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WaterCampus Leeuwarden - connecting water technology in Europe

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This case study originally appeared in *Cities for the future: Innovative and principles-based approaches to urban equity, sustainability and governance* (published in April 2015).

Cities for the future is the biannual flagship publication of the Global Compact Cities Programme and is financially supported by the Research and Innovation Portfolio at RMIT University.

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Cover image courtesy of Water Alliance.

Leeuwarden WaterCampus is playing a lead coordinating role in its multi-sectoral collaboration to support and drive the city's Innovating water projects. WaterCampus stimulates cooperation between national companies, research institutions and governments in water technology to achieve synergy in innovation, education and entrepreneurship at a global level. Image: Water Alliance.

Labour Environment

Cross-sectoral Collaboration

WaterCampus Leeuwarden – connecting water technology in Europe

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Leeuwarden in the Netherlands has recently elevated its engagement with the Global Compact Cities Programme to the Innovating level. A quadruple helix of science, education, business and government in water technology will soon be extended to culture and the community in efforts to improve global water sustainability and local development in the city.

Water is essential for life. Yet the world faces many water challenges due to urbanization, population growth and climate change.

In matters concerning sustainable water usage, the Netherlands has a lot to offer to the global market, with expertise in dyke construction, water quality, efficient water use for industrial and agricultural processes and raw material and energy production from wastewater and wastewater treatment. The government has selected the Dutch water sector as one of the 'top-sectors' of the Dutch economy, where government, research and businesses work closely together in a triple helix to increase the added value of the sector.

Leeuwarden is blessed with good quality drinking water and sufficient amounts of surface and groundwater. In the 1990s, a smart specialization in water technology was initiated in response to environmental and societal problems and economic opportunities in the global water market.

The project was built on regional expertise in the agro sector, existing regional knowledge on water management and employability opportunities for students. The establishment of Wetsus in Leeuwarden in 2003 was the first significant achievement in line with this smart specialization.

The WaterCampus innovation ecosystem

At WaterCampus Leeuwarden, a physical hot spot has been created where a quadruple helix is in practice. Research, education and business closely cooperate with government bodies and end users to develop innovative water technologies. A unique and comprehensive innovation ecosystem has been established, speeding up the development process. At WaterCampus, breakthrough innovations arise and find their way to the global market in an ecosystem that attracts water technologies entrepreneurs, knowledge institutions and end users.

In the 1990s, market studies concluded that the global market in the areas of drinking water, wastewater and industrial water was large and would grow in future decades. Economic growth in this market could be achieved based on four targets: knowledge pooling, early foreign acquisition, building international collaborations, and realizing pilots and reference projects. In an effort initiated by the Province of Fryslân (Friesland), important stakeholders collaborated in a taskforce to realize these targets. The launch of Wetsus, a centre of excellence for sustainable Water Technology, in Leeuwarden was one of the taskforce's first big achievements and an important basis for the establishment of WaterCampus Leeuwarden and other water technology initiatives.

More and more parties from all over the world are finding their way to the Netherlands when looking for water technology solutions. WaterCampus Leeuwarden is continuing to develop Water Alliance and its European Water Technology Hub as a global partner in research, business and education on water technology. As part of the hub, research, business and education partners from within and outside Leeuwarden cooperate to establish breakthrough water technologies to deal with global water issues. All partners are connected to and cooperate within WaterCampus Leeuwarden, as it is the physical hot spot of the European Water Technology Hub.

Results so far

The quadruple helix is in place at WaterCampus Leeuwarden, with strong cooperative ties between science, education, business and government. This mutual effort is resulting in significant impacts on society. Excellent know-how, the result of historical care

for and awareness of water in the Netherlands, is one of the triggers for the success of the Dutch water sector. The strong commitment and cooperation of all stakeholders in the water technology sector today are key drivers that make the progressive approach and results at the WaterCampus possible. Moreover, the WaterCampus region is a lively test garden for showcases and projects that attract increasing international visitors interested in new solutions.

Science

In order to develop the breakthrough solutions required to solve the global water crisis, multidisciplinary and applications-orientated research is required. At Wetsus over 95 global companies (25 per cent non-Dutch, 45 per cent SME) define a multidisciplinary research program, executed by PhDs supervised by 45 professors from 19 universities in nine different European countries. The companies involved are connected to Wetsus through long-term rolling financial commitments, enabling them to monitor and guide the scientific program to suit market demands.

Wetsus has already generated over 350 scientific papers with high citation impact and 65 patents, most of which have been transferred to the companies involved for commercialization. Currently, 70 doctorate students from all over the world, but predominantly from the European Union, are performing world-class research.

Business

The WaterCampus vision is that companies are crucial to bringing innovations to society. Stimulating business is therefore a priority. Companies are facilitated in several ways, including start-up company stimulation programs, marketing support, facility sharing, financial instruments and cooperation models.

Water Alliance is facilitating water-technology SMEs and has about 80 business members. It is also stimulating business and global cooperation for the Dutch water technology sector and encouraging interaction and cooperation with other sectors including agro, food, health, energy, and high-tech systems, generating business innovations. Water Alliance is globally promoting the Dutch Water Technology sector and attracting new partners in order to stimulate export. The international network of the Water Alliance already consists of approximately 2000 businesses and organizations worldwide. Annually, dozens of companies are successfully introduced by the Water Alliance to international partners, initiated through initiatives such as international trade shows and trade delegations.

As part of the WaterCampus innovation ecosystem, six water technology demonstration sites are available for water authorities and industries to test, develop and optimize their new products. The most recently opened demonstration site is located at the Antonius Hospital in the city of Sneek in Friesland, where researchers, businesses and industries can use specific hospital wastewater streams and temporarily apply their technology in a practical and simple 'plug and play' setting.

Education and applied research

The Centre of Expertise Water Technology and the Centre for Innovative Craftsmanship Water (*Centrum voor Innovatief Vakmanschap Water*) are enabling students and teachers to gain experience in and work on applied research for practical business and market demands in relation to water technology. Combined with masters and doctorate programs in Wetsus, a Bachelor of Science water technology track with Van Hall Larenstein and Noordelijke Hogeschool Leeuwarden, a vocational water education program with Friesland College and Nordwin College, and the water professor program for children at elementary schools, a unique worldwide learning cycle on water technology is present in Leeuwarden. This makes WaterCampus the place to be for the inflow of students in water technology at any level, with an outflow of innovative craftspeople, experts on water technology and excellent water researchers. Bringing together different educational levels at one physical location provides close cooperation with industry and an innovative climate. The availability of facilities and knowledge programs enables practical education with internships and research for projects related to water technology, creating value for students, businesses and industry.

Society

Involving society is very important but it also presents challenges. Societal awareness about the availability and use of fresh water and the disposal of wastewater is expected to have a significant influence on achieving ecological ambitions and improving quality of life. Therefore, the WaterCampus and its partners significantly invest in wider citizen involvement and engagement. Recent examples include the permanent exposition of a water laboratory at the Frisian Natural Museum that attracts many school children, frequent open days at the WaterCampus and local media involvement.

The 3FM Serious Request was a special event hosted in Leeuwarden in December 2013. At the event, three well-known DJs fasted and played music requests in a glass house for 24-hours-a-day in order to raise money for those who suffer from diarrhoea — a disease typically related to polluted drinking water. About 12.3 million euro was collected by donations from citizens and the private sector.

In addition, the Council of the European Union decided to award the title of European Cultural Capital 2018 to Leeuwarden, addressing water as one of the major themes in boosting the economic, social, ecological and cultural structure of Leeuwarden, Friesland and the Dutch Wadden area by using the power of *Mienskip* (community sense). The program is underway, with the WaterSciencePark and Fluid Art to be presented in 2018.

Government

National, regional and local governments are committed to a focus on water technology. The regional commitment is notably demonstrated by special innovation and demonstration subsidies that have launched customer projects and have co-funded the WaterCampus.

Over the past few years, a regional innovation subsidy '*Fryslân Fernijt*' has enabled approximately 45 SMEs to cooperate in approximately 20 water technology innovation projects. The Frisian Water Authority has also committed to adopting innovation through a Green Deal program to stimulate the application of innovative water technologies.

In selecting the Dutch water sector as one of the 'top-sectors' of the Dutch Economy, several programs have been launched focusing on science and innovation, human capital, export and promotion and global cooperation. A recent example is the Dutch water sector's partnership with the World Bank to tackle global water challenges. Programs are carried out in close cooperation with the WaterCampus Leeuwarden.

Future ambitions

The significant economic impact of the water technology sector has greatly influenced the success of WaterCampus. The Dutch water technology sector consists of more than 1,000 businesses and institutions, achieving a still growing turnover of five to eight billion euros, more than 25,000 jobs and about one per cent GDP. For the Province of Fryslân, the GRDP is 1.5 per cent, representing more than 10 per cent of the Dutch water sector. Growth characterizes the sector in spite of generally challenging European market conditions.

The joint ambition of the WaterCampus and its partners is to associate more than 2,000 knowledge workers with the WaterCampus Leeuwarden by 2020. This workforce will be an eminent contributor in fulfilling the ambition to realize solutions in response to global water challenges and to stimulate water technology businesses. It is hoped that valorization and internationalization will result in the stimulation of technology-enabled projects and showcases, encouraging a globally competitive water sector with strong connections to other major global water hubs. The program developed for the European Cultural Capital will also boost economic, social, ecological and cultural structures by using the power of community sense.

Leeuwarden has recently increased its engagement with the Global Compact Cities Programme, commiting to the Innovating level of the program with plans to expand the WaterCampus, deliver Leeuwarden Cultural Capital 2018 and stimulate technology-enabling projects. At this point, WaterCampus Leeuwarden is proud to present its new building as a first step towards its future ambitions.

Leeuwarden made the commitment to the Ten Principles of the United Nations Global Compact in 2010. It deepened its engagement in late 2014, committing to the Innovating level of the Cities Programme.

Hein Molenkamp, Managing Director of Water Alliance WaterCampus in Leeuwarden (the Netherlands), and Dean Amhaus, President and CEO of The Water Council in Milwaukee (USA), at a launch event held in December 2014 to mark Leeuwarden's engagement at the Innovating level of the Global Compact Cities Programme. It also marked the new transnational collaboration between the two water hubs, which will strengthen global approaches to water management to the benefit of other city participants and the Cities Programme. Image: Water Alliance.