

## CASE STUDY

### *Beach and dune management in Warnemünde*

#### **ABSTRACT:**

*Beach management is in Warnemünde closely linked to tourism, the main economic activity in this part of the German Baltic coast. The accumulation of sand, due to the presence of a perpendicular pier to the coastline, makes beach and dunes growing.*

*The management consists of flattening the dunes by bulldozer in order to control their height and to maintain the view on the sea from the promenade. Nature preservation and tourist stakeholders found an agreement, but this agreement is now threaten by individual interests.*

*Local authorities and researchers attempted to set up in 2002 an ICZM-program for the coastal strip Warnemünde-Kühlungsborn (30km), but it was given up for financial reasons. The priorities of this pilot study were dumping, tourism (yachting) and coastal preservation.*

#### **LOCATION:**

*Germany, Mecklenburg-Western Pommerania, Rostock-Warnemünde.*

#### **KEYWORDS:**

Beach Management – Dune management

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## EXECUTIVE SUMMARY

Beach management in Warnemünde is closely linked to tourism, main economic activity of this area of the German Baltic coast. In opposition with lots of other beaches of this region, Warnemünde beach is subject to sand accumulation because of a fortified pier perpendicular to the coast, the entrance of Rostock's harbour. The consequence is that beach and dunes are growing quickly, obstructing the view of the sea from the promenade. To meet the demand of tourism, a specific dunes management was set up. It consists to remodel every seven year the dunes sectors by flattening them by bulldozer. The sand removed is after used to improve the beach quality. An agreement was found between stakeholders of the nature and coastal protection and those of tourism, but is now questioned due to investors demands.

Warnemünde seaside resort was included in a ICZM-research program led by local authorities and researchers. The ICZM-program, that local authorities and researchers attempted to set up in 2002 was given up for financial reasons. This program concerned a 30 km long strip between two seaside resorts, Warnemünde and Kühlungsborn. Priorities of this pilot study were dumping, tourism (yachting) and coastal preservation. (The project is called: "Research for an Integrated Coastal Zone Management in the coastal region between Warnemünde and Kühlungsborn: tourism, conservation and ocean dumping" / Interdisziplinäre Forschung zum Küstenzonenmanagement: Tourismus, Natur- und Küstenschutz in der Küstenregion Warnemünde-Kühlungsborn)

The agreement signed is nowadays threaten by an increasing tourist pressure. Tourist investors would like to increase the frequency of the dune arasement in order to maintain low dunes and open sight of the sea for tourists. Tourist investors are financing on their own, the environmental and coastal authorities are not contributing to it anymore.

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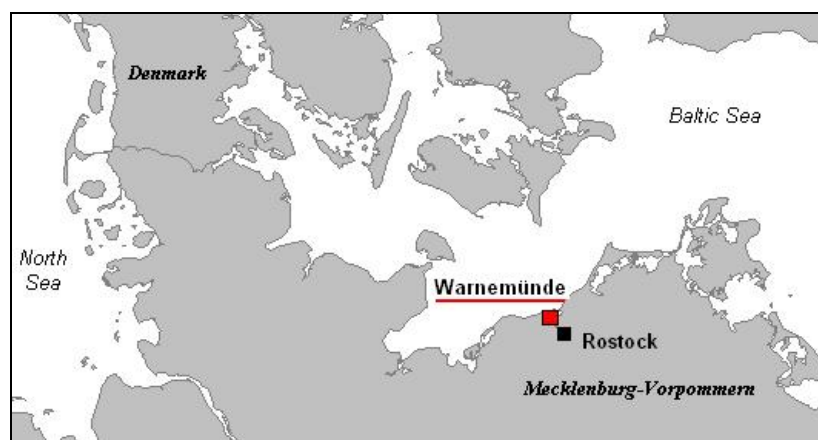
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## Introduction

The beach management initiated in 2002 in Warnemünde was source of controversy between nature preservation and tourist interests. A compromise was finally found. In this sand accumulation zone, the management consists to control the height of the dunes and to reuse the sand coming from flattened dunes to improve the quality of the beach.

The main grounds of this policy are the maintain of the beach quality and of the seaside resorts image, namely short-term interests. The ICZM pilot study also carried out in 2002 for Warnemünde and its west coastal area was only just began, when it was given up for financial reasons.



Source: A. Körfer.

Fig. 1. Location of Warnemünde

### 1. Economic weight of tourism.

The seaside of Warnemünde is located along the Baltic Sea, near from Rostock. The sandy coast is attractive for tourism, which can be considered as the economic factor of the city. The sand beach is for this Baltic Sea resort a major element. The maintainance of its width and quality are important factors for touristic activity.



Source: Martina Kammiller, 2003

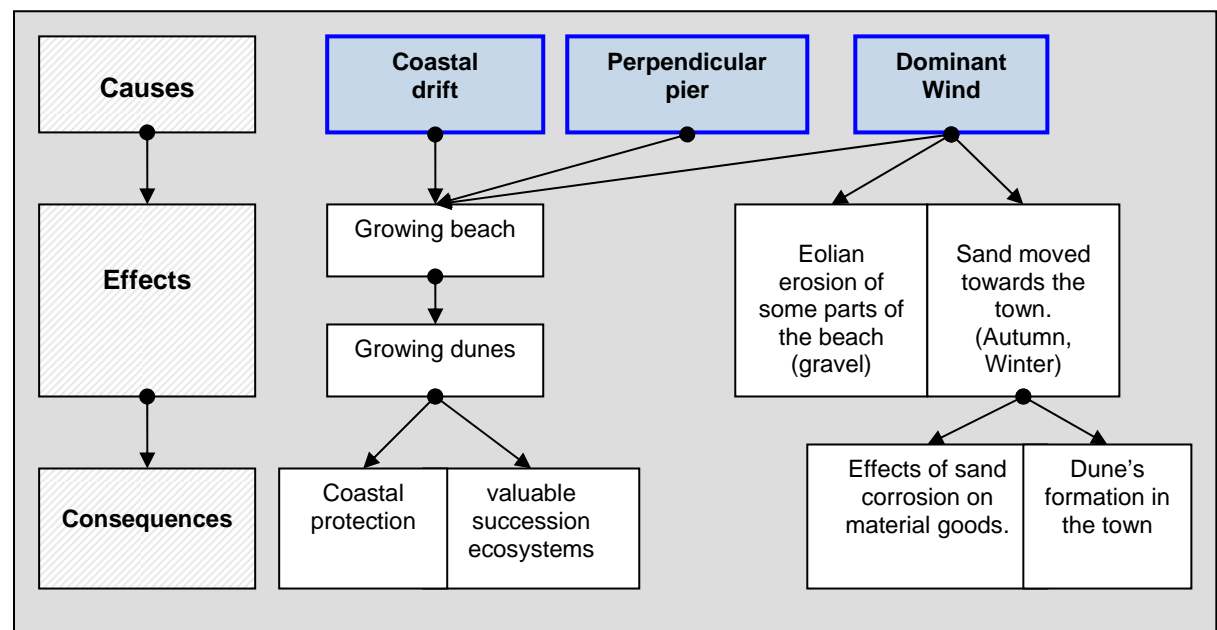
Fig. 2. Aerial view of the east part of the beach: accumulation along the pier.

**2.State of the beach management.**

**2.1. Warnemünde Beach : an accumulation area.**

*Coastal drift* : Along the southern Baltic coast beaches are subject to erosion and usually have to be maintained artificially by dredging and sand nourishment. In Warnemünde we find an entirely different situation. A long fortified pier extends towards the Baltic Sea and protects the entrance of Rostock harbour. Due to a dominating transport of sandy sediment from west to east, large amounts of sediments are accumulating on the western side of the pier. This is one of the rare cases along the Baltic coast, where the beach is permanently broadening.

*Eolian dynamic*: Apart from an increasing carrying capacity for bathers several problems are linked to the growing beach. During autumn and winter the dominating westerly winds blow the beach sand towards the town. In some parts of the beach only gravel remains and reduces the beach quality. Usually, the drifting sand is efficiently trapped by a chain of vegetated dunes between the beach and the town. The dunes prevent sand from entering the promenade and the town. As a consequence, the dunes are steadily growing. Tourists located on the promenade or on lower storeys of the hotels are not any longer able to view over the beach and the coastal sea. On the other hand, the dune chain serves as a wind shelter for the promenade and forms valuable habitats for several rare plant and animal species.



**Fig. 3. Synthesis of the current Situation**

**2.2. The beach management agreement.**

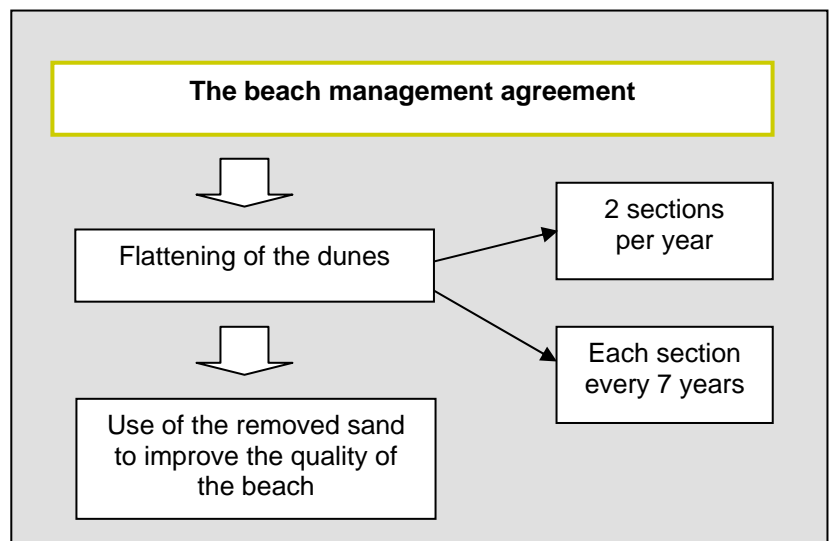
To meet the demands of tourism and nature protection, the dune chain was separated into sections. The authority for nature and coastal protection and the tourism association agreed that two sections

can be removed per year. About all seven years every dune section would have been removed once. This agreement allowed the development and maintenance of the dunes as succession biotopes and as sand traps. When removing a dune section the sand was pushed back to the beach and distributed there to increase the sand quality of the beach.

The urban aspect and the non-protected status of the dunes allow such policies. Warnemünde is a single case in Germany.



**Fig. 4. View of the beach from the lighthouse.**  
Source: A.Körfer, June 2006



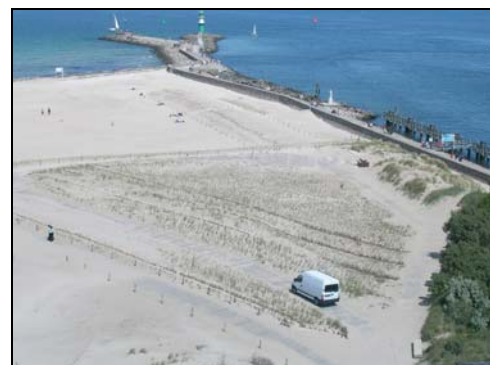
**Fig. 5. Terms of the beach management agreement**

### 2.3. A threatened agreement.

The pressure exerted by the tourism investors on the nature interest is increasing. The nature protection are nowadays in weakness position. The dune removal is partly financed by the tourist investors (hotels, restaurants...), as far as the nature local authority refused to pay more.



**Fig. 6. Dune section removing**  
Source: A.Körfer, June 2006



**Fig. 7. Accumulation zone along the pier.**  
Source: A.Körfer, June 2006

### 3. The ICZM attempts in the area:

The development of an Integrated Coastal Management of the area opened the perspective of a sustainable development with a long-term vision. A pilot study (“Research for an Integrated Coastal Zone Management in the coastal region between Warnemünde and Kühlungsborn: tourism, conservation and ocean dumping”) was led in 2002 by German Federal Foundation for Environment (Deutsche Bundesstiftung Umwelt - DBU) to analyse the possibilities to develop an ICZM-Strategie for the coastal area situated im west of Rostock.

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Fig. 8. Project logo

The 30 km of coastal strip between the both seaside resorts regroups common problems of the baltic coast of Germany, that means that the results of the investigation could be transferred to the rest of the region.

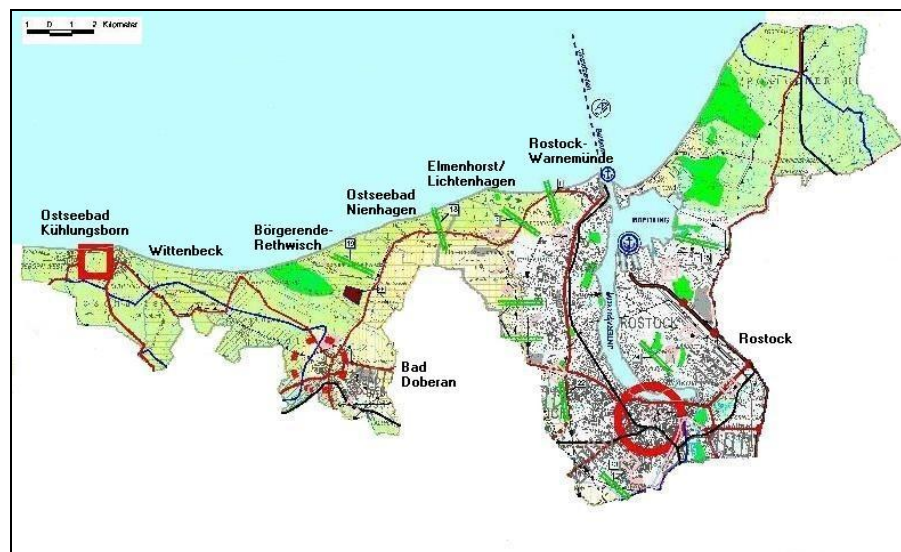


Fig. 9. Study area of the ICZM-Project  
Source: Schmidt (2005), p. 23

This project was "Interdisciplinary research to the coastal zone management: Tourism, Natur preservation, dredged material sea-dumping at sea in the coastal area of Warnemünde-Kühlungsborn". Concrete the project team worked about beach management, dredged sediments dumping and new marinas.

The *task* of the project team was to analyse and to describe conflicts, obstacles and shortcomings in the region. The project team made a *stock-taking*: they collected and prepared all relevant data, facts

and maps, contacted local experts, politicians and scientists of the region and investigate local newspaper articles.

The project also shows the lacks of the area to manage to lead a real integrated management. The coordination and the dissemination of the information between the stakeholders still insufficient and the stakeholders don't have all a well knowledge of the complexity of the issues.

The project team recognized that the approach should have been more concrete to answer the needs of the regional practitioners. The diversity of the stakeholder's particular interests and expectations make difficult the acceptance of new and common conception of the management.

Furthermore, the main thematic of study (beach management, sailing harbour, and dumping of dredged sediments) were chosen in the perspective to improve an integrated land-sea management, which is lacking in the regional plans. The project vocalize on these issues, leaving lots of terrestrial problems out.

## Conclusion

Due to its short duration and a very limited funding the Warnemünde pilot study did not seriously contribute to an improved management of the region. Beach and dune management is still a major concern in Warnemünde. Many ideas and suggestions derived from the Warnemünde project were finally picked up and fully developed within the ICZM-Oder project (<http://www.ikzm-oder.de>).

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