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**Wadden Sea Board (WSB 33)**

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<b>Agenda Item:</b>	<b>5.3</b>
<b>Subject:</b>	<b>Climate change adaptation in the Trilateral Wadden Sea Cooperation</b>
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This document briefly describes how the TWSC deals with climate change adaptation in the Wadden Sea, and the progress made during this period of cooperation. During the WSB the chair of EG-C will give a presentation on the potential impact of climate change (a.o. the results of the Climate Vulnerability Index process), management perspectives for adaptation and the work of the Expert Group Climate and invites the board to think ahead with respect to the position of climate change (adaptation) within the framework of the trilateral cooperation.

**Proposal:** The WSB is invited to note the information and provide further guidance with respect to the position of climate change adaptation in the Wadden Sea

## World Heritage in changing climate / Climate change adaptation in the Trilateral Wadden Sea Cooperation

### Background

It is expected that climate change will seriously impact the structure, functions and characteristic biodiversity of the Wadden Sea ecosystem, as well as the safety of the inhabitants in the region. Addressing these impacts as a cross cutting theme is a major challenge for the Trilateral Wadden Sea Cooperation (TWSC). The overall goal of climate change adaptation in the Wadden Sea Area is to safeguard and promote the qualities and integrity of the area as a natural and sustainable ecosystem whilst ensuring the safety of the inhabitants and visitors, as well as the cultural heritage and landscape assets and sustainable human use ([CWSS, 2014](#)<sup>1</sup>). Furthermore, the Wadden Sea is a World Heritage property. Therefore, it is also required to investigate the impact of climate change on the Outstanding Universal Value (OUV) of the area and take adaptation measures, if necessary, in order to safeguard the OUV. The TWSC is also obligated to report to UNESCO on this threat and how it is dealing with it.

Between 2011 and 2014 the former Task Group Climate (TG-C) drafted a trilateral [Climate Change Adaptation Strategy \(CCAS\)](#) on increasing the resilience of the Wadden Sea to the impacts of climate change. At the Trilateral Governmental Conference in February 2014 the strategy was adopted, and it is still in place ([CWSS, 2014](#)<sup>1</sup>). The Leeuwarden Declaration (2018) re-confirmed that work on the implementation of the strategy has to continue ([CWSS, 2018](#)<sup>2</sup>). Also is stated that more research on the impact of climate change on the Wadden Sea (eco)system is needed as still a lot is unknown.

### Progress Expert Group Climate Change Adaptation (EG-C), 2018-2021

In this period of trilateral cooperation, an Expert Group Climate Change Adaptation (EG-C) is in place. Main aims of this group are to advise the WSB on request or self-initiated, to exchange knowledge and to monitor the trilateral Climate Change Adaptation Strategy. To particularly consider the vulnerability of the World Heritage, the group has worked on trialling a Climate Vulnerability Index (CVI) between 2019 and 2021. This is a systematic tool to rapidly assess climate change risk to World Heritage sites worldwide. The group also contributes to the single integrated management plan (SIMP) and Quality Status Report (QSR) process. Before 2018, the group focussed mainly on abiotic factors and sea level rise, this is gradually changing now towards an integrated approach to climate change adaptation. A more elaborate summary of activities, including an advice for the next working period is foreseen next year.

### Impact of climate change

The Wadden Sea is and will be impacted by climate change. The only questions are: how severe and how fast. In the CVI process, three key climate stressors impacting the Wadden Sea OUV were identified: temperature trend (air and/or water); extreme temperature events; and sea level rise. These were consistent across the two timeframes considered (ca. 2050 and ca. 2100) using a 'business-as-usual' climate scenario, which represents the most likely consequence of current international policies linked to greenhouse gas emissions (see [workshop report Heron et al 2020](#)). Direct impacts on the ecology are expected by temperature increase and heat stress (by 2050). Sea level rise is a concern on the long run (by 2100): if the speed of rise accelerates, the morphological system can possibly not adjust in sufficient pace and habitats may disappear or alter.

<sup>1</sup>CWSS (2014) Toender Declaration. Ministerial Council Declaration of the 12<sup>th</sup> Trilateral Governmental Conference on the Protection of the Wadden Sea. Common Wadden Sea Secretariat, Wilhelmshaven, Germany.

<sup>2</sup>CWSS (2018) Leeuwarden Declaration. Ministerial Council Declaration of the 13<sup>th</sup> Trilateral Governmental Conference on the Protection of the Wadden Sea. Common Wadden Sea Secretariat, Wilhelmshaven, Germany.

Indirect effects are also present. For instance: during drought, the hinterland will store and use more fresh water, reducing inflow to the Wadden Sea. Building climate proof dikes may require more space. The need for climate change mitigation may put additional pressure on the use of area, such as renewable energy (wind farms, solar panels, tidal energy, etc). When considering the ecological functioning of the Wadden Sea, also effects of climate change outside the Wadden Sea Cooperation Area need to be considered.

These examples show that estimating the overall impact of climate change is a challenging task. On the other hand, using general principles, we know that extreme events like heat waves will put additional stress on populations in the Wadden Sea that are already under pressure. This will likely have negative effects. It should be expected that some species we now see in the area will migrate to cooler regions and new species will arrive. Such a trend has already been described in the Quality Status Report 2017 (Philippart et al 2017).

In addition to the direct impacts of climate change on the OUV, the CVI pilot further underlined a need to also consider socio-economic factors when addressing climate change (adaptation), e.g., look at water management in the hinterland and consider development of economic sectors, such as tourism.

## **Management perspectives for dealing with climate change**

Recent extreme events, such as in Canada and Europe, might indicate that climate change impacts are coming very rapid. Therefore, there is a clear need to know what will happen and a desire to act. However, when we consider the Wadden Sea (eco) system, possibilities for (direct) adaptation seem limited. For instance, there are limited possibilities currently known to prevent impact of extreme heat on marine life.

Accelerated sea level rise may lead to drowning of the intertidal system. Also here, options for adaptation are not straight forward. Key value of the Wadden Sea is the undisturbed natural dynamic geomorphological system. Interventions for climate change adaptation, for instance sand nourishments on tidal flats or structures to prevent erosion of habitats may be in contradiction with this key value.

General principles for resilience, such as diversity, redundancy and connectivity (see [Stockholm Resilience Center](#)), could be useful to apply also in the management of Wadden Sea. In general, a sound and healthy ecosystem is less vulnerable than a system under stress. When the ecosystem is able to adjust, for instance by allowing for migration of species, the future system can become more resilient. Concern remains that negative impacts may become too frequent, or changes will occur too fast and will disturb the integrity of ecosystems.

## **Considerations for trilateral cooperation**

Most possibilities for adaptation lie at local, regional and national level, e.g., in nature conservation projects, coastal zone management, use of the area and other spatial developments. The Trilateral Cooperation adds value by addressing the challenges of climate change at the level of the entire Wadden Sea and under consideration of its OUV. It is indispensable when it comes to overarching topics, like for instance: stimulate and cooperate in knowledge development, joint monitoring, sharing data and information, dealing with European legislation such as Natura2000 and aligning policies in the trilateral Wadden Sea cooperation area. Further it is required to report to UNESCO how the site deals with climate change. And, last but not least: raising awareness, provide education and communication on the potential impact of climate change on the property.

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<sup>2</sup>CWSS (2018) Leeuwarden Declaration. Ministerial Council Declaration of the 13<sup>th</sup> Trilateral Governmental Conference on the Protection of the Wadden Sea. Common Wadden Sea Secretariat, Wilhelmshaven, Germany.

The following items are worth considering and discussing with respect to climate change adaptation and the trilateral cooperation:

- Foster scientific evidence on the impact of climate change on the Wadden Sea and likelihood of effects of measures by further stimulating and accelerating research, knowledge exchange and joint (research) projects, amongst others via the trilateral research agenda;
- Strengthen the Trilateral Monitoring and Assessment Programme (TMAP) framework to monitor the impact of climate change on the area consistently with respect to climate change and compare trends and developments between regions;
- Discuss the balance between accepting and allowing changes to happen, restoring natural dynamics and conservation goals;
- Further elaborate strategies for adaptation in a natural dynamic system and map possible interventions to support the system in adapting to a changing climate;
- Strive to make the Wadden Sea as resilient as possible to climate change and investigate cumulative effects of climate change and other pressures. Consider reducing other pressures, amongst others via the SIMP process;
- Position climate change adaptation as a major challenge for the Wadden Sea and surrounding areas in the TWSC. Communicate on the potential impacts of climate change. Promote an integrated approach towards development of the area: climate change is not a separate topic, but is to be dealt with throughout disciplines.

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