

Water Footprint of Organizations

Local Measures in Global Supply Chains



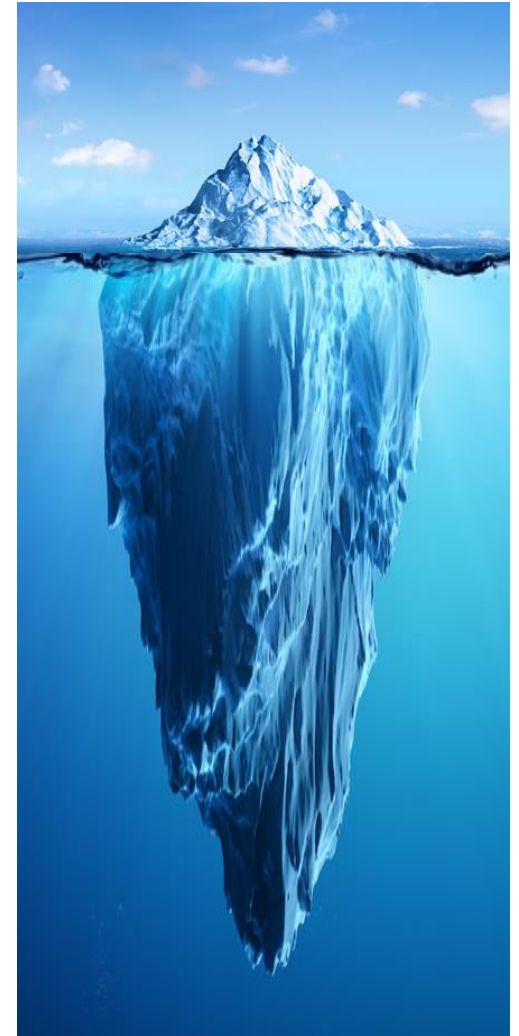
Markus Berger, Silvia Forin, Jonas Bunsen, Matthias Finkbeiner
& the WELLE project team

Berlin, October 20, 2020



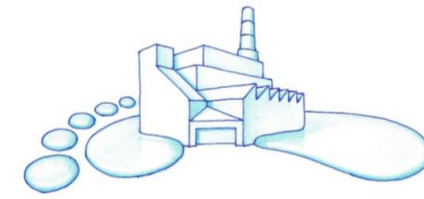
Background

- Companies measure, manage and communicate their direct water use and wastewater discharge...
...which is usually < 5% of the total water footprint
- Indirect water use of mining, material and energy production more relevant – but out of scope



Project goals

- The WELLE Project enables companies to:
 - Determine their total water footprint
 - Identify local hotspots in global supply chains
 - Take actions in cooperation with suppliers and stakeholders



- Consortium:



Method for the Organizational Water Footprint

Step 1: Review of existing approaches



REVIEW
Supply Chain Water Management

ADVANCE SUSTAINABLE SYSTEM
www.advsustainables.com
Check for updates

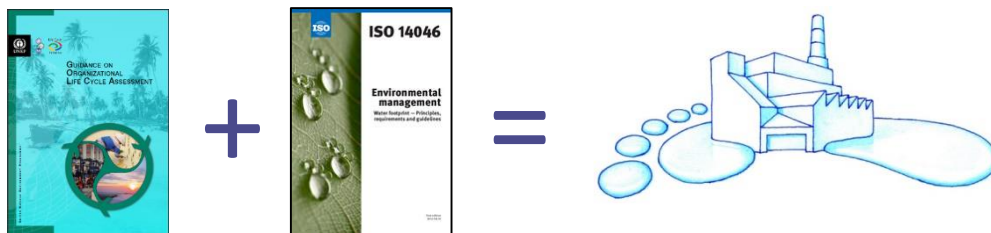
Measuring Water-Related Environmental Impacts of Organizations: Existing Methods and Research Gaps

Silvia Forin,* Markus Berger, and Matthias Finkbeiner

Forin, S.; Berger, M.; Finkbeiner, M. Measuring Water-related Environmental Impacts of Organizations: Existing Methods and Research Gaps.

Advanced Sustainable Systems **2018**, 2,10, 1700157

Step 2: Combining the Organizational LCA and the Water Footprint ISO Standard



The International Journal of Life Cycle Assessment
<https://doi.org/10.1007/s11367-019-01670-2>

WATER USE IN LCA

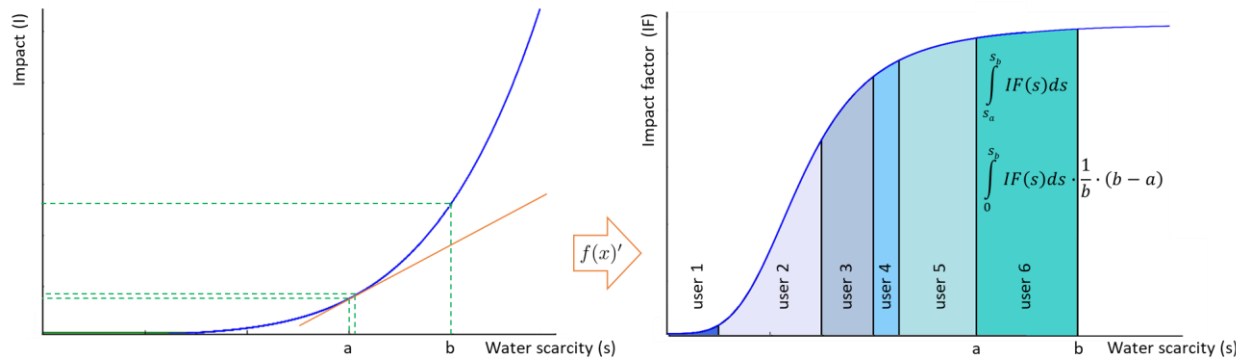
Organizational water footprint: a methodological guidance

Silvia Forin¹ • Natalia Mikosch¹ • Markus Berger¹ • Matthias Finkbeiner¹

Forin, S.; Berger, M.; Mikosch, N.; Finkbeiner, M. Organizational water footprint: a methodological guidance. *The International Journal of Life Cycle Assessment*. **2020**, 25 (2), 403-422.

Method for the Organizational Water Footprint

Step 3: Large scale inventories and non-marginal impact assessment



The International Journal of Life Cycle Assessment (2020) 25:663–666
<https://doi.org/10.1007/s11367-019-01726-3>

COMMENTARY AND DISCUSSION ARTICLE

Check for updates

Comment to “Marginal and non-marginal approaches in characterization: how context and scale affect the selection of an adequate characterization factor. The AWARE model example”

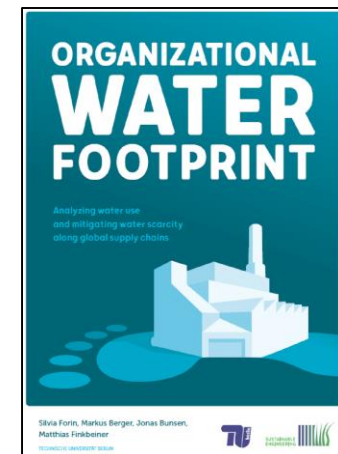
Silvia Forin¹ · Markus Berger¹ · Matthias Finkbeiner¹

Forin, S.; Berger, M.; Finkbeiner, M. Comment to “Marginal and Non-Marginal Approaches in Characterization: How Context and Scale Affect the Selection of an Adequate Characterization Factor. The AWARE Model Example.” *The International Journal of Life Cycle Assessment*. **2020**, 25 (4), 663–666.

Step 4: Putting the science into practice...

- Guidelines for practitioners
- Discussions with industry
- Webinars

Practitioners' guide: [https://welle.see.tu-berlin.de/Organizational_Water_Footprint_\(OWF\)_Practitioners_Guidance.pdf](https://welle.see.tu-berlin.de/Organizational_Water_Footprint_(OWF)_Practitioners_Guidance.pdf)



Water footprint database

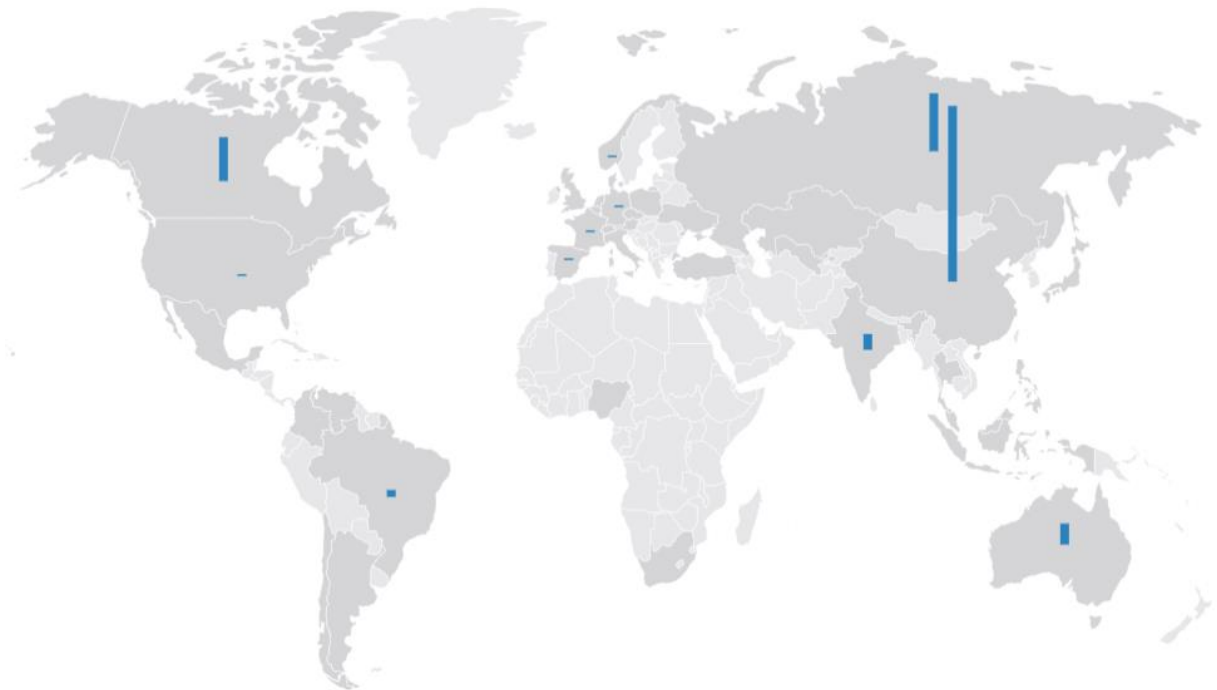
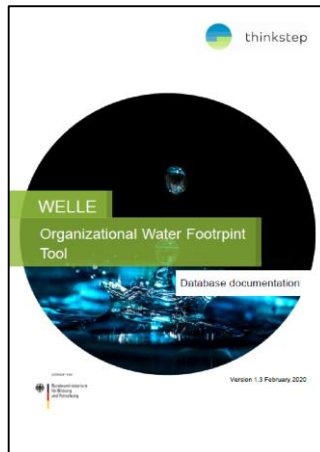
- Based on thinkstep's LCA database, a WELLE database is established to provide the geographically explicit water use data for > 160 materials & energy carriers



1 kg aluminum = 97 L

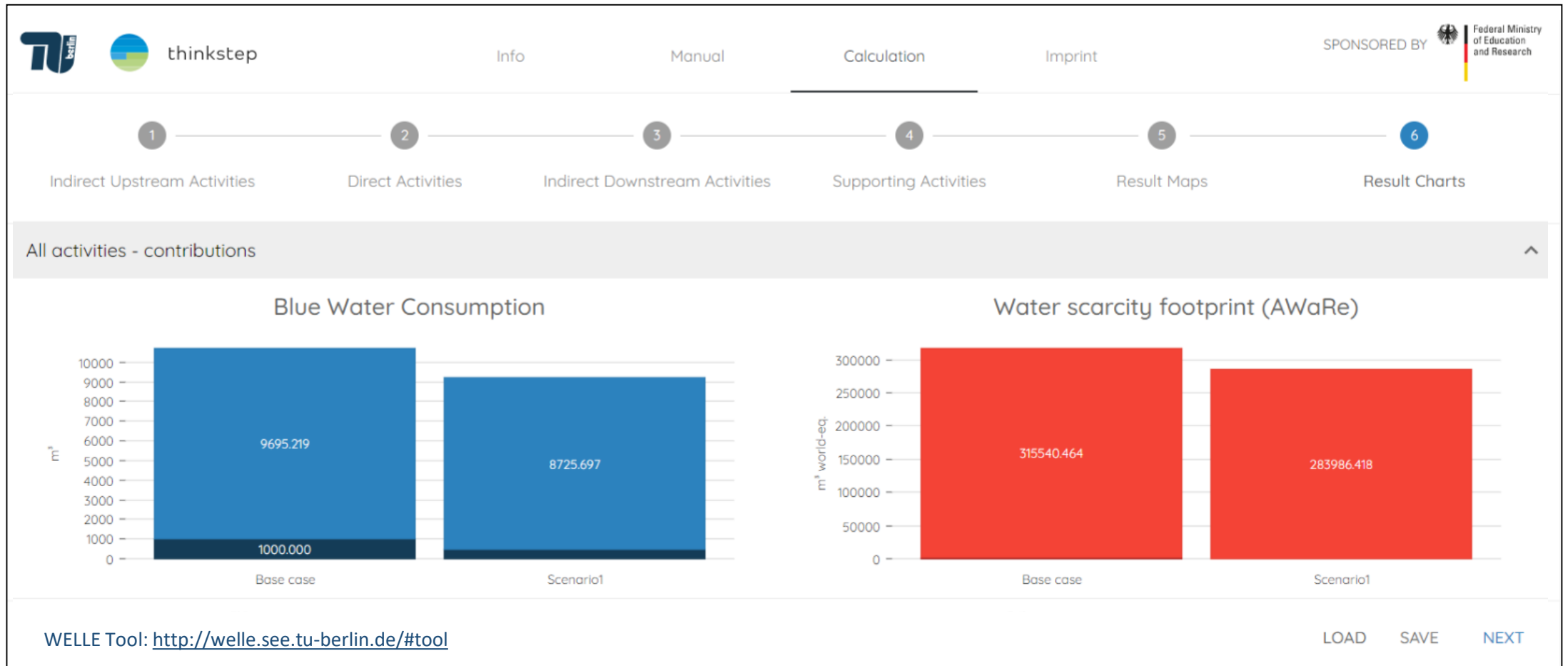


thinkstep



Water footprint online-tool

- By entering direct water use at production sites, purchased materials and energy, the corporate water footprint is determined



Case studies

- Evonik: Water footprint of production lines of amino acids
Wojciechowski, A.; Forin, S.; Berger, M.; Binder, M.; Finkbeiner, M.; Combined Organizational and Product Water Scarcity Footprint: a case study on the use of amino acids for chicken production. *Int J LCA (in preparation)*
- DKI: Water footprint of European copper mix
- Neoperl: Water footprint of entire company (Neoperl GmbH)
Forin, S.; Gossmann, J.; Weis, C.; Thylmann, D.; Bunsen, J.; Berger, M.; Finkbeiner, M. Organizational Water Footprint to Support Decision Making: A Case Study for a German Technological Solutions Provider for the Plumbing Industry. *Water* **2020**, *12* (3), 847.
- VW: Water footprint of production site in Uitenhage, South Africa

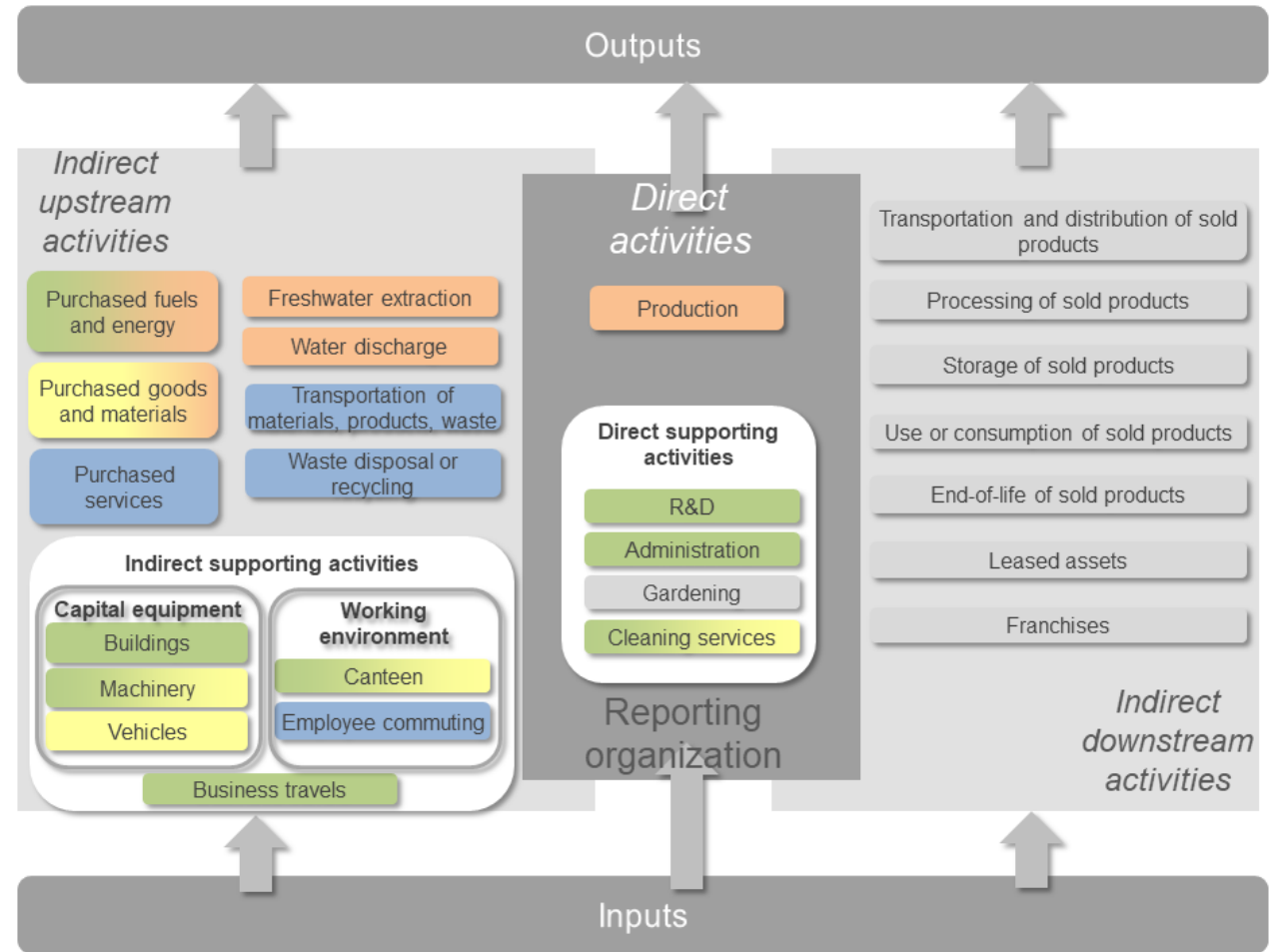
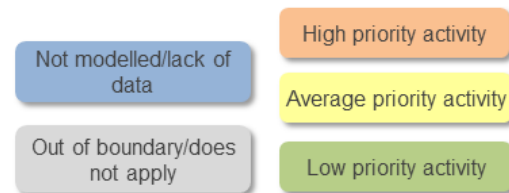


Results!? ⇒ Final WELLE Workshop, October 22, 2-4 pm

<https://tu-berlin.zoom.us/j/65521416688?pwd=OVBLdkxUeE5qSnJaS2xGR0RoWTZiZz09>

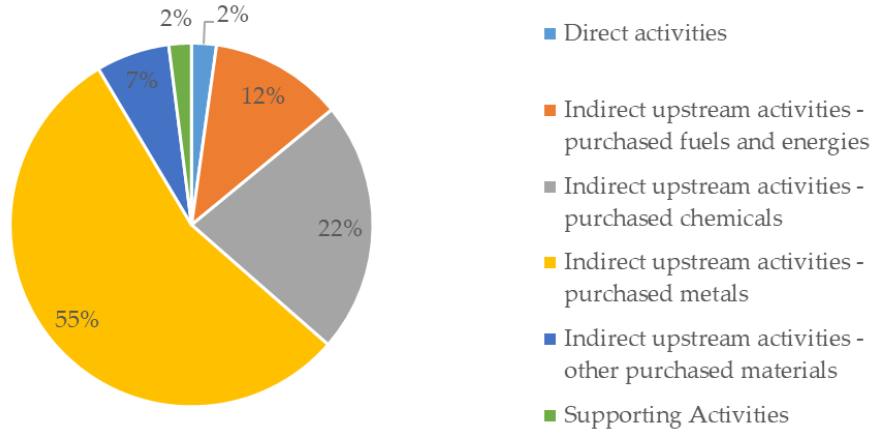
Water Footprint Neoperl

- Cradle-to-gate analysis of the entire company Year 2016

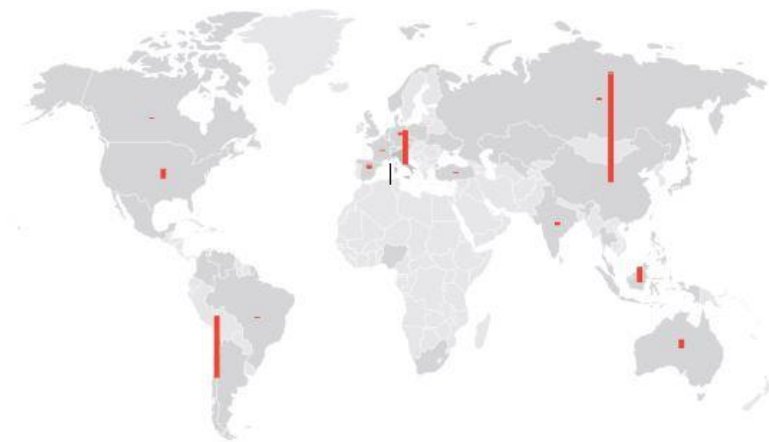
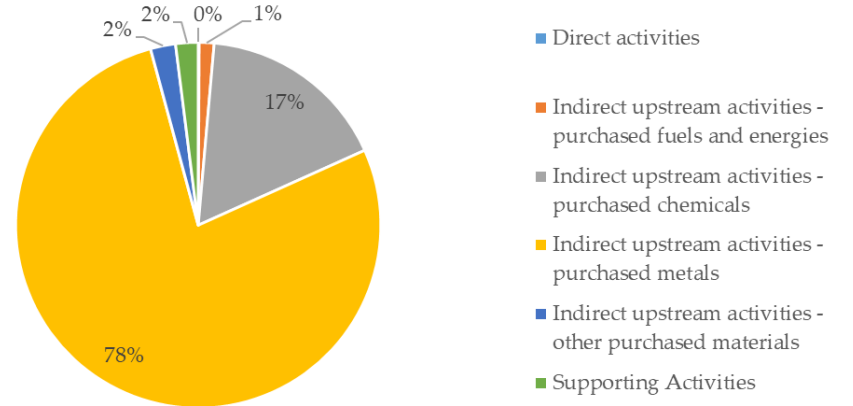


Water Footprint Neoperl

Volumes: 110.000 m³ blue water consumption



Local impacts:



Mitigating water stress

- Use water footprint results to mitigate water stress along the supply chain:
 - **Water Stewardship:** Take collective action at local hotspots in global supply chains with suppliers and stakeholders
 - **Ecodesign:** Analyze a product's water use along its life cycle in the design phase
⇒ Optimization by water efficient material and design choices
 - **Sustainable procurement:** Purchase water efficient/certified materials, supplier requirements, etc.

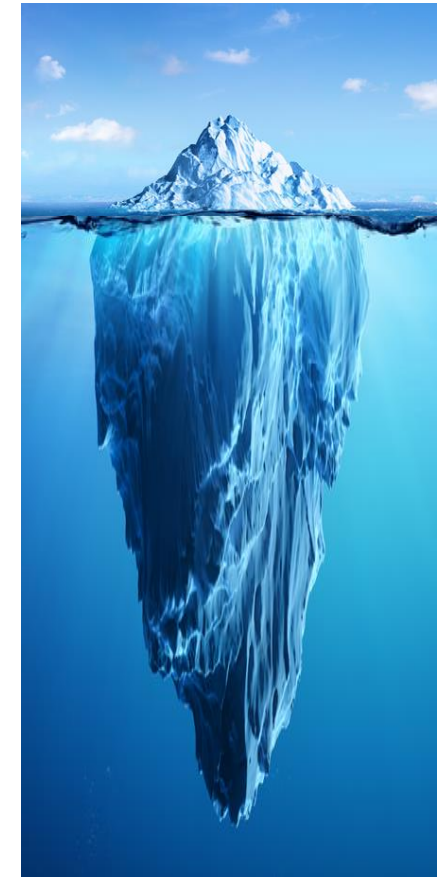


Image: Rfischia | Dreamstime.com

Thanks a lot for your attention!

