

Valuable waste plastic

Floating recycling plant recovers plastics before they enter the sea

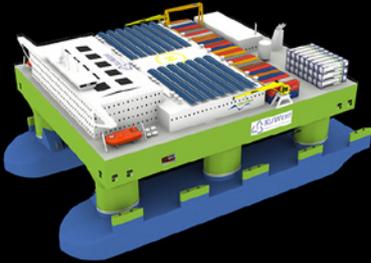


Photo: © TECHNOLOG services GmbH

A mobile floating recycling plant collects used plastics, recycles them and supplies high-quality recyclate to the global market.

„Waste can only be avoided if plastic refuse is given a monetary value.“

Martin Wittmaier
(Bremen City University of Applied Sciences)

The KUWERT project facilitates collection of homogenous plastic waste from towns on the west coast of Africa. These plastics are purchased, thus opening a new value chain. Up to 1,500 people on land and nearly 300 employees on the water ensure that 64,000 tons of plastic per year is recycled - instead of being carelessly washed away to sea. Plastic waste that has been immersed in seawater becomes soiled and vegetated, rendering it nearly always unrecyclable.

Why a mobile floating recycling plant?

The floating platform allows the recycling plant to be tailor-built, avoiding the necessity to adapt to localized volume flows (like fixed recycling plants on land). This also ensures the facilities can function independently of varying political conditions within developing countries, e.g. in Western Africa, and remain largely unaffected by local structures as well as resistant to political fluctuations. In addition, the mobile unit can be very easily relocated to other regions if the flow of goods changes. The biggest plastic emitters are coastal cities in economically distressed countries, such as Sierra Leone, Liberia, and the Republic of Guinea in western Africa. These regions are ideal for the solution developed by KUWERT.

How much does waste plastic have to be worth in order to be collected?

Plastic collection in Africa, for example, has almost only taken place at landfills or in public spaces so far. 40 USD per ton of used plastic is currently a common price (12/2020). Since high-quality recycled plastic can only be obtained from clean and homogeneous end-of-life plastics, the value of the plastic to collectors can increase by up to 800%. This is incentive enough for a functioning value chain to develop.

3,600 nautical miles per month, 16 ports, 7 countries: 64,000t of plastic per year could be recycled at sea.



Source: © IEKRW

Research to create new value chains in the Global South.

KUWERT „Ship-based treatment of plastics for the implementation of value chains“ explored strategies to reduce the input of plastics (in this case macroplastics) into the environment using West Africa as an example.

Since the input of macroplastics into the environment is particularly high when functioning waste

collection and disposal systems are lacking, the research focused on the Global South. Stakeholder dialogues were conducted to assess whether a commodity chain based on plastic recyclates is feasible on the West African coast. A prototype model ship (see cover photo) was developed and used to determine costs.

Worth noting! Economic and environmental balances are positive.

With a negative CO₂ footprint of 1.5 million tons / 20 years, KUWERT makes a significant contribution to climate protection. Regardless of the shipbuilding industry and the up to 800 % jump in purchase price for plastics, the economic indicators are very positive. KUWERT shows the economic value of plastic recycling.

1) Compared to the revenue potential of plastic collected and marketed at local landfills.

Pre-sorted material enables local collectors to earn up to eight times more income.



Photo: © TECHNOLOG services GmbH

Pre-sorted hard plastic



Photo: © IEKRW

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