

Two coastal management and public participation case studies in Germany

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Summary

Two coastal management case studies from the south-western Baltic Sea are presented: beach and dune management in the seaside resort Warnemünde as well as coastal defence management Timmendorf/Scharbeutz. In the worse case example Warnemünde, ongoing beach and dune management problems call for an integrated management approach including public participation. An integration of local and regional Agenda 21 activities into a new regional Agenda 21 forum is considered and discussed as a basis for an ICZM. Climate change and sea-level rise calls for a new coastal defence strategy in Timmendorf/Scharbeutz. In a participative procedure, this strategy was successfully developed by local stakeholders, municipalities and coastal defence authorities. The possibilities and limits of public participation are briefly compared and discussed.

1. Introduction

All kind of activities and problems are concentrated in the coastal zone. Therefore, an Integrated Coastal Zone Management (ICZM) is pre-requisite for a sustainable development of the coasts. To reach consensus among the local population, stakeholders and authorities concerning aims, implementation and acceptance of an integrated management an early and intensive public participation is nowadays regarded as imperative. The ongoing pressure on the European coasts caused the European Commission to develop a European strategy. Especially the EU-recommendations on ICZM, released in 2002, increased the pressure on the member states to foster their ICZM activities. In this document, public participation is an important principle and the member shall ensure a successful ICZM by: 'involving all the parties concerned (economic and social partners, the organisations representing coastal zone residents, non-governmental organisations and the business sector) in the management process, for example by means of agreements and based on shared responsibility'. We present and evaluate two case studies from northern Germany with different public participation approaches.

2. Coastal management in Warnemünde, Baltic Sea coast

2.1 Problem and background: Beach and dune management:

Warnemünde is a seaside resort and dominated by summer tourism. The town has only 6000 inhabitants, but in 2002 675,000 over-night stay of tourists (Kammler 2003)) were recorded in addition to large numbers of daytime visitors from the cities Rostock and Berlin. Tourism is the exclusive economic factor and the size and quality of the beach is of major importance for the local economy. 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 (Fig.1). 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. 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 at the beach.

During the last years, new investors and large hotels forced the community to accept that in front of some hotels and new buildings the dunes are removed more often. To reach this aim, they utilised the poor economical situation and the high rate of unemployment in this region as well as influenced media and the public opinion in different ways. This group efficiently pretended to represent the tourists' opinion and were able to implement their own interests to a large degree. However, the present situation has serious disadvantages for the resort. Now, drifting sand accumulates in the town during winter semi-annual. In central areas of the promenade shelter is lacking and a certain disintegration of local tourism industry into small and rich was initiated.



Figure 1: Beach, dunes and the harbour entrance of the seaside resort Warnemünde at the southern Baltic Sea coast in Germany (Picture: Kammler 2003).

This worse case example shows that especially during economically problematic situations, decisions are easily driven by single, short-term interests. A sustainable long-term development and the consideration and integration of other interests, uses and users are easily sacrificed. Stakeholders and the local population was only poorly informed and had nearly no possibility to participate in the decision making process. On the other hand, an Integrated Coastal Zone Management with a strong public forum, involving local people, stakeholders and authorities could be a counterbalance to interests of a few investors.

2.2 Steps towards an integrated management

During a pilot study, funded by the Deutsche Bundesstiftung Umwelt (DBU), the possibilities für an Integrated Coastal Zone Management in the coastal region between Warnemünde and Kühlungsborn were analysed and evaluated. The first steps were:

- An opinion survey with focus on decision- and policy-makers. Based on a systematic address collection and evaluation, talks with about 40 persons were carried out. Main aim was to ensure that our recognition of relevant coastal problems is correct and in agreement.
- A systematic analysis of minutes from community and district council meetings. Topics with coastal relevance were collected, counted and grouped to major issues.
- A sytematic analysis of regional newspapers, to get an impression about the topics in the public discussion.
- An analysis of community and district statistics as well as telephone and yellow pages books to get an impression of the economic relevance of different uses in the coastal zone.

Major problems in the terrestrial part of the coastal zone were not considered at that stage, because they already receive a lot of attention and are dealt with in regional plans. Regional plans in Germany just started to cover coastal waters and the immediate shoreline and, so far, an integrated land-sea management is lacking. Based on this analysis, beach management, sailing and sport boat harbours and, to a minor degree, dumping of dredged sediments had been elaborated as major issues. Especially beach and dune management received a lot of public attention and caused many controversial discussions.

2.3 Lessons learned

During the pilot study several general, well known aspects again became obvious: the pattern of regulations and competences are very complex and largely in-transparent; many activities, projects and planning are aiming at the same direction, but are isolated, not well co-ordinated and often unknown to many stakeholders. A reliable basis for decision processes is often lacking and there is an urgent need for an integrated approach.

On the other hand, we became aware that our approach was partly too abstract and academic, and did not always met the needs of regional practitioners. In the pilot study we neither had nor will have the financial and personnel resources to create and maintain a comprehensive coastal zone management initiative. We have to deal with an unexpected large number of relevant stakeholders, authorities and political bodies with a wide range of interests and expectations. Regional stakeholders saw the need of an integrated management only as long as their major interests were concerned and as long as their own responsibilities were not touched. The information flow between authorities, political bodies and stakeholders is insufficient and not well structured. Personal contacts and preferences determine the information dissemination. The same is true concerning the knowledge about data, projects and activities. Finally, decisions are often made by single persons or authorities. Their decisions reflect their preferences and seemed to be influenced by several elusive factors.

Three resulting aspects shall be pointed out: spatial planning already covers most parts of an ICZM and regional planners are the key player in ICZM in Germany. It seems to be not possible to create and maintain a new regional coastal management discussion forum, with regular moderated meetings. Existing structures, co-operations and synergies have to be utilised. Further, a lack of data and information was hardly conceived as a problem, but lacking data availability is deficient and hampers decision making processes. Information has to be prepared and linked for major coastal issues. Interactions with other uses and issues have to be shown.

2.4 Consequences: Agenda 21 and dissemination tools

Agenda 21 as a forum for public participation: The term Integrated Coastal Zone Management is closely linked to the Agenda 21 process. It is explicitly mentioned in the Rio de Janeiro declaration on a sustainable development, which was signed in 1992. Follow up regional Agenda 21, like the Baltic 21 for the Baltic region, mention ICZM in their action programme, as well. Especially on a local and regional scale, the agenda 21 process is “bottom up” and based on public participation and support. Therefore, the Agenda 21 process can serve well as an umbrella for an ICZM initiative. In the

Warnemünde-Kühlungsborn region, many Agenda 21 activities exist: at the university, the districts councils, the city of Rostock, the regional planning authority, the state office of for the nature as well as a large number of local Agenda-groups. So far, all these activities are carried out independently, without a joint co-ordination and a systematic information exchange, but are often thematically close to ICZM issues.

An informal regional Agenda 21-Forum, with annual or semi-annual meetings could link all the existing activities and serve as a basis for ICZM. It might improve the information flow and public participation in regional decision making processes. This forum would be inexpensive and could utilise existing structures, instead of creating something entirely new. The suggestion to establish this forum received broad support from many sides, but failed so far partly due to a lack of concrete funding, but more important, due to a decline of funding for agenda activities in general and the lack of an initiator.

A regional internet platform for ICZM: To overcome the problem of insufficient data and information availability a regional internet platform was created. This platform contained ICZM-relevant digital reports, statistics, maps, pictures, information on major coastal issues, regional addresses and an overview about authorities and their responsibility. The first version of this internet-platform was positively evaluated in the region. A regional information system might help to inform the interested public about problems and ongoing decision making and to motivate an improved participation. Due to a lack of funding, it was not further developed.

Newsletter: to ensure a dissemination of latest coastal news newsletter with national focus was established. It obviously met an urgent demand and the number of subscribers grew fast to over 900. This newsletter is nowadays maintained by the German association 'EUCC – Die Küsten Union Deutschland' (<http://www.eucc-d.de/newsletter.php>).

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>).

3. Coastal defence management Timmendorf-Scharbeutz

3.1 Problem and background: coastal protection and sea level rise

About 345,000 people and economic assets of 46 thousand million euros are concentrated in the flood-prone lowlands along the about 1,200 km long Baltic Sea and North Sea coasts of Schleswig-Holstein. The coastal defence administration in Schleswig-Holstein faces the challenge to safeguard the inhabitants of coastal lowlands against catastrophic flooding during storm surges and land loss by coastal erosion. The authorities have the legal obligation to, e.g., build and maintain sea walls that are in the public interest, and protect settled (built-up) coastlines against irreversible land loss. Owners of protected land may be summoned to the costs for building and maintenance according to their benefits. As in other public sectors, the demand for active participation in the planning of measures is increasingly being forwarded to the coastal defence authorities. In response, they financed a pilot study in which a new method to actively involve private persons in the development of plans was tested.

The pilot study area is situated in the inner (sheltered) part of the Lübeck Bight along the Baltic Sea coast of Schleswig-Holstein (Fig. 2). It consists of two spit systems that separate former lagoons from the Baltic Sea. The spits have a mean elevation of about 2.5 and 3.0 meters above mean sea level (MSL), and are intensively built-up areas. One former lagoon is still occupied by a lake, in the other marshes developed that are now drained and extensively cultivated. Littoral currents still transport significant amounts of sand from the adjacent cliffs into the bight. As a result, the coastline is rather stable. As the tidal range is insignificant, hydro- and morphodynamics in the area are governed by storm surges and waves. The highest storm surge ever recorded in the Lübeck Bight reached a water level of about 3.30 m above MSL in the year 1872. As shown in Fig. 2, however, this storm represents a singular event (i.e., cannot be considered in a statistical probability analysis, see below). Further, it becomes clear that no significant trend in storminess exists. Mean sea level rise in the region amounted to about 0.15 cm per year over the time period 1900 to 2000.

Two municipalities, Scharbeutz and Timmendorfer Strand, occupy the area. Local economy is strongly dominated by coastal tourism. For example, the municipalities have a tourist bed capacity of 17,710. About 18% or 12.6 km² of the total municipal area is situated less than 3 m above MSL. In the case of the 1872 storm surge, this area would be flooded. 5,667 people are living in this flood-prone lowland, and capital assets of about 3,4 million euros (mainly houses and inventory) are concentrated there.

The existing flood defence for the coastal lowland is the spit system with a mean elevation among 2.5 and 3.0 m above MSL. Hence, from a coastal defence point of view, the situation is rather critical. It is estimated that a breaching of the spits will occur with a water level of about 2.1 m above MSL. Statistically, this extreme water level has, in the present situation, a return interval of about 80 years. If MSL rises by 0.5 m, which is a realistic scenario for this century (IPCC 2001), the statistical return period would diminish to about 15 years.

With the last catastrophic storm surge about 130 years ago, an economic dominance of tourism which depends on broad (idle) beaches, it becomes clear that local population was rather sceptical towards coastal defence. As no sea walls exist in the area, the municipalities are responsible for flood defence, i.e., the municipal councils have to decide whether and what kind of sea defence they actually want. The coastal defence administration acts advisory and contributes to the costs. Hence, an appropriate coastal defence solution for the area can only be achieved **with** active participation and acceptance of the local population. For this, a new method, introduced to the coastal defence division in the responsible Ministry by a consulting company, was tested.

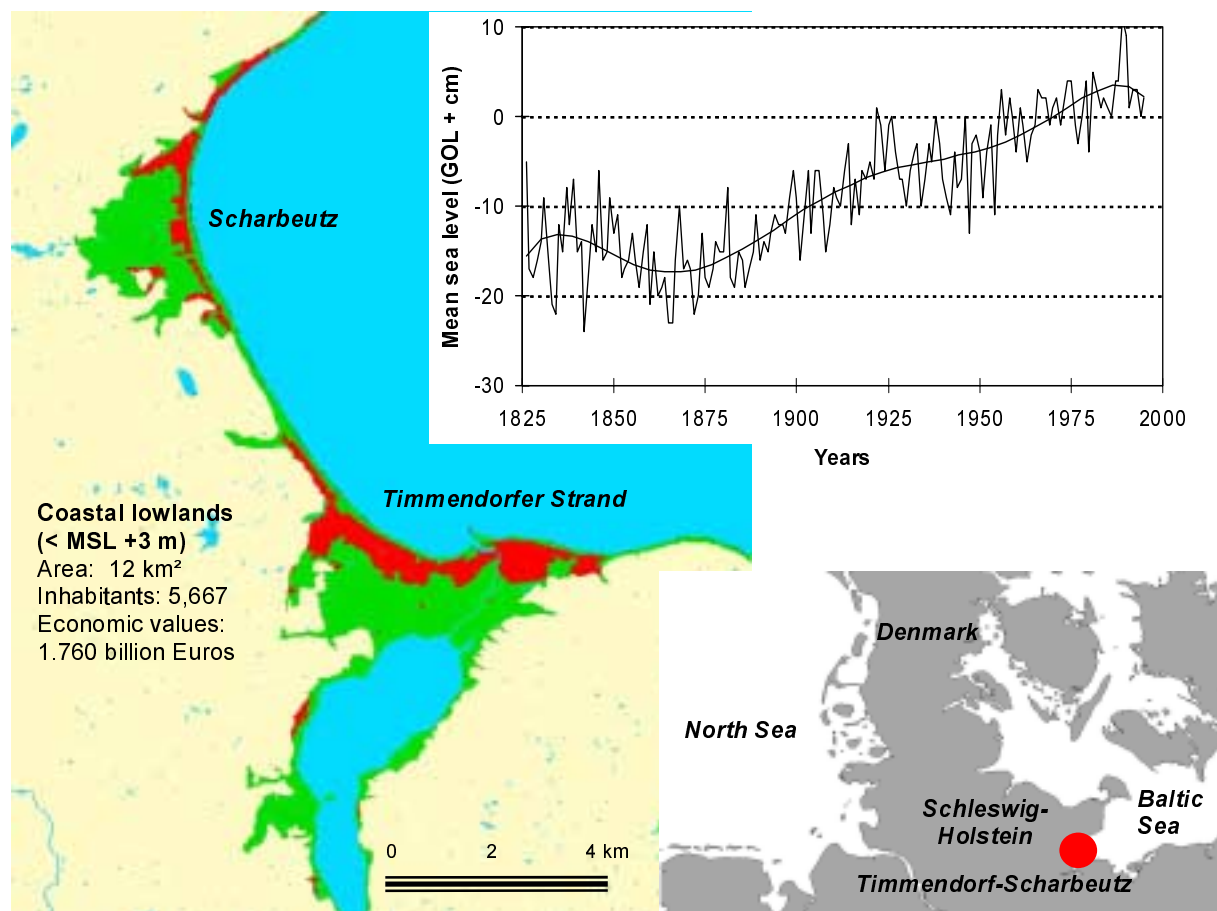


Figure 2: Coastal lowlands and build-up areas below 3m above mean sea level in the region Timmendorfer Strand – Scharbeutz, northern Germany. The figure further shows the development of the mean sea level at gauge station Travemünde since 1826.

3.2 Approach and participation process

The applied method is called „Sensitivity Model of Prof. Vester[®]“, developed to cybernetically evaluate complex systems (VESTER 2001). The basic idea is that each system (country, region, company, etc.) is composed of a number of interacting elements and should be viewed upon in a holistic way. Further, it is recognised that the affected persons (citizens of a region, employees, etc.) have a profound knowledge of their system, and should be actively involved in the analysis. Following this line of argumentation, a conceptual model can be established by the affected persons that describes the complex system in a simplified way. With this (computer-aided) model, possible future developments under different scenarios may be simulated.

As a starting point, a public meeting was organised by a consultant to which all affected persons as well as local boards, councils, etc. are invited. The invitation to the meeting came from the mayors of the municipalities, who made up a distribution list and publicly announced the meeting in the local news magazine. About 65 persons, mostly representatives from affected local interest groups, e.g., the society of beach-chair hirer, and municipal representatives attended the meeting. After being informed about the problematic situation and the need for action (not the solution) by the coastal defence administration (initiator), the consultant company Kaul & Reins GbR explained the model and invited the participants to conduct the analysis. The people who responded took part in a number of meetings and, together with the initiator and moderated by the consultant, conducted the sensitivity analysis:

- characterisation of the system with appropriate variables,
- definition of the effects (direction and strength) of the system variables upon each other,
- definition and (semi-)quantification of a subsystem that zooms in on the problem/action,
- definition of, and simulation for different scenarios that focus on the problem/action,
- discussion of the results and establishment of recommendations by the working group.

Every project group meeting was attended by about 20 to 25 persons (in all, about 50 persons participated). The consultant moderated the meetings, established the model with the data delivered by the working group, performed the simulations, and wrote the reports. To avoid prejudice under the local participants, the consultant (who normally is financed by the initiator) had to moderate the analysis neutrally and independently.

The sensitivity analysis for the pilot area Scharbeutz and Timmendorfer Strand consisted of nine meetings of the working group and two public meetings. In the first project meeting a general brainstorming on possible system variables took place. In all, 47 variables were listed and roughly related to each other. During the next meetings the number of variables was systematically reduced to 17 to achieve a ‘workable’ systems representation. Further, the interrelations between the variables were described and quantified. The following 17 variables were defined: economic power, (quality of) tourist services, (degree of) employment, (number of) inhabitants, (number of) tourists, (quality of) beach, (quality of) coastal protection, (quality of) living, (security of) people, (quality of) recreational activities, (ecological quality of) landscape, (ecological quality of) Baltic Sea, (effectiveness of) infrastructure, (height of) municipal budget, (quality of) future oriented politics, (quality of) image, and (development of) traffic.

The second phase of the sensitivity analysis concentrated on the possible effects of different coastal defence strategies on the system. Five possible strategies had been defined in the fifth meeting: (1) zero option where no coastal defence is executed, (2) maximal option where a primary state dike is built on the beach, (3) coastal protection option where measures to protect the coastline against erosion are implemented, (4) flood defence option where measures to reduce the risk of flooding are implemented, and (5) mixed option where coastal protection and flood defence measures are combined.

In order to reduce the complexity, the 17 original variables were summarised into 7 ‘key variables’ (relevant to coastal defence) in a coastal defence model, presented, discussed and later made operational. Further, one external variable (risk of flooding) was defined. This variable is not influenced by the systems variables but has direct impacts on the system.

Based upon the operational model, the consultants simulated the effects of the increasing risk of flooding on the system in 15 rounds of five years for each of the coastal defence scenarios. During the

last meeting, the results of the simulations were presented and discussed with the working group. The discussion resulted in the following common recommendations:

- the working group unanimously supports the results of the sensitivity analysis, especially those of the simulations with the coastal defence model,
- the working group recommends a combination of coastal protection and flood defence measures to be implemented, and
- the working group demands further active participation in the process as a technically qualified interest group.

A detailed description of the process and analysis can be found in Hofstede & Hamann (2002).

4. Discussion: Possibilities and limits of public participation

Both case studies again underline the importance of an early and intensive public participation. In the case of Timmendor-Scharbeutz the participants of the meetings recognised the long-term risk for their coastal lowland, accepted their responsibility to anticipate this risk, and evolved from sceptics to advocates of an integrated coastal defence concept. The entire approach was systematic and ensured comprehensible, transparent results. Problematic is the fairly low number of participants compared to those affected, the time-consuming and tiring procedure and the dependency on motivated volunteers. Finally, the results may not conform to the initiators' expectations. The relatively low number of participants (max. 25) conducting the analysis is a major weakness. In consequence, the results of the working group may be questioned afterwards by the rest of the affected. However, as these participants represent interest groups and are, usually, active persons in a community, they may function as „multipliers“.

The group meetings in Timmendorf-Scharbeutz as well as meetings of the Agenda 21-Forum ensure contacts between different stakeholders, support a joint understanding of problems and increase the understanding for other positions and perspectives. Especially smaller groups allow informal meetings which support a corporate feeling, reduce prejudices and hierarchies and favour lasting personal contacts. Even years after a participation process, maintained contacts can be very valuable for other discussion and decision processes.

What is the pre-condition for a successful participation? The example Timmendorf-Scharbeutz was successful because it dealt with a concrete and well defined problem and the number of possible solutions was very limited. The sea-level rise problem is increasing in future and required an early solution. It was possible to make the problem and all major interactions transparent to the participants. However, a problem of this approach is that it is isolated and largely independent from other decision processes in the region. The integrated aspect is only limited and the group is only temporarily active. After finishing the recommendations the group broke apart and a re-activation is not easy. The knowledge, the problem awareness as well as results and solutions are not permanently maintained. An umbrella structure, which harbours and maintains the outcome of this focus group is lacking.

A regional Agenda 21 forum could possibly serve as an umbrella for different kind of focus groups and promote an integrated management as well as a sustainable development of the region. Especially when based on an own regional Agenda 21, a political commitment with well defined issues, it might be a suitable supplement to concrete approaches like in Timmendorf-Scharbeutz.

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