



Natural Climate Buffers in the Netherlands – a multiple benefit approach



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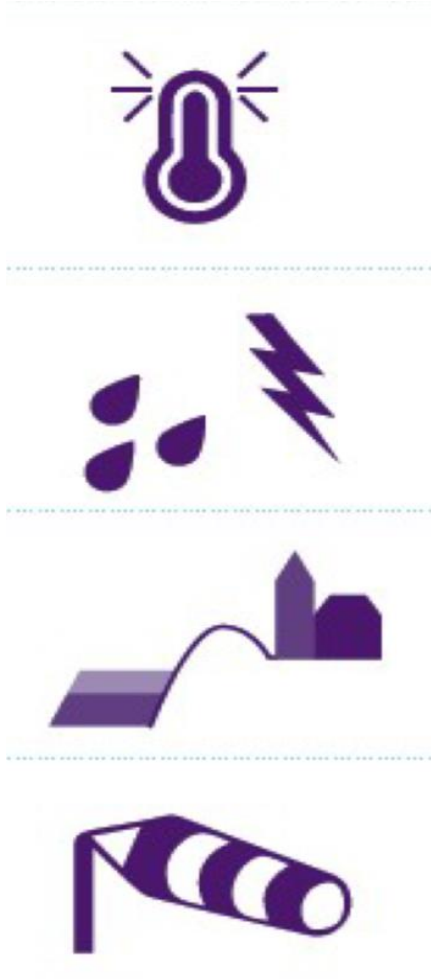
Workshop on Implementation of
Nature-based Solutions to tackle climate change

*Marseille (France)
22-24 January 2019*

Introduction

- **Issue of Climate change:** floods, erosion, drought, heat, carbon sequestration
- **Type of ecosystem:** coast, marine, rivers, fens, regional inland waters
- **Type of NbS:** Ecosystem restoration, infrastructure related, ecosystem based management, etc.
- **Project leader and partners:** NGO's
- **Calendar:** 2008-2022
- **Funding:** mostly government (95%), shifting to market (mineral extraction, carbon credits) and EU funds.

A changing climate – inevitable?

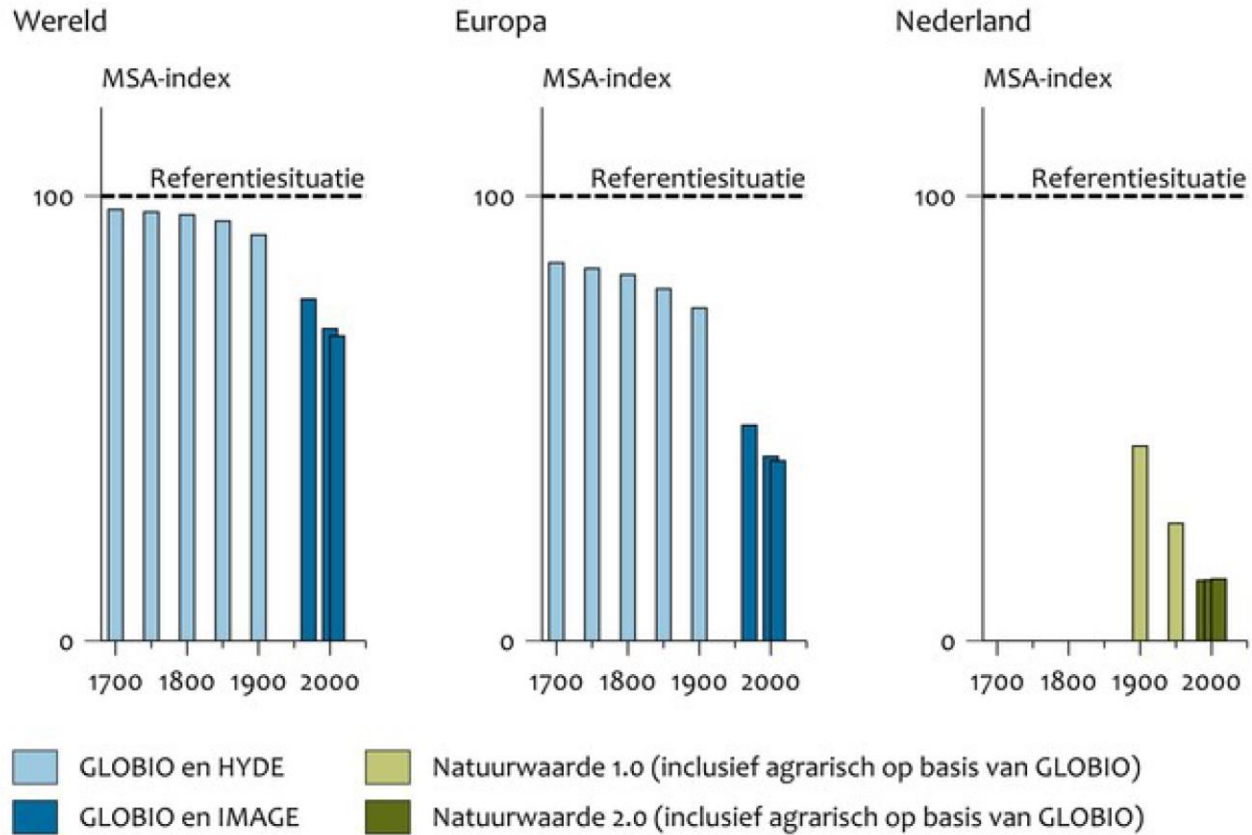


The extreme year 2018



Biodiversity crises

Mean population size native species (MSA)



Bron: PBL.

PBL/apr16
www.clo.nl/nl144003



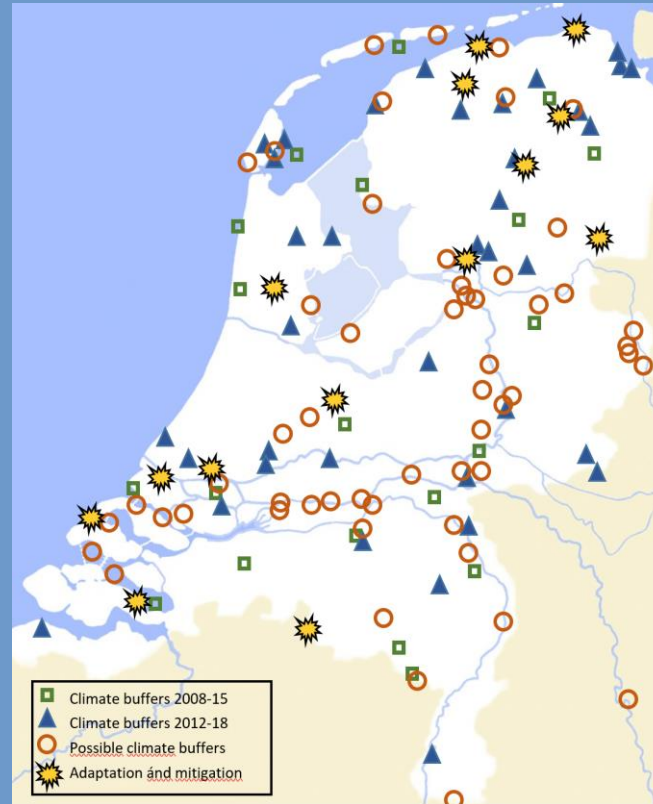
Natural climate buffers – the concept

Natural climate buffers

Natural climate buffers are *areas* where *natural processes* get space. So they adapt to climate change and improve quality of both natural and human life. They contribute to restoration of biodiversity.

www.klimaatbuffers.nl

Nature-based solutions
Building with nature
Etc.



Principle 1 – ecosystem services



bio builders



carbon sink



green airco



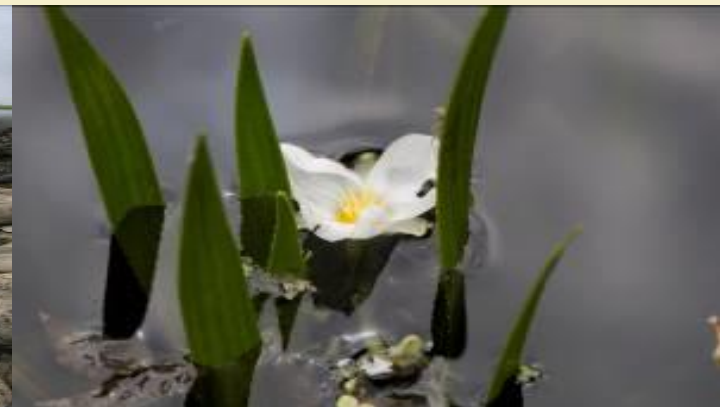
natural sponge



living coast



blue-green space



Principle 2 – Integrated project designs

| Shared function | E.g.... |
|-----------------|---|
| recreation | swimming, cycling, walking, canoeing |
| public health | cooling the city, sport and fitness |
| agriculture | reconstruction/reallocation, nature inclusive agriculture, salty crops, paludiculture |
| fisheries | spawning/recruitment habitats, small-scale shared use, sport fishing |
| raw materials | drinking water, building mineral extraction |



Natural Climate Buffers in the Netherlands

Climate buffers 2008-2016

The first pilots

Learning by doing
2008-2016

Coast and estuaries
Rivers and lakes
Below sea level
Hills and sandy soils
Urban environment

20 pilots in the field



www.eurosite.org/eurosite-highlights/natural-climate-buffers-study-tour-follow-up/

Example 1 – Tidal marshlands

natuurlijke
klimaatbuffers



Noord-Friesland

- 2.000 ha revitalized
- re-opened to the sea
- growing faster than sealevel rise
- lowering waves
- carbon-sequestration



PROJECTEN

- 1 Oesterdam
- 2 Noord-Friesland buitendijks



Blue carbon in the Netherlands

| | |
|--|------------------------------|
| Sum emissions all sources NL ca | 200 Mt CO ₂ -eq/j |
| Emissions peat soils | 7 Mt CO ₂ -eq/j |
| Uptake in nature | 4 Mt CO ₂ -eq/j |
| Uptake in tidal marshlands (10.000 ha) | 0,1 Mt CO ₂ -eq/j |

| | |
|-------------------------------------|---------------------------------|
| Sequestration rate tidal marshlands | 5-15 t CO ₂ -eq/ha/j |
| Sequestration rate NW-EU forests | 1-10 t CO ₂ -eq/ha/j |

| | |
|------------------------------------|---------------------------------|
| Sum stock NL soils | ca. 1300 Mt CO ₂ -eq |
| Sum stock NL nature | ca. 400 Mt CO ₂ -eq |
| Stock tidal marshlands (10.000 ha) | 11 Mt CO ₂ -eq |

Carbon certificates voluntary market 20-80 €/t CO₂-eq/j



Example 2 – Space for water and nature



De Onlanden

- 2.500 ha new fen habitat
- down-stream water retention area (NW storms)
- total costs 33 mln € (excl. 9 mln € recreation facilities)
- alternative: 105 mln € (higher regional dikes)
- carbon sequestration

PROJECTEN

- 1 De Onlanden
- 2 IJsselpoort
- 3 Zuidelijk Westerkwartier



Bluethroat



Bittern

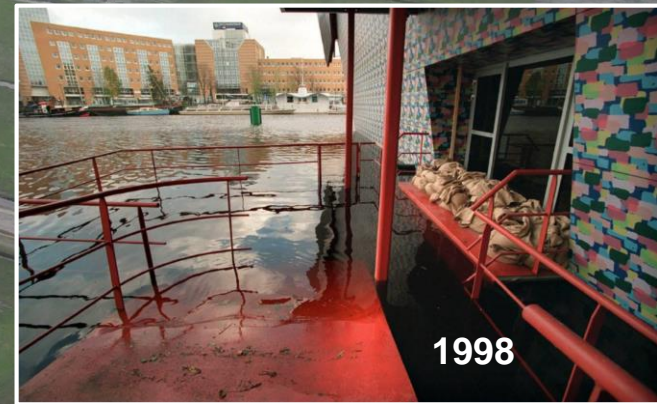
De Onlanden

Disaster?

Blessing!

January 2012

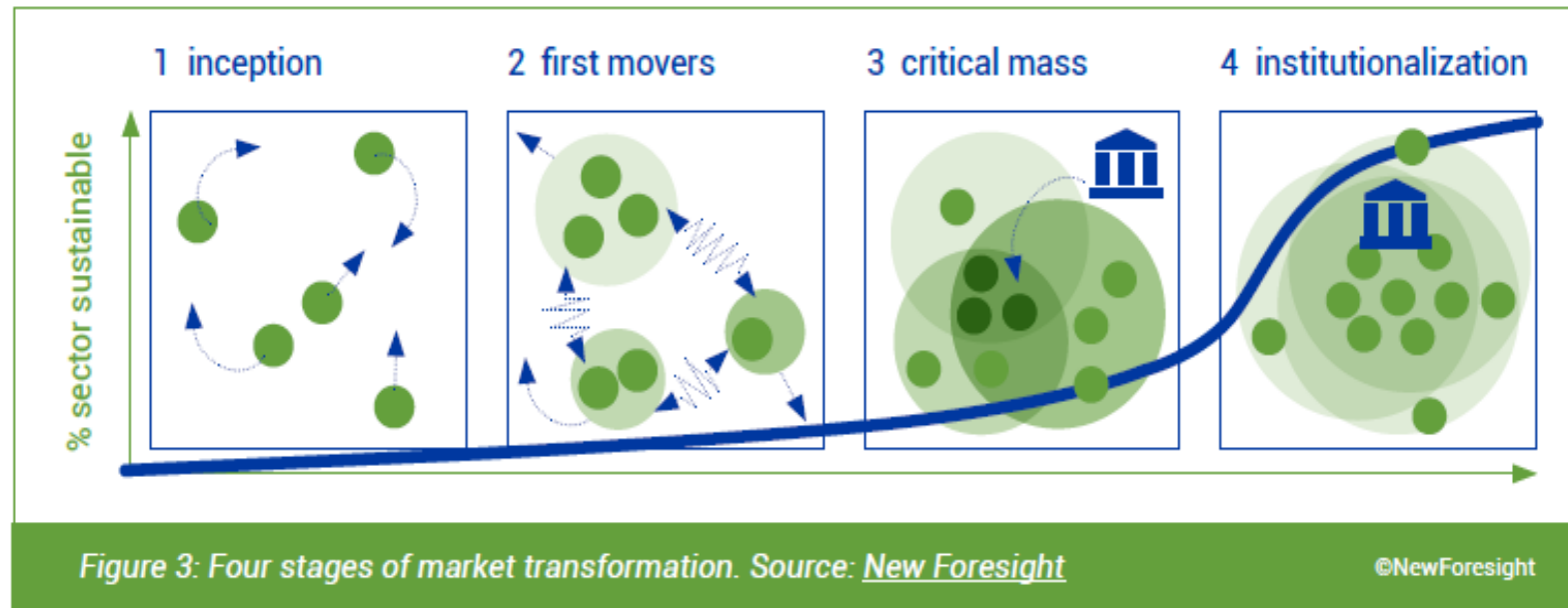
water level Groningen – 40 cm/24h



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% |
| | ----- | ----- |
| TOTAL | 157,90 | 100% |

From pilots to mainstream



Natural Climate Buffers 2.0

Climate buffers 2017-2022

From pilots to mainstream



Main goal: *In 2022 natural climate buffers have become 1st choice policy. A transition towards nature-based solutions which contribute to climate adaptation and biodiversity together is not far away now. Our lessons learned are shared with others.*

1. Lobby

Cooperation with other interests and influencing water policy

2. Projects

Upscaling and multiplying concrete projects

3. Knowledge

Developing and exchanging knowledge

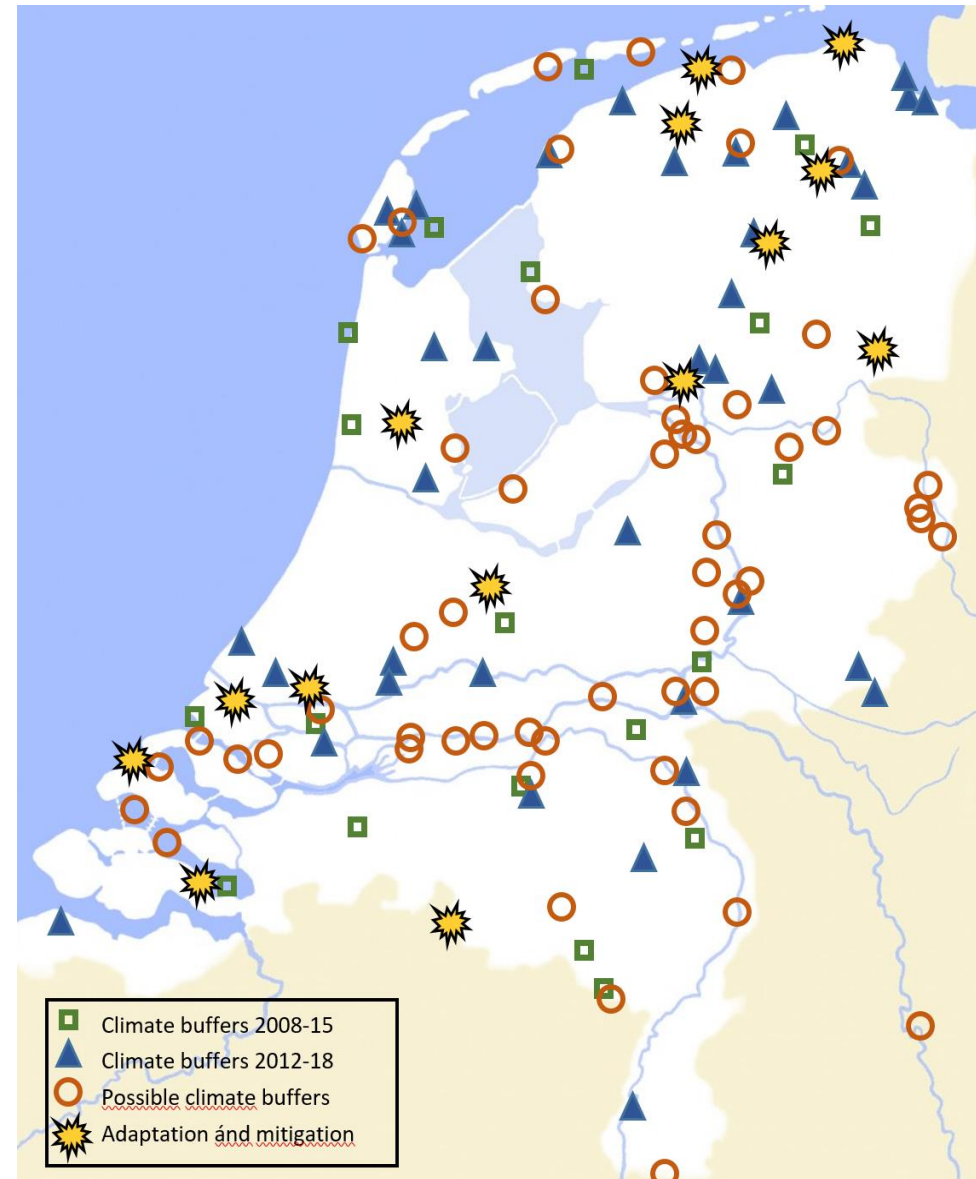
4. Communication

Communication and dissemination

Climate buffers 2019 and future possibilities

Climate buffers in practice

- 56 projects ready or on execution
- 57 serious ideas, on exploration or planning
- 14 'squared' climate buffers: adaptation and mitigation



Conclusions & recommendations

Conclusions

- nature-based solutions *effective!*
- integrated approach: broad *support*
- integrated approach: per actor *cheaper*
- building with nature: *more flexible* & cheaper



Recommendations

- Learning by doing – proving by doing!
- Framing nature conservation: from victim to solution

Autumn 2019
Natural Climate Buffer Tour Scotland
www.eurosite.org



Thank you

For more information :

www.eurosite.org/dutch-climate-buffers/

www.klimaatbuffers.nl

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