









Annual General Meeting 7<sup>th</sup> November 2014

Dr Michael Ottaviano Chief Executive Officer





#### Disclaimer



The information contained herein has been prepared solely for informational purposes and is not an offer to buy or sell or a solicitation of any offer to buy or sell any security or to participate in any trading strategy or to enter into any transaction. If any offer of securities is made, it shall be made pursuant to a definitive offering memorandum prepared by or on behalf of any fund or other issuer which would contain material information not contained herein and which would supersede this information in its entirety.

#### 2014 - Achievements to Date



- 1MW CETO 6 design unveiled (March)
- \$20m CETO 6 CEFC debt facility for CETO 6 (March)
- \$9.5m CETO 6 capital raise (April)
- \$11m CETO 6 grant (June)
- CETO 5 Perth Wave Energy Project
  - Offshore foundations installed
  - Pipeline installed
  - CETO unit components delivered and assembled
  - Onshore power and desalination plants constructed
  - Unit & pod deployment phase now commenced



### Carnegie Overview



- Owner and developer of "CETO" wave energy technology
- 40 engineering, commercial, administration staff
- ASX listed, based in Fremantle, Western Australia
- Subsidiaries in UK, Ireland and Chile
- 120 Patents or patents pending globally
- \$100m spent to date on CETO
- EDF (Electricite de France) is a CETO power licensee





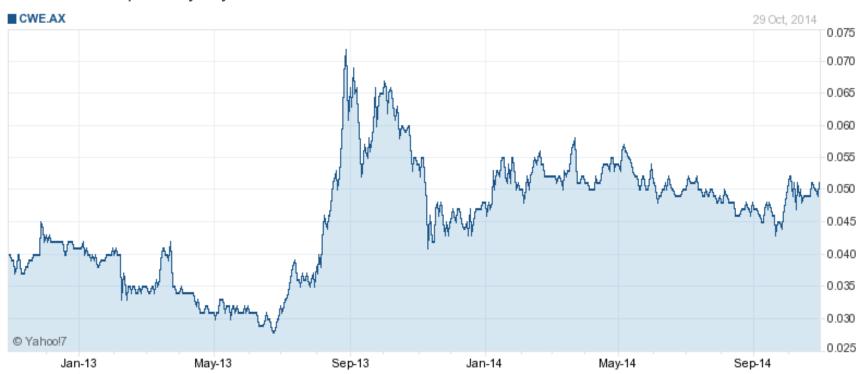
# Carnegie Trading Snapshot



Financials(30/9/14)

ASX

- o \$9.5m cash
- \$18m undrawn grants
- \$20m undrawn five year loan facility
- \$1m p.a. royalty



# Carnegie Board of Directors



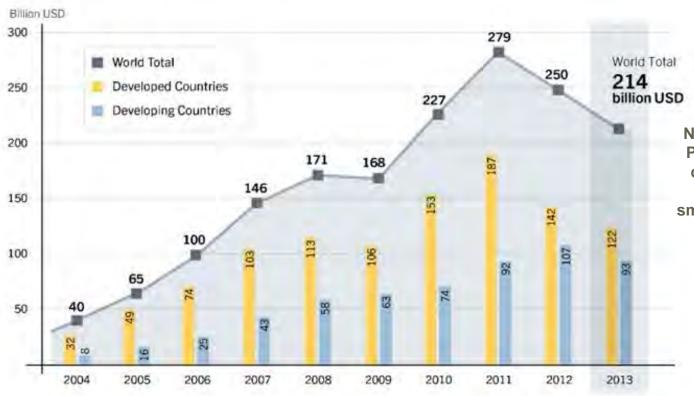


L-R: Kieran O'Brien (ex ESB), Mike Fitzpatrick (ex Hastings), John Leggate (ex BP), Jeffrey Harding (ex Pacific Hydro), Michael Ottaviano (MD & CEO), Grant Mooney (Chairman)

### Global Renewables Market Still High



# Global New Investment in Renewable Power and Fuels, Developed and Developing Countries, 2004–2013



Note: a record amount of PV capacity (39GW) was constructed in 2013 for less money than the smaller 2012 total of 31GW

Data Source: UNEP FS / BNEF Global Trends in Renewable Energy Investment 2014

REN21. 2014. Renewables 2014 Global Status Report (Paris: REN21 Secretariat).

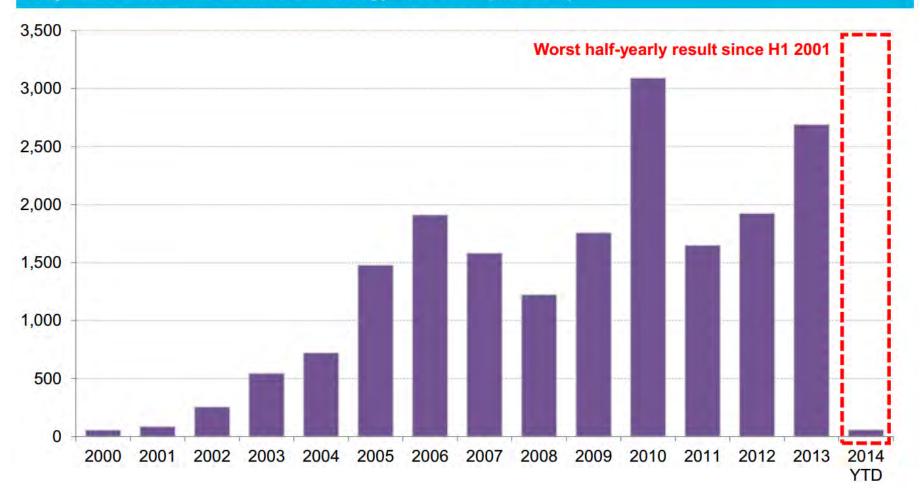


 International Energy Agency (IEA) forecast \$10 trillion of new energy generation investment over the next 20 years, 60% to come from renewables

### While Australia's Halts

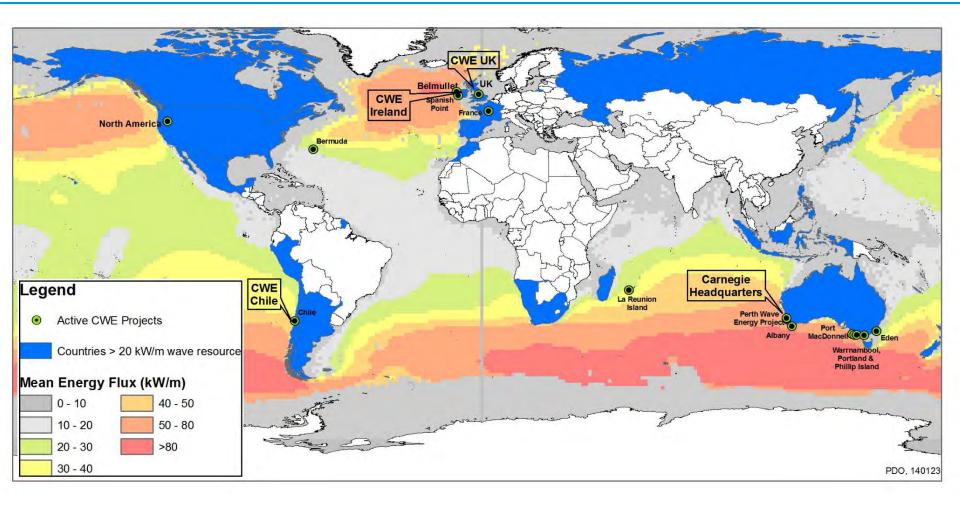


#### Large-scale investment in clean energy, 2000-14 (AUD bn)



### Global Wave Resource > Current Global Power Use





- Market is global, large and co-located with demand centres
- Resource is more predictable, consistent and available than wind or solar
- Total resource potential = >200TW (200 million MW)

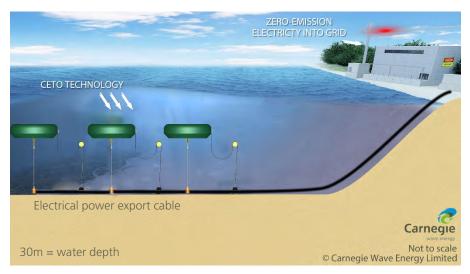
## **CETO Technology**



- Fully submerged, point absorber
- Near-shore location or deepwater location
- Onshore or offshore power generation
- Power & water production with onshore production
- Modular design largely using proven subsea components



Near-shore location & onshore power & water (CETO 5 configuration)



Deepwater location & offshore power production (CETO 6 configuration)

# **Development Pathway**



#### Completed



#### In Progress



#### Commercial Projects I



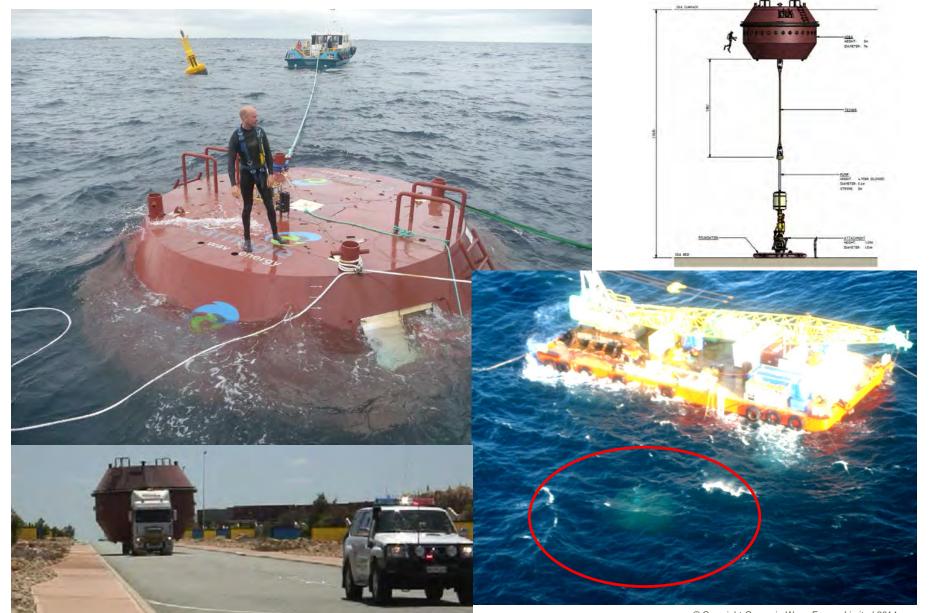
**Development capital** 

3<sup>rd</sup> party project funding/finance

Revenues

# Track Record of Ocean Testing – e.g. 80kW CETO 3

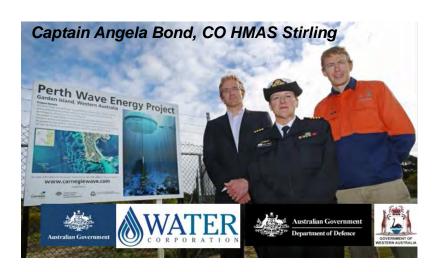




### Perth Wave Energy Project



- 3 x 240kW CETO 5 units
- 100NB, 3000psi flexible pipeline 3.2km ashore
- Onshore power plant and grid connection
- Onshore reverse osmosis desalination pilot plant
- Australian Industry Minister, Hon Ian Macfarlane
- \$22m in Government grant funding. \$18m in CWE funding.
- Power & Water Offtake to Australian Department of Defence (HMAS Stirling)
- Location: Onshore & 3km offshore from Garden Island, Western Australia





### Perth Wave Energy Project - desalination



- Integrates off-the-shelf reverse osmosis desalination technology with the CETO infrastructure.
- The Perth Project will be the first wave project to produce clean power and fresh water anywhere in the world.
- Cooperation agreement with Western Australian Government owned
  Water Corporation
- Water supply agreement with the Department of Defence
- Desalination plant capable of 50m3/day potable water production off
  CETO project or off grid

"Carnegie's wave powered seawater desalination technology offers a novel and promising approach to achieving desalinated freshwater with zero greenhouse gas emissions"

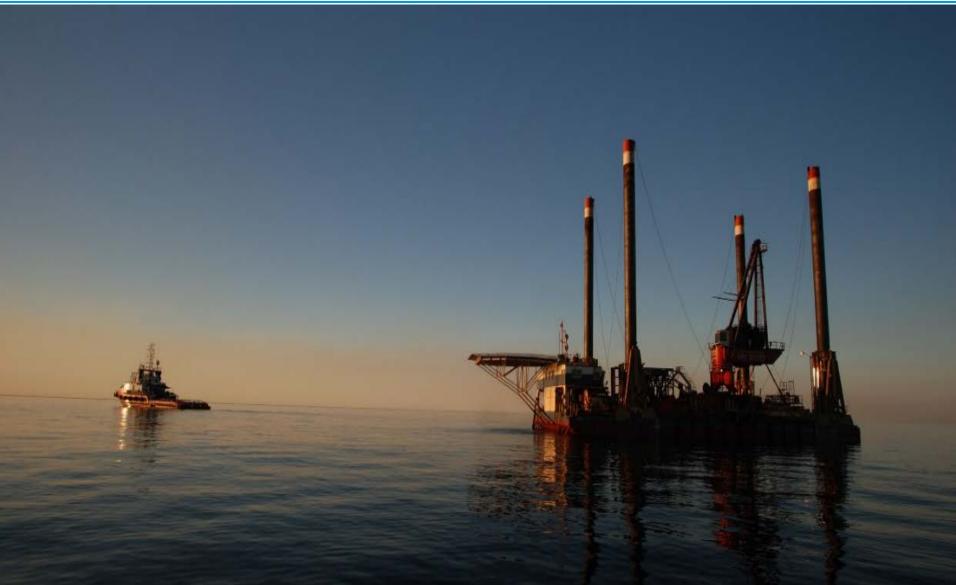
Sue Murphy, CEO, Water Corporation





# Perth Wave Energy Project – offshore foundations





# Perth Wave Energy Project – pipeline installation











# Perth Wave Energy Project – power, desalination, grid connection











# Perth Wave Energy Project – pumps, pods, tethers, attachments











# Perth Wave Energy Project – buoyant actuators





# Perth Wave Energy Project – onshore assembly & test













# Perth Wave Energy Project – offshore POD #1 installation











# Perth Wave Energy Project – CETO Unit #1

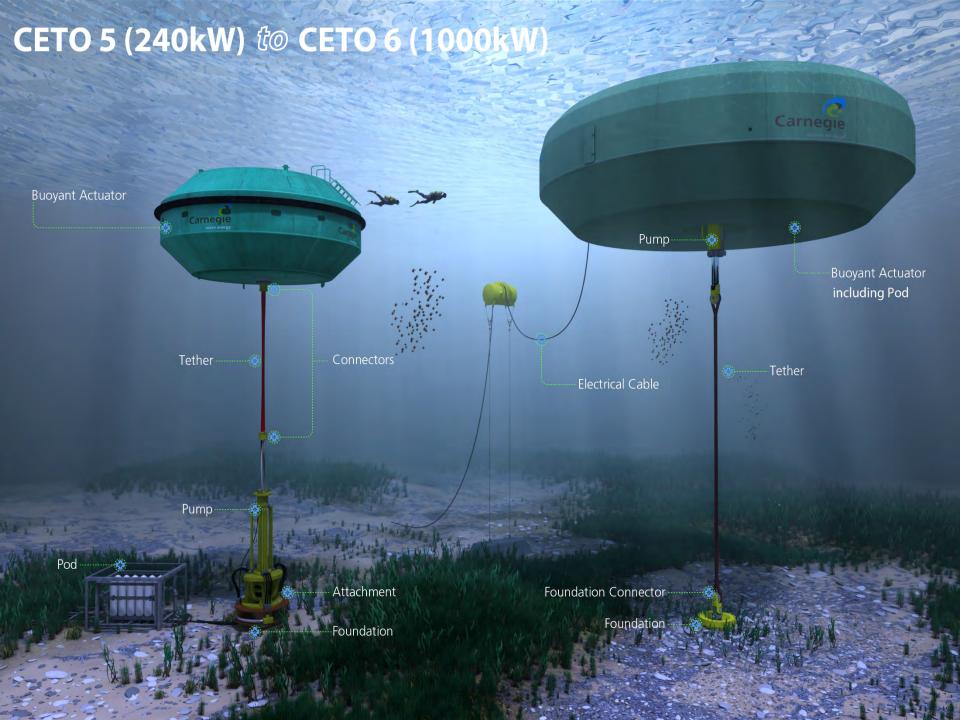




# Perth Wave Energy Project – CETO Unit #1 tow test



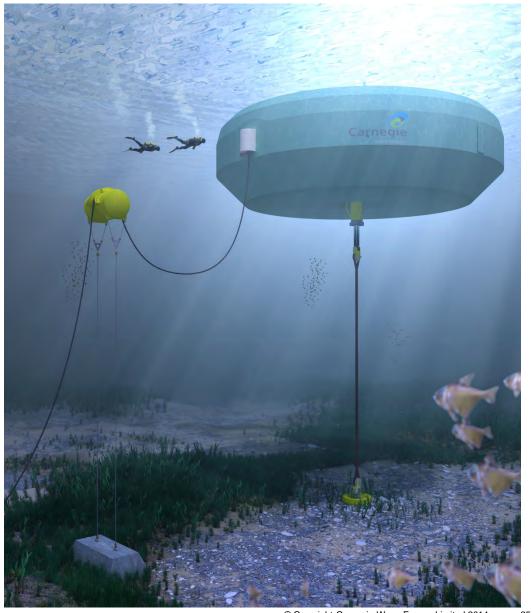




### CETO 6 – Next Generation Design



- 1MW capacity target
- 4 x increase in rated capacity vs
  CETO 5 => ~50% increase in
  diameter
- On board power generation
  - Removes heavy lifts (pods on seafloor)
  - Further simplifies install and O&M
  - Enhances ability to tune/control system
  - Allows deeper water and further distance from shore
  - Replaces hydraulic transmission
    (piping) with electrical transmission
    (cable)
- First commercial production design

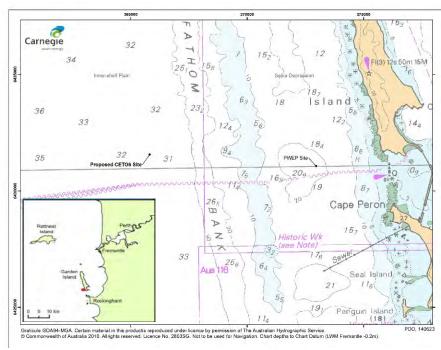


# CETO 6 Demonstration Project



- 3MW CETO 6 project: 3 x 1MW CETO 6 units
- Design start: 2013. Project commissioning: 2016
- Location: Garden Island, Western Australia. Further offshore (deeper water, higher energy waves) than CETO 5 Perth Project
- Offtaker: Australian Department of Defence (HMAS Stirling)
- ca. \$46m total budget
- Funded by CWE, CEFC loan & Government grant.



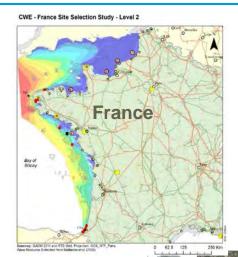


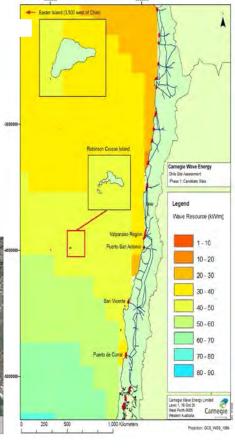
# Commercial Priority Markets - Snapshot

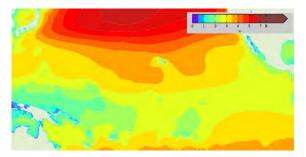




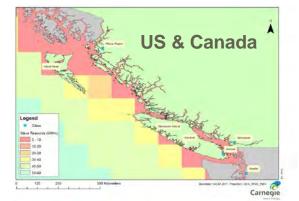


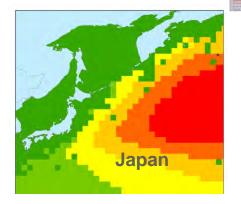


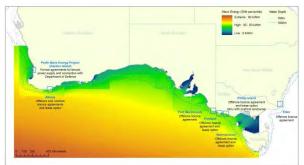




**Remote Islands** 







#### Milestones





#### 2011-13:

- ✓ Single unit test (CETO 3) at project site.
- Power offtake with Dept of Defence
- \$22m in Government grants secured
- ✓ Design & approvals of Perth Project

#### 2014:

- Start construction of Perth Project
- CETO 6 project design and location
- √ \$40m in CETO 6 project funding secured
- Power and water production from Perth project

#### 2016:

CETO 6 project (Garden Island, WA)

#### • 2017:

CETO 6 project (Wave Hub, UK)