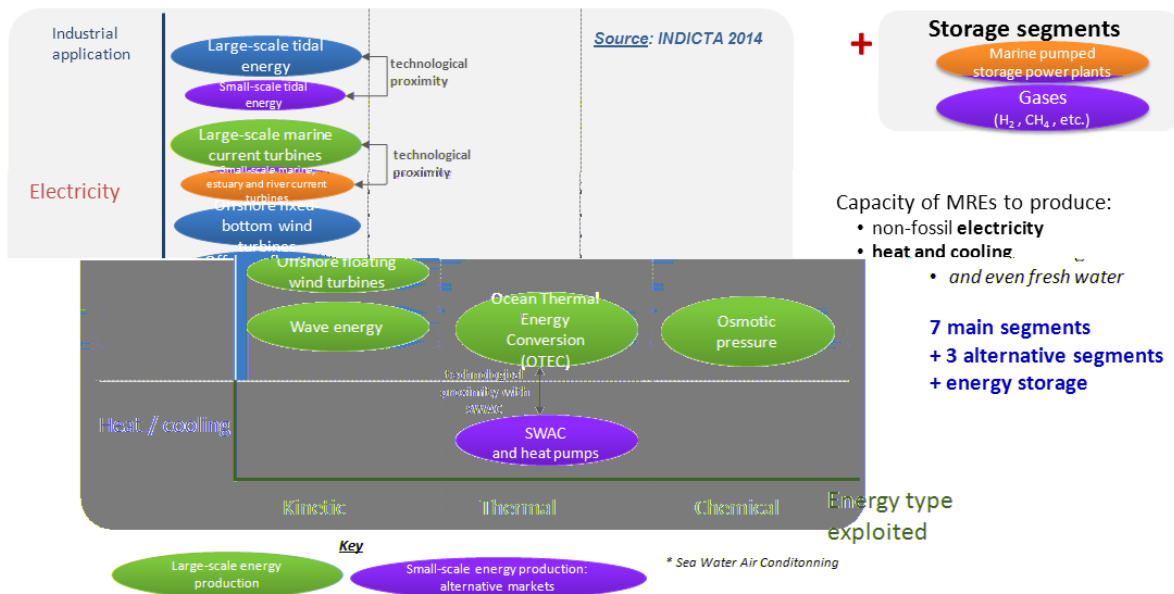


## Assessment of MRE development opportunities and prospects in Brittany

**Marine renewable energies (MRE) include a multitude of segments** with the potential to make a strategic contribution to the future energy mix: production of electricity, heat and cooling, and energy storage. They also provide excellent **leverage for socio-economic development** in regions that have substantial marine resources alongside an economic fabric with strong development potential and appropriate governance for the issues specific to these innovative segments.

### A MULTITUDE OF MRE SEGMENTS WITH EXTENSIVE APPLICATIONS ACROSS ALL FORMS OF ENERGY



Over and above the positions taken by France as a whole, **the Brittany region has strategic development potential when it comes to MREs**, with an abundant resource (still to be quantified) and an economic fabric that can be directly developed throughout the value chain of MRE projects (education and training, R&D laboratories, specialist engineering companies, shipbuilding and repair, port infrastructure, sea transport services, etc.). Also significant is the presence of manufacturers and major orderers that are well established locally and liable to play a key role in these markets that offer major export potential from both an industrial and a service perspective.

The economic and industrial development of MREs in Brittany requires **strong political backing** on at least three levels:

- 1/ An ambitious, credible global vision, shared and taken on board via collective, coherent energy planning**, to bring about the necessary medium and long-term visibility for economic players;
- 2/ Backing and support** not only for the **means of energy production** but also for **R&D programmes** and **production facilities** (including **infrastructure**), **professions** and **skills development**;

- 3/ **The search for innovative leverage** in terms of technological development (**comprehensive island solutions** in particular), **funding** (public and crowd funding), or **new economic models** that integrate storage, smart grids or other innovative methods where synergies could be implemented (such as electric mobility).

**Building an MRE industry sector in Brittany** therefore stands to contribute:

- ✓ To achieving local ambitions in terms of **energy transition and decentralisation** (INDICTA forecasts / proactive multi-MRE scenario: at least 35% of Breton electricity consumption by 2030).
- ✓ To **regional socio-economic development**, with the potential to create an estimated 3,000 to 5,000 direct jobs depending on the scenario under consideration.

This potential for local economic and industrial development will only be fulfilled in a sustainable way if there are sufficient **export** prospects and if the **competitiveness** of economic players allows Brittany to hold its own in a more competitive international context, confirming the need to identify **opportunities for cooperation**.

→ In this respect, **the British county of Cornwall is a long-term strategic partner**.

### **Continuing the MERiFIC cooperation to accelerate the socio-economic development of MREs in Brittany and Cornwall**

**A cross-analysis of MRE segment development issues in Brittany and Cornwall** (energy planning, technological innovation, governance, modes of support and funding, training, types of port infrastructure, potential of the existing and emerging industrial fabric, etc.) highlights numerous potential synergies and areas of substantial complementarity between the two regions.

- As part of a global multi-MRE approach, the **fabric of industry and service activities in Brittany is capable of meeting all the needs associated with the development of MRE projects**, and this applies to the entire project value chain (upstream studies -> production and assembly, installation, operations & maintenance, even dismantling), while Cornwall has a particularly strong economic fabric in **upstream service activities** (engineering, etc.) and **downstream service activities** (operations & maintenance, etc.).

These **complementary factors in terms of the industrial aspect** and **potential synergies in the services aspect** are particularly apparent in the most mature strategic segments (offshore fixed and floating wind turbines, large-scale marine current turbines), where the criteria for the weight and size of the systems require the presence of suitable large infrastructure: in this context, the **port of Brest** is the only port in the two regions capable of accommodating the industrial logistics activities connected to **MRE systems weighing more than 1,000 tonnes**, such as Alstom or Areva's multi-megawatt wind turbines or DCNS's marine current turbine foundations (OpenHydro).

Moreover, we note the following shared distinctive features, which could provide **the fundamentals of a long-term vision** for the partnership between Brittany and Cornwall:

- Particularly significant potential in the two main segments of **offshore floating wind turbines and wave energy**; moreover, local players have enough advantages to be able to position themselves as pioneers and harbour **leadership ambitions** in the two most attractive emerging MRE markets in the world, over time.
- **The peninsula and island nature of the two regions**: this lays the ground for strategic innovation, reinforcing opportunities in terms of **alternative segments** (SWAC, small-scale tidal energy, small-scale marine, river and estuary current turbines), **storage technologies**, and **energy autonomy solutions** with excellent **export** potential.

### **Summary of strategic recommendations and priority actions from the SEEM study**

In order to tackle the specific issues for Brittany and the levers of cooperation with Cornwall that have been identified, ARTELIA and INDICTA's teams offer **five strategic recommendations** with an **action plan and seven priorities** to concentrate on in the short term.

Our recommendations are based on **two types** of strategic decision-making:

- **An ambitious shared regional energy policy around two fundamental levers for immediate activation:**
  - **Multi-segment planning, including identification of shared objectives for multi-MRE installed capacity by 2030**, in order to give economic players sufficient visibility to successfully carry out their development projects;
  - **Innovative funding**, from the most natural items to implement (test resources, CEIs, etc.), via making full use of the specific features of **islands and energy storage needs**, to **the search for breakthrough economic models**, such as coupling the sale of locally produced renewable energy with the development of regional electric mobility.
- **An assured segment policy around coordinated, controlled development of several MREs in parallel**, taking into account the extent of the marine resources and socio-economic and industrial development potential available to Brittany and Cornwall:
  - **On this path, offshore wind turbines and wave energy are the main strategic MRE segments**, with the port of Brest as the organising industrial base for industrialisation of the two regions when it comes to floating wind turbines.
  - In addition, the potential offered in Brittany and Cornwall by **alternative segments** (SWAC, small-scale tidal energy, low power marine and river

current turbines, etc.) and the **storage** segment justify the implementation in the short term of a strategy defined around **islands and energy autonomy**, with a subsequent ambition based on the implementation of overall solutions tried and tested locally then focused on **export**.

Our action plan is based on seven priority actions to be launched as from 2014, out of a total of 25 identified actions:

1. Adopt a “Regional marine renewable energy plan” – a planning document defining **shared** regional **objectives** for **2020 and 2030**;
2. Produce a **technical and economic study on sites with potential** in connection with the road map resulting from action 1;
3. Set up a **jobs observatory** specific to the MRE sector;
4. Launch a **Call for Expressions of Interest (CEI)** dedicated to innovative systems, alternative technologies and islands;
5. Arrange **meetings between enterprises in Brittany and Cornwall** and develop a **joint upstream service offering** for local projects then export;
6. Promote **cooperation between Brittany and Cornwall to pool R&D efforts** in strategic segments, particularly around test sites;
7. Carry out **lobbying actions** to have the MRE sector included in national policies and strategies, in the short term including the energy transition law.

In summary:

→ The vision we propose for Brittany links the implementation of a **regional energy strategy** with a controlled **multi-segment development policy** and the implementation of **inter-regional alliances**, where Cornwall acts as a long-term strategic partner.

→ The industrial and socio-economic potential that has been identified presents both:

- **Short-term opportunities**, particularly in the most mature segments (fixed wind turbines, large-scale marine current turbines), although a risk of dispersal should be monitored in order to concentrate sufficient efforts to **develop long-term strategic sectors** (floating wind turbines and wave energy);

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