

**United Nations University, Institute of Advanced Studies (UNU-IAS) submission on  
the topic of “marine renewable energies”**

UNU-IAS would like to contribute to following information relating to the topic of “marine renewable energies”. The information is based on the research undertaken by two UNU-IAS Visiting Research Fellows, Dr. Miguel Esteban and Dr. David Leary.

There are currently four ways of obtaining energy from sea areas, namely from wind, tides, waves and thermal differences between deep and shallow sea water. Using this as a basis, the percentage of the world’s electricity that could be produced from ocean based devices is estimated to be around 7% by 2050, and this would employ a significant amount of people by this time, possibly around 1 million, mostly in the maintenance of existing installations<sup>1</sup>. For the case of the UK alone, if all the workforce currently involved in oil production in the North Sea was gradually transferred to the offshore ocean and wind energy, by the year 2050 it could produce between 127 and 146TWh of electricity, equivalent to around 57-66% of the current energy consumption in the country<sup>2</sup>.

However, ocean and offshore energy face considerable challenges in their development, and although their cost is expected to become lower than coal in the next decade<sup>3</sup>, their current development requires considerable government incentives. Also, ocean energy today faces an uncertain state of regulation under domestic legal systems, including managing hazards to navigation, providing further financial incentives for wide scale commercialization of this technology (such as increased research and development funding and feed-in tariffs) and managing ocean energy’s relatively benign environmental impacts<sup>4</sup>.

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<sup>1</sup>Esteban, M. and Leary, D., (2011), “*Current Developments and Future Prospects of Offshore Wind and Ocean Energy*”, Journal of Applied Energy. Vol. 90, pp. 128-136

<sup>2</sup>Esteban, M., Leary, D, Zhang, Q, Utama, A. and Ishihara, K. N. (2011) “*The Greening of the Offshore Energy Sector in the North Sea*”, International Journal of Labour Research 2010, Vol. 2, Issue 2.

<sup>3</sup>Esteban, M. and Leary, D., (2011), “*Current Developments and Future Prospects of Offshore Wind and Ocean Energy*”, Journal of Applied Energy. Vol. 90, pp. 128-136

<sup>4</sup>See for example Leary, D., and Esteban, M. (2009), “*Climate change and renewable energy from the ocean and tides: calming the sea of regulatory uncertainty*”. International Journal of Marine and Coastal law 24: 617-651 and Leary, D., and Esteban, M. (2010) “*Renewable energy from the ocean and tides: a viable renewable energy resource in search of a suitable regulatory framework*” Carbon & Climate Law Review, Issue 4, pp 417-425.