MEETING DOCUMENT

Expert group Climate Change Adaptation (EG-C 10)

21 October 2021
Online meeting

Agenda Item:	4. Trilateral information
Subject:	Draft summary record
Document No.:	EG-C 10/4
Date:	21 October 2021
Submitted by:	CWSS

Robert Zijlstra, chair of the trilateral Expert Group Climate Change Adaptation (EG-C) presented progress in the implementation of the trilateral Climate Change Adaptation Strategy in the Wadden Sea, including lessons learnt from the use of the Climate Vulnerability Index method in the Wadden Sea at the Wadden Sea Board meeting 33 on 27 August 2021 in Wilhelmshaven, Germany.

The WSB discussed the level of ambition of the TWSC in this field, as well as possible directions between "laissez faire" and the need to act – allow dynamic adaptation of the system or (and how much) to intervene to combat climate change related changes to the system. Securing the Outstanding Universal Value of the Wadden Sea World Heritage is shared core responsibility of the Trilateral Wadden Sea Cooperation (TWSC). Karin Lochte emphasised the possibility to work with models for future scenarios, to analyse different management options . The strong relation of the EG-C to Trilateral Research Priorities may be considered by the Trilateral Programming Committee on Wadden Sea Research (TPC-WSR) (compare Agenda item 5.5). She also emphasised that the upcoming ISWSS will seek scientific advice for the management of the Wadden Sea under climate change. Also the consideration of the landward-side of the Wadden Sea system, including socio-economic aspects, may need to gain more attention in future.

The WSB noted the information and thanked Robert Zijlstra for the presentation and EG-C for their progress in climate change adaptation.

The WSB agreed on the importance of climate change for the work of TWSC and the need to fill knowledge gaps in system understanding by research and at the same time to define and take actions with support of EG-C

EG-C may review the trilateral CC Adaptation Strategy and to make proposals for an adjustment if necessary.

This document contains the slides presented at WSB 33.

Proposal: The group is invited to note the information

Trilateral Wadden Sea Cooperation

The Wadden Sea and climate change

Impact, adaptation and trilateral cooperation

Robert Zijlstra
Chair of Expert Group Climate Change Adaptation
WSB 33 27.8.2021

Photo: © Eurimage 2003, Common Wadden Sea Secretariat, Brockmann Consult

United Nations Educational, Scientific and Cultural Organization
The Wadden Sea World Heritage Site since 2009
WADDEN SEA WORLD HERITAGE
Common Wadden Sea Secretariat

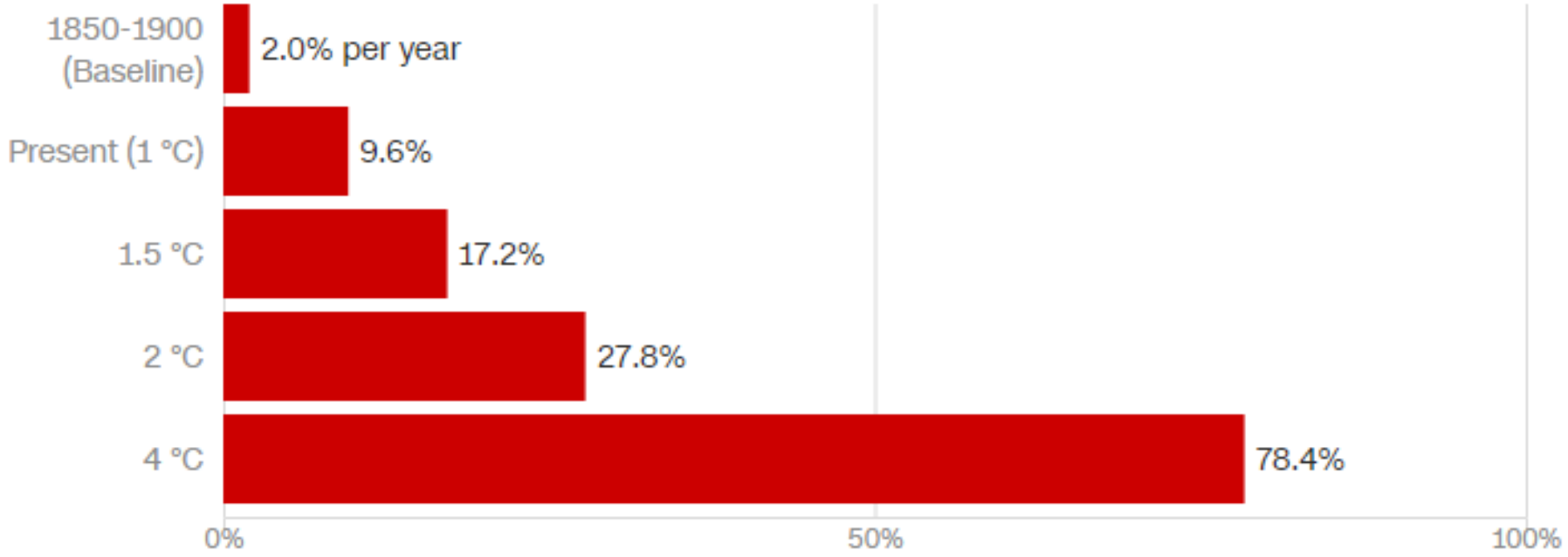
Was that wild weather caused by climate change? Scientists can now say 'yes' with confidence

By John Keefe and Curt Merrill, CNN

Aug. 9, 2021

A warmer planet means more extreme-heat events

As the global temperature rises, the chance of experiencing a 50-year-event increases from 2 percent per year to nearly 80 percent per year. A 50-year-event is when the temperature exceeds a level seen only once during the 50-year baseline period from 1850-1900.



Source: IPCC AR6 Working Group I report

‘Heat dome’ probably killed 1bn marine animals on Canada coast, experts say

We are not talking about some future scenario!

Habitat-forming species were hit especially hard

Observation:
Several non native species survived

Lack of knowledge:
What are long-term and chain effects?

Content

- Impact of climate change on the Wadden Sea
  - How vulnerable is the Wadden Sea?
  - What can happen?
- (How) Can we adapt?
  - Trilateral Climate Adaptation Strategy
  - Adaptation in a natural dynamic system?
- Trilateral cooperation
  - What's needed / desired?

Climate Vulnerability Index (CVI)

Pilot for the Wadden Sea, coordination by the Trilateral Expert Group Climate Change Adaptation (EG-C)

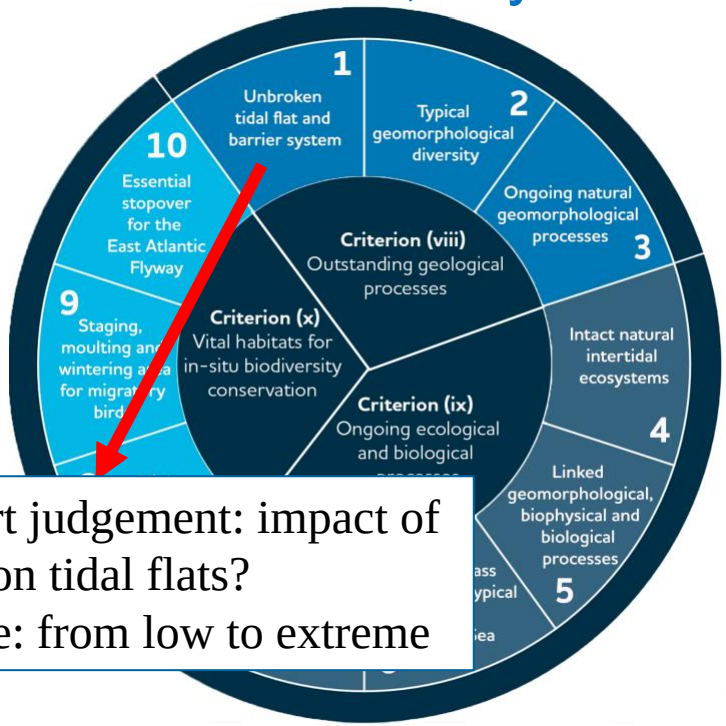
The CVI is:

- A Joint rapid assessment tool for a serial and transnational WH property like the Wadden Sea
- With enhanced involvement of scientists and site managers, how WH and OUV can be applied in research and protection.
- Helps in communication of expert opinion to the public and towards Unesco
- Priority setting in WH protection and management (state parties, trilateral expert groups).

The CVI Method (1st phase)

	Climate Stressor
Temperature	Temperature trend (air and/or water)
	Extreme temperature events
Water cycle	Precipitation trend
	Intense precipitation events
	Flooding (fluvial, pluvial)
	Drought (severity, duration, frequency)
Wind & Storms	Mean wind trend
	Storm intensity and frequency
Snow & Ice	Sea/lake ice change
	Snow cover change
Coastal	Sea level rise (trend)
	Coastal flood
	Storm surge
	Coastal erosion
Context-specific	*e.g., Ocean acidification*
	e.g., Radiation change
	...
	...

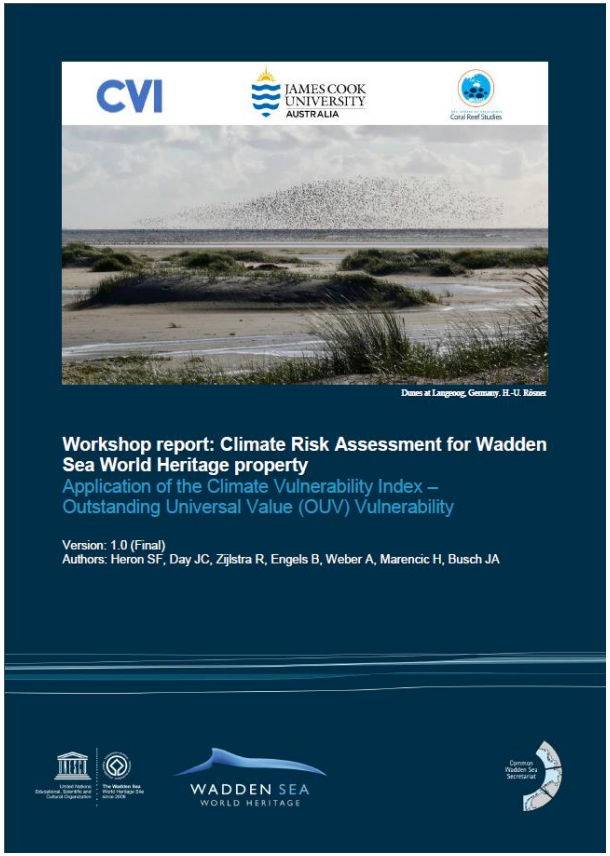
OUV criteria, key values



Expert judgement: impact of SLR on tidal flats?
Range: from low to extreme

Results

- Main climate stressors:
  - Temperature trend (air and/or water);
  - Extreme temperature events; and
  - Sea level rise
- High OUV vulnerability (!):
  - In 2050: mainly temperature / heat
  - In 2100: additionally sea level rise



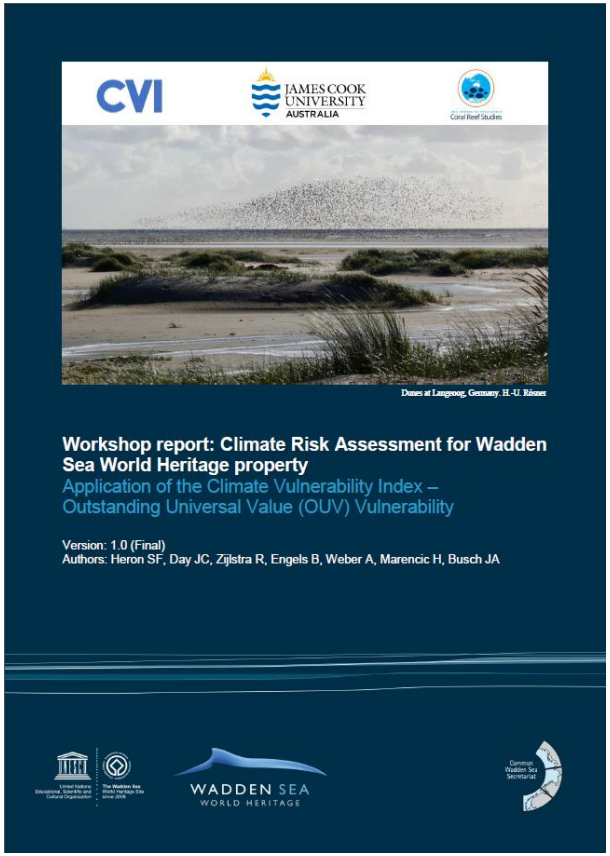
CVI Report 2020

Impact + adaptive capacity = Vulnerability, for the year 2050

Key Climate Stressors:	Temperature trend (air and/or water)	Extreme temperature events	Sea level rise (trend)
Exposure	Very likely	Likely	Very likely
Temporal scale	On-going	Frequent	On-going
Trend	Rapid increase	Moderate/Rapid increase	Slow/Moderate increase
Exposure	**Very likely** ○○○○●	**Very likely** ○○○○●	**Very likely** ○○○○●
Sensitivity	Moderate	Moderate	Low
Spatial scale	Widespread	Extensive	Extensive
Compounding factors	Medium/High probability	Medium probability	Medium probability
Sensitivity	**High** ○○○●○	**Moderate** ○○●○○	**Moderate** ○○●○○
Potential impact	**Extreme** ○○○●	**High** ○○●○	**High** ○○●○
Local management response	Low	Low	High
Scientific/technical support	Moderate	Moderate	Moderate/High
Effectiveness	Low	Very low/Low	Moderate/High
Adaptive capacity	**Low** ○●○○	**Very low** ●○○○	**High** ○○○●
OUV Vulnerability	**High** ○○●	**High** ○○●	**Low** ●○○
Combined OUV Vulnerability		**High** ○○●	

Lessons learned / recommendations

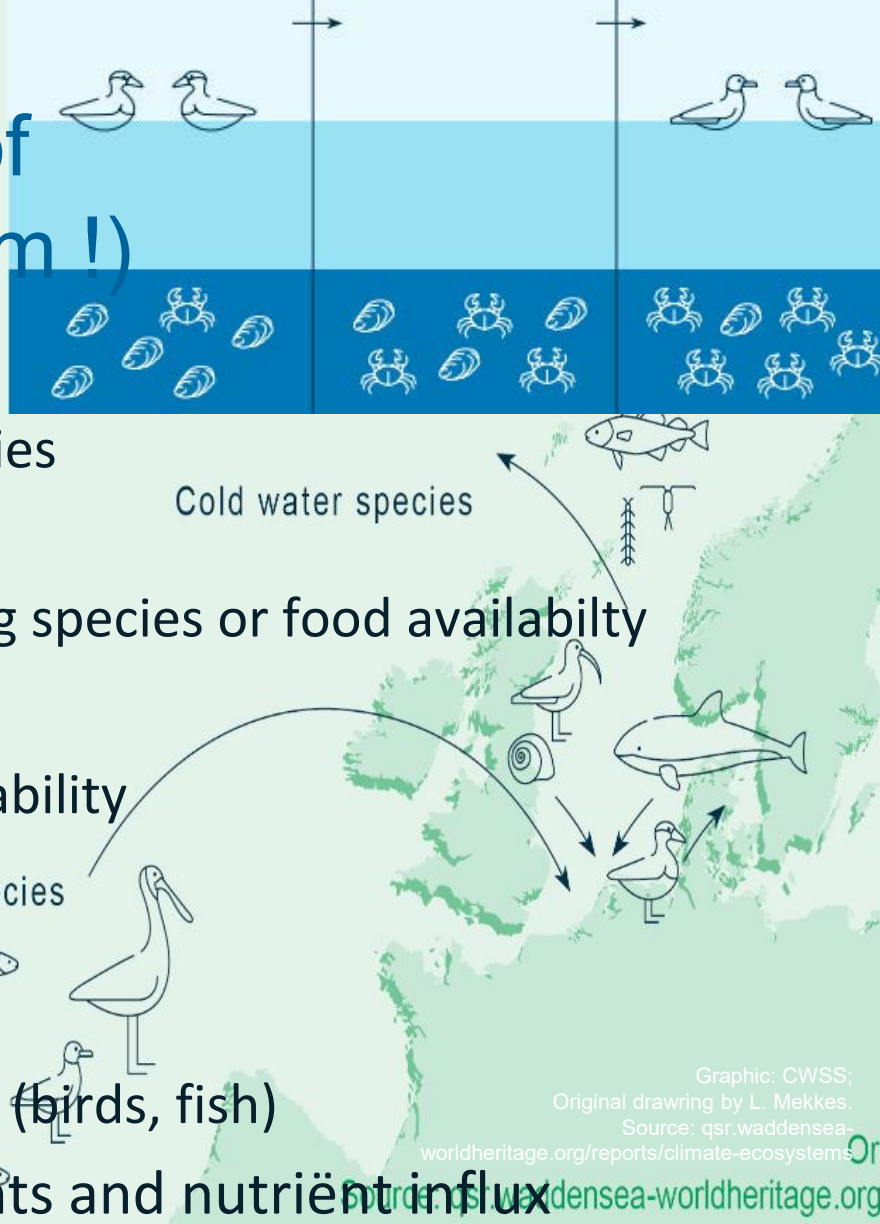
- Much is still unknown, more research needed!
- Large area, complex ecosystem, not all elements face same (negative) impact -> more detailed analysis
- Look at international context: Flyway/SWIMWAY, including the Arctic & Africa
- Limited adaptation options?
  - Limit climate change (Paris agreement)
  - Reduce (other) pressures (relates to SIMP)



CVI Report 2020

Some potential impacts of climate change (short term !)

- Mean temperature rise:
  - Distribution shift, different species
  - Changes in timing life cycles
  - Mismatches between interacting species or food availabilty
- More frequent heatwaves:
  - (temporal) decline of food availability
  - Potential decline quality/diversity existing habitats
  - Increasing stress on populations (birds, fish)
- Droughts: Loss of salinity gradients and nutriënt influx



Graphic: CWSS;
Original drawring by L. Mekkes.
Source: qsr.waddensea-worldheritage.org/reports/climate-ecosystems

Complexity due to indirect effects and socio-economic interactions

- Increasing need for coastal protection
- Changing land and water management (a.o. agriculture) behind the dikes influences inflow of water and nutrients
- More pressure due to tourism (“improving” climate)
- Climate mitigation and “sustainable” energy

(from a.o. the fase 2 ESC analysis during the CVI process)

(How) Can we adapt?

- Wadden Sea is natural dynamic system
- the Wadden Sea (eco)system will change due to climate change
- Major interventions seem undesired or are simply impossible (e.g. cooling the water, making birds heat resistant or building intertidal flats)
- Accept changes?

However:

- We can (and should) manage pressures
- We can (and should) support the adaptive capacity of the natural system

How to adapt? The Trilateral climate change adaptation strategy

STRATEGIC OBJECTIVES AND *PRINCIPLES*

- Resilience to climate change in the Wadden Sea region may best be achieved by implementing an adaptation strategy that consists of seven basic elements:
- Natural dynamics, Interconnectivity, *Integration, Flexibility, Long-term approach, Site specific approach and Participation*.
- Under the precondition that the safety of the inhabitants remains guaranteed….

Towards a more resilient Wadden Sea

- The natural dynamic system can (and will) adapt itself
- Diversity and redundancy: a healthy natural dynamic (eco)system can take on (some) pressure due to climate change
- Ensure interconnectivity (enable migration):
  - Local, regional, national, international
  - Wadden sea and hinterland (!)
- Manage/reduce other pressures on the ecosystem
- Understand what will happen due to climate change (e.g. map tipping points, effects on Flyway, Swimway)

More or less identical goals as for nature restoration and conservation

Progress Leeuwarden Declaration

Aware that climate change has impacts on the Wadden Sea and that future changes can pose a threat to the Outstanding Universal Value of the Wadden Sea ecosystem, and determined to address the challenges of climate change mitigation and adaptation, including CO_2 reduction and impacts of climate change on the Wadden Sea ecosystem's food web;

Reaffirming that the overall goal of climate change adaptation in the Wadden Sea Area is to safeguard and promote the quality and integrity of the area as a natural and resilient ecosystem whilst ensuring the safety of its inhabitants and visitors

- *25. Continue to support the global and national efforts to mitigate climate change at the regional level;*
- *26. Instruct the Wadden Sea Board in cooperation with, among others, the Wadden Sea Forum and green NGOs to develop and support promising initiatives for climate change mitigation taken at the local and regional levels by authorities, organisations, companies and inhabitants, inter alia by exchanging information and best practices, linking various initiatives and stimulating pilot projects, including the CO_2 reduction ambition of the Wadden Sea Region;*
- *27. Instruct the Wadden Sea Board to continue implementing the Trilateral Climate Change Adaptation Strategy and update the priorities contained therein where needed;*
- *28. Request the Wadden Sea Board to determine together with its scientific partners which investigations are needed to better understand the impacts of climate change on the Wadden Sea ecosystem, for example on primary production and alien species, and to be prepared to enhance the level of adequate management to safeguard the Outstanding Universal Value of the Wadden Sea;*

Single Integrated Management Plan

- Monitor and understand (=research) the system
- Continue and strengthen work on nature conservation and restoration for resilience to climate change
- Sustainable human use (tourism, fisheries, shipping)
- Coastal defense: opportunities to improve the coastal zone (e.g. connectivity)
- Promote mitigation: carbon storage and reduced (zero) emissions in the WH-area

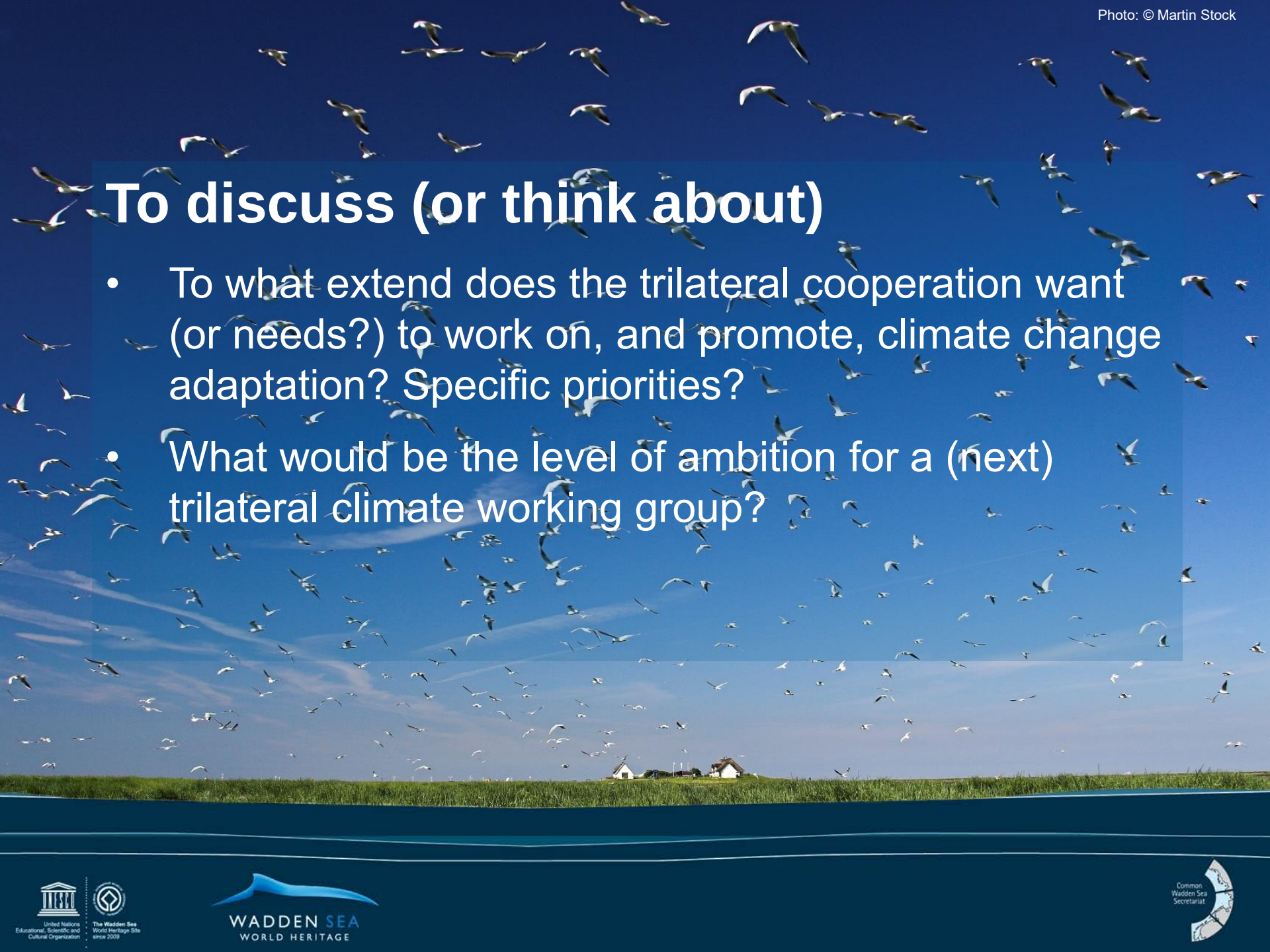
Towards the Ministerial Declaration and future work

Stay ahead, climate change is happening, speeding up and stronger impacts may be coming more rapidly (than we might think)

- Further improve system understanding, a.o. by monitoring (TMAP) and research (TRA)
  - Describe and investigate effects of climate change on all aspects of the ecosystem (eg. CVI 2.0 or QSR??)
  - A more process oriented monitoring (TMAP?) to follow the rate of change and to quantify impacts of our (restoration) efforts and to enable fast response to unexpected changes in environmental conditions or the ecosystem.

Towards the Ministerial Declaration and future work

- Improve and strengthen the Climate change adaptation strategy, actively promote implementation. Develop guidelines, share best practices, ensure legal framework and explore options for adaptation
- Deal with the apparent tension between ‘laissez faire’ and ‘need to act’ (see annual report 2020)
- Given the high vulnerability and responsibility for the World Heritage: report to Unesco how we are “protecting” the Wadden Sea (also consider the WHC policy document on impacts of climate change)



To discuss (or think about)

- To what extend does the trilateral cooperation want (or needs?) to work on, and promote, climate change adaptation? Specific priorities?
- What would be the level of ambition for a (next) trilateral climate working group?


THERE IS A PLACE – WHERE HEAVEN
AND EARTH SHARE THE SAME STAGE
Thank you all for your attention
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