



# Assessing the Environmental Impact of Products: *The Role of Data Quality in Ecolabels*

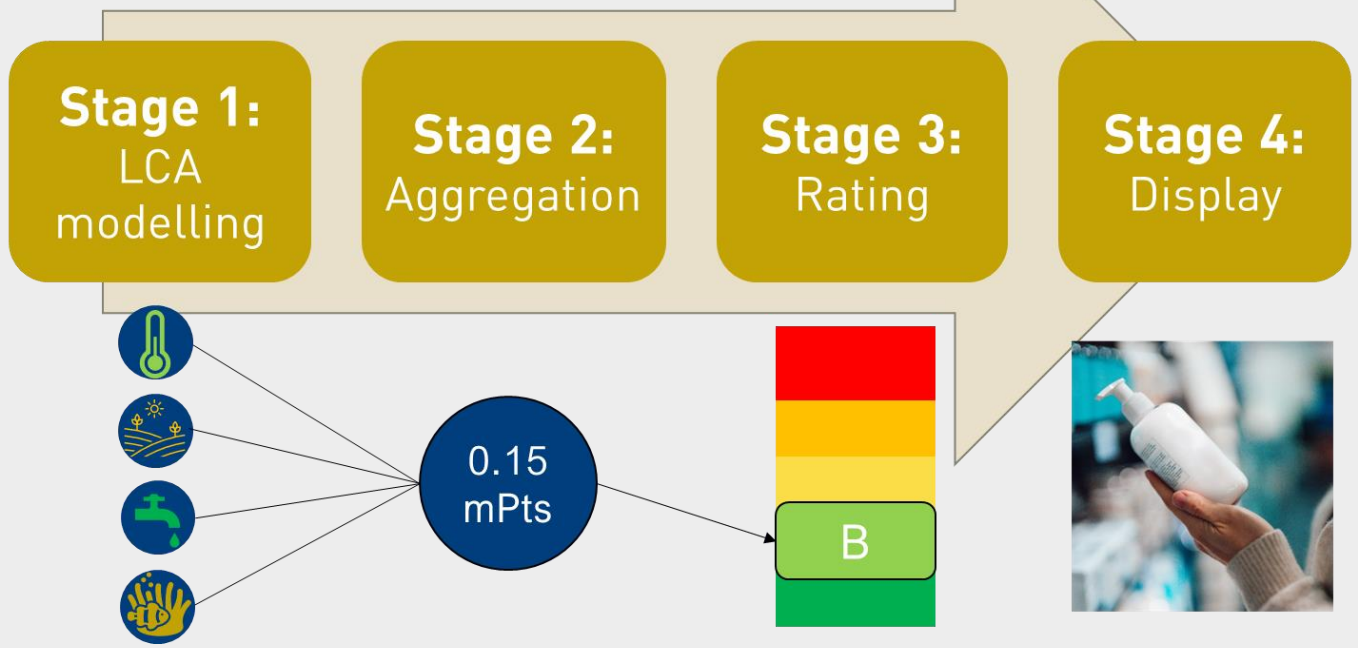
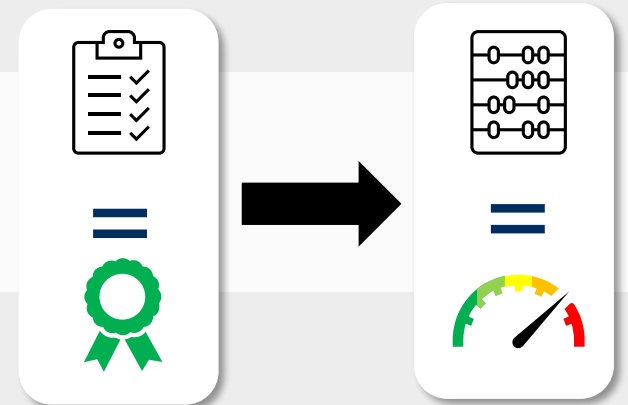


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# A new type of ecolabel, based on LCA

▶ ▶ ▶ From assessing practice to measuring impacts: emergence of **environmental rating ecolabels (ERE)**



▶ ▶ ▶ LCA results are turned into performance rating(s)

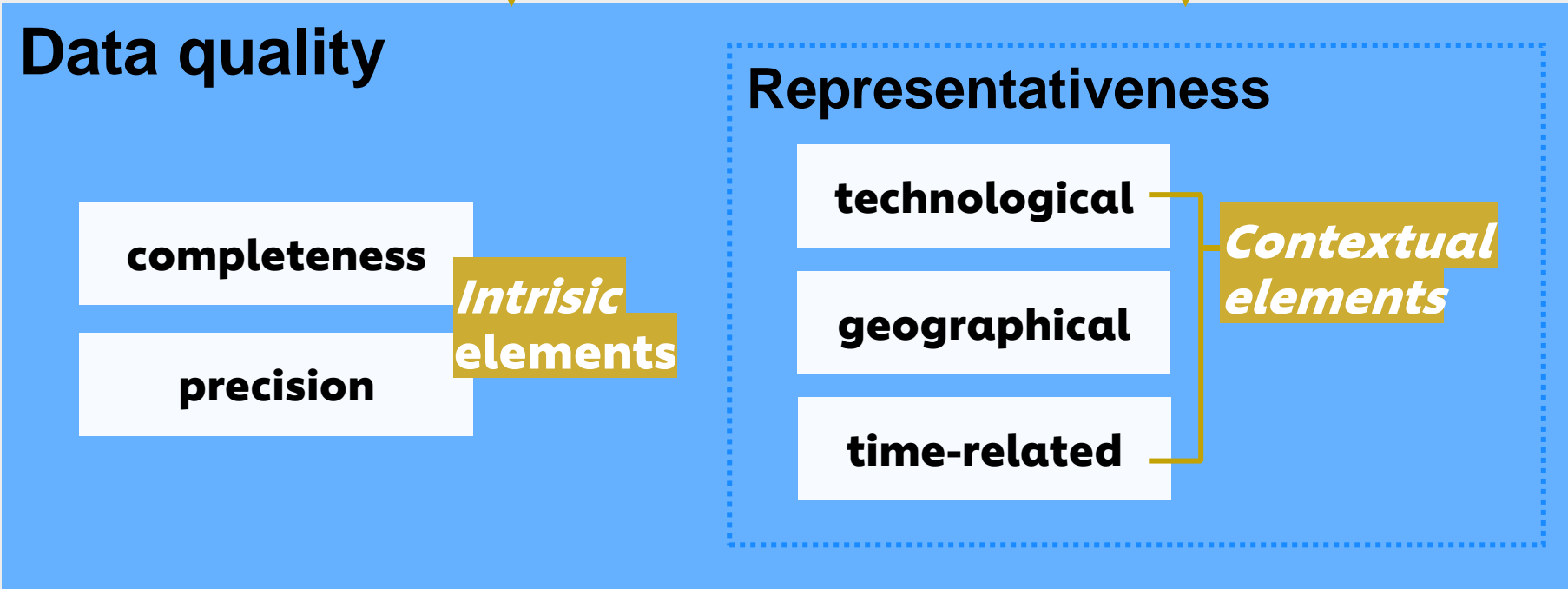
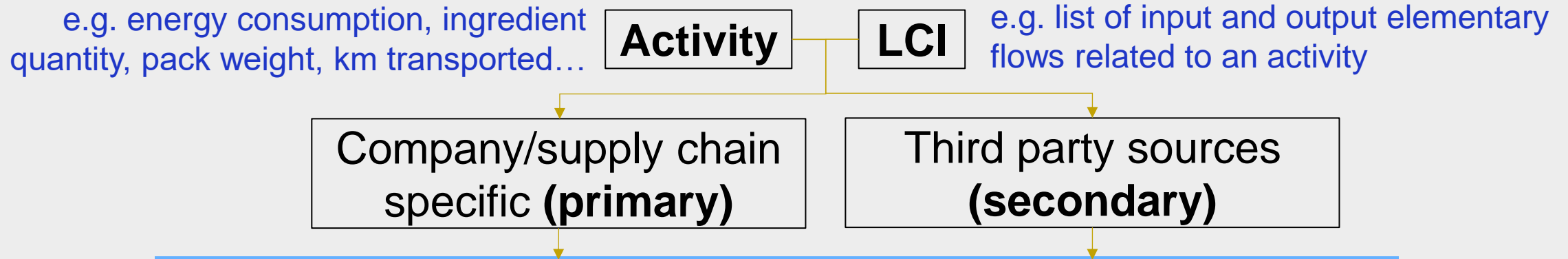
▶ ▶ ▶ ERE aim to promote sustainable consumption

# The data challenge



- » Data quality is an '***elusive element in LCA***' (Edelen and Ingwersen, 2018)
- » In ERE, **balancing feasibility at scale** and robust data quality management systems is challenging
- » **Data rules** were found to be missing from most proposed schemes (Courtat et al., 2023)
- » Going **beyond a binary view** (primary vs secondary data) is necessary

# Types, origin and specificity of LCA data



# Types, origin and specificity of LCA data

e.g. energy consumption, ingredient quantity, pack weight, km transported...

**Activity**

**LCI**

e.g. list of input and output elementary flows related to an activity

Encourages product differentiation in ERE

Company/supply chain specific **(primary)**

Third party sources **(secondary)**

## Data quality

**completeness**  
**precision**

*Intrinsic elements*

## Representativeness

**technological**  
**geographical**  
**time-related**

*Contextual elements*

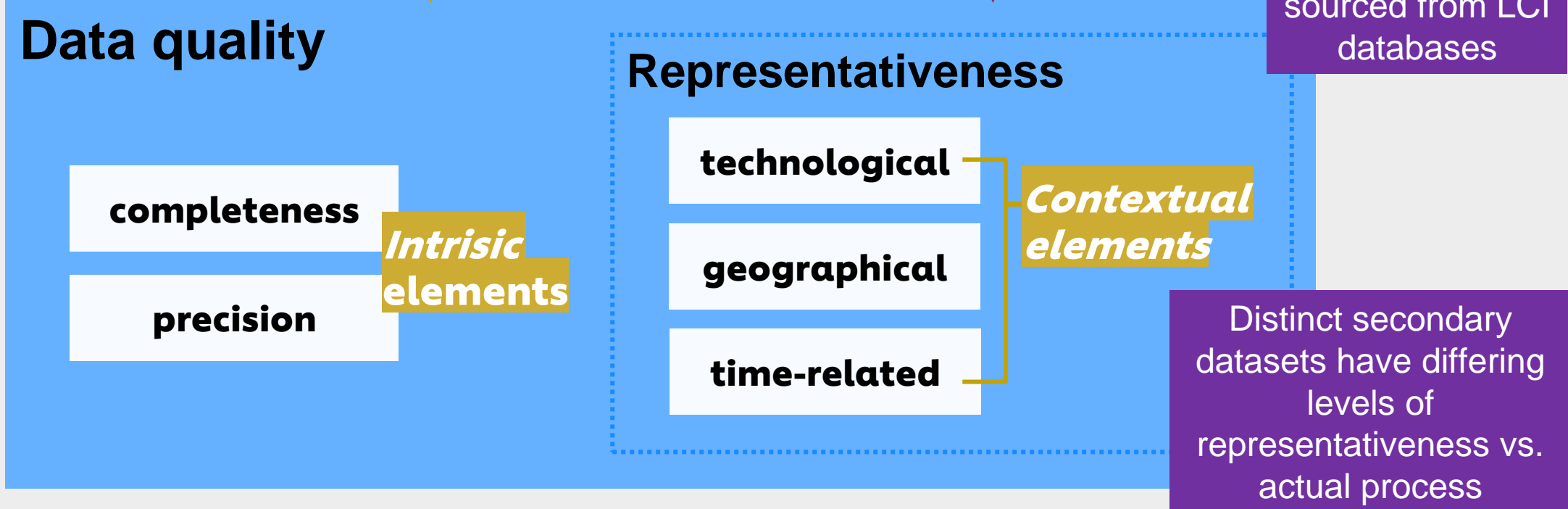
# Types, origin and specificity of LCA data

e.g. energy consumption, ingredient quantity, pack weight, km transported... **Activity** **LCI** e.g. list of input and output elementary flows related to an activity

Company/supply chain specific **(primary)**

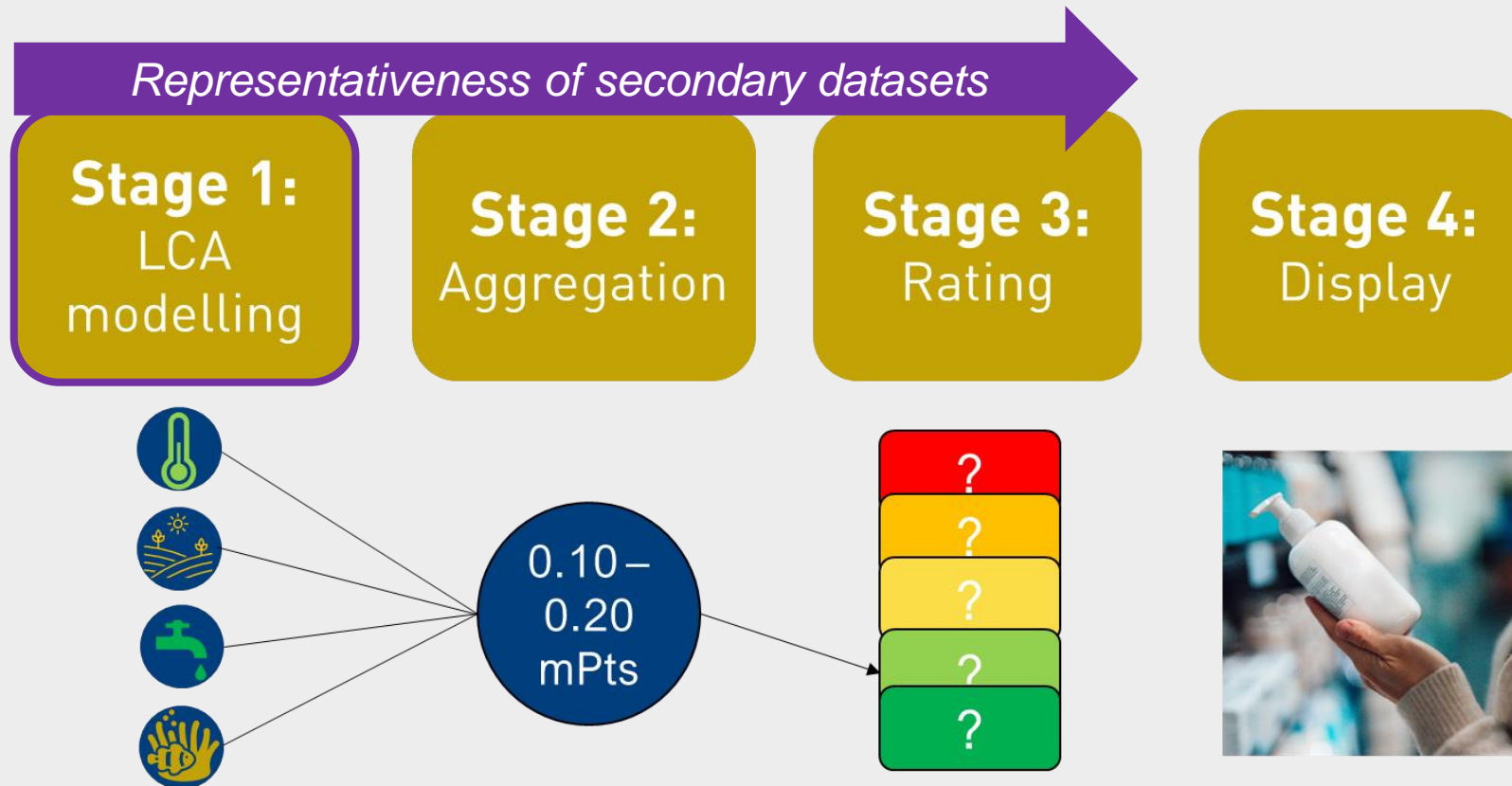
Third party sources **(secondary)**

Lists of elementary flows are usually sourced from LCI databases



# Research question

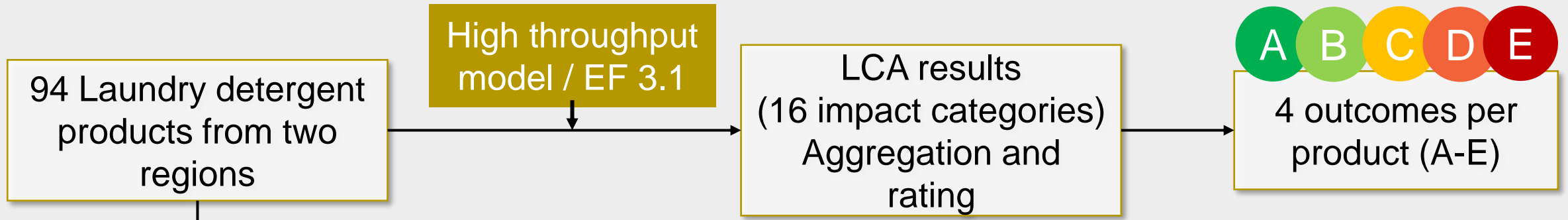
» Does using secondary datasets of **various representativeness** influence the environmental **ratings** awarded to products under ERE schemes?





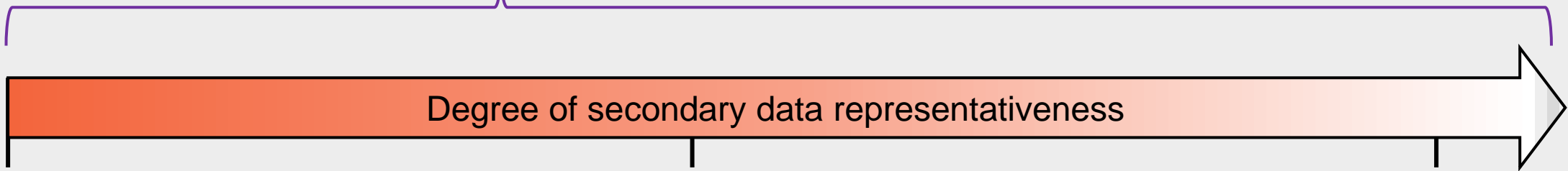
# Methods

## Simulating rating outcomes under four scenarios



19 key ingredients

4 data scenarios



Generic  
e.g. 'chemicals, organic'

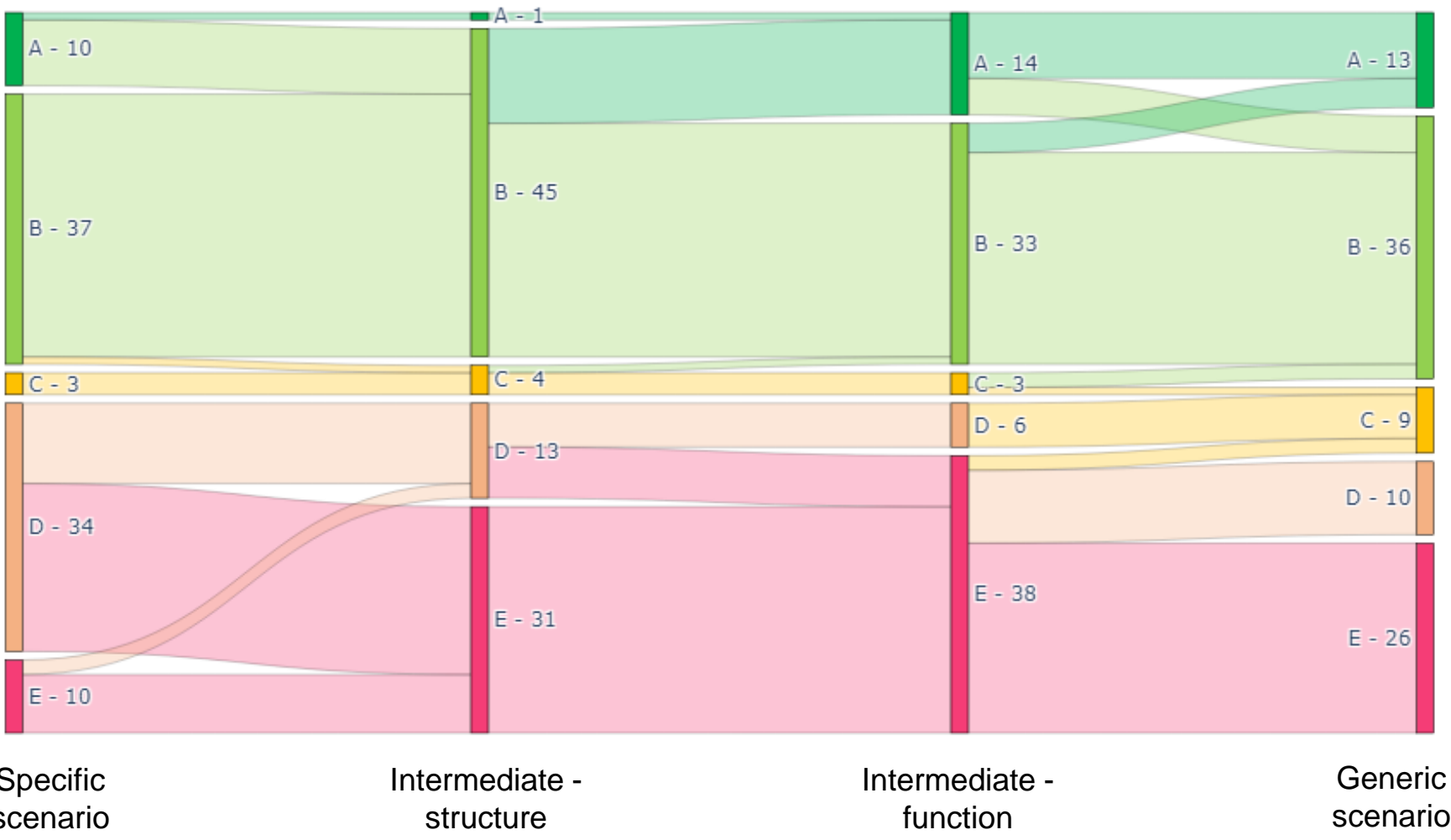
2 x Intermediate  
**chemical structure / function**  
e.g. 'Monoethanolamine' / 'Sodium hydroxide'

Specific  
to **substance** / region  
e.g. 'Triethanolamine'



# Results

## Product rating outcomes vary across data scenarios



Compared to the most specific scenario (left):

- » **60%** of products have a different rating in at least one scenario
- » 17% have a different rating in **all** other scenarios
- » Most are one-class differences

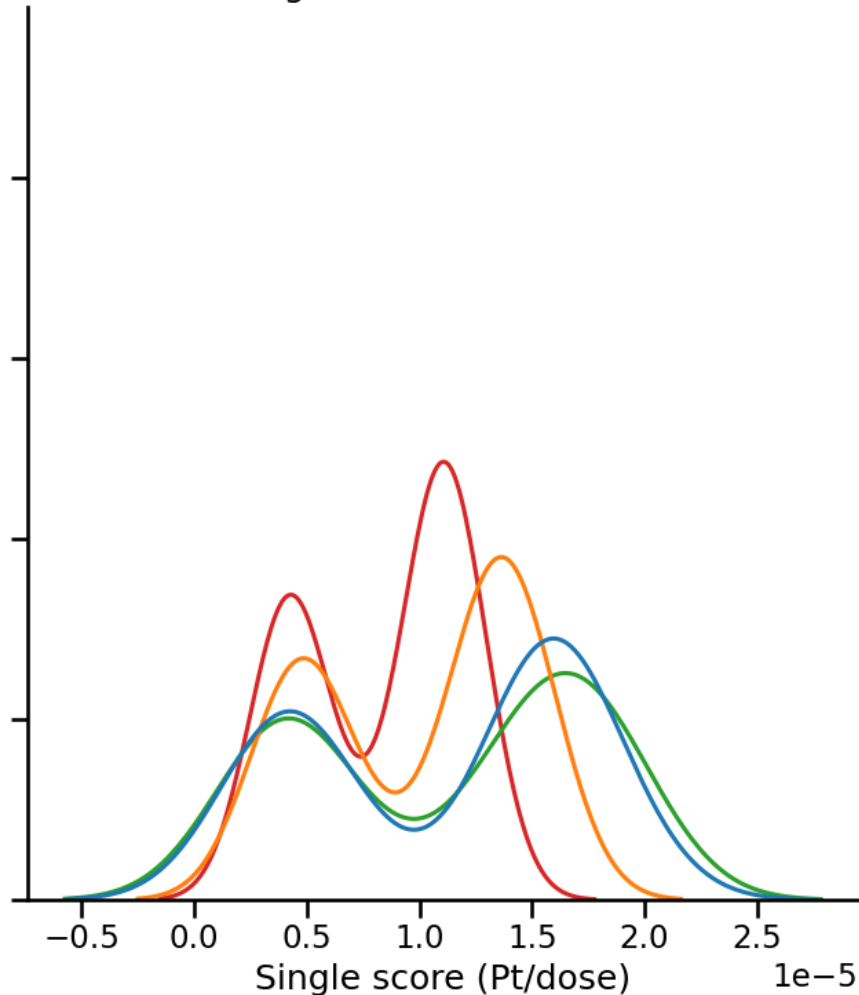
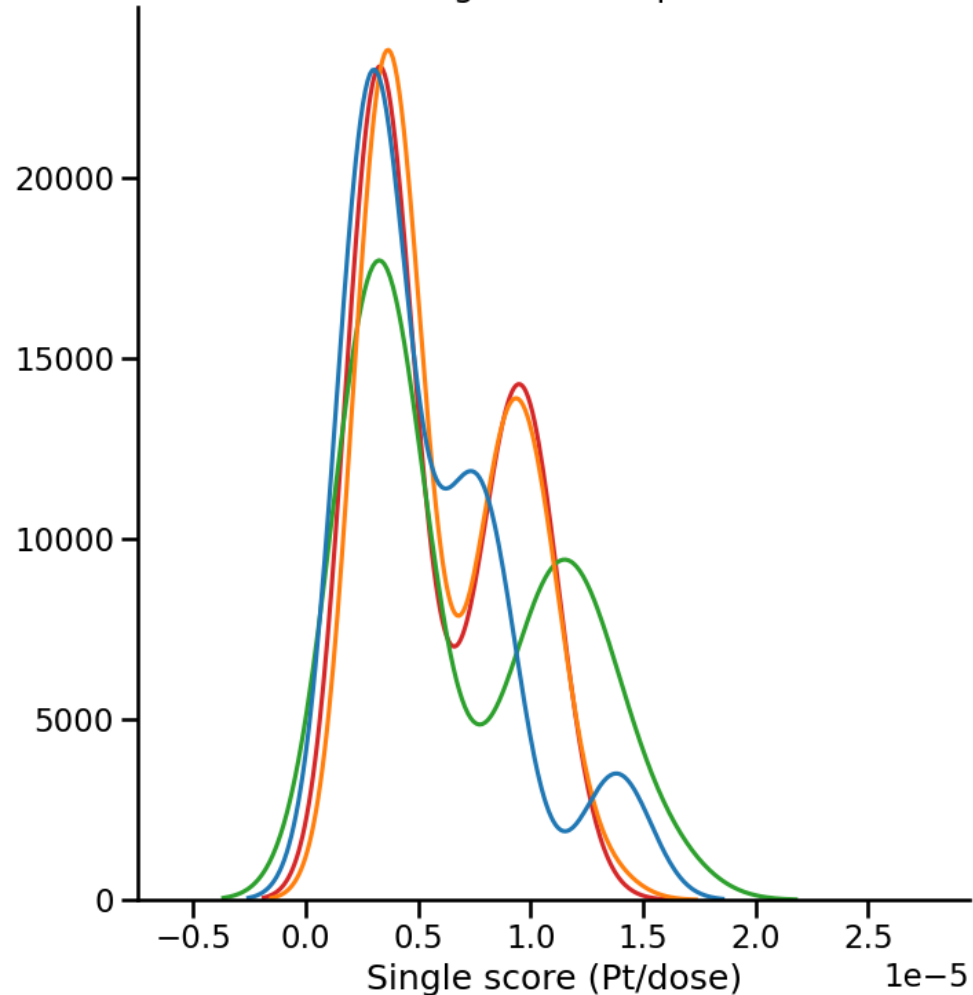
# Results

Single score deviation is highest in function scenario



Region = Europe

Region = Latin America



- scenario
- generic
  - intermediate - chemical structure
  - intermediate - function
  - specific

# Conclusion



## Insights

- » Specificity of secondary LCI datasets affects rating outcomes
- » Mapping chemical substances through function leads to highest variability in midpoint results



## Recommendations

- » Evaluate the representativeness (technology, time, geography) of secondary datasets used in LCA calculations
- » Implement specificity thresholds at product level, reflecting key sector considerations
- » Explore the relationship between representativeness and uncertainty

# Thank you!

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