



# HARMONITOR

## **Navigating trade and sustainability certification of bio-based value chains**

Champion final event | Brussels | 24-04-24

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[www.harmonitor.eu](http://www.harmonitor.eu)



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# Topics

- Harmonitor Project
- Our approach
  - Trade data for dedicated & bio-based products
  - Level of certification
- Results
  - Example for PLA

Next steps



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## General overview

- **Full project name:** Harmonisation and monitoring platform for certification schemes and labels to advance the sustainability of bio-based systems.
- **Start date:** 01/06/2022 > **End date:** 31/05/2025
- **Website:** [www.harmonitor.eu](http://www.harmonitor.eu)

# Partners



**DBFZ**



Universiteit Utrecht



Radboud University

**Worldwide-leading  
research centres in  
bioeconomy**



sustainable quality | consult



btg  
biomass technology group

**Experienced consultancies  
policy, market, technology**



GRAS  
Global Risk Assessment Services

**Leader developer of  
sustainability tools**



Preferred  
by Nature™



**RIA**



agroVet  
Certification

**Competent  
certification  
organisations**



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# BTG Biomass Technology Group



- Independent, private SME company, dedicated to energy and materials production from biomass
- Unique combination of Consultancy, RTD and Project development
- From pre-feasibility up to implementation
- Expertise spanning entire value chain from biomass to energy and materials: availability, logistics & pre-treatment, conversion, sales/application in the market
- Extended knowledge of “gamma”-aspects (LCA, sustainability and chain evaluations, financial analyses, legal aspects, etc.) and knowledge transfer
- Experience with the formation of consortia and co-operation in large European projects.

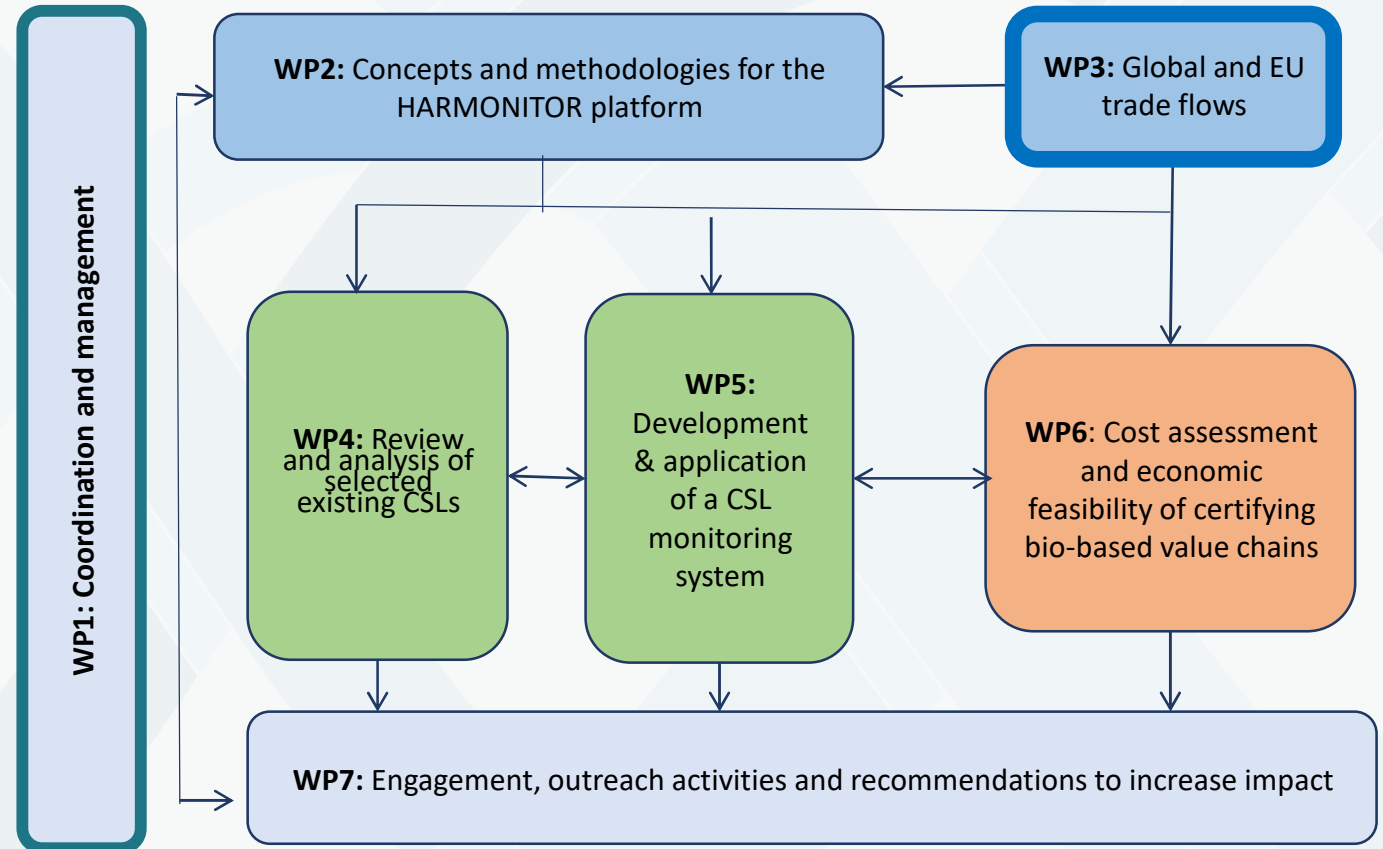


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# Specific objectives and methodological approach

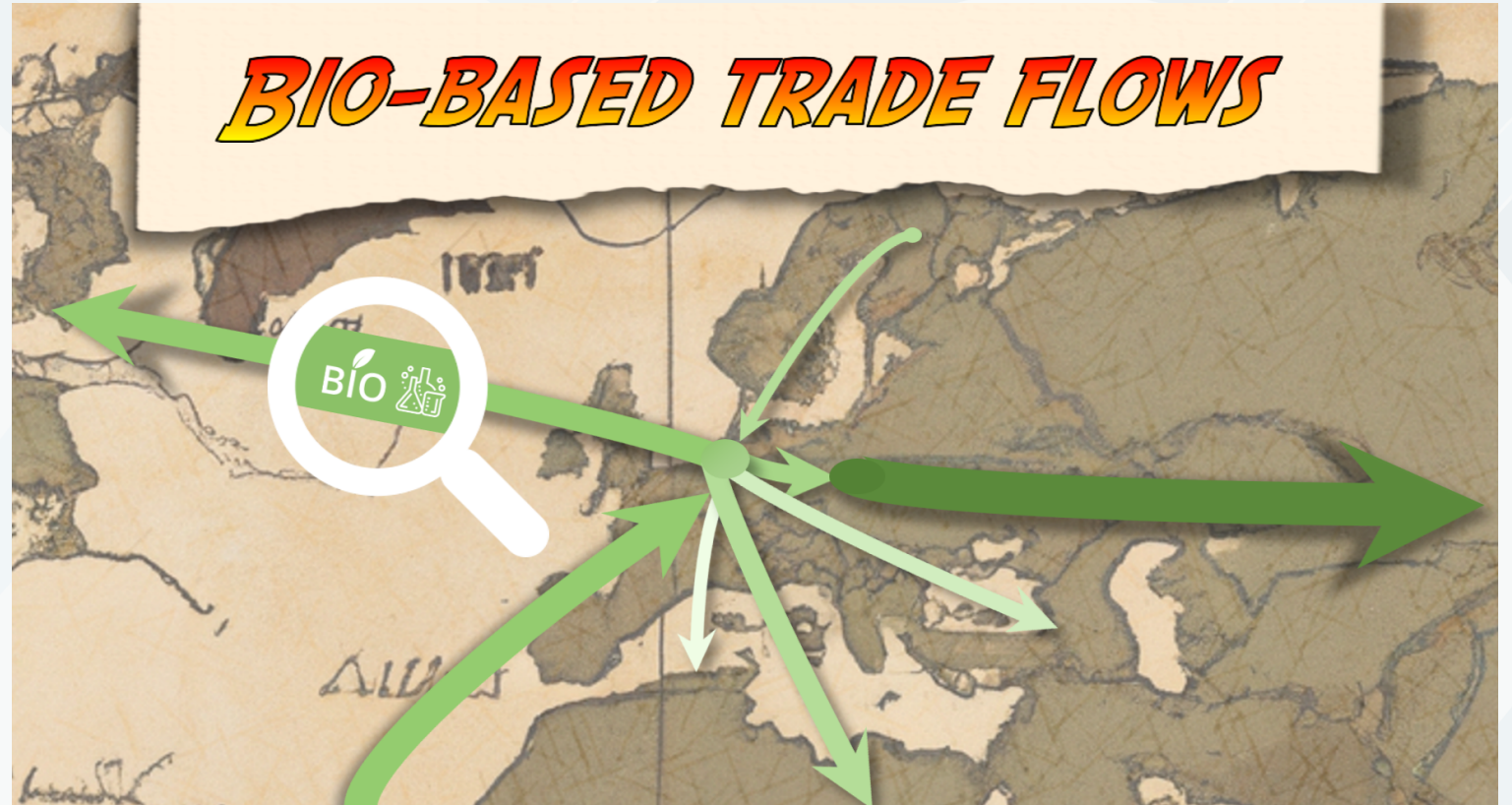
## Goals:

- Development of a platform for CSLs cooperation
- Provide data on bio-based value chains
- Review and comparison of CSLs
- Develop and apply a monitoring system
- Use of CSLs as co-regulation instrument



## WP3: Global and EU trade flows

- Navigating trade flows of bio-based products
- Level of certification



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# Navigating trade flows

# Value chain	# Value chain
1 Sugar/starch → Acetic acid → PTA, VAM, acetic anhydride, etc.	19 Wood → Wooden packaging (cases, boxes, drums)
2 Sugar/starch → Ethylene glycol → PET	20 Wood → Wooden pallets
3 Sugar/starch → Ethylene → PE, HDPE	21 Wood → Wood wool, wood flour → Panels, fibre cement
4 Sugar/starch → Butanediol (1,4) → solvents, polyurethanes	22 Wood → Lignin based products (binders, asphalt/bitumen)
5 Sugar → Lactic acid → PLA	23 Wood → Tall oil → chemicals
6 Sugar → Lactic acid → salts and esters	24 Wood/waste paper → pulp → graphical paper
7 Starch (potatoes, corn) → Starch polymers → plastic utensils	25 Wood/waste paper → pulp → paper board
8 Palm oil → Palmitic acid → cosmetics, surfactants	26 Wood/waste paper → pulp → toiler paper
9 Oil crop → Glycerol → Propylene glycol	27 Cotton → Cotton fabrics (woven, table and bed linen, bags)
10 Soybeans → PUR	28 Wool → Wool fabrics
11 Vegetable oil → Glycerol → Epichlorohydrin → solvent in paints	29 Jute → Textile
12 Wood → Rayon → Yarn	30 Flax → Textile, table linen
13 Waste water → PHA → Plastics	31 Hemp → Textile, insulation materials
14 UCO → (Poly)propylene → Plastics	32 Straw → building materials (e.g. insulation)
15 Algae → Algal fatty acids → cosmetic ingredient	33 Biowaste → Compost
16 Wood → Sawn wood → sawn wooden products	34 Animal skin → Leather → clothing, textiles
17 (Waste) wood → Fibreboard (particle board, MDF, etc)	35 Natural rubber → Tyres
18 Wood → Oriented strand board (OSB)	

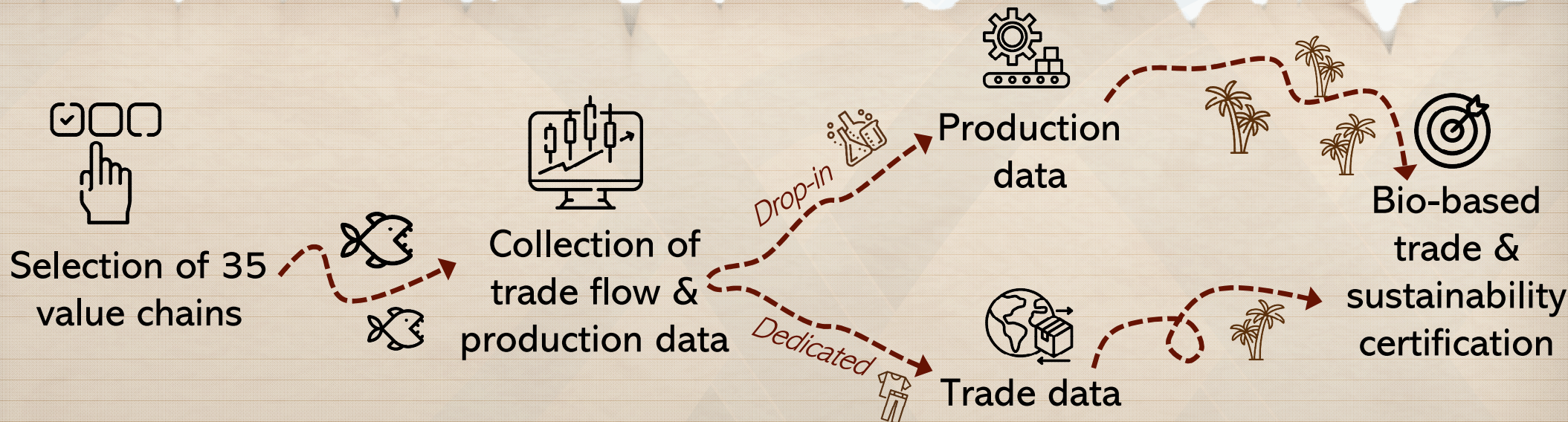






# Navigating trade flows


Trade = 100 kt


100%




 Finding the right data sources  
(Comext for intra-EU,  
COMTRADE for extra-EU)

 No trade data for bio-based  
drop-ins (only total trade)

 Estimation of bio-based share using production data

 Using the bio-based share to make estimations on trade data

 Estimating the level of certification

# Navigating trade flows

Trade = 100 kt

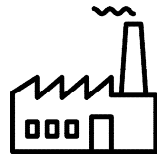


Bio-based trade = 10 kt

*Estimation of bio-based share of drop-in product:*

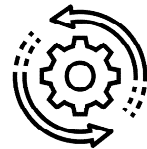


1.



5 factories

2.



20 kt bio-based

3.



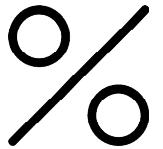
100 kt

4.



Total production  
(fossil & bio-based) =  
1 Mt

5.



10% of production  
is bio-based

# Navigating trade flows

Trade = 100 kt

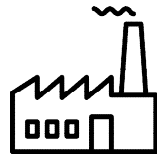


Bio-based trade = 10 kt

## What is the level of certification?



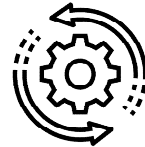
1.



5 factories



2.



20 kt bio-based

100%

3.



100 kt

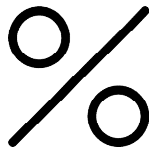
40 kt

4.



Total production  
(fossil & bio-based) =  
1 Mt

5.



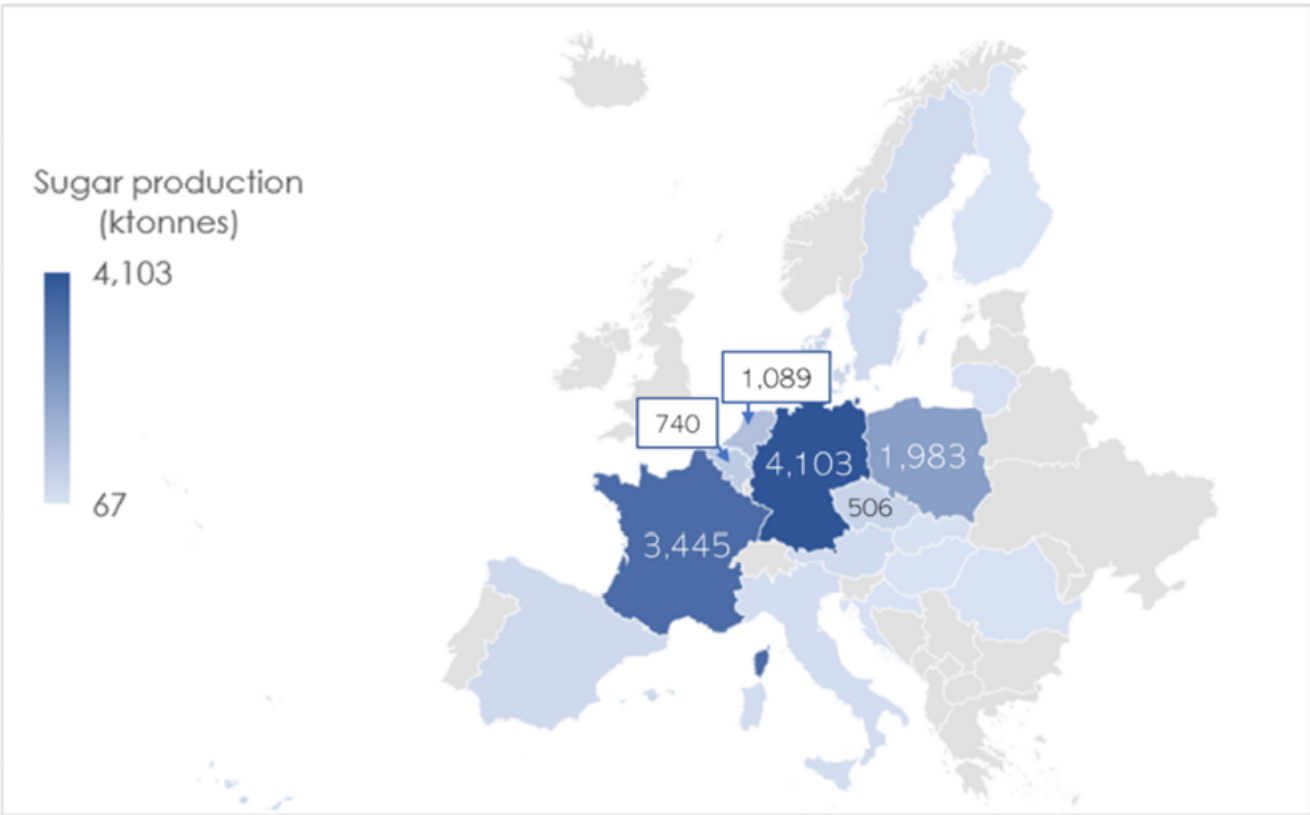
10% of production  
is bio-based

**40% of the bio-based  
product is certified**

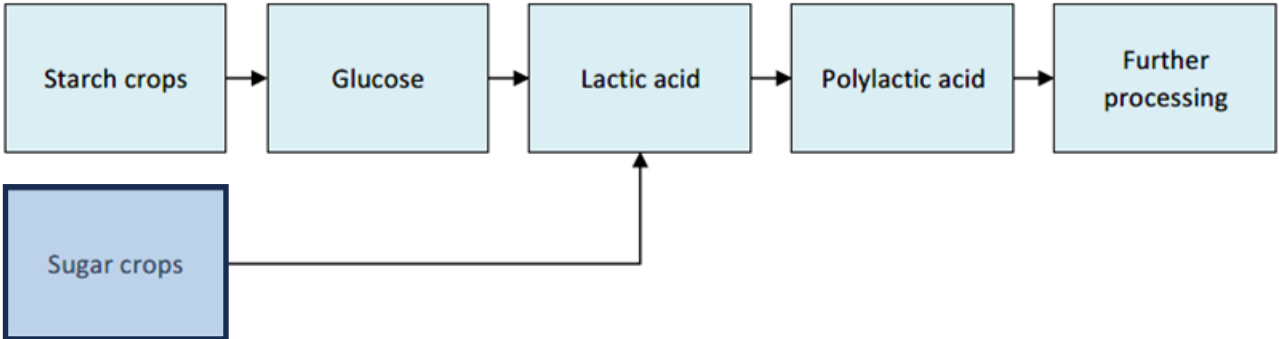


& More!

# Mapping trade flows



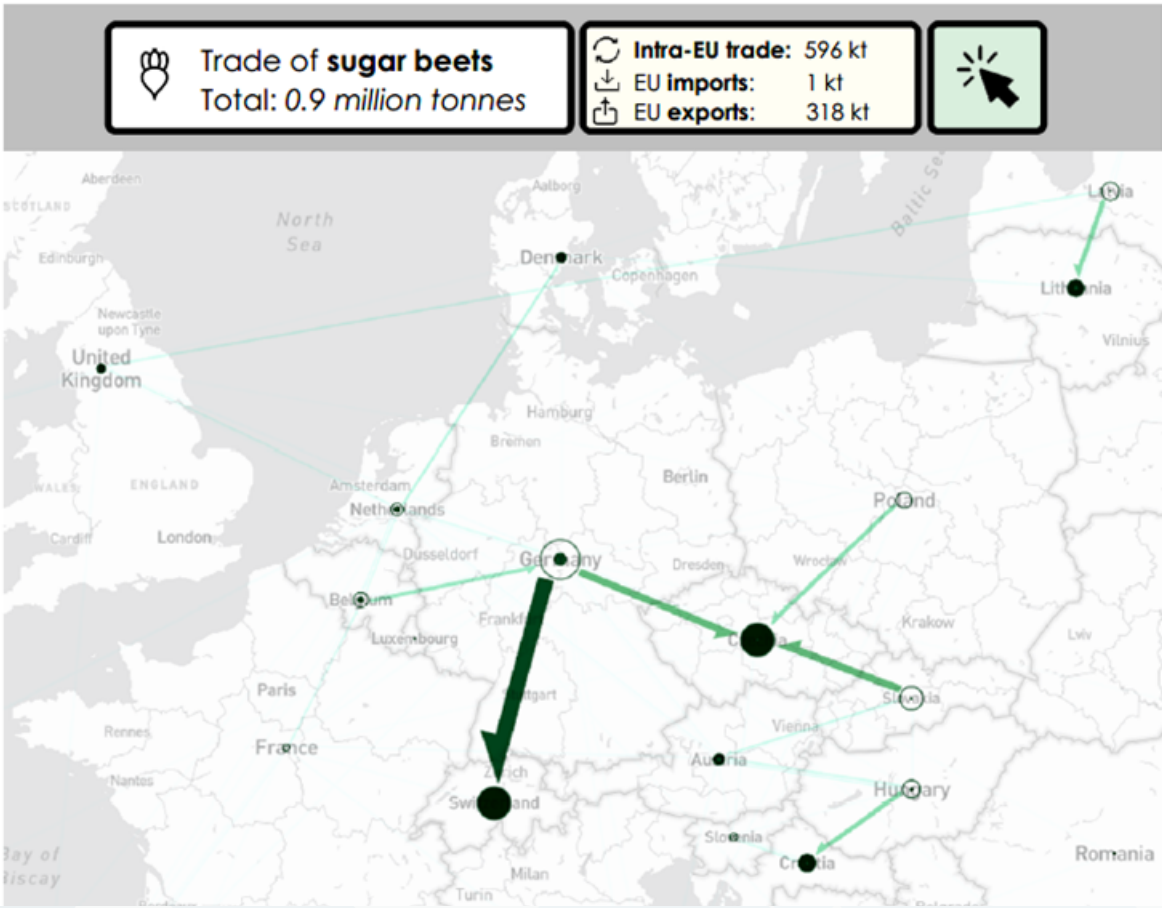
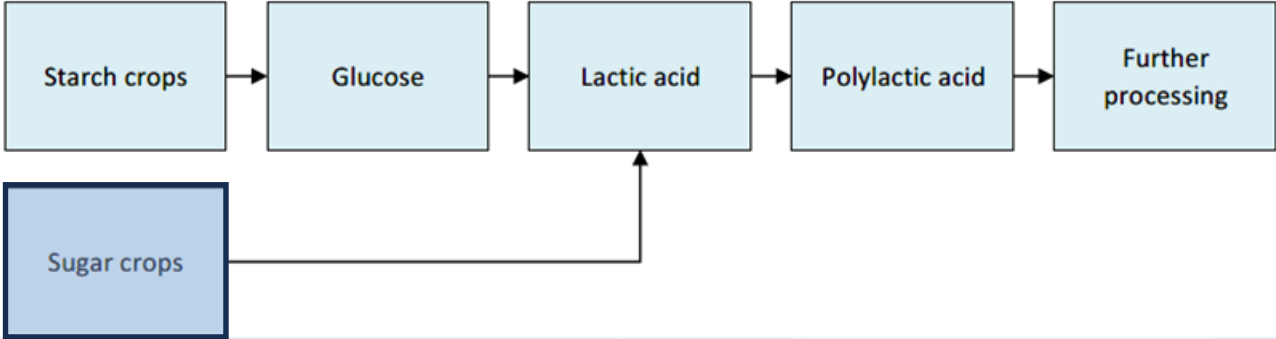
*E.g. PLA:*



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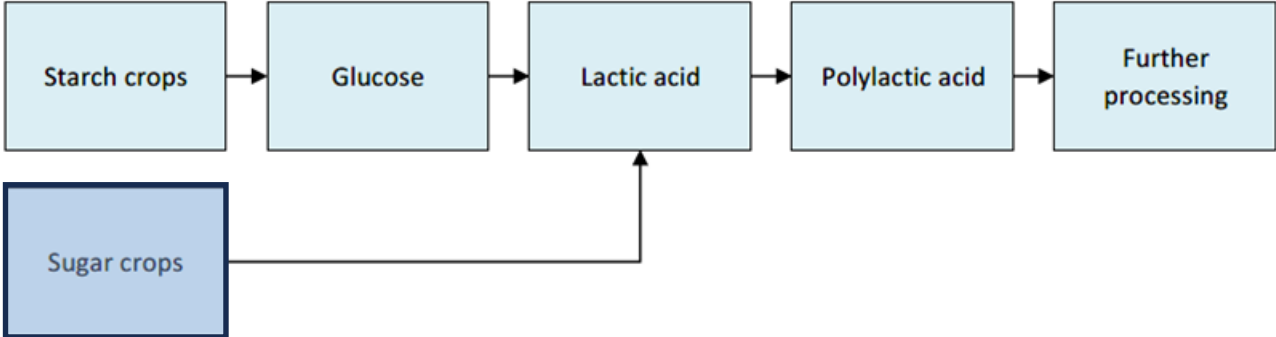
# Mapping trade flows

E.g. PLA:



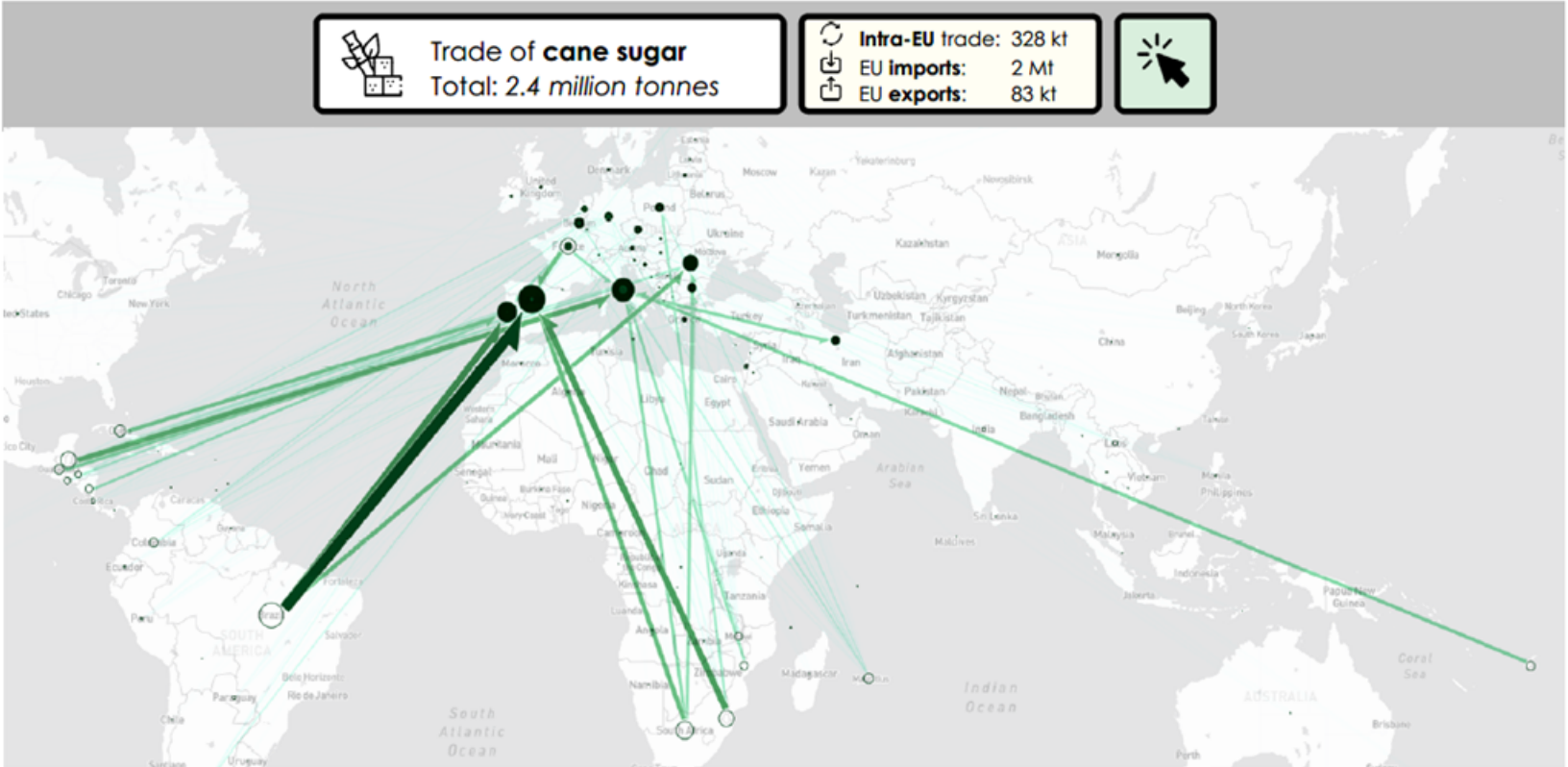
# Mapping trade flows

E.g. PLA:

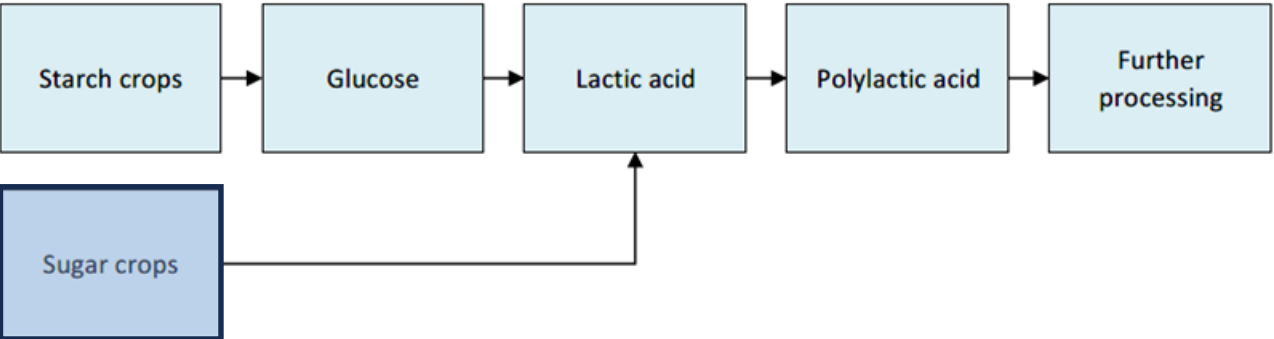


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# Mapping trade flows



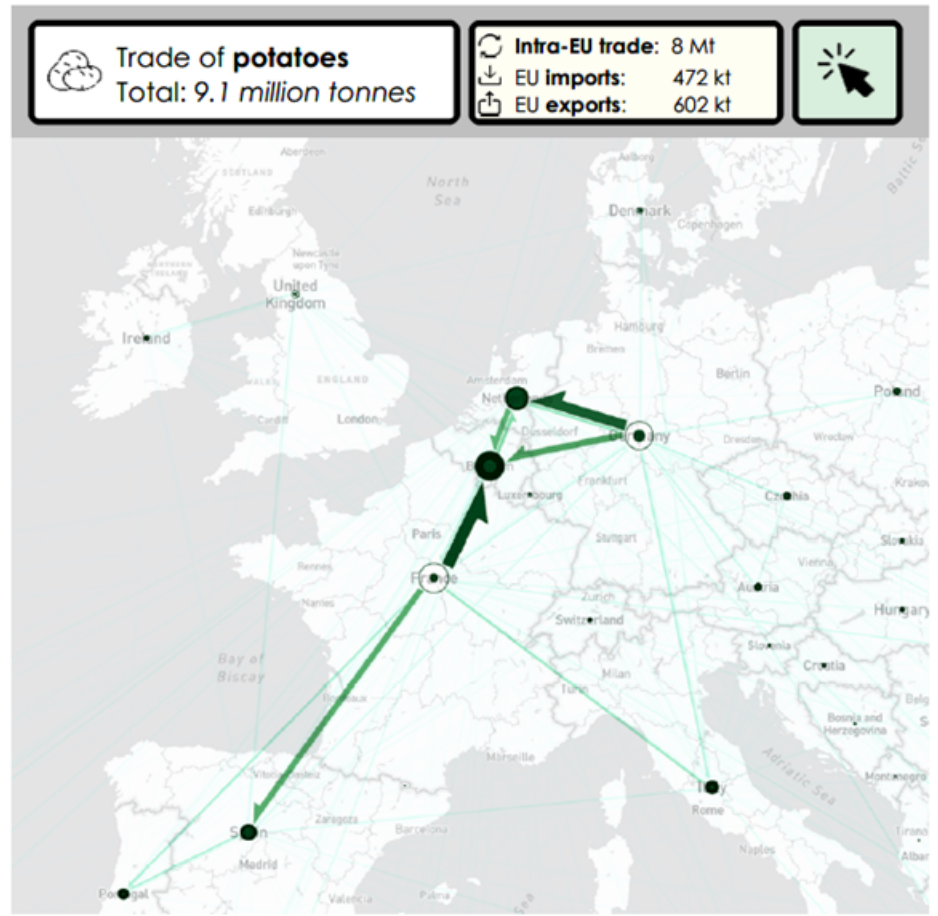
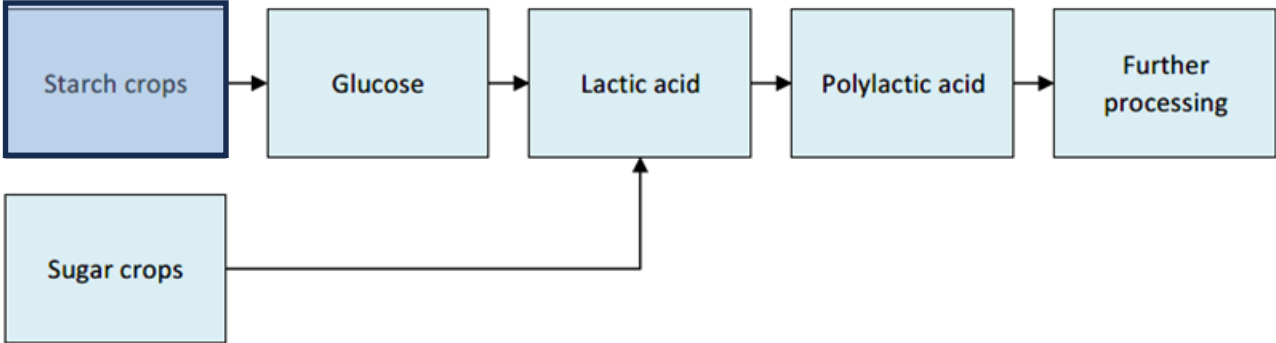
E.g. PLA:



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# Mapping trade flows

E.g. PLA:

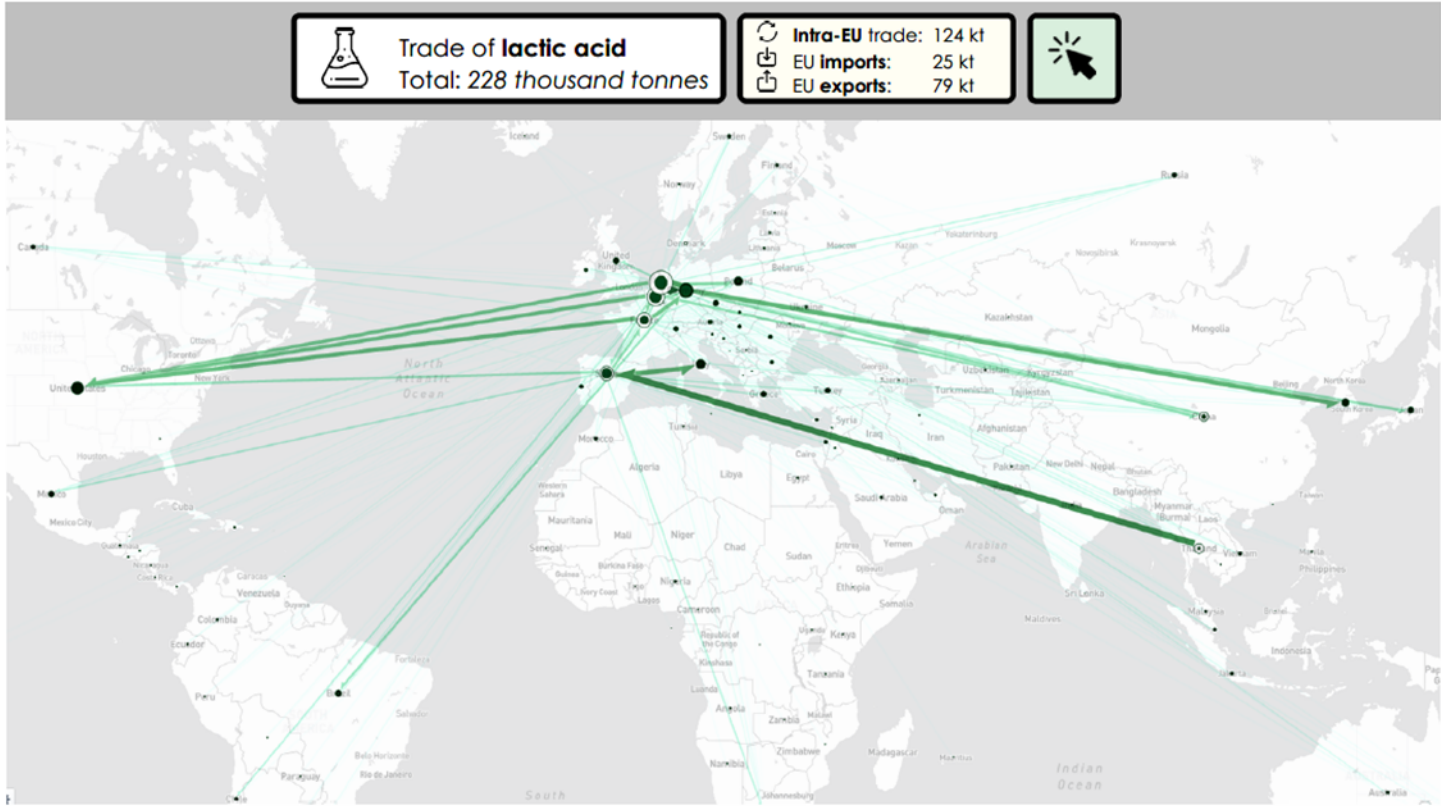
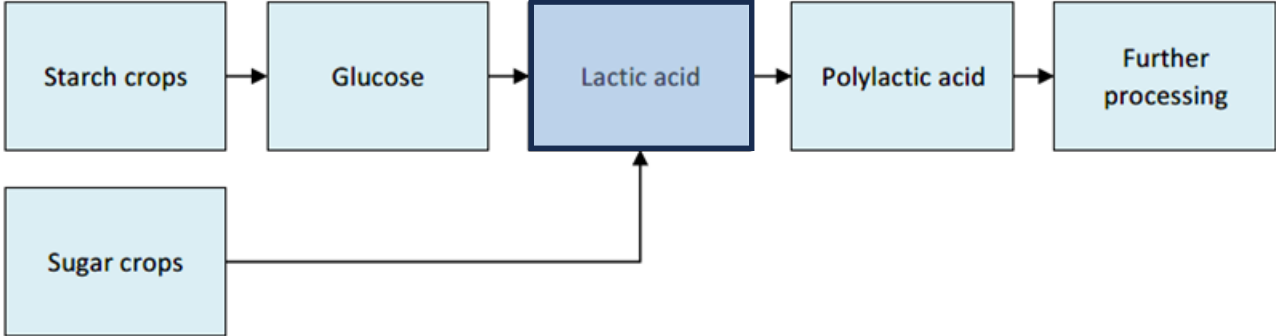


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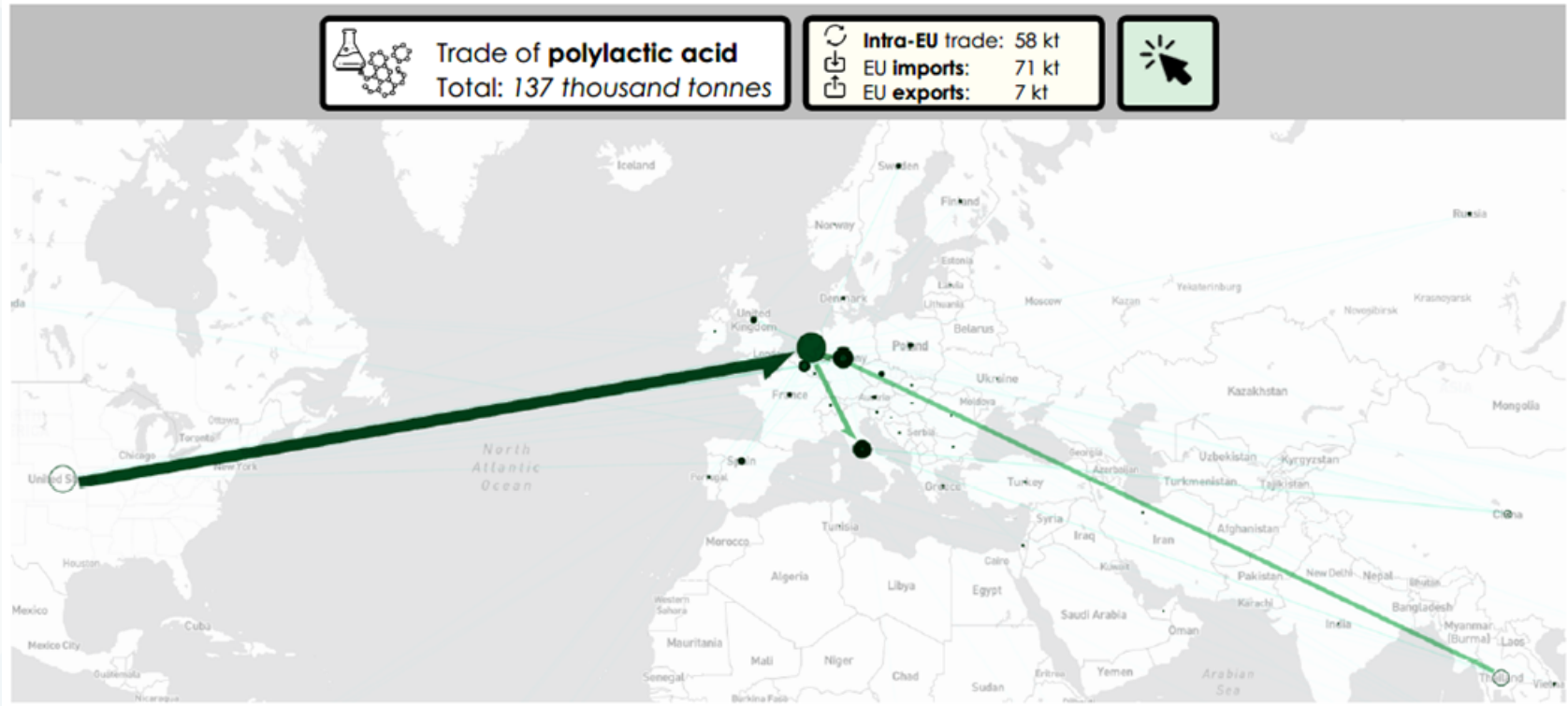


# Mapping trade flows

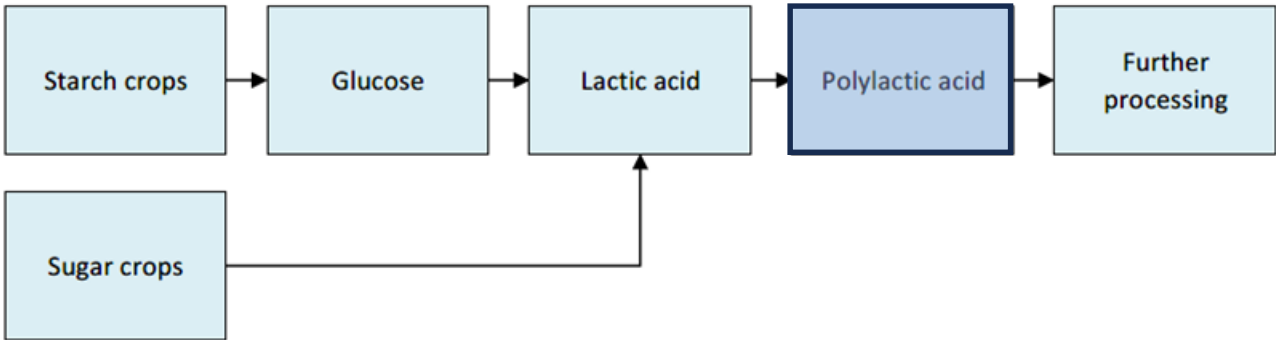
E.g. PLA:



# Mapping trade flows



*E.g. PLA:*



# Level of certification

*Preliminary results PLA:*

## PLA plants



Created with Datawrapper

Capacity	Certificate	Assumed certified volume
150 kton	ISCC Plus	150 kton (100%)
100 kton	Not found	0%
75 kton	Bonsucro (on demand client)	25 kton (33%)
<b>325 kton</b>		<b>175 kton (54%)</b>

**54%**



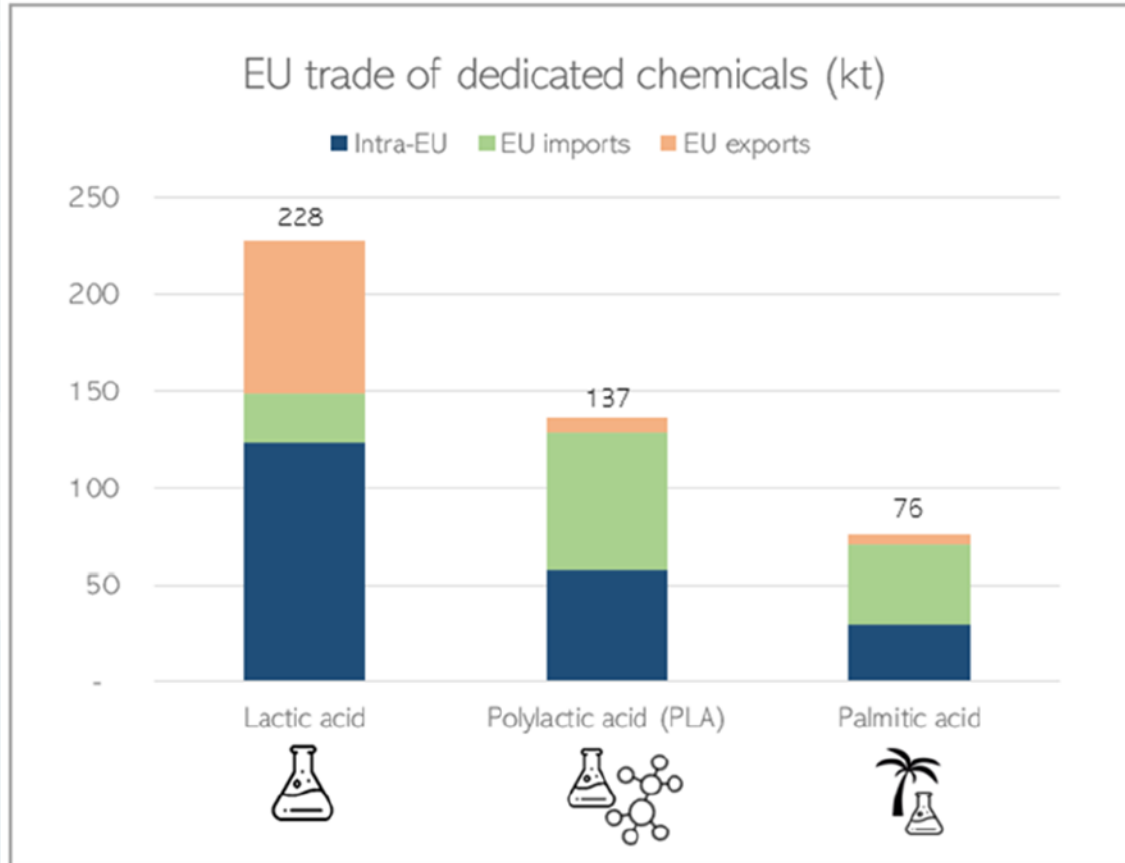
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# Visualization of trade flows - flowmap



# Preliminary results - chemicals

*Dedicated:*



*Drop-in:*

Trade of drop-in chemicals (thousand tonnes)	Total EU trade	Intra-EU	EU imports	EU exports	Largest importers (from EU countries)	Largest exporters (to EU countries)
<b>Ethylene</b> Bio-based share: 0.3%	<b>2,929</b> <u>9</u>	2,123 6	630 2	176 1	Belgium, Netherlands Germany, Netherlands	Netherlands, Belgium Germany, Netherlands <i>Known producers: Brazil, India</i>
<b>Ethylene glycol</b> Bio-based share: 0.7%	<b>1,867</b> <u>13</u>	1,108 8	618 4	141 1	Germany, Spain Belgium, Spain	Belgium, Germany Saudi Arabia, Germany <i>Known producers: India</i>
<b>Propylene glycol</b> Bio-based share: 8%	<b>527</b> <u>42</u>	388 31	30 2	109 9	France, Netherlands Belgium, Netherlands	Germany, Netherlands, Spain <i>Known producers: United States, Poland, Belgium</i>
<b>Polyurethane</b> Bio-based share: 0.01%	<b>1,103</b> <u>0</u>	567 0	71 0	465 0	Germany, Italy, France	Germany, Italy, Netherlands
<b>Epichlorohydrin</b> Bio-based share: 28.6%	<b>160</b> <u>46</u>	72 21	17 5	71 20	Netherlands, Switzerland, States United States	Germany, Netherlands France, Netherlands <i>Known producers: China, Thailand, France, Germany, Czech Republic</i>
<b>Polypropylene</b> Bio-based share: 0.06%	<b>7,477</b> <u>4</u>	4,842 3	1,604 1	1,030 1	Italy, Germany, Poland	Germany, Netherlands Belgium, Netherlands <i>Known producers: Netherlands, Belgium, Germany, Sweden, Japan</i>



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# Plans for trade flows

Read the preliminary results on the HARMONITOR website!

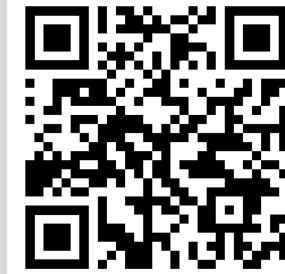
➤ Check out the trade flow tool

In next deliverable (August 2024):

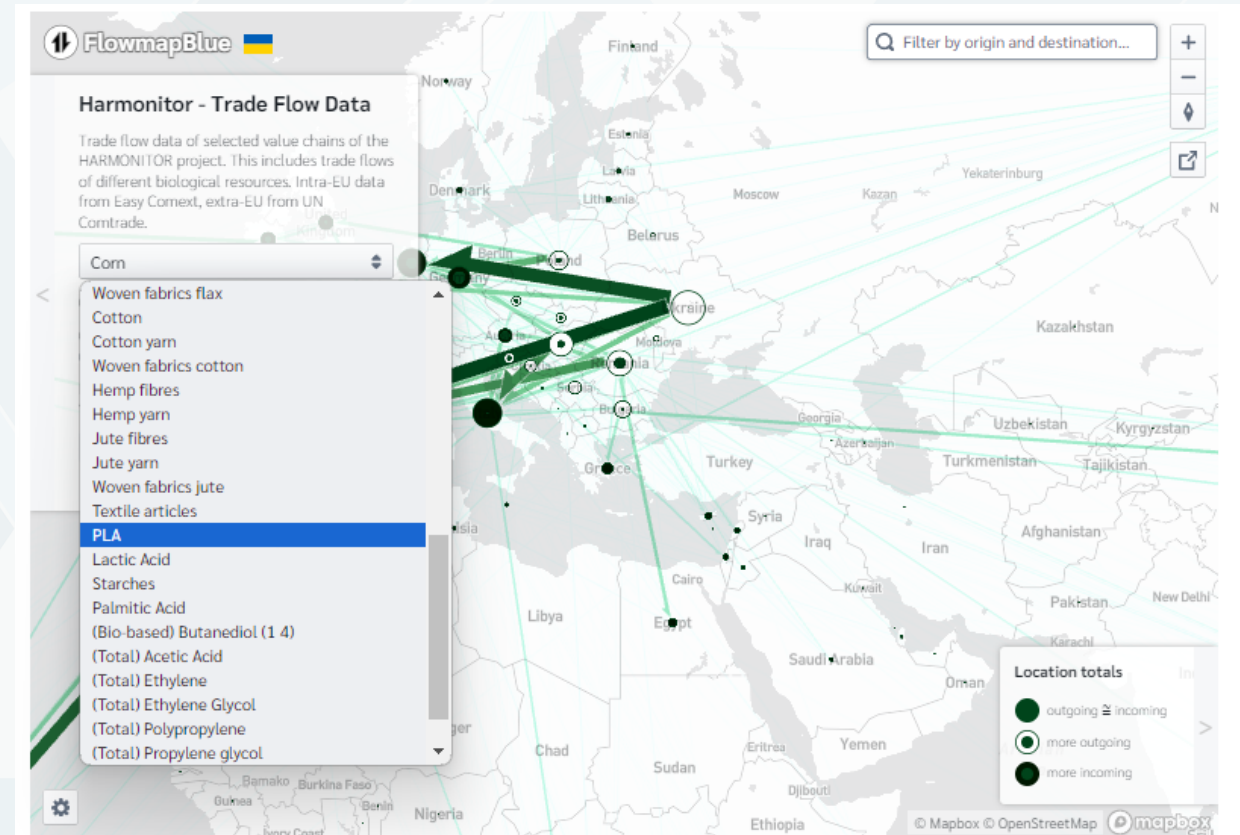
- Include more qualitative information & more value chains
- Years added

November: report on the level of certification

Flowmap tool



Report



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# Thank you for listening

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[www.harmonitor.eu](http://www.harmonitor.eu)



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