

Position paper

'Building with Nature – exploring Nature Based Solutions for water challenges'

Today March 22, 2018, is World Water Day. Every year we celebrate on World Water Day the power of water and raise awareness to the challenges of water security. This year the theme is 'Nature for Water,' from the belief that the answers to the global water challenges are with nature, in the way nature and water are connected to our societal, economic, cultural and environmental demands.

The world population will grow with another 50% in the next decades before reaching its peak. The average welfare of citizens worldwide is increasing fast. Rapid urbanization and economic growth are coupled with increasing devastating impacts of climate change. All these processes are interlinked and combined and increase the already large pressure on resources such as raw materials and minerals, nature and ecosystems and the oceans and atmosphere.

An enormous effort and creativity is required to manage the challenges mankind is facing. The answers of the past are not the answers we need for the future. Inclusive, comprehensive and innovative approaches are needed to come up with better and more sustainable solutions for our worldwide challenges.

Nature Based Solutions are a critical part of the answer to these challenges. They require a comprehensive approach to engineering and combine and address societal needs for flood protection, infrastructure and food production while providing additional benefits in increased biodiversity, CO₂ sequestration, recreational and economic values. Furthermore, nature based solutions are adaptable to changing circumstances, often cost effective and more impactful than our traditional solutions.

Nature Based Solutions

Nature Based Solutions (NBS) - also dubbed as Building with Nature solutions - are engineering designs for societal challenges stemming from the true understanding of our natural ecosystems and their functions and services and making use of these natural and environmental assets. NBS require innovative governance, plus institutional, business and finance models and frameworks. And they demand an inclusive collaboration with various disciplines and sectors and the engagement of all relevant stakeholders from the initiation phase of a project all the way towards implementation.

In the water management sector significant progress has been made in recent years in the understanding, functioning and the design, implementation and management of NBS. NBS combine environmental, economic and human needs and make an impactful contribution to meeting the various Sustainable Development Goals (SDGs) the world agreed upon in 2015.

Example project

The planning and design of NBS starts with understanding the ecosystem - a dynamic complex of the living and non-living environment - and identifying the mix of challenges across all aspects of sustainable development. By connecting societal needs with natural processes, we can solve the root causes and provide added values and benefits for our society and our planet.

In Demak, Indonesia, an Indonesian-Dutch public private consortium is countering severe coastal erosion by restoring the mangrove belt which was destroyed in the past decades. To stimulate the development of sustainable off-shore habitat low-tech parallel structures are constructed, stimulating sedimentation. On the growing mudflats mangrove will naturally re-colonize the new inter-tidal area. To prevent future destruction of mangroves and to ensure the long-term

management of the mangrove belt the local communities are trained - parallel to the development and implementation of the mangrove belt - in high yield sustainable aquaculture in the hinterland of the mangrove belt. A system of bio-rights (loans from a revolving fund) stimulates the villagers to work on the maintenance of the mangrove system and to help re-green areas already occupied by fishponds.



Left: Building structures to stimulate sedimentation. Right: Structures and natural mangrove - Desa Bedono (credits Nanang Sujana, Wetlands International).

This integrated and inclusive approach to coastal erosion problems shows that the mix of our societal challenges can be overcome using NBS, combining all aspects across the board of environmental, social and economic needs in a comprehensive nature based approach. The re-creation of the mangrove belt results in additional benefits such as breeding ground for fish and other marine species, provision of increased bio-diversity, CO₂ sequestration and many recreational opportunities for nearby city dwellers and international tourists. The collaboration with local communities and their increased capacity to understand and mitigate the different risks builds ownership that ensures future maintenance and proper management of the area. The communities have an opportunity to maintain and progress their traditional way of life and increase their income.

Developing the principle

In the last decade we invested a lot and managed to understand and develop the principles of Nature Based Solutions further. In The Netherlands a lot of experience was built up in - the development, research and implementation of - projects and programs such as the Sand Engine, Room for the Rivers, the Hondsbossche coastal defense structure and the ongoing Marker Wadden project.

The Netherlands offers a unique mix of creative design, engineering design, ecology, social science and governance knowledge and experience. Moreover, the country is a real laboratory for Nature Based Solutions, a unique testing ground for new concepts in water related challenges, all the way to implementation.

Research programs develop applied knowledge based on physical (pilot) projects: examples are the public-private Building with Nature program, the Knowledge and Innovation program MarkerWadden (KIMA) and NKWK NOW Living labs in the Dutch Delta.

Upscaling Nature Based Solutions

Now is the time to learn, replicate and scale up NBS solutions at a large scale. To be able to do so the following steps are critically important:

- Educate the new generation of engineers, designers, ecologists, policy makers, politicians and managers in the principle of Nature Based Solutions;
- Develop a credible narrative of Nature Based Solutions on landscape scale for various water related challenges, including business cases and examples of successful (pilot) projects;
- Implement large scale pilot projects worldwide and disseminate the experience and knowledge gained;
- Involve communities in the planning and implementation of nature based solutions and equip them with knowledge and financial means in order to scale up and sustain such solutions, working side by side with governments and private sector;
- Scale up existing pilots and replicate these in international consortia across the globe, in partnership with the financial sector (Multilateral Development Banks, the Green Climate Fund, governments, private sector and pension funds).

The public and private sector in The Netherlands successfully work together to tackle these challenges. We are open to collaborate globally and share our unique knowledge and experience in the implementation of Nature Based Solutions for water related challenges. Let's join forces all over the world and scale up our Nature Based Solutions.

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