

# CASE STUDY 3

## Storm



CrossEU

Denmark  
Germany

### Climate Change Hotspots (CCH)

#### Hotspot: South-western Denmark and Northern Germany

The municipalities of Aabenraa and Haderslev in Denmark and the cities of Flensburg and Kiel in Germany have been selected as Climate Change Hotspots in the case study 3 focusing on flooding during storm surges.

The Climate Change Hotspots (CCH) are highly exposed and vulnerable towards the occurrences and impacts of storm surge from the Baltic Sea. The areas have low lying coastlines, and cities in this region are often positioned in the bottom of fjords, next to the sea. The combination of a low-lying coastline with a high degree of human and economic activities next to the sea makes this region particularly exposed and vulnerable to the occurrences and consequences of flooding during storm surges. The region has experienced serious flooding events in the last decades, and most recently in October 2023.



Flooding Hejsager Beach, October 2023.

Copyright: Haderslev Municipality.

### Context

The selected climate change hotspots (CCHs) are highly exposed and vulnerable towards the occurrences and impacts of storm surge from the Baltic Sea. The regions of Southern Denmark and Northern Germany have low lying coastlines, and cities in this region are often positioned in the bottom of fjords, next to the sea. The combination of a low-lying coastline with a high degree of human and economic activities next to the sea makes this region particularly exposed and vulnerable to the occurrences and consequences of flooding during storm surges.

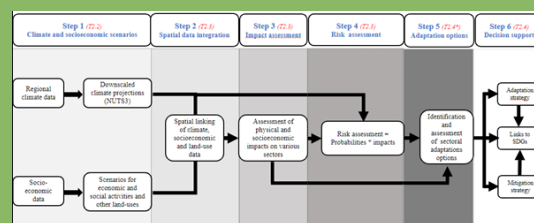
The CCHs, within the region were recently hit by a severe storm surge in October 2023, where many urban areas were flooded, resulting in large economic losses.

### Objectives

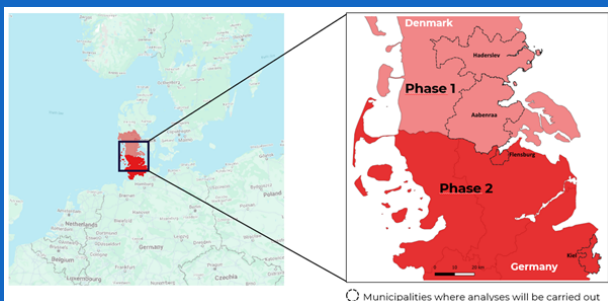
The objective of this case study is to investigate the impacts of flooding events on land use including buildings, business, agriculture, infrastructure, transport, health, tourism, ecosystems, and historical/cultural values. The analyses will be conducted on a detailed geographical level for storm surges. An assessment of damage costs and risks of flooding events will be used as input to decision-making on adaptation measures.

### Methods

The assessment of damages from coastal flooding is based on an integrated analytical framework including climate scenarios, flood inundation modelling, impact mapping, damage cost modelling, and socioeconomic impact assessment.



Analytical structure of the integrated analysis of climate impacts from coastal flooding.  
Figure from CROSSEU Deliverable 2.1 & 2.2



○ Municipalities where analyses will be carried out

The Climate Change Hotspot with focus on the municipalities of Aabenraa and Haderslev in Denmark, and Flensburg and Kiel in Germany.