

NaturSea-PV, sustainable energy and materials for healthy oceans

Section: Environment and ecology

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The European Union aims to become the first climate-neutral continent by 2050, requiring contributions from all renewable energy sources. While wind, biomass, solar, and hydropower are essential, [these technologies often need large areas to produce large quantities of electricity, competing with land use for nature conservation and food production.](#) Given that 71% of Earth's surface is water, using the space from seawater to produce green energy becomes an attractive solution.

The role of offshore energy technologies is crucial to achieve the carbon emission reduction targets. Offshore wind farms, already common in shallow waters, are now moving into deeper areas. Similarly, floating photovoltaic (PV) systems, which are established on lakes, [are beginning to expand into marine environments.](#) However, current floating PV systems are made from High-Density Polyethylene (HDPE), which cannot withstand the severe winds and waves of open seas, and [its use has been associated to microplastics pollution, implying an environmental risk.](#)

In light of advancing on offshore floating photovoltaic technology, [NaturSea-PV](#) (101084348) European project arises. The aim of this multidisciplinary project, supported by the

European Green Deal, is to improve the reliability and durability of marine substructures used in floating solar installations, reducing both maintenance costs and the risk of failure. One of its innovative features is the development of new circular materials. A high performance and more ecological concrete will be developed, with >30% reduction in carbon footprint, which is a stronger, more durable and more environmentally friendly material than the current High-Density Polyethylene, ideal for harsh conditions. Moreover, eco-friendly surface treatments will be investigated using coatings derived from natural resources to protect against corrosion and fouling from marine species, in combination with predictive computational tools that will help predict the behaviour of the materials in the real environment.

Additionally, the project will test these new systems in real-world marine environments, and it will evaluate the socio-economic impacts, ensuring its designs are compatible with existing marine activities, in line with the EU's broader goals for healthy oceans and sustainable development.

In conclusion, investing in scientific research and innovative technologies is vital for a fair green transition. NaturSea-PV exemplifies this commitment by supporting 3 of the 17 Sustainable Development Goals (SDG), contributing to develop affordable and green energy (SDG 7), produce sustainable cities and communities (SDG 11) and respect life below water (SDG 14).

[Photo by [Matt Hardy](#) on [Unsplash](#)]