GCIRC Technical Meeting

Importance of agricultural emissions of rapeseed production - importance for biofuel manufacturing

PSPO
THE POLISH ASSOCIATION OF OIL PRODUCERS

Cambridge, 09/04/2025

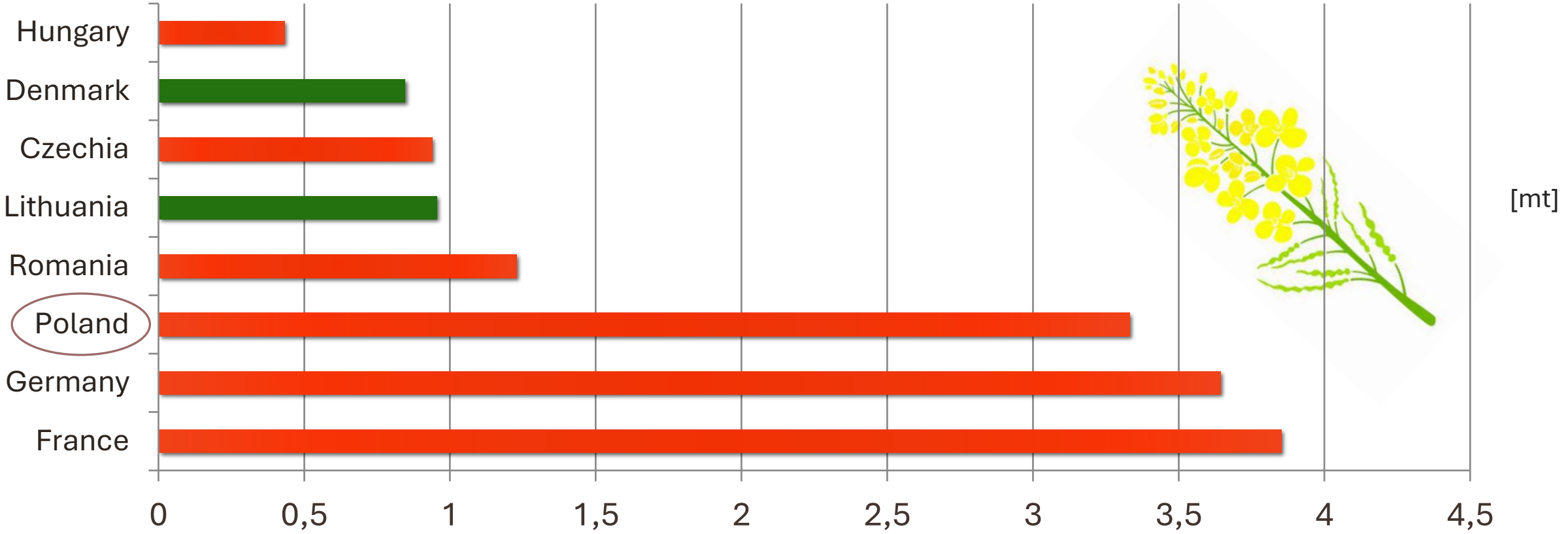
Polish Association of Oil Producers (PSPO) – what we do?

rapeseed oil	rapeseed meal	biodiesel	feedstock	communication
promotion	researches	legal framework	education	expertises

PSPO Members

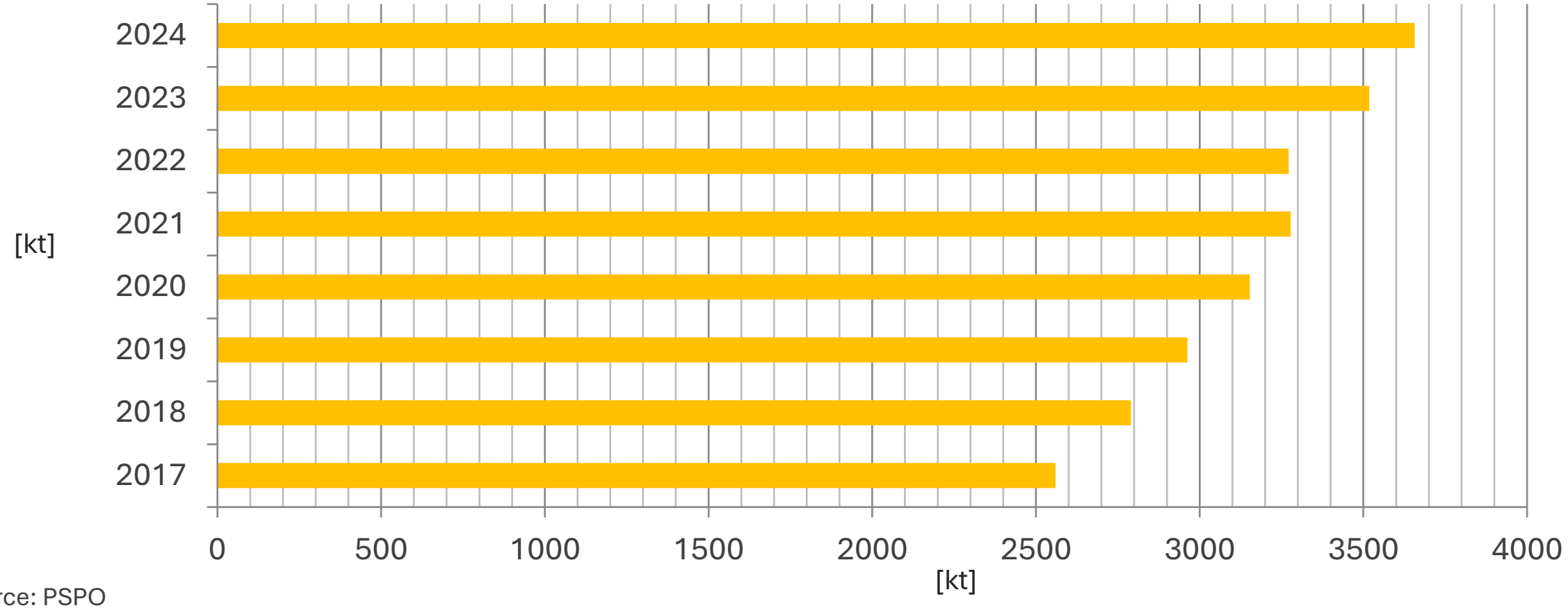
- ✓ 10 companies,12 crushing units
- ✓ More than 95% of crushing capacity installed in Poland
- ✓ Full integration of the sector
- ✓ Collaboration on collegial basis

Rapeseed production in the European Union (2024)



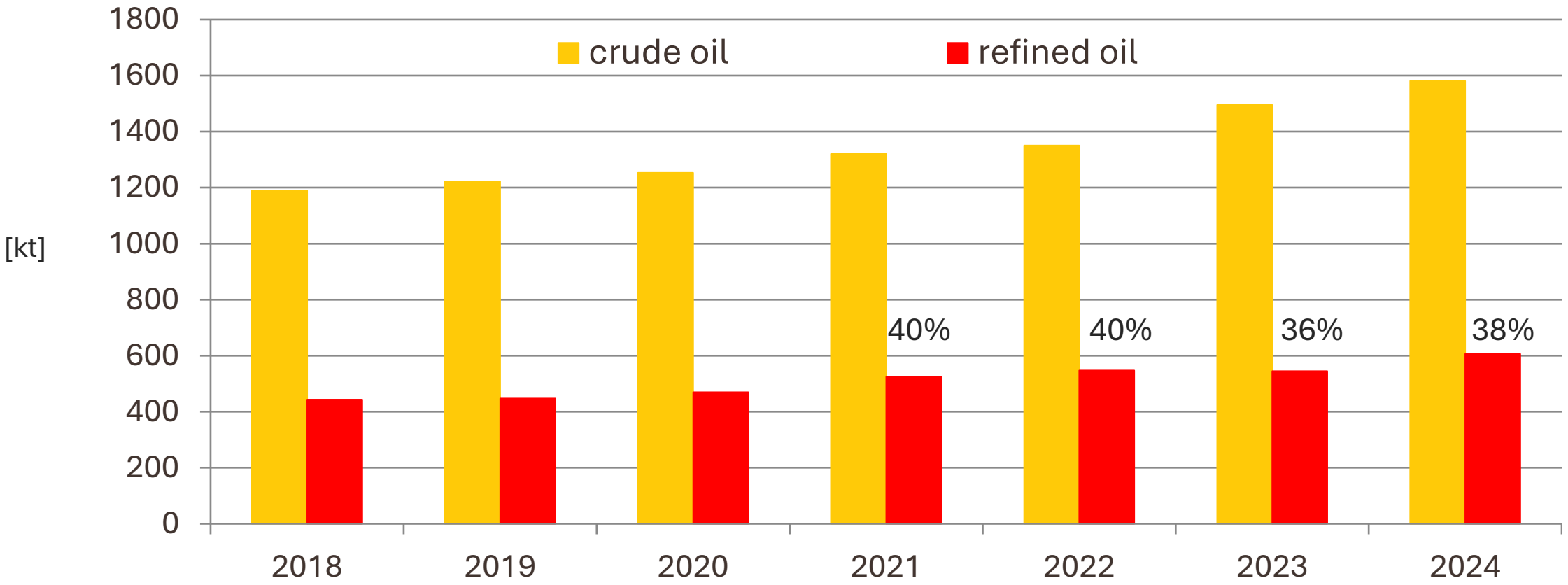
Source: EC, Agridata

Rapeseed crush by PSPO Members



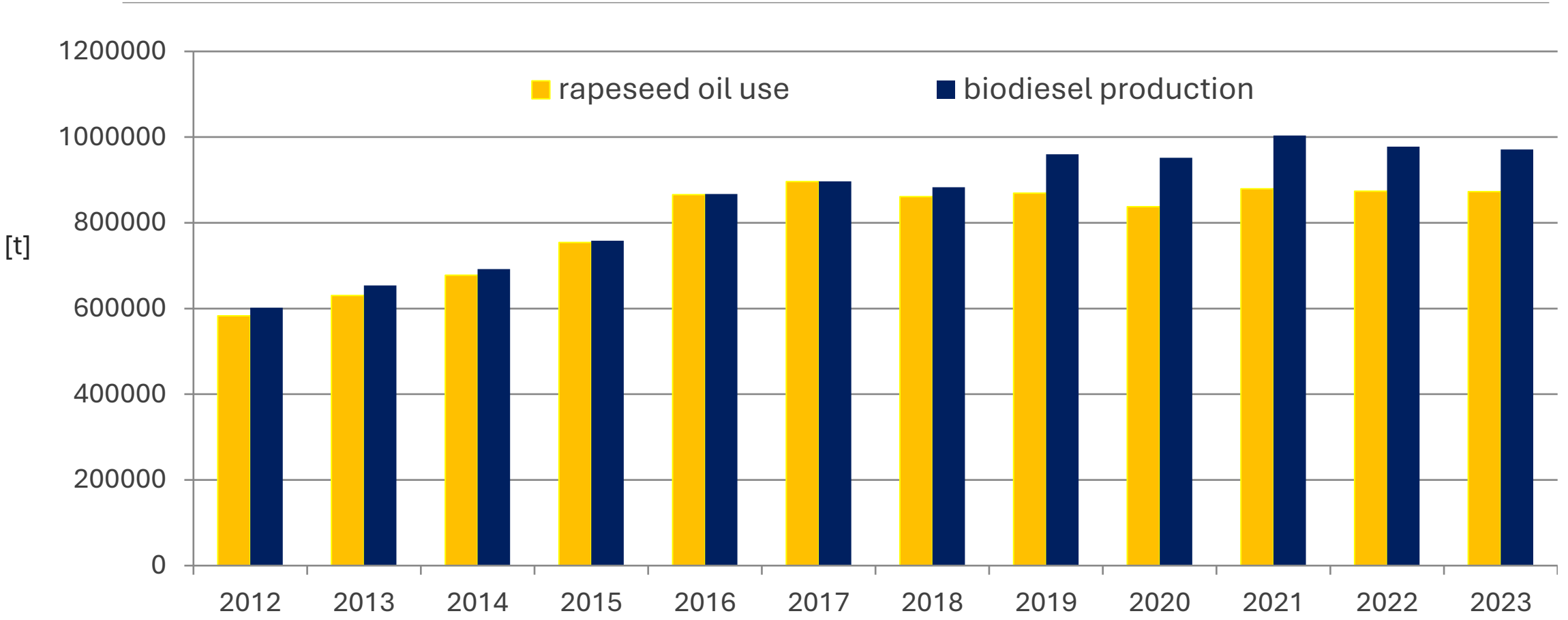
Source: PSPO

Production of rapeseed oil by PSPO Members



Source: PSPO

Rapeseed oil as biodiesel feedstock in Poland



Source: KOWR

Importance of rapeseed in Polish biofuel production chain

1 mln tons of FAME

900 kt of oil

2,3 mln tons of seeds

Agricultural emmissions in biofuels - what is inside?

$$e_{ec} = e_{seed} + e_{chem} + e_{lim} + e_{field} + e_{mm}$$

where:

e_{seed} - emission from the use of grain for sowing,

e_{chem} - emission from the production and transport of artificial fertilizers and agrochemicals,

e_{lim} - emission from acidification with fertilizers and the use of liming,

e_{field} - emission (mostly nitrous oxide) resulting from the cultivation cycle,

e_{mm} - emission from agricultural machinery and other equipment

Emissions from cultivation (e_{ec}) include emissions from the cultivation process itself, collection, drying and storage of raw materials, but also from the production of chemicals and products used in cultivation. CO_2 capturing during cultivation of raw materials is excluded.

Agricultural emmissions in biofuels - what are the options?

- default values from RED2 directive 2018/2001;
- average GHG emissions determined for the each region (NUTS2) in national report that has to be approved by the European Commission;
- actual values of GHG emissions from cultivation calculated for each (!) farm;
- aggregated values calculated on the basis of statistical data (NUTS 3)

Agricultural emmissions in biofuels – aggregated values option

Legal basis: Annex V, Part C, paragraph 5 of Directive 2018/2001 (RED2):

(…) Estimated emissions from agricultural biomass cultivation may be determined based on regional averages for emissions from cultivation included in the reports referred to in Article 31(4)* or information on the disaggregated default values for emissions from cultivation set out in this Annex, used as an alternative to actual values.

In the absence of appropriate information in these reports, averages based on local agricultural practices using, for example, data from a group of farms may be calculated as an alternative for using actual values.

** NUTS2 national report*

Agricultural emmissions in biofuels – aggregated values option

- may be calculated for farmers operating as a group in the region at more detailed (lower) level than NUTS2;
- must be calculated according to the methodology for the e_{ec} emission component;
- input data should primarily be based on **official government statistics**, where such data are available and reliable. If they are not available, statistics published by independent bodies may be used;
- option for first gathering points (FGP) – collectors of the feedstock at subregion level

Polish NUTS3 subregions – groups of districts

Agricultural emmissions in biofuels – aggregated values option

Based on local agricultural practices, The Institute of Soil Science and Plant Cultivation (IUNG) has developed statistical data covering the years 2020-2023 for rapeseed and maize that can be used to calculate average emission values for the cultivation stage in the biofuel life cycle

Agricultural emmissions in biofuels – aggregated values option

Ministerstwo Rolnictwa i Rozwoju Wsi > Aktualności > Wiadomości > Krajowe uprawy rolne na biopaliwa – dane do obliczania emisji

Powrót

Krajowe uprawy rolne na biopaliwa – dane do obliczania emisji

09.07.2024

Informujemy, że Instytut Uprawy, Nawożenia i Gleboznawstwa – Państwowy Instytut Badawczy (IUNG-PIB) zakończył prace nad danymi statystycznymi, które mogą być wykorzystane do obliczenia emisji dla etapu uprawy na poziomie regionów NUTS3 w uprawie rzepaku ozimego i kukurydzy na ziarno. Dane te są punktem wyjścia do opracowania krajowego raportu dla Komisji Europejskiej, dotyczącego typowych emisji gazów cieplarnianych z uprawy surowców rolnych.

Minister Rolnictwa i Rozwoju Wsi

Materiały

Do pobrania
Dane_statystyczne_-_uprawy_kukurydzy_w_Polsce_na_poziomie_regionów_NUTS3.pdf 0.52MB

Do pobrania
Dane_statystyczne_-_uprawy_rzepaku_w_Polsce_na_poziomie_regionów_NUTS3.pdf 0.52MB

Dane statystyczne za lata 2020 - 2023 dotczące

Nr kolumny		1.1	
KOD NUTS	Nazwa jednostki NUTS 3	Emisja glebowa	P su
		gCO_2eq/ha	to
PL213	Miasto Kraków	1 231 007	
PL214	Krakowski	1 381 409	
PL217	Tarnowski	1 123 367	
PL218	Nowosądecki	1 231 007	
PL219	Nowotarski	1 231 007	
PL21A	Oświęcimski	1 311 263	
PL224	Częstochowski	1 319 547	
PL225	Bielski	1 548 743	
PL227	Rybnicki	946 103	
PL228	Bytomski	1 433 106	
PL229	Gliwicki	1 280 535	
PL22A	Katowicki	1 277 833	
PL22B	Sosnowiecki	1 277 833	
PL22C	Tyski	1 099 802	
PL411	Pilski	1 291 777	
PL414	Koniński	1 101 131	
PL415	Miasto Poznań	1 196 908	
PL416	Kaliski	1 038 540	
PL417	Leszczyński	1 200 954	
PL418	Poznański	1 256 208	
PL424	Miasto Szczecin	1 109 621	
PL426	Koszaliński	1 123 075	
PL427	Szczecinecko-pyrzycki	1 048 743	
PL428	Szczeciński	1 285 639	
PL431	Gorzowski	1 065 535	
PL432	Zielonogórski	1 051 450	
PL514	Miasto Wrocław	982 086	
PL515	Jeleniogórski	672 344	
PL516	Legnicko-głogowski	908 541	
PL517	Wałbrzyski	884 952	
PL518	Wrocławski	694 214	
PL523	Nyski	1 131 848	
PL524	Opolski	1 238 268	
PL613	Bydgosko-toruński	1 118 948	
PL616	Grudziądzki	1 165 483	
PL617	Inowrocławski	1 183 310	
PL618	Świecki	1 046 200	
PL619	Włocławski	1 215 928	
PL621	Elbląski	1 141 801	
PL622	Olsztyński	1 094 565	

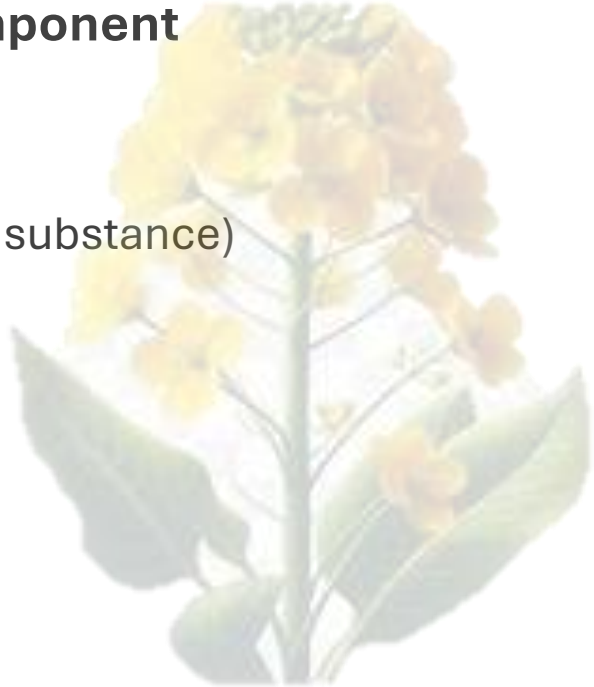
Nr kolumny		1.1	1.2	1.3
KOD NUTS	Nazwa jednostki NUTS 3	Emisja glebowa *Field emission*	Plon suchy *Dry yield*	Kwasowość gleby *Soil accidity*
		gCO_2eq/ha	ton/ha	pH
PL213	Miasto Kraków	1 231 007	3,9	6,1
PL214	Krakowski	1 381 409	3,8	6,2
PL217	Tarnowski	1 123 367	4,1	6,0
PL218	Nowosądecki	1 231 007	3,9	6,1
PL219	Nowotarski	1 231 007	3,9	6,1
PL21A	Oświęcimski	1 311 263	3,8	6,3
PL224	Częstochowski	1 319 547	4,5	7,0
PL225	Bielski	1 548 743	3,8	6,6
PL227	Rybnicki	946 103	3,7	7,0
PL228	Bytomski	1 433 106	3,5	6,3
PL229	Gliwicki	1 280 535	3,4	6,5
PL22A	Katowicki	1 277 833	3,8	6,6
PL22B	Sosnowiecki	1 277 833	3,8	6,6

2.3	2.4	2.5	2.6
LPG (uszenie)	Gaz ziemny (suszenie)	Energia elektryczna (suszenie)	Energia elektryczna do pozostałych celów
t/ha	m^3/ha	kWh/ha	kWh/ha
0,00	0,00	0	0
0,00	0,00	0	0
0,00	0,00	0	0
0,00	0,00	0	0
0,00	0,00	0	0
0,00	0,00	0	0
0,00	0,00	0	0
0,00	0,00	0	0
0,00	0,00	0	0
0,00	0,00	0	0
0,00	0,00	0	0
0,00	0,00	0	0
0,00	0,00	0	0
0,00	0,00	14	0
0,00	0,00	0	0
0,68	0,00	2	0
0,00	0,00	0	0
0,00	0,00	0	0
0,00	0,00	0	0
0,00	0,00	258	0
0,00	0,00	0	0
0,00	0,00	491	0
0,00	0,00	0	0
0,00	0,00	0	0
0,00	0,00	0	0
0,00	0,00	110	0
0,00	0,00	0	0
0,00	0,00	0	0
0,00	0,00	710	0
0,00	0,00	0	0
0,00	0,00	0	0
0,00	0,00	0	0
0,00	0,00	25	0
0,00	0,00	0	0
0,00	0,00	0	0
0,00	0,00	15	0
0,00	0,00	0	0
0,00	0,00	10	0
0,00	0,00	18	0

Example of NUTS3 emission calculation:

rapeseed from Płock district [PL 923] / Mazovia province

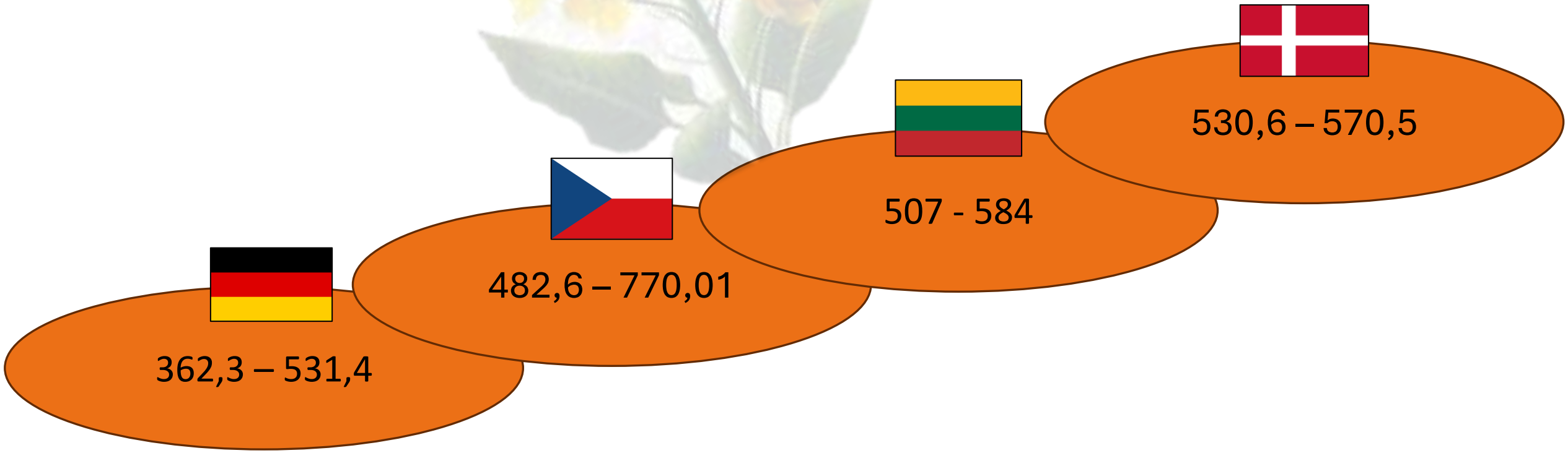
PL923	Płocki	1 216 933	4,1	6,4



Emission component	value [g CO_2eq/ha]
Fertilizers production	672 540
Plant protection products (active substance)	11 771
Acidification and liming	139 926
Machineries (fuels)	324 994
Seeds for sowing	1 967
Field emission	**1 216 933**
summary	2 368 131
Rapeseed emission:	**578 kg CO_2eq/ton** of dry biomass

51,4%!

Average emission values from rapeseed cultivation in EU regions (NUTS2)



Source: EUR-Lex

Conclutions

- ✓ Biodiesel production is crucial to keep rapeseed cultivation in Europe, which developed thank to this non-food purpose;
- ✓ Sustainability criteria are obligatory for biofuel chain and GHG emission reduction is the most imporatnt part of certification;
- ✓ Most of biodiesel emissions come from agriculture – processing emissions are already reduced to the minimum;
- ✓ Agriculture emissions are great challange – lots still can be done, but not all is in farmers hands…

Thank you for your attention!

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