

Wave and Wind floating Combination for Atlantic Basin Justification Report

1. **Combination:** Wave and floating wind
2. **Basin selected:** Atlantic: Location.
3. **Concept:** Large scale for export. Farm size.
4. **Basin suitability:** Atlantic is suitable due to
5. **MUS or MUP:** The concept will be multiple use platforms.
- 6.
- 6.1 **Technical (Rating 5)**

Concepts current

The concept is envisaged for this combination is MARINA. The concept is a large floater with OWC (Oscillating Water Columns) array with one wind turbine. This concept are realised as a concrete structure. The delta-shaped large floating platform with OWC wave energy converters and one wind turbine was chosen. This concept was one of the final 3 chosen from a 4 year long detailed EU study based on finding the most feasible wind and wave platforms.

Companies that would be considered for this combination are Wave Energy Ireland Ltd, Mainstream, and Dong. These all contributed towards the MARINA consortium project. This is considered a possibly an engaged concept as they have contributed towards the MARINA project. OWC array with wave power production comparable to that of the wind turbines. The energy balance is almost 50% wind and 50% wave contribution.

- 6.2 **Socio-economic (Rating 5)**
By combining the sectors of Wind with wave there is a cross over in the jobs and supply chain.
- 6.3 **Environmental (Rating 5)**
By sharing the space in the ocean it will be possible to extract energy in the most efficient way with less impact on the environment.
- 6.4 **Financial (rating 3)**
OWC array concept also has high platform CAPEX and OPEX costs, resulting in a high cost of energy. WEC contributes additional CAPEX and OPEX costs compared to a single turbine concept with relatively minor contributions to total energy production.
It is important to note that from this evaluation, all concepts studied resulted in a high CoE and are not currently cost-effective as combined multi-purpose platforms. Concepts would require further technological advancement and a refined evaluation to prove their effectiveness.
The OWC array presents higher risk and more maintenance but redundancy in design to optimize power production
- 6.5 **Short or Long Term Commercial Viability (Rating 1).**
Commercially viable in 10-20 years
- 6.6 **Overall rating 19.**
Comments: Ratings were not based specifically on MARINA platform but a general Wave and offshore floating wind combination.
7. **Key threats/challenges to be solved**
8. **Costumer/societal problem that can be solved by combining the sector**

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9. Suggested companies

9.1 Wave

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9.2 Wind

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9.3 History status of above listed companies in combination

- + = both at status

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