Preventing beach erosion for tourism – Ystad, SE

1. Policy Objective & Theme

- ADAPTATION TO RISK: Managing impacts of climate change and safeguarding resilience of coasts/coastal systems
- ADAPTATION TO RISK: Preventing and managing natural hazards and technological (human-made) hazards

2. Key Approaches

- Ecosystems based approach
- Technical

3. Experiences that can be exchanged

To hold the line against coastal erosion to protect tourism assets, supported by a cost-benefit analysis.

4. Overview of the case

An economically important tourist area in southern Sweden is threatened by coastal erosion. The case shows the ‘hold the line’ measures which have been taken to ensure that there is no loss of the tourist income. The policy measure shows a benefit:cost ratio of 3:1 against doing nothing to protect the shoreline.

5. Context and Objectives

a) Context

Ystad is located in the southern point of Sweden and, although Sweden is generally subject to land uplift by isostatic rebound, notable erosion occurs here where land uplift is around zero. An important part of the city of Ystad is Sandskogen which has a coastal, sandy beach strip of about 5 kilometres. The area within, and around, Sandskogen is of great archaeological interest with many settlements and findings from the Mesolithic period (10000 – 4000 B.C.) Over the last 100 years, the coastline has moved about 50 meters inland. It is vital for the tourist economy of Ystad (population 26,000) that the erosion of the coast does not continue. In 2004, around one million tourists visited Ystad (1600 hotel beds and 650 camping places) spending ca. €48 million. Ystad is also one of the seaports of Sweden on the southern Baltic coast. Its artificial harbour, which admits vessels drawing 6 m., is freer from ice in winter than any other Swedish Baltic port. At Löderups Strandbad, there is a nature reserve. The combination of high water levels with strong wind has on many occasions resulted in severe damage of the coast of Ystad municipality.

b) Objectives

The present strategy of Ystad municipality is to “Hold the line” with a ”Limited intervention” to preserve the present position of the coastline.

6. Implementation of the ICZM Approach (i.e. management, tools, resources)

a) Management

Coastal planning is mainly the responsibility of the municipalities, although for some special sector planning the region or even national level is responsible. The coordination of the different state sector interests in the physical plans of the municipalities is the responsibility of the County Administrative Board. This body develops regional guidelines and has to ensure that national and regional policies are considered in local planning.

b) ICZM tools

In order to safeguard their plots, the owners in the area have dumped rocks/bricks along the coast since the 1950's. The Swedish Environmental Protection Agency decided to support an effort by the local municipality Ystad in 1995 to halt the erosion following several decades of serious erosion. As a part of this programme, a series of groynes were constructed along the coast. At Sandskogen, in front of the hotel, a seawall of 300 m length was built. The edge, in front of the hotel, is very steep and stones have been laid there to delay/mitigate further erosion. Just east of the hotel four groynes with a length of 100 m were built during the 50's and 60's and in 1995 one additional groyne was established immediately east of the hotel. The dunes were strengthened by placing geo-textile and planting vegetation in one section, and west of that another seawall was built with a length of about 1000 m. Other works have been conducted viz. at Löderups Strandbad, two groynes were built in 1994, 800 m apart and another four were subsequently built later on. Ystad's main sewage drain has earlier been threatened with destruction so a 200 m long seawall was built. The opportunity was taken to test various materials and construction types for the seawall to see which works best for future defences. The three applied construction types were 1. solid concrete (foreshore protection), 2 gabions (net baskets with stone filling) and 3 concrete slabs attached, forming a net. In front of the coastal protection slope, two smaller groynes have been built at an angle with the coast. Following this work, at the request of the community a camera monitoring system for the beach was established

In general, in Sweden beach nourishment is very unusual for coastal protection. However, the municipality has applied for, and been granted, permission to extract sand from accumulating areas to nourish the eroding parts of the Sandskogen beach both in the water and on the beach. A request to extract sand from the seafloor was rejected. A social cost-benefit analysis of the area was conducted which indicates that the benefits of maintaining and protecting the present shoreline under the current policy is economically more than 3 times more beneficial than the cost of doing nothing.

Following the HELCOM recommendation 15/1 (protection of the coastal strip), a protected shoreline zone ranging 100 m inland and offshore is reserved for out-door recreation and nature protection and may be extended to 300 m if necessary.

7. Cost and resources

No costs are available.

8. Effectiveness (i.e. were the foreseen goals/objectives of the work reached?)

The overall effect of the entire coastal protection scheme is positive in Ystad. The early dumping of rocks by the owners at Löderups Strandbad temporary saved the buildings but, in the long run the ad hoc way in which the dumping had occurred resulted in much graver damages and more problems. In some areas, the problem has been moved further downstream because only hard protections were applied. The coastal protection scheme has protected the beaches from erosion thus preserving the recreational facilities of the coast. The dunes have also been strengthened reducing the chances of flooding. The existing seawalls and promenades that have been built need constant maintenance. If this is not done, the prevailing weather situations will lead to flooding and renewed, progressive erosion leading to loss of large beach areas. Considering the predicted sea level rise over the next 100 years due to global warming, protection of the shoreline and land areas close to the sea is becoming more acute.

9. Success and Fail factors

An Environmental Code was drawn up with the purpose of creating stronger environmental legislation. Furthermore, the measures taken are underpinned by fifteen national environmental quality objectives which were adopted in 1999. These comprise i.a. "a balanced marine environment, sustainable coastal areas and archipelagos", "that sea and coast must have a high degree of biological diversity, opportunities for aesthetic experiences and natural and cultural values" and "Industrial activities and recreations shall be carried out in a way that promotes sustainable development". Monitoring programmes on

coastal protection schemes are, however, lacking.

10. Unforeseen outcomes

Because only hard protection types were applied, the erosion problem has been moved further downstream in some areas of the coastal protection scheme. However, in these areas the problems are deemed to be less urgent because of the absence of important infrastructure or recreational facilities.

11. Prepared by

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12. Verified by

It was not possible to have this case verified.

13. Sources

- http://aqua.tvrl.lth.se/hh/atlas
- http://www.ystad.se/ystadweb.nsf
- Socio-Economic Study – Ystad Sandskog (2005) A-S Eriksson and M Persson, Ystad
- Ystad (Sweden) (2005) H Hanson, Lund University, Dept. Of Water Resources Engineering, Sweden

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Socio-economic study - Ystad (1.12 MB)

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