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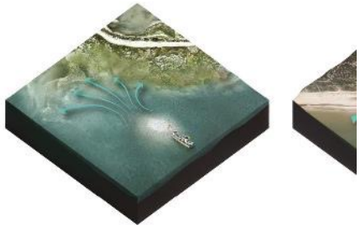
Building with Nature



Creating, implementing, and upscaling Nature-based Solutions

Editors

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Sand Motor

Sand Motor

Fig. A.5	Dredged sand is placed alongshore in a mega-nourishment.

Fig. A.6	Tides and currents begin to disperse the sand.

Fig. A.7	The sand continues to spread, creating an expanded beach.

Fig. A.8	The beach grows wider and dune plantings advance.

Sand Motor

Sand Motor

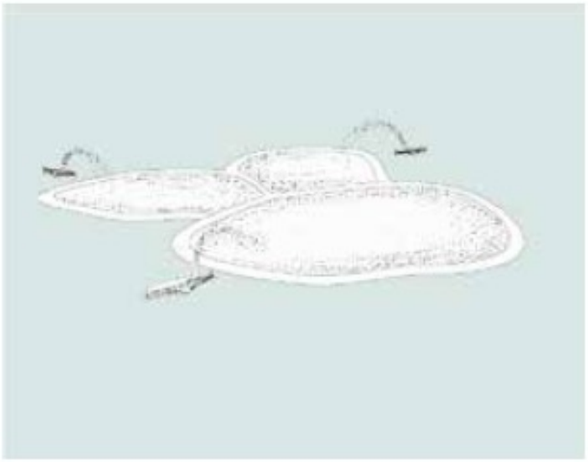
Sand Motor

Sand Motor

Marker Wadden

Marker Wadden

Fig. C.5	Dredgers construct a ring dike to contain dredged sediment.	Fig. C.6	Sediment is pumped into the ring dike, where it settles.	Fig. C.7	The new islands are planted; vegetation begins to emerge.	Fig. C.8	The nature islands mature and recruit plant and animal life.



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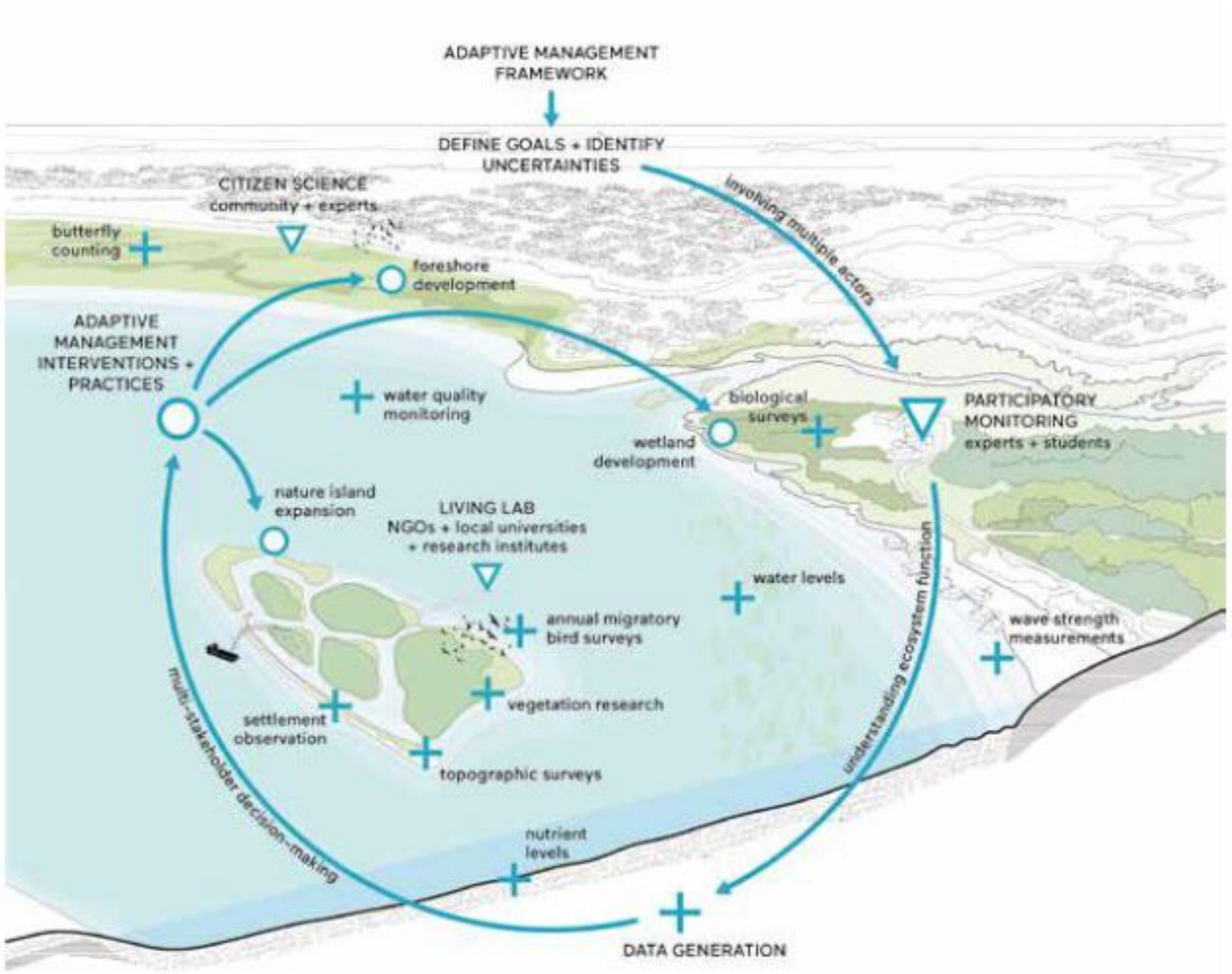

ADAPTIVE MANAGEMENT FRAMEWORK
DEFINE GOALS + IDENTIFY UNCERTAINTIES
involving multiple actors
CITIZEN SCIENCE
community + experts
butterfly counting
foreshore development
ADAPTIVE MANAGEMENT INTERVENTIONS + PRACTICES
water quality monitoring
biological surveys
wetland development
PARTICIPATORY MONITORING
experts + students
nature island expansion
LIVING LAB
NGOs + local universities + research institutes
water levels
annual migratory bird surveys
wave strength measurements
vegetation research
settlement observation
topographic surveys
multi-stakeholder decision-making
understanding ecosystem function
nutrient levels
DATA GENERATION

Marker Wadden

Indonesia, Demak

Indonesia, Demak

Fig. B.5	Community builds permeable structures parallel to the shore.

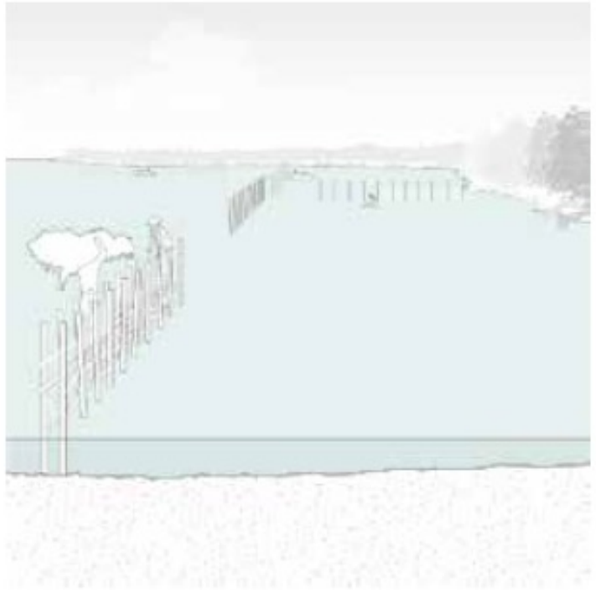


Fig. B.6	Permeable structures attenuate waves; sediment settles behind.

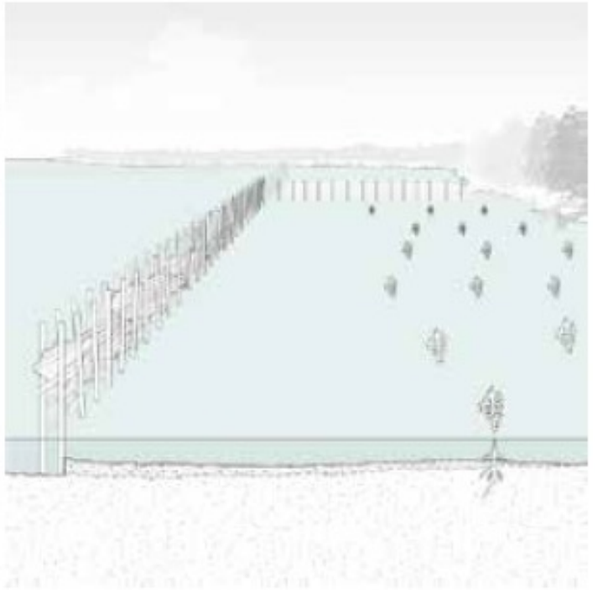


Fig. B.7	Mangroves regenerate and advance as seabed level rises.

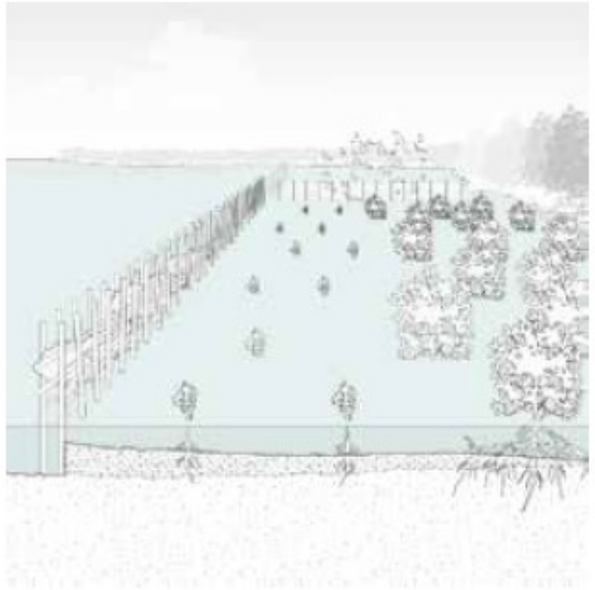
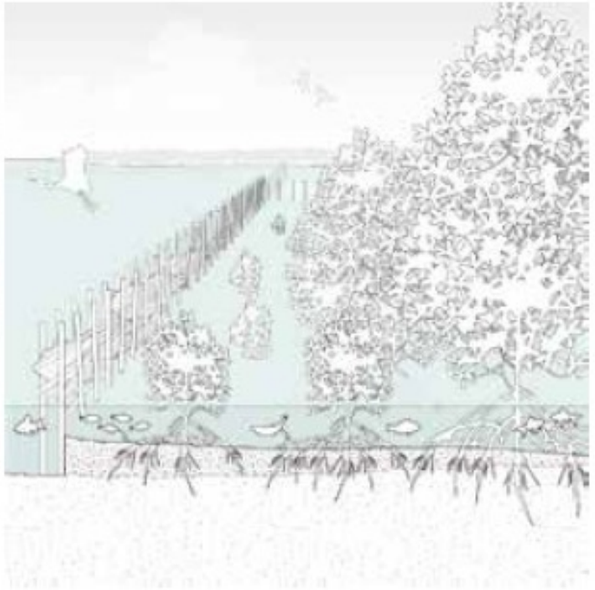
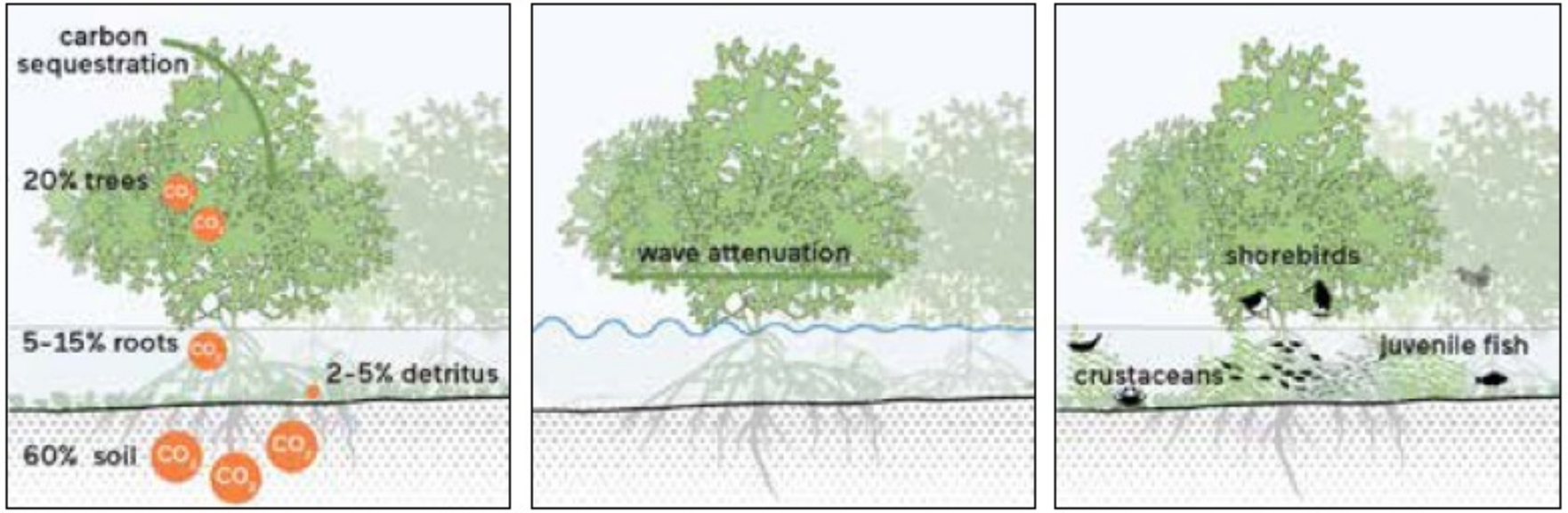


Fig. B.8	Mangroves mature; planning begins for new structures.



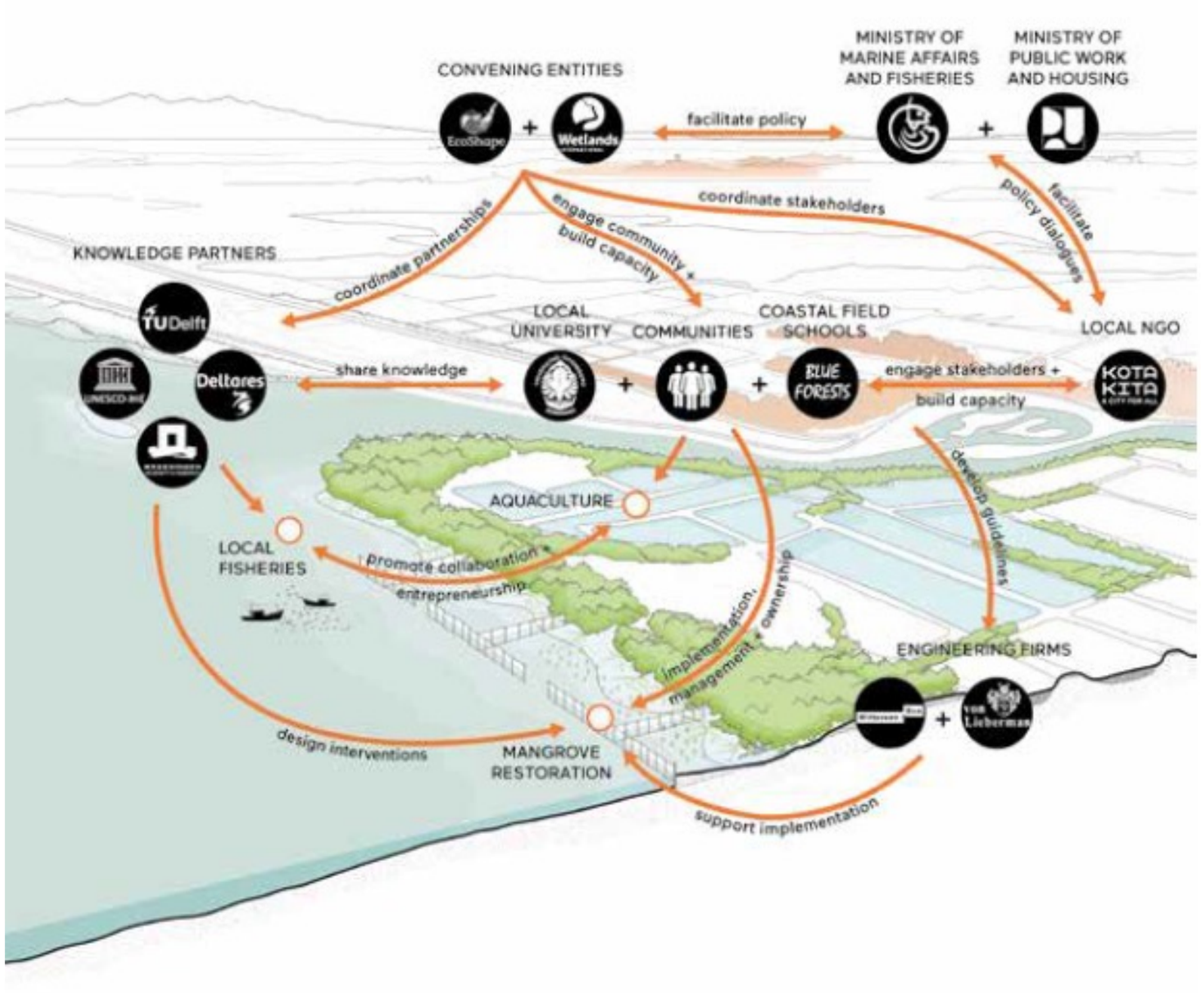
Mangrove benefits



Indonesia, Demak

Indonesia, Demak

Indonesia, Demak


CONVENING ENTITIES
MINISTRY OF MARINE AFFAIRS AND FISHERIES
MINISTRY OF PUBLIC WORK AND HOUSING
facilitate policy
coordinate stakeholders
coordinate partnerships
engage community + build capacity
policy dialogues
facilitate
KNOWLEDGE PARTNERS
LOCAL UNIVERSITY
COMMUNITIES
COASTAL FIELD SCHOOLS
LOCAL NGO
share knowledge
engage stakeholders + build capacity
develop guidelines
AQUACULTURE
LOCAL FISHERIES
promote collaboration + entrepreneurship
implementation, management + ownership
ENGINEERING FIRMS
design interventions
MANGROVE RESTORATION
support implementation

Indonesia - Demak

“Over thirty million people in Java are at risk. The agri- and aquaculture sectors, both engines for economic growth, have suffered multibillion-dollar losses. Conventional interventions failed; we cannot continue past practices.”

Fegi Nurhabni
Deputy Director for Disaster Mitigation and Climate Change Adaptation, Ministry of Marine Affairs and Fisheries

5
Subsidence and flooding affect daily life in Bedono village.

Getting started

Building with Nature enablers help to frame key considerations at the start of any project and make the development process achievable. Context will determine the particular importance of each enabler in a project or initiative, though all projects benefit from the consideration of all enablers. The following pages detail how enablers supported specific Building with Nature projects. More detailed information on the enablers and other tools is available on EcoShape's online platform.

Institutional embedding

Building with Nature should fit into the local institutional context, following its norms and regulations. Further policies and processes can be developed to support the co-creation, partnerships, and funding schemes necessary for Building with Nature implementation. Key aspects to consider:

- → Fitting Building with Nature in the existing context, norms, and regulations
- → Creating a policy environment in which conservation laws and formal instruments are addressed
- → Connecting with international enablers including the Paris Agreement, Sendai Framework, Aichi Biodiversity Targets, the Convention on Biological Diversity, and resolutions advocated by the Ramsar Convention on Wetlands, the United Nations Convention to Combat Desertification, and the sustainable development goals

Business case

A sound and convincing business case can effectively generate support and financing for Building with Nature applications. A key challenge is the difficulty quantifying the wide range of savings and co-benefits of Building with Nature, due to the soft advantages and performance uncertainty of natural dynamics. Key aspects to consider:

- → Defining the optimal business model based on traditional engineering and nature conservation expertise as well as financial knowledge
- → Improving estimates of maintenance costs and additional services and benefits (i.e., coastal access, fish production, carbon sequestration)
- → Developing financing arrangements and prerequisites (bankable value-creation streams)

Adaptive management, maintenance, and monitoring

Building with Nature designs are dynamic: they develop under changing climatic conditions. This requires an adaptive approach to manage, maintain, and monitor their performance long term. Key aspects to consider:

- → Balancing initial efforts and investments against adaptivity and resilience
- → Making maintenance strategies an integral part of the development process
- → Planning and techniques for adaptive management and monitoring to deal with natural dynamics along various time and spatial scales

Multi-stakeholder approach

Building with Nature can rarely be implemented by a single party. Successful projects require stakeholder engagement from the start and through all the phases of design, implementation, operation, and ongoing maintenance. Key aspects to consider:

- → Cooperation between stakeholders and integral, multifunctional approaches
- → Coalition building, co-creation, and public participatory approaches to align ambitions
- → Stakeholder assessment and engagement

Technology and system knowledge

Building with Nature requires knowledge of specific concepts and technology to design Nature-based Solutions. In addition, knowledge of the local ecosystem, social system, and physical system is essential for any Building with Nature project to work. Key aspects to consider:

- → Large-scale system analysis, comprehension of driving processes (physical and ecological), and natural dynamics
- → Building with Nature concepts that fit different landscapes
- → Building with Nature design approaches and assessment tools

Capacity building

Capacity building among policy makers, industry managers, and the local community is essential. It takes place through education, training, and knowledge sharing. People familiar with the Building with Nature philosophy are more likely to support and participate in its applications, which is a benefit to scaling up and especially critical for the maintenance of Nature-based Solutions. Key aspects to consider:

- → Increasing awareness of the philosophy and potential of Building with Nature
- → Educating emerging practitioners on Building with Nature through training programs
- → Creating Building with Nature communities around your project

Enablers of Building with Nature

Building with Nature has been implemented in a range of landscapes, on different scales, to test a variety of concepts. Nevertheless, it is rarely straightforward to realize a project that employs Building with Nature concepts. Drawing from experience spanning more than a decade of learning-by-doing, intersectoral collaboration, fundamental research, and pilot projects, EcoShape has identified six core elements, or essential *enablers*, that address the unique characteristics of Building with Nature projects.

Building with Nature represents a paradigm shift in that it emphasizes natural processes and systems understanding as fundamental to the creation of Nature-based Solutions. These innovative projects differ greatly from traditional gray infrastructure solutions such as dikes and dams. Building with Nature is inherently dynamic, multifunctional, context specific, and innovative. To enable Building with Nature, these aspects must be carefully considered throughout the development process. The main question is: *How*?