Australia: Unlimited Opportunities in Clean Energy

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April 2013

Originally published in Top Capital www.topcapital.com.cn. Republished with permission

Entrepreneurs and corporate decision makers are acutely aware of the value of natural resources for business, particularly if those resources are limited. They recognise the need to maintain sustainable development and to minimise the impact of growth on our most finite and valuable resource – the environment. Strengthening our commitment to a lower carbon future and building capacity for business and domestic energy use through to the next generation should be considerations as we go about investing and delivering profits.

Clean energy technologies offer one of the main pathways to a sustainable future in a carbon constrained world and Australia offers substantial opportunities to Chinese firms for productive investment in the sector.

Investment is needed to help fill gaps in Australia's clean energy supply chains, introduce new technologies and devise innovative financing mechanisms for Australian clean energy projects.

According to one of the most comprehensive surveys undertaken of the clean tech sector in Australia, ***Clean Tech Review 2013*** by Australian Clean Tech (a survey of over 1300 companies) combined revenue for the sector was nearly $29 billion and employing over 53,000 people. Companies were involved in capital transactions totalling $1.3 billion during the 2012 calendar year in 126 separate deals. The average capital transaction was $10.4 million.

Additionally, according to Clean Tech Review, the sector is set for some significant growth trends in 2013-2014 and the outlook is positive.

- Industry is increasingly demanding clean tech solutions that improve efficiency of operation and have immediate bottom line benefits. *Energy Efficiency* has been the initial focus however during 2013 industry will increasingly adopt a focus on *Resource Efficiency* with the inclusion of solutions for energy, water, waste or materials.
- With more certainty around the Renewable Energy Target (RET), the demand for Large Scale Generation Certificates (LGCs) combined with turbine prices decreasing and more mature investors entering the sector, 2013 is likely to see a significant increase in Wind Farm development and construction activity in Australia.
- Solar pricing is now reaching a level where it is competitive with off-grid and onsite usage without a feed-in tariff. 2013 will see a number of commercial scale solar projects commence construction and start to deliver power late in 2013 or early 2014.
- In March this year the milestone of over one million rooftop solar units installed was passed on homes and businesses in Australia, providing insight into the acceptance

and take up of renewable energy by Australian consumers. Around 2.5 million Australians live in homes with solar panels in the roof generating energy for their own home or business and for the grid.

Australia Supports a Clean Energy Future

The Australian Government is implementing a comprehensive strategy for a clean energy future–the Clean Energy Future plan. This aims to cut pollution and encourage investment in new clean energy sources such as solar and wind. This transformation offers significant opportunities for international investors.

The Government's plan includes the introduction of a carbon price, promoting innovation and investment in renewable energy, encouraging energy efficiency and creating opportunities to cut pollution.

Australia's existing Renewable Energy Target, combined with other elements of the plan, including the carbon price, is forecast to deliver about A$20 billion of investment in renewable energy by 2020 in today's dollars.

Foreign investment in Australia's clean – or renewable – energy sector will also provide major export opportunities for Australian-based businesses in coming decades. International investment in Australian clean energy projects – such as wind, solar, biofuels– and energy efficiency also means the creation of new and highly-skilled jobs in Australia.

The Clean Energy Future plan will assist business to grasp these market opportunities, while reducing costs. The plan includes:

- Deployment of renewable energy technologies under the Renewable Energy Target scheme, which is designed to deliver a 20 per cent share of renewables in Australia's electricity mix by 2020.

- Development and commercialisation of renewable energy technologies through the A$3.2 billion Australian Renewable Energy Agency (ARENA).

ARENA has the objectives of improving the competitiveness of renewable energy technologies and increasing the supply of renewable energy in Australia. It also provides grants through specific programs such as the strategic initiative *Regional Australia's Renewables* which aims to demonstrate the viability of renewable energy in regional and remote locations. It will support the deployment of commercially prospective renewable energy technologies, both generation and enabling, in off-grid and edge-of-grid situations.

Deployment of renewable energy, energy efficiency and low pollution energy technologies and solutions is supported through the establishment of the A$10 billion Clean Energy Finance Corporation (CEFC), which will commence investing funds from 1 July 2013. The Australian Government announced that it will establish a $10 billion commercially oriented Clean Energy Finance Corporation (CEFC) as part of its Clean Energy Future Package.

The objective of the CEFC is to overcome capital market barriers that hinder the financing, commercialisation and deployment of renewable energy, energy efficiency and low emissions technologies.

The CEFC will invest in firms and projects utilising these technologies as well as manufacturing businesses that focus on producing the inputs required.

Australia introduced a carbon price on 1 July 2012, making large emitters of carbon financially liable for their carbon emissions. The carbon price is fixed for the first three years before transitioning to an emissions trading scheme.

In the first six months of the carbon price, emissions from electricity generated in the National Electricity Market declined by 8.6 per cent compared to the same six-month period in 2011.The volume of energy from renewable sources increased by almost 30 per cent, and the volume from coal-fired generation declined by nearly 10 per cent.

The Australian Government has also recently released its *Australia in the Asian Century* White Paper, which provides a roadmap for Australia's deeper and broader engagement with Asia and in particular China.

One of the national objectives for 2025 listed in the Asian Century White Paper is 'environmental sustainability'. The pathway that has been mapped out to achieve this objective includes:

- Implementing the Clean Energy Future policies, alongside international action, to reduce Australia's emissions intensity and absolute greenhouse gas emissions.
- Maintaining a commitment to ensuring that 20 per cent of Australia's electricity is generated by renewable energy sources by 2020.
- Continuing to support Australia being a world leader in the research and development of solar energy technologies, and becoming a world leader in the commercialisation and deployment of renewable energy technologies and energy efficiency.

Innovation Precincts Will Drive Growth

In February 2013, the Australian Government released its A$1 billion Industry and Innovation Policy Statement – which focuses on creating and supporting high-skill jobs in Australia and building a dynamic and diverse Australian economy. It recognises that skills, innovation and entrepreneurship are the drivers which will ensure Australia remains a world-competitive investment location.

International cooperation through business and R&D will play an important part in achieving the objectives.

The Industry and Innovation statement highlights the importance of developing Australia's clean energy sector. With the world moving towards a future of lower carbon pollution, new technologies, energy sources and business practices will be in demand. Australian companies have the opportunity to be at the forefront of meeting this demand.

Investment of more than A$500 million will assist in establishing up to 10 Industry Innovation Precincts to drive business innovation and growth in areas of Australian competitive advantage.

Precincts will bring firms, research institutions, technology experts and business service providers together to achieve the innovation, connections and scale Australian business need to succeed in the future. The first two Precincts will be a Manufacturing Precinct with locations in south east Melbourne and Adelaide and a Food Precinct headquartered in Melbourne.

The Precincts will also present opportunities for international firms, including from China, to partner with Australian companies to take technology to the large markets of Asia and beyond.

Solar

Australia boasts significant solar energy resources in areas with access to the electricity grid. Annual solar radiation in areas of flat topography within 25 km of existing transmission lines, is nearly 500 times greater than the annual energy consumption of Australia.

The Australian Bureau of Resources and Energy Economics projects that solar energy consumption will increase from 14 PJ in 2012-13 to 236 PJ in 2049-50. This equates to a projected annual average growth of 7.8 per cent.

Australia also has demonstrated world-class expertise in the research and development of new technologies and integrated system design and has made significant contributions to innovations in solar photovoltaic cell design and solar thermal technologies.

In this light, international scientific collaboration and foreign investment are an important part of continuing this process of technological innovation in solar power.

Case Study

Trina Solar & ANU

In 2011, for instance, researchers at the Australian National University and one of the world's biggest solar cell manufacturers, Trina Solar, joined together to improve the efficiency and lower the cost of making solar cells.

Supported partly by a A$3.3m grant from the Australian Solar Institute, the A$10.7 m project's aim of greater cell efficiency will be an important part of making solar energy more competitive as a source of power.

The joint project will also provide Australian industry and researchers with a useful position in the global energy supply chain and keep them in touch with trends in the global energy business and where future markets might develop.

Wind

Australia has some of the best wind resources in the world, primarily located in western, south-western, southern and south-eastern coastal regions but extending hundreds of kilometres inland and including highland areas in south-eastern Australia. There are large areas with average wind speeds suitable for high yield electricity generation. Australia's large land mass and low population density provides an abundance of potential wind farm locations.

In April 2013, Australia's largest wind farm, Macarthur Wind Farm located in Victoria was commissioned. The project has installed 140 turbines producing 420 megawatts of electricity.

Case Study

Hydro Tasmania & Shenhua

Developing the opportunities for wind power in Australia is one reason why Hydro Tasmania and major Chinese clean energy firm, Shenhua, signed a strategic cooperation agreement in Beijing in April 2013.

Together, the two firms plan to invest A$1.6 billion to develop about 700 MW of wind power in Australia by 2020. They will build on an already fruitful partnership in wind power development in Australia and China over the past few years.

Case Study

Xinjiang Goldwind Science and Technology Co Ltd

One of the world's leading makers of wind turbines, Xinjiang Goldwind Science and Technology Co Ltd, has also entered the Australian clean energy market, bringing with it not only production expertise but a range of skills and knowledge about wind farming technology. In 2010, Goldwind invested $50m in the Morton Lane Wind Farm project in Victoria; construction began in 2010 and was completed in 2012. Goldwind also invested in the Gullen Range Wind Farm, near Goulburn in NSW, in 2010. When construction is completed in 2014, the farm is expected to supply electricity to 64,000 households.

Wind energy generation in Australia grew by an average of 28 per cent in the five years to 2010-11, making it Australia's second-biggest source of renewable energy after hydro. The installed capacity of wind generation in Australia exceeded 2500MW by 2012, with an additional 608 MW of committed wind generation planned for connection in 2012 and 2013. This capacity is composed of approximately 1,350 wind turbines in 60 operating wind farms

The State of South Australia has the highest wind-power generation capacity of any Australian state or territory, producing around half of the nation's wind energy. Wind provided around 26 per cent of the state's total electricity production in 2011–12. South Australia's wind-powered electricity generation, both as a proportion of total generation

and per person are now similar to those of Denmark, the world's leading wind power country.

Biofuels

There are also many opportunities to invest in biofuels in Australia. Australia's energy supply competitiveness and reliability, breadth of natural advantages, skilled and innovative workforce, and stable economy, enable the nation to make a significant contribution to a more sustainable future in transportation fuels.

Australian has established internationally competitive energy and agricultural industries with the expertise to assess and deliver new projects. Researchers and infrastructure support next-generation biofuels demonstration and scale-up projects. Strong Intellectual Property protection laws and regulated markets combined with the needs of large CO2 producers motivated to reduce and sequester greenhouse gas emissions means growing interest in pursuing biofuels opportunities.

Australia and China

Cooperation between Australia and China on global issues continues to be important to the bilateral relationship. This cooperation was taken to a new level during an historic visit to China by Prime Minister Julia Gillard, who led a senior political delegation in April 2013.

During that visit, Australia and China reached a strategic cooperation agreement to establish a new bilateral architecture to help guide the relationship.

The new Strategic Partnership puts in place an annual leaders meeting as well as senior ministerial dialogues on economics, trade and foreign affairs.

In March 2013, the Australia-China Ministerial Dialogue on Climate Change was held in Sydney, led by Minister Greg Combet, Australian Minister for Climate Change, Industry and Innovation, and H.E. Xie Zhenhua, Vice Chairman of China's National Development and Reform Commission.

As part of this annual dialogue, both the Minister and the Vice Chairman also participated in the Australia China Climate Change Forum at the University of New South Wales.

As the highest per-capita emitter in the developed world, Australia has a responsibility to reduce its emissions and to play a strong role in global efforts to tackle climate change, including through bilateral initiatives with key trading partners like China.

Cooperation with China will be a key focus for Australia as China implements its own trial Emissions Trading Scheme (ETS) over the next years.

For more information

Australian Clean Tech www.auscleantech.com.au

Australian Renewable Energy Agency www.arena.gov.au

Australian Trade Commission (Austrade) www.austrade.gov.au

Clean Energy Council www.cleanenergycouncil.org.au

Clean Energy Finance Corporation. www.cefcexpertreview.gov.au

Department of Climate Change and Energy Efficiency www.climatechange.gov.au

Department of Resources, Energy and Tourism www.ret.gov.au

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) www.csiro.au

The Solar Council www.solar.org.au