

natural climate buffers



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del2Landschappen



‘Natural climate buffers’ in The Netherlands

cashing ecosystem services

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The principle

Climate adaptation by nature

- space and natural processes in stead of technical ‘solutions’
- flood protection, coastal and inland
- waterconservation in a drier climate

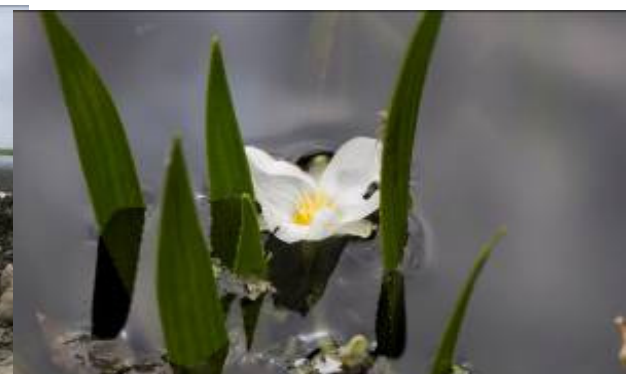
Multifunctional rural & urban development

- exploitation of ecosystem services
- function combinations: optimal space use, optimal use of money
- robust projects: resistant against disturbance & climate change
- also: integration water flood directive, WFD and water scarcity policy



Which natural processes?

Function	Natural techniques
Defense against storms and high water levels	marshes and sandy foreshores, natural dune genesis, 'green' dikes
Water retention	space for water, retarding water discharges by sponge function
Water conservation	store water in upstream areas, lakes and groundwater
Land grows with rising sealevel	Sedimentation by 'biobuilders' like sea grass, reed, shellfish etc.
Sustainable urban environment	Parks, waters, green roofs etc.



Learning by pilots

5 coast and Wadden Sea

3 rivers and IJsselmeer

3 below sea level

8 hills and sandy soils

1 urban environments

20 pilots in execution

> 50 projects waiting...





Groningen
city

Onlanden

Hunze

1998 - Groningen Museum

20 km
10 mijl

Onlanden	Hunze
2500 ha realization all together in 5 years	3100 ha realization many subareas 1997-2014
flood protection by water retention	flood protection by retarding water discharges, water retention
no water conservation for drier periods (yet)	infiltration of clean seepage water in groundwater; conservation potential
integrated with agricultural land improvement, recreation	integrated with recreation, drinking water, agricultural land improvement
Sustainable urban environment	Parks, waters, green roofs etc.



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ESS & multifunctionality

	Water protection	Fresh water supply	Water quality/WFD	Reduction greenhouse gasses	Agriculture/reconstruction	Recreation	Drinking water supply	Nature/ecology
Oesterdam			•			•		•
Punt van Voorne	•						•	•
Harger- en Pettenerpolder/Hondsbossche Zeewering	•					•		•
Kwelderherstel Ameland	•		•			•		•
Zeegrasvelden Waddenzee	•		•					•
Zandmotor Workumerwaard/IJsselmeerkust	•		•			•		•
Eelder- en Peizermaden/Onlanden	•		•			•		•
Hunzedal	•	•	•	•	•		•	•
Dwingelderveld	•	•	•			•		•
Regge Natuurlijk	•		•			•	•	•
IJsselpoort	•		•					•
IJsselmonde		•	•					•
Kempenbroek	•	•			•			•
Vlijmen-Den Bosch	•					•		•
Ooijen-Wanssum	•					•		•
Weerterbos	•		•		•			•
4 ^e Bergboezem Breda	•					•		•
Schieveen		•				•		•
Schoonwater Castricum		•	•			•		•

Costs – 16 pilots

<u>contributor</u>	<u>Mln €</u>	<u>%</u>
nature management organizations	2,14	1%
research & industry	0,01	< 1%
local authorities/communes	17,38	11%
regional authorities/provinces	60,66	38%
national government	61,19	39%
→ regional water boards	11,76	7%
drinking water firms	0,10	< 1%
charity funds, lotteries	2,20	1%
others	0,39	< 1%
EU-funds	2,03	1%
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TOTAL	157,90	100%

Conclusions & recommendations

Conclusions

- climate buffers: solutions for water and nature in changing climate
- spatial solutions bring different needs together
- blue investments attract a plurality of public/private funds



Conclusions & recommendations

Recommendations for NGO's

- dare to start/orchestrate: others will follow
- allurements: money, landownership, rural influence
- start exchange of experiences and cooperative projects: Interreg
- use (EU) funds to cross the threshold and earn the rest

Recommendations for EC

- research to quantify socio-economic benefits
- 'green' solutions as preferable in allocating EU-funds
- oblige involvement 'green' solutions in decision making for water projects



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Just start and orchestrate

