Erosion Pressure on the Danish Coasts

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Coastlines around the world are receding due to coastal erosion. With rising sea levels and a potential climatic deterioration due to climate change, erosion rates are likely to increase at many locations in the future. Together with the current preference of people to settle near or directly by the ocean, coastal erosion issues become increasingly more important to the human values at risk. Along many Danish coastlines, hard structures obviously act as coastal protection in the form of groins, breakwaters, revetments etc. These eroding coasts however still lack sand and where the public, in general, neglects coastal protection in the form of groins, breakwaters, revetments etc. These values at risk. Along many Danish coastlines, hard structures already act as coastal protection. Together with the current preference of people to settle near or directly by the ocean, the need for sand replenishment i.e. in the form of repeated sand nourishments.

Coastal Erosion Pressure

At unprotected coasts it is fairly easy to assess erosion rates (e.g. in m/y) from historical measurements. At protected coasts it is more difficult to assess the autonomous erosion had there been no coastal protection measures. Still, some erosion is likely to occur beneath the water surface which in time will lead to new energetic conditions in front of and failure of the hard structures to serve their purpose of yielding protection.

The concept of erosion pressure is thus a measure of how much extra erosion can be anticipated along a coastline independently of the current degree of coastal protection. This allows us to compare coastal models with wave-driven protection measures to assess longer coastal stretches as dynamic and coherent units; it aims to address explicitly the nature and causes of erosion at individual sites, and it to address new erosion challenges found Atlantic north to different protection options.

Coastal Erosion Atlas of Denmark

To address national coastal erosion issues towards landowners, to support policy & decision makers, and to reinforce coastal management approaches and practices the Danish Coastal Authority, DTU and University of Copenhagen are collaborating on a coastal erosion atlas tool that takes into consideration the great variability of change and challenges along the 7,300 km-long Danish coastline. Currently we are elaborating on a further assessment of the impacts of climate change on the coast.

The project tool is, together with tools on flooding hazards and risks, publicly available to inform and to serve as a fairly non-technical guidance towards coastal development and coastal protection issues (the scientific approaches and methodology is available as well at kyst.dk).

For more information, visit the Coastal Erosion Atlas of Denmark at kystatlas.dk.