Water Footprint

Applications and role in water sustainability

Dr. Ertug Ercin, Hong Kong, 11.07.2019

Director and senior researcher

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Water in supply chains : advisory services

- Analytics: dependencies, vulnerabilities to extreme weather events
- Early Warning Systems: agricultural supply chain, extreme events, production losses
- Climate Risk Assessment: Stress Testing, Reporting
- Sustainability Assessments: Water Footprints, Environmental Footprint

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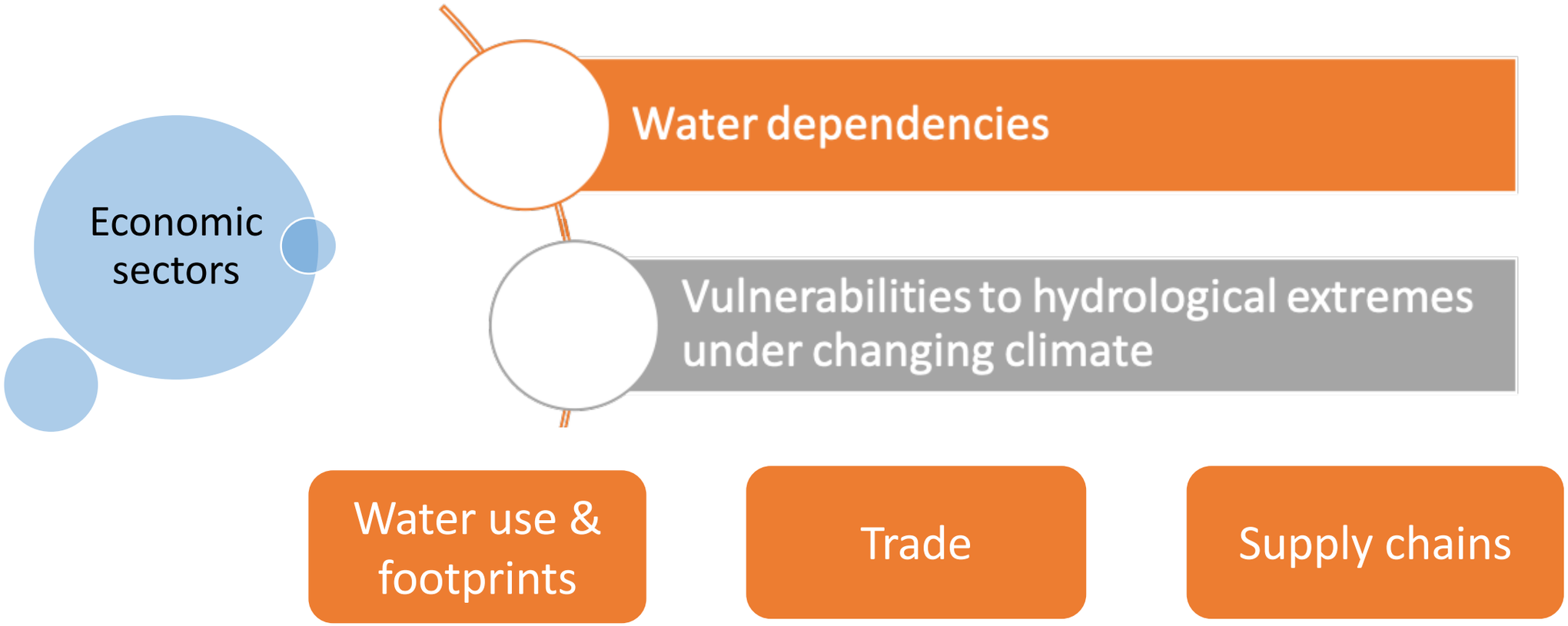
Water in supply chains : research



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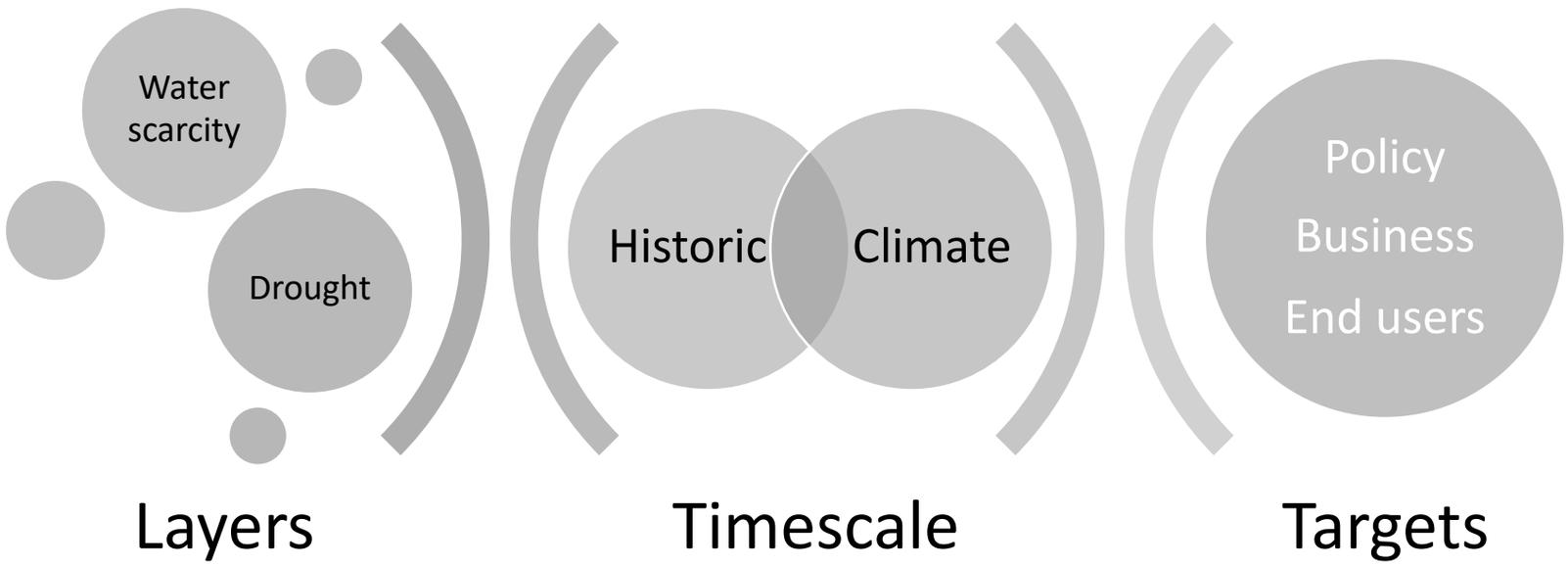
Water in supply chains : research



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Water Footprint

How much water is consumed for our production and consumption?

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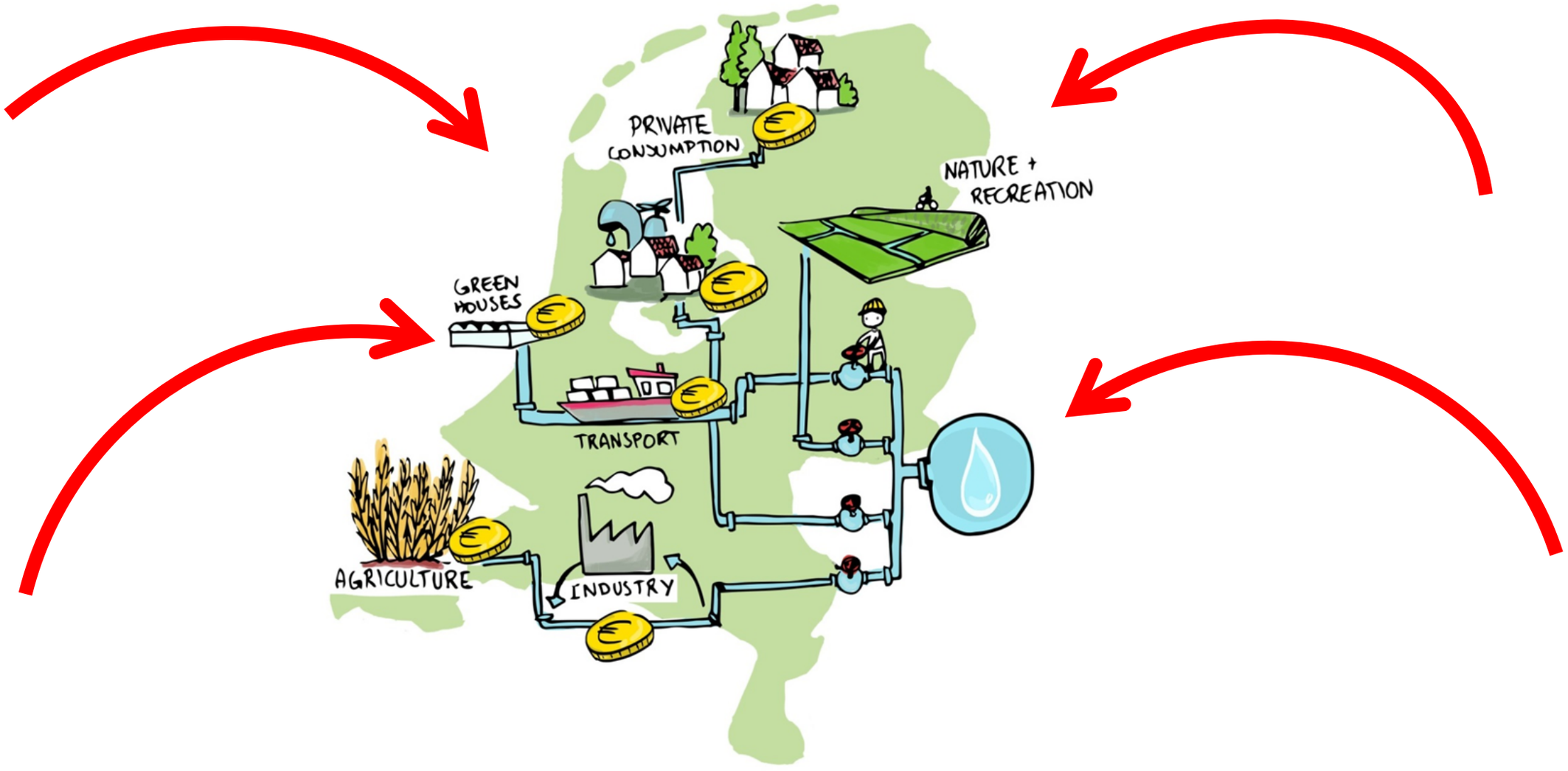
Dutch economy

5 km^3/year from water resources inside the Netherlands



Total water demand = 64 km^3/year,

92% external, drought risks are outside….

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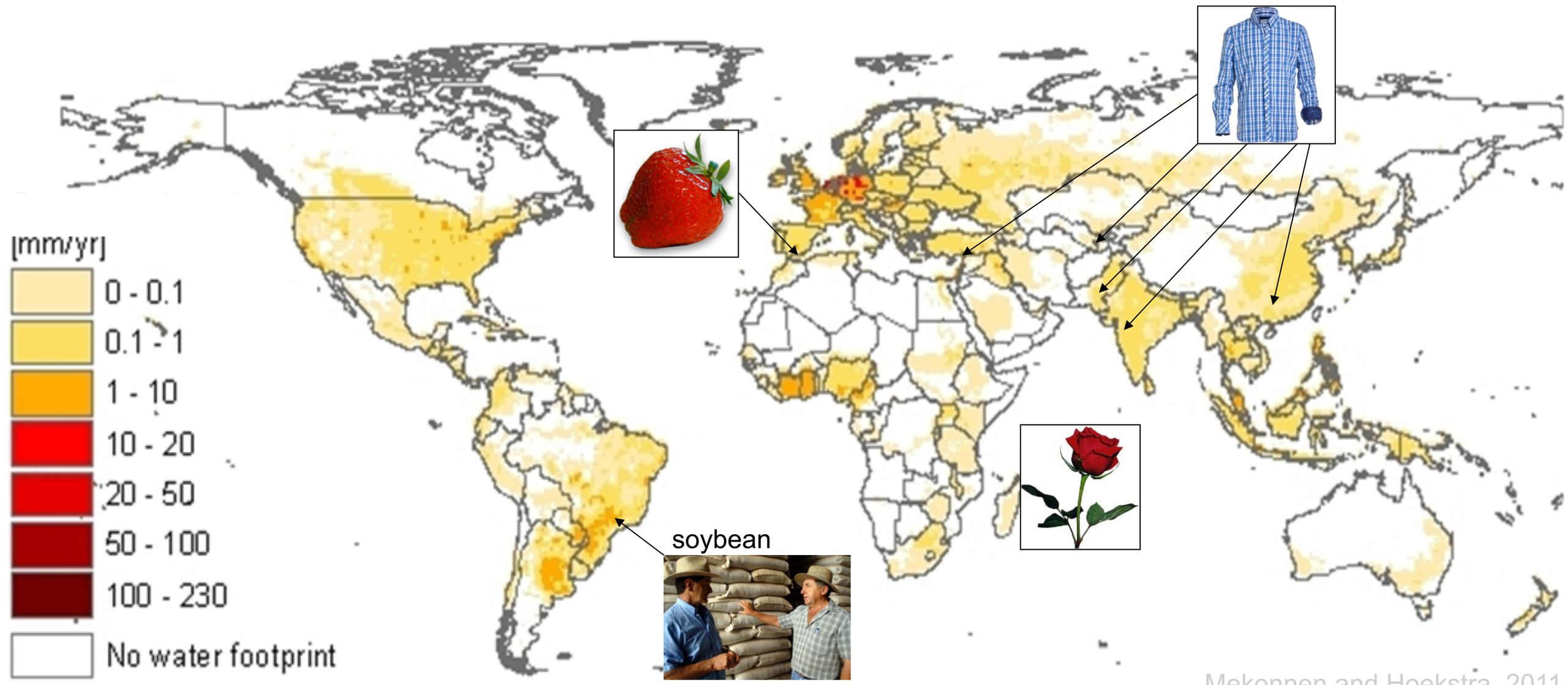
Dutch economy

92% of its water demand is outside its borders



Mekonnen and Hoekstra, 2011

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[Hoekstra & Chapagain, 2008]

My experience in water footprint applications...

(PhD, postdoc, 5 years WFN, 2 years R2Water)

— National/Regional Policy: the EU Climate Adaptation

— Water Stewardship: Sustainability and Risk

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EU Strategy on adaptation to climate change

*"…**recent research** has revealed pressing adaptation needs, for example with **the vulnerability of the EU to climate change in third countries**."*

Ref: Ercin A.E et al. (2016) *Dependencies of Europe's economy on other parts of the world in terms of water resources*, Horizon2020 - IMPREX project, Technical Report D12.1

REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL

12.11.2018

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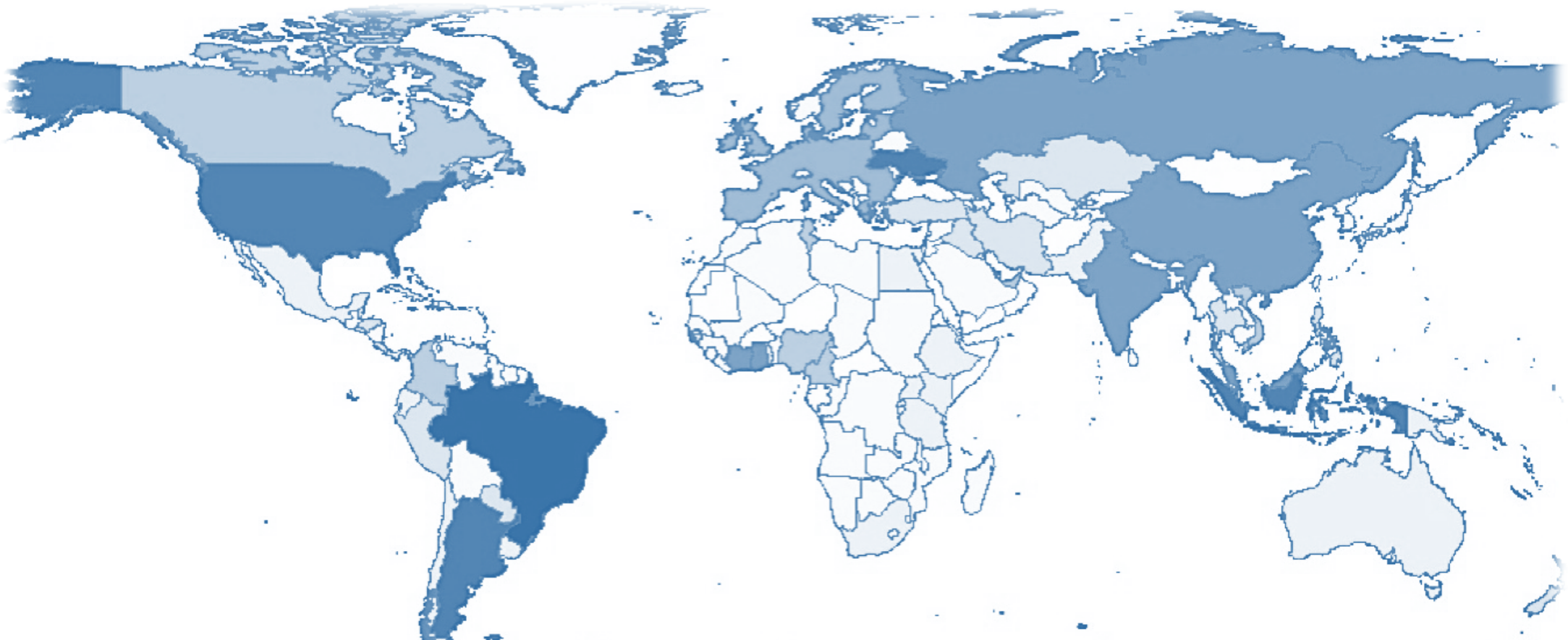
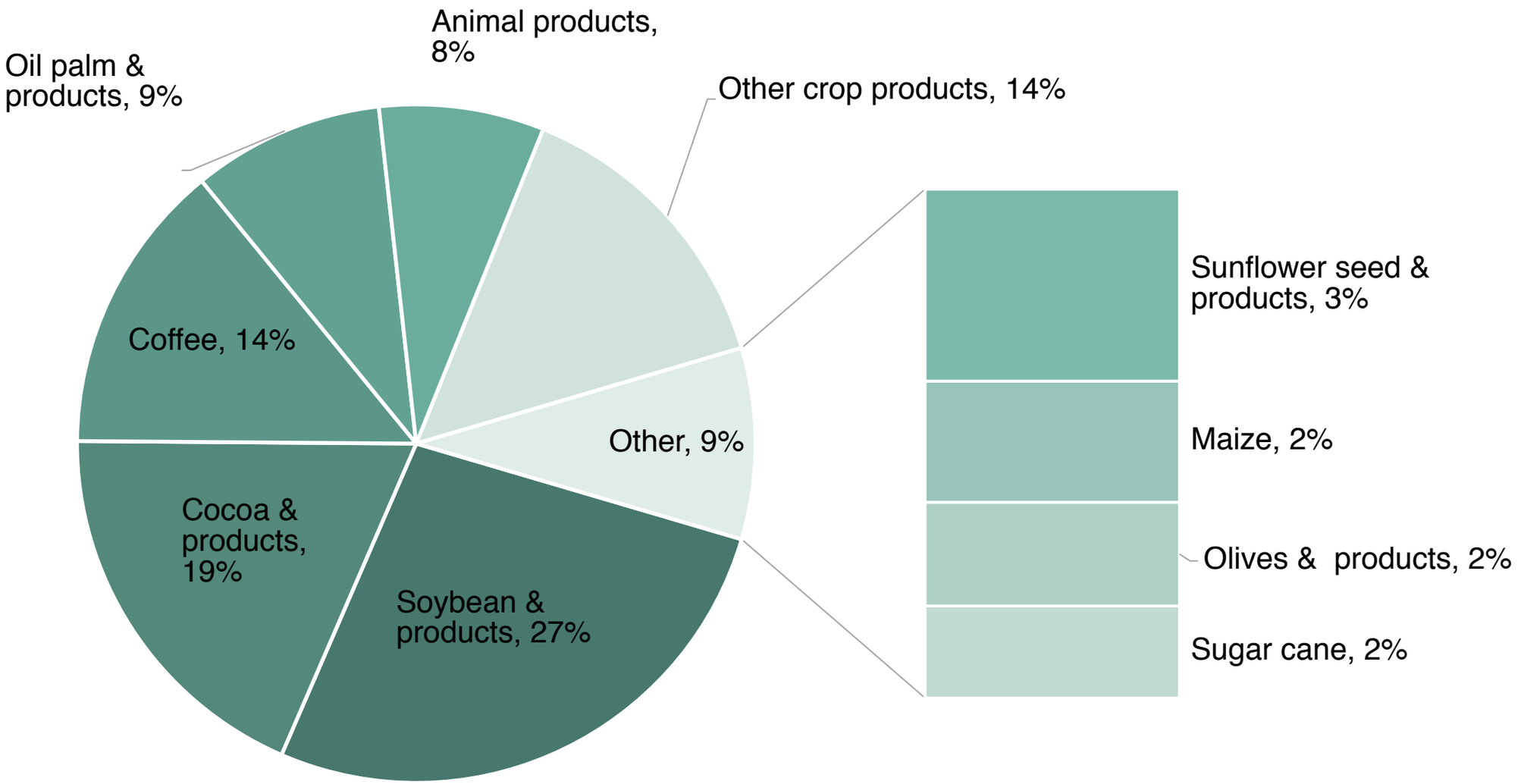
EU’s economy is dependent on water resources beyond its borders

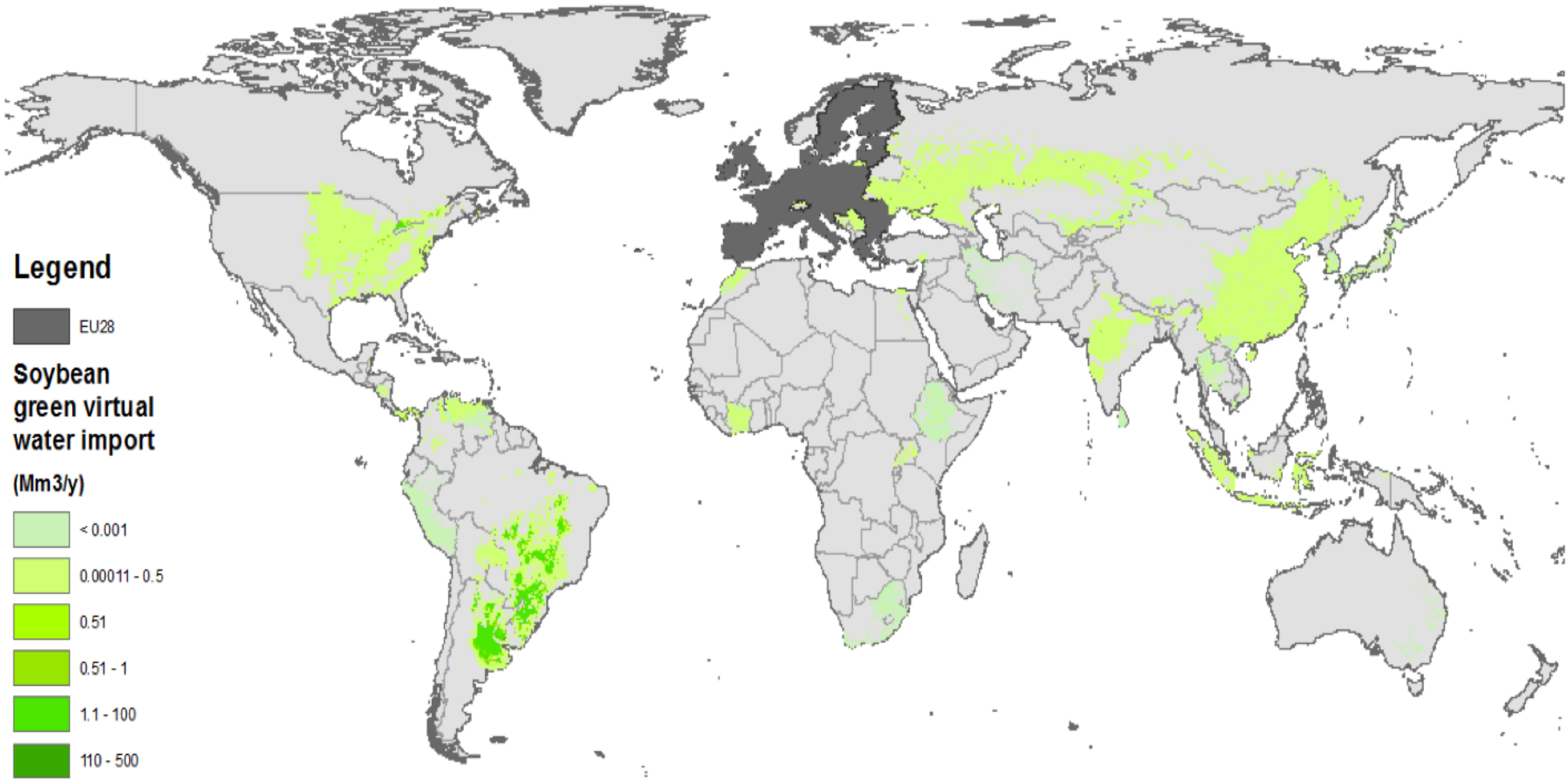
- **EU’s global water demand: 668 km^3**
- **~38% outside its borders**



Dependencies – rainfall (green virtual water imports)



Dependencies (exposure) – rainfall (Soybean)



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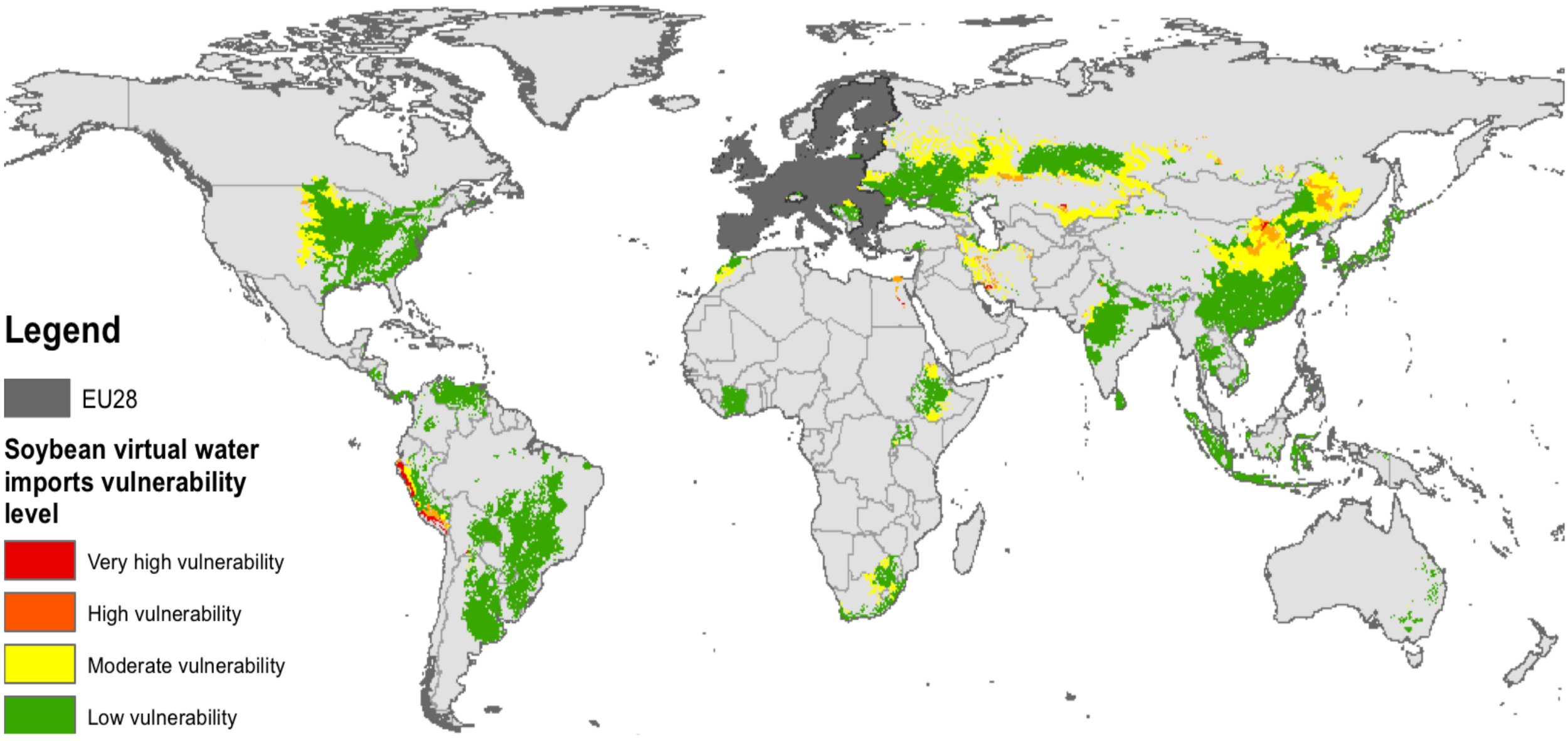
98% of soybean is imported, 99% of it, low drought vulnerability (current)



Brazil, Argentina and the USA.

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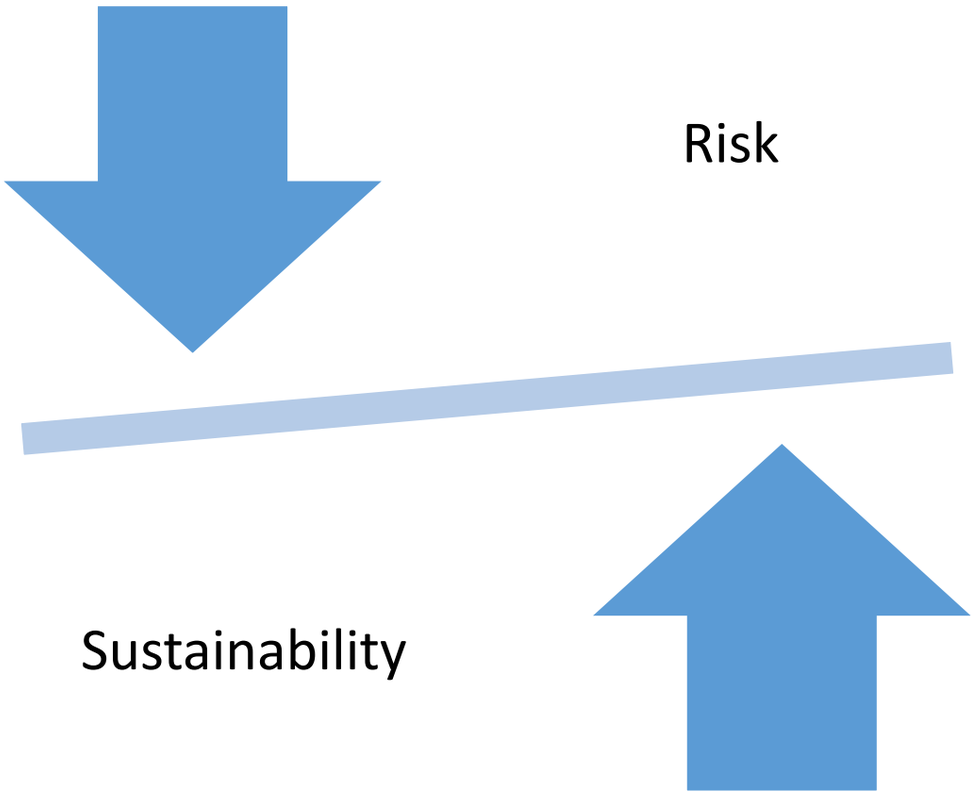
Water for business

Water represents both a risk and an opportunity to business.

Mismanagement of water can directly impact on operations, damage brand, credibility, credit rating and insurance costs.

On the other hand, adequate water management enhances business efficiency and opens new opportunities through water stewardship.



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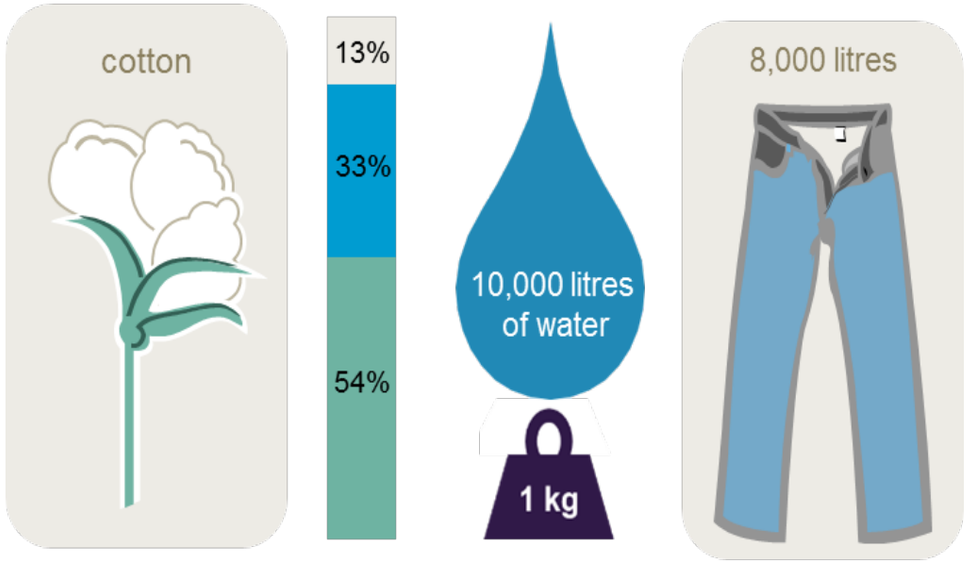
Cotton supply-chain of a brand /retailer



(Mekonnen and Hoekstra, 2010; 2011)

- Water footprint of cotton at farm level (702 farms) – suppliers of a retailer
- Water footprint of different agricultural practices
- Grey water footprint of different pesticides/fertilizers
- Developing guidance on how to reduce and better manage water footprints

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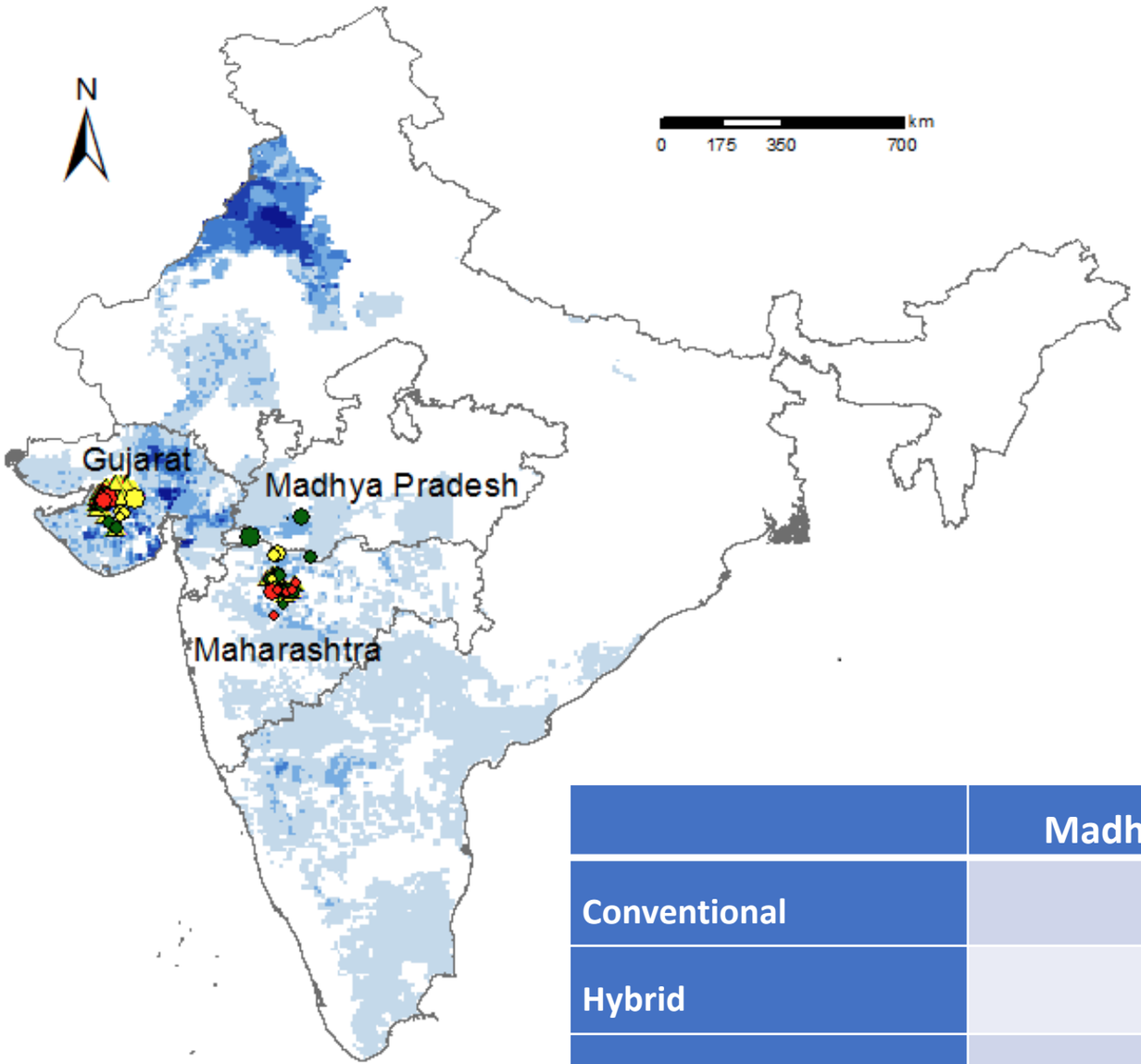
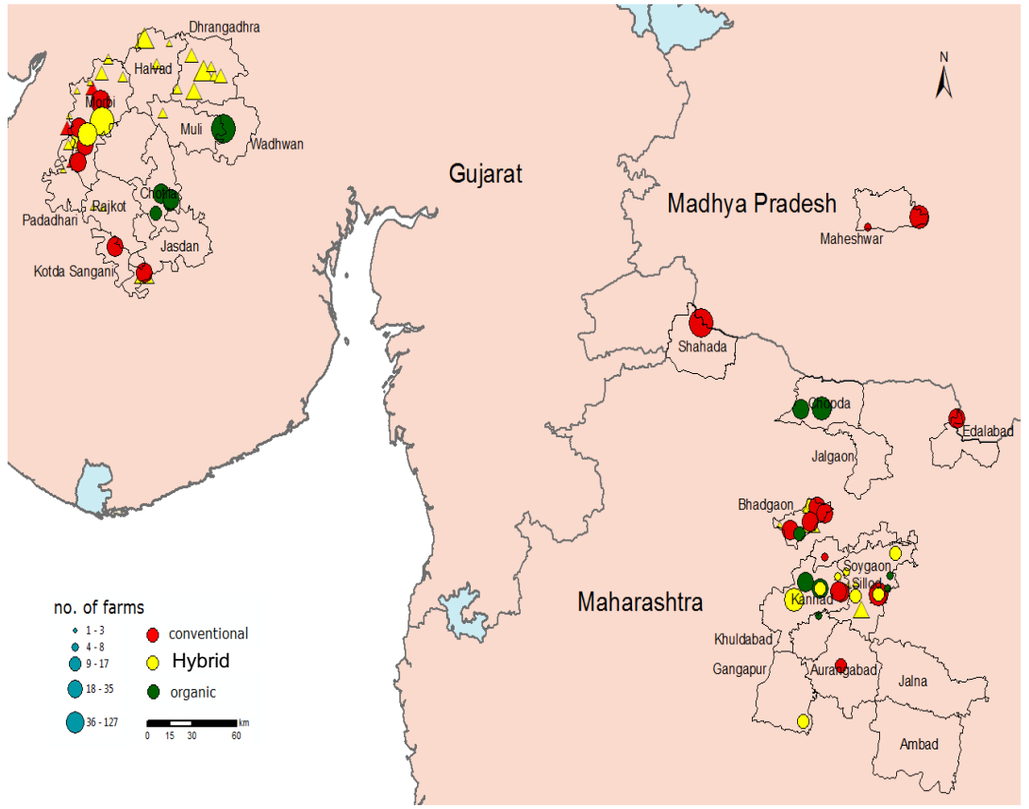
Location of farms:
Gujarat, Madhya Pradesh, Maharashtra





	Madhya Pradesh	Gujarat	Maharashtra	Total
Conventional	100	90	100	290
Hybrid	n/a	160	49	209
Organic	n/a	101	102	203
Total	100	351	251	702

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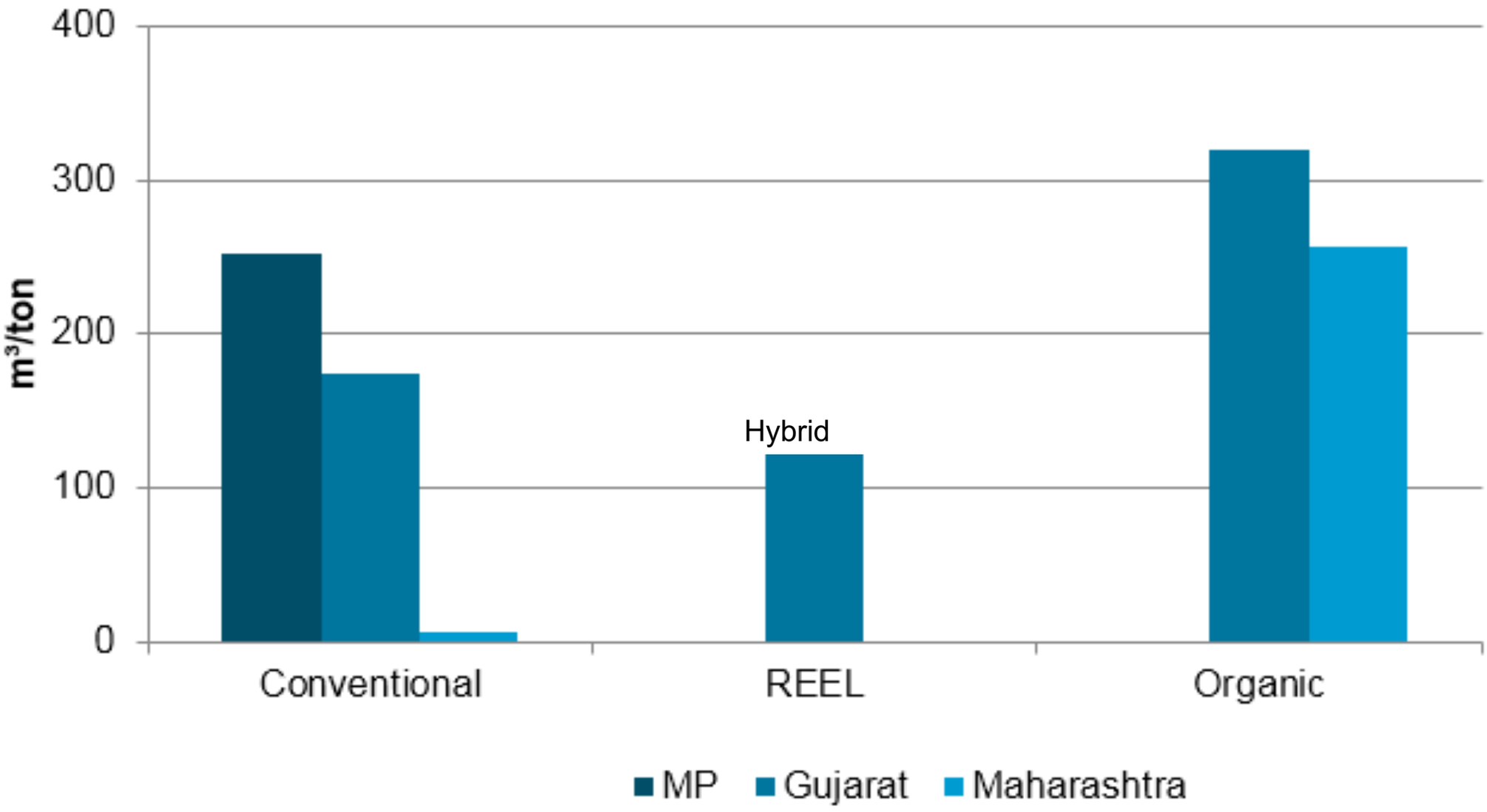
Blue water footprint per ton of cotton in different agricultural practices



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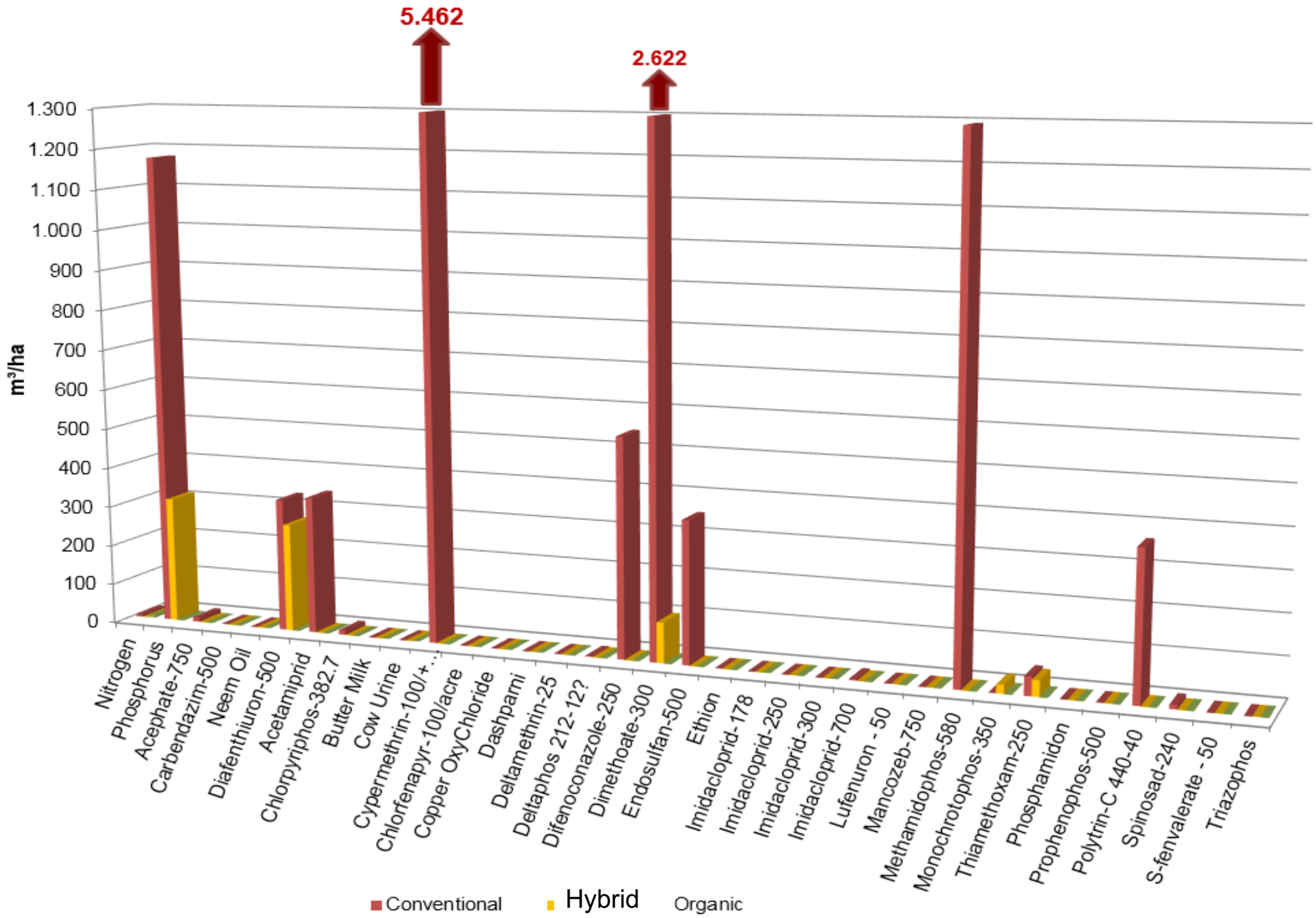
Grey water footprint per critical pollutants



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Thank you!

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