

• Breakout Group  
Sustainable Development -  
Ecology

Introduction by  
Prof.dr. Jouke van Dijk  
University of Groningen  
The Netherlands



ISWSS15  
The International Symposium on  
Wadden Sea Science  
Brecht, Belgium 2021

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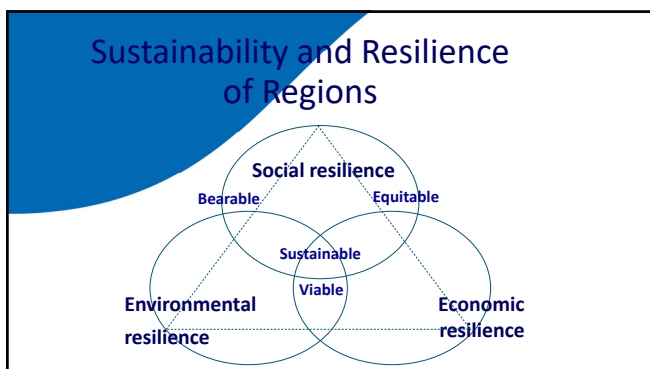
**Objective of this session**

- The objective of this session is to bring together scientists from different disciplines, managers and politicians: Taking into account existing trilateral programmes, strategies and plans, they are asked to discuss and come up with **recommendations for the TWSC to improve research, monitoring and assessment as well as management for the preservation of the Outstanding Universal Value in the context of climate change.** It is desirable that these recommendations also link to how the Wadden Sea community will contribute to achieve some of the expected outcomes of the UN Decade of the Ocean.

**Moderator:** Jouke van Dijk  
**Rapporteur:** Suzanne Poies  
**Technical moderator:**  
Harald Marencic

**Goal for the individual breakout groups:**  
Each breakout group should decide on three recommendations for science and three recommendations for management.

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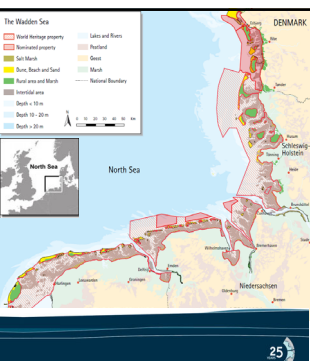


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The World Heritage List is the most prestigious List of cultural and natural monuments world wide

**2014 entire Wadden Sea on the World Heritage List with the extension of the Danish part (Dutch islands and harbour estuary are excluded!)**

An exceptional opportunity and obligation to reinforce conservation and management and advance sustainable regional development with the stakeholders



**The Wadden Sea**  
World Heritage property  
Natural property  
Salt Marsh  
Shore, Beach and Land  
Tide area and Marsh  
Intertidal area  
Depth < 10 m  
Depth 10 - 20 m  
Depth > 20 m  
Lakes and Rivers  
Natural  
Geot  
Marsh  
National Boundary

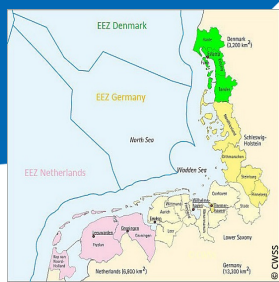
North Sea  
Denmark  
Netherlands  
Germany

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### The Wadden Sea Region

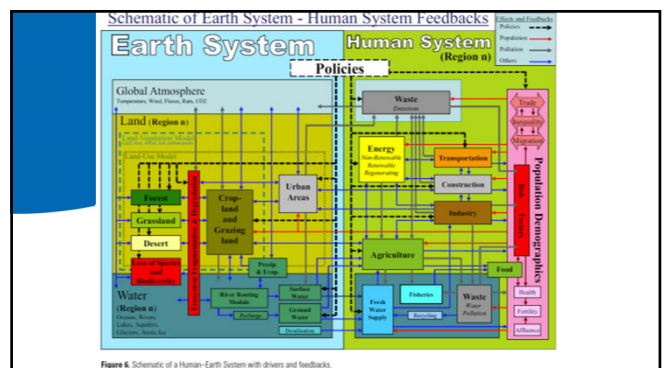
covers an area, which encompasses the coastal zones, the Wadden Sea with its islands and sands and the relevant parts of the **Exclusive Economic Zones (EEZ)** of Denmark, Germany and the Netherlands.  
(WSF/CWSS)

Important for rights for fisheries, fossil fuel extractions and windfarms

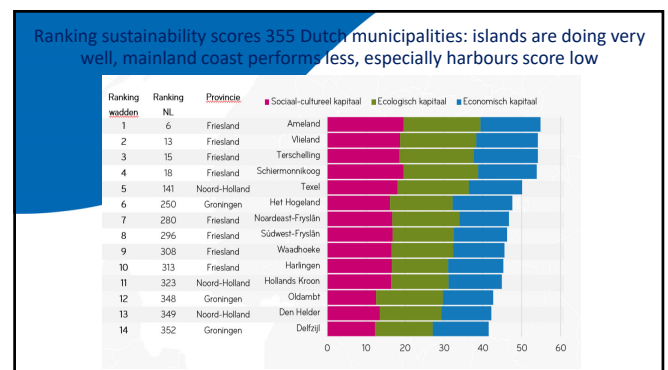


EEZ Denmark  
EEZ Germany  
EEZ Netherlands  
Wadden Sea  
North Sea  
Lower Saxony  
Netherlands (6,200 km²)  
Denmark (1,200 km²)  
Germany (1,200 km²)  
© CWSS

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Draft recommendations by the speakers in the Thematic Section Sustainable development - Ecology

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#### Lecture 1

- for science: Create biodiversity assessments that are MARINE: Measurable, Applicable, Reliable, Integrative, Non-Equilibrium
- Evaluate multivariate diversity and predict the time frame of transient dynamics
- Provide data analysis and data publication hub
- for management: Do not trade complexity for simpler but useless metrics
- Time series create their own baselines – keep time series going and allow overlap for comparability if methods need to be changed
- Align with environmental data and make data available
- Do multi-site monitoring

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#### Lecture 2

- for science: Biodiversity assessments need multiple metrics (S, ENS, SERr, SERa), single metrics lead to false interpretations
- Multivariate assessments are only an additional calculating effort, the four metrics do not require additional data (species identity, abundance, biomass)
- for management: Continuous time series must be coordinated with environmental parameters to improve model accuracy and predictions
- Biodiversity targets need to be set and implemented at regional and local scales, not at global scales

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#### Lecture 3

- for science: Models are great tools for connecting different approaches -> strengthen collaboration
- Include multi-stressor scenarios
- for management: Ecosystem approach
- Requirement: Holistic monitoring and data base

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#### Lecture 4

- for science:
  - Implement fully harmonized salt marsh monitoring in the whole Wadden Sea region
  - Include standardized measurements of SEC in monitoring
  - Investigate climate-ecosystem feedbacks considering multiple drivers (e.g. warming & eCO<sub>2</sub>) and ecosystem processes (e.g. herbivory & plant-microbe interactions)
- for management:
  - Maintain biodiversity by a large-scale mosaic of different management regimes (grazed vs non-grazed)
  - Increase natural hydrology by decreasing artificial drainage
  - Increase area and carbon sequestration potential by deembankments

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#### Lecture 5

- Prioritise further research on climate change effects for the Wadden Sea;
- Initiate trilateral research on the interrelationships between climate change impacts and applicable legal regimes;
- Discuss necessary or desirable policy responses and formulate recommendations for the next Trilateral Governmental Conference (2022).

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**Lecture 6**

For science: Large scale morphodynamic modeling:

- Process understanding
  - Feedback: benthos ↔ environment
  - Feedback: species ↔ species
- Calibration data
  - Species level or functional groups?
  - Data not harmonised
  - Data of future states (e.g. heat waves)
- Confirmation data
  - How does benthos and benthic diversity impact coastal morphology?

for management:

- Preserve functional biodiversity?
- Facilitate growth of mussel beds or sea grass?

=> Since coastal system are highly dynamic: What exactly shall be protected or preserved?

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**Breakout Group Sustainable development - Ecology**

**Final Recommendations in the Thematic Session Sustainable development - Ecology**



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**Final Recommendations Thematic Session Sustainability - Ecology**

1. Science and Management have a joint responsibility.
2. Develop biodiversity assessment tools (for monitoring and assessment) and improve use of time series.
3. Define biodiversity/sustainability targets on local and regional level.
4. Need to understand the system and recognize complexity of the Wadden Sea. Simple indicators do not work, but the message should be simple. Requiring an adequate communication („complexity is not an excuse“).
5. Shape living labs/project jointly with managers and scientists. The Partnership Hub can be instrumental for all stakeholders involved.
6. Multi-disciplinary approach needed to address biodiversity/sustainability.

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