

Aquaculture & Wave Combination for Mediterranean Basin Justification Report

1. **Combination:** Aquaculture and Wave
2. **Basin selected:** Mediterranean.
3. **Concept:** large scale aquaculture farm, with energy supplied by autonomous wave energy devices.
4. **Basin suitability:** Mediterranean is a good basin for all types of aquaculture production. Mediterranean has sufficient wave energy for some types of wave energy machine that focuses on autonomous energy production.
5. **MUS or MPP:** The concept will be multiple use of space. There will be no shared platform.

6.

6.1 **Technical** (rating 4)

Aquaculture: large scale nets and pods. Finfish mostly, also molluscs.

Wave- energy: Technologies appropriate would be multiple point absorbers

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

Aquaculture is considered as a great opportunity in the Mediterranean to create jobs and provide more fish for the increasing markets.

The basin has the skilled labour for aquaculture, and ports and service harbour for the wave- energy farm, operation and maintenance needs.

Wave energy installation could provide local jobs.

6.3 **Financial** (rating 5)

Diesel supply in large use for aquaculture farms can be a considerable expense for a n aquaculture project. A more economical energy supply could be the key ingredient in making some projects economically viable.

Other costs sharing outcomes could be:

- Shared operations and maintenance
- Shared vessels

6.4 **Environmental** (rating 5)

Aquaculture alone has a probable negative impact on the environment. Due to

- Waste products
- Diesel energy used to power the installation

Wave energy combination with aquaculture could reduce the energy environmental impact, by use of clean renewable sources. Replacing diesel.

The wave energy could also be considered a safe haven for fish, and perhaps a nursery area for the fisheries in general

6.5 **Short or Long Term Commercial Viability** (rating 1)

7. **Key threats/challenges to be solved**

- Storage and use of the produced extra energy
- Substation for aquaculture farm use of the energy from wave farm.
- High investment costs
- Safety concerns of workers
- Interaction between fish growth and wave energy devices is unknown
- Operational problems caused by the combinations are not researched
- Risk for damage of energy technology from loose 'items' after storm events

- Impacts insurance opportunities
 - Possible increase of fouling due to fish farming
- 8.** Costumer/societal problem that can be solved by combining the sector
- More environmental friendly fish farming.
 - Increased use of renewable energy in the Mediterranean.
 - Technology base to increase fish production in touristic areas.
 - Energy independency of the islands in the Mediterranean.
- 9.** Suggested companies
- 9.1 Aquaculture:
- Nireus,
 - Kefalonia (Greece), and
 - Pisciculture Marine de Malte (P2M) Ltd
- 9.2 Wave
- Albatern
- 9.3 History status of above listed companies in combination
- Nireus/Kefalonia/Pisciculture + Albatern = all at Single status