

Water use on the Uithof:

Can it be made more sustainable?

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Summary

Currently the Uithof makes use of water produced by Vitens which is in a region with high water stress. Current water production is unsustainable due to high depletion rates and nitrate pollution of groundwater. Water use on the campus makes use of standard toilets, urinals and showers. No special attention to water savings has been identified. Water waste treatment is done through centralized water boards. Essentially a lack of transparency and awareness of water use should be the main priority of the Uithof when addressing water use efficiency, based on the suggested improvements from the comparative case study. Increasing awareness includes measures such as introducing water meters floor by floor and student campaigns. As for actual water saving measures grey water reuse can be investigated for use on the campus. Literature across all three fields of study in the paper review seems to agree with a general trend towards decentralization. This may not be immediately possible mainly due to financial constraints, however, we urge the Uithof to consider this as a future option, with prospective lessening in implementation costs over time. Further solutions are mentioned throughout the different aspects of sustainable water use as sections in the review. For governance on water use, as seen in the literature review; transparency and regulation on water management especially in decentralized systems is a barrier that the Uithof can look to break.

Regarding sustainable water production it is important for the Uithof to take action regarding ground water depletion, and nitrate contamination. As these problems exceed the Uithof region the Uithof needs to increase its collaboration with the Dutch government and relevant actors that are responsible for water contamination. By implementing water saving toilets and urinals water use on the Uithof may be reduced up to 30% for office buildings and educational buildings. Payback times are estimated to be around four years. By collecting rain water a total of 43% of daily toilet and washing machine use can be compensated. Awareness of actual water consumption reduces water use by up to 27% by displaying the consumption rate during use. This reduction may be amplified through social competition and sharing of information through social networks.

According to all possible implementations as shown in table 5 for waste water treatment we strongly believe that the most suitable for the Uithof are:

- Sand filters
- Diverse valves
- Constructed wetlands
- Aerobic biological treatment

The first three can easily be implemented with relatively low investment costs. In addition they can provide the Uithof with a good quality of treated water for several uses. Finally the aerobic biological treatment can provide a high quality treatment with the respective costs, but it will provide treated water for more uses, saving more water and money.

The main research question of this study was: can water use on the Uithof be made more sustainable?

The answer is Yes. Through implementing the findings as described in the conclusion the sustainability of water use on the Uithof may be improved regarding the concepts of people, planet, profit.

People: Through collaboration with government and other relevant actors in water production, management and use (e.g. farmers) the Uithof may push for policies which improve the sustainability of water production. By reducing groundwater contamination long term water production and availability is improved, allowing future generations to have access to clean drinking water.

Planet: Through implementing water saving and grey-water re-using methods the Uithof may reduce water demand and therefore production. This reduces pollution and greenhouse gases which improves the environment for future generations.

Profit: Implementation of new technology that reduces consumption and increases awareness of water use saves the Uithof money. Focusing on water-efficient appliances will also form a driver for companies to develop more efficient technologies, this making efficiency profitable.