



Harnessing ocean's potential for energy without emissions

AUSTRALIA: First wave farm may be forerunner of far more ambitious plans

by Greg Ansley

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As the world's leaders try to hammer out a new programme to slow global warming, the energy and mineral-rich state of Western Australia has begun a shift to wave power.

With less than 4 per cent of its electricity drawn from renewable energy and a national commitment to produce 20 per cent from renewables by 2020, the state Government has agreed to build the nation's first commercial wave energy farm.

It will use a system called Ceto, developed by WA's Carnegie, and named for a sea goddess born in Greek mythology to the mother goddess Gaia.

The A\$50 million (\$61.6 million) project will produce enough electricity to power 3500 homes and may be the forerunner of far more ambitious plans to use wave motion both in Australia and overseas.

The Defence Department has also signed contracts with Carnegie to supply power from the ocean to its Navy base south of Perth, and its

Harold E Holt communications station at Exmouth in the state's north.

The construction of the first 5MW farm follows the granting of a licence by the state Government to a large area of seabed near Garden Island, allowing the installation of 30 Ceto units.

The greenhouse gas emission-free wave farms can also provide fresh water from the sea by using reverse osmosis desalination technology.

The system works by anchoring submerged buoys to the seabed, driving pumps by the motion generated by waves. The pumps push water under pressure to drive hydroelectric turbines on shore.

Carnegie claims a number of key advantages for the system, including the fact that submerged buoys are not affected by storms and are able to adjust to a wide range of wave heights and directions. Carnegie also says that, unlike wind, waves can be predicted days in advance, allowing operators to match supply to demand.

The company believes the potential for wave energy is vast, with about 60 per cent of the world's population living within 60km of a coastline.

And in Australia, studies have estimated a total deepwater wave potential of about 500,000MW for the coastline stretching around the bottom of the continent from Geraldton, above Perth, to the New South Wales-Queensland border — although much of this could not at present be tapped.

An independent report produced for Carnegie estimated that Australia has a potential inshore wave energy resource of about 170,000MW — roughly equivalent to four times the nation's power generation capacity.

The report found that wave heights sufficient to power Ceto units were reached for 94 per cent of the year, although only about 10 per cent of the potential could be economically used.

Even so, this would be sufficient to provide one-third of Australia's present power demand.

