

#### **Resilient Sandy Strategies** *Thinking, acting and interacting differently*

Jaap van Thiel de Vries

Ecoshape | Boskalis – Hydronamic



Building

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with



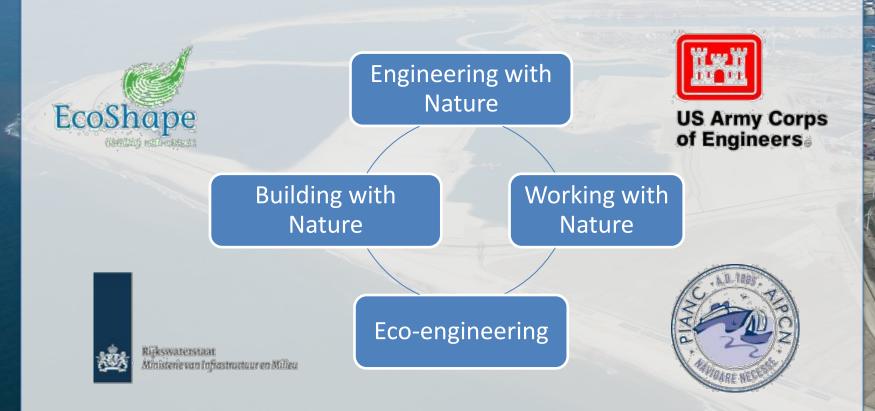
June 14, 2016

# The need for resilient systems...



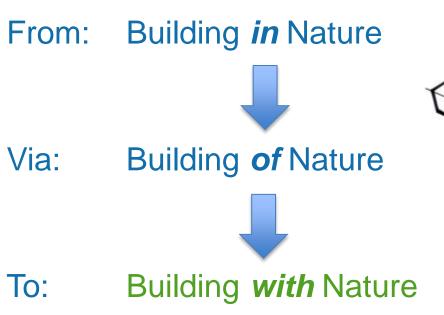
## New challenges to marine infrastructure

What if we are so focused on minimizing negative effects that we miss opportunities to maximize positive effects?



The philosophy









Develop infrastructure and at the same time *use* and *create opportunities* for nature & society

# **Building with Nature Innovation Program**



- Develop ecosystem knowledge for infrastructure development
- Develop scientifically sound design rules and norms
- Make the concept tangible by creating practical BwN-examples
- Bring the BwN-concept forward in society and make it happen

# Learning by doing

#### soft solutions

Tropical



Pilot Sand Motor Delfland Coast



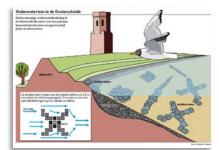
Dike with Sandy foreshore Markermeer



Oyster reefs Oosterschelde



EcoShape



Underwater garden Eastern Scheldt



Coastal protection Sea grass



Securing mangroves coasts

(North java Indonesia)

Coral reef restoration



*'rich levee' Singapore* 





### **Opportunities for resilient sandy strategies** The Dutch context

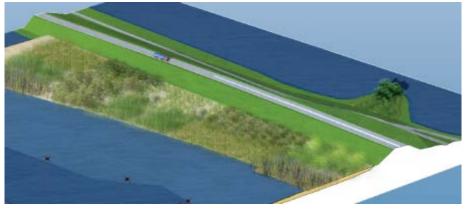


## **Opportunities for resilient sandy strategies**

#### Sandy Beaches and Dunes



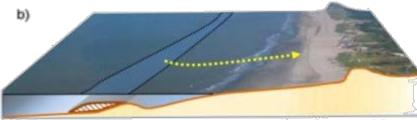
**Dikes and Dam** 



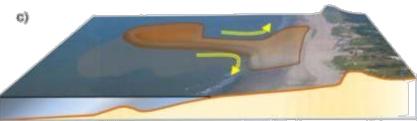
Sandy strategy as alternative for conventional dike reinforcement



Traditional beach and dune nourishment



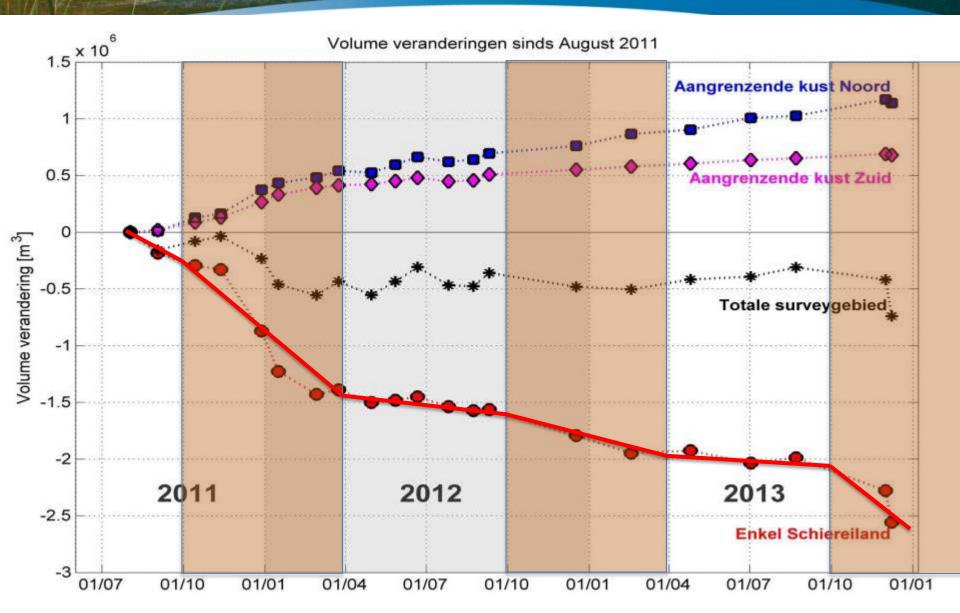
Shoreface nourishment



Localized mega nourishment

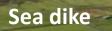


#### Use nature to create resilience... Enhanced spreading to adjacent coastal sections during storm season



### The Pettemer Sea Defense Increasing resilience by introducing a sandy beach and dune system

Sandy beach & dunes





## Creating multifunctional landscape's Influence nature with initial condition to get desired landscape properties

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### **Pilot sandy foreshore Houtribdijk:** Sandy vegetated foreshore as alternative for conventional dike reinforcement

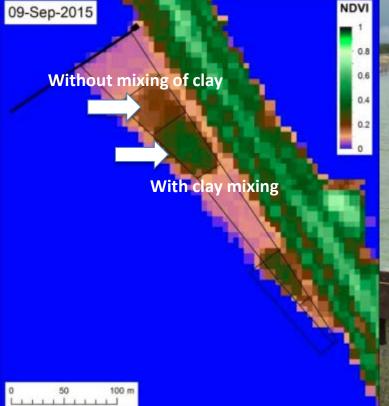


#### Hoogwaterbeschermingsprogramma



# **Engineering with vegetation** First findings...







# **BUILDING WITH NATURE**

Thinking, acting and interacting differently

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# www.EcoShape.nl Guideline

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#### How to use this Guideline?

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