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Maximizing the Value of Offshore Space by Co-Locating Aquaculture and Wind Farms: An Interview with Bela Buck

Bela Buck is head of the working group on marine aquaculture, maritime technologies, and ICZM at the Alfred Wegener Institute for Polar and Marine Research in Germany. For more than a decade, he has made the case that offshore aquaculture and wind farms are compatible uses of the marine environment. In other words, aquaculture cages (or mussel longlines or seaweed culture designs) can be attached to the base of wind turbines without hampering the effectiveness of either construction. So in cases where offshore space is at a premium, Buck says, co-locating aquaculture and wind farms would maximize the value of a particular area. (His presentation on this subject at the 2012 International Marine Spatial Planning Symposium is at www.slideshare.net/riseagrant/buck-bella-12975102.)

You have proposed co-locating offshore aquaculture and wind farms in German waters since at least 2001. However, no wind projects have been completed yet featuring such co-location. What have been the obstacles?

Bela Buck: The initiative to install wind farms in the German North Sea as well as in the Baltic Sea started around 1999. However, compared to other wind farms in the North Sea or the North Atlantic, German wind turbine sites are not nearshore: the German windmills are planned in regions about 60 km off the coast at a depth of about 50-60 m. (In contrast, the Horns Rev wind farm in Denmark is just 2 km offshore and 10 m deep.) As these conditions require relatively new foundation technology, system designs have first had to be planned before they can be set in place. These foundations have to resist storm conditions and the so-called "century wave" height (potential wave height within 100 years), which can be 20-30 m depending on the site.

Another problem was that there were initiatives fighting against the wind farms, mainly originating from the tourism and fishery sectors. So Germany's first offshore wind farm (Alpha Ventus) was installed just four years ago. Now the engineering challenges involved with building offshore aquaculture facilities need to be solved. It is not yet clear, for example, if an aquaculture device would be connected to a windmill foundation directly or in the space between various foundations.

In your opinion, should all offshore wind farms also serve as offshore aquaculture facilities?

Buck: Yes, of course, provided economic and engineering problems are solved. We need additional area for food and do not have that additional area on land anymore. It is a question of which aquacultured food will be cultivated where, in which technique, and extensively or intensively.

Aside from the co-location of aquaculture and wind farms, are there other multi-use pairings of offshore activities that could be compatible and viable?

Buck: Yes, there are some. The multi-use concept is not new. Various combinations have existed for decades: in coincidental ways (e.g., fishing and shipping), in tolerated ways (e.g., nature conservation and a mussel fishery), and in well-organized ways (e.g., tourism and research; artificial reefs and angling). Some other potential co-uses have been established at the decommissioned oil platforms in the Gulf of Mexico, which are today used for private fishing or aquaculture purposes such as finfish farming.

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