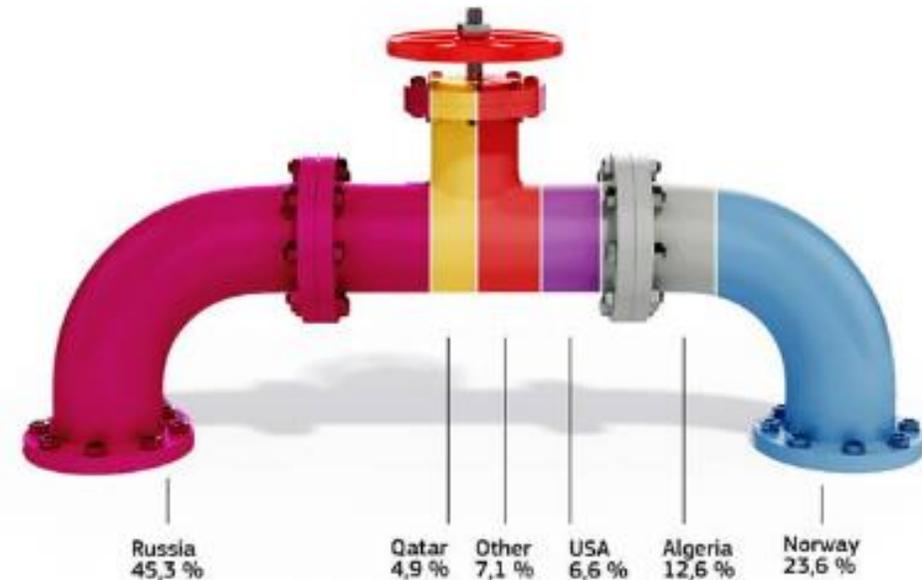
Drivers of food security

- Set up roundtable of the key European Biomass producers & users to share our knowledge as part of fact finding mission, in order to develop comprehensive tool to allow for a robust assessment of availability of biomass meeting the new EU political « autonomy » ambitions & targets for the energy and agri-food sectors.

REPowerEU

- EU commission strategy from March to decrease dependency on Russian gas imports.
- One of the main actions: to increase EU biomethane production to 35 billion m3 before 2030.
- Increase of 100 % from 2021 production.
- If increase is only to come from crops, we expect an additionally 5-7 Mio. ha. of arable land will be needed.
- EU production today is around:
 - 3,5 billion m3 Biomethane.
 - 17 billion m3 Biogas.
- **How much biomass is required to reach the EU target?**

Share in EU natural gas imports, 2021



Source: European Commission



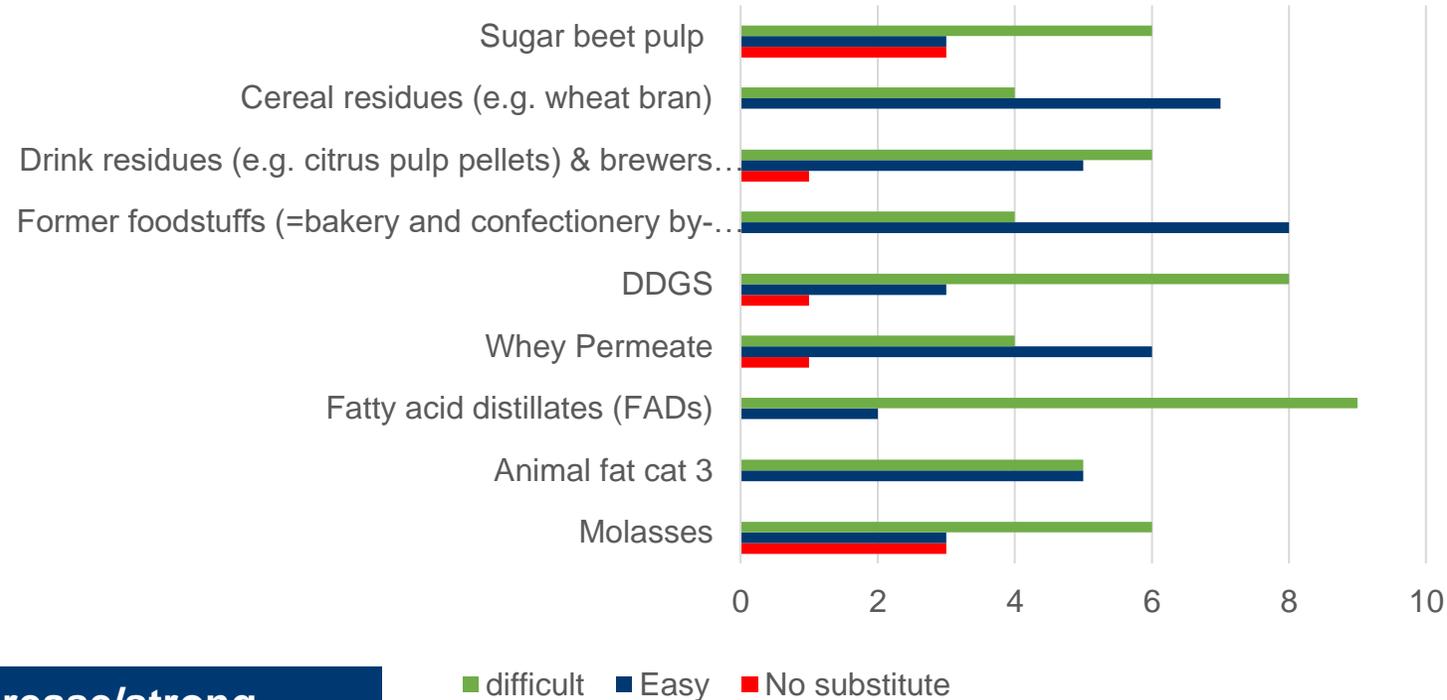
New record for biomethane production in Europe shows EBA/GIE Biomethane Map 2022-2023

Nearly 30% more biomethane plants compared to the 2021's edition



Do other stakeholders discuss energy targets for biomethane/biogas sector?	11 yes : 1 no
Do authorities plan any legislative change in regards to food/fuel/food discussion? (e.g. increasing renewable energy targets, phasing out or capping the first-generation biofuels, adjusting blending levels etc.)	10 (91%)
Are your members involved in biogas/bioethanol/biofuels production?	10 (82%)
Do you expect the % of feed materials being used in bioenergy sector to rise by 2030?	10 (100%)
If yes by how much do you expect the % would rise by 2030?	up to 10 %: 5 10-30 %: 3 more than 30 %: 2

How difficult it would be to find substitutes?



Feed ingredient	Increase/strong increase
Crops: Maize	↑↑
Hi fibre co-products: Beet pulp, Other food co-products (DDGS, wheat bran etc.)	↑↑
Liquid materials: Molasses, Oils (palm, soy oils) & animal fats	↑↑

Internal survey

Circular feed



Food/feed grade status



Land use ratio



The proximity of origin to feed mill



Nutrient digestibility

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• DG SANTE (2020)

A sustainable livestock sector will certainly play a key role in a sustainable European food system and will be able to meet the evolving demands of European consumers. The livestock sector indeed not only produces essential products, it provides livelihoods for many and a substantial part of the production is based on sustainable feed sources, which are not competing with food use.

Yours sincerely,

Stella Kyriakides

Points to address at the EU level

Biomass balance/fact sheet challenges

- What do we miss?
 - integrated balance sheet or monitoring system at EU level to provide a clear assessment on Biomass production/availability and use (food/feed, Bioenergy, other non-food uses)

June 2023

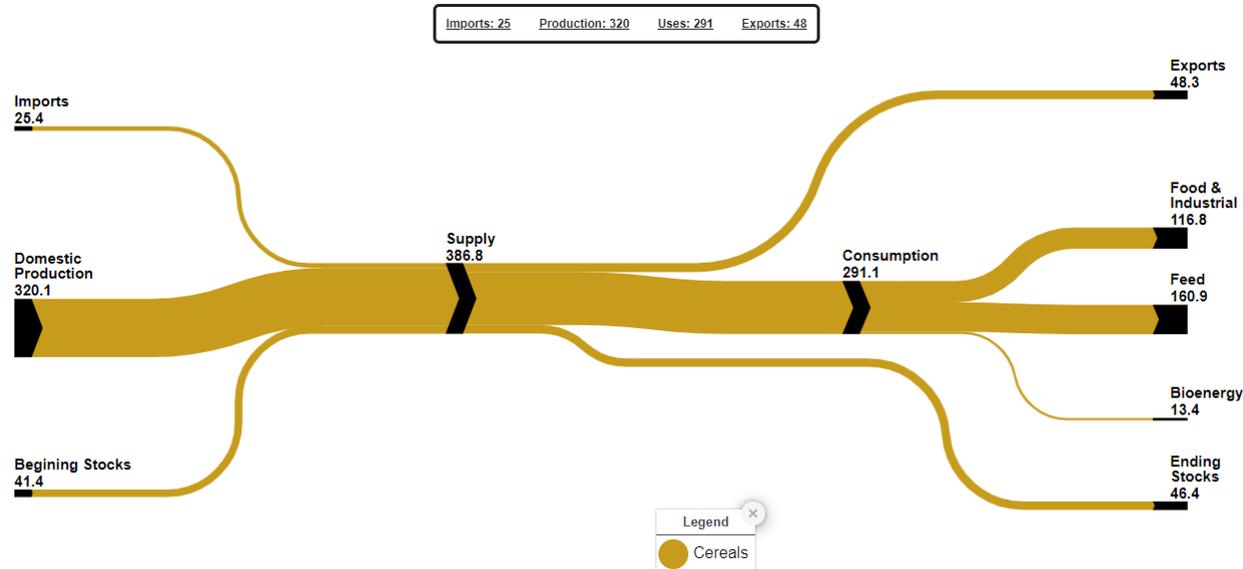
EU Feed Protein Balance Sheet (forecast)

Protein source	2021/22			2022/23			2023/24			Protein content (g/kg DM)	Feed use (kg DM/ha)	% of total feed use	% of total feed use
	Total EU (Mtpa)	EU (Mtpa)	EU (Mtpa)	Total EU (Mtpa)	EU (Mtpa)	EU (Mtpa)	Total EU (Mtpa)	EU (Mtpa)	EU (Mtpa)				
CROPS				168.2	151.4		17.00	15.48	91%	23%			
CEREALS (of wheat)	289.7	21.3	44.5	252.5	163.3	146.5		15.70	14.29	91%	21%		
Common wheat	155.8	2.7	36.0	148.8	91.3	86.8		11.0%	10.4%				
Barley	75.6	15.0	3.4	80.0	86.9	80.5		8.6%	5.12	4.04			
Rye	2.7	0.0	0.0	2.7	0.0	0.0		0.0%	0.00	0.00			
Oats	1.0	0.1	0.0	1.0	0.0	0.0		0.0%	0.10	0.00			
Corn	2.7	0.0	0.0	2.7	0.0	0.0		0.0%	0.27	0.00			
Sorghum	16.8	0.0	0.0	16.8	0.0	0.0		0.0%	1.68	0.00			
Other	3.2	0.0	0.0	3.2	0.0	0.0		0.0%	0.45	0.00			
OILSEEDS (of wheat)	35.1	21.6	0.9	55.9	1.6	1.9		0.46	0.46	100%	1%		
Soya beans (EU and PF)	2.9	14.8	0.2	17.2	1.2	1.2		100%	0.40	0.40			
Rapeseed	16.7	6.2	0.1	22.8	0.2	0.2		100%	0.08	0.08			
Sunflower	15.5	0.6	0.6	15.8	0.2	0.5		100%	0.00	0.00			
PULSES (of wheat)	4.6	1.0	0.5	5.1	3.4	3.0		0.85	0.73	87%	1%		
Field peas	2.3	0.5	0.2	2.8	1.7	1.5		200%	0.38	0.34			
Broad beans	1.3	0.1	0.3	1.5	0.9	0.9		200%	0.32	0.32			
Lupins	0.2	0.2	0.0	0.5	0.4	0.2		100%	0.14	0.07			
Other pulse crops	0.8	0.2	0.0	1.1	0.4	0.4		200%	0.19	0.19			
CO-PRODUCTS				78.6	41.5		23.88	9.00	38%	32%			
OILSEED MEALS	29.7	21.4	2.0	49.1	43.9	14.1		15.46	4.92	25%	26%		
SOYA BEAN MEALS (of wheat)	11.3	16.3	0.7	24.3	21.7	5.1		12.51	4.63	4%	16%		
Rapeseed meal (from EU rapeseed production)	0.1	0.0	0.0	0.0	0.0	0.0		200%	2.89	2.89			
Rapeseed meal (imported, unprocessed)	3.4	0.0	0.0	3.4	0.0	0.0		100%	1.15	0.00			
Rapeseed meal (imported as soya)	0.0	0.0	0.0	0.0	0.0	0.0		100%	0.00	0.00			
Soya bean protein concentrate	0.3	16.3	0.0	0.3	0.0	0.0		100%	0.19	0.00			
RAPESEED MEALS (of wheat)	12.3	0.4	0.8	12.4	1.3	1.3		4.09	2.23	89%	5%		
Rapeseed meal (from EU rapeseed production)	0.1	0.0	0.0	0.0	0.0	0.0		200%	2.89	2.89			
Rapeseed meal (imported, unprocessed)	3.4	0.0	0.0	3.4	0.0	0.0		100%	1.15	0.00			
Rapeseed meal (imported as soya)	0.0	0.0	0.0	0.0	0.0	0.0		100%	0.00	0.00			
SUNFLOWER MEALS (of wheat)	5.2	3.0	0.5	7.7	7.7	4.3		2.77	1.55	95%	4%		
Sunflower meal (from EU rapeseed production)	4.9	0.5	4.3	4.3	4.3	4.3		100%	1.56	1.56			
Sunflower meal (imported, unprocessed)	0.4	3.0	0.0	3.0	3.0	0.0		100%	1.18	0.00			
Sunflower meal (imported as soya)	0.0	0.0	0.0	0.0	0.0	0.0		100%	0.00	0.00			
OTHER OILSEED MEALS (of wheat)	0.6	1.7	0.2	2.1	2.1	0.1		0.46	0.08	12%	1%		
Faba bean meal	0.0	1.6	0.1	1.5	1.5	0.1		100%	0.24	0.01			
Lupin meal	0.4	0.0	0.0	0.4	0.4	0.0		100%	0.19	0.00			
Other pulse meals	0.2	0.0	0.1	0.2	0.2	0.2		100%	0.07	0.07			
OTHERS CO-PRODUCTS	30.3	4.1	1.8	32.3	23.7	27.4		4.70	4.13	85%	6%		
Distillers' wet corn gluten products (20-30%)	4.1	0.0	0.0	4.1	4.1	4.1		100%	0.77	0.77			
Distillers' wet corn gluten products (30-35%)	1.0	0.0	0.0	1.0	0.7	0.7		100%	0.49	0.49			
Cattle feed grains with molasses	3.1	0.0	0.0	3.1	3.0	3.0		100%	1.02	0.81			
Wet distiller's grain	6.0	0.0	0.0	6.0	6.0	6.0		27% maize	0.33	0.33			
Wheat bran	7.4	0.0	0.0	7.2	7.2	7.2		100%	1.11	1.11			
Other grain	0.0	0.0	0.0	0.0	0.0	0.0		0%	0.00	0.00			
Beet pulp pellets	5.7	1.2	0.2	6.7	6.7	5.5		70%	0.55	0.44			
Miscellaneous	3.1	1.2	0.2	4.1	1.3	1.3		100%	0.14	0.14			
NON-PLANT SOURCES				7.7	7.5		1.85	1.74	94%	2%			
Fermentation on farm (vets)	0.4	0.2	0.2	0.5	0.5	0.4		100%	0.31	0.26			
Other manure	2.2	0.1	0.0	2.0	2.0	2.0		100%	0.07	0.07			
Slaughter waste products	1.6	0.0	1.0	0.8	0.1	0.1		100%	0.08	0.08			
Processing waste products	2.7	0.1	0.0	1.9	1.6	1.4		100%	0.56	0.48			
Formal feedstuffs	0.0	0.0	0.0	0.0	0.0	0.0		0%	0.00	0.00			
ROUGHAGE				1091	1091		32	32	100%	43%			
Oats	786			786	786	786		100%	0.00	0.00			
Maize	21			21	21	21		100%	0.00	0.00			
Other roughage	7			7	7	7		100%	0.00	0.00			
Soybean hulls	3	0.0	2.0	1.3	1.3	1.3		100%	0.2	0.2			
TOTAL									75	68	78%		

Terminology challenges

- Policy makers, bioenergy industry and feed industry & waste sector use different terminologies & legal definitions (sometimes for the same feedstocks)
- EU Perspective – current legislative definitions:
 - EU Waste catalogue
 - EU Waste Framework & Waste Directives
 - EU Feed material catalogue
 - CN Codes for crop residues
 - RED Annex IX
 - EU food waste accountability framework





3.3 Biofuels and biomaterials

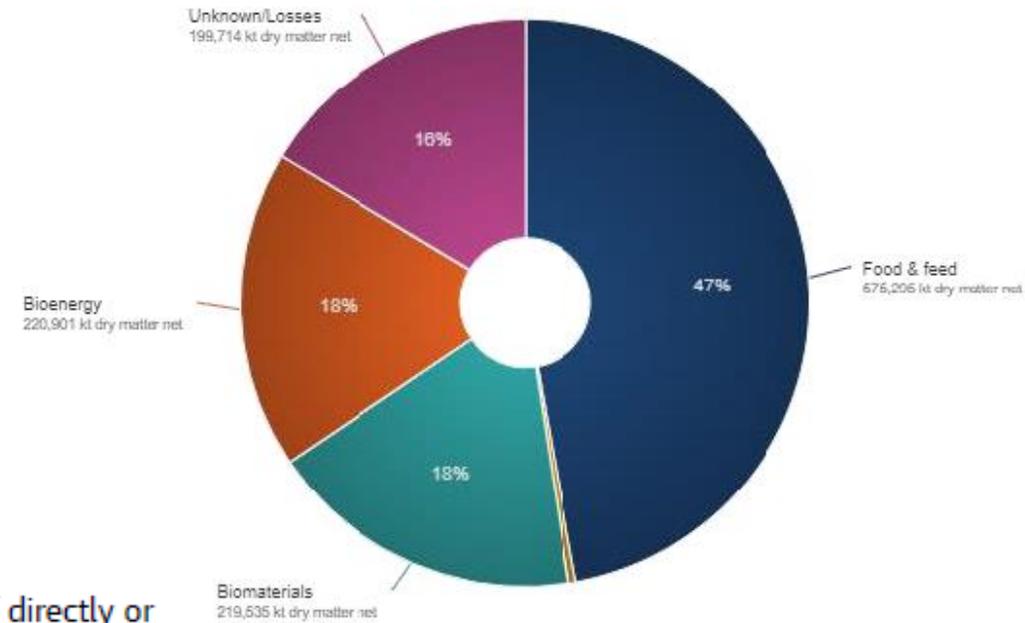
Most of the biomass used as biofuels continues to be woody biomass. In 2017, 195 million tdm of directly or indirectly⁹ gathered woody biomass were estimated to have been used for energy.

Other than updates for woody biomass, no changes have been made to the dataset for biomaterials and biomass for energy production.

It is important to note that, due to lack of data that can be integrated with the sources used for this analysis, many bioenergy pathways are missing (e.g. biogas production from biowaste).

Almost all of the biomaterials also have an origin in forestry activities with the biggest component being solid wood products. In 2017, approximately 133 million tdm of biomass were used for bio-materials. Although a net importer of roundwood, the EU27 is a net exporter (24 million tdm) of solid wood products.

Figure 15. Composition of the EU27+UK biomass uses, net trade, 2015.



Source: JRC EU Biomass Flows

JRC Biomass flows

ePURE ethanol: Made in/from Europe

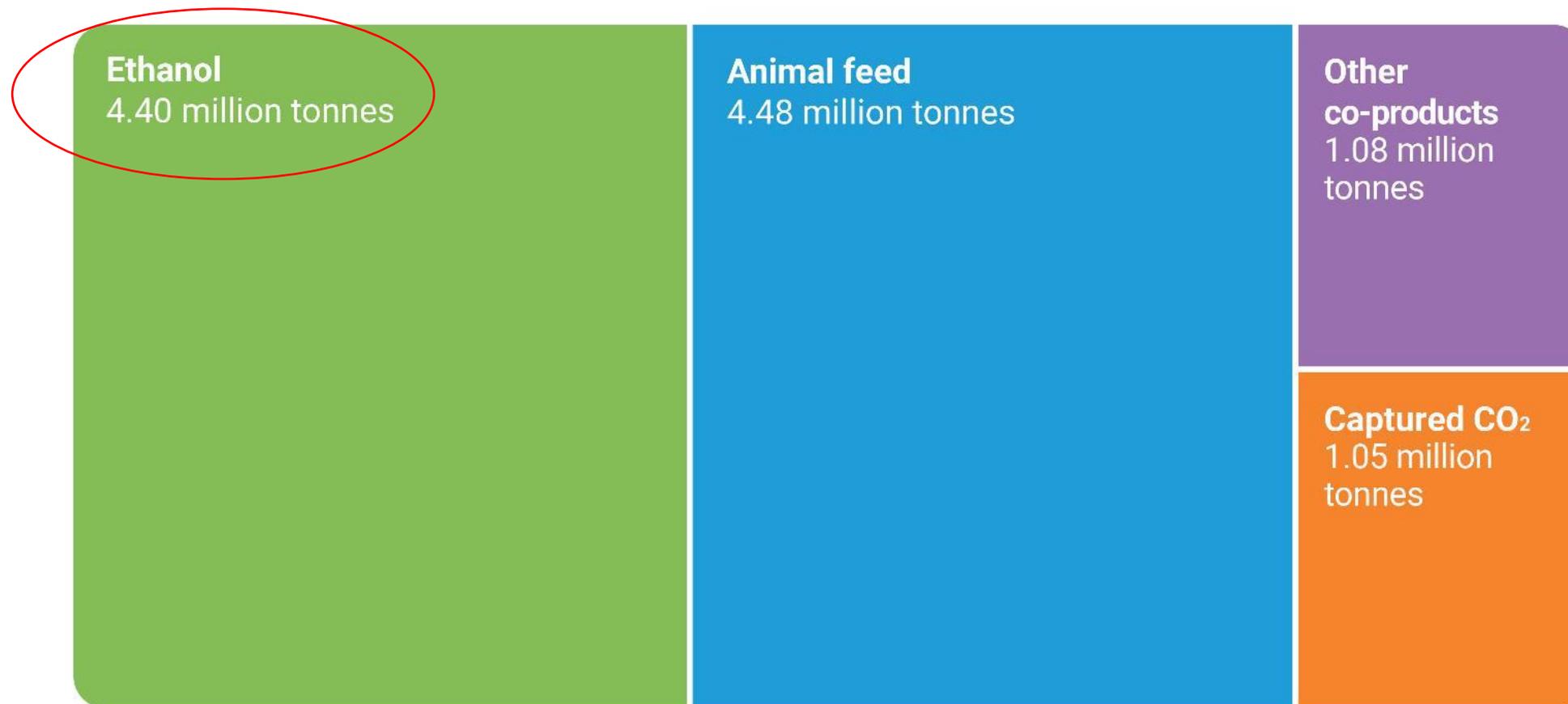
Feedstock used to produce renewable ethanol



- All the feedstock used to produce renewable ethanol by ePURE members was grown in Europe
- Of the 5.58 billion litres of ethanol produced in 2021
 - 50.4% was from corn,
 - 21.8% was from wheat,
 - 14.5% was from sugars,
 - 3% from other cereals, and
 - 10.3% from RED Annex IX-A and other feedstocks.

ePURE production: More than just ethanol

Main output of European renewable ethanol plants



In 2021, ePURE members produced more animal feed than ethanol

Source: Aggregated and audited data of ePURE members for 2021
Ethanol – pure alcohol; animal feed co-products – dry matter equivalent; other coproducts – commercial equivalent

Denmark: the current biomass balance

Product	Dry matter in millions of tons
Grain	7.92
Oilseed rape	0.55
Legumes	0.10
Potatoes	0.63
Beets	0.60
Maize	2.43
Grass in rotation	2.50
Permanent grass	0.47
Woody biomass	1.4
Timber	0.8
Straw (energy, feed and bedding)	2.7
Straw (incorporation)	2.3
Total	22.39

Source: AU, 2022

Bioresource	Extra dry matter in millions of tons
Straw ¹	1.5
Catch crop	1
Bioresources from forestry ²	0
Industrial waste products	1.3
Manure, wastewater and biowaste	2.5
Perennial crops, legumes, turnips etc.	2-3
Total	8.3 - 9.3

Listing key Biomass categories for potential balance sheet

- Agriculture
- Forestry
- Fisheries
- Primary processing
- Waste biomass
- Other

	used	Potential	future use		
Biomass	Food	Feed	Fuel/Energy	Other (fertilisers, industry)	Other residues (the material that
Fibers (flax, hemp, cotton)					
Roughage					
Grass					
Silage					
Fodder Legumes					
Dried fodder					
Haylage					

Challenges

- Sources of data on biomass produced, sourced and used are numerous
- Scope and structure
 - how to assess the overall available biomass if we don't use the same terminology ?
- How to avoid double counting?
- Uniform unit?

Questions

- Do we all share the need for such a monitoring system for biomass?
 - If yes, how can work together? Would you agree to share respective sectoral outlooks/estimates for biomass production and use?
 - Would you see interest in joining forces on assisting EC to develop an integrated biomass balance sheet?
- What are the main categories?
- Do we monitor the end use?
- Who is taking the leadership?
- Do we aim to address what is currently used or potentially used?
- Should we list all the biomass or only the ones that are used by many sectors?

Thank you for your attention



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