

Wave and Offshore Wind Combination for Atlantic Basin Justification Report

1. **Combination:** Wind and Wave
2. **Basin selected:** Atlantic: Location. Cantabrian Offshore Site
3. **Concept** Either Large scale or small scale.
4. **Basin suitability:** Atlantic is suitable due to
5. **MUS or MUP:** The concept will be multiple use of space. There will be no shared platform.
- 6.
- 6.1 **Technical** (Rating 4)-From Excel Matrix

The leader from Mermaid (Erik Damgaard Christensen) has not answered to the proposal to participate so Raul Guanche has offered to assume the responsibility to present the Atlantic Site MPP case from Mermaid as far as it was the most advanced TRL case in the project. The invited partners to the meeting would be Eric (DTU) and UC.#

In the same platform wind and wave energy converters are combined. The location is in the Cantabrian Sea, at La Virgen del Mar. The offshore energy farm will consist of 77 multi-use platforms with 5 MW wind turbines and three 1150 KW oscillating water columns.

The surface would be 100 km². The depth range is 40-200 meters. The seabed is sands and rock and the distance to shore is between 3 and 20 km. It is important to highlight that data information is available due to the existence of a monitoring grid at the location. Wind and wave converters would share the same floating platform.

The wind energy part would produce 77,256 GWh. The project time horizon is 25 years and 1 km spacing is considered to minimize wake effects. Wave energy annual production would be 1.3 GWh.

6.2 **Socio-economic** (Rating 5)

- technological transfers between sectors
- competitive advantages and benefits for the region
- uncertainty on regulatory conditions
- uncertainty on the availability of funding
- Lack of social consensus.
- Social sensitivity towards aesthetic and functional impact of the facilities.
- Social perception on Environmental requirements.

6.3 **Environmental** (Rating 5)

Due to

- Visual impact up to 10 km offshore.
- Birdlife may be affected.
- Wind turbines make sound that affect animal life.
- Marine life affected all along the site and radiation pollution.
- Heat, light, vibration.
- Interference with ship tracks.

6.4 **Financial** (rating 3)

6.5 Short or Long Term Commercial Viability (Rating 1) Wave energy in farm array will take another 10 years before commercial viability.

6.6 Overall rating 19.

Comments.

7. Key threats/challenges to be solved

- Acquisition of permits:
- Lack of social consensus
- Social sensitivity towards aesthetic and functional impact of the facilities.
- Social perception on Environmental requirements

8. Customer/societal problem that can be solved by combining the sector (8)

- Renewable energy for all the zone (1348 GW*h/año-> 327.600 houses).
- New employment offers.
- External companies establish in the region.
- Economic impact in the community.
- Cantabria would be more known in the whole world.
- Enhance the biomass of a number of sessile and motile organisms.

9. Suggested companies

9.1 Wave

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9.2 Wind

9.3 History status of above listed companies in combination

- + = both at status