

Using coastal infrastructure to create a multi-purpose, green and sustainable economy: Aquaculture and the combination with energy supply installations

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The biological, technical and commercial feasibility of aquaculture enterprises are often related to local environmental conditions and an available niche market potential. With regard to its direct economic potential it involves information about fixed and running costs with special focus on the operation and production costs. Projects on the combination of aquaculture ventures with other industrial installations, such as biogas plants, geothermal power stations as well as other concepts have shown that these innovative combinations inherit an economic benefit. This is due primarily to various cost savings as well as using energy for e.g. adjusting the required optimal water temperature for cultivation of marine products. Biogas and geothermal plants have shown the feasibility of such multi-purpose systems and are already in the commercial utilization phase in the cultivation of aquatic species; however, other innovative combinations on a commercial basis are still in their infancy.

A case in point is the potential of combining aquaculture systems with offshore wind farms in order to develop more spatially efficient production systems. Indeed, along the German North Sea coast, the observed high spatial competition of stakeholders has encouraged the idea of integrating various users at the same site. Newcomers – the offshore wind farmers – are already covering large areas, which provide the opportunity to use these areas in a multifunctional way. Open ocean aquaculture in conjunction with the offshore turbines beyond the 12 miles zone is believed to be a promising avenue to decrease possible stakeholder conflicts.

This presentation provides an overview of the potential multi-use concepts. The current state of inter- and transdisciplinary research on a potential implementation on a showcase basis is outlined, covering biological, technical, economic and social/policy aspects as well as an estimation of its future potential.

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