BOATCYCLE - Management, recycling and recovery of wastes of recreational boat scrapping

LIFE08 ENV/E/000158

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Project description:

Background

The leisure sailing sector has grown in recent years in Mediterranean countries. At the beginning of 2007, 43 774 boats were registered in Spain, but by the end of the year a further 11 667 (2 432 in Catalonia) were registered. These boats have a significant environmental impact because after their useful life they become a 'waste product'. Dumping or sinking boats in ports and meadows has been a common practice in certain areas of the Mediterranean coast. Boats are also sometimes dumped in fields and forests. Such dumping carries a risk of pollution if boats are not properly decontaminated.

Objectives

The main objective of the Boatcycle project was to reduce the adverse impact of the nautical industry on the environment through the development of methodologies for the treatment of boats as waste, both at management and waste recovery level. The sustainable production of boats based on a Life Cycle Assessment (LCA) approach and using eco-design would be tested and promoted.

Specific objectives were to:
- Collect, select and manage all the different wastes coming from the scrapping of the three most common types of recreational boats: an inflatable boat, a yacht and a sailboat.
- Develop a system for recycling and valorising for four of the most relevant residues from boat scrapping: fibreglass, neoprene, wood and PVC.
- Implement the best practices of the recycling and valorisation of the four targeted wastes through demonstrative pilot experiences, in order to improve waste management and treatment of the increasing number of

abandoned boats.
- Develop a comprehensive guide for sustainable production and eco-design of both fibreglass/wood and neoprene/PVC inflatable boats.
- Develop policy and technical recommendations for boat waste management and revalorisation.
- Disseminate and raise awareness among all actors involved in the entire boat life cycle, from eco-design and sustainable production to waste management.

Results

The Boatcycle project addressed the legal (the European Wastes Catalogue does not include boat waste) and mechanical difficulties (every boat is of a different shape and size) involved in managing boat waste. It also focused on the cost of dismantling, the recovery of components and the lack of an updated register of boats.

Pilot initiatives demonstrated how fibreglass, wood, neoprene and PVC wastes arising from the scrapping processes can be analysed and re-used or recycled to produce composites with the same characteristics as the commercial products.

The main output was the diagnosis document, revised and approved by an advisory board formed by the Catalan association of nautical industries, the government recycling agency, the European Federation of Yachting Harbours and the Nautical and Tourist Ports National Federation. The project's study results have fostered debate among the concerned authorities.

The document consists of a map of the boats now existing in Europe (the trends in number of boats, the hotspots, etc.). It also contains an analysis of the legislation on end-of-life boats that is already available in several countries (Finland, France and Japan) and an account of the experience acquired with the pilot initiatives (the dismantling of three boats), which propose different possible solutions.

The project addressed boat production and manufacturing processes based on a LCA and an eco-design approach. It provided guidelines concerning sustainable production and eco-design as well as policy and technical recommendations for waste management. The LCA carried out within the project tasks showed that the use of recycled materials for the production of the boats would reduce around 40% of the environmental impacts and 20% of CO_2 emissions in the boats studied. Moreover, more efficient boats and engines together with educating owners on their better use can significant reduce their environmental impact: around half for sailboats and yachts, and 20% on rigid-hulled inflatable boats (RIBs). This translates to a 60% decrease in CO_2 emissions on sailboats, 52% for yachts and 15% for RIBs.

The recycling of the materials from the boats would save 50% of the environmental impacts from sailboats and yachts, and 30% from rubber boats, while also saving 60% of CO_2 emissions from sailboats, 5% of CO_2 emissions from yachts and rubber boats.

The project has anticipated a potentially large problem and provided a set of

measures to reduce tackle it early. It has raised awareness among public administrations and policy makers as well as the industrial sector across Europe. Efforts to implement new measures in order to regulate recreational craft lifecycle are expected.

From the technological point of view, the project developed several innovative processes. It demonstrated the recycling of different wastes from boat scrapping and developed cleansing processes for eliminating varnish and resins from fibreglass, based on a calcination of the organic materials while leaving the fibreglass intact. Usually recycling fibreglass involves heating it above its melting temperature (higher than 1000ºC) which consumes a lot of energy.

Another important innovation was the design and creation of a new machine that is able to process PVC-based materials by using a cold temperature process. This equipment allows new composite materials (e.g. sheet or panels) to be obtained using a matrix made of recycled expanded polystyrene and filled with milled PVC. These materials offer good performances and can be used in different applications.

The project consortium made a large number of contacts during the project that will help support the continuation of the project goals.

Further information on the project can be found in the project's layman report and After-LIFE Communication Plan (see "Read more" section).

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Environmental issues addressed:

Themes

Environmental management - Eco-products design
Environmental management - Life Cycle Assessment-Management
Waste - Waste recycling

Keywords

sport facility, waste management, environmentally friendly product, navigation, life-cycle management

Target EU Legislation

- Waste
- Directive 75/442/EEC -"Waste framework directive" (15.07.1975)

Natura 2000 sites

Not applicable

Beneficiaries:

Coordinator	Acondicionamiento Terrasense
Type of organisation	NGO-Foundation
Description	The co-ordinating beneficiary, LEITAT Technological Centre, offers services to companies in the industrial sector by adding technological value to both products and processes. Their activities focus on research, development and innovation (R&D&I).
Partners	ICTP-CNR Institute of Chemistry and Technology of Polymers National Research Centre, Italy Fundació Mar, Spain

Administrative data:

Project reference	LIFE08 ENV/E/000158
Duration	01-JAN-2010 to 01-JUL -2012
Total budget	925,458.00 €
EU contribution	358,601.00 €
Project location	Cataluña(España)

Read more:

Leaflet	Title: "The Boat Scrapping Process" Year: 2012 No of pages: 5
Project web site	Project's website
Publication: After-LIFE Communication Plan	Title: After-LIFE Communication Plan Year: 2012 No of pages: 8
Publication: Guidelines-Manual	Title: "Guide on good environmental practices and ecodesign for recreational nautical sector" Author: Miquel Ventura Monsó Year: 2012 No of pages: 86

Publication: Guidelines-Manual	Title: "Guide on good scrapping and waste management practices for out-of-use boats" Author: Miquel Ventura Monsó Year: 2012 No of pages: 66
Publication: Guidelines-Manual	Title: "Diagnosis, state of the art of boat and boat scrapping" (15 MB!) Editor: Fundacio Mar
Publication: Layman report	Title: Layman report No of pages: 28
Publication: Technical report	Title: Project's Final technical report Year: 2012 No of pages: 90
Video link	Link to the video on the project's conclusions (19:03)

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