

Living Laboratories in Denmark

The Danish Coastal Authority encompasses seven research subjects within this project. The purpose of doing research within these areas is to develop design guidelines for sand nourishments in Denmark using the BwN concept. This is obtained by analysing coastal dynamics and different nourishment designs in both national and international perspectives. The analysis will be carried out in cooperation with the other countries in order to establish synergy and knowledge transfer between the BwN partners. Handling of erosion problems by implementing sand transport reducing methods will be investigated through analysis of wind-driven (aeolian) sand transport fluxes at selected study areas. Furthermore, a sediment budget of the Wadden Sea will be calculated in cooperation with Schleswig-Holstein for investigating whether the sedimentation rate of the Wadden Sea is able to keep up with relative sea level rise in the region. The resulting sediment budget can be used as a basis for managing the Wadden Sea and securing the area to future climate conditions change by improving strength of sea dikes.

The two Living Laboratories in Denmark, Krogen and Skodbjerge, are located along the Danish North Sea coast. These locations have been selected because the Danish Coastal Authority has been using BwN concept many years here. The constantly research in the area is constantly improving the BwN concept. The living laboratories are also located on the stretch of the coast where the Danish Coastal Authority is responsible for the coastal protection through a Common Agreement between the state and the local municipalities.

The Danish BwN Living Laboratories are overlapping with one of the FAIR pilot-site in Denmark



Krogen



There are no hard coastal protection installations in the area but nourishments have been performed several times in the last decades. This means that studying the system at Krogen can lead to a better understanding of the effects of beach and shoreface nourishments.

Furthermore two nourishments have been performed and monitored recently; one in 2012 and one in 2015 generating good prerequisites for understanding the nourishment development. The nourishment scheme at Krogen is evidence of the apparent threat of dune breakthrough and subsequently flooding of the hinterland. The hinterland at Krogen consists mostly of agricultural land but also a lot of holiday houses and primary infrastructure is in risk of being eroded and flooded. It is evident from the national elevation model, that it is a very flat, low-lying area below sea level. This makes the area vulnerable to flooding. In the vicinity and the flood proned is Vest Stadil Fjord to the north, Stadil Fjord to the east and Ringkøbing Fjord to the south.

Skodbjerge



Both shoreface and beach nourishments have been performed several times in the last decades. There are no hard coastal protection installations in the area in front of the dunes. This means that studying the system at Skodbjerge can lead to a better understanding of the effects of beach and shoreface nourishments. It is also possible to learn about acute erosion and Aeolian transport.

The area is fairly well protected by dunes, several dune enhancements and a vast hinterland only disturbed by a smaller number of vacation homes that are congregated in a couple of areas. The hinterland is a very flat, low-lying area close to sea level.

Because of the main road parallel to the coastline it is very important to maintain the protection of the hinterland. The road is the only road that is connecting the north and south of Holmslands Tang.

