

TOP TEN

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Category: **Waterborne**

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Research Area 2: **Green Mobility and Decarbonisation**

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Multi-use of the ocean space - Concept design of a multi-use marine platform (MUP) for Africa

The EU has developed the Blue Growth strategy to ensure sustainable use of the marine space. Combining several activities in the same marine space, as well as the introduction of multi-use platforms, has the possibility to divide the infrastructure overhead and reducing the costs of offshore operations, in addition to the demand on the space. The current focus of the Blue Growth strategy is on the European seas. This project will take a step further to expand the idea to third world countries with low access to potable water and electricity. For this purpose, different near-shore regions in Africa will be analysed for the selection of an ideal location for the design of a multi-use marine platform (MUP), combining several activities, such as energy generation, water desalination and transport. The MUP platform is placed 50 km from the north-west coast of the island nation Madagascar. The design uses the significant ocean and solar energy potential of the region to improve the energy scarcity of the island, enhance its economy, and make sustainable use of the ocean space. The MUP is designed for an operational life of 50 years. It is based on a modular megafloat, which consists of 5 circular modules. The modules are based on three different maritime uses: energy generation, energy storage, and aquafarming. The system generates 472 GWh renewable energy per year, 455 GWh through ocean thermal energy conversion, and 18 GWh through photovoltaic cells.

