

Clean Energy Australia 2009

Copenhagen December 13 2009

Clean Energy Council

The future is now



Clean Energy Council



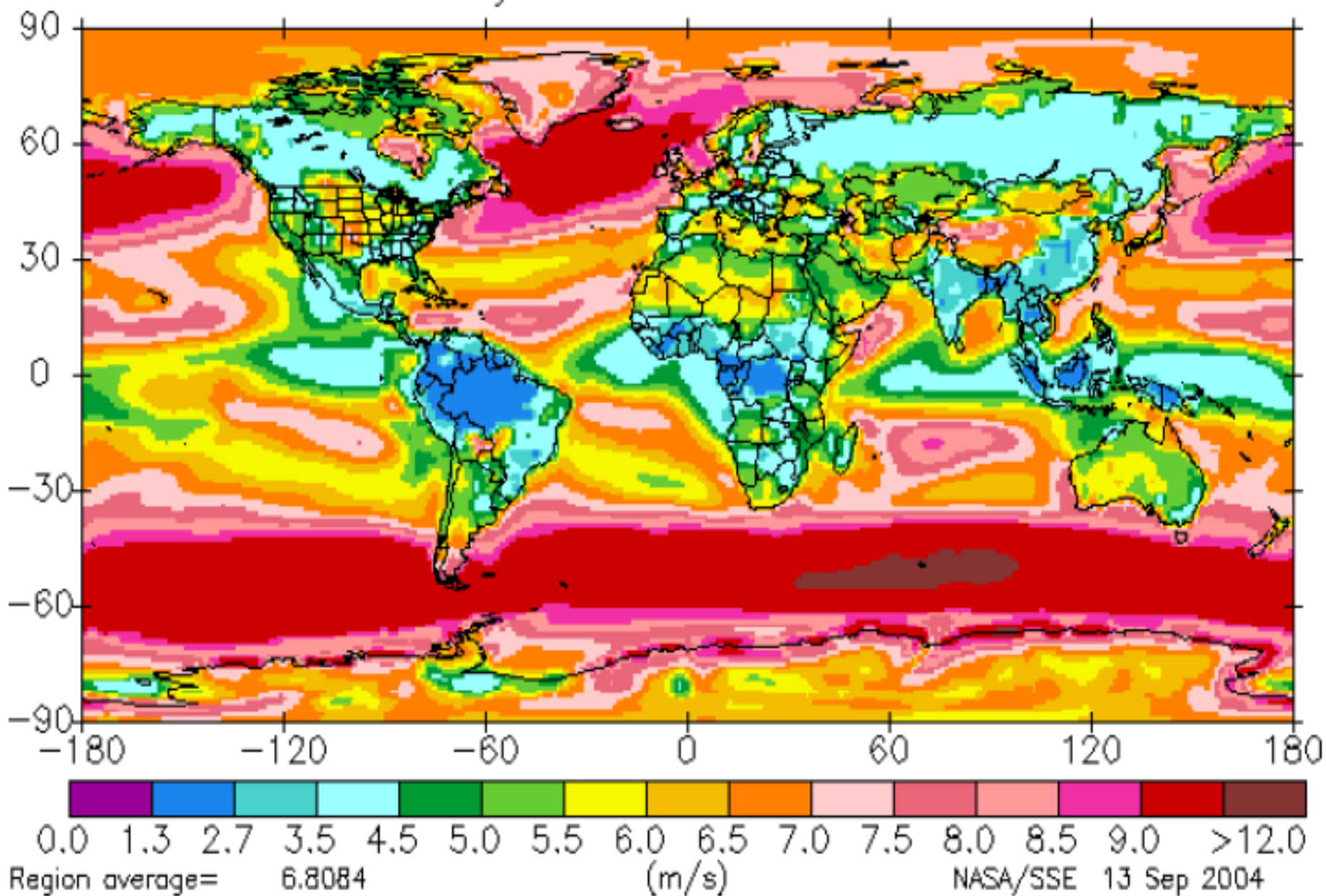


THE HYDRO-ELECTRIC
COMMISSION

CAUTION



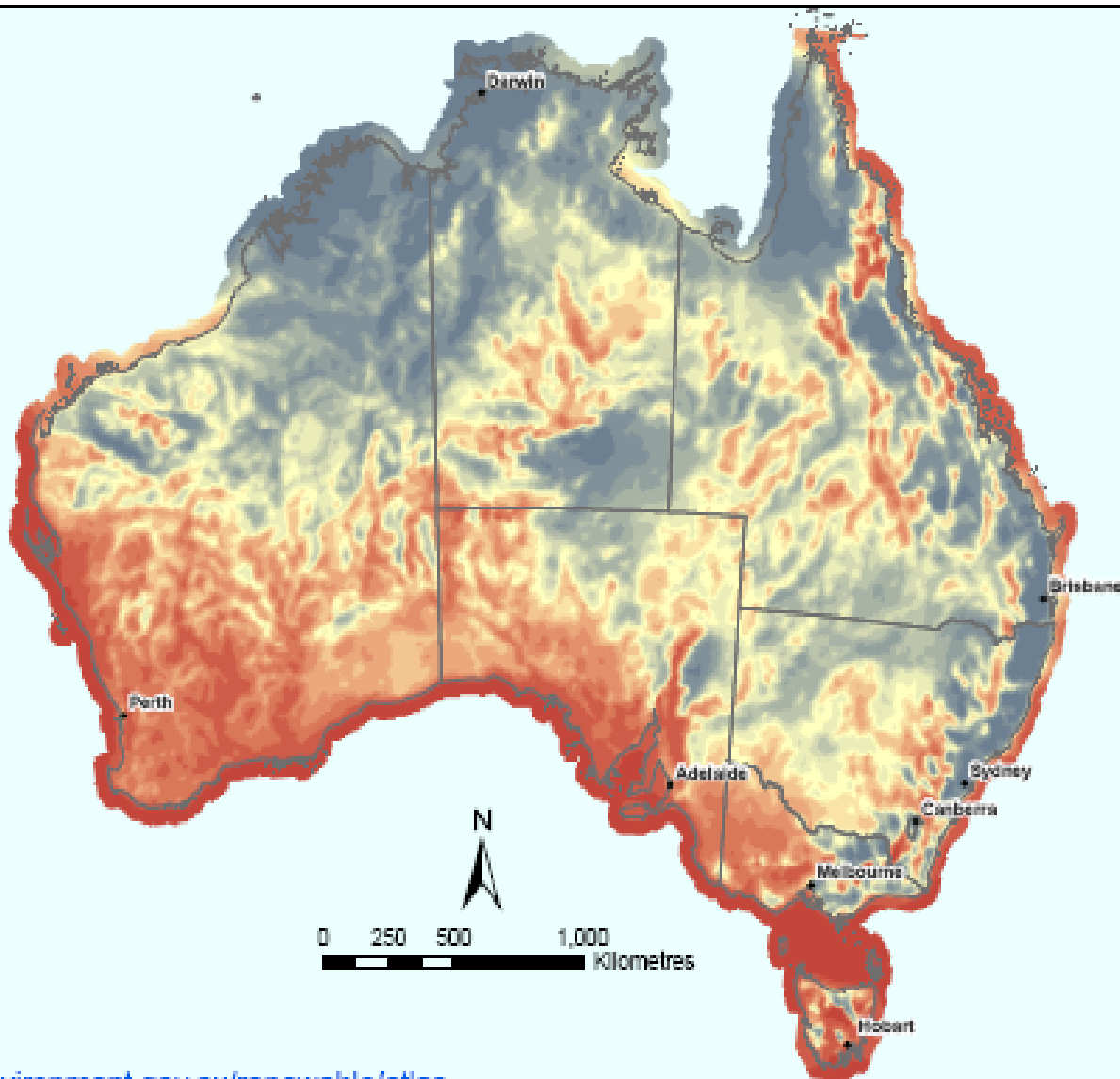
Annual 50m Wind Speed July 1983 – June 1993



RENEWABLE ENERGY ATLAS OF AUSTRALIA: Mean Wind Speed at 80m above ground level



Australian Government
Department of the Environment,
Water, Heritage and the Arts



Metres per Second



Data Sources:
Capital Cities
© Commonwealth of Australia (Department of the Environment, Water, Heritage and the Arts) 2008
State Borders
© Commonwealth of Australia (Geoscience Australia) 2008
Wind Speed
© Windlab Systems Pty Ltd 2007

caveat:
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Map produced by:
Environmental Resources Information Network (ERIN), Department of the Environment, Water, Heritage and the Arts, October 2008.

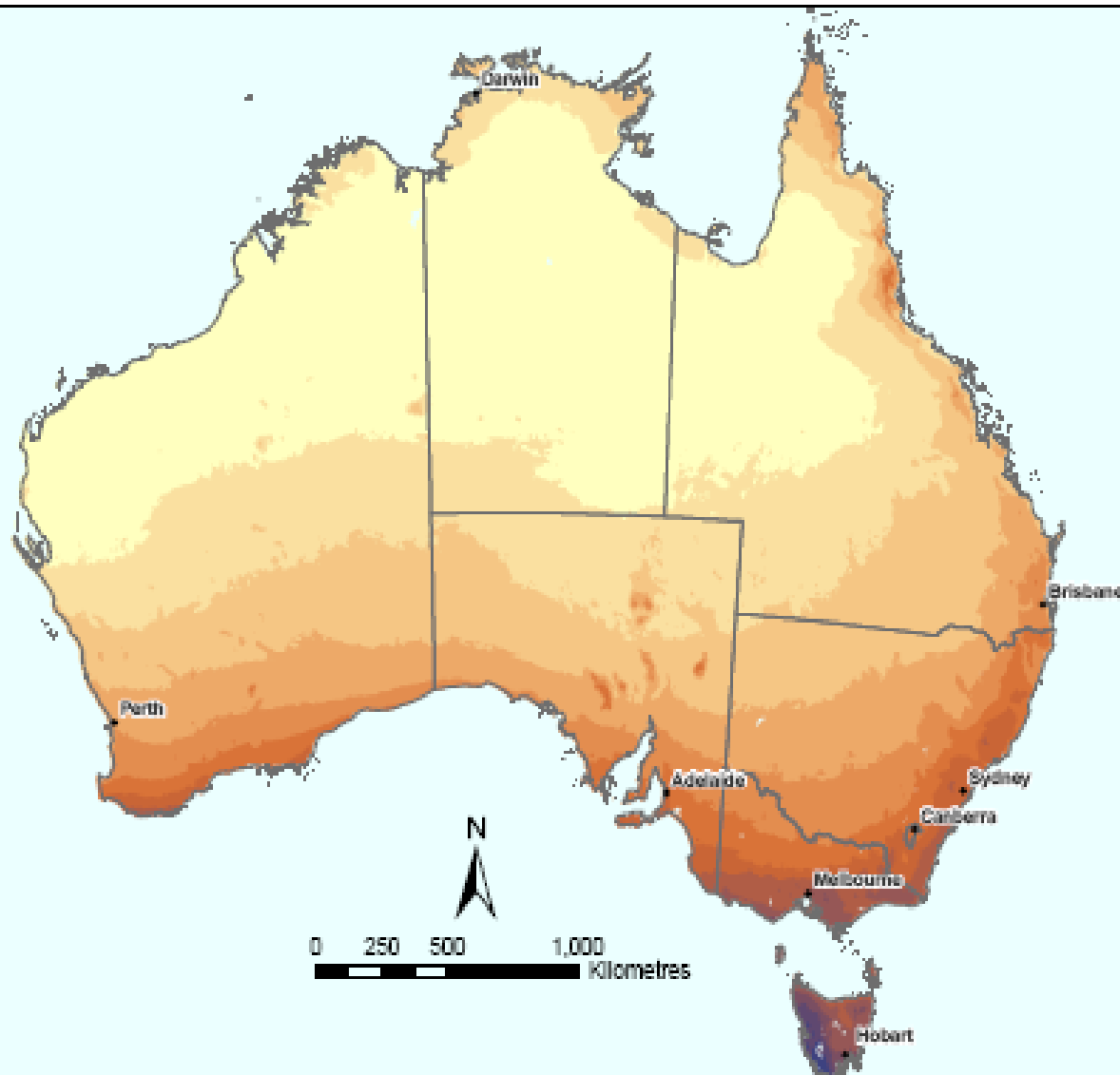
Albers Equal-Area Projection (20000)

RENEWABLE ENERGY ATLAS OF AUSTRALIA: Daily Solar Exposure - Annual Average



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Department of the Environment,
Water, Heritage and the Arts



MegaJoules/m²



Data Sources:
 Capital Cities
 © Commonwealth of Australia (Department of the Environment, Water, Heritage and the Arts) 2008
 State Borders
 © Commonwealth of Australia (Geoscience Australia) 2008
 Solar Exposure
 © Japan Meteorological Agency (JMA) and Commonwealth of Australia, Bureau of Meteorology 2008

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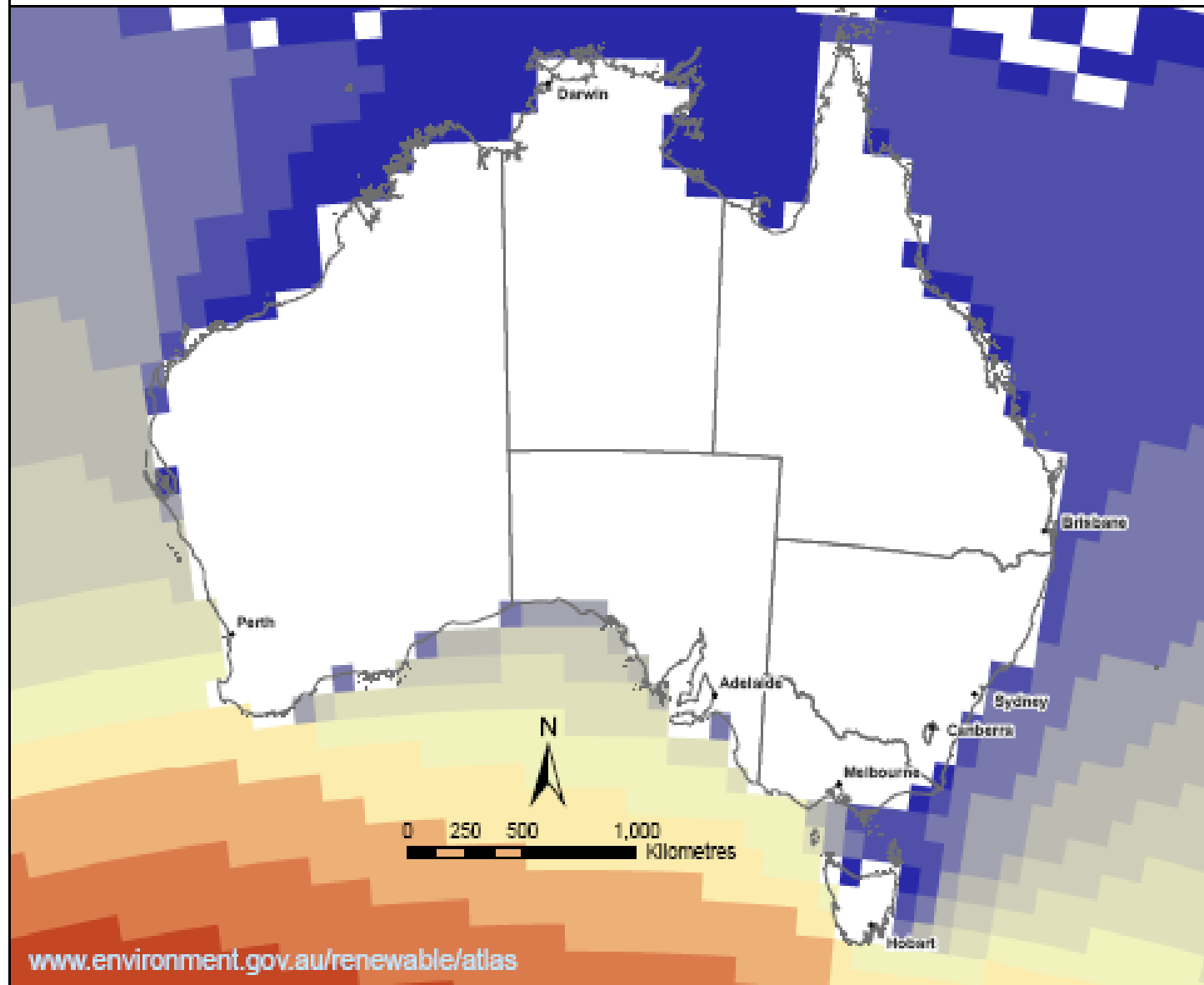
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Albers Equal-Area Projection (2000)

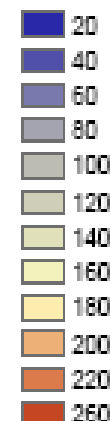
RENEWABLE ENERGY ATLAS OF AUSTRALIA: Highest Wave Power



Australian Government
Department of the Environment,
Water, Heritage and the Arts



Kilowatts/m²



Data Sources:
Capital Cities
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State Borders
© Commonwealth of Australia (Geoscience Australia) 2008
Wave Power
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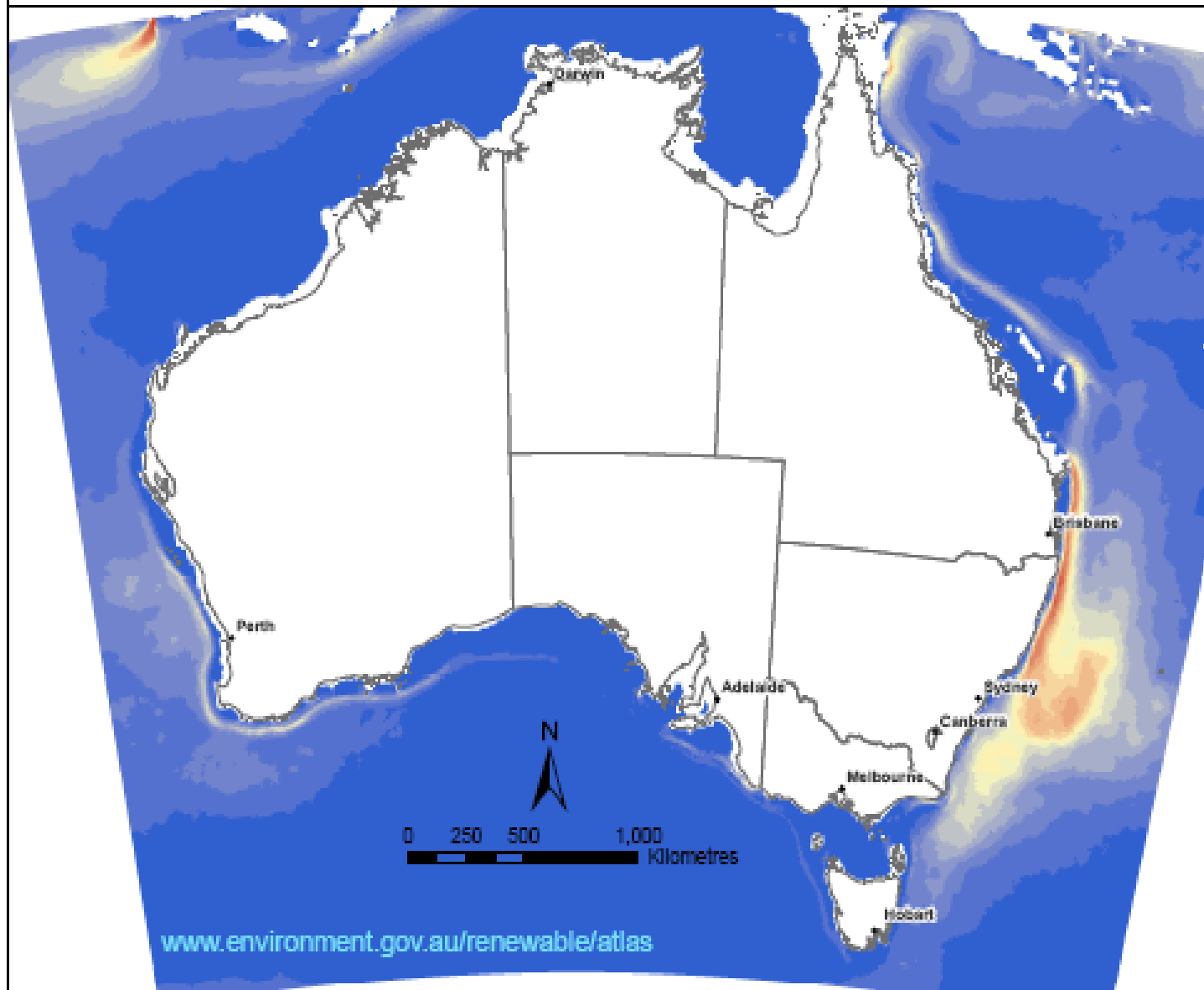
Map: Equal-Area Projection (GECA)

RENEWABLE ENERGY ATLAS OF AUSTRALIA: Highest Near Surface Current Power

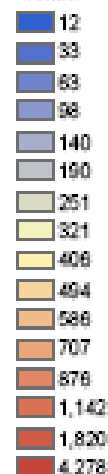


Australian Government

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Watts/m²



Data Sources:

Capital Cities

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State Borders

© Commonwealth of Australia (Geoscience Australia) 2008

Current

© CSIRO Marine and Atmospheric Research 2008

Caution:

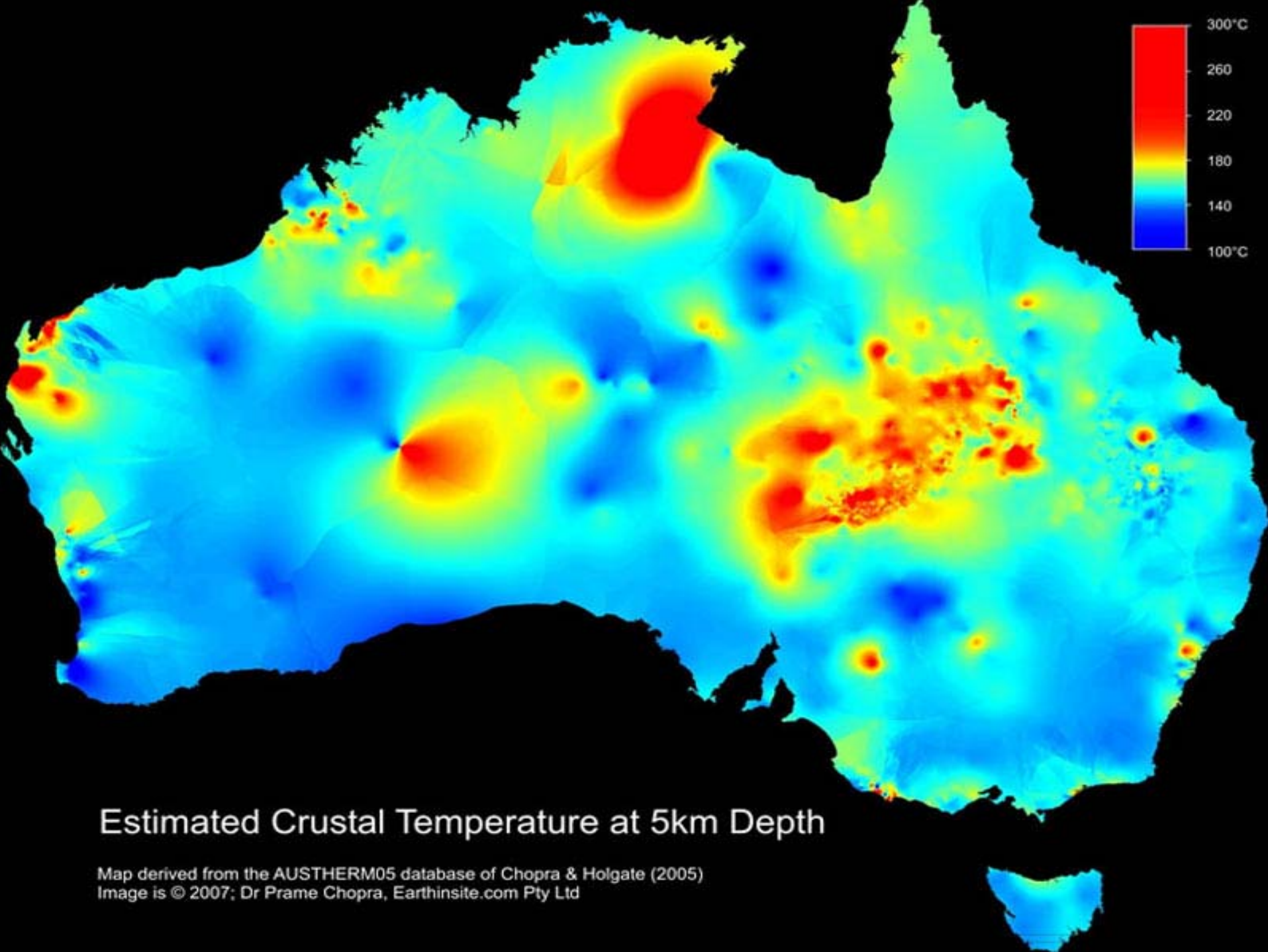
All data are presented to be correct as received from data providers. No responsibility is taken by the Commonwealth for errors or omissions. The Commonwealth does not accept responsibility in respect to any information or advice given in relation to, or as a consequence of anything contained herein.

Map produced by:

Environmental Resources Information Network (ERIN), Department of the Environment, Water, Heritage and the Arts, October 2008.

Albers Equal-Area Projection (GDA98)

www.environment.gov.au/renewable/atlas



Estimated Crustal Temperature at 5km Depth

Map derived from the AUSTHERM05 database of Chopra & Holgate (2005)
Image is © 2007; Dr Prame Chopra, Earthinsite.com Pty Ltd



Clean energy policy in Australia

- Mandatory 20 per cent renewable energy target by 2020 (currently 8 per cent)
- \$1.5 billion solar flagships – large scale solar
- Grants for clean tech and state based assistance





Further policy reforms

- Emissions trading scheme
- Tax reform to stimulate investment in clean tech sector
- Current debate to refine operation of the Renewable Energy Target – how to drive multiple technologies at the same time





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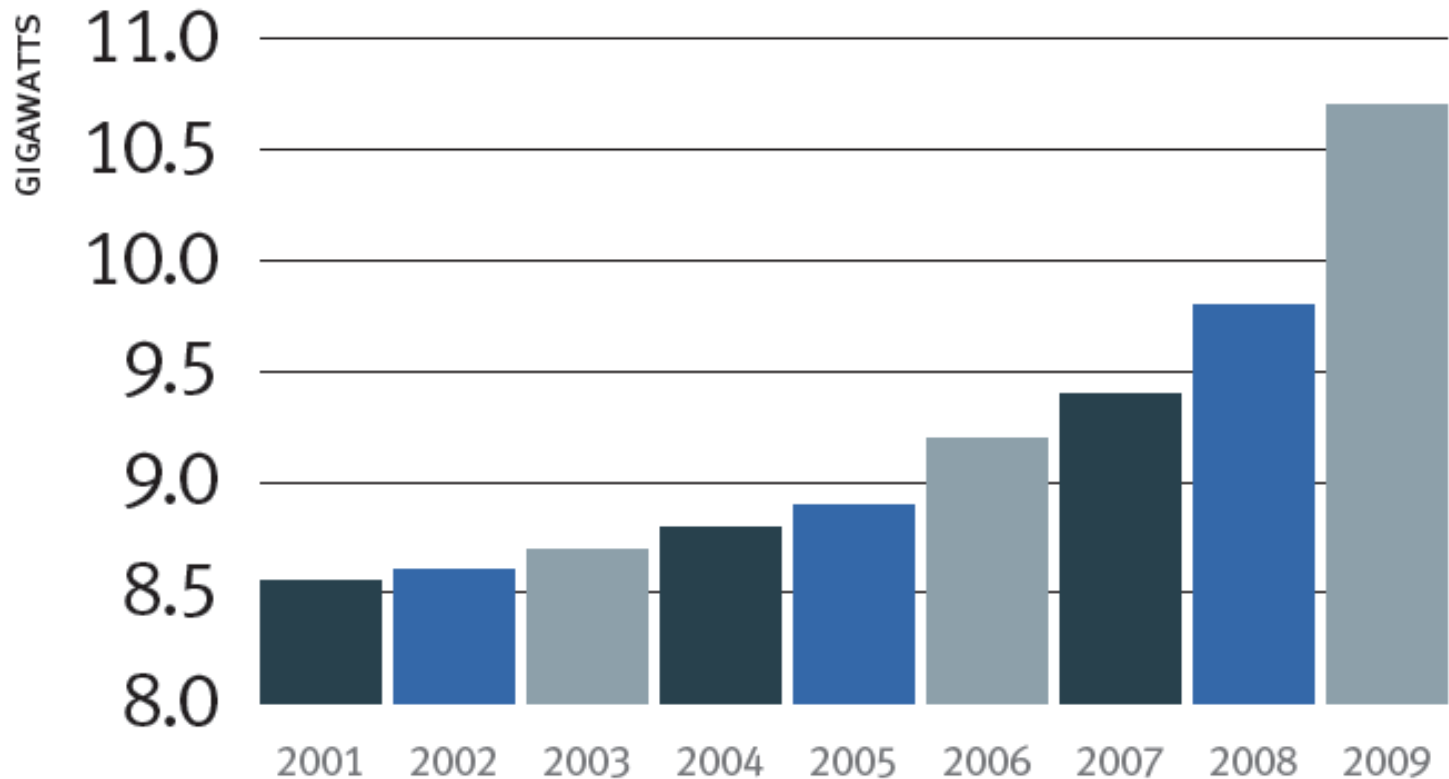
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Clean energy investment is growing

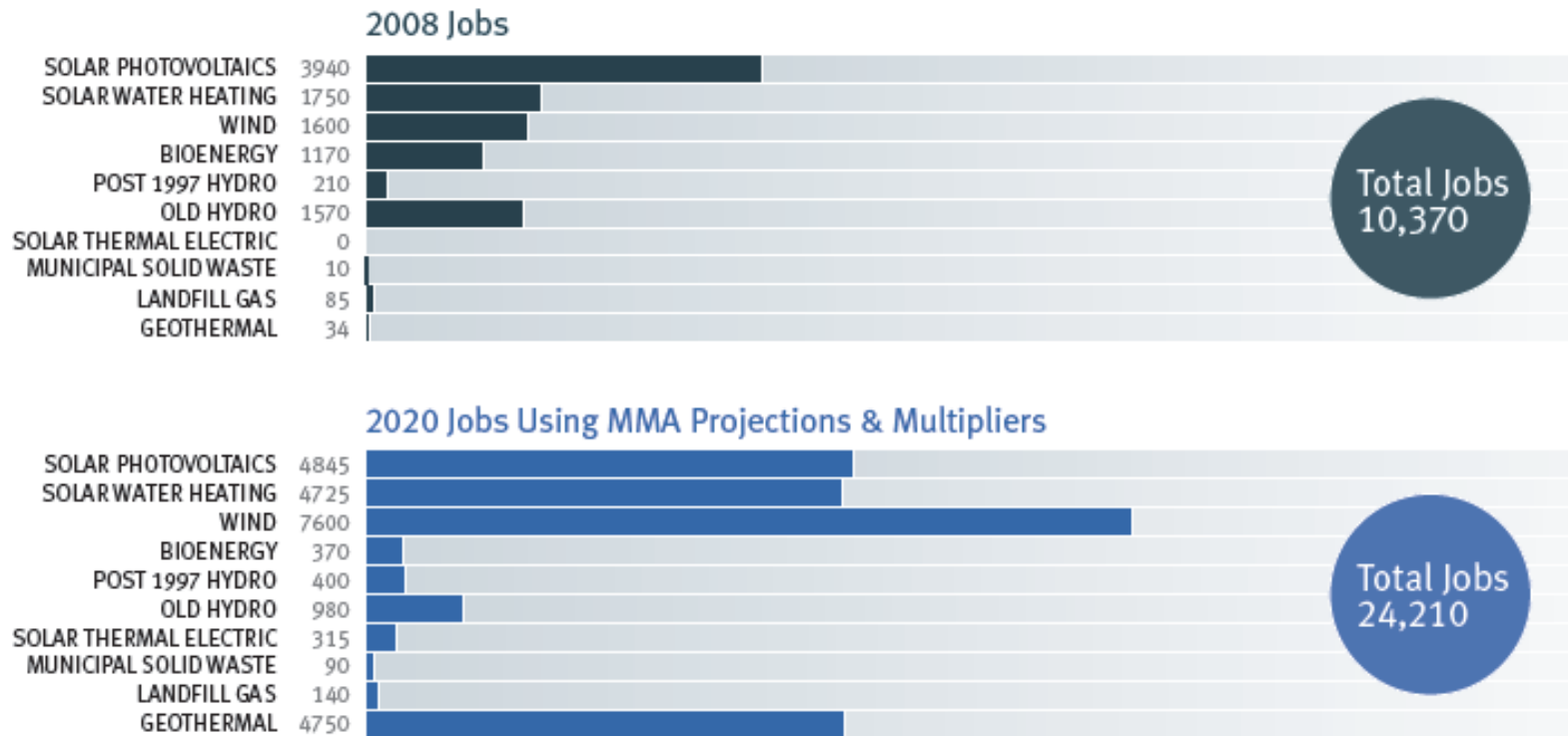
Figure 2. Cumulative installed renewable energy capacity in Australia (2001–2009)





More clean energy jobs

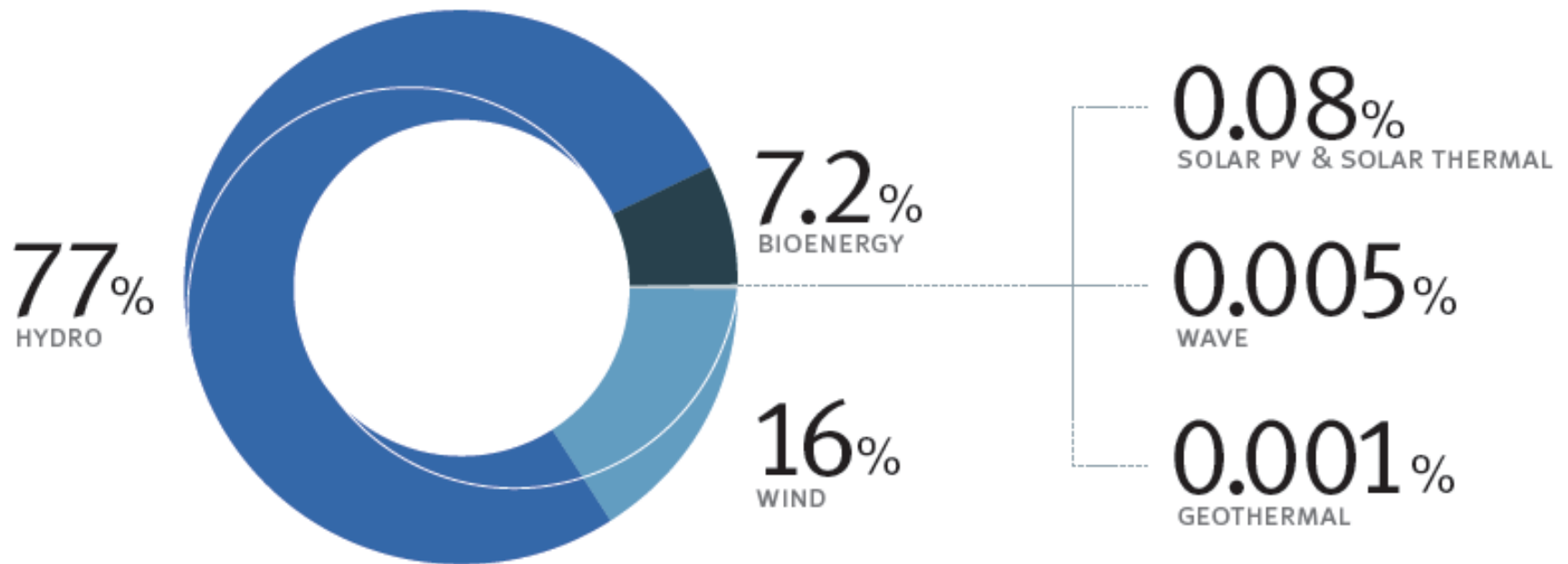
Figure 1. Renewable energy industry employment





Clean energy capacity by technology

Figure 5. Renewable energy installed capacity by percentage





Clean energy investment 2008

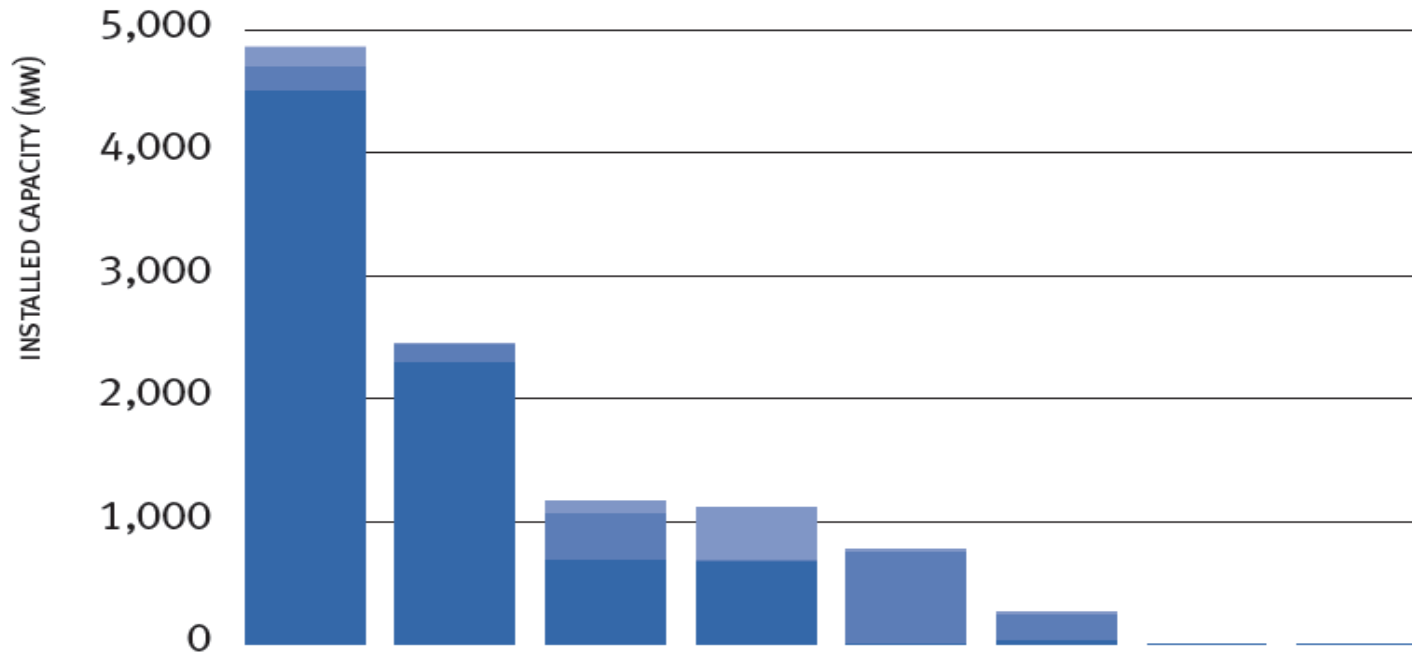
RENEWABLE TECHNOLOGY	\$M/MW	CAPACITY INSTALLED IN 2008 (MW)	CAPITAL COST OF PLANT COMMISSIONED IN 2008 (\$M)
Hydro	3.01	7	\$21
Solar Thermal	4.16	0	\$0
Solar PV- small	9.5	22	\$209
Solar PV - large	7.5	0.28	\$2
Wind	2.23	482	\$1,075
Bioenergy	2.65	14	\$37
Geothermal	2.9	0	\$0
Wave	5	0	\$0
Tidal	3.5	0	\$0
			Sub Total \$1,344
	\$M/UNIT	UNITS INSTALLED	
SWH	0.005	83,000	\$415
Total			\$1,759





Clean energy capacity by state

Figure 7. Installed capacity of renewable energy projects by state



FUEL SOURCE	NSW	TAS	VIC	QLD	SA	WA	ACT	NT
Wave	0.5	0	0	0	0	0	0	0
Geothermal	0	0	0	0.1	0	0	0	0
Solar Thermal	4	0	0	0	0	0	0	0
Solar PV	2	0	1	0	2	0	0	1
Bioenergy	162	4	103	426	29	36	4	1
Wind	187	143	384	12	740	201	0	0
Hydro	4505	2295	683	669	3	30	1	0
Total	4860.5	2442	1171	1107.1	774	267	5	2





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