

Fuelling a step forward

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by **Paul Turret**,
Director of the Higher Institute of Maritime Economics (ISEMAR)

Despite a slight lag behind Northern Europe, France is showing a strong political will in developing marine renewable energy. This new industry spans the whole sectors of aforementioned energy, but also mechanics, engineering, as well as shipping, and is currently emerging ex nihilo in its natural environment: Ports. Whether as a niche market or a growth driver, marine renewables are dynamically moving forward in France.

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Despite falling a bit behind its neighbours in this matter, France is leading the way in Europe in terms of diversity in the offshore energy sector. Similarly to a player that joined a match later than other players, and therefore can develop its bigger potential.

Western Europe & energy transition

Successive governments have consistently endorsed marine energies, promoting the emergence of the industry and the proliferation of adequate technologies. For example, since 2012, seven fixed wind-farms, located in the English Channel and on the Atlantic coast, were assigned to the two French energy companies – EDF and Engie. What’s more, contracts for two new farms are currently waiting to be signed. And, talking about French innovations, as the seabed along the shoreline is not always appropriate for “regular” plants, France is also launching test farms for floating turbines in Southern Brittany and the Mediterranean. Meanwhile, France is also developing tidal stream turbines, which are located underwater, running on sea currents. Various tests are being carried out in favourable sites of the English Channel with a view to launching commercial operations as soon as possible.

Spaghetti of trendsetters

France’s priority in the field of marine renewables is to expand its energy power sources, hence the involvement of large national corporations. For industrial stakeholders, this is obviously an opportunity to diversify. Nuclear giant Areva has bought German companies to set up its branch Adwen, and was planning to build a plant in Le Havre. Likewise, the veteran firm of mechanics – Alstom, after abandoning its shipyards, has ventured into wind power by taking over a Spanish company. Naval defence shipbuilding company DCNS is also developing this type of tidal stream turbines after it took over the Irish company OpenHydro.

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Ports – vital spots

As a sea-based industry, the energy offshore sector is highly dependent on ports. They must be located nearby and ready to provide all kinds of services,



Photo: EDF

such as pre-assembly, foundations, cables, maintenance, and many others. Having said this, one must emphasize that there are very few ports involved in pre-assembly and these are located in the vicinity of the windfarms. They must offer specific features in terms of space and quay wall construction, as they must be able to handle and store heavy cargo and accommodate specialized vessels (e.g. jack-up ships).

Another implication relating to ports when considering marine renewables is the setting up of industrial units, which generates rental income for port authorities and significant job creation for local authorities. This is one of France's main national policy aims since launching its marine energies development initiative.

For several years, ports and local authorities have therefore been billed as industrial development areas. New plants are being built by stakeholders seeking to diversify their business, thereby creating a relatively broad industry. Although France does not compare with Germany, it does outperform Britain, and is acquiring a new industry, albeit one under foreign control.

Only one plant is currently active, namely the General Electric pod production plant in Montoir (established in 2014). The Port on the Loire also houses

the headquarters of shipbuilding firms STX France, and Fincantieri.

The company has added an electrical substation production unit (jacket, and topside) with a unit value equivalent to the building of half a ferry. The first French floating turbine will also be built in one of the port basins of Saint-Nazaire. In France, Cherbourg takes second place in the marine offshore business. The planned LM Wind Power blade production plant is set to be built in its port. (although the Danish company was taken over by General Electric in 2016). Another plant, which will be producing turbines for DCNS, is also planned.

Another harbour, Le Havre, should become home of two of Adwen's production units, now under Siemens' control. At the tip of Brittany, Brest is also developing spaces dedicated to marine renewable companies and related traffic. Generally speaking, French ports have plans to welcome to some extent marine renewable-related sectors.

Logistics and its challenges

Marine renewable energy brings various logistical demands. Firstly, the supply chain related to incoming flows for plants (approx. 30,000 parts are needed to build a pod). On the export side, heavy

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cargo represents the bulk of the flow. However, the logistical sector has one specific feature: Handling preassembly phases in neighbouring ports before on-site implantation. The common challenge faced by these logistics operations is the great need for space to handle large numbers of exceptional volumes. Quays need to be able to deal with marine renewables parts (a pod weighs 400 mln tn), which require significant port investments.

Offshore in practice

In Great Britain, the ports of Hull and Belfast are undergoing significant development. In Germany, the new Weser terminal project is estimated to cost EUR 250 mln – the price to pay to set cargo-handling operations free from the constraints of old basins.

In France, the Port of Saint-Nazaire is developing an area dedicated to marine renewable energy in a confined zone where big and small-scale shipbuilding (STX) already has to contend with engine production (MAN). The Nantes Saint-Nazaire seaport and its companies can pride themselves on their heavy cargo handling expertise.

Another example, this time coming from Cherbourg, has unused areas and therefore has the capacity for large-scale development projects and can even reclaim land from the sea. The port authority and its regional counterpart (the Normandy region) are planning investments of up to EUR 100 mln, dedicated i.e. to quays, and plant implantation.

The Port of Brest has even more expensive development projects in its portfolio (EUR 170 mln), while another small Mediterranean port, La Nouvelle, is using marine renewables to justify investments for which political stakeholders have been pushing for several years.

Generally speaking, preassembly operations imply new logistical processes for port territories. Many ports have experience with heavy cargo, but windfarms

require regular connections for limited consignments. In the case of offshore wind turbines, preassembly is dependent on the storage of big turbine components (e.g. masts, pods, blades) before they are assembled by specialised ships. Port logistics centre around the aggregation of such parts. The loading/unloading time is long, and storage requires a lot of specially-designed space, as yards must be able to handle heavy elements.

The shipping industry, on the contrary, works on short-time scales. This is due to seasons and weather windows enabling the installation of offshore wind turbines. More specifically, shipping time scales face great constraints from contracting partners as daily charter rates for offshore vessels (such as jack-up vessels) range from EUR 200-400 thousand per day. For the big energy corporations that own the windfarms, these represent an astronomical expenditure that puts all other costs into perspective.

The industry therefore follows the shipping rationale (reducing chartering rates). The parts need to be ready at the pre-assembly port. This explains why the port business is geared towards

aggregating many elements in areas that are often expensive to convert. Plants, on the other hand, need to mass-produce for each industrial goods market (sequentially, wind field by wind field). The industrial rationale also entails considerable space constraints for ports.

Cargo-handling stakeholders already have broader experience in project cargo. Working alongside specialised logisticians, cargo-handling companies deal with the various constraints imposed by the industry and windfarm owners to ensure the success of the marine renewables branch.

Marine renewable energy delivers a windfall for ports as it represents a new industry that requires much land and quay space, but generates significant sources of employment. The price tag is obviously hefty, but France cannot miss out on such a prime opportunity, especially for ports housing the winning combination of production plants and pre-assembly units. But a question on the lifespan of this industry remains: Are marine renewables to be a short-lived industrial up-date, or will they be part of a more fundamental movement towards energy transition? ■



Photo: Siemens