

# Water Nexus

*Salt water where possible, fresh water where necessary*

<http://waternexus.nl/>

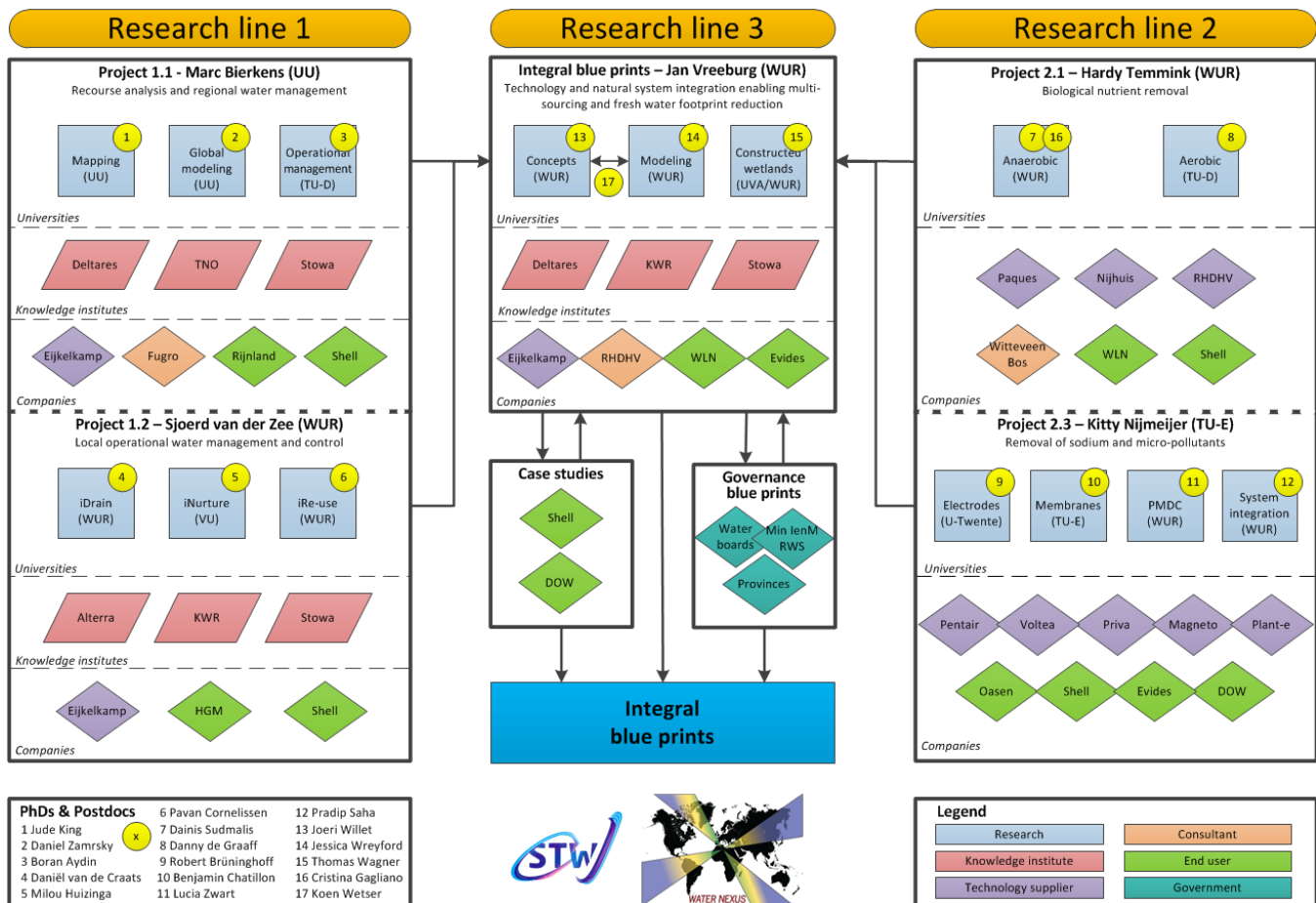
Water Nexus is a new NWO-STW research programme of 6 Million Euro, that will run from 2015 to 2020, and is supported by 25 partners from multinational and small/middle sized companies, consultancy firms, research institutes, water boards, and the Ministry of Infrastructure and Environment. It is coordinated by Prof. Huub Rijnaarts of the Environmental Technology group of Wageningen University (WU). Marc Bierkens (Utrecht University/Deltares) supervise project 1.1: Resource analysis and regional water management, where Gualbert Oude Essink from Utrecht University /Deltares is daily supervisor of the three PhDs.



**News:**

- [Miljoeneninvestering voor aanpak waterschaarste](#) (in Dutch)

**The three research lines of Water Nexus:**



## PhD 1: Rapid regional mapping of fresh-saline groundwater distributions and hydrogeological properties using airborne geophysics

UU, Jude King

### Goals:

- Assess locations and volumes of fresh and brackish water in deltas through combining airborne geophysics, conventional monitoring techniques, modelling and data-model integration
- Map out vulnerabilities and opportunities for fresh as well as brackish water use and control

article: King, J., Oude Essink, G.H.P., Karaolis, M., Siemon, B., Bierkens, M.F.P., 2018. Quantifying inversion algorithms using airborne frequency domain electromagnetic data – applied at the Province of Zeeland, the Netherlands. *Water Resour. Res.* 2060, 1–22. doi:10.1029/2018WR023165 [download](#)

## PhD 2: Rapid modelling and scenarios for strategic policy development

UU, PhD Daniel Zamrsky

### Goals:

- Build a toolbox (set of methods) for quick but comprehensive model construction, using state-of-the-arte codes
- Assess current and future fresh-saltwater distributions.
- Assess regional effects of water management and water technology measures for fresh-salt water use and control.

article: Zamrsky, D., Oude Essink, G.H.P., Bierkens, M.F.P.: 2018. Estimating the thickness of unconsolidated coastal aquifers along the global coastline, *Earth Syst. Sci. Data*, 10, 1591-1603, <https://doi.org/10.5194/essd-10-1591-2018> [download](#)

## PhD 3: Operational management of regional salt-fresh water resources

TU Delft, PhD Boran Aydin

### Goal:

- Set up integrated system to predict fresh water availability to enable day-to-day fresh water control for both water managers and fresh water users

article: Aydin, B.E., Tian, X., Delsman, J., Oude Essink, G.H.P., Rutten, M., Abraham, E., 2018. Optimal Salinity and Water Level Control of Polder Ditches using Model Predictive Control. *Environ. Model. Softw.* doi:10.1016/j.envsoft.2018.11.010 [download](#)

## More Information

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