Resilient Solutions - Perspectives

Niek Veraart
The Netherlands

New Jersey

209 km coastline

451 km coastline
Coastal & Riverine Inundation Risk
“Maak van de Nood een Deugd”
“Turn a Disadvantage into an Opportunity”
Climate Change

Coastal Flooding
Riverine Flooding
Pluvial Flooding

Barriers
Reclamation
Inundation

INTEGRATION

Scale
Systems
Time

Economic
Environmental
Social

Innovation & Engagement
Barriers & Buffers – Integration & Evolution
Barriers
Barriers
New Barriers
New Hondsbossch Dunes
New Barriers
New HondsBossch Dunes
New Barriers
Design as a Tool
The Sand Engine
Nature-driven erosion prevention, new habitat creation
The Sand Engine
Nature-driven erosion prevention, new habitat creation
Research by Design into Sea Defenses
Design as a Tool – Regional Approaches
Research by Design into Sea Defenses

Design as a Tool – Local Integration
Research by Design into Sea Defenses

Design as a Tool – Local Integration
Katwijk Aan Zee
Katwijk Aan Zee
Katwijk Aan Zee
Katwijk Aan Zee
Katwijk Aan Zee
Katwijk Aan Zee
Scheveningen Boulevard
Scheveningen Boulevard
Scheveningen Boulevard

A multifunctional retail destination that pays for the floodwall
Scheveningen Boulevard

3,97 mt. +NAP 1.02.1953
highest level ever measured
+0 NAP (Normaal Amsterdams Peil - Dutch reference level, based on average sea level). Normal tide +1mt./-1mt.

+7,50 mt.

NEW SEA DEFENSE
10,00 mt. +NAP

8,30 mt. +NAP

existing profile

ACTUAL SEA DEFENSE

3,90 mt. +NAP
position church Scheveningen

Section Keizerstraat
Scheveningen Boulevard

A multifunctional retail destination that pays for the floodwall
Scheveningen Boulevard
Rotterdam Dakpark
Rotterdam Dakpark
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Room for the River
Room for the River,
A landscape solution with many benefits in return
Room for the River,
Regional Landscape solutions with Local Context
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A landscape solution with many benefits in return
Room for the River, A landscape solution with many benefits in return
Room for the River,

Lowering floodplains
Lowering/excavating part of the floodplain increases room for the river in high water situations.

Lowering groynes
Groyne stabilise the location of the river and ensure its correct depth. However, in a high water situation, groynes may obstruct the flow to the river. Lowering groynes speeds up the rate of flow.

Dyke relocation
Relocating a dyke inland widens the floodplain and increases room for the river.

Removing obstacles
If feasible, removing or modifying obstacles in the riverbed will increase the rate of flow.

Depoldering
The dyke on the riverside of a polder is lowered and relocated inland. This creates space for excess flows in extreme high water situations.

Water storage
The Volkerak-Zoommeer provides temporary water storage in extreme situations where the storm surge barrier is closed and there are high river discharges to the sea.

Deepening summer bed
Excavating/deepening the surface of the riverbed creates more room for the river.

High water channel
A high water channel is a dyke area branching off from the main river to discharge some of the water via a separate route.

Dyke reinforcement
Dykes are reinforced at given locations where river widening is not feasible.
Room for the River, a landscape solution with many benefits in return

1. The initial situation with the existing dike.

2. The dike was moved 350 metres inland.

3. An ancillary channel is to be dug in order to give the river more room. This will create an elongated island.

4. Bridges across the ancillary channel.
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Room for the River, a landscape solution with many benefits in return.
Room for the River
Room for the River
Room for the Rain
Rainproof Amsterdam
Empowering citizens, businesses and neighborhoods towards resiliency

Which projects are there already to make the city rainproof?
Room for the Rain
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Benthemplein Water Square
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Room for the Rain
Benthemplein Water Square
Room for the Rain
Bentemplein Water Square
Buiksloterham Plot Plan
Dordrecht,
Water as Design Element
Dordrecht,
Water as Design Element
Rainproof Amsterdam
Empowering citizens, businesses and neighborhoods towards resiliency
Living in Water

Turning water into space
Living in Water
Living in Water – Adapting to Sea Level Rise
Smart Delta – Thinking with Water
Economic Development and Innovation
Economic Development and Innovation
Economic Development and Innovation
Driver for and integrated with Resilience
Thank You

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Thank You
Walcheren,
Using flood recovery to increase agricultural efficiency & tourism
Walcheren,
Turning flood recovery to increase agricultural efficiency & tourism