



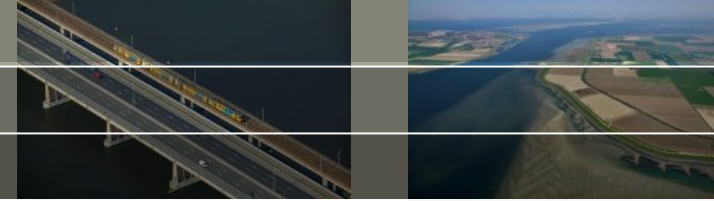
# Nature-based Solutions in a lake: Marker Wadden

## ‘Benefits of Ecosystem Restoration’ session

**Victor Beumer PhD., Deltares (NL), 16 May 2018**

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- Programme coordinator **Eco-Infrastructure** for Deltares

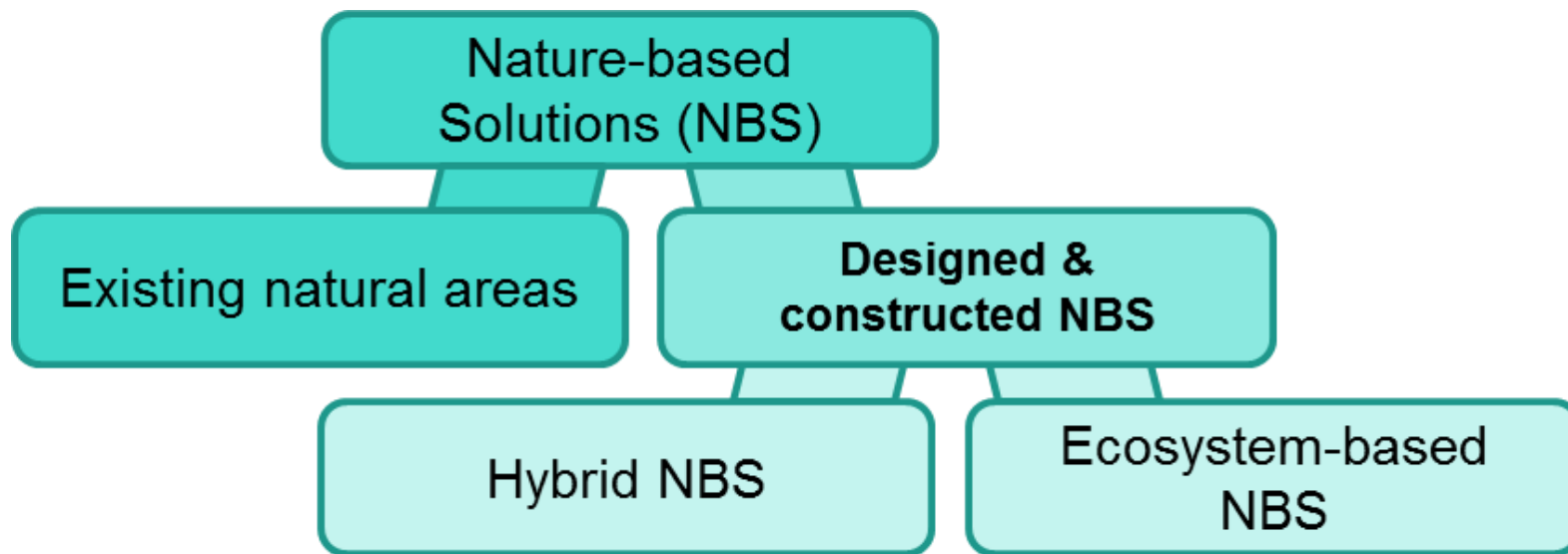
# Nature-based solutions



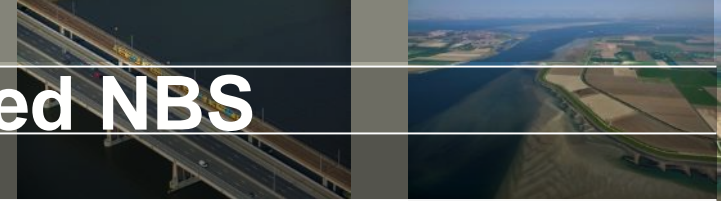
2 groups:

- Existing nature areas → derive ecosystem services from existing ecosystems (*restoration/conservation* approach)
- Designing and constructing natural solutions → design specifically for certain ecosystem services (*installation* approach)





# Hybrid versus ecosystem-based NBS

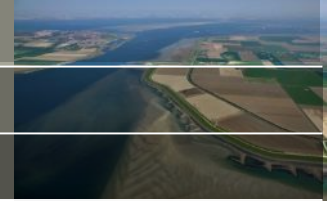


# Markermeer lake area (Netherlands)

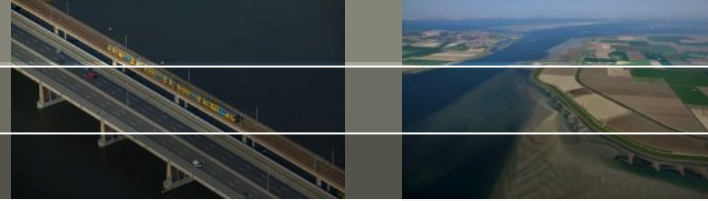




# Present state: construction



# Expected benefits: 2 scales



## MarkerWadden area as NBS:

- Increase in recreation
- Increase in knowledge on innovative techniques
- Education on lake ecosystems

## Markermeer lake system:

- Increase in bird diversity and numbers
- Increase in Habitat diversity
- Increase in clear water (quality)
- Increase in liveability for surrounding cities (Amsterdam, Lelystad and Almere)



# Identified barriers and how to overcome these



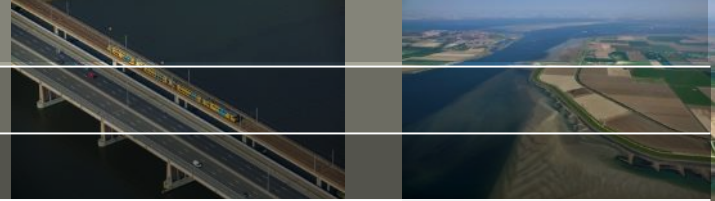
Some barriers:

1. How to prioritize benefits with respect to trade-offs?
2. How to combine all needs and desires of 15-20 stakeholders?
3. Not sufficient budget for construction: how to monetarize benefits?
4. How to minimize hard structures?

How to overcome these:

1. Separate main benefits from secondary benefits
2. Stakeholder involvement workshops with respect to the above
3. Select expected benefits on value and stack them into 1 budget
4. Make use of the natural processes of sedimentation

# Some lessons learned



- A ecosystem-based NBS (like MarkerWadden) to upgrade a lake system (Markermeer lake) as a whole can exist for multiple individual NBS's.

Multiscale approach: (1) individual NBS combined into (2) large ecosystem-based NBS to upgrade (3) lake system as a whole.

- The multiscale approach is also important for stakeholder involvement.
- To be extremely patient to get from an innovative idea to realization!