



# *Water Technology*

## *An innovative Dutch approach*



Hein Molenkamp, Vancouver

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# The Netherlands European Water Technology Hub

EUROPEAN  
WATER  
TECHNOLOGY  
HUB



WATER  
CAMPUS  
Leeuwarden

- Strong water technology network
- Development and commercialization of innovative & breakthrough water technologies
- Cooperation > 180 companies and 50 universities / institutes
- Focused at Water Campus Leeuwarden

Water hubs in world





# Innovation Eco System

## Scale up of technologies



2005 – 2009  
PhD project Wetsus

**mW**



2007 – 2013  
Pilot Wetsalt Harlingen

**W - kW**



> 2015  
Full-scale application

**MW**

# Water Technology Innovation Chain









# WATER CAMPUS

Leeuwarden



# Top research by unique bundling of know-how disciplines

- 20 European universities and research institutes
- 52 scientific chairs
- 95 companies Worldwide
- 23 research themes
- 120 research projects
- 26 spin-off companies

Wetsus

European centre of excellence for  
sustainable water technology



# Water Application Centre





# Demo-sites



WetSalt Desalination  
Harlingen



Municipal Waste Water  
Wetterskip Leeuwarden



Hospital Waste Water  
Sneek



Demo site Drinking Water  
Vitens Noord Bergum



Sensor Test Center  
Glimmen

# Facilitating Water Tech SME's and Start-ups

- Water Incubator
- Innovation infrastructure
- World Wide Network
- Coaching
- Venture Capital
- Talent pool
- SME research tools
- Business Development
- Stimulate Business
- Cross sectorial connections
- Launching customers
- Organizing sustainable cooperation & partnerships
- International Network & Export

- Netherlands
- Europe
- Global Water Hubs



# Test garden show cases & projects

Cradle to Cradle  
Islands

Salt Waste Water  
Treatment  
North Water, Delfzijl

Demi water  
production from  
surface water Kisuma  
North Water Veendam

Water factory  
Zoo Emmen  
BetaWater / WMD

Water factory Norit  
and Gietwater fabriek  
Glasshouses  
Klazienaveen WMD

Pure water factory NAM  
NieuWater / WMD

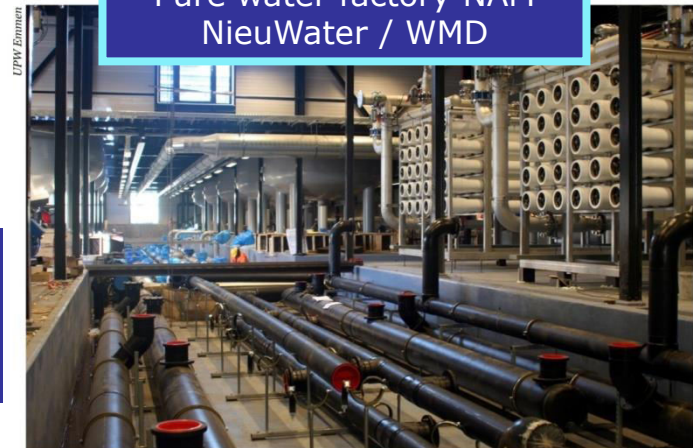
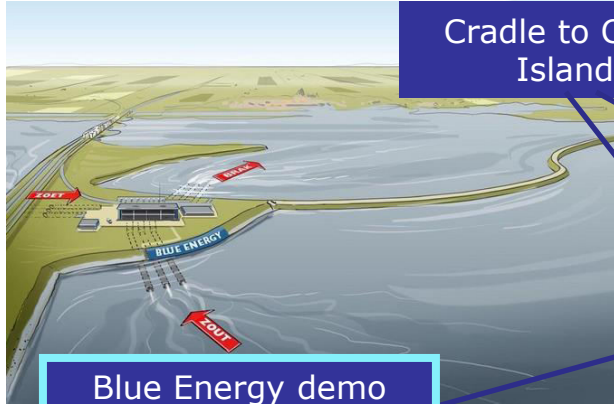
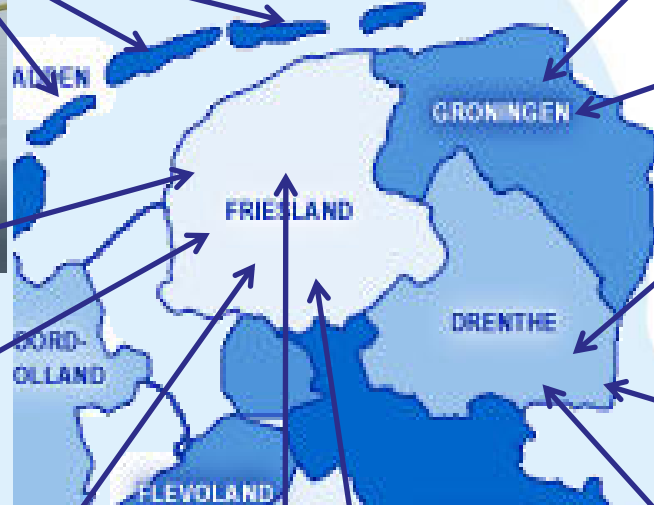
Blue Energy demo  
Harlingen / Afsluitdijk

Decentral sanitation  
Desah & Noorderhoek  
Sneek

Desalination  
brackish  
groundwater  
Noordbergum  
Vitens

Kerawash  
Textile washery  
de Binde  
Heerenveen

Methane reuse Drinkwater  
production Spannenburg Vitens





# 50 kW Blue Energy pilot

Salinity power as new source for energy



**RED STACK**

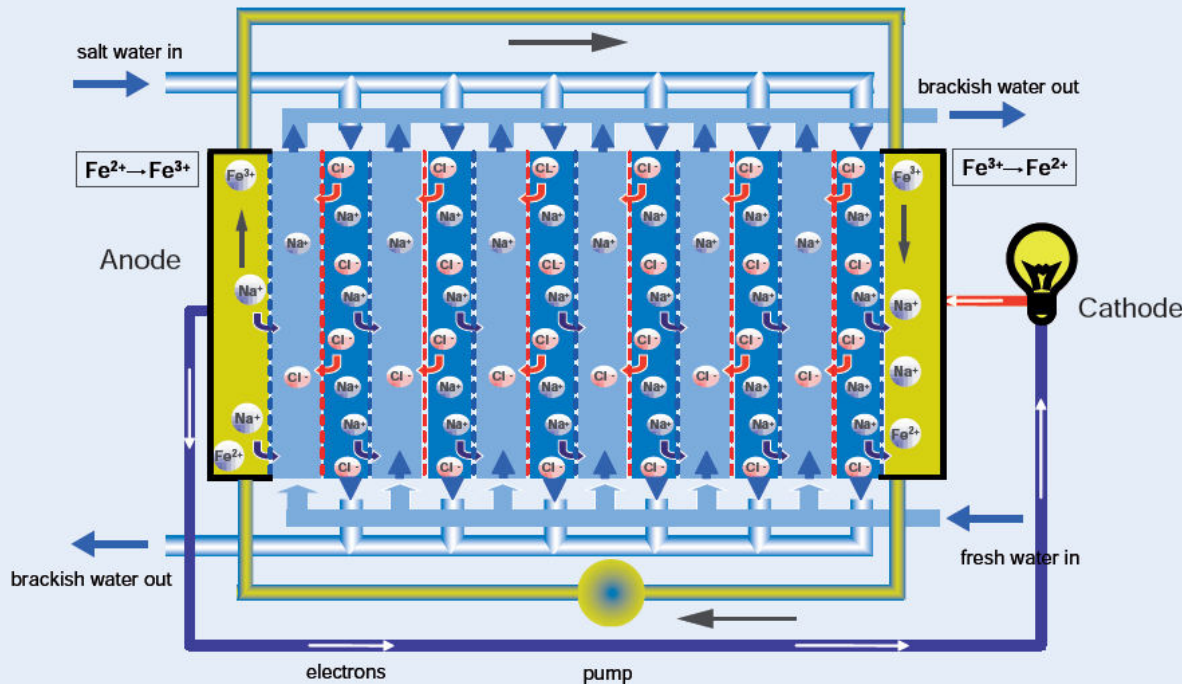


Figure 1: Schematic representation of reverse electrodialysis (RED)

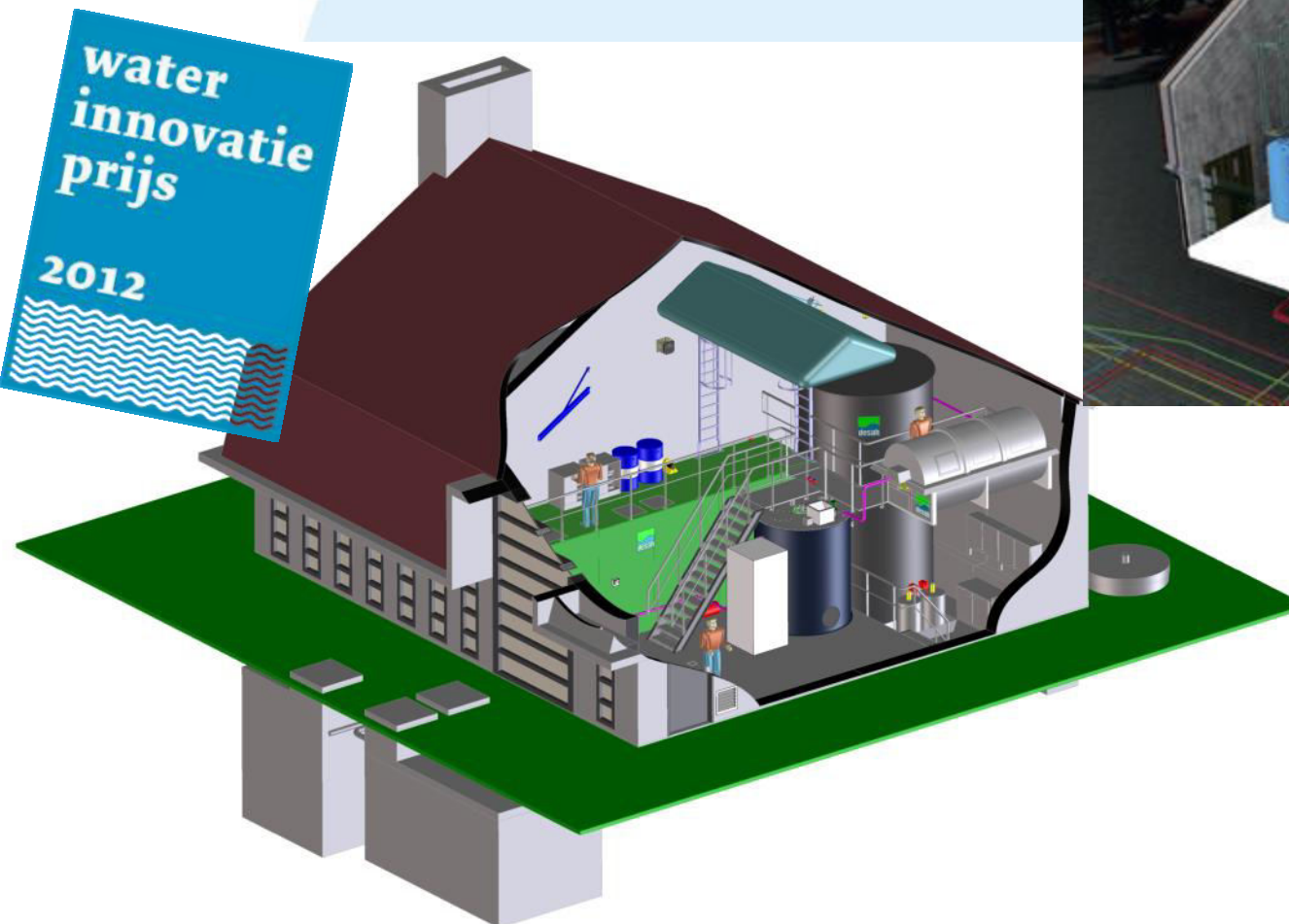
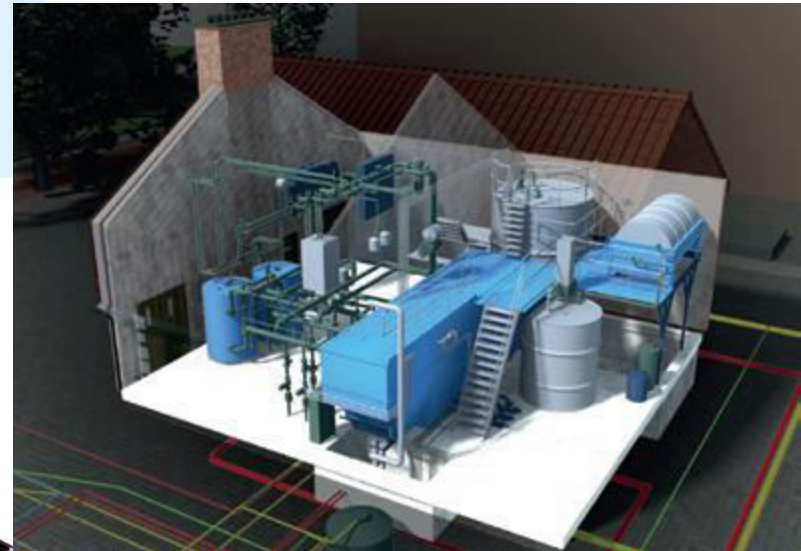


wateralliance

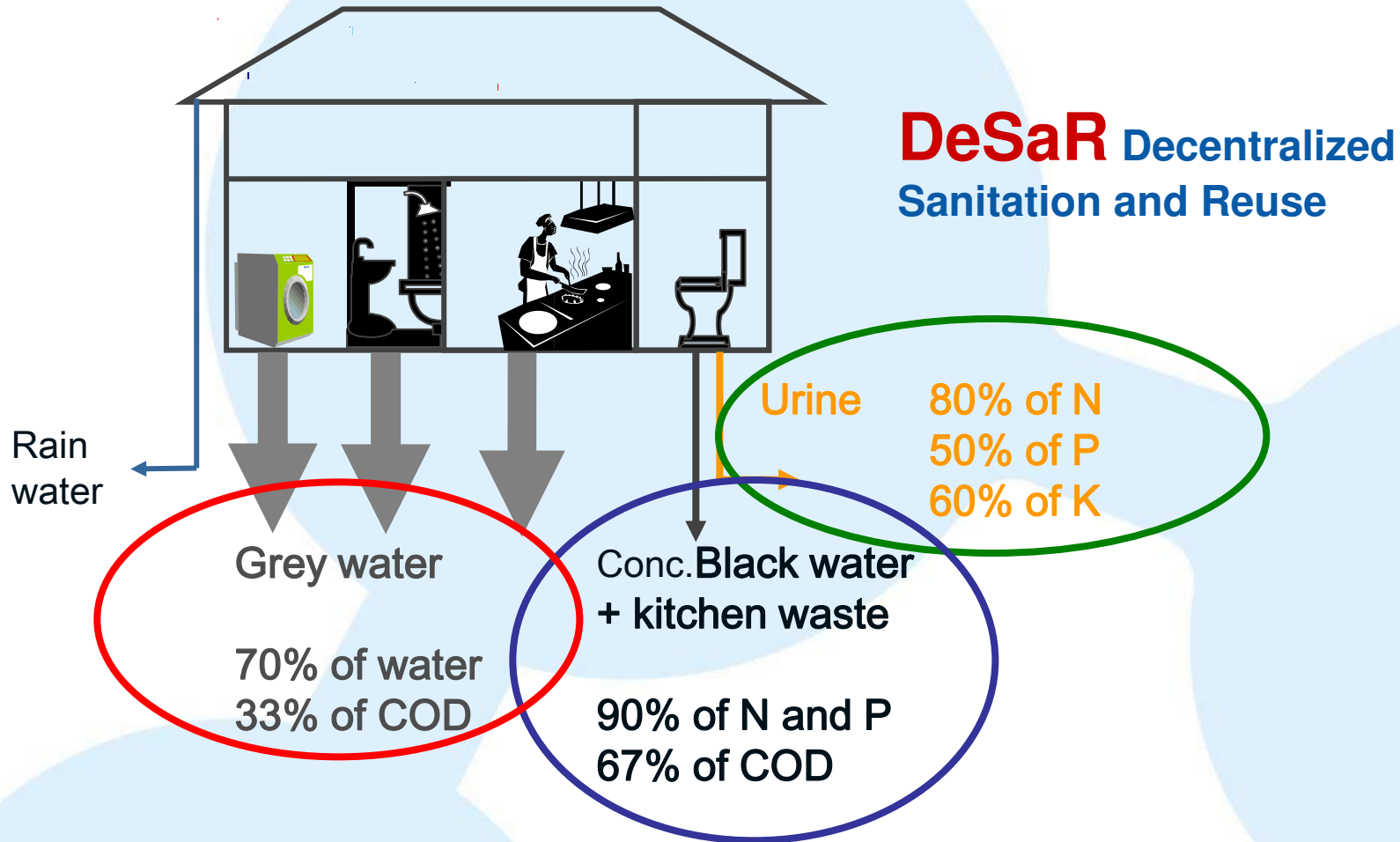
# Decentralised sanitation and Reuse Project "Waterschoon" in town of Sneek



- 232 houses **vacuum toilets and black water pilot plant**
- Separation of grey and black water
- Reuse of energy and nutrients

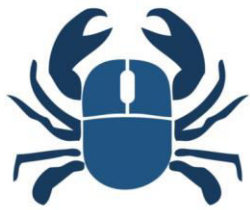


# DeSaR concept proposes to separate waste streams

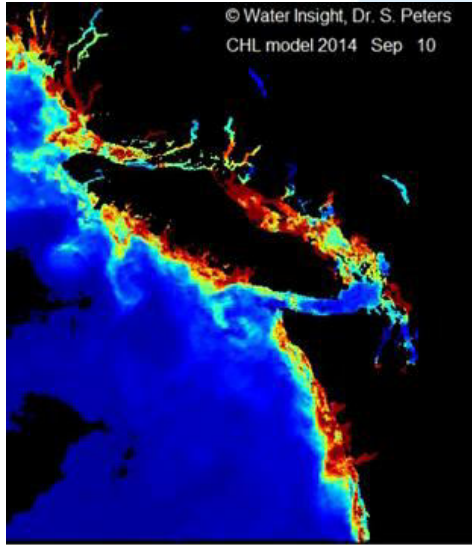


\* Kujawa-Roeleveld et al., 2006





**BlueLegMonitor**  
Spot-on water quality



	<b>Marine Harvest, world's largest salmon producer, annual turnover €2 billion, 400.000 MT/a</b>
<b>Sector</b>	Aquaculture
<b>Problem</b>	Recurring multi-million € harmful algae damage to salmon
<b>Approach</b>	Development of spectral algorithms for recognition of specific algae species and integrated monitoring system (satellites, ECOspot, ECOwatch)
<b>Operational development</b>	Portal development for dashboard style display of water quality parameters in close cooperation with the Client
<b>Market potential</b>	<ul style="list-style-type: none"><li>• Professional aquaculture producers</li><li>• Aquaculture insurance companies</li></ul>
<b>Strategic fit</b>	Unique aquaculture sector position for BLM



# Hydrowashr

**HYDROWASHR**

Your hands will be clean, dried, soft and comfortably warmed without any soap or towels.

Drastically save water: up to 350.000 liters per year per Hydrowashr

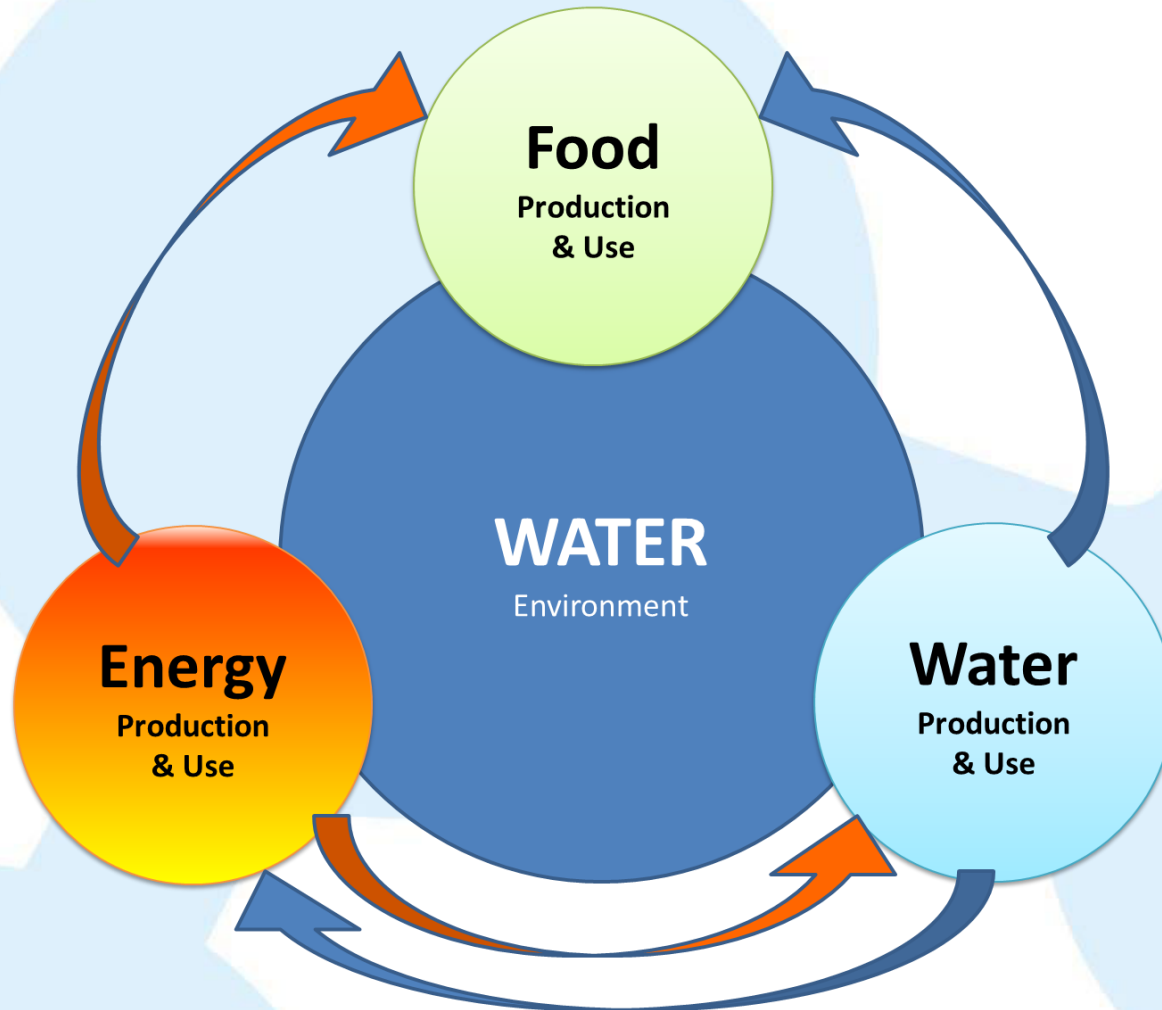
Stand-alone or combine multiple Hydrowashrs with numerous table options.

Completely touch-free thanks to integrated sensors.

**"ULTRA EFFICIENT & ULTRA HYGIENIC HAND SANITATION"**

Hydrowashr is an entirely new way of washing hands, making clever use of micro-droplets technology for supreme hygiene, efficiency and user comfort. Hydrowashr both cleans and dries your hands in one quick go, drastically saving water and making soap and towels superfluous.

# Linked Challenges Require Technological Innovations





# Connecting Water Technology Hubs



# Cooperation is a challenge what's in it for me?



# wateralliance

*your partner in business @* 

Have an inspiring conference!

**WATER  
CAMPUS**  
Leeuwarden



provincie Drenthe



NOM

provinsje fryslân  
provincie fryslân



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