

## First GRoW-Workshop on the „Water Footprint“

### Brief summary report

**Date:** 21 March 2018

**Place:** Hotel Steigenberger am Kanzleramt, Berlin

**Participants:** 20 (from the projects: GlobeDrought, go-CAM, InoCottonGROW, iWaGSS, MedWater, ViWA, WANDEL, WELLE), see also participants list in Appendix F

**Responsible Person/ Moderator:** Dr. Markus Berger

#### Welcome by PTKA and adelphi

- PTKA: General introduction and outline of the role and objectives of cross-cutting topics in GRoW – strengthening scientific quality and impact through joint work on specific topics (see slides appendix A).
- adelphi: The role of GRoWnet – support of networking activities between projects, which includes cross-cutting topics (cross-cutting topics shall be driven by projects themselves)

#### Introductory Presentation “Water Footprint – from virtual water to local impacts” (Dr. M. Berger) (see presentation in attachment/ also available at the login-area of the GRoW-website: <https://www.bmbf-grow.de/en/depot-login>)

- The “water footprint” has developed out of a debate around “virtual water” which looks at water volumes that are consumed during production processes and may thus virtually be traded through (international) trade of these products
- With the water footprint this concept has been developed further to better represent the *impact* of water use and is today defined as the volume of water used / consumed during production multiplied by local impact factors such as local water scarcity, type of watercourse, water quality, timing of water use, etc.
- To provide users an orientation when assessing water footprints, an international standard for water footprint has recently been developed (ISO 14046)
- Various methods have been developed to assess the water footprint, incl. the methods WAVE, AWARE, etc. and have been used to support decision making in industry and public policy (see presentation slides)

#### Presentation of projects’ contribution to the water footprint and topics that could be worked on jointly (see Appendix B and C)

- Several GRoW projects either work on the water footprint or are interested in the various water footprint methods (Appendix B). Work to be carried out in the various projects includes e.g.:
  - development of methods and tools to assess the water footprint of organisations (WELLE), textile industries and their supply chain (InoCottonGROW), the energy sector/ energy generation (WANDEL), global virtual water flows (ViWA)



- ways to mitigate the (local) water footprint, e.g. through food imports (GlobeDrought), local (water stewardship) actions to mitigate water stress (WELLE)
- developing methods and assessing local impacts of water use in terms of economic and ecological impacts (e.g. ViWA), ecosystem services (MedWater), impacts on human health, impacts on groundwater (e.g. go-CAM) and water quality in general
- assessing the water footprint at various scales (from global to regional)
- Topics of cross-cutting relevance identified during the discussion included (see Appendix C):
  - Impact assessments (outlining impact pathways)
  - Groundwater depletion and pollution
  - Water quality considerations
  - Inventory data
  - Mitigation of water stress at local level
  - Scale-issues (cross-scale comparison of site-based and global studies, regional and local impact assessment)
  - Communication of water footprint & outreach to public
  - Cross-impacts and trade-offs
- Clustering and prioritising of these topics by the participants resulted in three main topics that should be addressed in future work under the cross-cutting topic “water footprint”.
  - Mitigation – how can the water footprint be reduced? How can the water footprint be used to guide mitigation? How can the water footprint be used to assess the effectiveness of mitigation measures?
  - Impact assessment (including trade-offs and impacts on groundwater)
  - Water quality (including groundwater)

Two topics (impact assessment and water quality) were subsequently discussed in working groups.

### **Discussion in working groups (see Appendix D)**

#### **Working Group 1: Impact Assessments (including groundwater and trade-offs)**

##### Main points of discussion:

- Common understanding that volumetric water footprints (e.g. virtual water) are a first step for a global consideration and awareness raising but lack meaning since water scarcity is a local problem
- In order to allow for comparability and to support decision making, local impacts resulting from water use should be considered (based on water scarcity, sensitivity of ecosystems and population, etc.).
- Selection of impact pathways could/should be based on societal impacts, which differ around the globe: What should the water footprint tell in order to influence decisions of different target groups?
- There are different models available, but inventory data is very difficult to collect/access and comparability is somewhat limited

### Next steps:

- It was agreed to informally exchange knowledge on cross-cutting challenges/ questions that were raised and for each question a contact person was identified:
  - How to include upstream and downstream problems? (contact person: Markus Berger)
  - How to link surface and groundwater models? (contact person: Lennart Schelter)
  - How to model/assess the depletion of aquifers in order to take it into account in the water footprint? (contact person: Lennart Schelter)
  - How to consider competition/allocation of water between different sectors? (contact person: Tobias Landwehr)

Two major questions were identified which should be addressed in a future meeting:

- How to link water footprint with economic and social impacts (e.g. consumer health, consumer/ societal costs) (contact person: Ianna Dantas)
- How can trade influence water stress in certain regions or vice versa? What are the links to mitigation strategies? (contact person: Ianna Dantas)

### **Working Group 2: Water Quality (including groundwater)**

Contact person: Natalia Finogenova (InoCottonGRoW)

### Main points of discussion:

- It would be useful to standardize inventories across different GRoW projects that work on water quality issues and their integration into water footprint assessments
- Standardization could help to compare results across different models in terms of a) leaching rates and b) water quality substances measured

### Next steps:

- In a first step it was proposed to compile information about the different project inventories used in the projects
- A second step could comprise identification of common standards for water quality monitoring across GRoW projects (in terms of leaching rates and substances)


### **Closure**

- GRoWnet (adelpi) will be in contact with the various contact persons and support them in follow-up, e.g. through facilitating on-line meetings, exchange of information between interested people and the GRoW community.
- The next work-shop of the cross-cutting topics is planned for autumn 2018. In the next workshop, the main questions/issues of common interest that have been identified in this workshop will be discussed in more detail and more tangible outcomes of joint work on these questions will be agreed upon.
- Results of this first workshop will be presented at the next meeting of the GRoW steering committee (Lenkungskreis) on April 19, 2018.

**Appendix**

**A) Introductory Presentation**

## Cross-cutting topics - Background



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**Goals:**

- Strengthening scientific quality/ use of a larger pool of experts on specific topics to overcome scientific barriers
- Effectively transferring knowledge into scientific and societal processes (using a critical mass of expert voices)

**Selection of topics:**


- Where joint processing offers significant added value for the projects
- Developed by the GRoW steering group in coordination with BMBF/PTKA

**Example results of cross-cutting topics in other funding measures:**

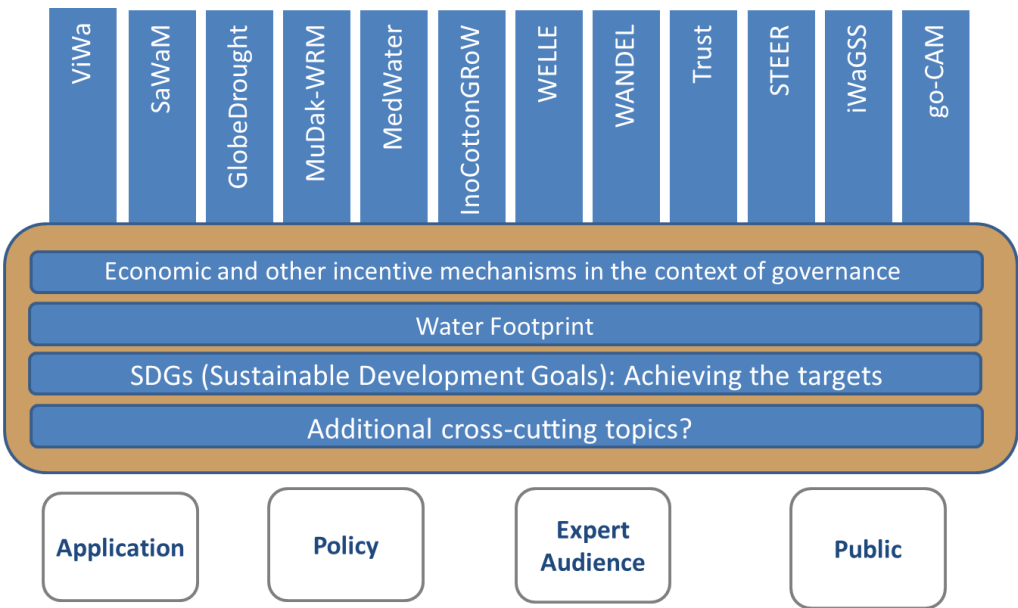
- Publication of discussion papers/ thematic issues / industry handbooks/ guidelines/ policy relevant position papers
- Specialized conferences/ workshops or roadshows
- Web-based decision support tools

22/03/2018
Welcome and Introduction to 1st Working Group on Water Footprint
2/4

## Role of cross-cutting topics in the funding measure GRoW



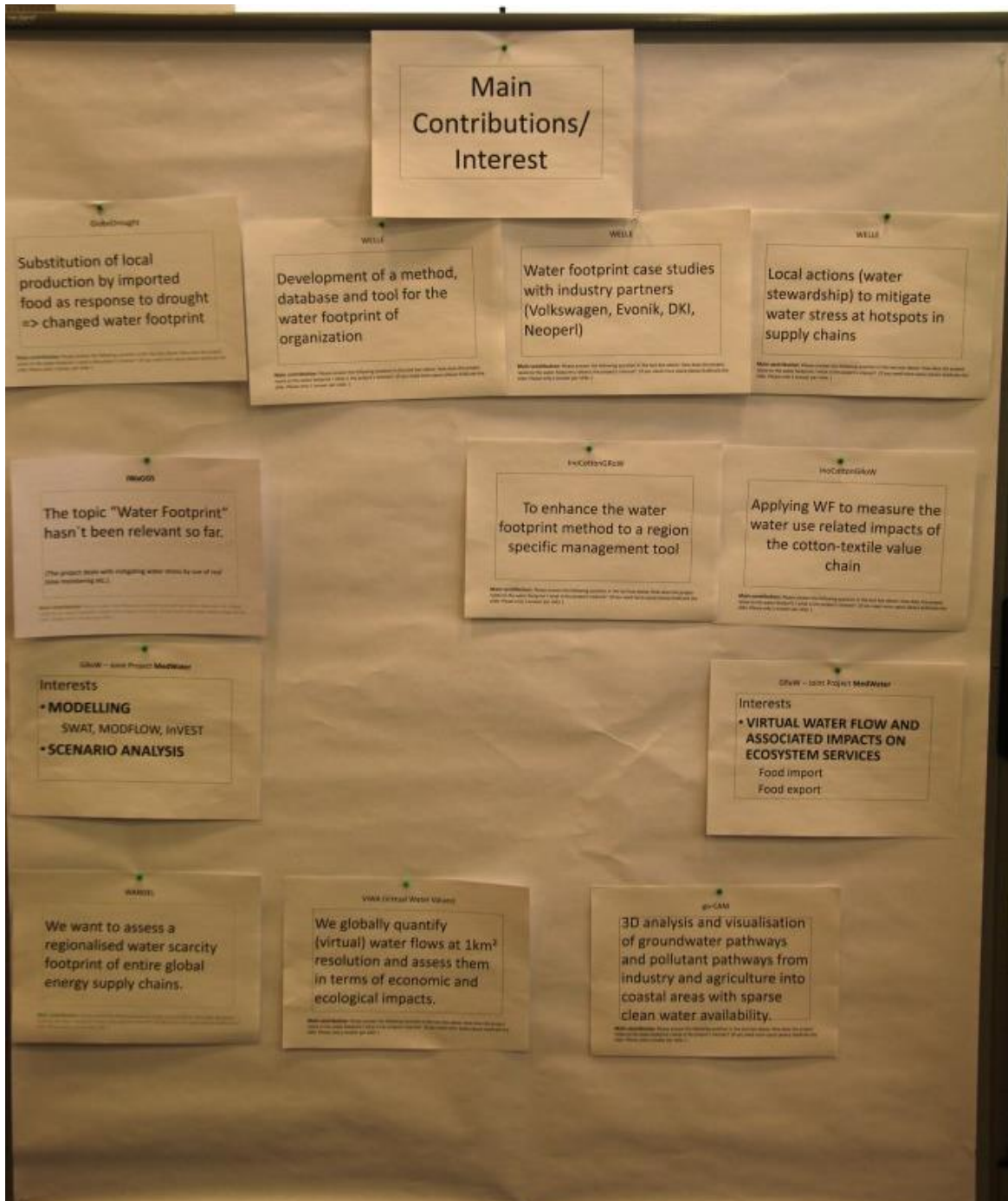
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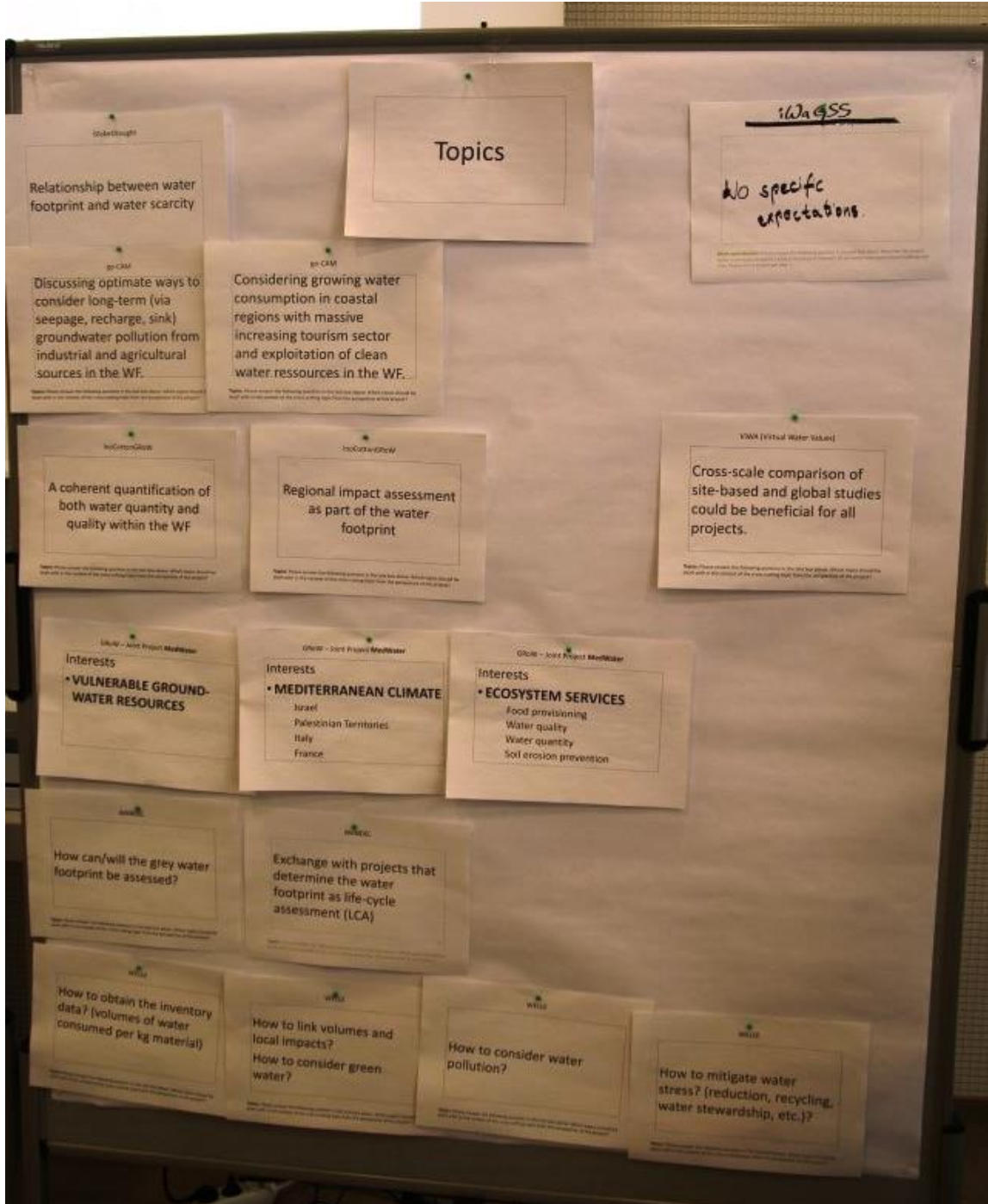


**B) Project Inputs – Contributions and interests with regard to the water footprint**





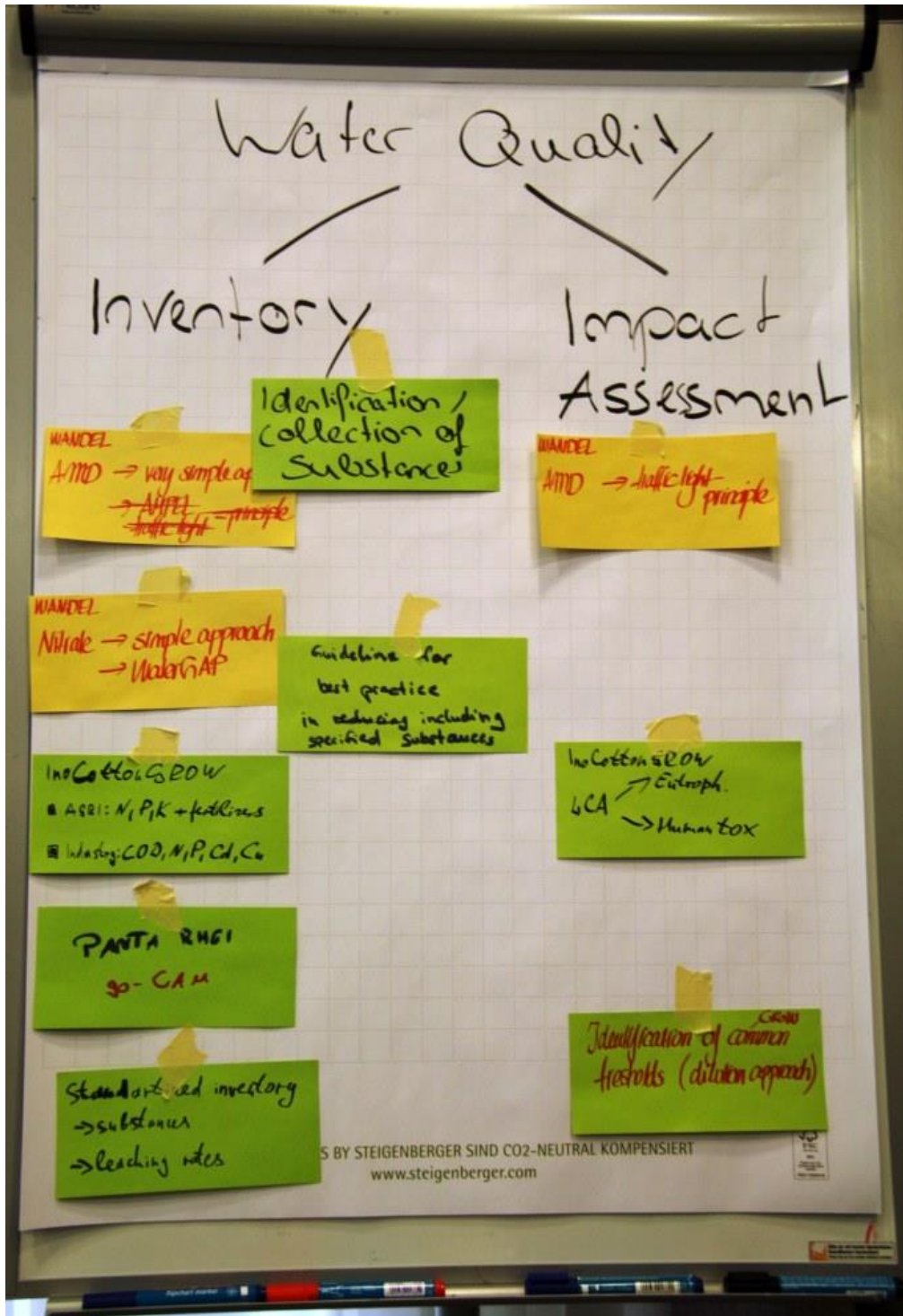
**C) Project Inputs – Topics that could be worked on jointly**





D) Results of the Working Group Session







### E) Overview of project inputs

Project	How does the project relate to the water footprint / what is the project's interest?	Which topics should be dealt with in the context of the cross-cutting topic from the perspective of the project?
<b>GlobeDrought</b>	<ul style="list-style-type: none"> <li>• Substitution of local production by imported food as response to drought → changed water footprint</li> </ul>	<ul style="list-style-type: none"> <li>• Relationship between water footprint and water scarcity</li> </ul>
<b>InoCottonGRoW</b>	<ul style="list-style-type: none"> <li>• To enhance the water footprint method to a region specific management tool</li> <li>• Applying WF to measure the water use related impacts of the cotton-textile value chain</li> </ul>	<ul style="list-style-type: none"> <li>• Regional impact assessment as part of the water footprint</li> <li>• A coherent quantification of both water quantity and quality within the WF</li> </ul>
<b>MedWater</b>	<p>Interests:</p> <ul style="list-style-type: none"> <li>• Mediterranean climate: Israel, Palestinian Territories, Italy, France</li> <li>• Vulnerable Ground-water resources</li> <li>• Ecosystem services: Food provisioning, Water quality, Water quantity, Soil erosion prevention</li> <li>• Virtual Water flow And associated impacts on ecosystem services: Food import, Food export</li> <li>• Modelling: SWAT, MODFLOW, InVEST</li> <li>• Scenario analysis</li> </ul>	
<b>go-CAM</b>	<ul style="list-style-type: none"> <li>• 3D analysis and visualisation of groundwater pathways and pollutant pathways from industry and agriculture into coastal areas with sparse clean water availability</li> </ul>	<ul style="list-style-type: none"> <li>• Discussing optimal ways to consider long-term (via seepage, recharge, sink) groundwater pollution from industrial and agricultural sources in the WF</li> <li>• Considering growing water consumption in coastal regions with massive increasing tourism sector and exploitation of clean water resources in the WF</li> </ul>
<b>ViWA</b>	<ul style="list-style-type: none"> <li>• We globally quantify (virtual) water flows at 1km<sup>2</sup> resolution and assess them in terms of economic and ecological impacts.</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-scale comparison of site-based and global studies could be beneficial for all projects.</li> </ul>



<b>WANDEL</b>	<ul style="list-style-type: none"> <li>• Assessment of regionalised water scarcity footprint of entire global energy supply chains</li> </ul>	<ul style="list-style-type: none"> <li>• Exchange with projects that determine the water footprint as life-cycle assessment (LCA)</li> <li>• How can/will the grey water footprint be assessed?</li> </ul>
<b>WELLE</b>	<ul style="list-style-type: none"> <li>• Development of a method, database and tool for the water footprint of organization</li> <li>• Water footprint case studies with industry partners (Volkswagen, Evonik, DKI, Neoperl)</li> <li>• Local actions (water stewardship) to mitigate water stress at hotspots in supply chains</li> </ul>	<ul style="list-style-type: none"> <li>• How to obtain the inventory data? (volumes of water consumed per kg material)</li> <li>• How to link volumes and local impacts?</li> <li>• How to consider green water?</li> <li>• How to consider water pollution?</li> <li>• How to mitigate water stress? (reduction, recycling, water stewardship etc.)?</li> </ul>