



International Policy: What's working?

China: low carbon domestic policy progress – opportunities for Australian & New Zealand business

Robert Hansor
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About LRQA

- Lloyd's Register Quality Assurance (LRQA) was established in the UK in 1985
- LRQA is a wholly owned independent, subsidiary of the Lloyd's Register Group, founded in 1760
- Climate change services
 - CDM validation and verification
 - Carbon foot printing, including ISO 14064 and PAS 2050
 - GHG verification for Emission Trading Schemes (ETS)
 - Assurance of Sustainability/CSR Reports
 - Climate change training services
- We have expertise throughout Asia Pacific



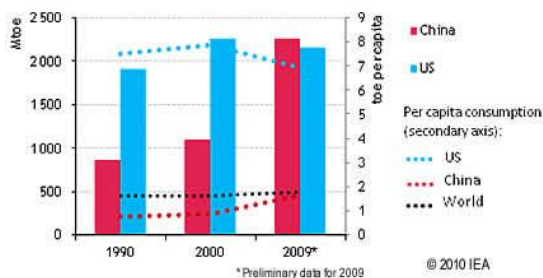
Introduction

- China's domestic policy framework
 - Low carbon economy
 - World leader in the development, production, and deployment of clean energy technologies
- Three issues to address
 - Clean energy achievements
 - Policy framework
 - Opportunities for the Australian and New Zealand business community



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Current energy demand



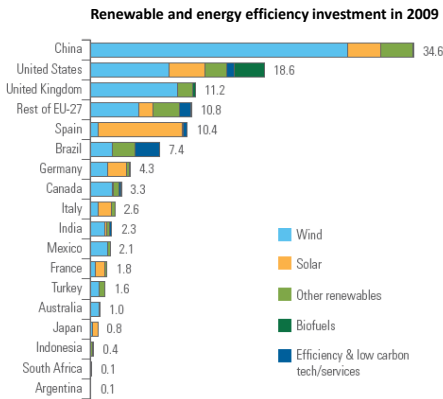
- China overtaken the US to become world's largest energy consumer
- Per capita basis still only around 1/3 of OECD average
- Prospects for further growth remain strong
- Over 1.3 billion people
- Most not entered the consumption-led economy → societal transformation



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Clean energy achievements

- Impressive statistics
 - In 2009, manufactured and installed more wind turbines than any other country; now ranks 3rd in installed wind capacity at 25 GW
 - Leading manufacturer of solar panels
 - Largest hydro capacity in the world (200 GW)
 - Building more new nuclear plants (23) than any other country
 - Utilising efficient coal combustion technologies
 - Building new networks of ultrahigh-voltage grid transmission lines and electrified high-speed passenger rail



Pew Charitable Trusts (2010)



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Policy environment: creating markets

- Long-term vision → stable market signal
- Focus on energy and resource efficiency in high energy consuming sectors
 - High level leaders have taken responsibility for achieving targets
- Targets attracted major government and private sector investment
- Medium- to Long-Term Development Plan for Renewable Energy
 - 15% of primary energy from non-fossil fuel sources by 2020
 - Investment in hydropower, wind, solar, and nuclear sectors
 - Renewable Energy Law (2006) requires grid companies to purchase from renewable sources
- Driven by energy security concerns and desire to maintain economic competitiveness



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Public awakening to unhappy trade-offs

- Growing public awareness of climate change impacts → new urgency
- 2009, reduce CO2 emissions as a proportion of each unit of GDP by 40 to 45% of 2005 levels by 2020
- Expected to announce new domestic measures in its next five year plan (2011 to 2015)
 - Curb the growth of carbon emissions
 - Speed of clean-energy deployment



Financing

- Able mobilise large volumes of cheap capital
 - New 10-year energy development plan worth about US\$740 billion
 - Reduce 1.2 billion tons of CO2 emissions a year + create 15 million jobs
- Focus on: renewables; energy efficiency; nuclear; smart grid; transportation; unconventional natural gas; clean coal; alternative-fuel vehicle technologies
- Finance policies promote industry growth
- Making it difficult to finance carbon-intensive projects



Infrastructure construction

- Ability to mobilise both low-cost capital and a large labour pool to quickly build infrastructure
 - Ability to get things done fast on a massive scale
- US\$100 billion currently dedicated to building transmission lines and railways
- State Grid Corporation will invest US\$88 billion building UHV transmission lines and has just unveiled a 10-year plan to build a national smart grid
- US\$300 billion extending rail network from 48,000 to 75,000 miles by 2020
 - 8,000 miles comprised of high-speed, long-distance rail that runs on electricity



Market mechanisms: carbon trading

- Considering the use of flexible market mechanisms
- Already experimented with the allocation and trading of surface water and groundwater resources as well as SOX pollution permits
- Announced intention to launch a domestic emissions trading scheme
- Details and timing are not yet public but may be implemented during next five-year plan period (2011-2015)
- Targets possibly assigned to high energy intensity sectors
- Unclear how the scheme will interact with the international carbon market
- Will China want domestic capital invested to offset emissions overseas?



Opportunities

- Economic opportunity for those with the right expertise and technology
- Key structural changes expected during the 12th Five-Year Plan
 - Increasing energy efficiency
 - Enhancing the utilisation renewable energy
 - Expanding the utilisation of natural gas
 - Natural gas is expected to meet 8% of China's energy needs by 2015 (4% today)
 - Unconventional gas could make up a quarter of China's gas supply by 2030
- Accelerating the construction of hydropower and nuclear power facilities
- Construction of large scale integrated clean coal and energy facilities
- Energy generation from hydro and nuclear power will rise from 7% to 9%
- Energy generation from wind, solar and biomass will rise from 1% to 3%



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Wind power: 30 GW by 2020

- Growth of wind has exceeded planning targets
- By the end of 2009, China had the 3rd largest installed capacity worldwide; growth is likely to be the largest in the world soon
- Continue developing onshore wind
- Initiate work on medium- and deepwater offshore wind farms
- On going challenges for the efficient development of wind resources include:
 - More accurate confirmation of wind characteristics
 - Adequate project design and proven turbines
 - Availability of skilled staff for design, manufacturing, operations and maintenance
 - Better grid planning



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- Coal to meet more than half of China's energy demand until 2030
- Coal consumption to peak around 2020 and then decrease through 2050
- Even if coal consumption decreases, China's CO2 emissions from all fossil fuels would not decrease without CCS, but would only level off
- China has over 1,600 large CO2 point sources, 91% of which are located 160 kilometres or less from potential geological sinks
- Theoretical capacity in deep saline formations amounts to 3,066 gigatonnes of CO2 – more than 450 times China's total CO2 emissions in 2005
- Capacity for CO2 EOR and EGR estimated to be 10 gigatonnes of CO2
- Estimated oil production by EOR could reach 7 billion barrels – 2.5 times China's current annual oil consumption



- State Grid Corp (controls 88% of national grid) has released industry standards for smart grids
- Rules identify 22 core criteria covering power generation, intelligent transmission, substations, distribution, utilisation and dispatch
- State Grid has 228 smart grid pilot projects
- State Grid will invest US\$37 billion this year in China's emerging smart grid network



Conclusion

- Beyond strategies confined to developing clean coal and renewables
- Long term vision where the development of energy, water, transportation and technology is considered together with financing and construction

- Beneficiaries:
 - Low-carbon vehicles
 - Rail (metro, long distance networks)
 - Grids (greater use of renewables and reduce transmission loss)
 - Nuclear
 - Natural gas (incl. unconventional)
 - Renewables (wind, hydro, biomass)
 - Building efficiency
- Or, for technologies that:
 - Do more with less
 - Enable conservation
 - Reduce pollution emissions
 - Enhance eco-efficiency / energy efficiency
 - Support moves to a carbon economy
 - Build in or enable recovery and re-use



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