Water Footprint of Organizations
Local Actions in Global Supply Chains (WELLE)

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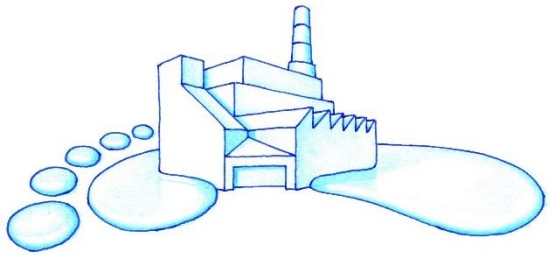
WATER AS A GLOBAL RESOURCE

Technische Universität Berlin
Institut für Technischen Umweltschutz
Fachgebiet Sustainable Engineering

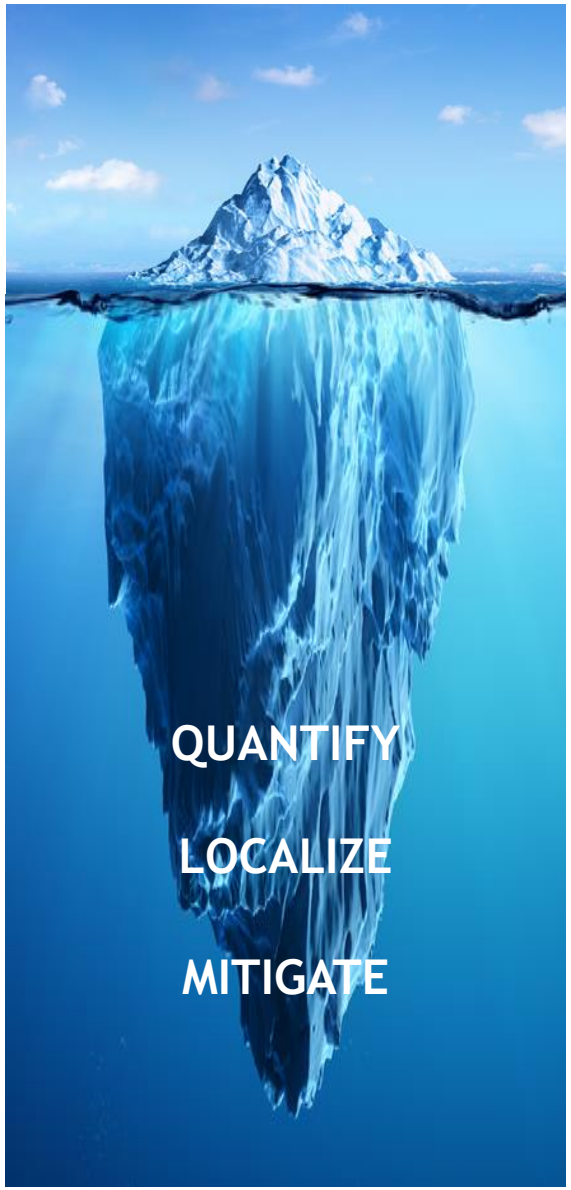
Why WELLE?

- Companies measure, manage and communicate their direct water use and waste water discharge
- …usually < 5% of total water footprint
- Indirect water use of agriculture, mining, material and energy production more relevant – but out of scope…



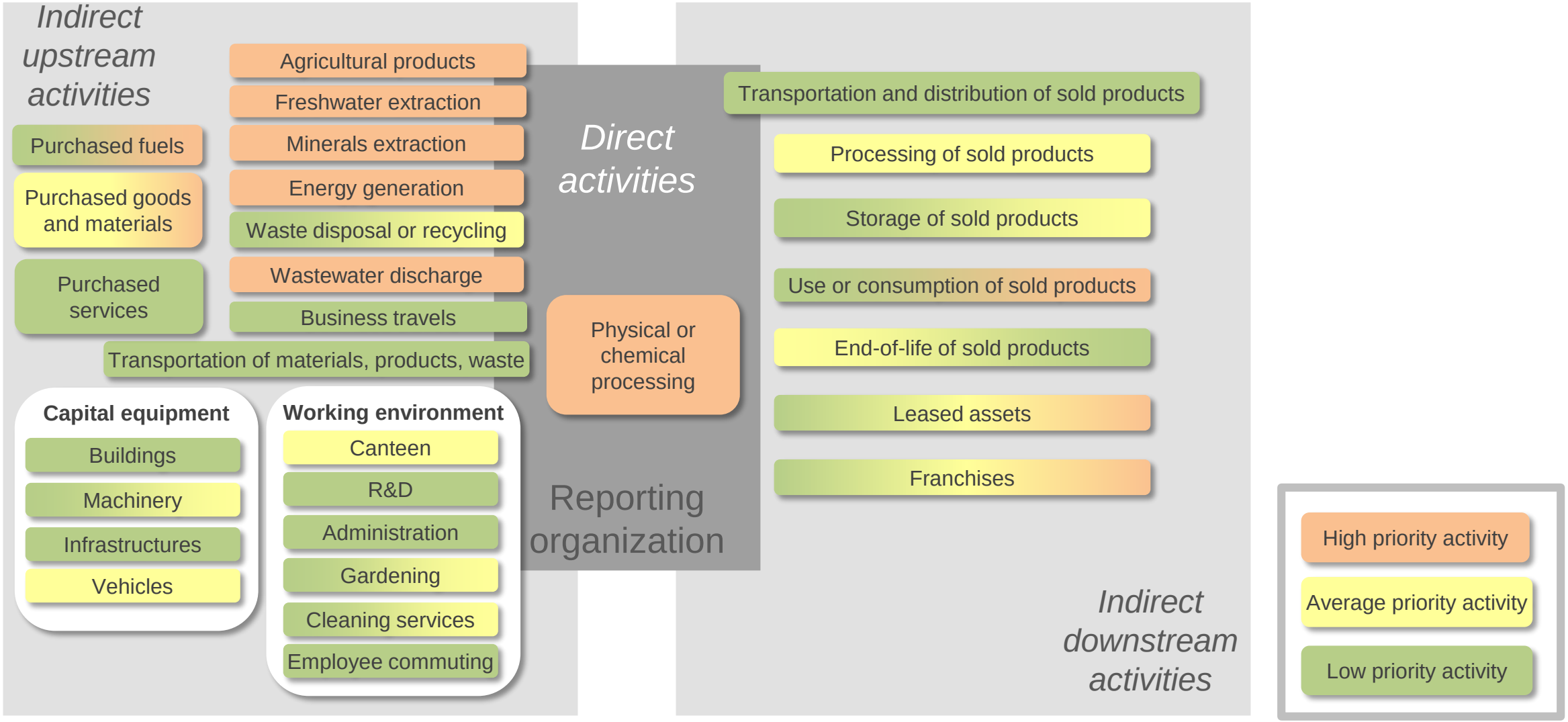
→ WELLE enables companies to:

- Determine their total water footprint
- Identify relevant material and local hotspots in global supply chains
- Take actions in cooperation with suppliers/stakeholders



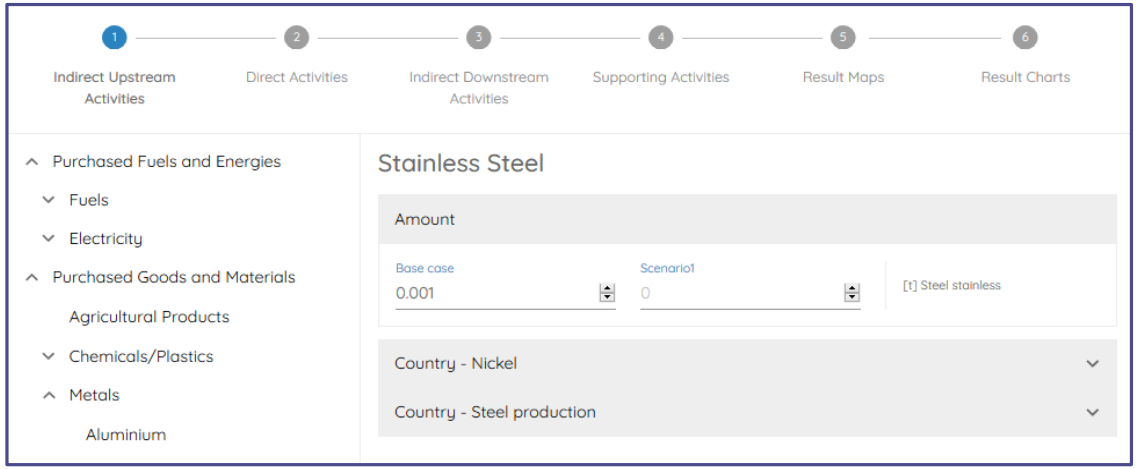
Method for the Organizational Water Scaricity Footprint

From products to organizations: modelling the value chain and prioritizing data collection

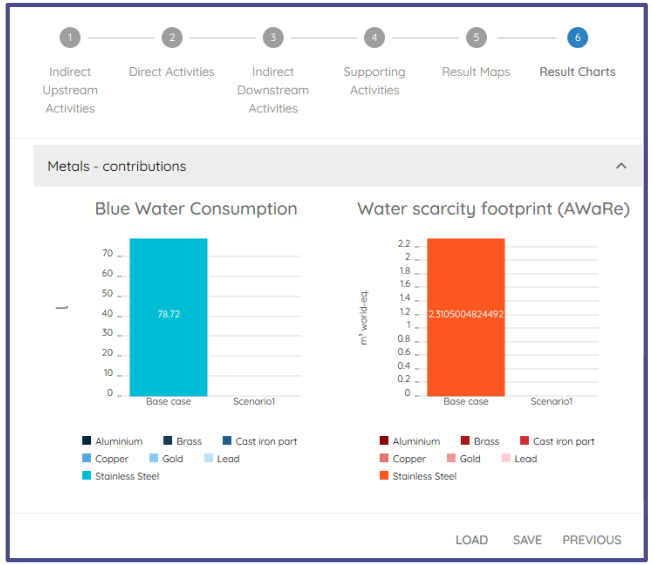


WELLE database and tool

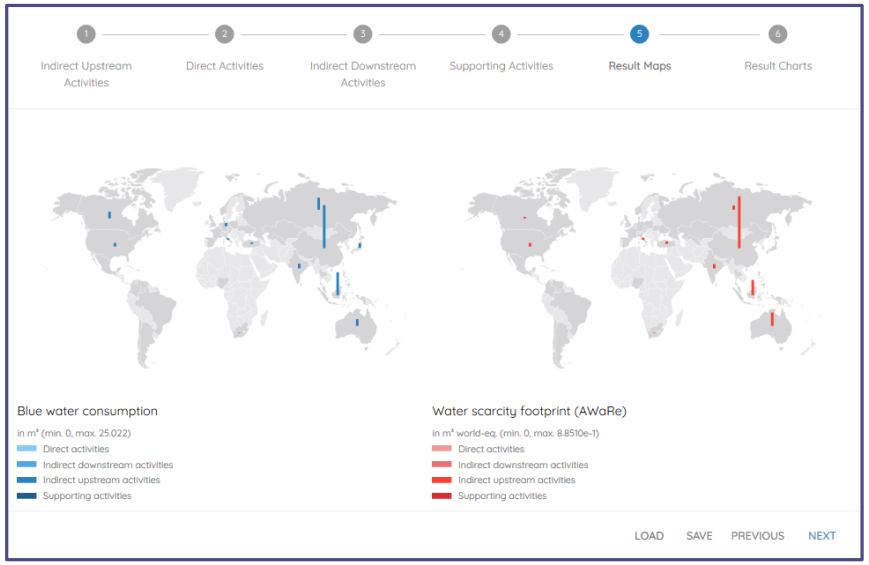
- Based on thinkstep's LCA database, a WELLE database is established providing the geographically explicit water use data for >100 materials & energy carriers (http://welle.see.tu-berlin.de/#database)
- To make the method applicable, a software tool is currently developed (http://welle.see.tu-berlin.de/#tool)
- Users enter direct water use and indirect upstream/downstream activities
- Tool shows both material-related and regional hotspots



material hotspots



regional hotspots



WELLE & the SDGs

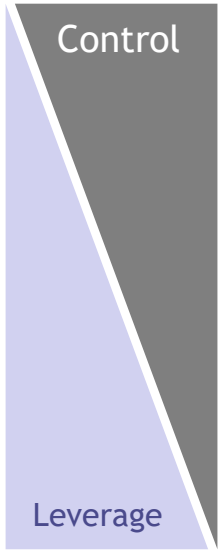
LOCAL WATER SCARCITY MITIGATION

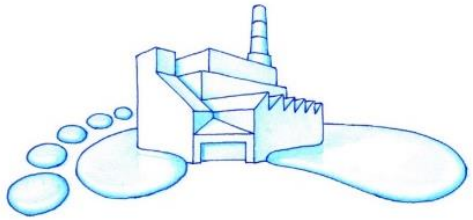
- Initiate local actions at hotspots in global supply
- Involve suppliers, local stakeholders, and water stewardship community
- Relevant but challenging…

SUSTAINABLE SUPPLY CHAIN MANAGEMENT

- Sustainability criteria for purchase decisions
- Ecodesign

→ Involvement of purchase and R&D departments





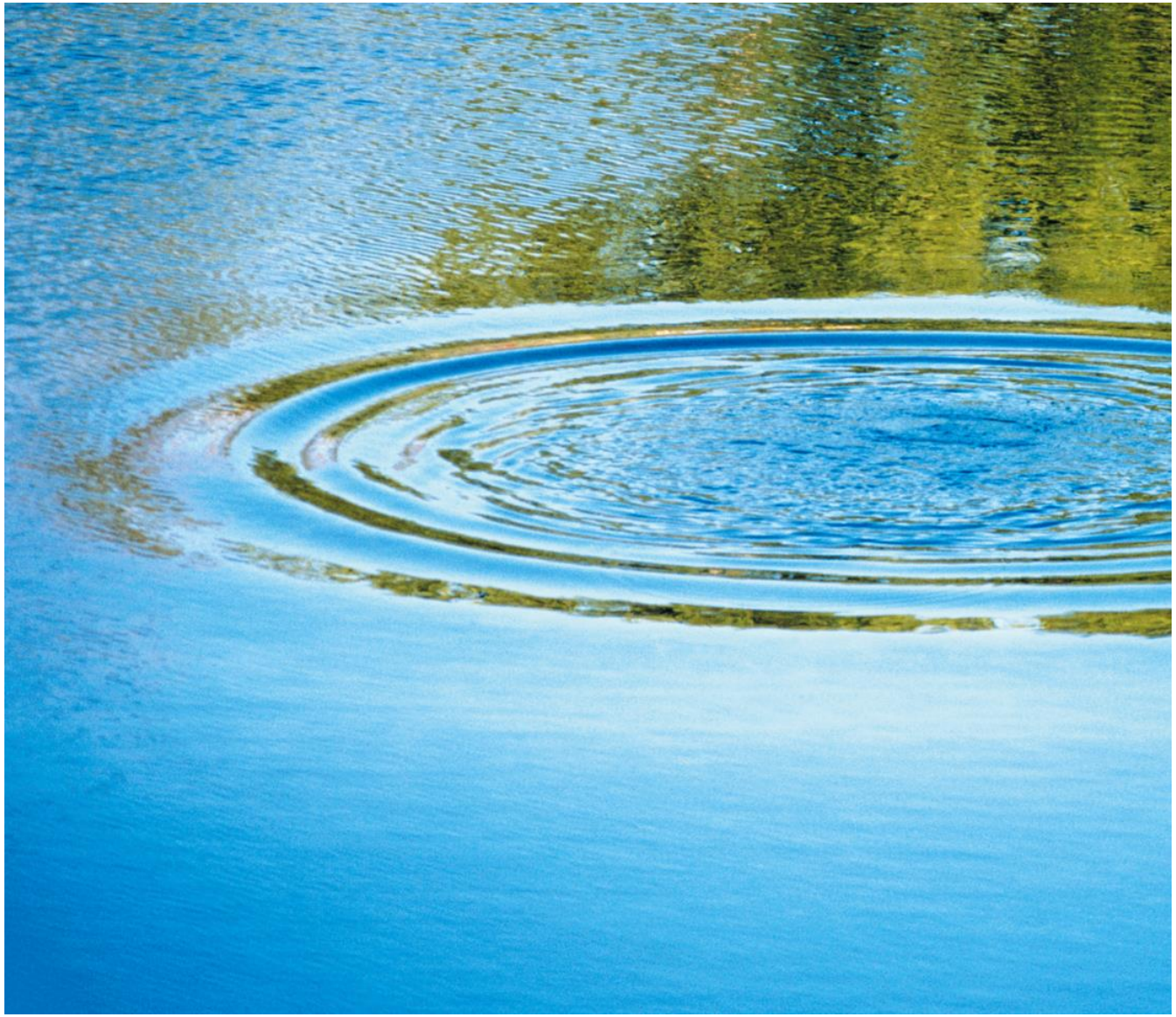
http://welle.see.tu-berlin.de

WELLE: Insights on assessing the organisational water scarcity footprint of the production of amino acids

Case study from Evonik Nutrition & Care GmbH

Aurélie Wojciechowski
Evonik Nutrition & Care GmbH

World Water Week 2019 – 26th August



EVONIK
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Goal & Scope of the Evonik Case study

- Comparison of two amino acid production lines
- Water scarcity footprint of the production of Methionine **(MetAMINO®)** in Antwerp (Belgium) and Lysine **(BioLys®)** in Blair (USA), two feed additives used for swine and poultry (focus on the production of 1 ton chicken live-weight)
- Strong focus on the supply chain (country of origin and region of production of raw materials)
- Two assessment levels: product level and manufacturing plant level (organizational water footprint) for 2017

Challenges faced while exploring the supply chain

- **MetAMINO®: chemical process**

Suppliers of some raw materials are changing from year to year, international trading

- Country of origin of raw materials and consequently water scarcity impacts might strongly change over the years
- Discussion to integrate sustainability indicators related to water scarcity in the choice of suppliers (Procurement)

- **BioLys®: Bio-based product from corn**

- ~95% of the water consumption of BioLys® comes from corn cultivation (irrigation)

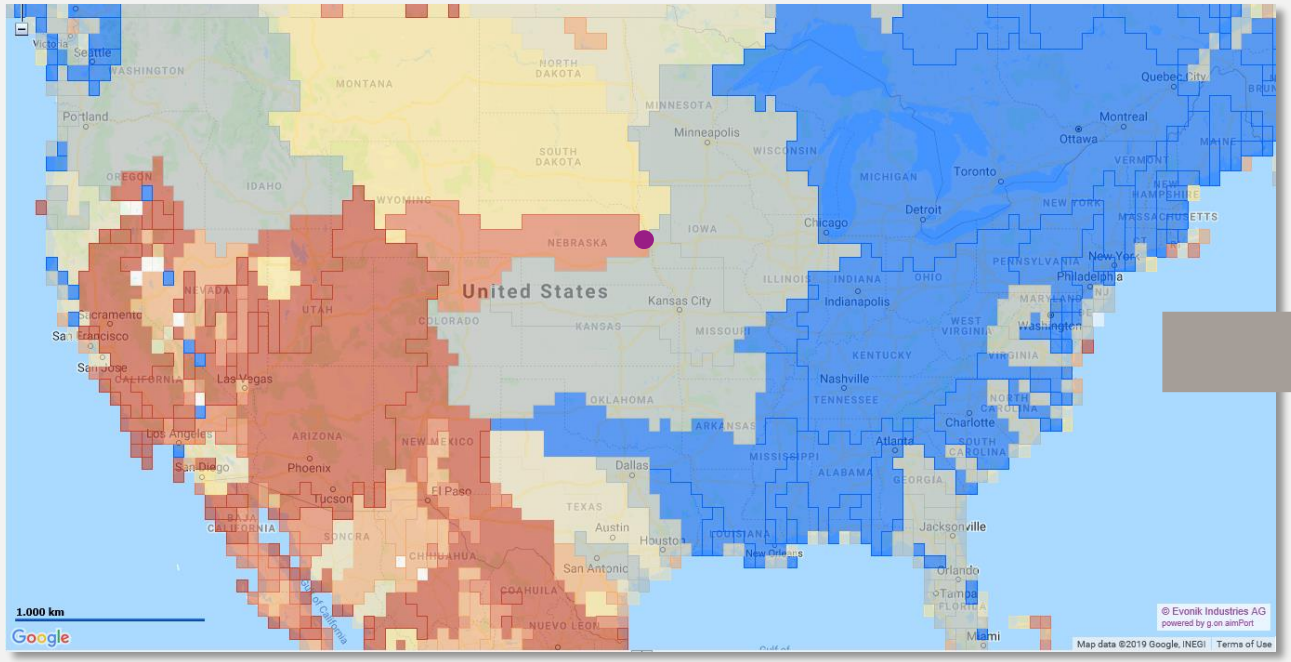
Low impact from other raw materials and from the water used for the fermentation

- Getting more information about specific water consumption for the corn cultivation:

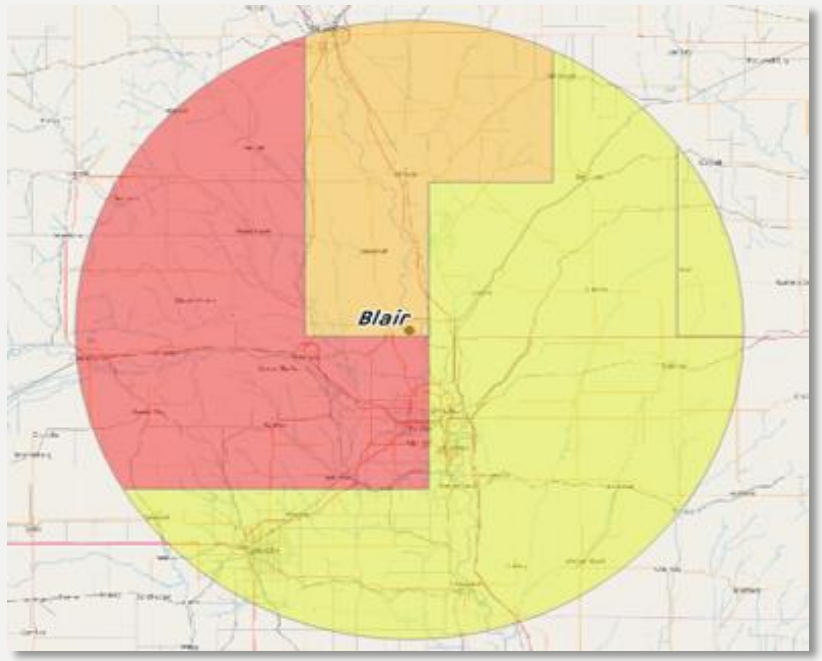
Moving from generic data at the country level (USA) to more specific data from supplier (local sourcing of corn)

Strong local differences observed in the water scarcity around Blair

Water scarcity in USA



Water scarcity in a radius of 150 km around Blair



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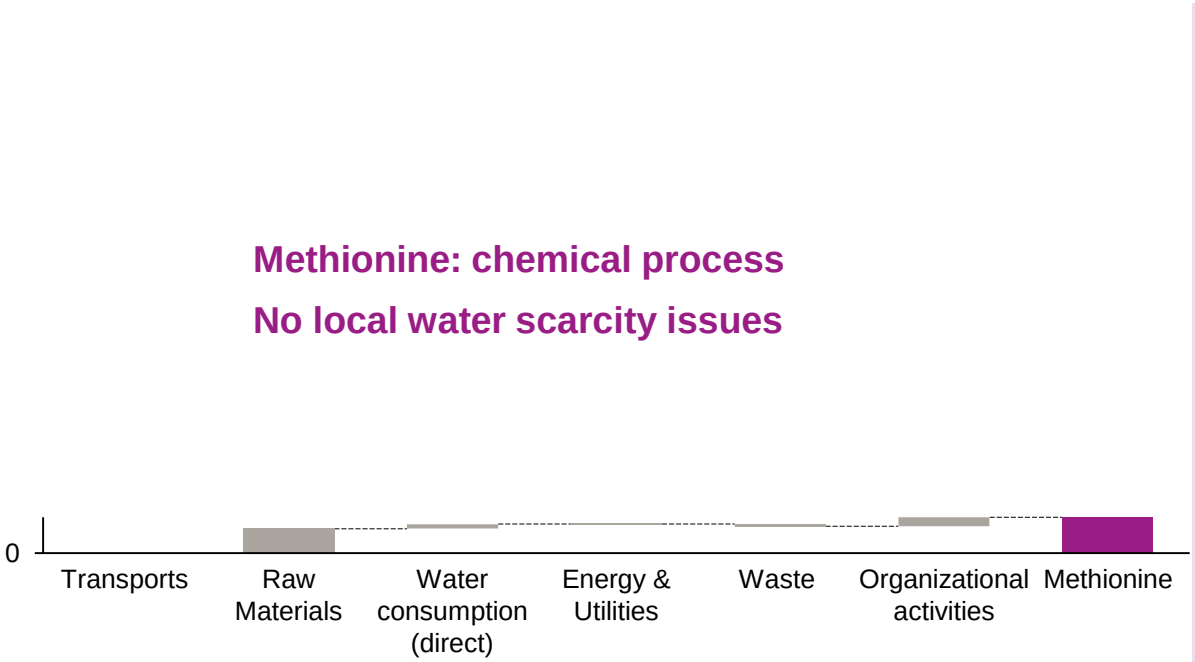
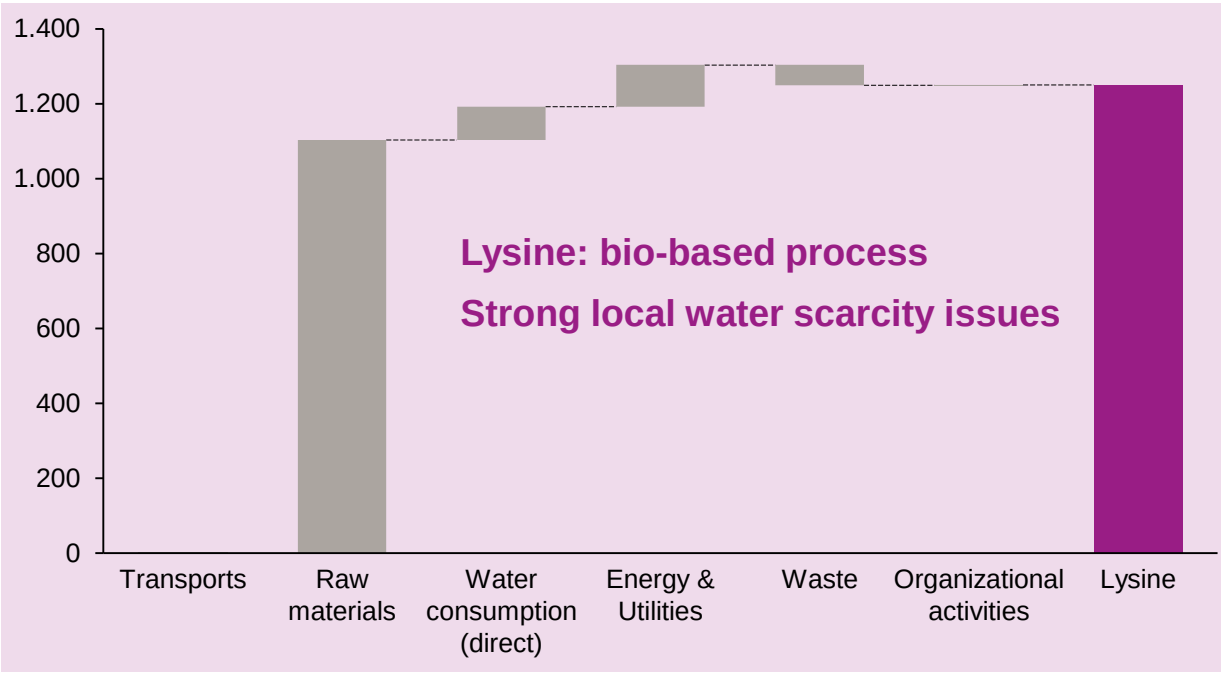
Water Scarcity Footprint results: kg water equivalent per kg amino acid





Organizational activities: Business travels, employee commuting, company cars, administration and capital equipment calculated for the plant Antwerp and Blair and allocated to Methionine and Lysine

→ **Low contribution to the overall Water Scarcity Footprint**

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Key learnings and next steps in the scope of the WELLE project

- **Water Scarcity Footprint reduction:**

Process optimization should rather focus on upstream activities (i.e. increasing yield → lower sugar consumption) than on activities at the facility level (i.e. reducing water consumption for the fermentation and downstream processes)

- **Water Stewardship approach for the Biolys ® production**

Deeper exchange with local corn starch hydrolysate supplier: more information on the local corn sourcing, amount of water used for corn irrigation (i.e. primary data)

Exchange with the Central Nebraska Irrigation Project planned

- **Integrating „Water Scarcity Indicators“ in purchase decisions**

Thank you for your attention!