Beach management and sustainable use of organic drift material - DE

1. Policy Objective & Theme

- SUSTAINABLE USE OF RESOURCES: Preserving coastal environment (its functioning and integrity) to share space
- SUSTAINABLE USE OF RESOURCES: Sound use of resources and promotion of less resource intensive processes/products
- SUSTAINABLE ECONOMIC GROWTH: Balancing economic, social, cultural development whilst enhancing environment

2. Key Approaches

- Integration
- Knowledge-based
- Ecosystems based approach
- Socio-economic
- Technical

3. Experiences that can be exchanged

Beach cleaning efficiency was improved. Products (and product ideas) made from cleaned and dried sea-grass were developed. The product ideas could be used by other communities if the costs of assorting, cleaning, and drying of the beach material can be reduced.

4. Overview of the case

A more efficient way for beach cleaning and separating algae and sea-grass from sand and stones was sought. Also to use the separated and cleaned algae and sea-grass to produce different kinds of products such as insulating mats and bulk material, construction plates, geo-textiles for shoreline stabilisation, sea-grass paper, filters for heavy metal separation, basis material for organic casting products.

5. Context and Objectives

a) Context

Algae and sea-grass are removed from beaches regularly, at least during the tourist summer season. In Mecklenburg-Vorpommern about 326,000 m2 of sea-grass are removed per year. Nowadays, this is a must for tourist beaches. Rotting seaweeds otherwise emit smelly gases on the beaches and form nasty heaps, and nutrients from the decomposed material run back into the nutrient rich Baltic Sea. Equipment, personnel, and garbage deposition ensure high costs. About 75% of the removed material during beach cleaning is sand. New, more efficient machines have been developed but are still not in general use. Deposition without pre-treatment is no longer possible. In 2001 sea-grass for insulation uses had been patented; in 2005, it was approved by the construction supervision authorities as a bulk insulation material. In 2005, sea-grass was approved as a renewable raw material that is subsidised as a renewable insulation material. At the end of 2006, public subsidies for using products from renewable raw material were running out.

b) Objectives

The aim of the study was to find means to separate sand and stones more efficiently from organic matter to improve beach tourism. Methods were sought to reduce costs by optimising the technical methods to remove useful organic matter and rubbish from sand and stone locally, and to avoid disposing of potentially usable material such as sea-grass and algae. A local economy with additional employment was to be established to make use of the assorted and cleaned organic material. The organic matter was to be used to produce various every day products such as cat litter, as well as construction and insulation material or artefacts. Another approach was to develop a technology to use the material together with other components in casting technology to replace plastic materials. A marketing study analysed the market potential for sea-grass products in Germany. The work ran from 2004 to 2006, with a second phase until 2007.

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

a) Management

The local administration of Klützer Winkel coordinated the initiative. The Technical University of Dresden was a scientific partner to develop casting production.

b) ICZM tools

The knowledge base on efficient beach cleaning was improved and the feasibility of the sea-grass product market was studied and recommendations to establish a sea-grass product market were based on a SWOT-analysis.
A marketing study for Germany analysed the potential for sea-grass products like insulation material, geo-textiles for shoreline protection, construction plates, and as a compound material. The properties of sea-grass for the different product types were analysed compared to other renewable materials. A great advantage was seen in its natural insulating and fire protection capacity. Sea-grass was of minor suitability for construction plates because it reduced the firmness of the plates. The best development potential was as an insulation material and in geo-textiles for erosion protection. The usability in compounds was still experimental and thus not analysed for its market potential. The maximum, most optimistic potential for sea-grass insulation material was determined as 10% of total renewable insulation material, corresponding to 12,000m3, and for geo-textiles as 5% of the total market corresponding to 200,000 m2, together corresponding to 1,100 tons dried sea-grass with an estimated value of €1.4 million. Potentially about 3,000 tons of dried sea-grass could be produced from beach cleaning material alone in the state Mecklenburg-Vorpommern. Between 2003 – 2005, only about 42 tons of dried sea-grass had been produced and sold from Klütz. All users that had answered a questionnaire were content or very content with the characteristics of the material, and 80% thought the price performance ratio was good.

The necessary steps for the development of a market were proposed. One was to base the production on a continuous trans-regional provision of high-quality raw material. Adaptation of the existing equipment to industrial standards, co-operation with distributors from the construction market were seen as further pre-requisites for the establishment of a functioning market. Overall a brand had to be developed that represented added value for consumers and raw material providers. The potential of other possible uses that have been developed by international partners were analysed for the German and European market e.g. as compost and for amelioration.

7. Cost and resources

The budget is not known.

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

Producing sea-grass products to provide added value from beach cleaning is possible under certain circumstances. So far, these circumstances are not yet established in Germany. Therefore, the market for sea-grass products cannot be established at an industrial level. Technical equipment for more efficient beach cleaning has been developed but is not widely used. The communication and co-operation between local communities had to be improved to provide a steady flow of assorted sea-grass; beach management is organised at the local level.

9. Success and Fail factors

The overall separation of algae and sea-grass from other material was still not efficient enough. The operation of the equipment to remove sand, separate and dry the remaining material, and grind it was not cost-efficient. The scientific partner was changed from the first development phase to the second. The co-operation of local communities was difficult, and thus the provision of raw material from beach cleaning turned out to be difficult as well.

10. Unforeseen outcomes

In 2005, the equipment was used by a private investor who planned to commercialise the project, in 2007, production was stopped because it was still not cost-efficient, and co-operation with other local communities was still imperfect. In 2009, the equipment was sold for other uses.

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13. Sources

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