Winds of Change: A new Paradigm with Offshore Wind Power

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Abstract

A recent report by Greenpeace describes offshore wind as the 'new powerhouse of Europe'. Similar statements have been made by other reports reflecting on the aggravated use of fossil fuels for energy needs, the resulting environmental impacts, and a search for large scale commercially viable renewable energy source. With a broad continental shelf and a strong wind regime, large wind power potential is available off the US coast, with enough offshore wind resource at shallow depths off the east coast to displace all the fossil fuel power plants in the region. The emergence of offshore wind power due technological advances has opened a new energy paradigm that can provide a long term solution to the energy requirements, at an affordable price and in an environmentally amenable manner.

This presentation will explore the offshore wind power as a large scale energy option within a global warming framework. The first part of the presentation will focus on the unfolding phenomenon of global warming, and the contribution of electricity generation to the greenhouse emissions. The effects of global warming on marine eco-systems are apparent, pressing the need for viable and immediately effective solutions. Large scale development of renewable energy resources is an important wedge in slowing down the global warming trend. Wind power and especially offshore wind power is suitably positioned for electricity generation at such a scale. As with other energy sources, a set of advantages and disadvantages are linked with offshore wind power. While the large resource size encourages its development, the intermittency of the wind resource is an important limiting factor influencing the implementation of offshore wind projects.

Within a larger framework of global warming and growing energy needs, the sustainable development of offshore wind energy will need to address the local risk perceptions in conjunction with global policy targets (e.g. Kyoto protocol). This will require an integrative and adaptive management approach, which is able to handle uncertainty and risks, stimulates innovative solutions and protects the integrity of coastal and marine ecosystems. An integrated coastal zone management framework to assess the risks, opportunities and challenges associated with a triangular interaction between the ecosystems, socioeconomic systems and the offshore wind projects, presents an alternative framework to the presently practiced risk assessment and conflict resolution exercise in the form of EIS (environmental impact statement).