



# When the surf's up, no limit to its power surge

Cameron Cooper

**G**IVEN Australia's reputation as a nation of beach bums, it is ironic that wave energy is emerging as a significant employment opportunity. According to a report from conservation group WWF-Australia, ocean power stations have the potential to create 3210 jobs by 2020 and 14,380 by 2050.

It notes that although Britain has dominated spending on wave technology to this point, Australia has the biggest and most consistent wave energy resource in the world. The report, *Power to Change: Australia's Wave Energy Future*, suggests the Southern Ocean has the capacity to generate 35 per cent of Australia's baseload energy needs, with jobs likely to result for executives, builders and tradespeople, divers and maintenance workers.

Carnegie Corporation, a West Australian wave energy and clean technology developer, released the WWF report at its Fremantle headquarters.

Michael Ottaviano, managing director of Carnegie, is confident the employment forecast is realistic.

"They are readily achievable numbers," he says, adding that it is "hugely realistic" that the industry will one day approach the size of the oil and gas sector.

The WWF job predictions are based on the rollout of 1500 megawatts of wave energy power stations by 2020 or 12,000 megawatts by 2050. They point to a dramatic potential ramping up of business for Carnegie, which at present employs just 20 scientists, engineers, tradesmen and commercial staff.

Ottaviano says Carnegie is determined to propel Australia to the international forefront of wave technology through the development of energy power stations off the Australian coast, including a five-megawatt site in Western Australia. The company recently received a \$12.5 million grant from

the state government to assist the project.

Wave energy is considered to be one of the renewable energy resources with the greatest potential to transform our electricity sector and provide new jobs in sustainable industries. It is an ideal source of power, particularly along the coast of Australia where regular storms in the Southern Ocean deliver constant swells to the shoreline.

"The resource is distributed right around the southern half of the country where the population lives. It's a known, measured proven resource. It's just waiting for the right technology to come and unlock that," Ottaviano says.

The centrepiece of Carnegie's technology solution is CETO, the world's only fully submerged wave technology system. It consists of submerged buoys tethered to sea pump units that deliver highly pressurised water through a pipeline to onshore hydroelectric turbines. The technology generates emissions-free renewable electricity.

Ottaviano expects industries such as oil and gas to initially provide the skill sets required for the expansion of wave power. Carnegie is preparing to recruit on the back of its potential projects.

"Obviously all of our people don't come out of the wave energy industry because it doesn't exist. We've had to cross-hire everyone. We go right from white-collar high-end PhD engineers and intellectual property specialists through to the blue-collar fitters and turners and electrical technicians and the like."

Workers from offshore oil and gas stations are ideal because their job description overlaps with the type of mooring, pipe and deployment and maintenance work that is required on wave projects.

Other workers are likely to be drawn from traditional power generation projects.

"We've got fossil-fuel and coal-fired power guys in here who just understand power and electricity generation," Ottaviano says.

In addition to jobs to service Australian power projects, there is potential for metal trades and other industries to manufacture the wave technology components for export. Areas such as western Europe, the US, Britain the French Atlantic coast, South America and parts of Asia are all prime potential locations for wave energy stations.

The WWF also suggests that some automotive sector employees will be valuable in the wave industry because of their experience in mass-production manufacturing.

Ottaviano expects Western Australia, Tasmania, Victoria and South Australia to be the prime areas for projects because of their exposure to southwest seas that are ideal for generating power.

Regional areas stand to be the biggest winners on the jobs front, with towns such as Geraldton and Albany in WA, Port MacDonnell in South Australia, and Portland, Warnambool and Phillip Island in Victoria among the likely leaders. Towns on the southern and central coasts of NSW and western Tasmania also have considerable potential.

"These will be, by default, regional jobs because that's where you get good access to the ocean, where transmission lines touch the coast and where the resource is good as well," Ottaviano says.

He has high hopes for job creation as the nation switches to more sustainable energy sources. "This is certainly an opportunity to both help transform our power generation sector from being fossil-fuel dominant to being clean, but also to create jobs and regional jobs [as well as] to create export opportunities," he says.