

A case study in Ringkøbing-Skjern, Denmark

Governmental Authorities with an Inclusive Approach

by Danish Coastal Authority (DCA) and
Central Denmark Region (CDR)



From Fjord to River to Groundwater

Ringkøbing-Skjern, Denmark's largest municipality, is surrounded by abundant waters, from fjord to river to groundwater. Whilst flood risks are to be handled by landowners, they are often unaware of this responsibility, the various sources of risk and how to manage risk. The municipality provides support in different ways.

Stimulating an Inclusive Process

The DCA and the CDR have stimulated an inclusive process, which aimed to raise the awareness of landowners and increase the coping capacity of society. Different solutions have been assessed, but can only be implemented as part of a long term process. This process should feed into the municipal climate adaptation plan in the DK2020 project.



Despite Progress, Challenges Remain

The inclusive process has yielded many benefits. It enabled the municipality to involve stakeholders in climate adaptation. It not only informed the management of flood risk, but also provided a guide for other municipalities on the process of flood risk management. Yet, significant challenges remain around the complex structure of responsibilities.

A case study on Lower Saxony Mainland Coast, Germany

Value of the Foreland for Climate Change Adaptation

by Niedersächsischer Landesbetrieb für
Wasserwirtschaft, Küsten- und Naturschutz (NLWKN)



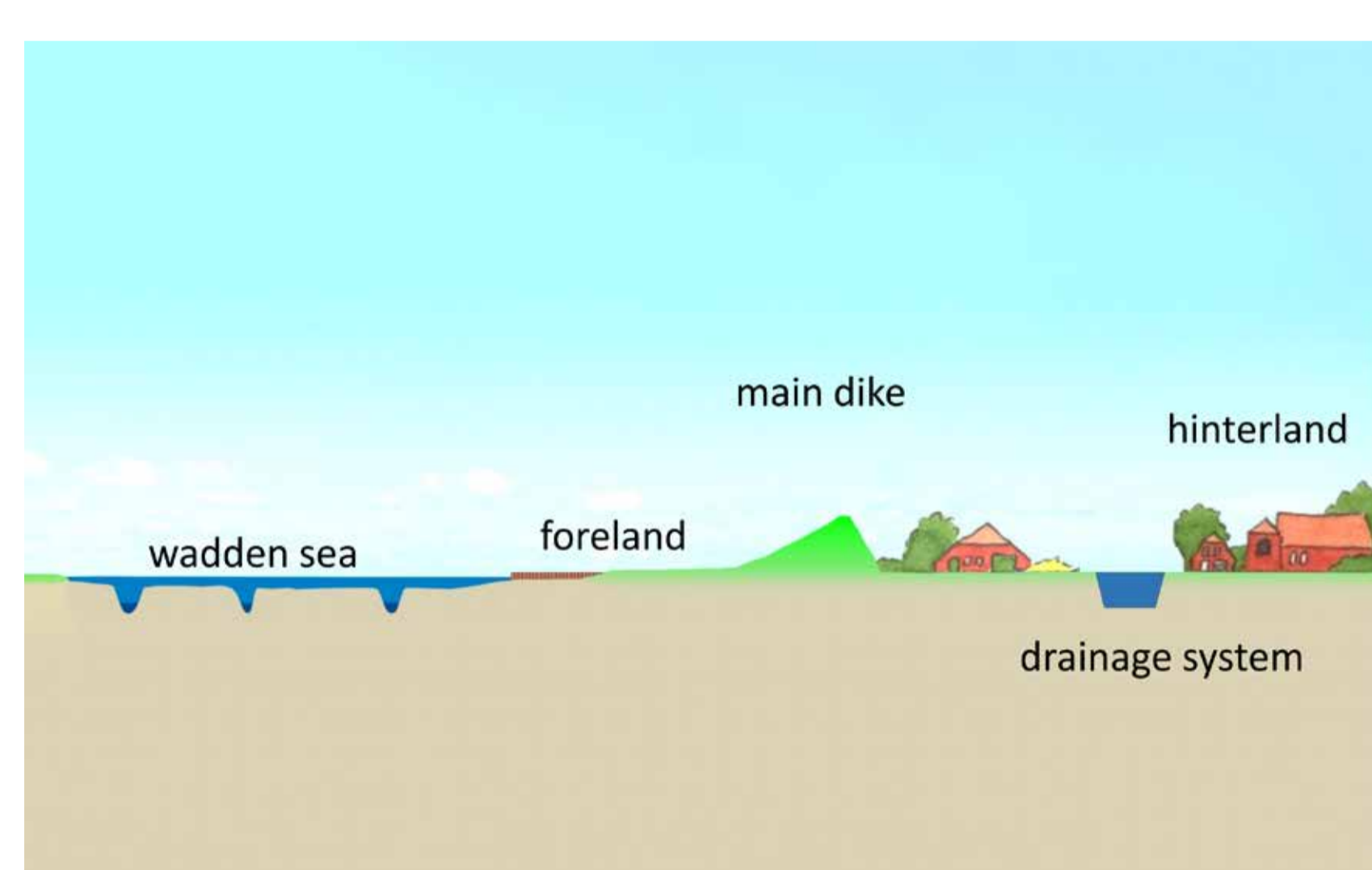
Forelands for Flood Protection

Marshlands of the Lower Saxony mainland coast are protected from floods by dikes and in large parts by a foreland, which provides additional safety as an ecosystem-based element. NLWKN and the Dike Board Esens-Harlingerland identified the relevant sections of the coastal flood protection system. A stakeholder workshop provided a collective understanding of importance of the foreland and its increasing value under climate change.

Cooperation for the Whole-system

The whole-system approach facilitated the analysis of the relationship between the foreland and the expected flood damage, using the “source-pathway-receptor” framework. A continuous dialogue enhanced the existing cooperation. It started as a small and project-based group and continued in mutual learning to consider climate adaptation of the coastal protection system.

Integration with Strategies



Coastal protection measures will continue to be a reasonable option for protecting the coastal lowlands against flooding. The measures of the Lower Saxony climate adaptation strategy, such as the climate dike and forelands as significant elements of the coastal flood protection system, can be implemented more easily, as adaptation pathways and stakeholder involvement facilitate the planning and approval processes.

A case study in Het Zwin Nature Reserve,
Belgium and the Netherlands

Working with Nature to Prepare for a Future Climate

by Flanders Environment Agency (VMM)



Nurturing Nature

The Zwin Nature Reserve is a Wetland of International Importance and a Natura 2000 site. Climate change threatens the tidal marshes in the area, impacting both ecology and drainage capacity. Investments were made to extend the reserve and make it climate resilient. However, it remains to be seen if the current system is ready for anticipated climate effects.



Whole-system in Context

Thanks to the limited dimensions of the water system in the area, the stakeholders considered the entire water cycle. The focus was on creating a natural landscape while preserving freshwater resources for agriculture and identifying measures with additional benefits in flood management. As part of an inclusive process, the VMM organised a public information campaign and engaged businesses and farmers.



Longer Horizons, Engaged Stakeholders

With the whole-system approach, both the specific challenges in the water system and other aspects were considered. The discussion extended the planning horizon, which is beneficial to consider climate projections. The extensive stakeholder involvement process accelerated the implementation of measures. Plans and infrastructure were adapted, and a solid basis was formed for future developments.



A case study in Weijerswold Floodplains, The Netherlands

Upstream and Downstream Benefits of Floodplains

by Province of Drenthe



Floodplains Gaining Priority

Weijerswold floodplains near the city of Coevorden were excluded from earlier flood plans, as they were a low priority area under the climate conditions at the time. The downstream city of Zwolle is at high risk of flooding from IJssel and Vecht Rivers. This concern reactivated a dialogue among the stakeholders about the mutual benefits of floodplains.

Dialogue for the Whole System

Local impacts of the floodplains were assessed and further extended with a whole-system perspective to integrate flood issues in Zwolle. A continuous dialogue facilitated the involvement of the Province of Drenthe in the catchment-based project for the Vecht River. Water storage areas around Coevorden became part of the possible solution for adapting to climate change.

Adaptive and Integrated Solution

The most significant benefit gained in this case is adaptability. The solution offers a flexible route, considering different climate scenarios and comes with the lowest social costs. It also combines other environmental and climate issues with a spatial impact, such as space for renewable energy, organic farming and nature restoration.

A case study in Dordrecht, The Netherlands

Changing the Way That Flood Risk is Managed

by Rijkswaterstaat

Ambition of a Self-reliant Island



The municipality of Dordrecht and partners, such as Rijkswaterstaat, have the ambition to create a Self-reliant Island, which takes shape in a spatial vision. In this vision, De Staart is (re)developed as an attractive residential-work area and a large-scale, self-sufficient flood shelter. The opportunity for such a development has been explored by experts in three workshops.

Whole-of-society Strategy

The municipality has developed a whole-of-society strategy, with the aim to connect citizens and other stakeholders to the ambition of a Self-reliant Island. Not only as consumers, but also as producers of flood safety. The communication campaign 'Ready for water' encourages citizens to make a household emergency plan in three simple steps.

Ready for Water

With their ambition, the municipality is changing the way that flood risk is managed. Communication activities, like the 'Ready for water' campaign, were deployed to make citizens aware of the risk and of how to act. This increased awareness and will likely lead to lower casualties in case of a flood.



A case study in Klarälven River, Sweden

River as Basis for Climate Change Adaptation

by Värmland County Administrative Board (VCAB)



Adapting with the River

The Klarälven River is crucial for the Värmland county, but it also poses flood risk, erosion, and landslide challenges. Measures to minimize the river's impact should

consider multiple aspects, such as biodiversity, hydropower production and cultural heritage. The VCAB and other stakeholders came together in three workshops to discuss climate change impacts, define a climate vision and evaluate potential measures.

Cooperation to Create Value

Working with a whole-system approach, stakeholders from different sectors explored how a holistic perspective and cooperation could benefit measures and development work. They identified a need to reduce silo-thinking between organizations and a need to work together and continually create value. They also discussed the impact of climate change on the river and the effects on their work.

Learning and Integrating Together

Compared to the traditional silo-thinking, using a whole-system approach provided multiple advantages. New types of measures can be created which are more multi-functional. The stakeholders that participated in the workshops testify the social and governance benefits, such as learning about the views and objectives of other stakeholders, and integrating knowledge from different sectors.



**Värmland County
Administrative Board**

A case study in Kent, the United Kingdom

Common Understanding of Risk and a Shared Climate Vision

by Kent County Council (KCC) and
Sayers and Partners (SPL)

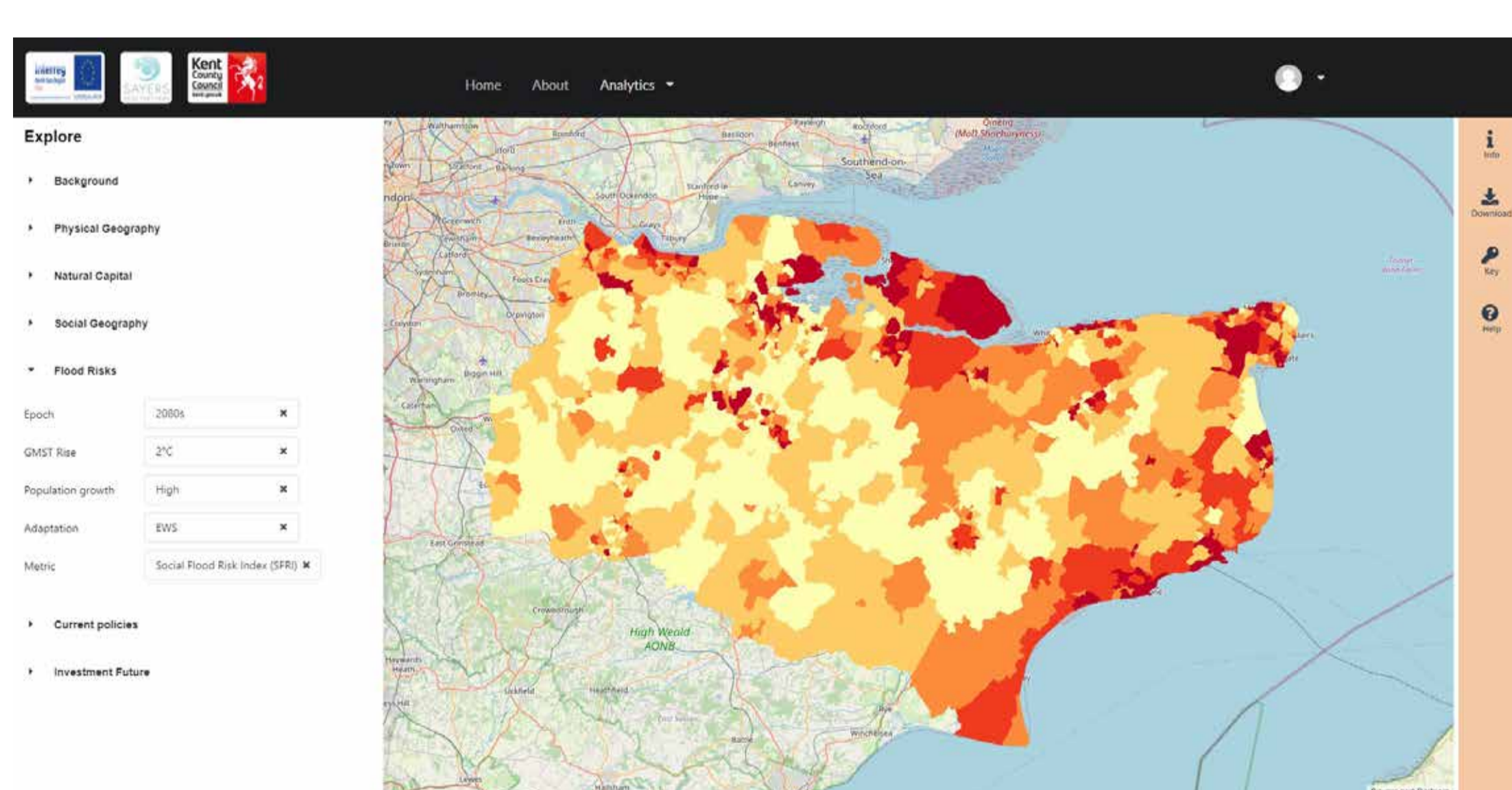


Overcoming Barriers

Climate change is likely to lead to more frequent and severe flooding across Kent. Beyond economic impacts, floods impact physical and mental health, and often have the greatest impact on the most socially vulnerable groups. Although integrated solutions are encouraged, a common understanding of the risk is lacking and institutional barriers limit cross-sectoral collaboration.

Whole System and Adaptive Approach

Through the Kent Future Flood Explorer, we have conducted a whole-system risk assessment to support the development of a common understanding of risk and how it may change in the future. This includes an assessment of the long-term costs and benefits of different adaptation portfolios. We have also explored barriers to institutional collaboration and how to meaningfully include all stakeholders in the decision processes.



Short-term Benefits can Foster Support for Long-term Action

Understanding future risk and the costs and benefits of alternative adaptation pathways is crucial for developing a shared vision. This understanding highlights that some of the most socially vulnerable communities are at greatest risk; evidence that underpins an inclusive approach to adaptation. In combination with evidence on the immediate benefits of adaptation measures, this understanding fosters broad support for long-term adaptation.