

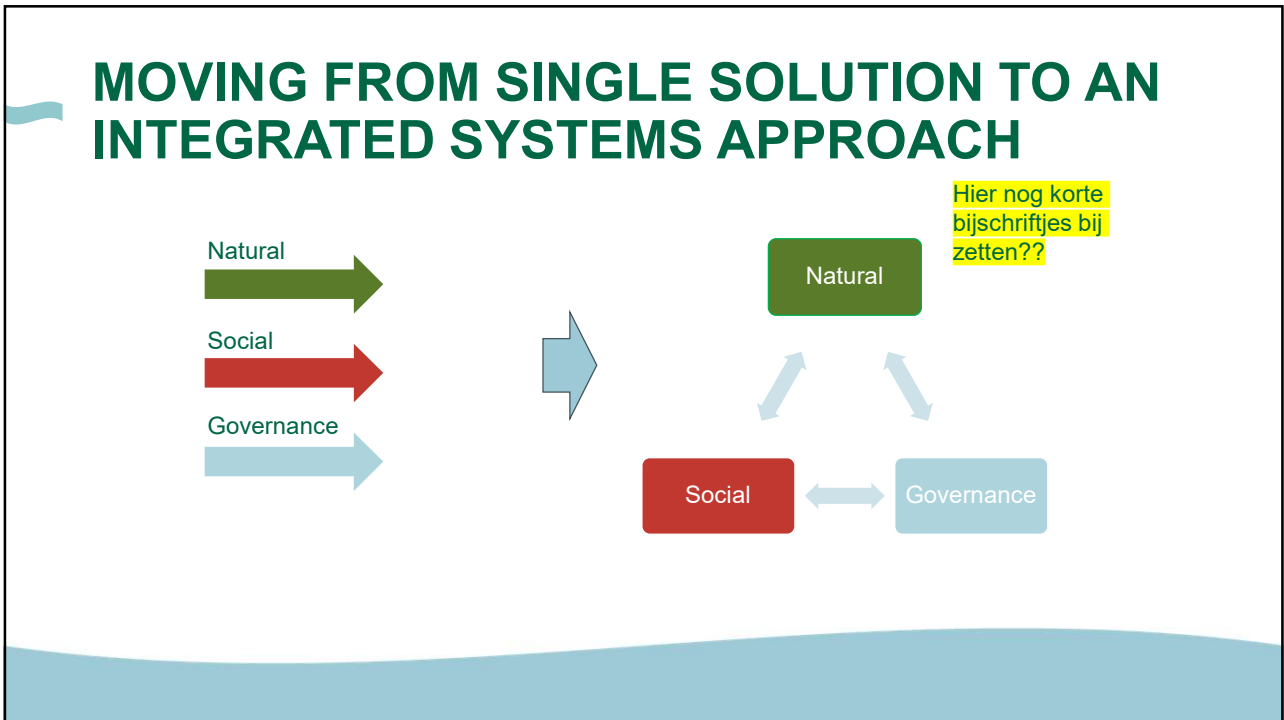
Nature-based Solutions in coastal defense

An Integrated Systems Approach

MANABAS COAST
NATURE-BASED SOLUTIONS

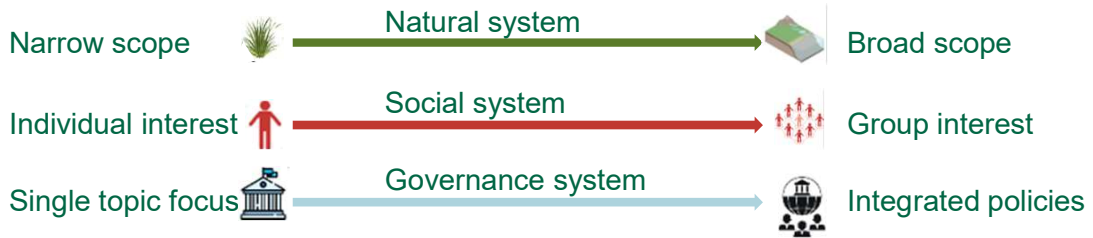
MANABAS COAST | Interreg North Sea | Co-funded by the European Union

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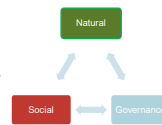
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MOVING FROM SINGLE SOLUTION TO A SYSTEMS APPROACH



Hard defense

EXAMPLE



Resilient coast

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MANABAS COAST PRINCIPLES IN RELATION TO THE 3 SYSTEMS

Nature based principles in MANABAS COAST		Natural System	Social System	Governan ce system
I	Embrace natural dynamics on different temporal and spatial scales	X		
II	Apply a holistic systems approach to address ecological, institutional and societal challenges	X	X	X
III	Combine multiple functions and provide benefits for people and nature for present and future generations	X	X	X
IV	Involve stakeholders throughout the entire project and ensure transparency, commitment and shared ownership		X	
V	Support adaptivity in management and practice	X		X

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EXAMPLE: AN ISOLATED (GREY) SOLUTION – HONDSBOSSCHE SEA DEFENSE (NL)



The previous defense with an isolated (grey) approach:

- lacked consideration of the natural system
- lacked potential (social) co-benefits
- not aligned with the coastline management scheme

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EXAMPLE: APPLYING A SYSTEMS APPROACH – HONDSBOSSCHE SEA DEFENSE (NL)

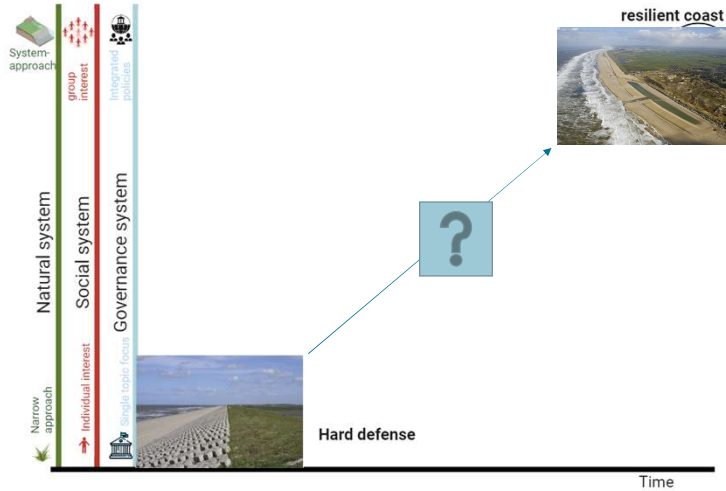


Applying mainstreaming principles along the 3 systems:

- Use natural materials as coastal defense that fit with the surrounding natural system
- Include local stakeholders in the design process
- Embed NbS within existing and future policy and legislation

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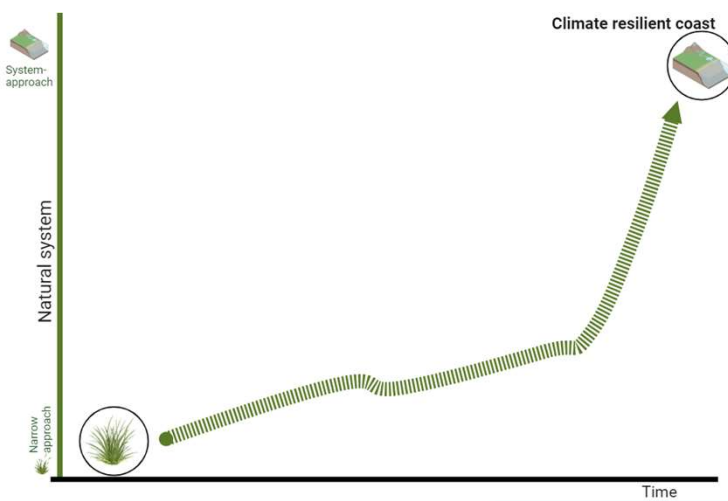
ROAD TOWARDS AN INTEGRATED SYSTEMS APPROACH – HONDSBOSSCHE SEA DEFENSE



Facilitate NbS through developments along the **natural**, **social** and **governance** axes

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MAINSTREAMING – THE NATURAL SYSTEM

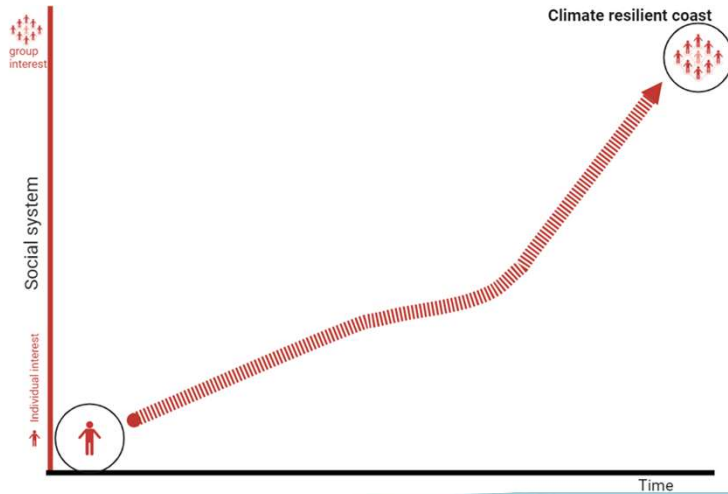


- Awareness of the greater dynamic system we live in
- Mainstreaming actions: enhance system knowledge and/or develop robust monitoring schemes



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MAINSTREAMING – THE SOCIAL SYSTEM

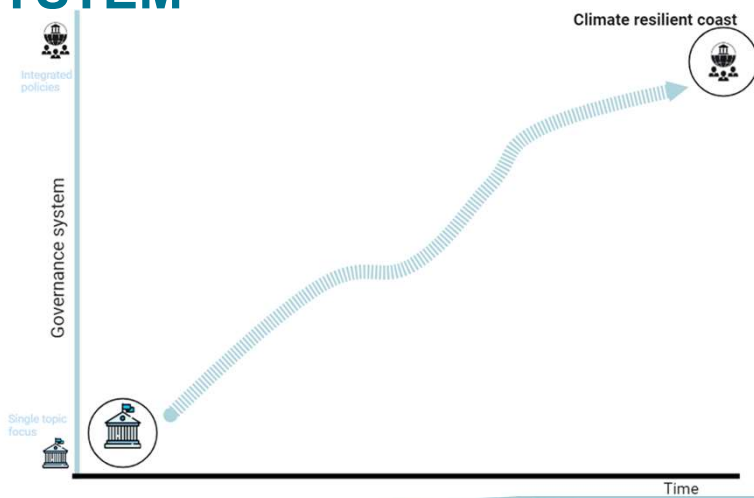


- Consideration of societal and stakeholders needs
- Mainstreaming actions: work together with other parties or actively involve communities and share knowledge

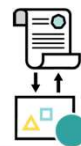


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MAINSTREAMING – THE GOVERNANCE SYSTEM

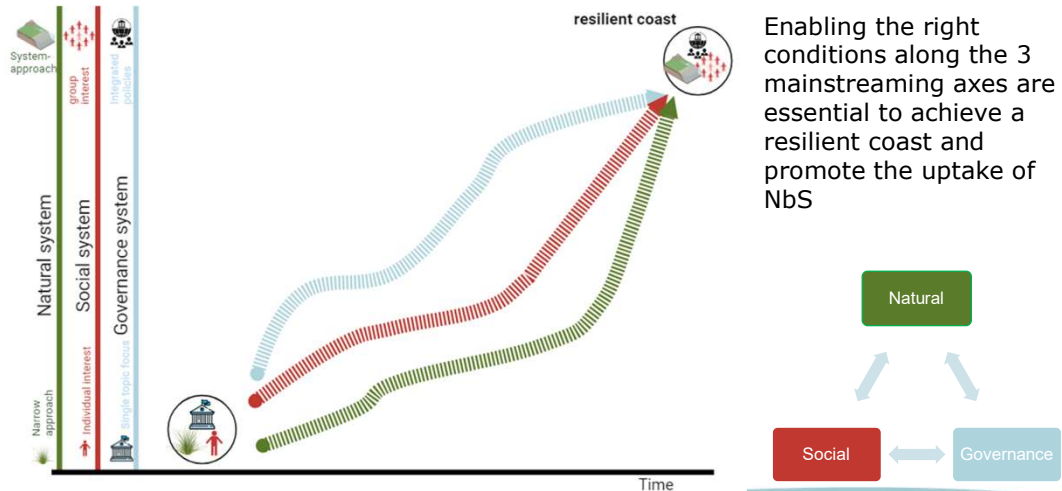


- Adapt and align policies and practice as well as search for win-win opportunities
- Mainstreaming actions: implement new policies that enable the consideration of multiple objectives or develop arrangements for NbS funding



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MAINSTREAMING – THE NATURAL SYSTEM



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BENEFITS OF AN INTEGRATED SYSTEMS APPROACH – HONDSBOSSCHE SEA DEFENSE



Integrated systems approach provides:

- Dune and beach system that provides flood safety and fits with the adjacent coastline
- Ample co-benefits for recreation and room for valuable nature habitat
- Long-term (20 yrs) management & monitoring plan included from the start

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