

# Climate Change and Mapping of the Future Nature

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## SUMMARY

Change in the global climate is one of the greatest challenges of our times. Efforts to reduce the effects of climate change and to find new environmentally acceptable solutions impinge on all parts of society.

An aspect of the risks associated with changes in the climate is sea-level rise and extreme events like floods. Coastal zones are particularly vulnerable to these risks and therefore urgently need to be included in the land use planning and nature preservation actions.

Denmark is a small country with a land area of 42,500 km<sup>2</sup>. However the coast line is 7,300 km long bringing Denmark in Top 20 at global level for countries with the longest coast line. Looking at the coast line/land area ratio Denmark is number one.

With 80 % of the population living in areas associated with the coastal zones there is obviously focus on strategies to protect urban areas and physical infrastructure. In this context Denmark's vulnerability to coastal flooding and erosion is limited when looking at these socio-economic most important zones. However it is also important to ensure and protect vulnerable nature, bio-diversity and the landscape.

GIS-based simulations indicate that a sea-level rise of 0.7 meter may have as a consequence that the Danish coastline can be reduced by 25 – 150 meters depending of the coastal character. The coastal zones are fragile ecosystems therefore sea-level rise can cause potentially serious damage to unprotected low-lying habitats and resources. As an example tidal meadows are one of the relatively rare nature types and it will be reduced by 30 % as a consequence of this scenario.

The Danish project 'Climate and Nature Maps' is being developed as a modeling tool contributing to the understanding of the 'Future Nature' and thereby facilitate decisions in the planning strategies. The 'Climate and Nature Maps' include a country wide digital elevation model with an accuracy of 0.10 meter, country wide orthophotos (20 cm GSD), surface geological maps, registration of nature types and other relevant geo-data sets. The 'Climate and Nature Maps' are developed by The Danish Society for Nature Conservation and BlomInfo A/S (mapping and geo-data engineers) in close cooperation with Danish municipalities.

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TS 4E - Coasts and Natural Resources

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