

The need for innovation in the watercycle

Research at the interfaces of drinking water, wastewater and water system

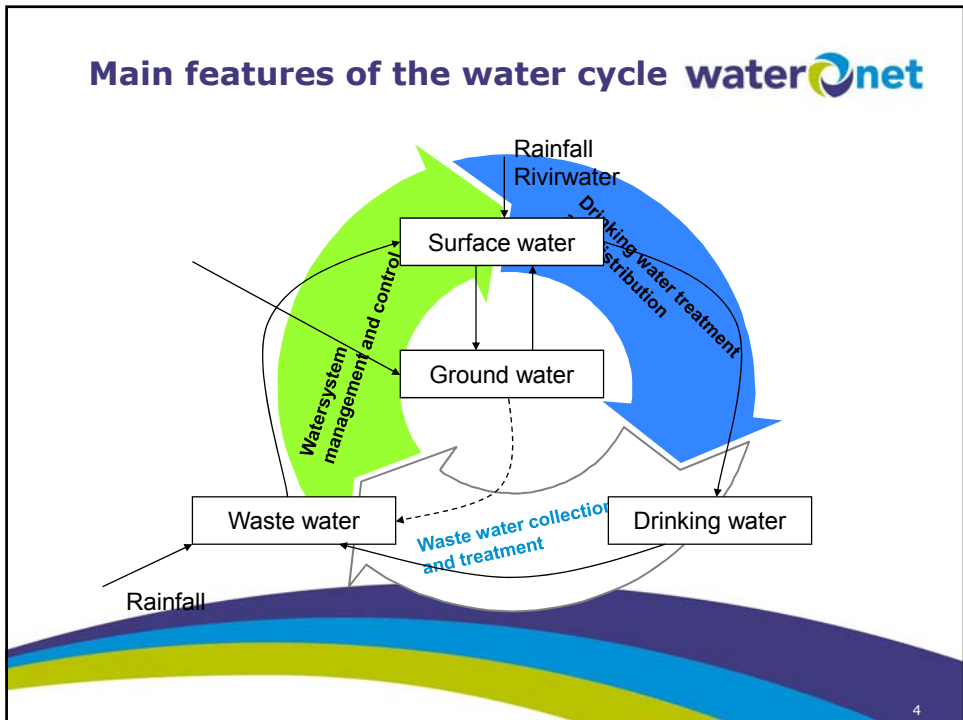
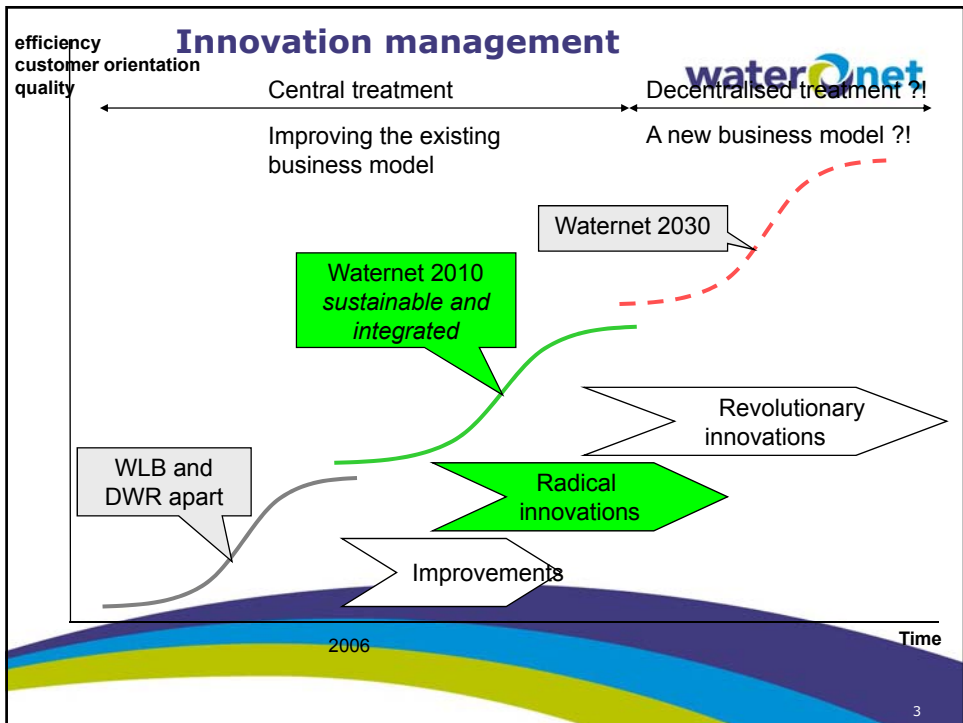
Jan Peter van der Hoek
April 24, 2009

The need for innovation

- Waternet = WLB + DWR
- Sustainable integrated watercycle company
- Synergy advantages, and more:

$$1 + 1 = 3 \text{ à } 4$$

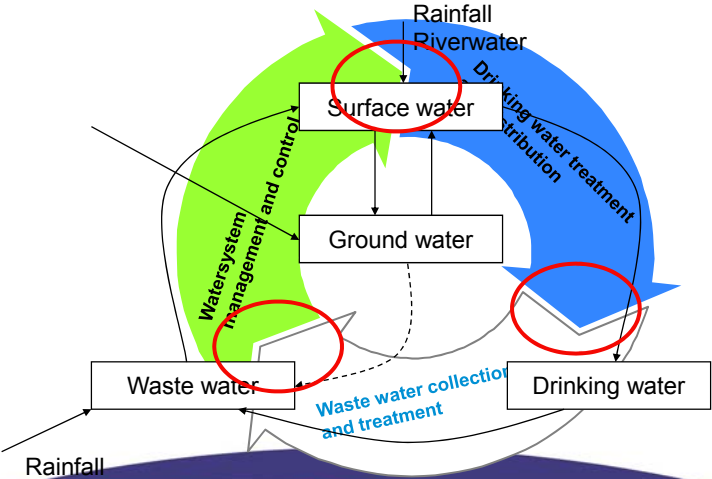
- What is the added value?
- How can the added value be realised?
- On which areas innovation is needed?



Innovation strategy

- All innovations are important
- A water cycle company should focus on those areas where drinking water, wastewater and water system interact and overlap
- There the added value of a water cycle company can be created and harvested

Strategic innovation areas



7 Strategic innovation areas

- Sources and watersystem
- Closing the water cycle
- Sustainability
- Decentralised concepts
- New products and services
- Internal services
- Management innovations

1. Sources and watersystem

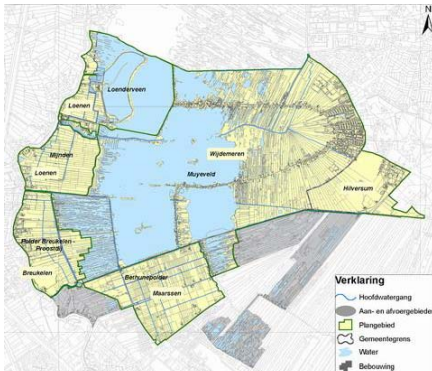
- **Strategic selection and use of drinking water sources**
 - there where watermanagement and drinking water interests meet and offer synergy
 - e.g use of brackish seepage water
 - research into desalination and brine treatment
- **Robust watersystems**
 - Interaction between watersystem and discharge of (treated) wastewater
 - Source protection (innovative use of the WFD)
- **Health, water quality, monitoring**
 - Most effective approach of emerging substances



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Bethunepolder



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2. Closing the water cycle (a)waternet

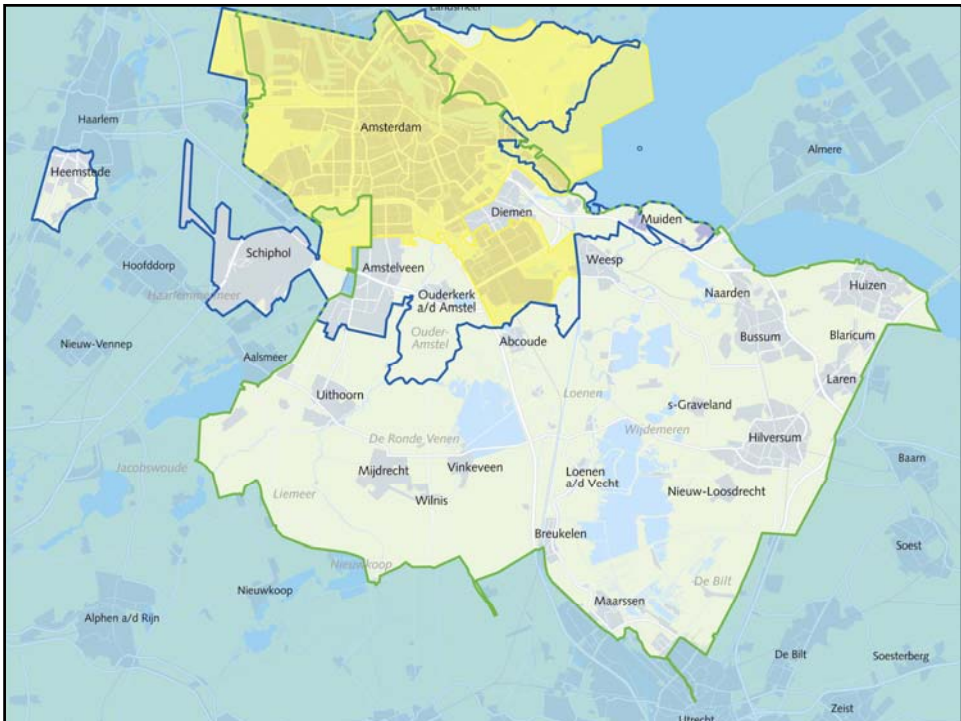
- Reuse of effluent

- drinking water
- process water
- research into treatment technology
- acceptance & communication
- separated collection of wastewater (black – grey – yellow)?



- Cooperation in the water cycle outside Amsterdam

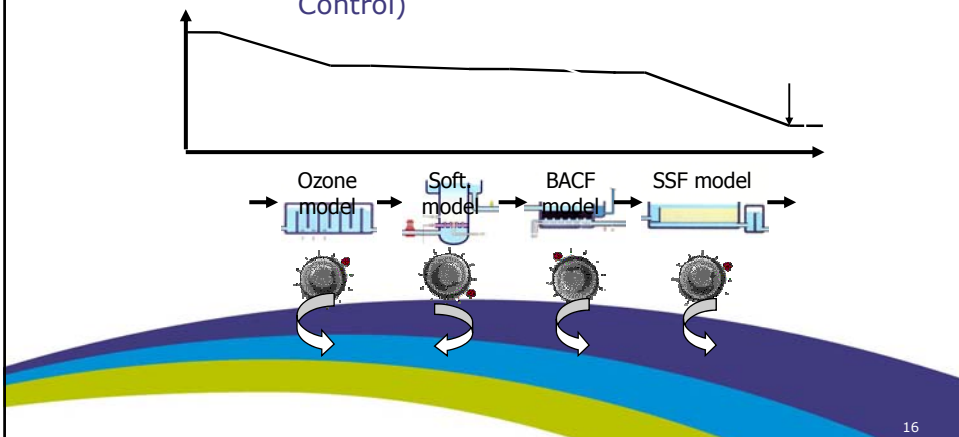
- collection of waste water for municipalities
- cooperation with neighbour drinking water companies



2. Closing the water cycle (b)water^onet

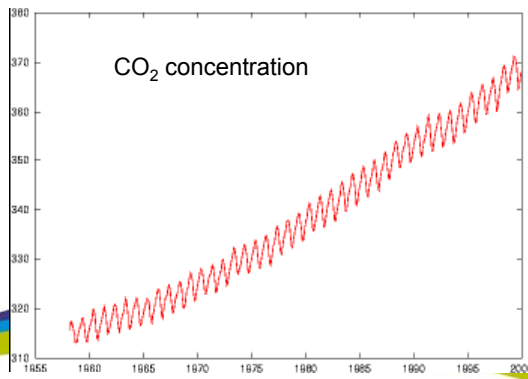
- **Modelling and process control**

- Modelling and control of the water cycle: drinking water production ↔ waste water treatment
- Integrated process automation (Real Time Control)



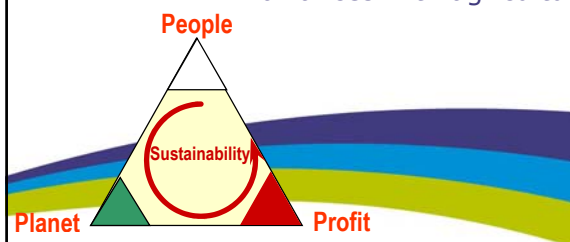
3. Sustainability (a)

- **Integrated climate change policy and climate change actions**
 - mitigation (climate footprint)
 - adaptation
 - combinations



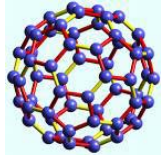
3. Sustainability (b)

- **Quantification of sustainability**
 - LCA / LCC
 - development of alternative performance indicators
- **Nature conservation combined with watermanagement**
 - Waternet as the water authority in spatial planning problems
 - alliances with agriculture



4. Decentralised concepts

- Closing the water cycle locally
 - Separated collection of waste water
 - Local production of drinking water
- Nanotechnology and biotechnology



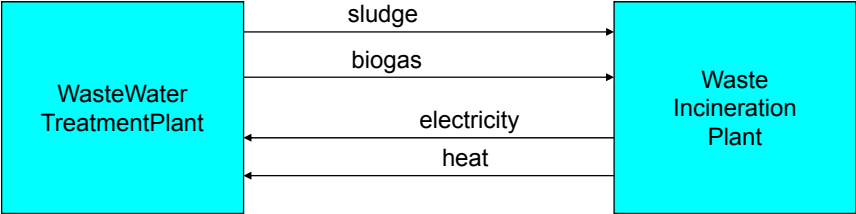
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5. New products and services

- Energy + Water
- One supplier with a multi-package (“one-stop-shop”)
 - supply of drinking water and process water
 - waste water collection and treatment
 - watermanagement and nature conservation
 - “safety behind the dykes”
- Integrated and transparent tariff for all water services

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Combination Wastewater Treatment Plant with Waste Incineration Plant



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6. Internal services



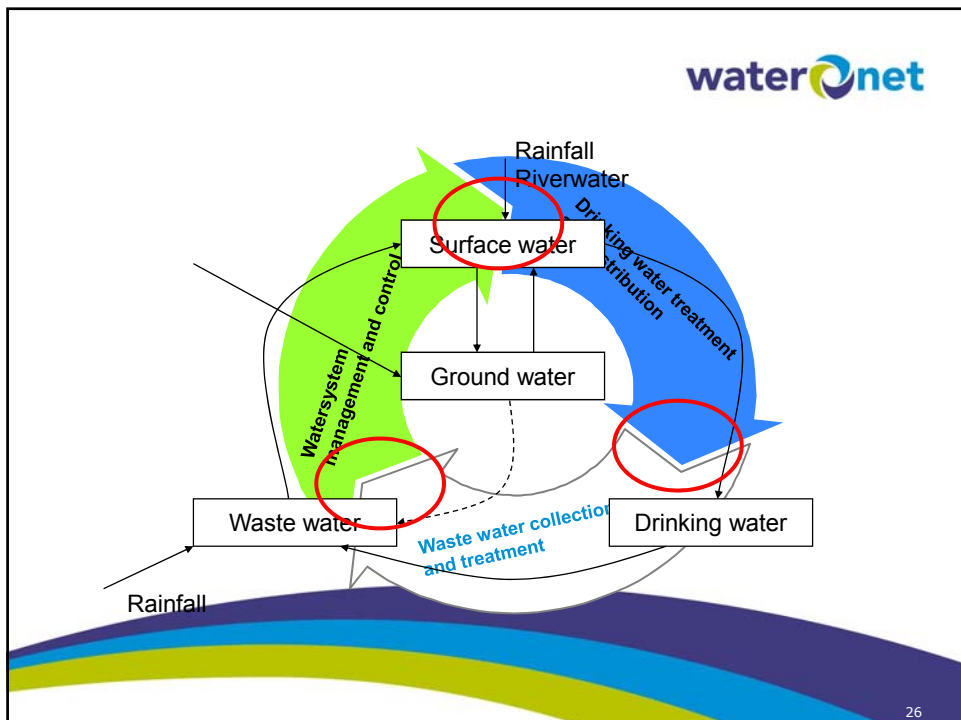
- Renewal of internal services resulting in a more effective and efficient operational management
- ↓
- Condition for innovation

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7. Innovation in management concepts

- **Innovation management**
 - focus on control and innovation + creativity
 - institutionalisation of innovation
- **Alliance management**
 - alliances with research institutes and universities
 - cooperation with suppliers

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