



# Water's role in a Circular Food System

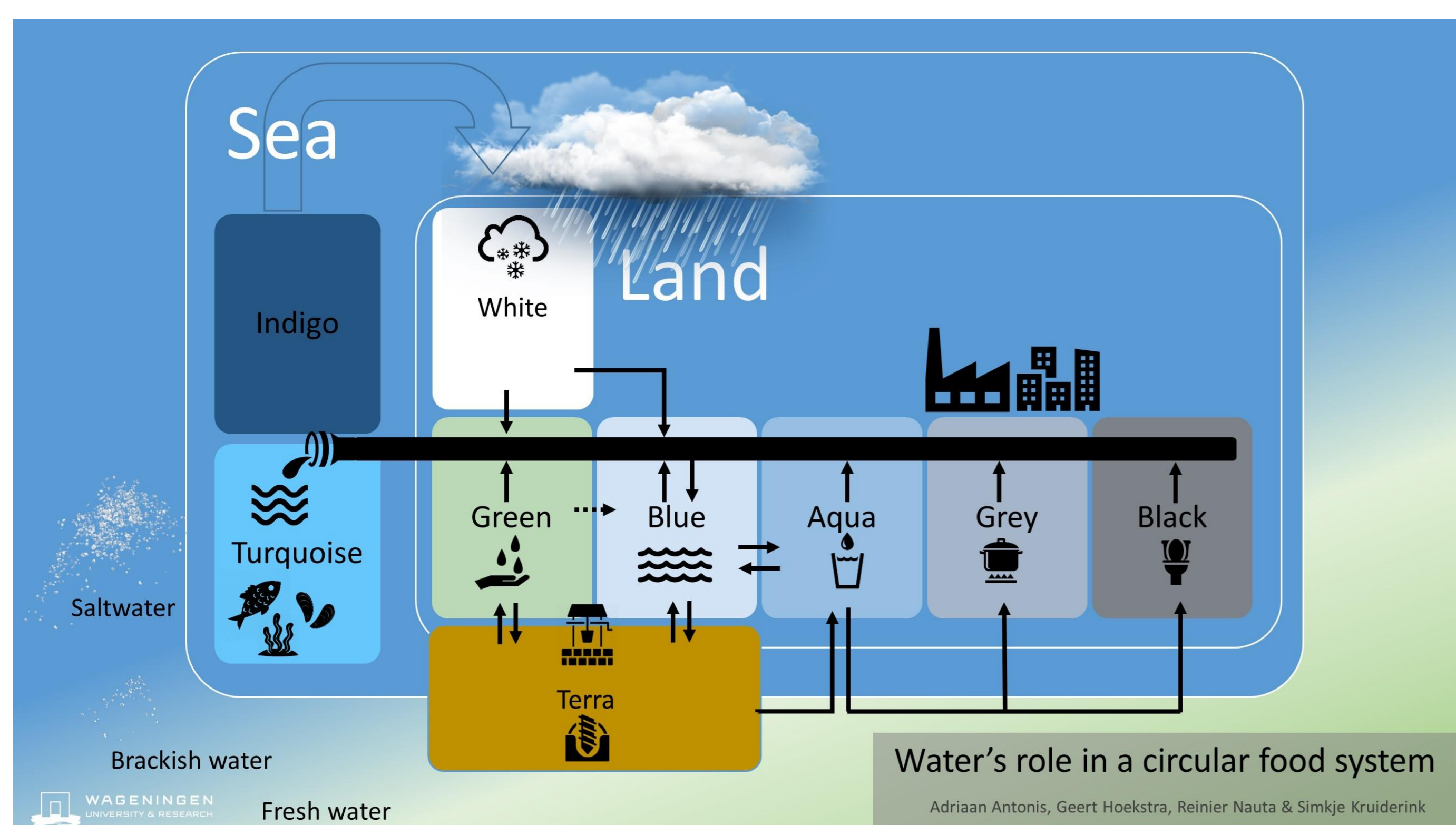
TEAM C

Water is a connecting element in the system 'earth' and one of the most essential natural resources. It is also the carrier of life providing nutrients within land as also within and to waterways including the sea.

The global food system harvests from saline (turquoise) as well as with green, white and blue water, much of which is stored underground in groundwater (terra) reserves. Society uses potable (aqua) water in their households and deliver process (grey) and sewage (black). Current linear (extractive) agricultural practices is one of the largest (92%) users of fresh water as well as one of the largest polluters of green, blue and turquoise water. In addition to transitioning to a more sustainable and equitable use of limited resources, we will also have to deal with climate change. Pressure on ecosystems and drinking supply will increase as well as aggravating existing problems with surface water quality and depletion of limited reserves of groundwater. The global hydrological cycle will change. In practice this means dealing with more salinization in specific agricultural areas as well as an increase of wetted zones in other areas combined with an increase of mosquitoes and the risk of vector borne diseases.

The transition towards a circular food system requires optimizing the use of earth's natural resources. This implies: minimizing the input of finite resources, encourage the use of regenerative ones, prevent the leakage of resources and stimulate the reuse and recycling of inevitable resource losses in a way that adds the highest possible value to the food system with the least possible damage to nature. In practice this means e.g. reusing green, grey and black water as well as the nutrients that it carries and minimizing the use of ground water to safeguard the availability for future generations well- managed "common" requires an integrated approach of scientists with different expertise.

Working on water's role in a circular food system, TEAM C worked on a conceptual framework.



The above overview (Figure 1) has been the starter for our conceptual framework in which different roles of water can be recognized. Not all these appearances have been scientifically coloured, but the distinction helps providing an overview of current present knowledge, identifying knowledge gaps, drafting up an research agenda and creating financial support for the development and exchange of knowledge.



Within WUR are projects that have been working on water as a circular food system resource. TEAM C explored the existing knowledge about water in food systems and inventories required knowhow about the role of water for a successful circular vision (kringlooplandbouw) by Minister Schouten. Highlighting these is a first step towards further developing circular food system thinking that combines food production from land and sea. Knowledge lacuna will be highlighted where additional research is needed. Team VC has had water's role on the regional, national and international agenda's.

## TEAM C

This sheet is a product of TEAM C, an agile team that has worked on one circular food system based on the principles of Imke de Boer and Martin van Ittersum on behalf of Martin Scholten

The individual team members can be contacted directly or via a general email address ([teamcirculariteit@wur.nl](mailto:teamcirculariteit@wur.nl)) for more information.

**Martijn Buijsse**  
WLR – regio Zuid Nederland  
[Martijn.buijsse@wur.nl](mailto:Martijn.buijsse@wur.nl)  
**Evelien de Olde**  
APS – duurzaamheid  
[evelien.deolde@wur.nl](mailto:evelien.deolde@wur.nl)  
**Jaap van der Meer**  
WMR – land / zee  
[Jaap.vandermeer@wur.nl](mailto:Jaap.vandermeer@wur.nl)  
**Sander van den Burg**  
WEcR – aquacultuur  
[Sander.vandenburg@wur.nl](mailto:Sander.vandenburg@wur.nl)  
**Klaas Jan van Calker**  
WLR – voedselketens  
[Klaasjan.vancalker@wur.nl](mailto:Klaasjan.vancalker@wur.nl)

**Adriaan Antonis**  
WBVR – Safety  
[Adriaan.antonis@wur.nl](mailto:Adriaan.antonis@wur.nl)  
**Fleur Brinke**  
WLR – regio Achterhoek  
[Fleur.brinke@wur.nl](mailto:Fleur.brinke@wur.nl)  
**Ingrid van Huizen**  
WLR – regio Noord-Nederland  
[i.b.vanhuizen@fryslan.frl](mailto:i.b.vanhuizen@fryslan.frl)  
**Simkje Kruidenink**  
LNV – beleid  
[s.i.kruidenink@minlnv.nl](mailto:s.i.kruidenink@minlnv.nl)  
**Geert Hoekstra**  
WEcR – Visketen en -markt  
[Geert.hoekstra@wur.nl](mailto:Geert.hoekstra@wur.nl)