North West tidal barrages could provide five percent of UK's electricity

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Engineers at the University of Liverpool claim that building estuary barrages in the North West could provide more than 5% of the UK's electricity.

Researchers, working in collaboration with Proudman Oceanographic Laboratory, examined ways to generate electricity from tidal sources of renewable energy in the Eastern Irish Sea. The study showed that four estuary barrages, across the Solway Firth, Morecambe Bay and the Mersey and Dee estuaries, could be capable of meeting approximately half of the North West region's electricity needs.

Funded by the Northwest Regional Development Agency, the team investigated different types of tidal power, including barrages - which run from one bank of an estuary to another and guide water flow through sluices and turbines - using advanced two-dimensional computational modelling. They found that the most effective mode of generating electricity was 'ebb generation', which involves collecting water as the tide comes in and releasing the water back through turbines once the tide has gone out.

The barrages would provide substantial sea defence, as well as flood alleviation, by draining the estuary following heavy rainstorms. Electricity generation could also help to achieve the UK's CO_2 emission reduction targets.

Professor Richard Burrows, from the Maritime Environmental and

Water Systems Research Group, in the University's Department of Engineering, said: "With concerns mounting over the UK's future energy provision it will soon become paramount that all sources of renewable energy are fully developed. Unlike the wind, tides are absolutely predictable. The geographical location of the UK, and the seas that surround it, provide a great platform for marine renewable sources.

"The best places to harness tidal power at meaningful scales are areas with a high tidal range such as estuaries. Tidal barrages would alter the natural motion of an estuary's flow as the sea level changes, usually by holding back the water at high tide and then releasing it when the tide has subsided. This water level difference across the barrage is sufficient to power turbines for up to 11 hours a day, and, in terms of the four North West barrages, the energy extracted could equate to 5% of the UK's electricity generation needs."

Joe Flanagan, Head of Energy and Environmental Technologies at the Northwest Regional Development Agency (NWDA) said: "The NWDA is pleased to have supported this project, which has provided an important stimulus to the concept of tidal power in England's Northwest. There are a variety of groups and individuals promoting a number of schemes in the region, which have now been brought together under the Northwest Tidal Energy Group.

"Building on the work of the Liverpool team, I expect that a number of more detailed feasibility studies of individual schemes will be undertaken in the near future. Although most of the focus for tidal energy has been in the Severn estuary I would welcome the UK's first major tidal scheme here in the Northwest."

Dr Judith Wolf, from the Proudman Oceanographic Laboratory, added: "The problem with renewable energy generation is that it is intermittent; electricity can only be generated in line with the tidal flow. However the

tide arrives in the North West around four hours after the Severn, where plans to build a barrage of similar scale are currently underway, so together they could increase the number of daily generation hours. In the future, other tidal energy schemes around the UK coast could extend the generation window."

Source: University of Liverpool (news : web)