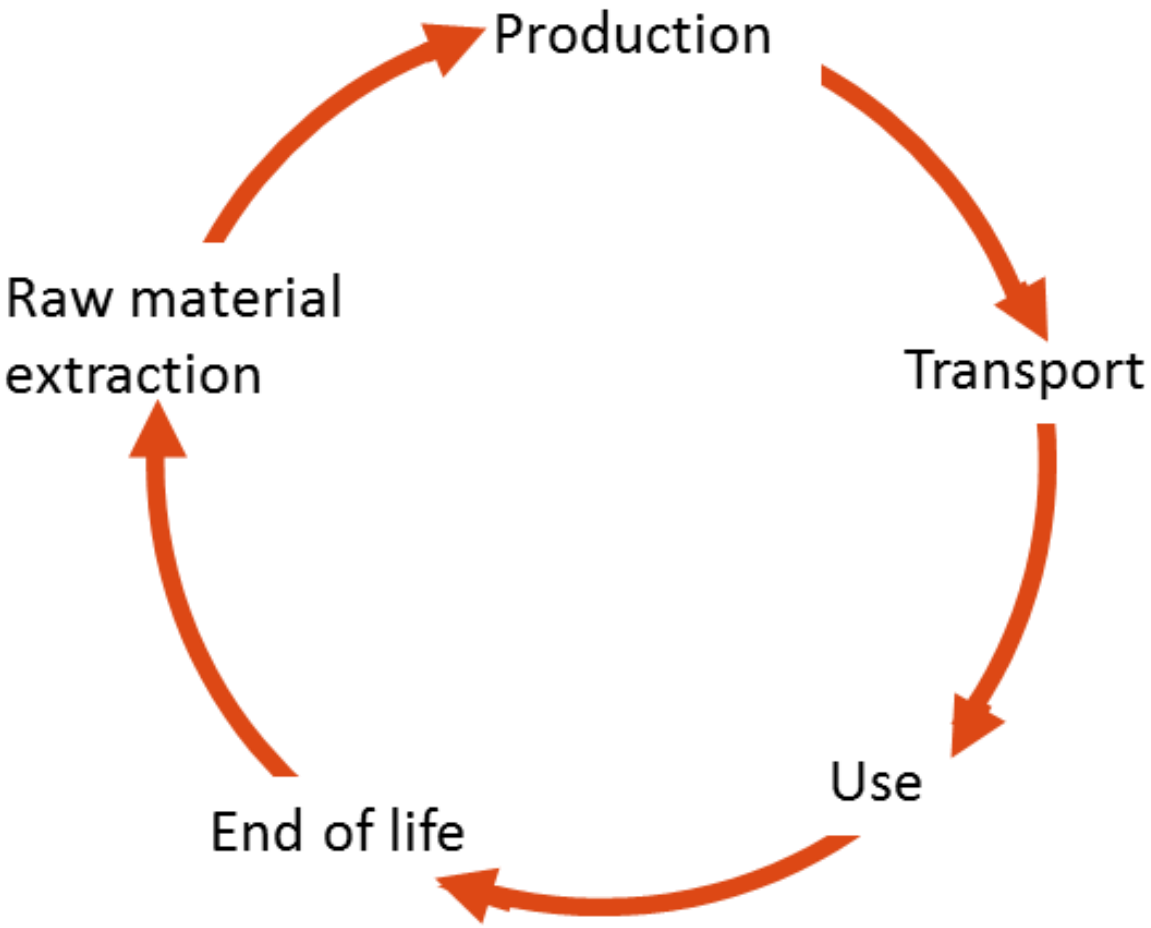
LCA


Production
Transport
Use
End of life
Raw material extraction

gettyimages
Paul Taylor

Water footprint and regionalization: the case study of Walloon corn

Saïcha Gerbinet, Florence Van Stappen and Angélique Léonard
saicha.gerbinet@ulg.ac.be
Products, Environment, and Processes (PEPs)
Department of Chemical Engineering
Université de Liège
www.chemeng.uliege.be

Life Cycle Assessment

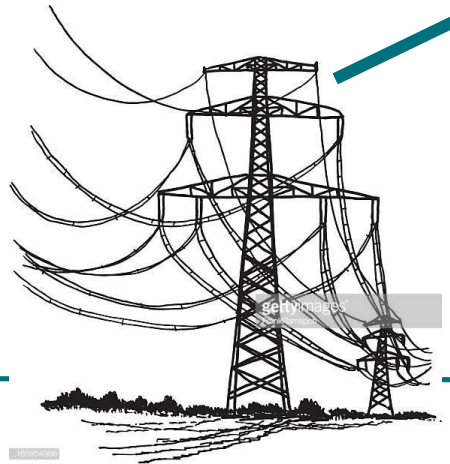
- Defined by ISO 14040 – 14044 standards

Goal and Scope definition

Functional Unit

- What?
- How much? **1 hectare of corn crop**
- How long? **During 1 year**
- How? **Traditional agricultural practices**

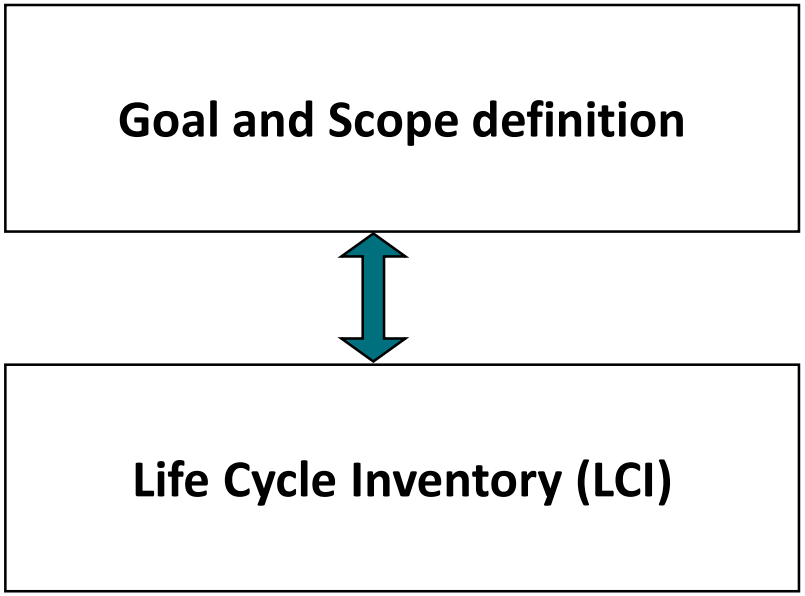
System boundaries



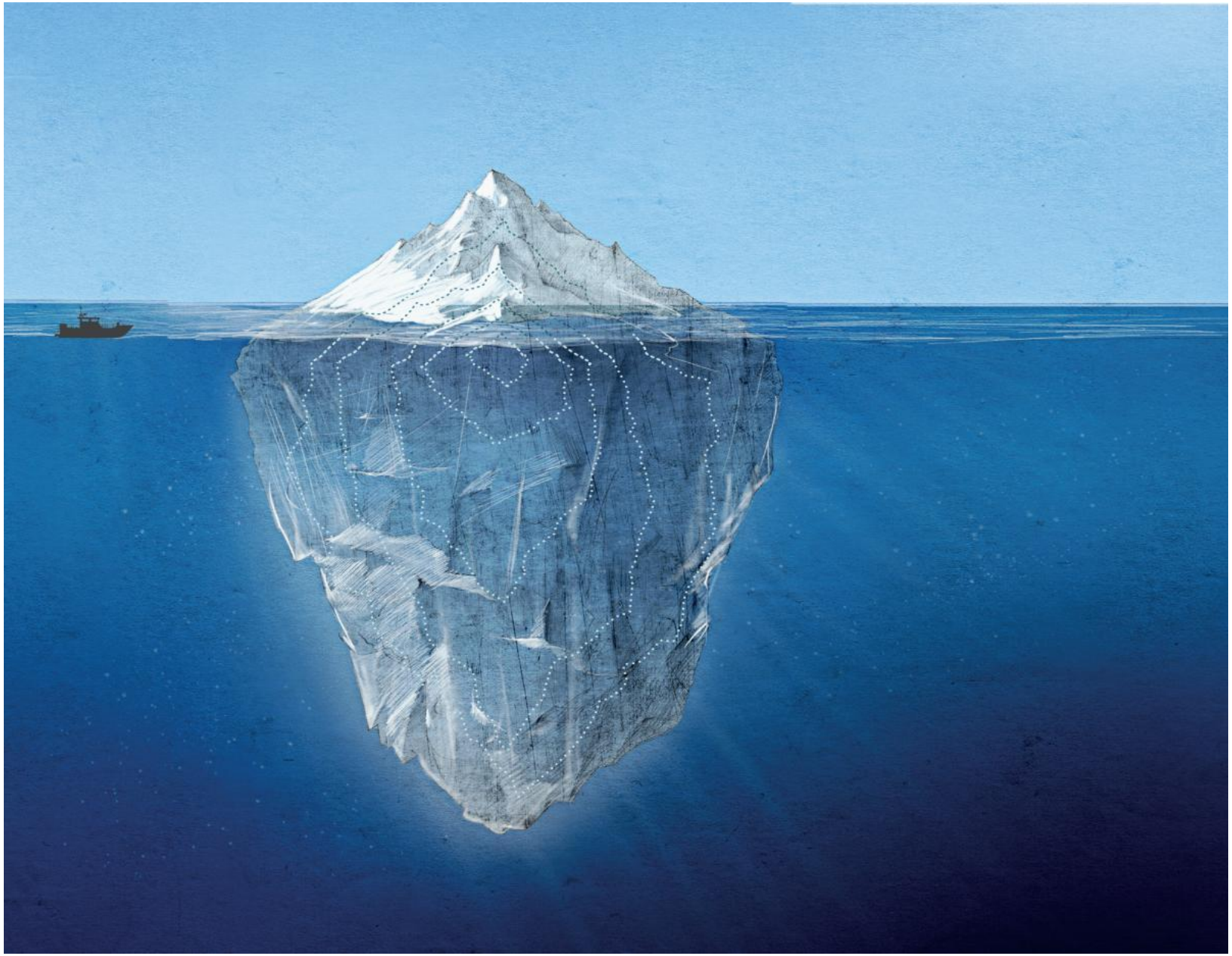
Field emissions

Life Cycle Assessment

- Defined by ISO 14040 – 14044 standards

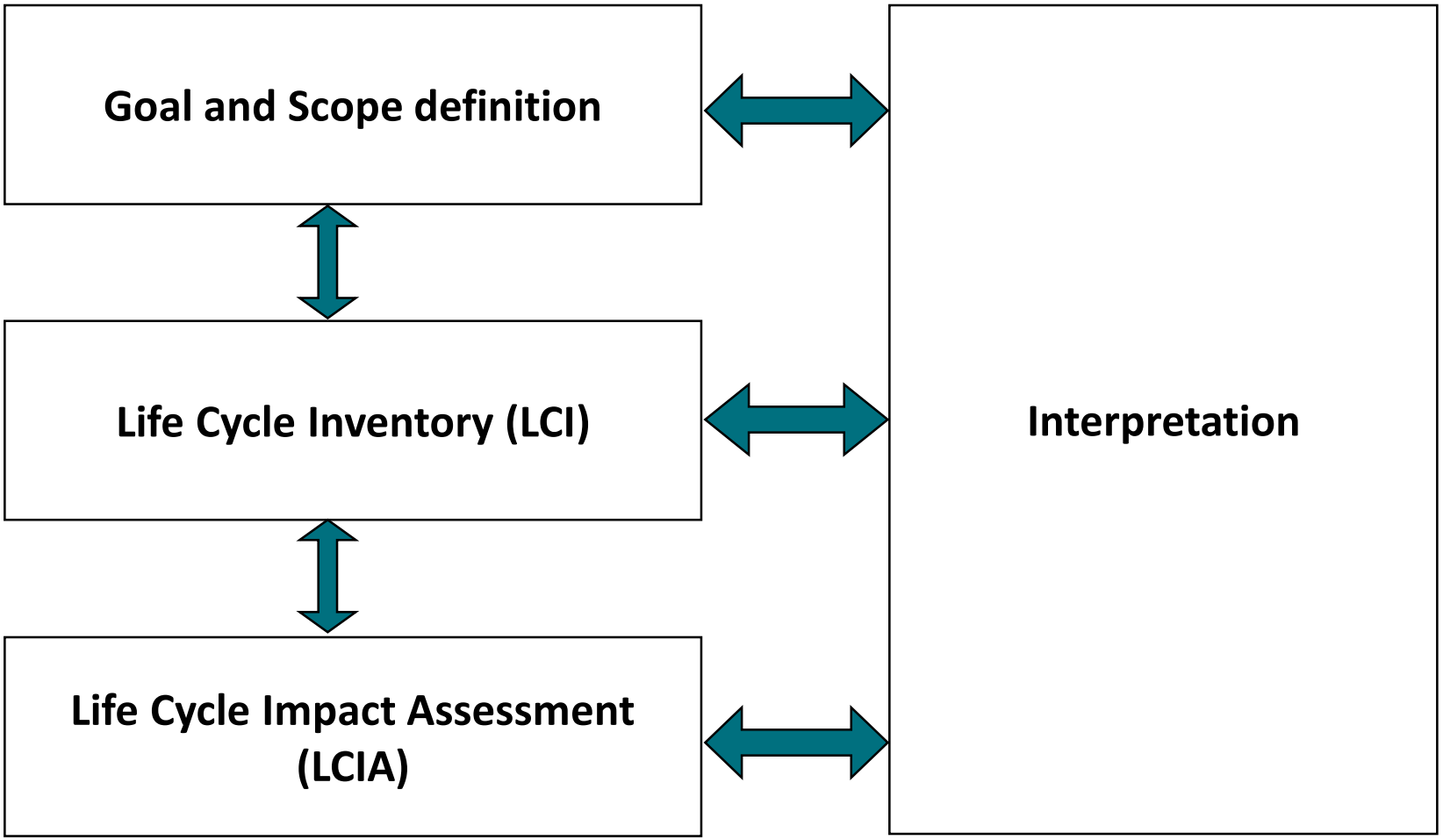


Data inventory: time consuming !



Life Cycle Assessment

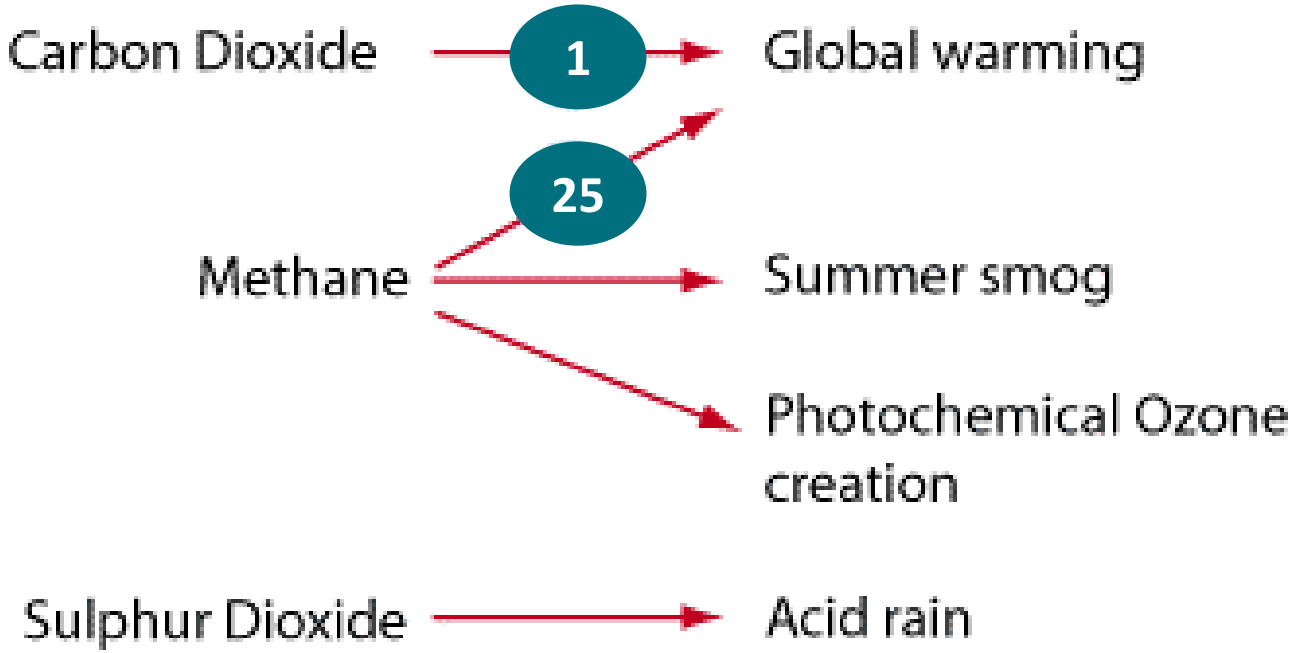
- Defined by ISO 14040 – 14044 standards



Impact evaluation

Impact evaluation - Characterization

Characterization factor (CF)



Software/database

thinkstep
GaBi

SimaPro

eco nvent

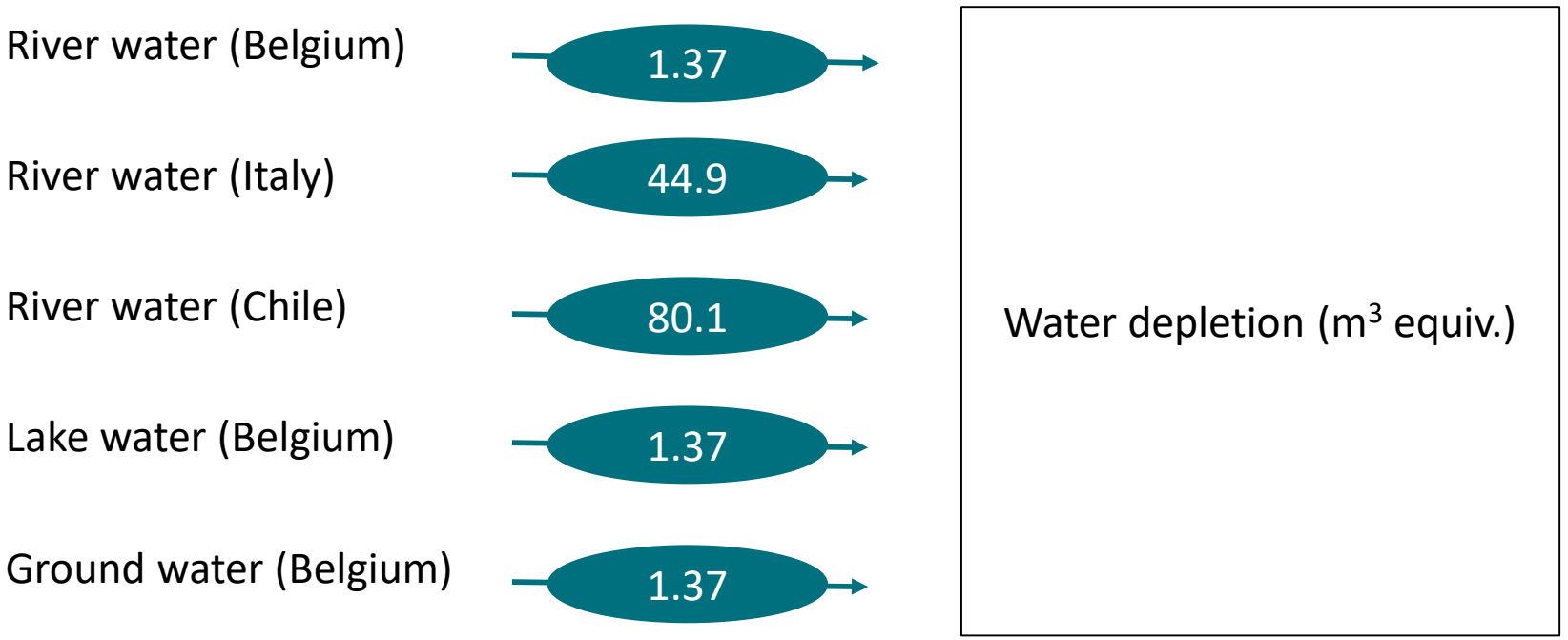
Specific data

In this study

- 3 methods:
  - AWARE
  - ILCD recommended
  - ReCiPe 2012

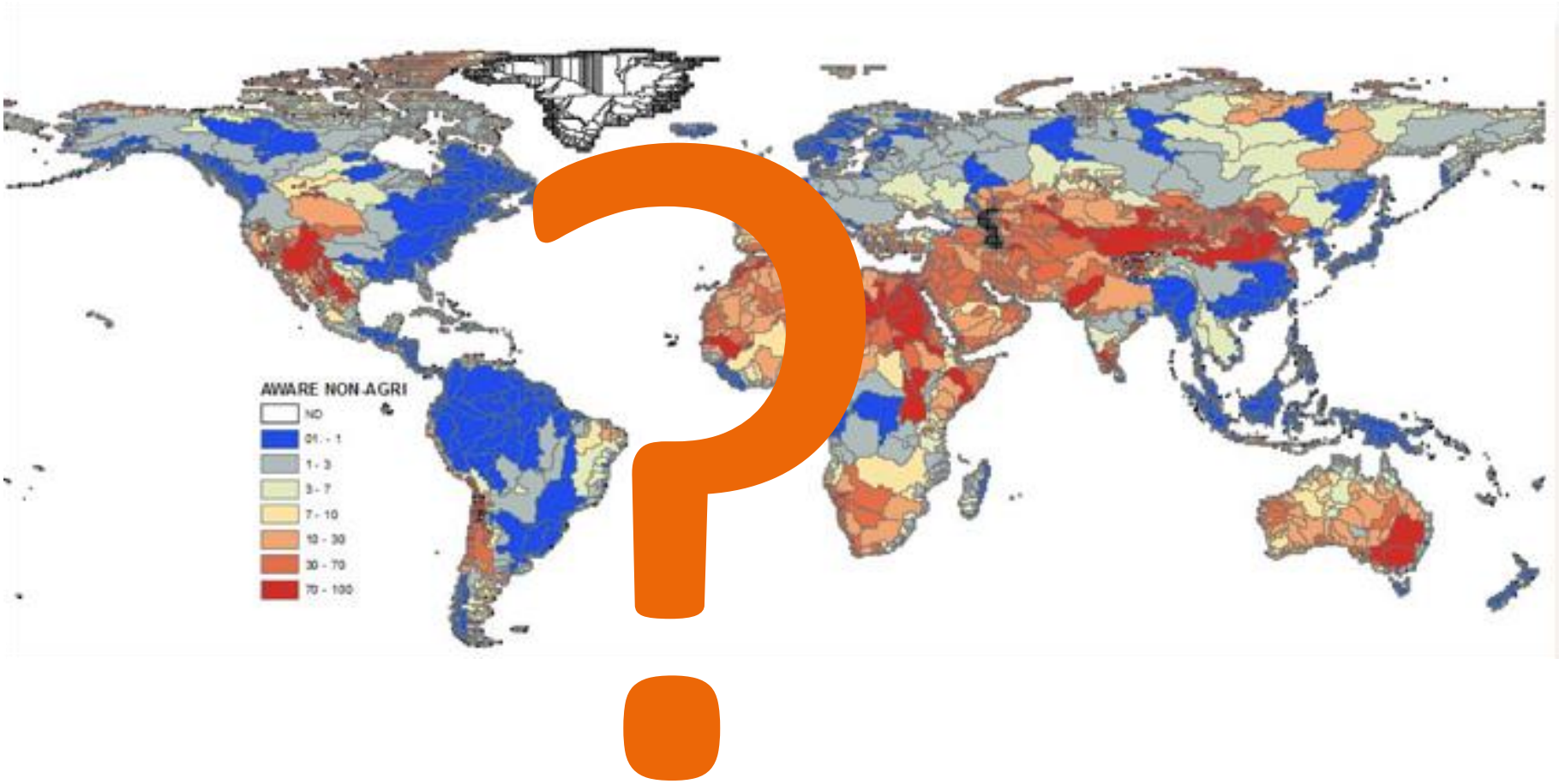
Impact evaluation - Characterization

Characterization factor (CF)
- AWARE



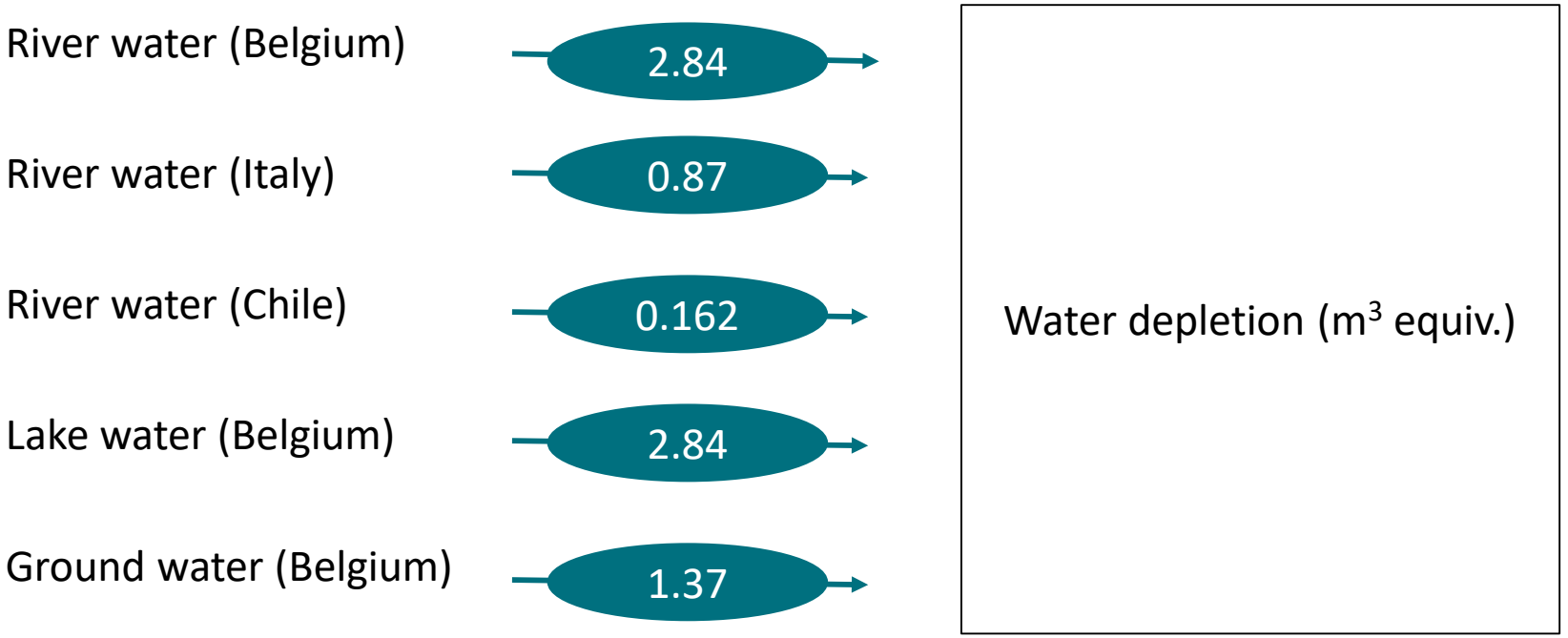
Available WAter REmaining

AWARE



Impact evaluation - Characterization

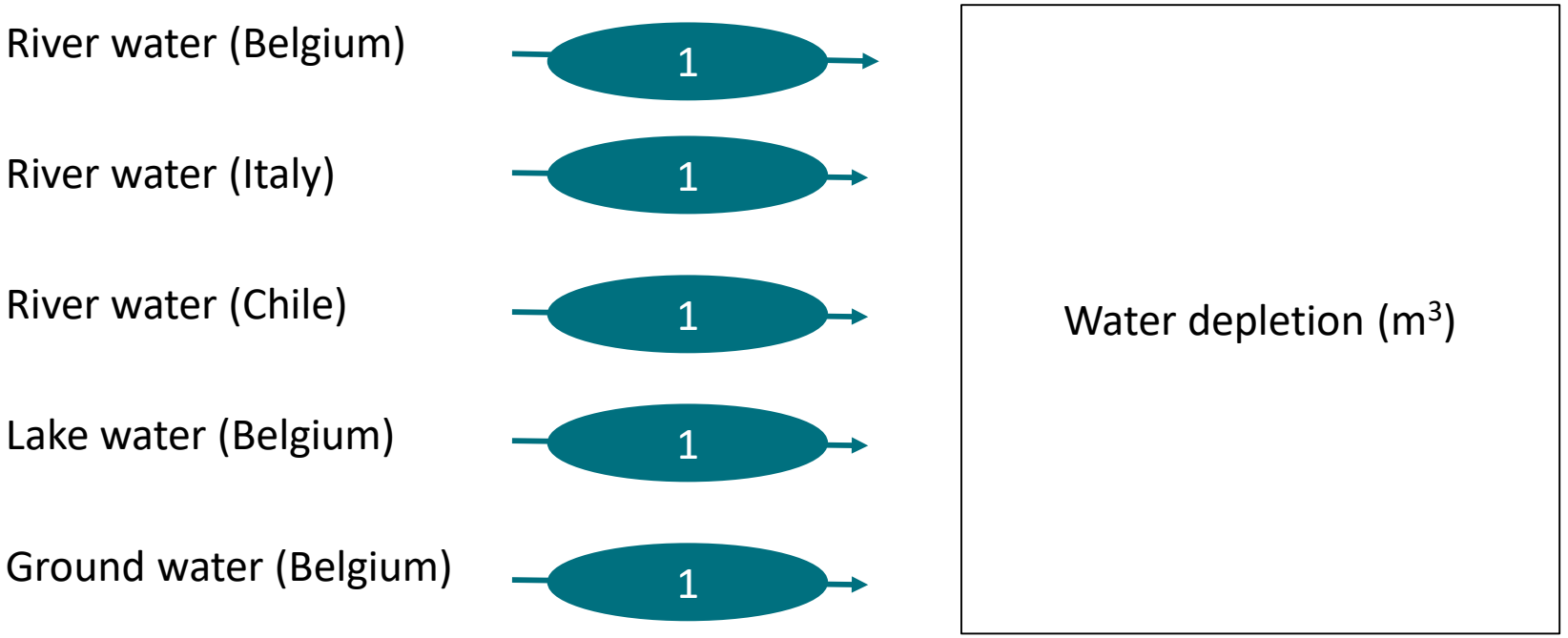
Characterization factor (CF)
- ILCD



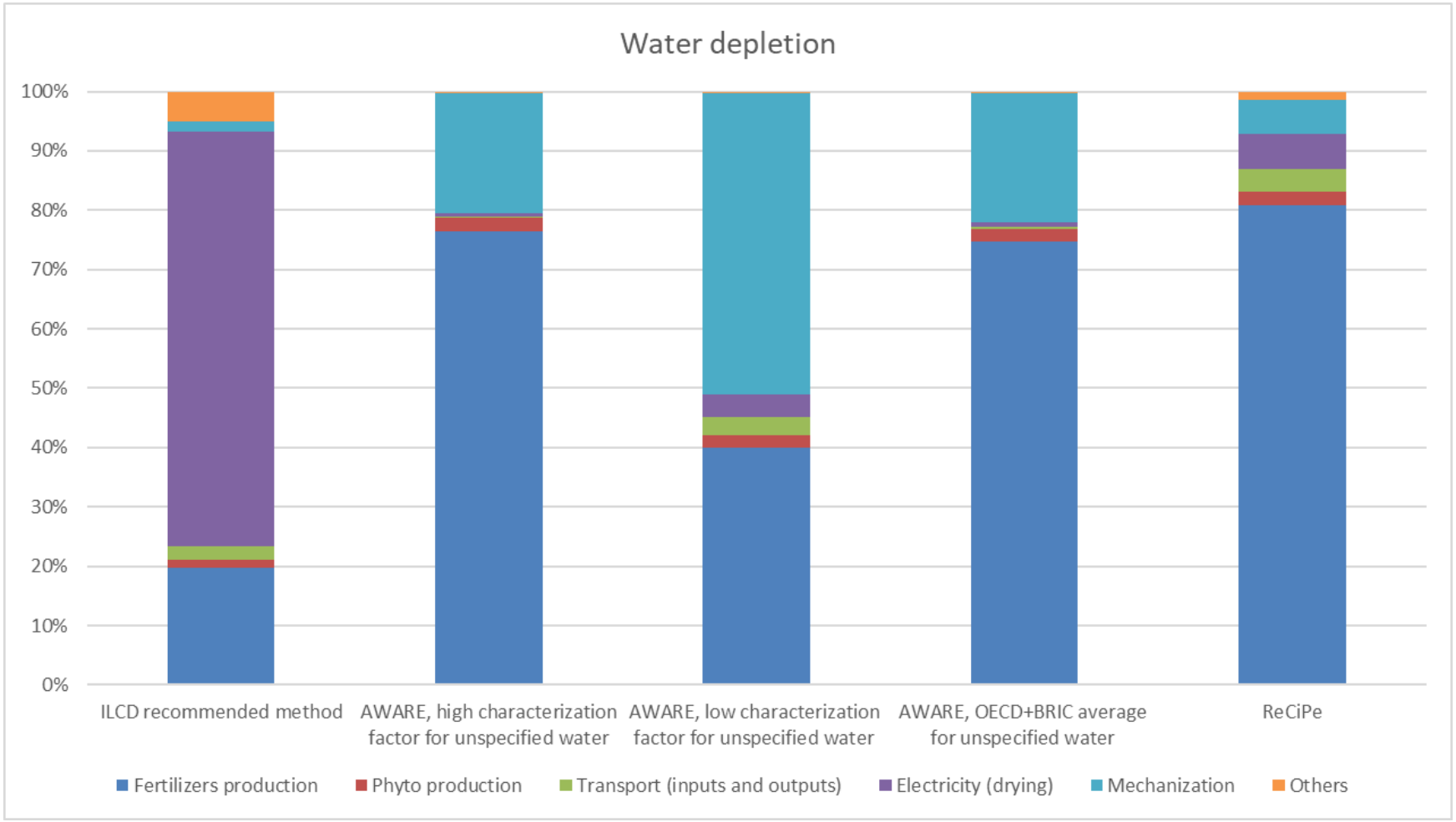
Based on the ration between water consumption and water availability

Impact evaluation - Characterization

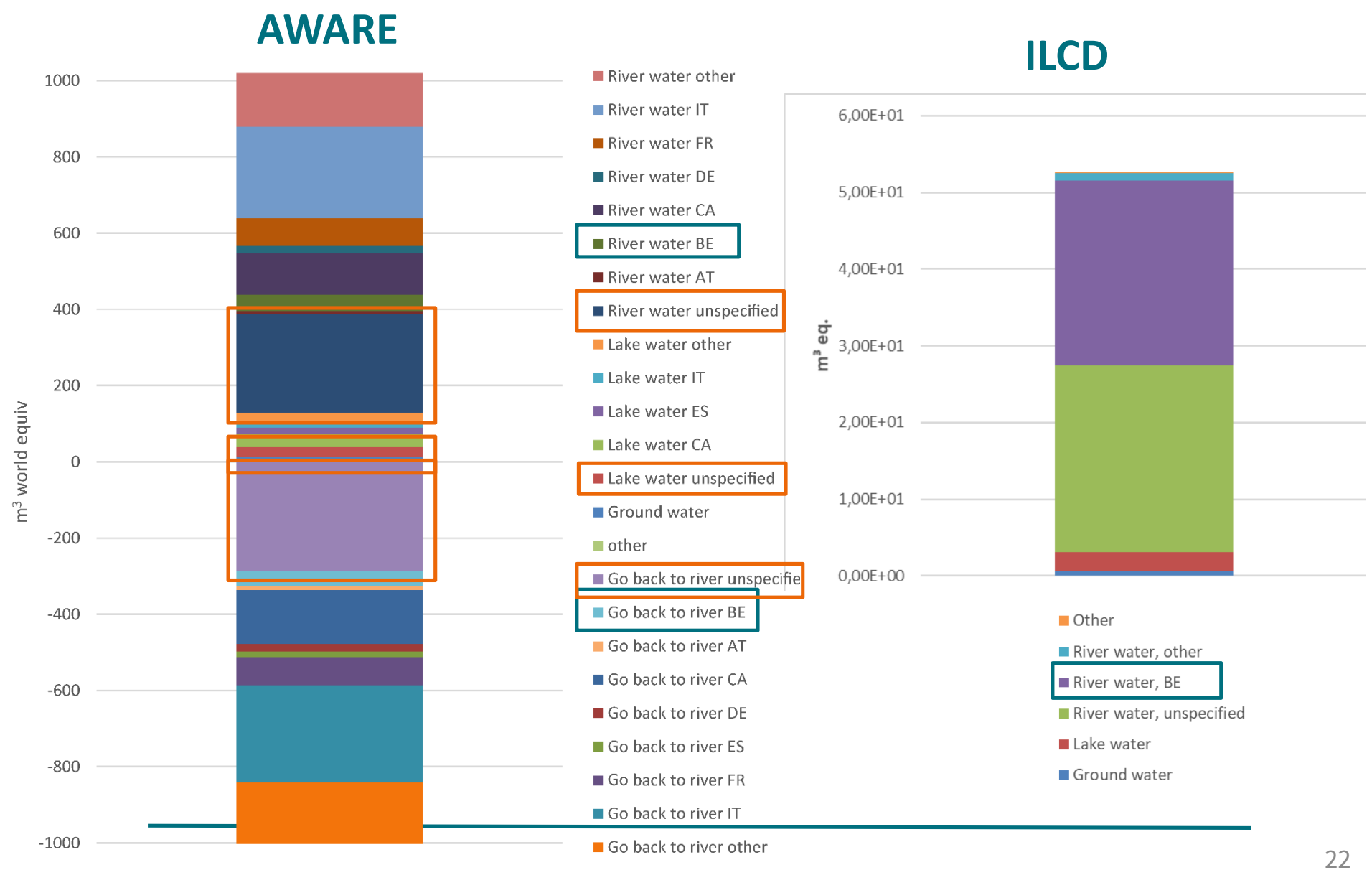
Characterization factor (CF)
- ReCiPe



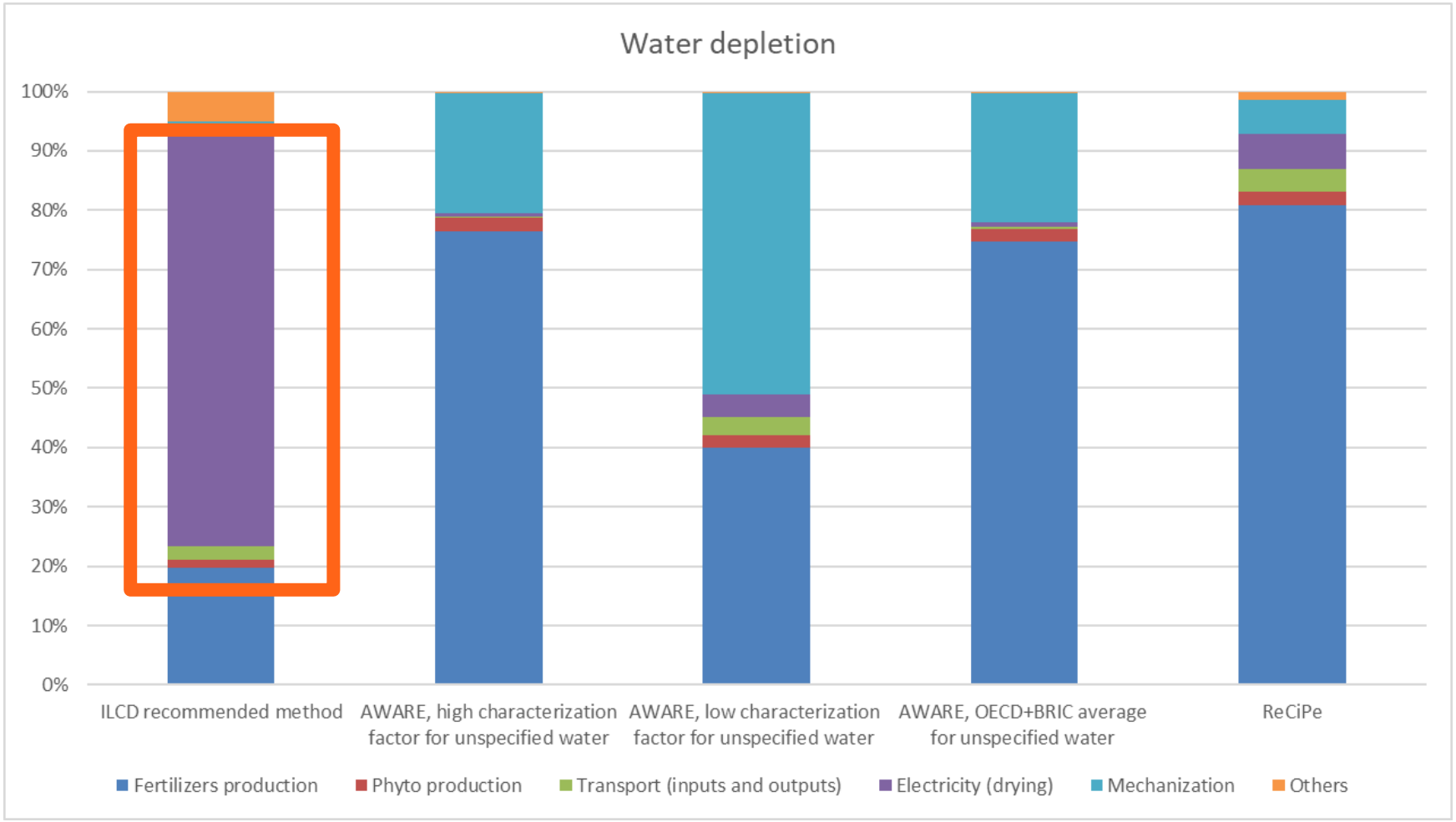
Water depletion



Water origin?



Water depletion



Nuclear electricity – 1 MJ

Inventory

	GaBi dataset in GaBi	Ecoinvent in GaBi	Ecoinvent in Simapro
Water input	0.0319	0.0486	0.0513
Water output	0.0314	0.0478	0.0504

X CF for Belgium: 2.84

X CF for unspecified water: 0.162

X CF for Belgium for ½ of the water

	GaBi dataset in GaBi	Ecoinvent in GaBi	Ecoinvent in Simapro
Total	0.0886	0.00353	0.0002
Water input	0.0886	0.00353	0.0703
Water output	0	0	-0.0701

Same dataset in two different software: different results!

Conclusions

Conclusions

- Different method: different definition of water depletion

➔ Choice the good one!

- Importance of the regionalization

- Same dataset, with same method, in different software: different results!

➔ Method documentation should avoid confusion