

KuWert – New Ways to Reduce Plastic Waste in the Oceans

Plastics in the Environment – Sources • Sinks • Solutions

Plastic waste is a major threat to marine ecosystems. Every year, an estimated ten million tonnes of plastic waste end up in the oceans, where they need centuries to degrade. To prevent this, effective collection and disposal systems have to be in place. However, this is not the case in many developing countries. This is where the KuWert project comes in. The researchers are developing solutions for a ship-based treatment of plastics waste. The intention is to help creating new value chains in developing countries and avoid plastic waste in the oceans.

Leakage through Interrupted Value Chains

Until now, it has not been technically and economically feasible to remove large quantities of plastic waste from the oceans. Hence, the amount of plastic waste in marine ecosystems has continuously increased and is estimated to double by 2025. Solutions are needed to reduce the emission of plastics into the environment. Functional waste disposal systems, common in industrialized countries, are often lacking in less developed countries due to uncertain political and economic conditions. There, large quantities of plastic usually leak into the environment and subsequently, especially in coastal areas, into the oceans. Recycling is virtually non-existent and value chains are thus interrupted. Consequently, plastics with a market price of up to 600 Euros/Mg are left by the roadside, although considerable parts of the population live on one dollar or less per day.

Ship-based Treatment as an Innovative Approach

The joint research project KuWert has two objectives: The reduction of plastic waste emissions into the environment and the oceans. In addition, value-added chains for the recycling and trade of the waste in the participating countries (Sierra Leone and Mauritius) will be created. The core of the concept is a ship-based solution for the collection, treatment and marketing of plastic waste. This aims at overcoming the challenges of setting up disposal infrastructures on land. A first draft of a modular platform already exists. This platform has to be equipped with the required systems: storage areas, conveyor belts, balers, shredders, washing systems, drum screens, magnetic separators, plastic detector sensors, sorting equipment, suitable construction machinery and an extruder for processing recycled plastics.

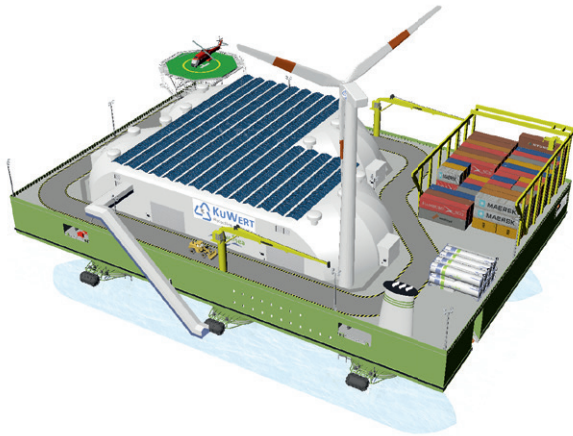
Cleaner Environment and Economic Benefits

KuWert thus tackles this problem at its core. The concept is to create incentives for collecting the plastic waste produced in households and industry through new local recycling options to prevent leakage into the environment and the oceans. In addition, valuable secondary raw materials are obtained. The mobile nature of this form of waste treatment allows ports on international trade routes to be served making it possible for the waste to reach international recycling markets. The researchers also want to investigate whether it is technically and economically feasible to produce and market products such as piles, paving stones or roof tiles from plastic waste in the target countries themselves.



Plastic waste in Sierra Leone that is washed into the oceans during the rainy season.

By closing value chains, people benefit not only from a cleaner environment but also economically. This provides the basis for the sustainable implementation of mobile waste treatment systems in the target countries.



Concept of a ship-based platform for the treatment of plastic waste

Research Focus

Plastics in the Environment – Sources • Sinks • Solutions

Project Title

Ship-based Treatment of Plastics for the Implementation of Value Chains in Less Developed Countries as well as for the Prevention of Plastic Inputs into the Environment and Especially in Marine Ecosystems (KuWert)

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