



Australia Starting to Make Waves

by John O'Brien, Australian CleanTech

In my work within the cleantech sector in Australia, I am often asked which sectors have the best chance of flourishing here. This question is often followed by another: which companies in those sectors are the ones developing global technologies? It can be a dangerous game to give direct answers to these questions, as the only certainty about predictions is that they will be wrong!

The wave sector is more difficult to predict than some sectors. The relatively immature nature of most of the technologies means that it is likely to be some time before positive cash flows are strong and it starts to become clear which of the many development technologies may dominate global installations. Who will be the Vestas and Suzlon of the seas and estuaries? What does seem likely is that, over the next five years, only a handful of technologies will move ahead of the pack and start to be seen as the industry leaders. Will any of those technologies be Australian?

IS WAVE A WINNING SECTOR FOR AUSTRALIA?

As recounted in previous issues of Cleantech magazine, Australia is blessed with some exceptional wind resources, some very hot rocks underpinning the geothermal sector, a ridiculous amount of solar resources and a highly variable climate that has required innovation in water usage. However, there are limitations to the application of some of these resources: the best wind is generally to be found on picturesque coastlines and the best solar and geothermal resources are in the deserts, thousands of kilometres away from the main demand centres. Overall, in terms of market capitalisation, employee numbers and revenues, the cleantech sector here is dominated by the water and waste sectors.

Australia, the world's largest island, has a coastline of approximately 20,000km (compared to nearly 18,000km for the UK). Of Australia's 22 million population, 90% lives within 120km of the coast and over 70% lives in the coastal belt from Cairns in Queensland to my home town of Adelaide in South Australia.

The location of the population alone makes the country an ideal site for the deployment of wave power. The fact that geothermal and concentrating solar resources are so far inland - and hence so

far from the population density - would seem to give wave power significant long term advantages.

The conditions for tidal power are less favourable, with few large tidal estuaries that drive the required flows. Those that do exist, such as the Clarence Strait near Darwin and Derby in the far north-west of the country with its 11.8m tides (only 3.2m less than the Bay of Fundy), are generally far from large population centres and will support niche projects at best.

PROGRESS TO DATE

With such a strong case for long term deployment, it would seem likely that wave power would be the sector in receipt of long term support from Government programmes. There has indeed been some backing for individual companies and projects, but overall the case for wave has not managed to get much of a hearing within Government. It is seen as a technology that is too far beyond the electoral cycle to be moved further up the list than wind, solar and geothermal. The capital markets and venture community have also been fairly reluctant to back wave too seriously, although again a few companies have received some solid support.

The recently released Australian Cleantech Review, 2010 demonstrates this lack of large scale support, with only 3.6% of the 420 listed and unlisted cleantech companies reviewed operating across the combined category of wave, tidal and hydro. These companies raised a total of A\$40 million in 2009, a mere 1.8% of the total funds raised by the Australian cleantech sector.

Given this lack of financial support, it has been only the best technologies with the greatest chances of success that have made any progress. This early weeding out has meant that Australia's wave technology companies are now in a strong position to make the step up to be among the leading businesses in the sector on a global basis.

Some of the companies leading this charge are:

- **Carnegie Wave Energy (ASX:CWE)** is the only listed wave company in Australia. It has strong ties with EdF in

France and is commercialising its CETO technology. The company was profiled under its former name of the Carnegie Corporation in the July/August 2009 edition of Cleantech magazine.

- **BioPower Systems**, profiled on page 27, is commercialising the bioWAVE and bioSTREAM systems for wave and tidal applications that are based on the concepts of biomimicry.
- **The Atlantis Resources Corporation**, profiled on page 27, was formed in Australia and is now working in multiple international locations developing its Aquanator and Solon tidal turbines.
- **Oceanlinx's** core patented technology is an oscillating water column (OWC) device that offers major improvements in the design of the system, the turbine, and in construction technique. The company has been operating since the early 2000s and has raised a total of over A\$30 million. It has an operational demonstration plant and is developing potential projects in Australia, US, UK, South Africa and Mexico.

LOOKING FORWARD

As in many cleantech sectors, Australia is developing world leading technology in the areas of wave and tidal power. Also like other sectors, however, it seems unlikely that these technologies will be successful in becoming global leaders whilst they remain in their home territory. In Australia, the Government's 'green' stimulus is small, the regulatory measures are providing only limited assistance and the venture capital industry is chronically under-funded.

The Australian wave sector will therefore need to rely on international corporate or investment partners and demonstration projects in other waters before it can make its presence felt globally. Once proven, however, the technologies may then have a glorious homecoming to meet the potential market demand for large scale deployment to power Australia's coastal population.

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