Wave & Oil & Gas Combination for Mediterranean Basin Justification Report

1. Combination: Wave + Oil & Gas

2. Basin selected: Mediterranean & Black Sea

3. The concept is envisaged for this combination is a multi-purpose platform with a Wave Energy machine such a Wavestar generating energy to meet the demands of the platform. The Wavestar Device which is a multipoint absorber that can be attached to an Oil platform and provide power. This is will be at the scale of autonomous power. Wavestar can generate in small wave climates like the Mediterranean and they have indicated they have been in talks with Chevron to further this ambition. This would make them an engaged concept. Another company GRS is a potential second option for this concept. Wavestar are engaged and at a TRL level of 7 with their device. Chevron is considered for this engagement of the concepts but there is other single companies that are due to develop in the area, BP is reported to be set to invest US$12 billion offshore Egypt.

4. Provide description of the concept/project under the following headings
   a. **Technica**l *In-depth description*
      The WS is a so-called multi point absorber being developed by the company Wave Star Energy (www.wavestarenergy.dk). The machine is equipped with a number of floats which are moved by the waves to activate pumps, which press oil into a common transmission system, the pressure of which drives a hydraulic motor. The motor, in turn, drives the generator of the WEC. In the event of a storm the floats are lifted to a safe position. The system can also be remotely operated. Current Scale 1:2 In Denmark a 600 kW machine.
   b. **Socio-economic**

      Route to market for WECs, Overlap of job skills and technical job creation

   c. **Environmental** *Positive environmental benefits*
      By using Wave energy it reduces diesel usage which is especially important in reducing contamination in the marine environment due to spillage. This may not count in an Oil rig though.
   d. **Financial**
      The cost of energy produced from wave is very high when used in a grid application but when compared to diesel usage its make more financial sense. This eliminates the need for cabling at a million a km and would take up around 10% of a WECs

5. Does the opportunity qualify as multi-use of space or multi-use offshore platform:
   This concept is A Multi use offshore Platform/Multi-Purpose Platform

6. Scale of concept/project:
   B: An autonomous stand-alone projects

7. Identify the key threat/challenge that can be addresses through combining the chosen sectors:

The Oil industry is suffering from massive downturn and in the North Sea for example the decommissioning phase is due to be as big in monetary terms in the next few years. Possibly an addition of Wave adds to this.

- Socioeconomically: Will the combination create new jobs or will a transference of labour force occur (even more if decommissioning will gain importance in the following years)? Net creation vs. employment maintenance
- Oil and Gas will be the driver for the selection of the locations. So, wave energy would be spatially distributed according to oil and gas platforms: Are the environmental conditions in these areas suitable for the development of wave?

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8. What is the customer/societal problem that can be solved by combining the sectors

"Chevron may have simply viewed the Mendocino wave project as a tool with which to gain carbon trading leverage to use to offset their pollution elsewhere, in the hope that Congress would adopt fiscal or other incentives for trading in carbon credits,"

Commented [LI1]: This project is in California. If they don't have any license offshore the Mediterranean, I don't think that the potential for combination with wave will be an incentive to invest in the area