

Integrated shoreline management for a large harbour city and an adjacent seaside resort - LT

1. Policy Objective & Theme

- ADAPTATION TO RISK: Integrating coherent strategies covering the risk-dimension (prevention to response) into planning and investment

2. Key Approaches

- Integration

3. Experiences that can be exchanged

The ICZM experience considers integrated management of the sandy shoreline which is exposed to an ever increasing storm surge impact. The essence of this integration is application of the dredged material from the entrance of the Klaipeda Seagate for the beach and near-shore nourishment of the adjacent Palanga seaside resort. This is located down-drift as regards the resulting long-term long-shore sediment drift.

4. Overview of the case

In 2001, a pilot programme was undertaken to stabilise precious recreational beaches of the Palanga seaside resort north of the Klaipeda seaport. These beaches are particularly vulnerable facing the increased storm frequency and mismanagement in the previous decades. The near-shore and beach nourishment is aimed to mitigate former human intervention, which caused the deficit of sediments, without compromising the naturalness of the coastal zone of Lithuania. The beach nourishment programme has successfully continued since 2001.

5. Context and Objectives

a) Context

Since the 1830's, the construction of Klaipeda Seaport breakwaters (jetties), as well as regular dredging of bottom sediments at the Seagate corrupted the resulting secular northbound long-shore sediment drift, which for centuries had supplied the Lithuanian mainland coast with sand brought from the eroded Sambian promontory. Furthermore, 500,000 m³ of polluted sand was taken away from the beaches of the case study area after the disastrous crude oil spill out of a wrecked tanker at Klaipeda in November 1981. Such human intervention caused the deficit of sediments at the mainland foreshore and beaches, and significantly reduced the resistance of the mainland coast against erosion, particularly the precious sandy beaches of Palanga.

b) Objectives

The most opted coastal protection policy in Lithuania in general, and in the case study area in particular, is limited intervention through coastal fore-dune and forest management, as well as through the submerged nourishment aimed to stabilise the coastal zone, particularly the recreational beaches. The key objective is to apply dredged material from the entrance of the Klaipeda Seagate for the beach and near-shore nourishment of the adjacent Palanga seaside resort. The timescale associated with implementation and goals achievement is considered in decades rather than in years.

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

a) Management

Klaipeda County comprises seven municipalities of the Western region of Lithuania. Four of them are situated on the Baltic Sea coast. In 2003, the Ministry of Environment of Lithuania approved the National Shoreline Management Programme. The responsibility of implementing the Programme was assigned to the Klaipeda County Governor's Administration. Klaipeda County Governor's Administration is responsible for the programme the main aim of which is to restore and to maintain the Baltic Sea coastline. Also, in this process co-operation among Klaipeda and Palanga municipalities is vitally important.

b) ICZM tools

This case study witnesses a complex approach towards ICZM comprising policy, legislative, planning and technical tools. In 2005, the Lithuanian Government declared that all sand which is dredged from the Klaipeda Seagate and its adjacent areas and is suitable for beach nourishment should be applied to the areas defined in the National Shoreline Management Programme. The measures that are applied correspond with the respective recommendation of the Helsinki Commission, which implies the priority of conservation of natural coastal dynamics where it is possible. Only in cases when there is a threat to human settlements or heritage values should "hard" measures be applied. On this basis a number of shoreline management projects were carried out in the Klaipeda County within the last 6 years. Some serious efforts were already taken and new projects are waiting to be started and accomplished. Sand dredged from the Klaipeda Seagate was applied to the submerged nourishment of the coastal zone in the foreshore at Giruliai and Palanga regularly from 2001 every year on. The total volume of sand applied for the foreshore and beach nourishment at Giruliai and Palanga since February 2001 was ca. 5 million m³ of sand, dumped in the vast coastal zone from a depth of 4–6 m up to the seaward foot of the foredune.

Parallel to the beach nourishment efforts, maintenance of coastal fore-dune and forest plantations (restoration, fastening and re-vegetation of the fore-dune with marram grass and hybrid marram grass) is the principal technical coastal stabilisation measure within the case study area. The fore-dune is maintained behind the beaches at 80% of the case study area. Coastal forests and dunes being the integral part of the coastal belt enjoy protection within the general nature conservation framework. They are, according to the Law on Forests, specifically regarded as a protected category. The use of forests is limited, clear cutting of trees is not allowed in a zone of 1 km. The fore-dune is regularly maintained and restored after every season of autumn and winter storms. Any new constructions in the coastal zone are allowed only behind the fore-dune. Coastal pine plantations cover 50% of the coast length behind the fore-dune ridge and other coastal locations. The total area of managed fore-dune ridge and coastal pine forest plantations within the case study area is 42 sq. km.

7. Cost and resources

Annual maintenance cost for coastal pine forests is €3,000/ha. Annual maintenance costs for the coastal fore-dune is €1,500/ha. Annual nearshore and beach nourishment costs are €1.65 million.

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

Preliminary investigations into the effects of the foreshore and beach nourishment at Giruliai and Palanga have raised hopes that application of this 'soft' measure might effectively mitigate the negative impact caused by the corruption of the long-shore sediment drift. The only problem is that such a measure is a rather costly one. Forest and fore-dune maintenance and restoration is effective in mitigation of damage due to storms; this measure is also cost-effective because the labour costs in Lithuania are relatively low.

9. Success and Fail factors

Continuous funding and appropriate timing (early spring to summer) is critically important for the success of the programme.

10. Unforeseen outcomes

Preliminary investigations into the effects of the foreshore and beach nourishment had shown that unexpectedly large volumes of the dumped sand (over 70%) reach the coast and serve the purpose of beach replenishment. However, the process of sediment dumping and the turbulence of the bottom at the nourishment sites have inflicted losses to a dozen local small-scale fishermen which used the Baltic foreshore at Giruliai and Palanga as their fishing ground.

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13. Sources

- Povilanskas, R. Klaipėda (Lithuania) Case Study. In: I. Lucius, A. Salman & al. (eds.) EUROSION. Living with coastal erosion in Europe: A guide to coastal erosion management practices in Europe. RIKZ-EUCC-IGN France International -UAB-BRGM-IFEN-EADS Systems & Defence Electronics <http://herakles.fzi.de/Euroasion/incoming/Klaipeda.pdf>



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