A tailored LCA database for the chemical value chain – cm.chemicals for robust environmental decisions

Raoul Meys, Managing Director and Co-Founder

84th LCA DISCUSSION FORUM
21 September 2023

carbonminds

GOOD DECISIONS COME FROM GOOD DATA.

cm.chemicals

Comprehensive
80,000+ datasets covering
1,000+ chemicals and plastics

Actionable
more than 190 production regions to identify promising regions

Quality assured
methodology in compliance with ISO 14040/44/67 and soon Together for Sustainability

TÜVRheinland CERTIFIED
Certified Calculation Method
Regular Surveillance
www.tuv.com
ID 0000081021

But how did Carbon Minds do it?
What is behind it the database?

LCA practitioners

Let me show you a little bit what we did . . .

Science

The foundation of work is based on high-impact scientific publications at the **RWTH Aachen University**

nature Communication
10.1038/s41467-023-37382-3

Science
10.1126/science.abg9853

PNAS
10.1073/pnas.1821029116

ELSEVIER
10.1016/j.compchemeng.2022.107798

Parts of one publication has been reprinted in the latest IPCC report.

Ongoing effort to publish since the foundation of the company

WILEY-VCH
10.1002/cite.202300041

CellPress OPEN ACCESS
10.1016/j.oneear.2023.05.006

Industry

Cooperation with **industry and industry association**. Among others:

TOGETHER FOR SUSTAINABILITY

TRICON

BRENNTAG

covestro

Braskem

heubach

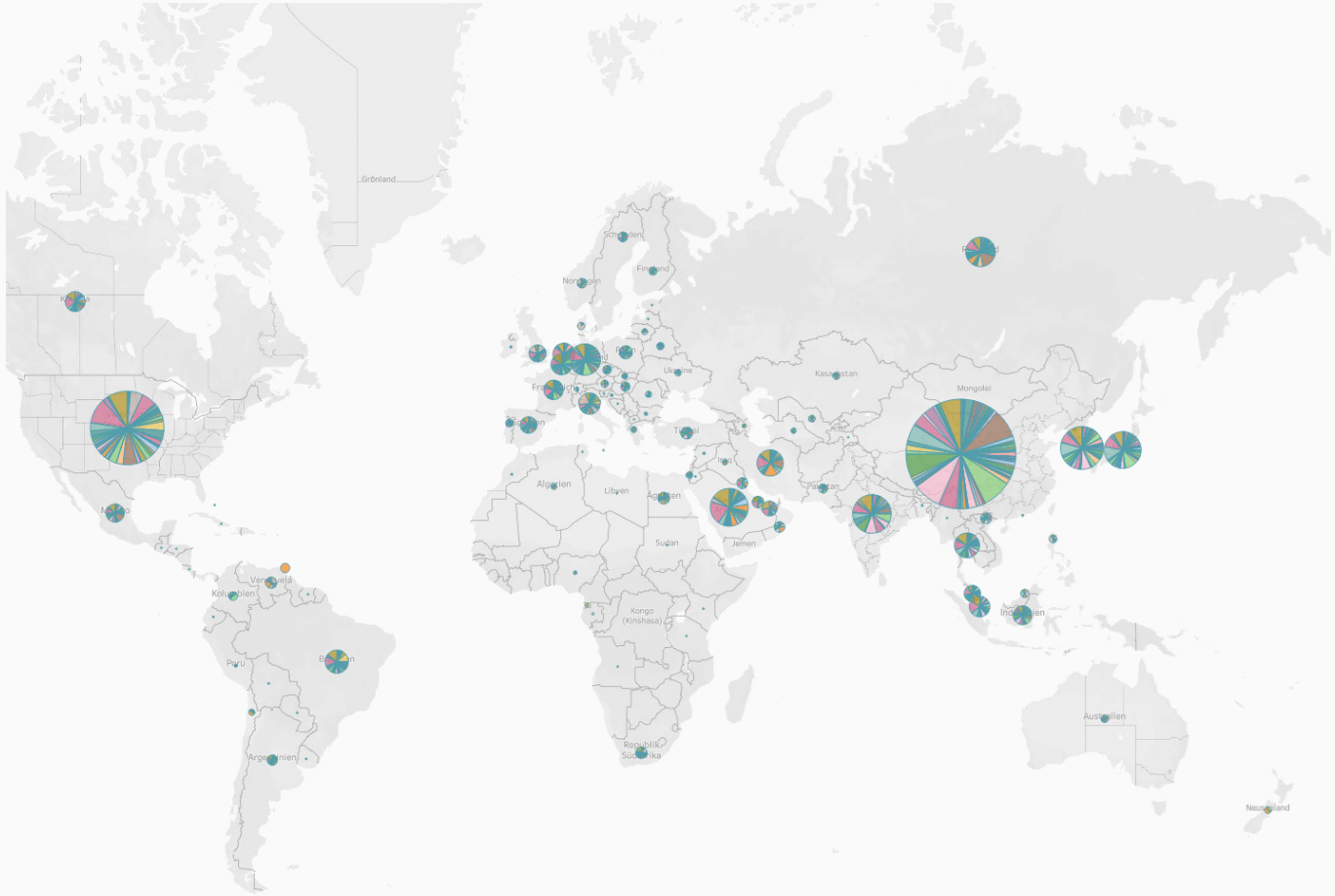
LUBRICANTS. TECHNOLOGY. PEOPLE. FUCHS

Consistent improvement of database via various projects.

For instance, the project by the EU Commission for EF 4.0 compliant datasets which include cooperation with industry.

Combining Science and Industry expertise:
Three key ingredients to model the chemical value chain

1. Market data: production locations and volumes of chemicals



Combining Science and Industry expertise:
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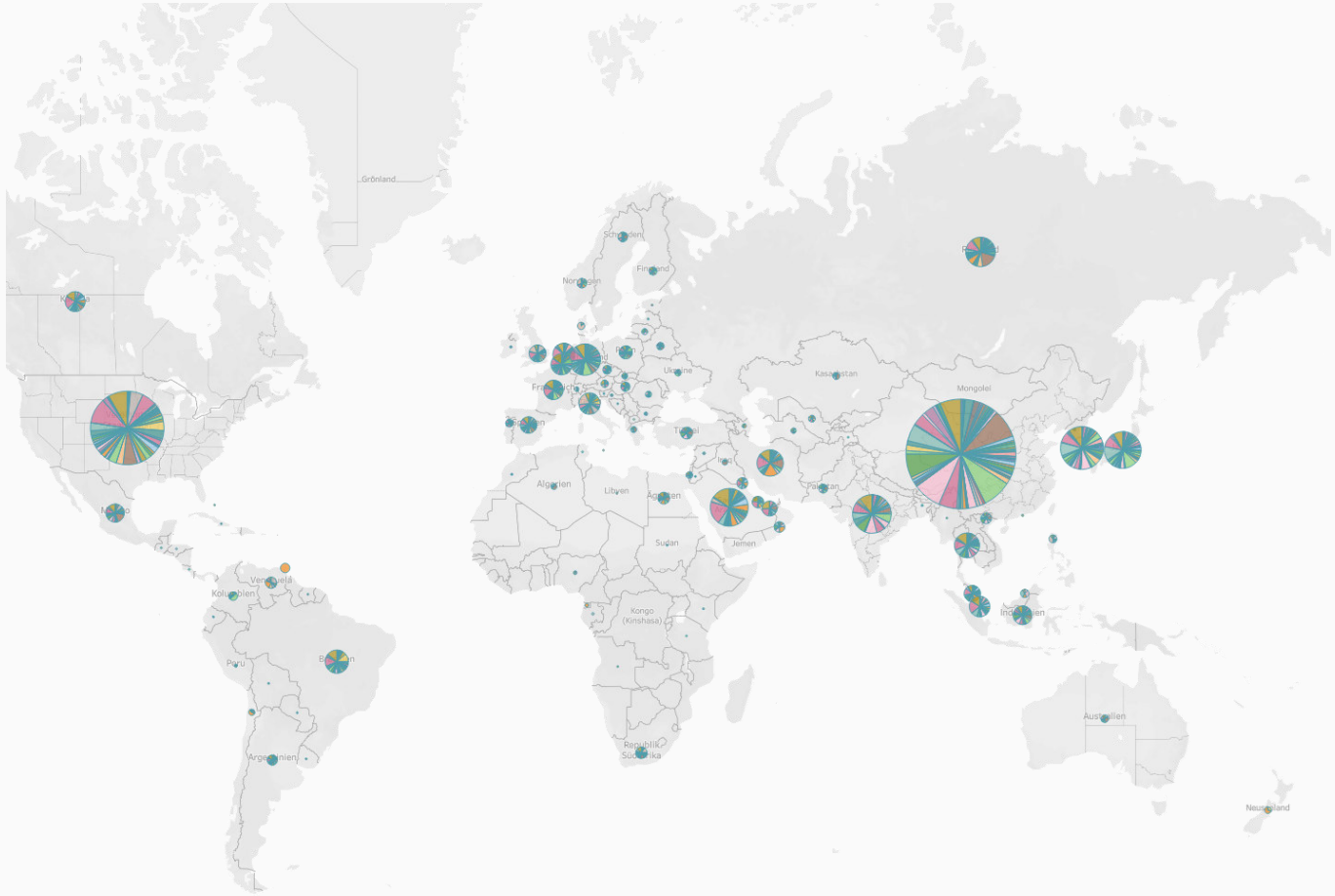
1. Market data: production locations and volumes of chemicals

2. Technology data: Technology specific mass and energy balances

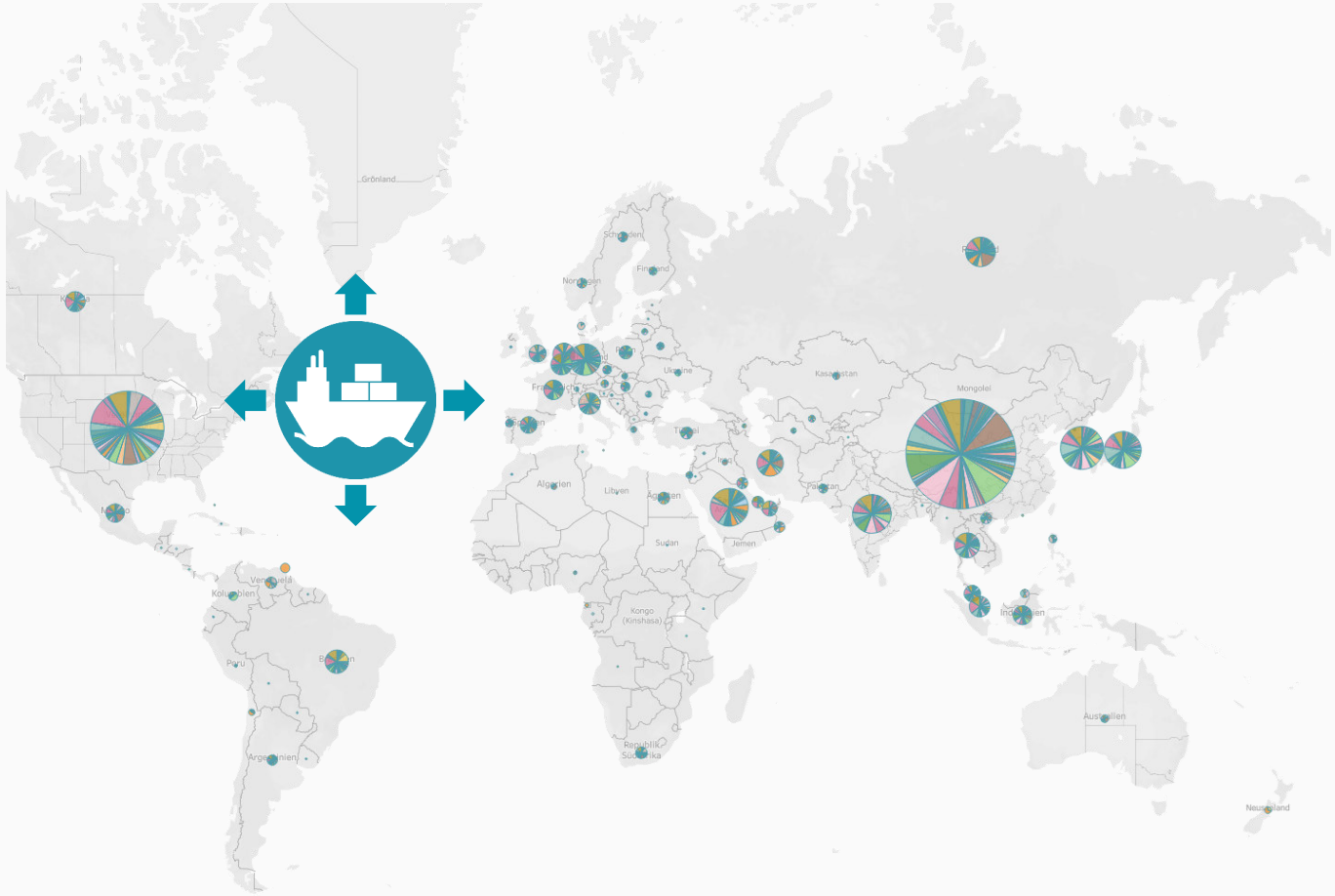


Combining Science and Industry expertise:
Three key ingredients to model the chemical value chain

1. Market data: production locations and volumes of chemicals

2. Technology data: Technology specific mass and energy balances

3. Trade data: International trade flows between production regions



carbonminds

Nice, but what does this actually mean?

LCA practitioners

Let me show you a little bit around what we have in the database for the example of polypropylene.

Tableau Reader - 2021_07_08_DataBaseVisualization

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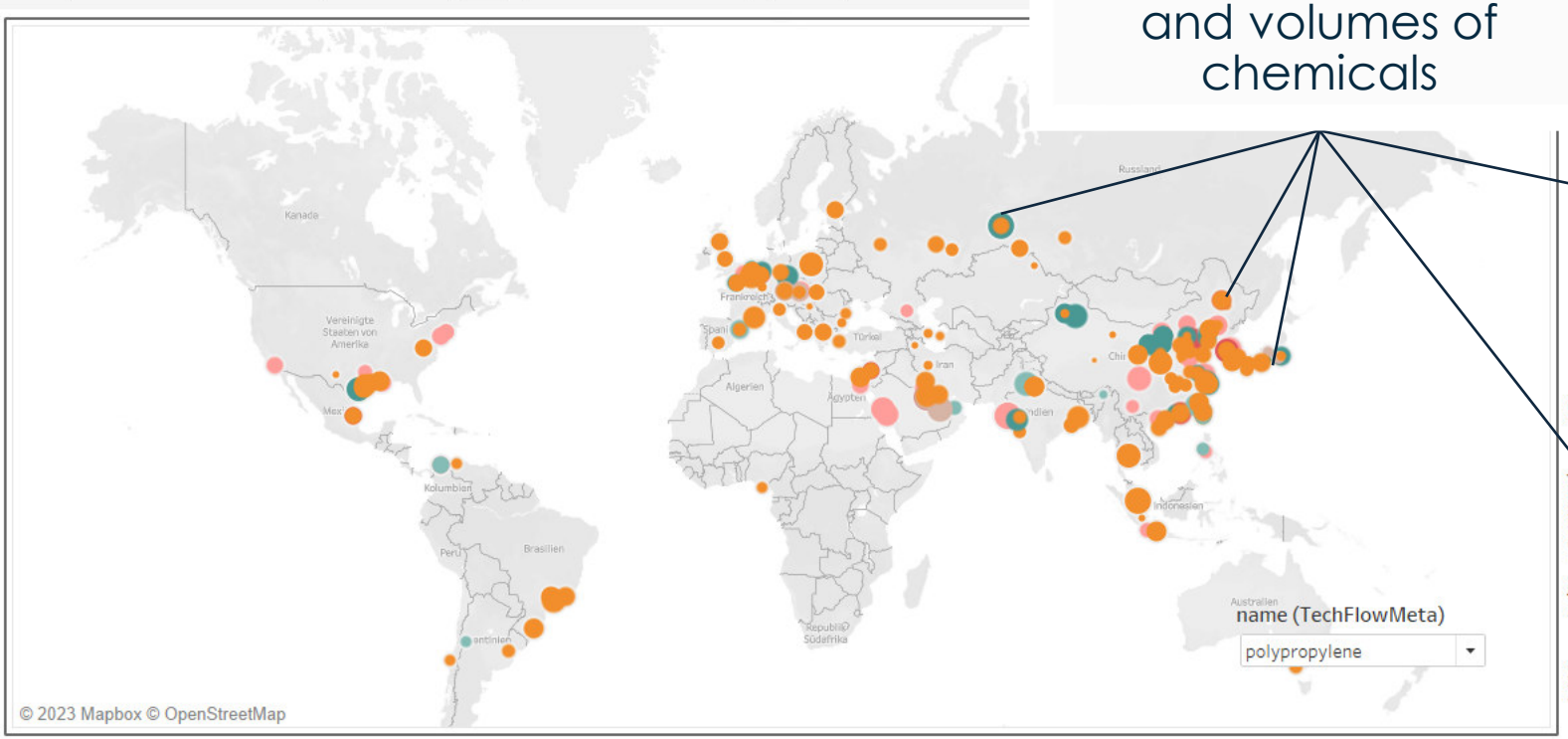

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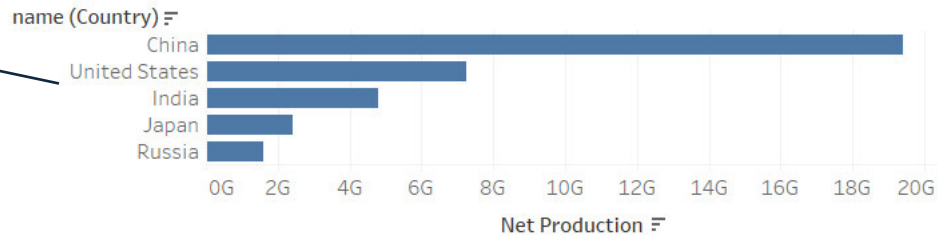
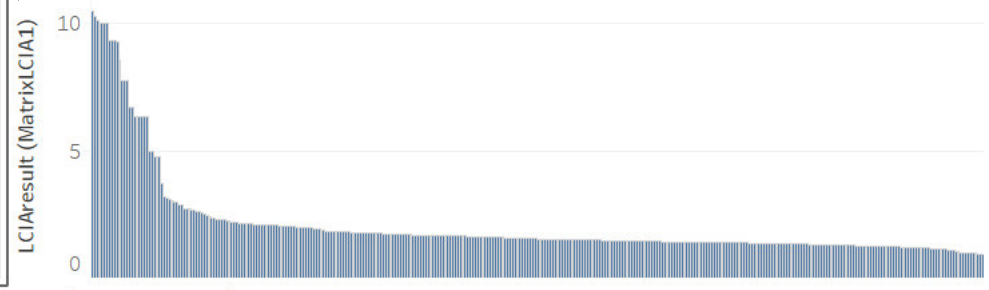
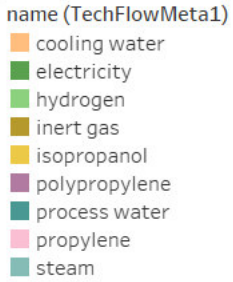


SupplierImpactGlobal





SupplierContribution

Technology Contribution | WorldMap | PlantMap | ProdVol | SupplierContribution | SupplierImpactGlobal | CountrySpecific | PlantSpecific

359 Markierungen 1 Zeile mal 1 Spalte SUM von AVG(Longitude): 22.102.3

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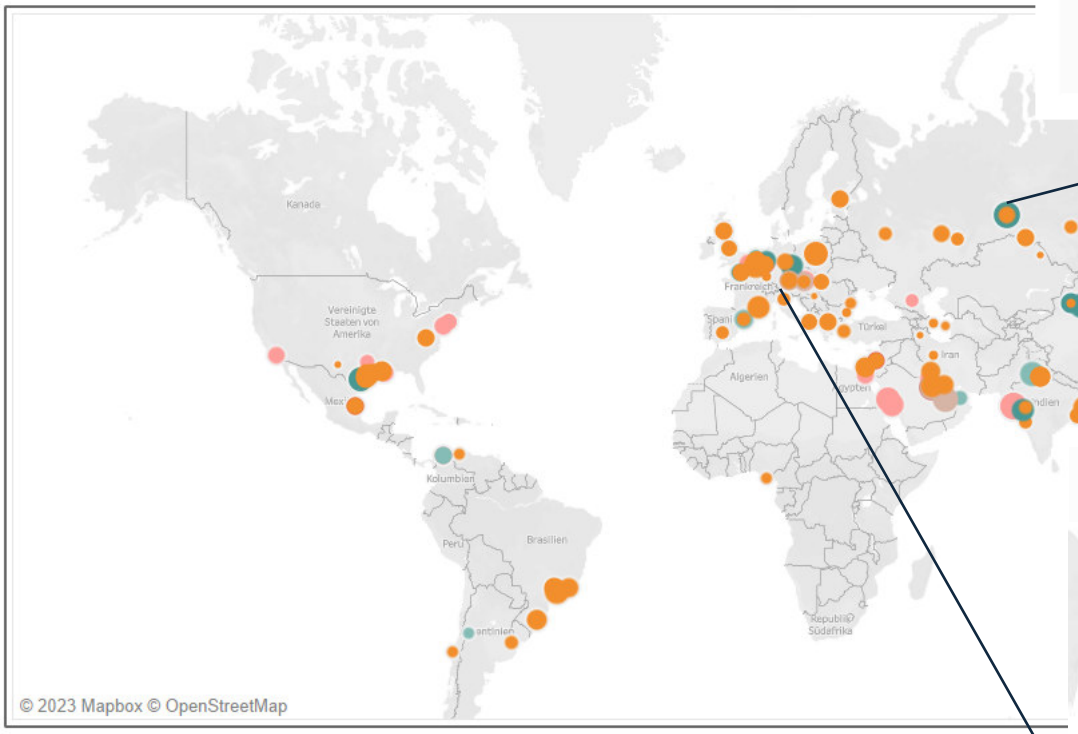

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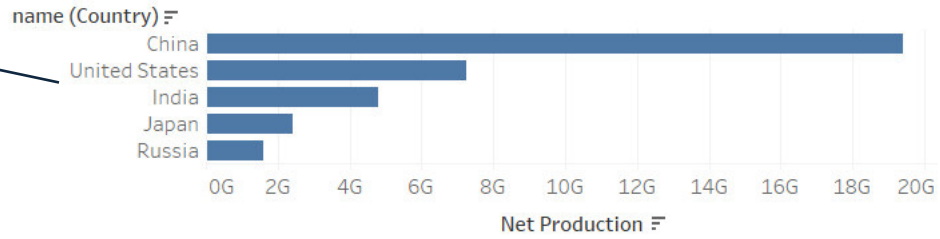
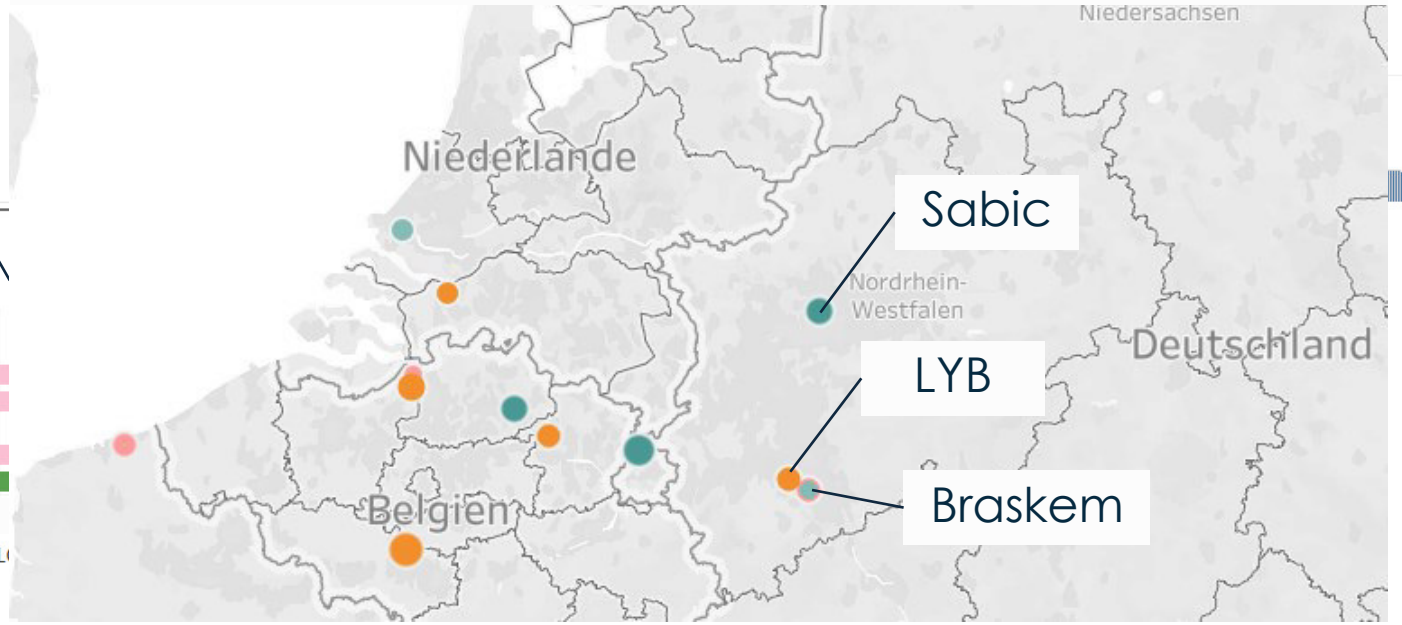


SupplierImpactGlobal

Zoom in Netherlands, Germany, Belgium



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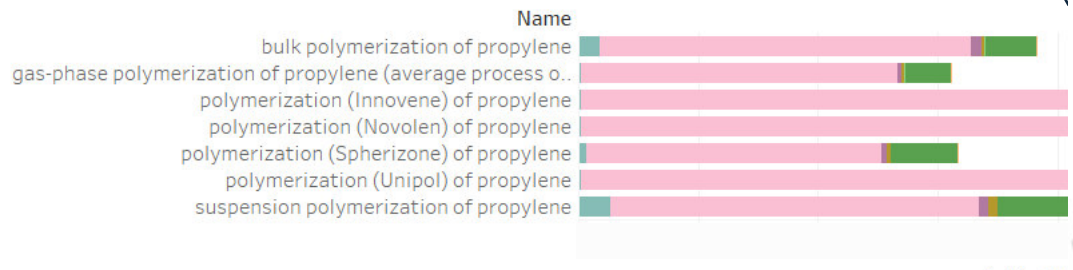

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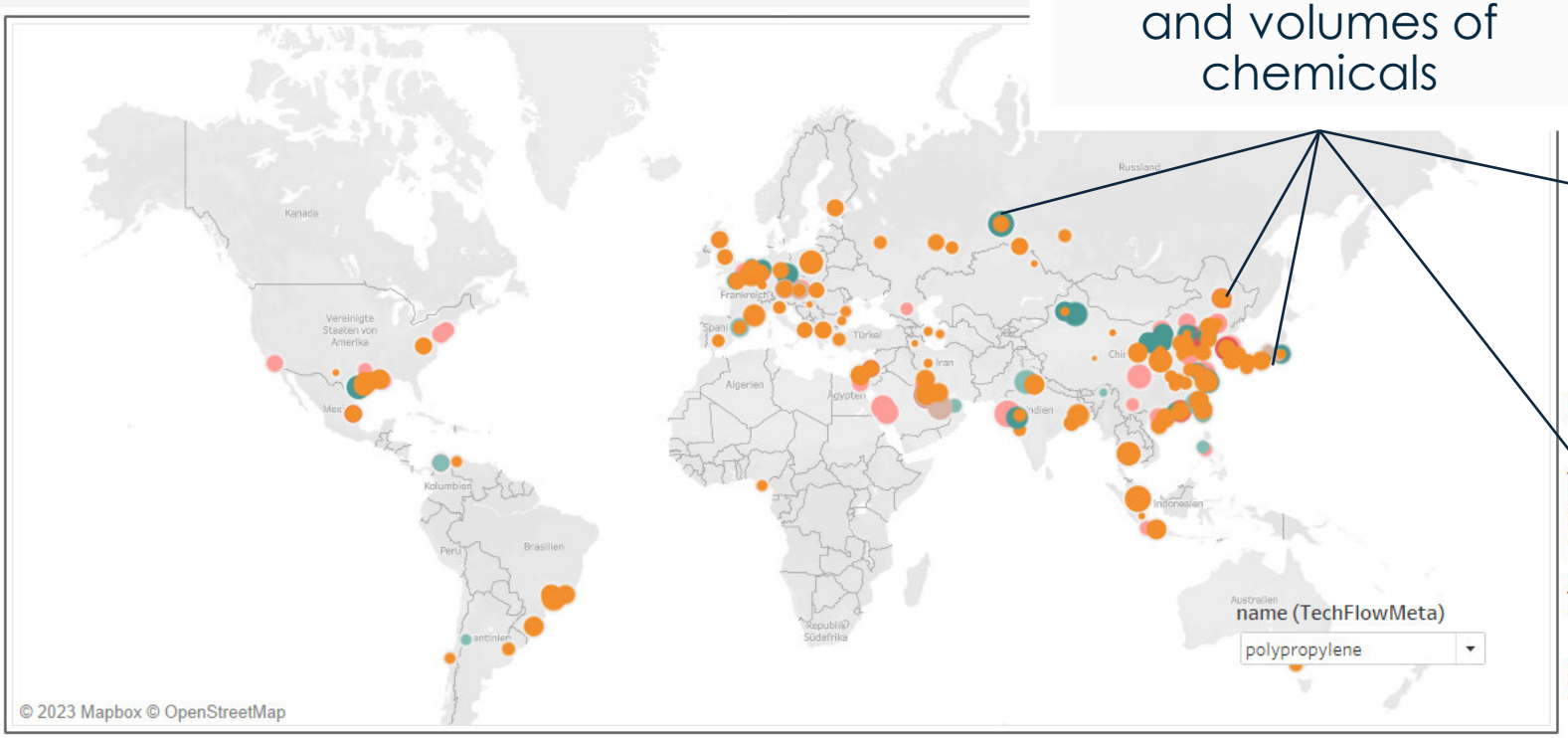

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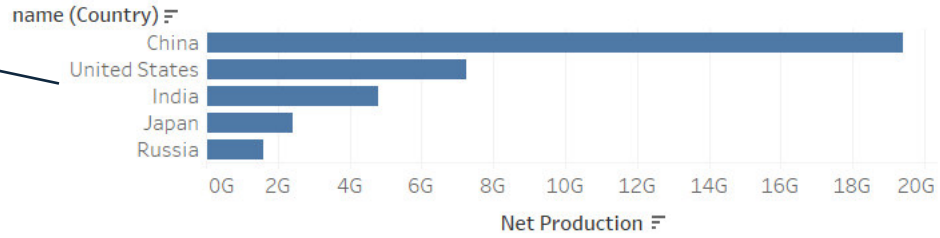

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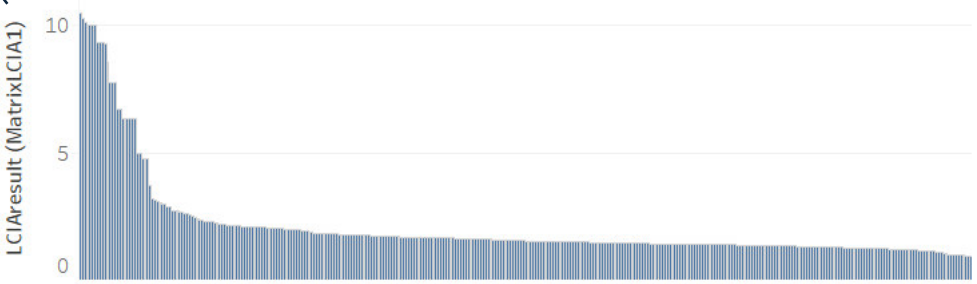

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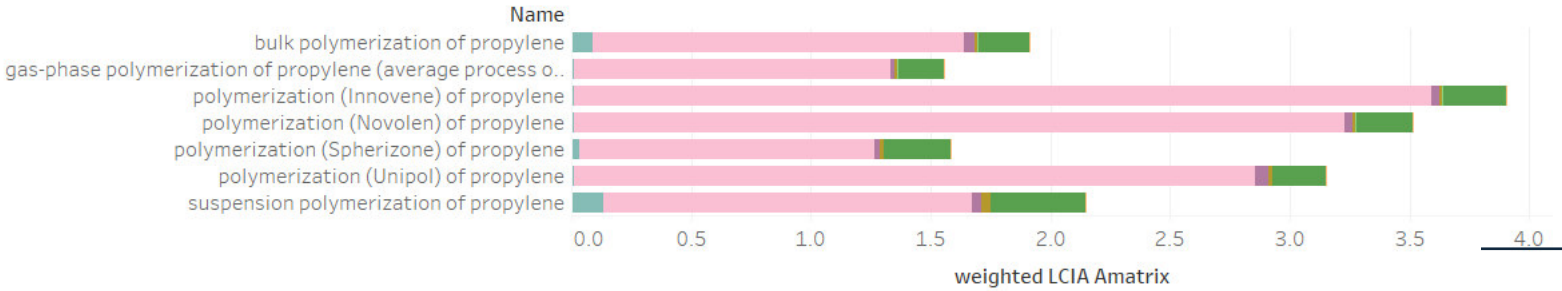

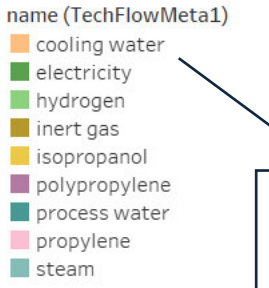

2. Technology data: Technology specific mass and energy balances

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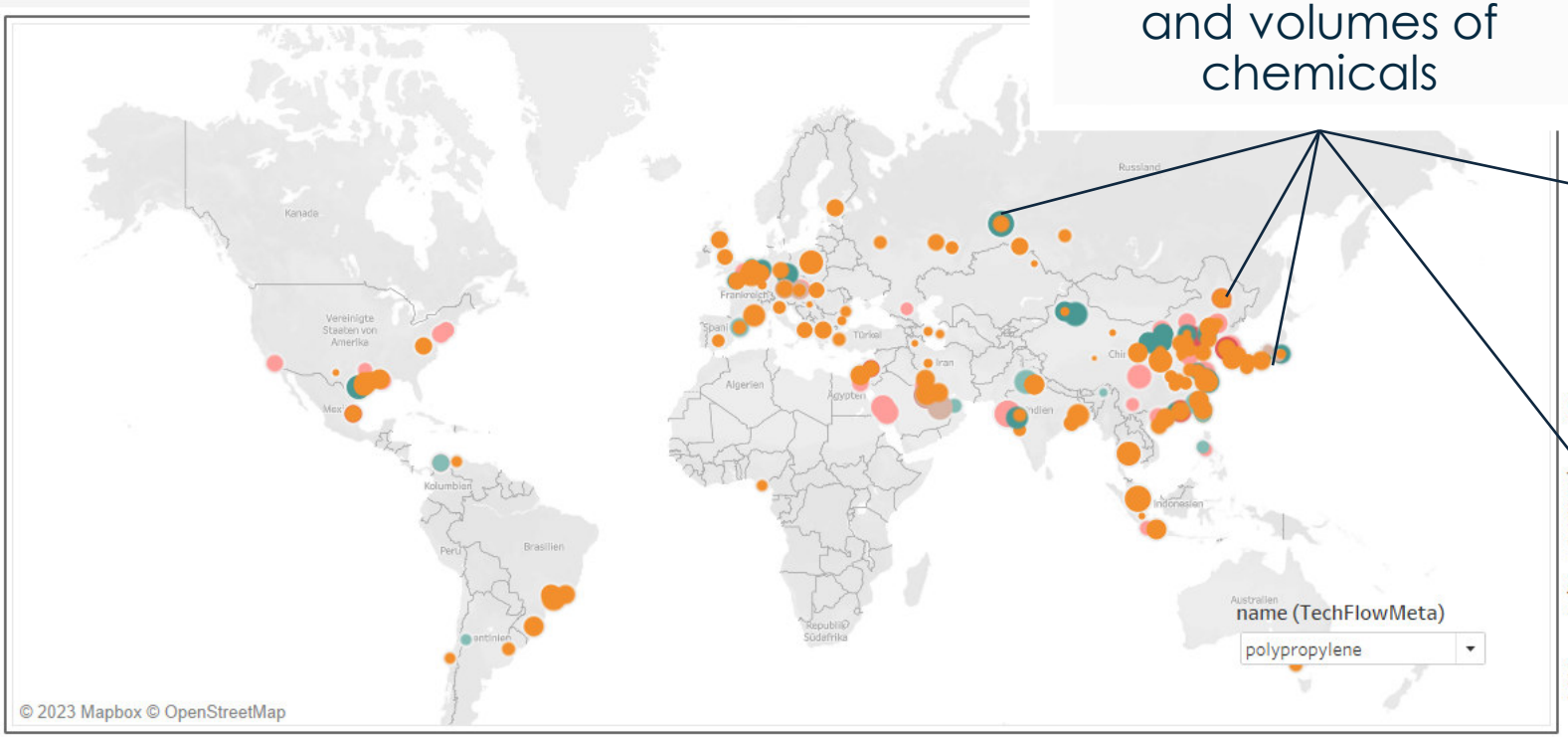

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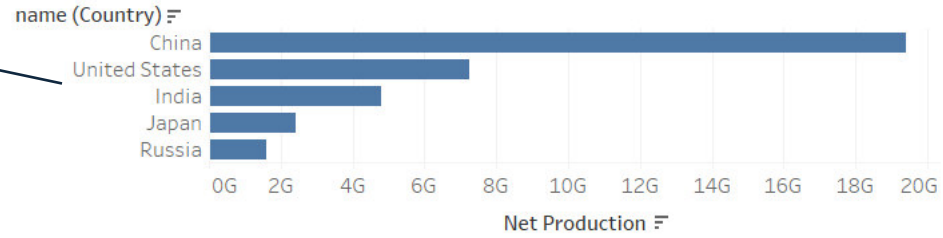

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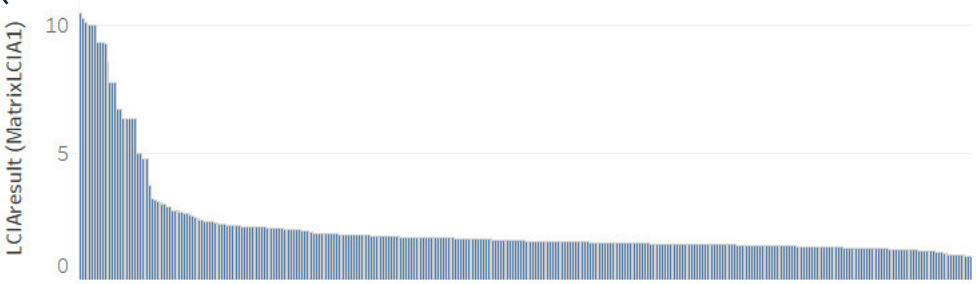
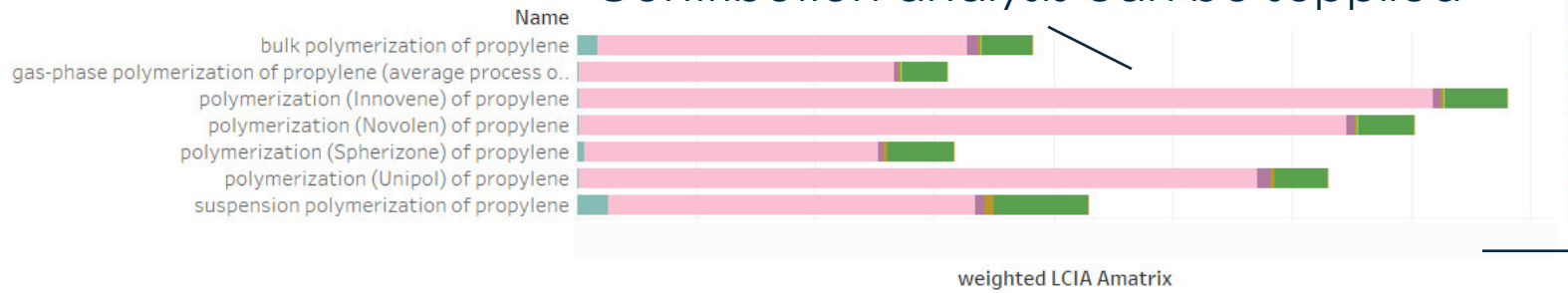
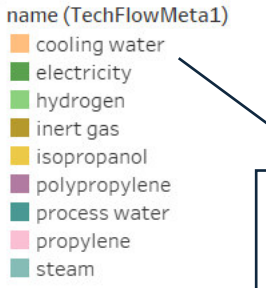


SupplierContribution

Contribution analysis can be supplied





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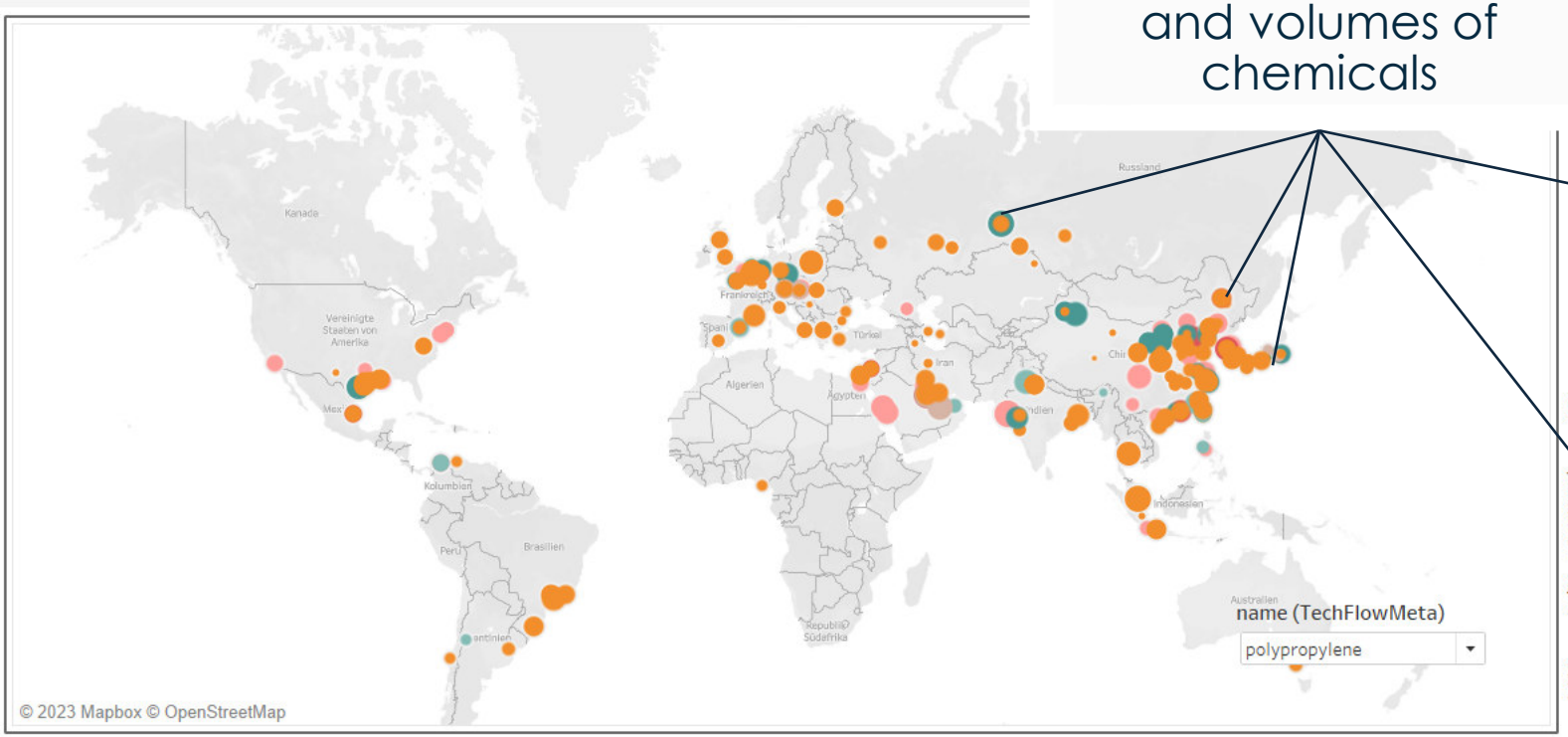

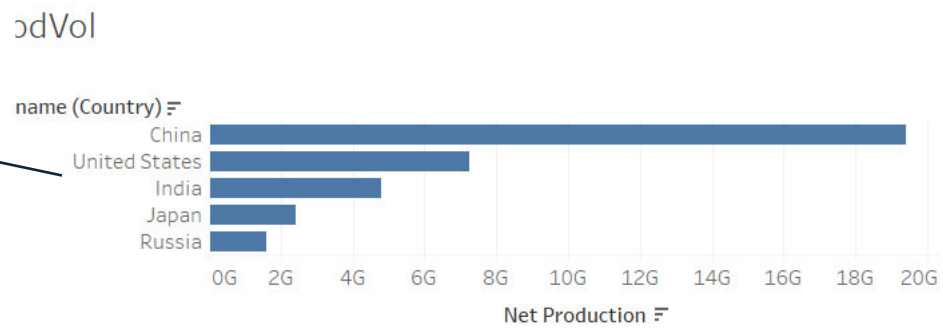

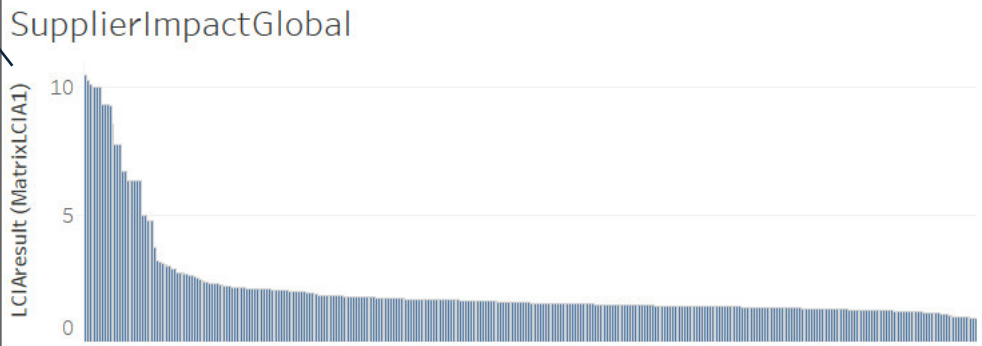

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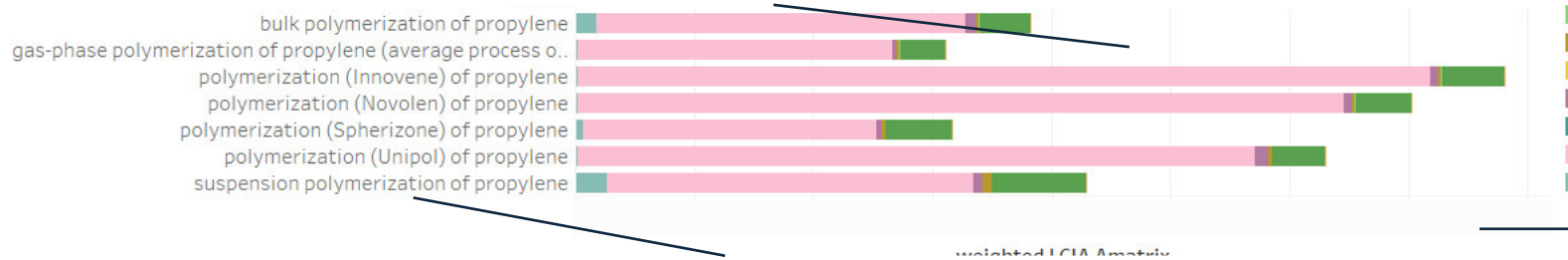

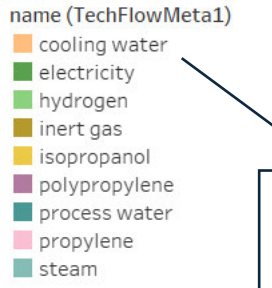

2. Technology data: Technology specific mass and energy balances

Modeling of industrial relevant technologies

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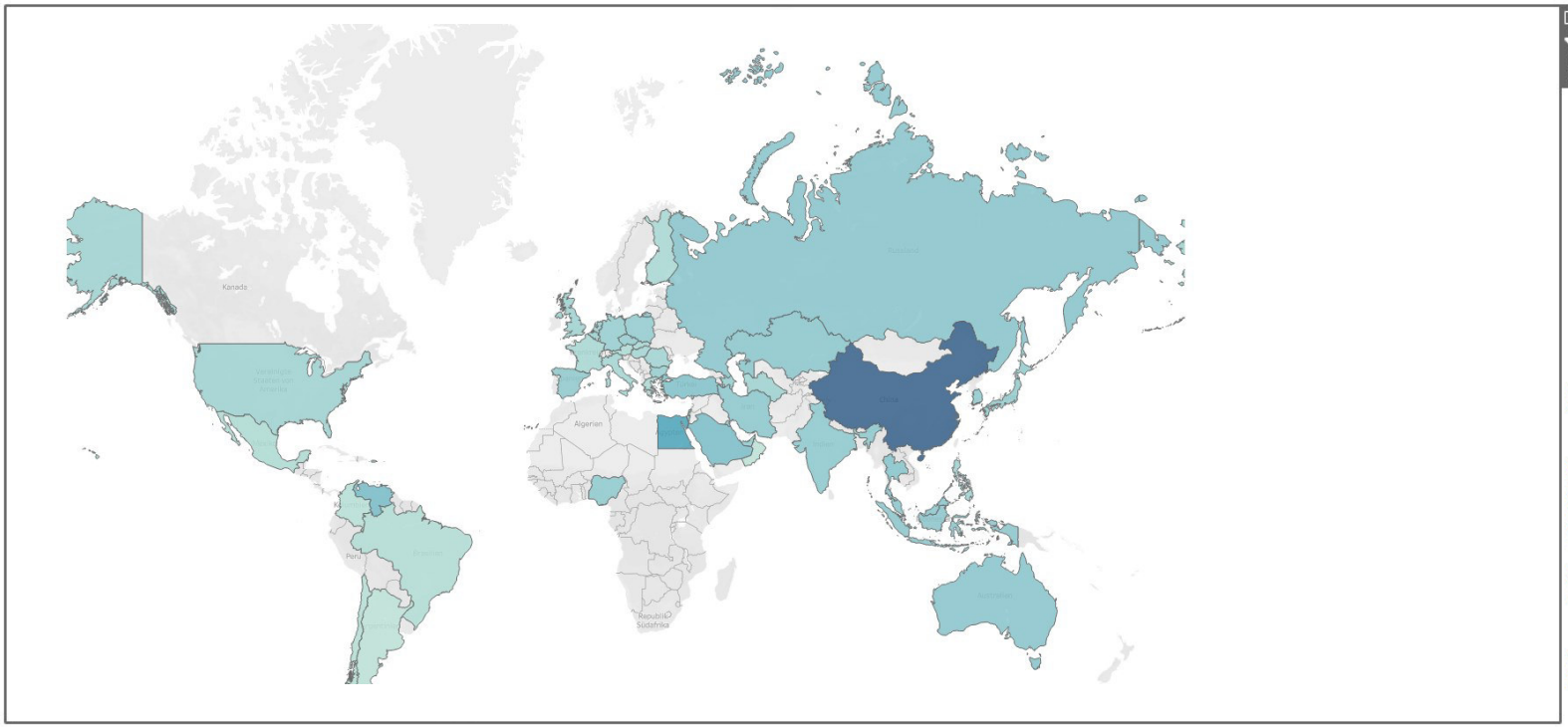

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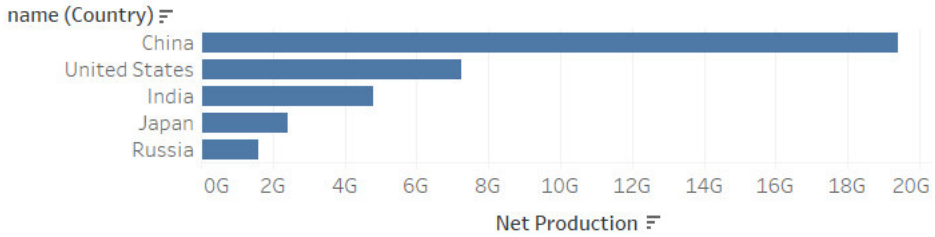
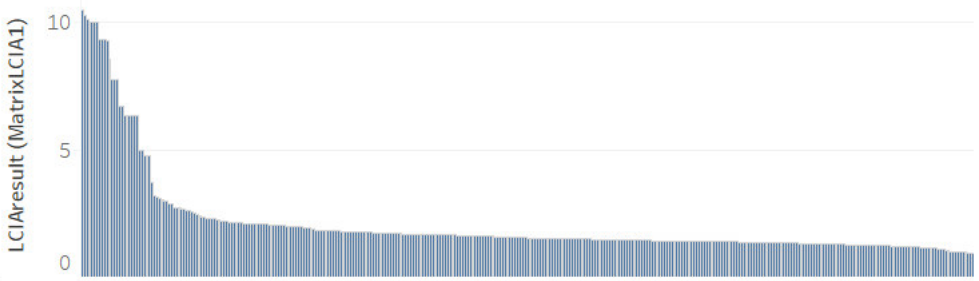


SupplierImpactGlobal



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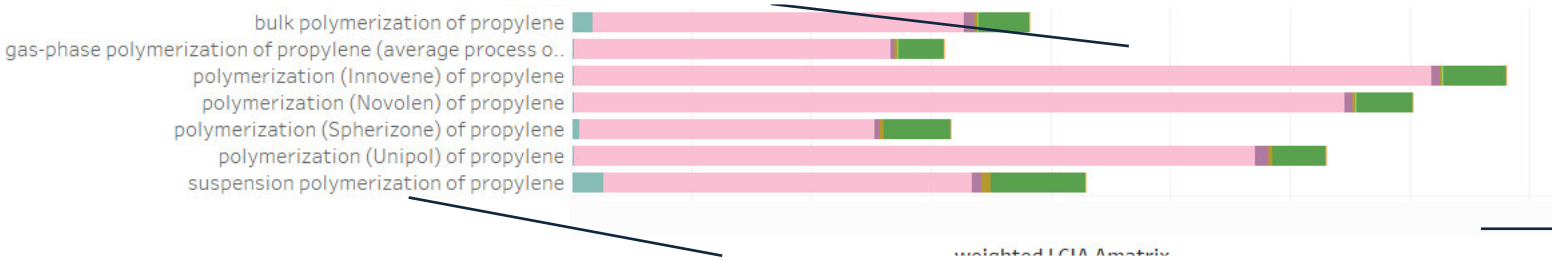

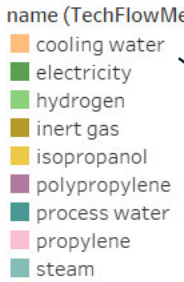

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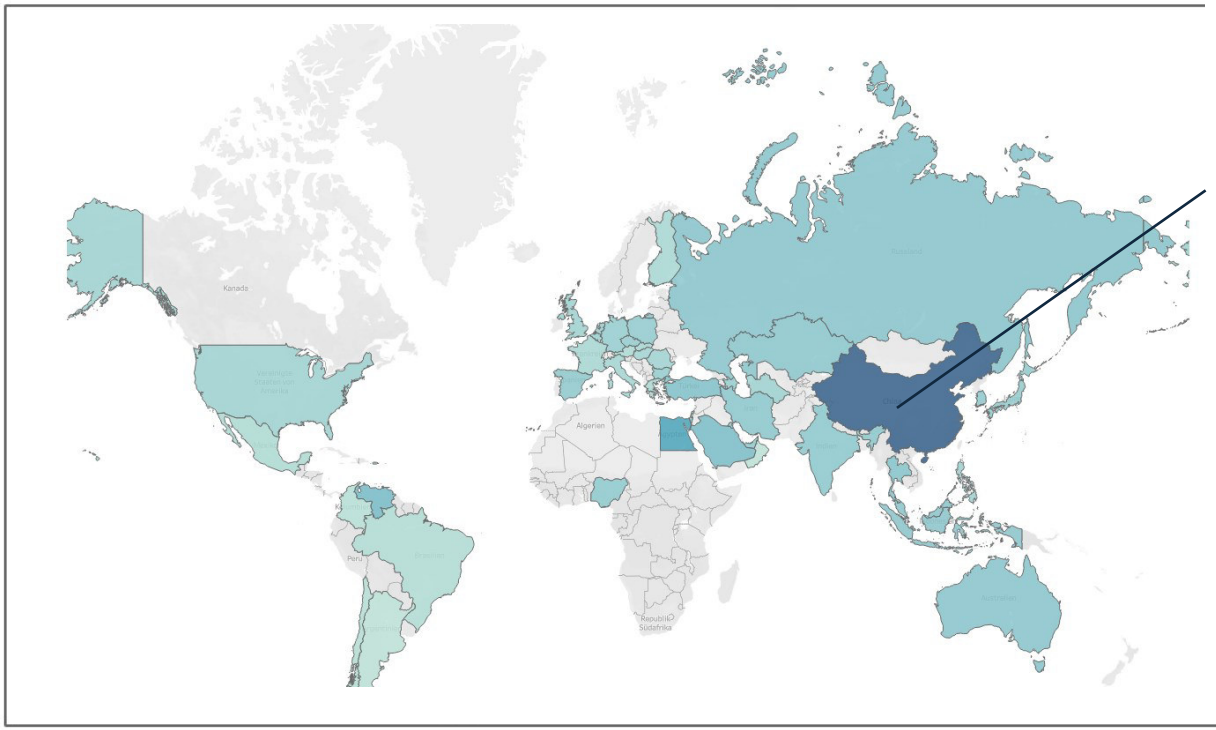
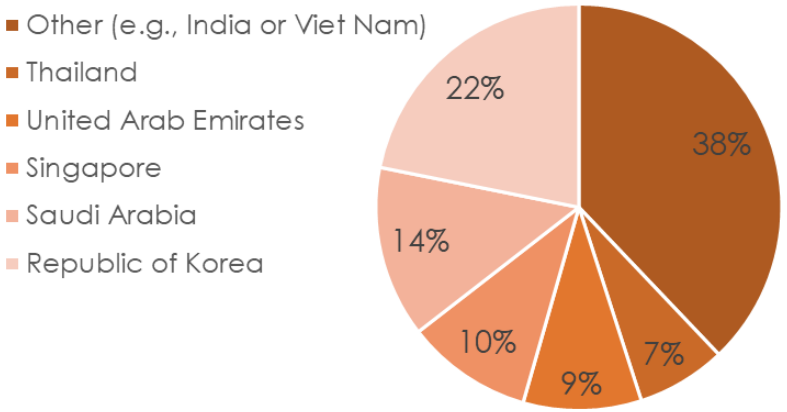
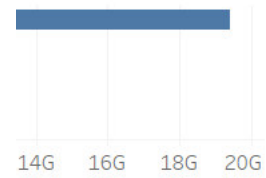
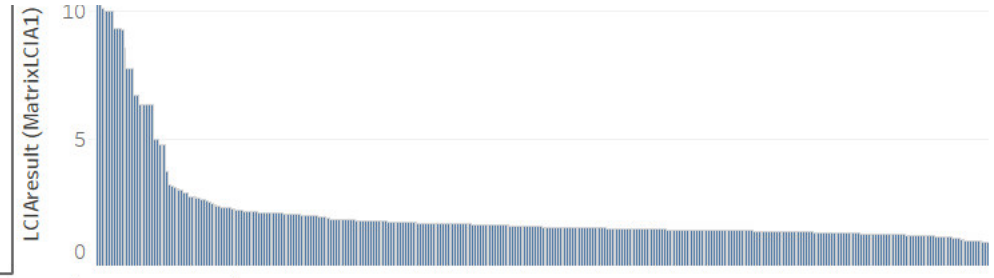
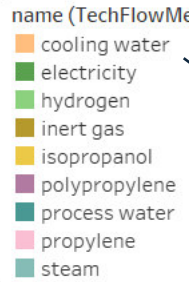


3. Trade data example: Imports to China









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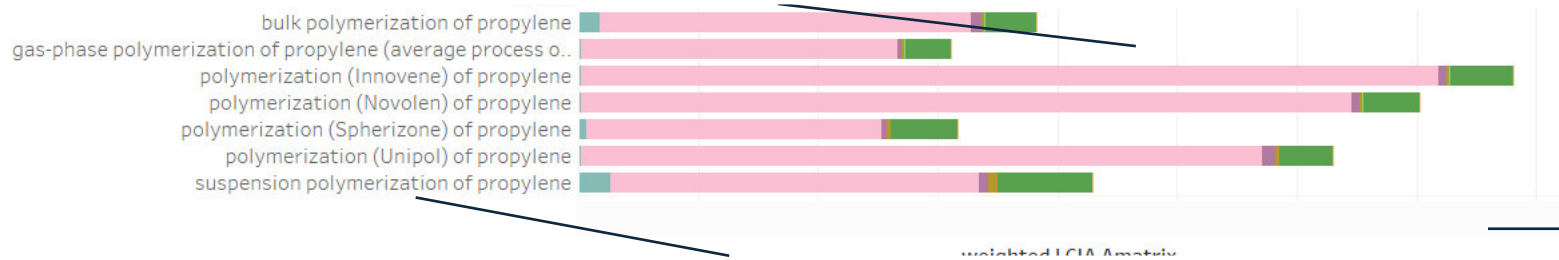

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Modeling of industrial relevant technologies

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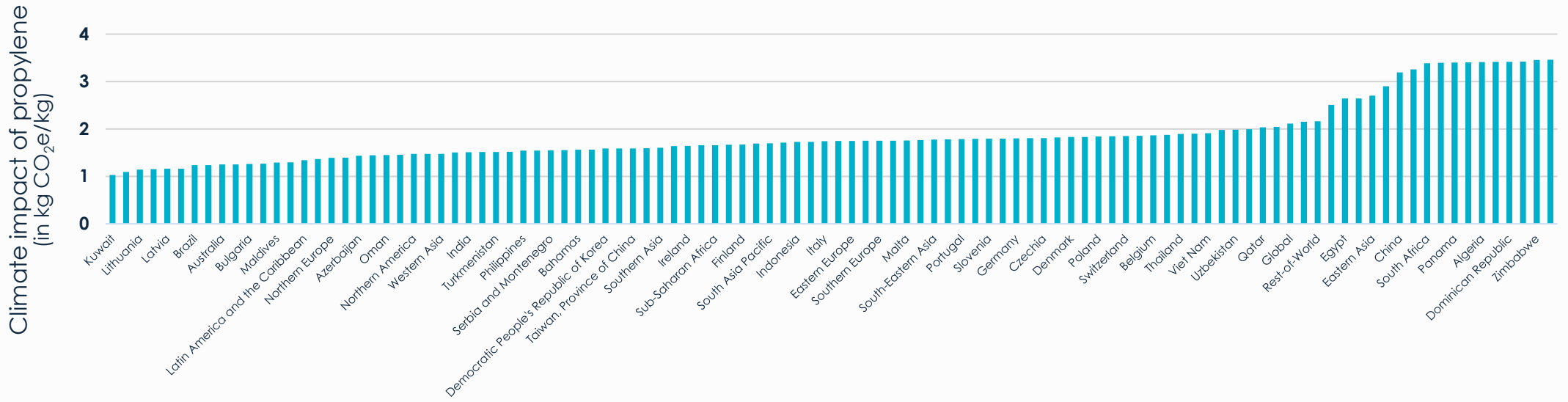
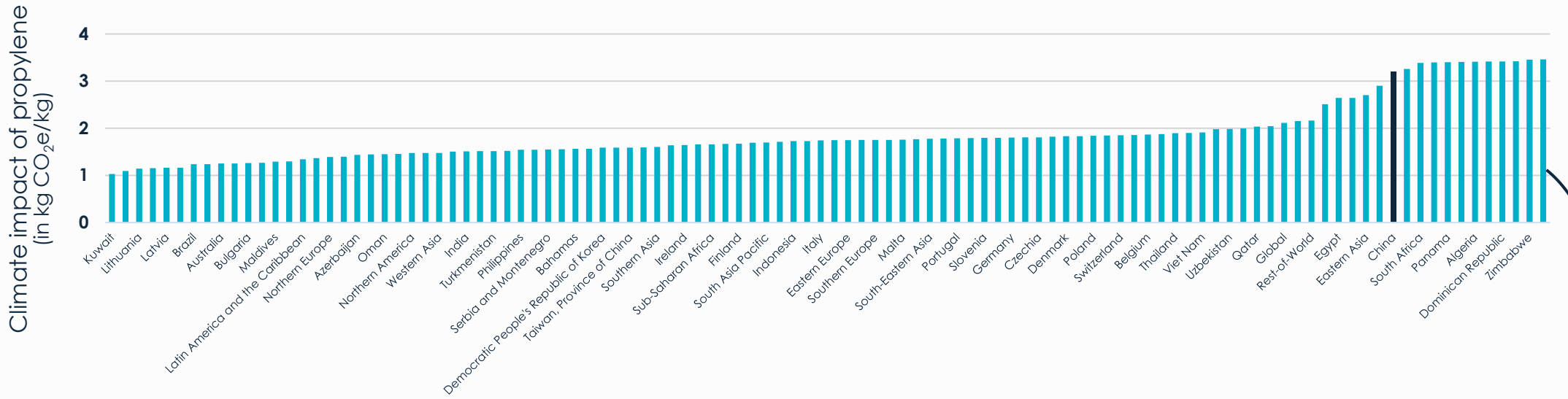
Okay, I understood more but what can I now actually do with this data?

LCA practitioners

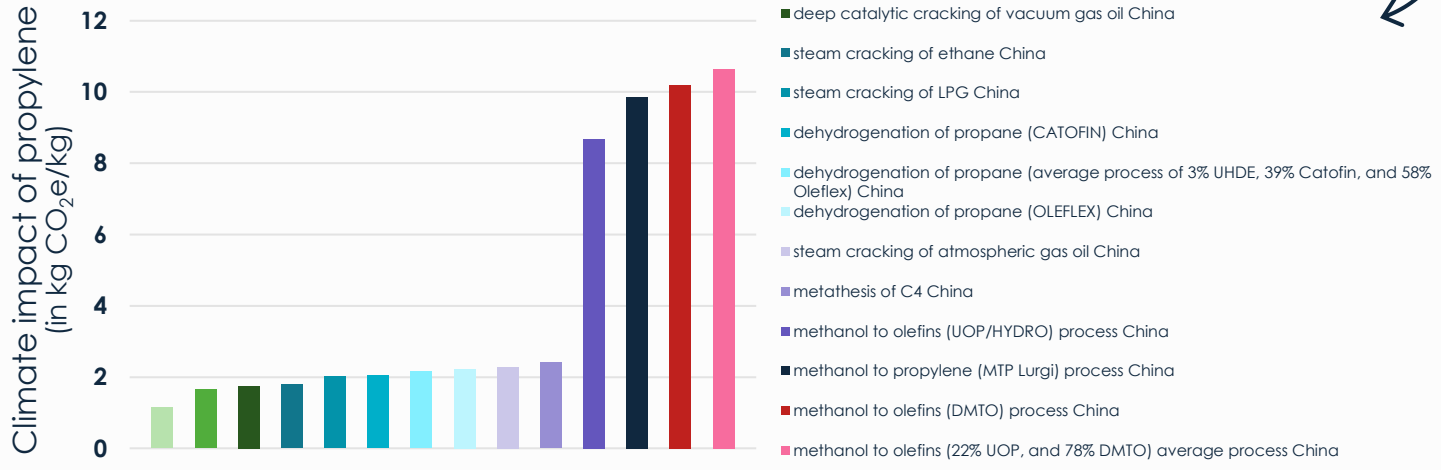
Choose your raw material wisely with cm.chemicals – **propylene as raw material for plastic**



Choose your raw material wisely with cm.chemicals – **propylene as raw material for plastic**



Technologies in China



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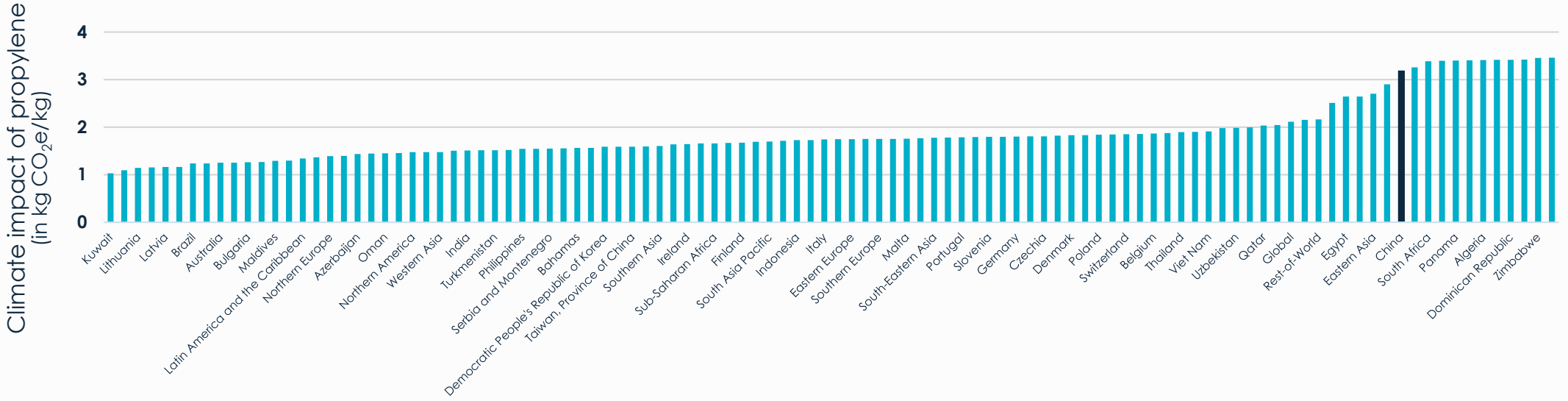
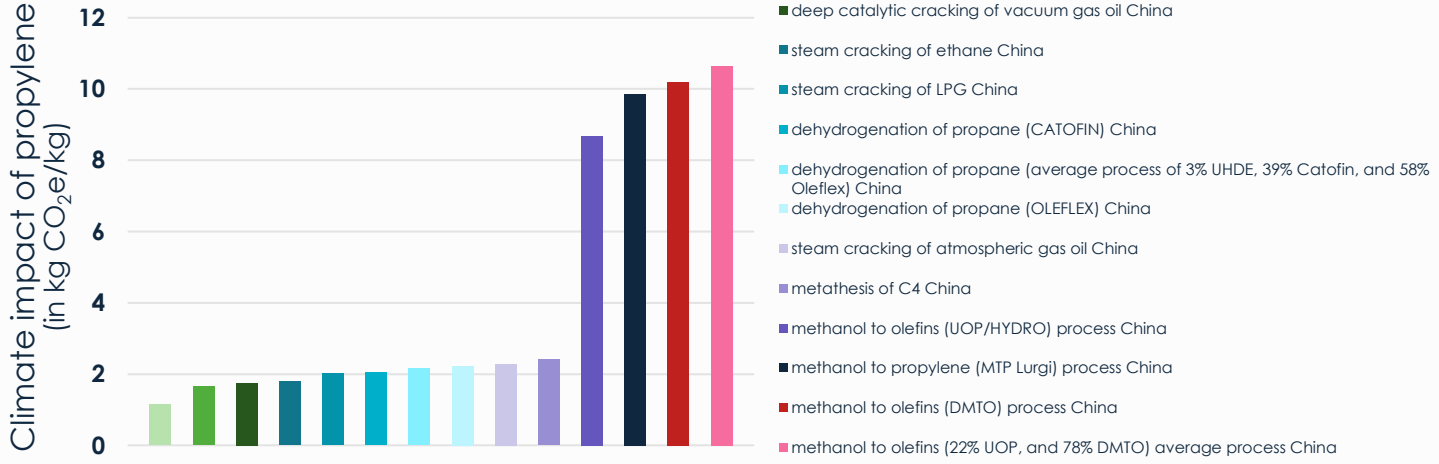


Identify differences in environmental impacts between countries…

Technologies in China



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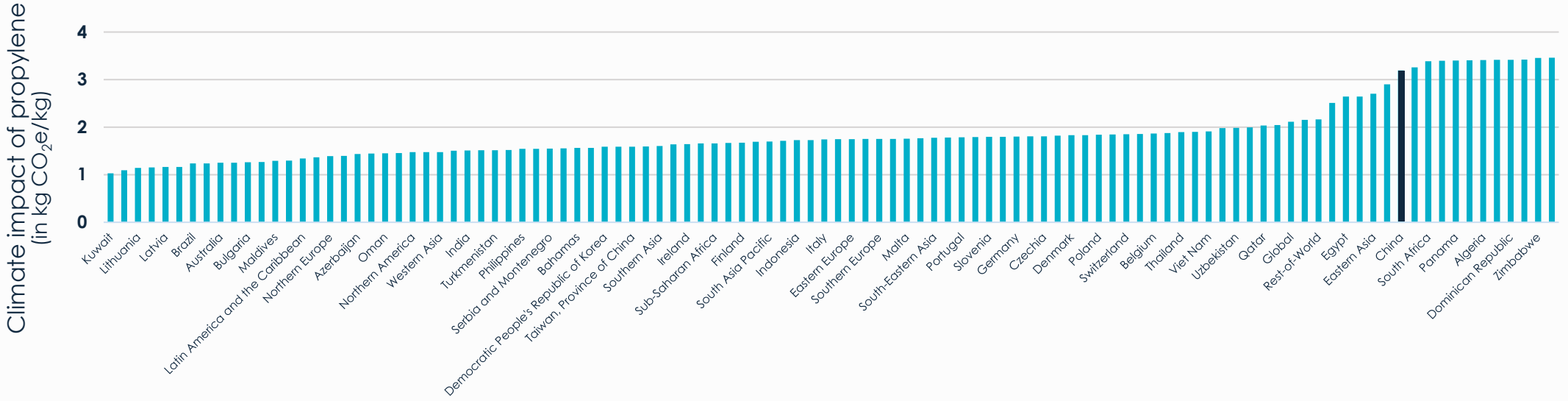
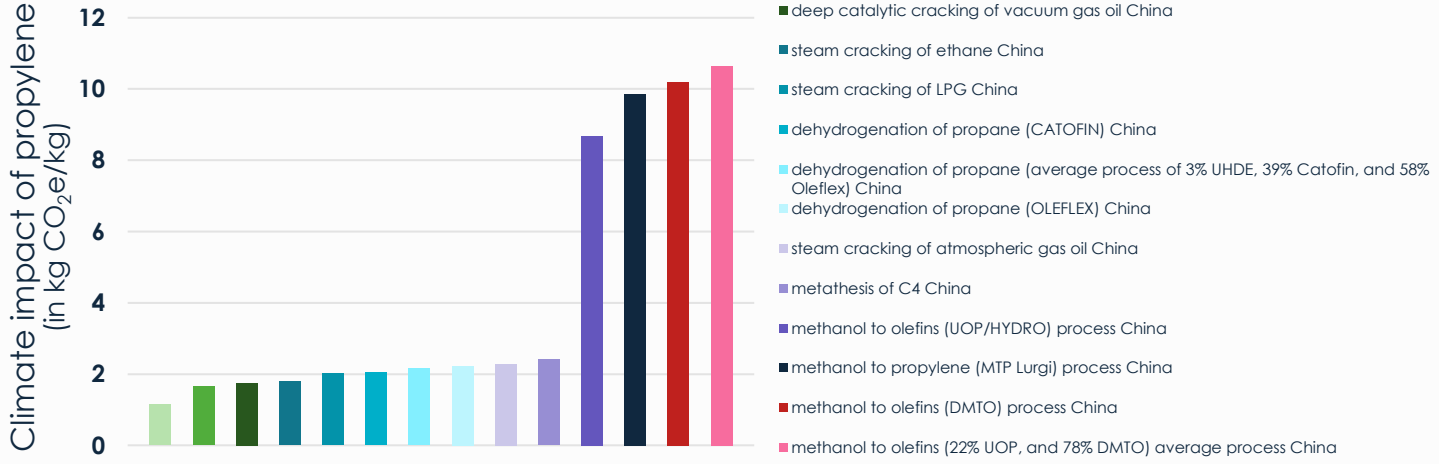


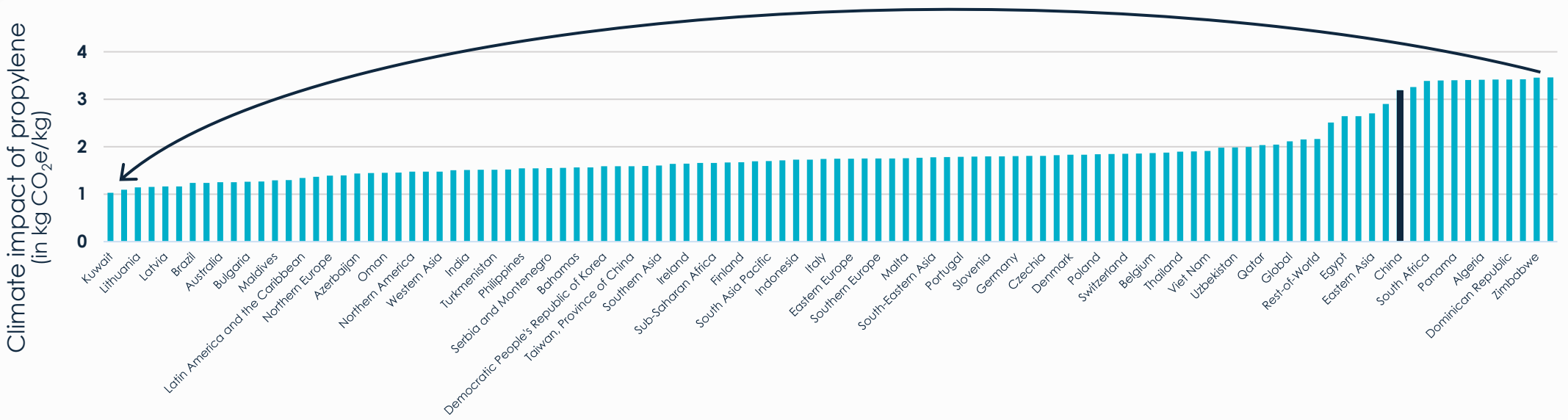
Identify differences in environmental impacts between countries…

…explore differences between technologies

Technologies in China



Choose your raw material wisely with cm.chemicals – **propylene as raw material for plastic**

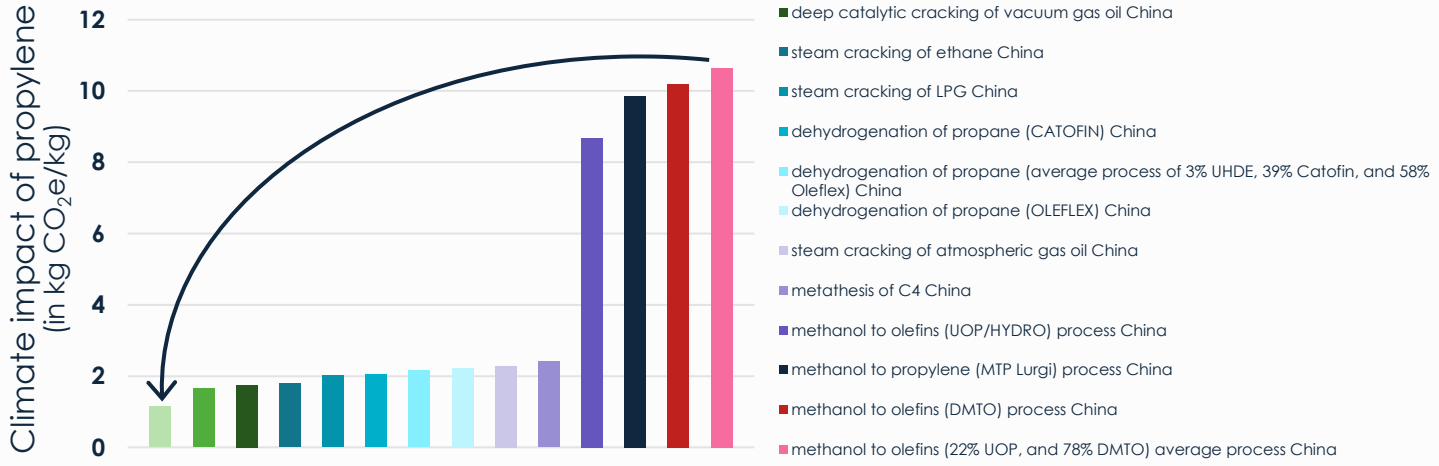


Identify differences in environmental impacts between countries…

…explore differences between technologies

Find reduction opportunities TODAY!

Technologies in China



Conclusion: Did the chemical value chain and LCA community forget about data?

Thank you for your attention.

Let us stay in touch!

RAOUL MEYS

E-Mail: raoul.meys@carbon-minds.com
Web: www.carbon-minds.com

Stay in touch:

linkedin.com/in/raoulmeys
linkedin.com/company/carbon-minds