

William Putuhena, Indonesian Ministry of Public Works and Housing

“Indonesia has one of the longest and most densely populated coastlines in the world. Our common practice is combating coastal erosion with hard structures. Through this Building with Nature initiative, we are eager to start to shift the paradigm. We believe such a nature based, sustainable approach will benefit us in many aspects, and we are ready to learn how to implement that. The involvement of local people, is a special feature of this program. When this approach is successfully executed, efficient functionality and sustainability of the coastal system are ensured.”

Mr. Eko Rudianto, Indonesian Ministry of Marine Affairs and Fisheries

“We are looking for alternative ways to solve coastal erosion problems in Indonesia and we are eager to collaborate with the Netherlands in Building with Nature approaches.”

Jane Madgwick, Wetlands International

“BwN platforms are a crucial means for intensive dialogue, building trust and establishing partnerships across research

organisations, civil society, companies, government and communities to broker solutions that benefits all stakeholders. Our ambition is that this way of working with nature and natural processes becomes the dominant approach to tackle water challenges – sought by governments, cities, ports – and supported by planners and investors.”

Han Winterwerp, Deltares

“Building with Nature is one of the tools within Integrated Coastal Zone Management. Building with Nature can be a low-tech technique, but should be based on a high-tech system understanding. Dissemination of know-how and knowledge is crucial to become successful.”

Dolfi Debrot, Wageningen Marine Research

“In the case of complex and diverse mangrove systems, economic and social factors are often the ultimate drivers of ecosystem degradation. Hence, an international and multi-disciplinary team combining a diversity of expertise is essential to design, study, understand and perfect a BwN approach for each differing local ecological and socio-economic setting.”

Acknowledgements

This leaflet was made possible by Waterloo Foundation, the Dutch Sustainable Water Fund and Otter Foundation and was developed by partners of the Building with Nature Indonesia project and partners of the Ecoshape Consortium

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Building with Nature Indonesia – meet the partners

Collaboration across sectors and disciplines for resilient coasts and deltas

In Northern Java millions of people are suffering from the consequences of coastal erosion. In the Demak district ‘Building with Nature’ solutions are being used to halt land loss and revitalize aquaculture. Building with Nature represents an innovative approach to coastal and water management challenges. It provides an alternative to hard infrastructure as it works with and alongside the dynamics of nature. An Indonesian Building with Nature platform is being set up to develop and share knowledge and experience.

Building with Nature: paradigm shift in water infrastructure solutions

Worldwide, coastal managers face the challenge to align the interests of economic development and care for the environment, while coping with challenges such as sea level rise, land subsidence and extreme natural events. A sustainable way to achieve this balancing act is through ‘Building with Nature’.

‘Building with Nature’ means making the services that nature provides an integral part of the design of hydraulic infrastructure, thereby creating benefits for nature and society’

Examples of natural services are the transporting capacity of water for sand, silt and nutrients or shoreline vegetation which breaks the force of incoming waves. When these services are part of the infrastructure design, not only are society’s needs for infrastructural functionality met, but also new services are created, such as food supply, nature development, flood prevention or carbon sequestration.



Flexible, sustainable and cost-effective

The Building with Nature approach demands profound site-specific understanding of the natural and socio-economic and institutional systems. It is a no-regret approach: through adaptive management, the infrastructural design can be aligned with changing environmental conditions. By creating conditions for nature to regenerate by itself, projects are often less expensive on a life-cycle basis than traditional engineering solutions. Extra benefits such as biodiversity conservation and livelihood development are created. The Building with Nature approach can be applied at every hydraulic engineering challenge.

Collaboration is key to drive innovation

Interdisciplinary collaboration among stakeholders is essential for sustainable implementation of the infrastructural design. This was the main driver for founding

the Ecoshape platform. **Ecoshape** is a consortium of in total 20 government agencies, dredging companies, engineering firms, research institutes, and NGO's, that develops and shares Building with Nature knowledge and experience. Members share the vision that multi-sectoral and public private collaboration is key to drive innovation.

Pilot projects

Since 2008, large and successful pilots have been implemented, through a wide variety of partnerships between Ecoshape members and local stakeholders. Building with Nature is now widely supported within the Dutch water sector and embraced by a growing number of government institutions in the field of infrastructure and ecosystem development. One of the large-scale pilot projects under the Ecoshape Consortium is being implemented in Indonesia. (See box)

Building with Nature in Indonesia

This pilot inspires and informs replication across the coastline of Northern Java that also suffers from erosion. Other opportunities for applying the Building with Nature philosophy in very different settings include the coastal defense of Jakarta bay, resilient city of Semarang and sustainable port development.

Halting coastal erosion in Demak

The Building with Nature pilot in Indonesia focuses on the coastal zone of Demak, Central Java, where coastal erosion is projected to result in land loss of up to 6 km inland by 2100. This would affect over 70,000 people and cause the loss of 6000 hectares of aquaculture ponds along with numerous coastal villages.

Technical measures

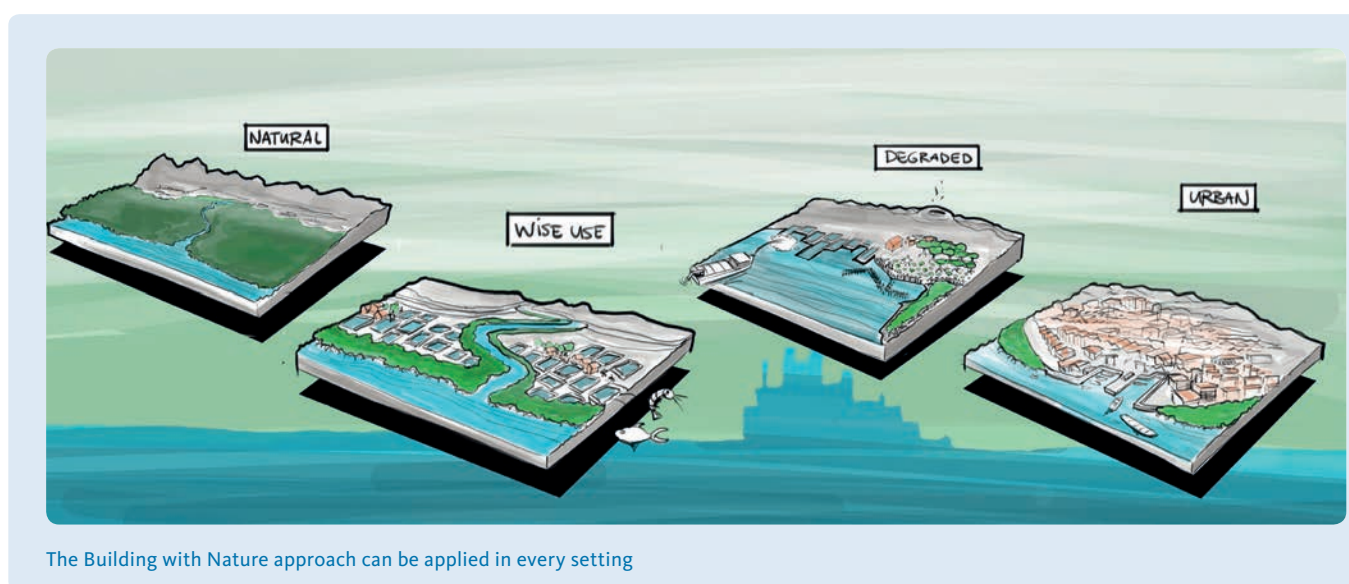
Technical measures include the construction of permeable dams that help to establish a healthy sediment balance. This process is reinforced by small scale sediment nourishments. Once the near shore seabed level has sufficiently risen, mangroves will regenerate naturally and develop a natural defense against further erosion. The project also calls for integrated water resource management to address subsidence that is related to ground water extraction from deep wells.

Community and stakeholder engagement

By developing and implementing sustainable aquaculture practices together with the communities, one of the root causes of the mangrove deforestation is addressed and it gives a boost to the local economy. Communities restore and sustain the greenbelt they rely on for coastal safety. The measures will be governed under community bylaws and will be rooted in community development plans and integral government master planning for sustainable development. This project shows that close engagement with local communities and other stakeholders, at all levels from design through to implementation, is vital to address root causes and to deliver community benefits.

Knowledge development and sharing

To stimulate sound replication, the project partners actively share knowledge and tools and invest in capacity building. One of the initiatives is to support the development of an Indonesian Building with Nature platform in which the government, knowledge institutes, private sector, NGO's and communities collaborate to build up and share Building with Nature knowledge and experience in Indonesia.



The Building with Nature approach can be applied in every setting

Meet the partners

Building with Nature Indonesia is implemented through a public private partnership. It connects world class expertise and experience with local and context specific knowledge on engineering, aquaculture, ecosystems, capacity building and governance. Each partner brings in specific knowledge, experience and skills and has a unique role within the project.

Design, implementation and maintenance of technical and socio-economic Building with Nature measures is done by local communities as much as possible.

In the project in Demak the following partners of Ecoshape are actively involved:

Government agencies

Planning and implementation of measures in Demak takes place in alignment with field programmes of **The Indonesian Ministry of Marine Affairs and Fisheries (MMAF)** and the **Indonesian Ministry of Public Works and Housing (MPWH)**. Both ministries are creating an enabling environment for implementation of Building with Nature nationwide. MMAF is the government body responsible for management of coastal and marine resources. MPWH is the government body responsible for technical and large infrastructure among which roads and coastal and river flood defences.

Not-for-profit organisations

Wetlands International is managing the partnership, coordinates outreach and field based activities, empowers local communities, facilitates policy and stakeholder dialogue and contributes ecological expertise.

Wetlands International is a not-for-profit global NGO. Its core activities are dedicated to maintaining and restoring wetlands for their environmental values as well as for the services they provide to society. **Blue Forest** is a not-for-profit Indonesian NGO dedicated to community based mangrove conservation and restoration. In this project, Blue Forest organizes coastal field schools to develop and implement aquaculture measures with communities.

Knowledge institutes

Deltares and **Wageningen Marine research (formerly IMARES)** contribute and share knowledge on coastal ecology and geomorphology, and socio-economics. They are responsible for the design and monitoring of Building with Nature interventions. Deltares is further coordinating our Building with Nature training programme, together with the international water education facility **UNESCO-IHE**. The **University of Diponegoro (UNDIP)** in Semarang contributes local system knowledge to the design and supports on the ground monitoring.

Consultancy and engineering firms and contractors

Witteveen+Bos is responsible for implementation of coastal safety engineering measures by Indonesian contractors and prepares the Business Case. Witteveen+Bos manages the development of the guidelines and facilitates project replication. Contractors in the Ecoshape consortium are **Boskalis**, a global services provider operating in the dredging, maritime infrastructure and maritime services sectors. **Van Oord** is a leading international contractor, specialized in dredging, marine engineering and offshore projects.