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Offshore wind energy: A comparative analysis of UK, USA and India

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ABSTRACT

Offshore wind is one of the most fascinating industries in the renewable energy sector and it is experiencing a remarkable growth. Offshore wind energy generation offers an opportunity in the race to decrease the dependence on fossil fuels, reduce green house emissions, increase energy security and create employment opportunities. UK has proven success in offshore wind and has been enjoying the economic benefits of offshore wind since over a decade. Offshore wind energy is an emergent renewable energy industry in the United States. The United States is coping up with the challenges and heading up fast to catch up with the industry. India is still in its infancy stage where the policy frameworks are framed by MNRE government and getting ready with the tools to enter into the offshore market. This paper researches the current situation and trend of offshore wind industries in UK and US, from aspects of policy, grid connections, operation and maintenance and cost reduction and analyses the proper direction and pathways of the industry to India. Therefore this paper highlights the scenario as to how these three countries UK, USA and India, respectively, are enabling offshore wind, to make a vital and sizeable contribution to the low carbon economy.

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1. Introduction

Offshore wind power is poised to deliver an essential contribution to a clean, robust and diversified Global energy portfolio. Capturing and using this inexhaustible resource has the potential to mitigate climate change, improve the environment, increase energy security and stimulate the global economy. In the year 2013, offshore wind power installations are on track to hit a consecutive annual record globally, where developers added 1080 MW of generating capacity in the first half of the year. Although still compared to the land based wind power which is

roughly around 300,000 MW, offshore capacity is growing close to 40% a year [1]. The world annual installed offshore wind capacity in the year 1991–2013 is explained in Fig. 1.

Four key conditions needs to be in place for offshore wind developments to be successful anywhere in the world. Firstly, the Government must be ready and able to create the political and financial environment that encourages growth. Secondly, an advanced technological grid parity is essential for the turbines operating above the seas. Thirdly, operation and maintenance plays a crucial role to make offshore wind farms reliable and

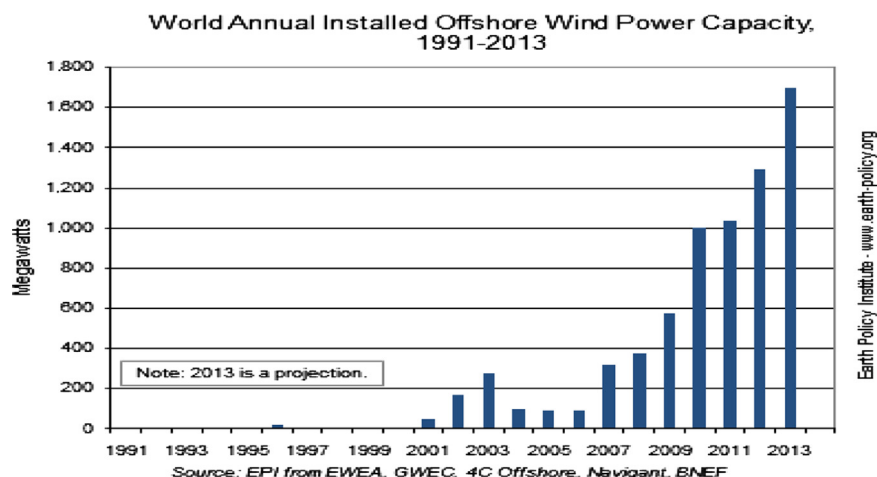


Fig. 1. World Annual Installed offshore wind capacity(1991–2013): The figure shows the world annual installed capacity from the year 1991 to 2013. Although still compared to the land based wind power which is roughly around 300,000 MW, offshore capacity is growing close to 40% a year.

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