



Australian Government
Australian Trade Commission

Clean Energy & Green Building Technologies in China - a snapshot

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To cover today ...

- Current snapshot of the market
- Drivers behind changes in the energy sector
- Developments in Green Building technologies
- Where can Australia engage ?



A refresh of the China challenge...

- China needs **24m** new jobs every year. 10% growth has delivered **20m...**
- **Domestic market** starting to become important, not just exports
- Per capita incomes are rising, markets **sophisticating rapidly**
- Rural to Urban move is the **largest** migration in human history
- In 2007 China consumed **40%** of the world's cement production
- Population density in Guangdong is **466** people / sqkm. Chongqing **789** !

Source: EIU China 2008 / China by Numbers 2008



Energy Profile

- **2nd largest** energy consumer in the world, almost 15% of world consumption
- Over **90%** from traditional fossil fuels - Coal alone is 70%
- Environment issues are **real and front of mind**
 - Energy efficiency at 33% only, much higher than developed economies
- **Energy security** also an issue
 - Heavy reliance on oil imports 46% in 2007 and rising fast, plus LNG !
- Signatory of Kyoto protocol, but not bound by CO₂ targets
 - But international pressure building...
- Strong **commitment** to address this from all levels of Government **AND** *society*

Traditional sources

- Power sector dominated by large SOEs
 - 90% of the installed capacity, of which 5 largest companies have 50%
 - Followed by 4 smaller national groups and 43 at the local level
 - only 6.2% of capacity by private or foreign investors
 - **Most of them have an active RE agenda!**
- Moves towards 'cleaner' fuels, especially LNG and Nuclear in the South & East

What's the Structure ?

Two broad areas...

SUPPLY SIDE

- Fossil fuels: coal, petrol
- Cleaner energy: LNG, Nuclear, (clean coal)
- Renewable Energy: Hydro, Wind, Solar, Biomass

Key agencies

National Development & Reform Commission
Energy Bureau of NDRC
Ministry of Science & Technology

Key measures & legislation

China Renewable Energy Law

Other supportive acts
Energy Development 11th 5 Year Plan
Renewable Energy 11th 5 Year Plan
Renewable Energy Medium to Long Term Plan

Key Players:

Power generators: 90% SOEs
Power equipment manufacturers

DEMAND SIDE

- Energy saving systems
- Green building technologies
- Energy conservation campaigns

Key agencies

National Development & Reform Commission
Ministry of Housing and Urban Rural Development
Ministry of Industry and Information

Key measures & legislation

Energy Saving Law

Local Energy Saving Application Schemes
10 Key Energy Saving Projects 2005-2010
Building Energy Saving No. 11th 5 Year Plan
Local Building Energy Saving Acts
Design Standards for Building Energy Saving

Key Players:

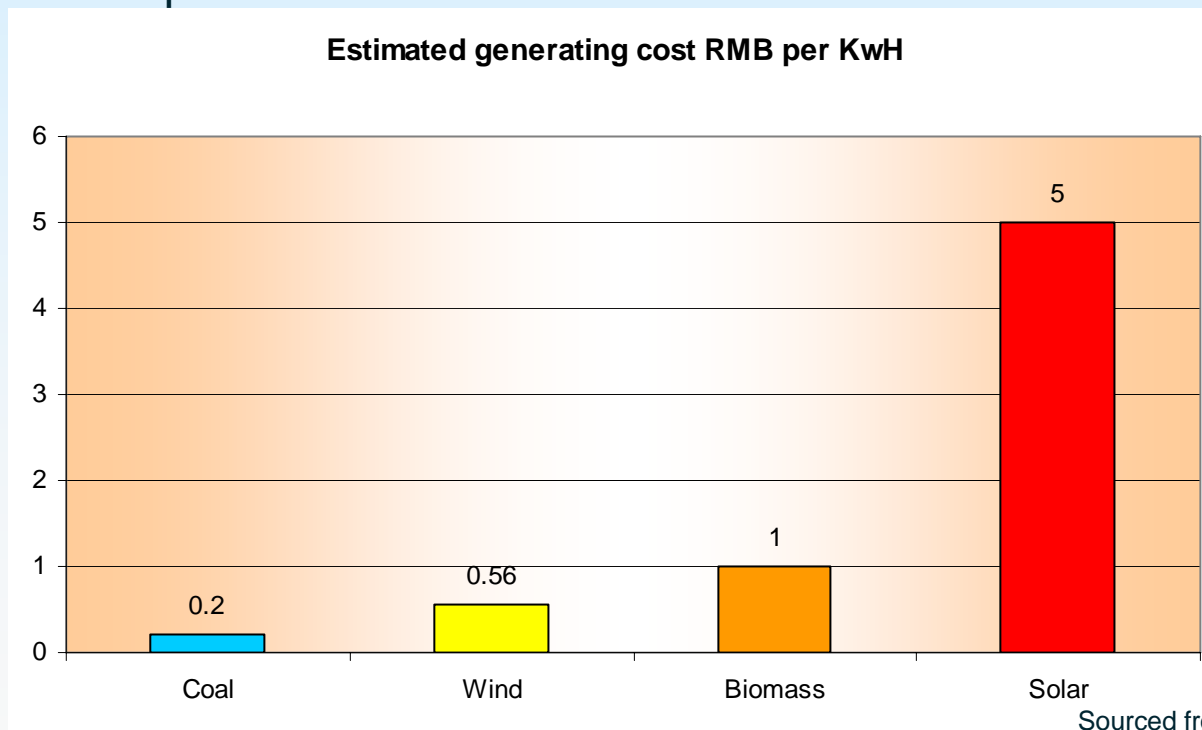
All industries
All building developers

Supply Side - Renewable Energy

- **11th 5 Year Plan**
 - By 2010, RE including hydro to account for **10%** of the nation's total energy consumption, and **15%** by 2020.
 - Estimated to require A\$350 bn investment to achieve
- **Renewable Energy Law** came into effect 1 Jan 2006
 - means RE became a compulsory policy for all levels of government
 - set quantitative RE targets up to 2020, some already exceeded
 - Has led to several other related promulgations to support RE development
- *A compulsory 3% quota of installed RE (hydro excl.) being set against all large scale generators both at national level and provincial level.*

Renewable Energy: current issues

- Incentives not enough to overcome the high development cost of RE
- Market demand for RE yet to be established – suffers from swings and commitment
- Weak R&D development, technology and manufacturing means heavily dependant on importation



Sourced from Guangdong Govt agencies



Active International Co-operation (not exhaustive)

- Bilateral cooperation with **Europe, U.S, UK, Germany, Italy, Japan, Australia**
- China- **EU Energy Partnership** and Energy Cooperation
 - Major meeting every 2-3 years
- China- **Germany** cooperation program on RE Utilization and remote area development.
- **UN** cooperation on biofuels
- The recent China- **U.S Energy & EP** Cooperation Guidance
 - 34 items including RE, Energy Efficiency, supports the **commercialization** of U.S. RE & EE technology in the market of China.
- Covanta Energy Group established 2 JVs in China (Chongqing & Guangzhou)
- China Renewable Energy Scale-up Program (CRESP),
 - Partners are China Government, **World Bank and GEF** (Global Environment Facility)
- Participant in Asia-Pacific Partnership on Clean Development and Climate
- Fully utilization of CDM (Clean Development Mechanism under Kyoto Protocol): so far over 200 RE and EE projects being successfully registered.



Australia China Government Engagement

- Australia China Climate Change Partnership (MOU 2004)
 - Promoting co-operation in climate change science, policy and technology
 - Projects include recovery and use of coal mine methane, Weihai solar city, carbon accounting, renewable energy law, energy efficiency for motors and appliances, agriculture
 - Involving Energy Research Institute of NDRC, Chinese Renewable Energy Industries Association, China Coal Information Institute; CSIRO, AGO, etc
- Asia Pacific Partnership on Clean Development and Climate (AP7)
 - Clean development in Buildings and Appliances, Fossil Energy, Power Generation and Transmission, Renewable Energy and industrial applications
- RE & EE Business Mission to China – 2006
 - Ministerial mission presented our capability and strengthened B2B relations
- Prime Minister's Visit in 2008 Emphasised Climate Change Collaboration
 - \$20 million for clean coal technology
 - Gaobeidian Power Station post combustion carbon capture project visit

Demand Side : Green Building Technologies

- **Energy Efficiency** has become a fundamental national policy, and is the No. 1 energy policy
 - Serious energy waste in manufacturing + construction !
 - In 2003, energy consumption per GDP unit being 3.1 times of the average level of developed countries;
 - energy utilisation efficiency being 33%, significantly lower than world's advanced level.
- Key industries eg; steel, power generation, cement etc **consume 20%** more energy than the average of developed counties.
- Energy consumption per building area also high, **2-3 times** of developed countries !
- Cause and effect **easily identifiable**, remedial actions achievable...
- **Goal : reduce energy per unit GDP by 20% by 2010**



Demand Side: Green Building Technologies

- **Energy Saving Law** updated and came into effect April 2008.
 - Quantitative energy saving targets built into planning at **each level of government**, and is an important in performance assessment of local government.
- **Compulsory** energy standards for designated manufacturing industries
 - And phase out of energy inefficient factories and plant
- Compulsory implementation of new energy saving standards for all **new buildings** (otherwise not approved)
- Encourage new energy saving **building materials and equipment**, integration of RE systems in to buildings (solar, geothermal, wind)
- Frontline cities like Guangzhou, Shenzhen, Shanghai, Beijing, etc pressure to achieve **50% energy saving** for all new buildings (based on the energy standards of 1980's)

Example: Beijing MOST (Ministry of Science and Technology) “Green Building” demonstration project

Built in 2004, 3 years occupied

- natural light utilization in design;
 - anti-heating reflective glass with lower radiation;
 - natural ventilation system;
 - Photoconductive intelligent lighting system;
 - Intelligent elevator and water supply system.
-
- 72.3% energy saving annually
 - An average of 38.4 kwh/m² energy consumption
 - 900,000kwh **electricity** saved annually
 - 10,000 tons water saving annually



An Austrade Initiative

Clean Energy & Green Building Technologies Mission to China and the Beijing Olympics

- Aims and objectives

- Showcase diversity and strengths of Australian industry
- Focus on RE credentials as well as existing successes
- Engage with policymakers, influencers and entrepreneurs in 4 key cities
- Utilise the Business Club Australia

- Key activities

- Workshops and seminars in Hong Kong, Guangzhou & Shanghai
 - Mixture of formats but all aimed at key officials, industry contacts and influencers attending
 - Networking events including Olympic events in Hong Kong and Beijing
 - Captains of Industry as Mission Leaders
 - Proposed Federal Minister involvement





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Endorsed by the
Australian Olympic Committee
as Australia's international
business program at the
Beijing 2008 Olympic Games



Australian business hub

Level 3 of the Hilton Hotel for duration of Games

- Ballroom (up to 300 sit-down)
- Ballroom Lobby
- Galleria: drop-in lounge, intimate functions, reception, BCA ticket HQ

Targeted participation

500 Australian companies / 2,000 Australian business people

- 1,000 Chinese companies / business people
- International business visitors



Hilton Hotel, Beijing



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Business Networking Events in Beijing

- A 'spine' of Austrade events
- A platform for other Australian businesses to network with their clients/customers and each other
- Planned 2-3 events per day at BCA venue (Hilton Hotel)

BCA signature business networking events schedule (draft)

- Friday 8 August – VIP function, afternoon
- Friday 8 August – Opening Ceremony Gala, evening
- Saturday 9 August – Business of Sport, evening
- Saturday 16 August – Financial Services, lunchtime, Shanghai tbc
- Sunday 17 August – Mining, lunchtime tbc
- **Saturday 23 August – Clean Energy & Green Building Technologies Mission**
- Sunday 24 August – VIP function, afternoon
- Sunday 24 August – Closing Ceremony Gala, evening



Conclusions & Recommendations

- Renewable energy commitment is strong and real
 - But sector is still emerging and grappling with several practicalities
 - Short term opportunities exist in wind power, solar and biomass
 - Medium term and longer term positive outlook
 - Access to raw materials is critical

- Green Building Technologies moving fast
 - Expanding fast and is real money chasing real business
 - Sector will continue to develop and grow
 - Opportunities exist across the country



Conclusions & Recommendations

- What does commercial success look like ?
 - Localised business
 - Good partnerships with local companies
 - Committed to realistic timelines
 - Intense Government relationships – at more than one level



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