

Cleantech Investing in China

John O'Brien, Sino CleanTech

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The growth of cleantech investing in China over the last few years has been outstanding. This has seen the establishment of global leaders in areas such as solar and wind, but also the development and investment in many companies involved in water, waste, hydro, energy efficiency and other cleantech sub-sectors.

Many Chinese cleantech companies have grown into the world leaders through this significant investment into Chinese companies from Chinese investors. Many of these companies have listed over the last few years, both on Chinese based stock exchanges and also on various international stock markets. The performance of these listed companies is tracked through the China CleanTech Index that is discussed later in this article.

The growth is the result of both global market trends and also a growing emphasis from the Chinese Government on delivering environmentally friendly solutions and, at the same time, building globally competitive industries.

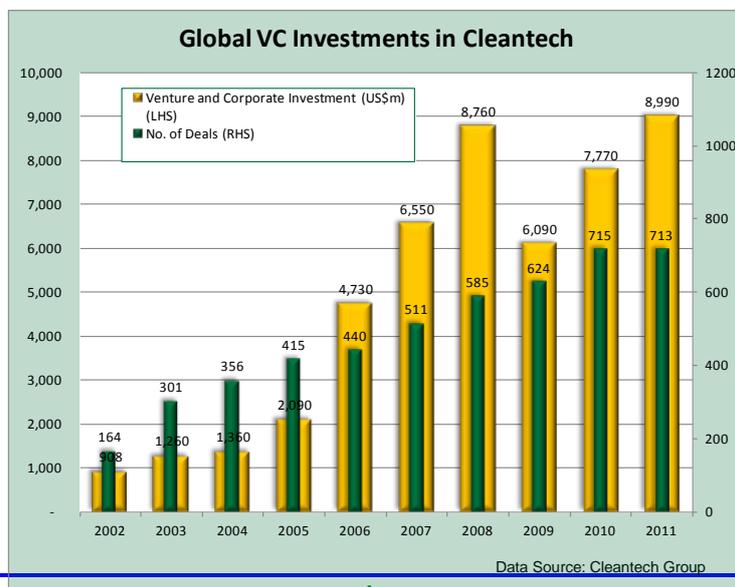
One of the recent trends that has emerged is a willingness for Chinese investors to invest into international cleantech companies. This is a fascinating new stage of the growth of the Chinese cleantech sector and will provide great advantages to both China and the international companies that receive the investment.

This article looks first at the latest international cleantech market statistics and then at the listed Chinese cleantech companies and wraps by considering the investment flows into and from China into cleantech companies.

International Market Trends

The international cleantech market place has been thriving over the last few years with 2011 showing a strong continued recovery from slowdown shown in 2009.

The Cleantech Group tracks global transactions and has published details that show the growth in total venture capital and corporate investments in 2011, exceeding the previous high point achieved in 2008. The total number of deals fell slightly for the first time showing the increasing deal size compared to 2010 although not yet reaching the average deal size achieved in 2008.



In terms of sector, Solar secured the greatest venture capital and corporate investment with US\$1.81bn in 111 deals, followed by energy efficiency at US\$1.46bn across 150 deals and transportation at \$1.12bn across 61 deals.

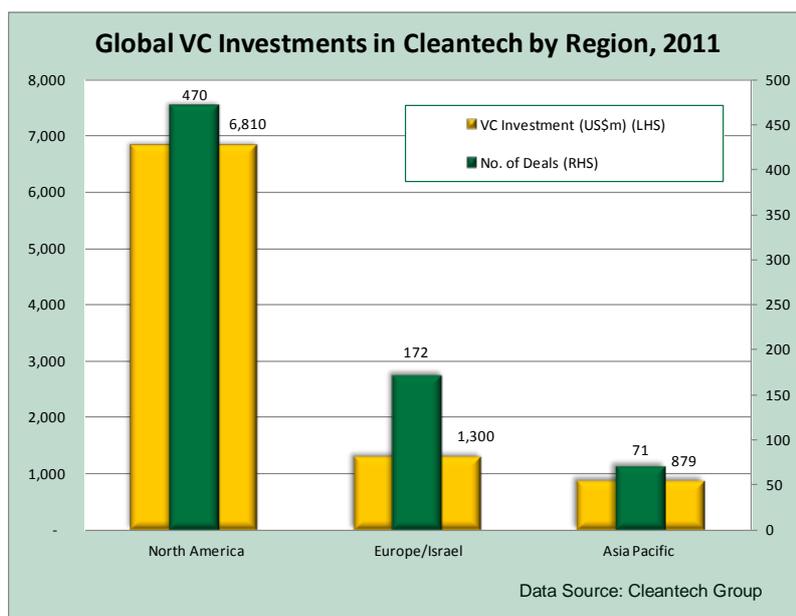
The Cleantech Group reported that the largest transactions in these three sectors were as follows:

Solar - *BrightSource Energy* - US\$201m from VantagePoint Capital Partners, Alstom and others.

Energy Efficiency - *OS/soft* - US\$135m from Kleiner Perkins Caufield & Byers, Technology Crossover Ventures and others.

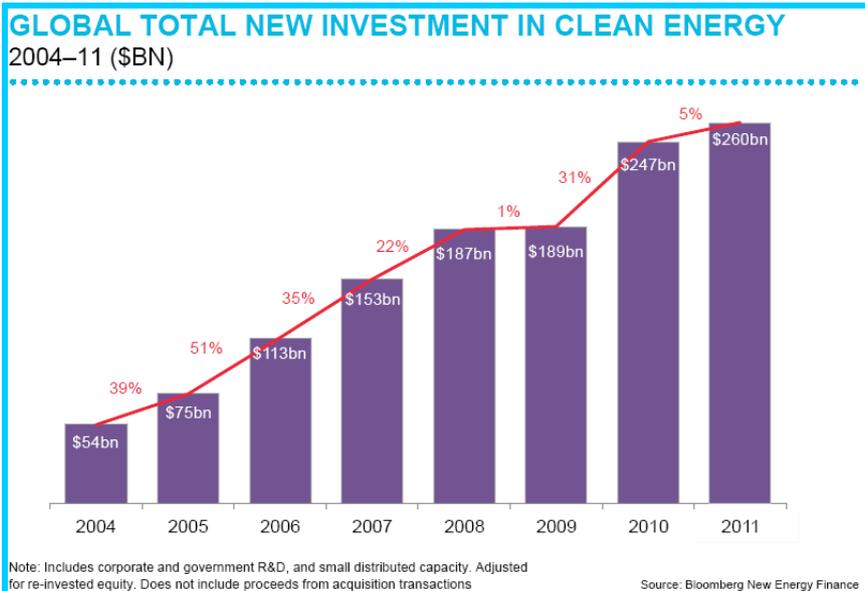
Transportation - *Fisker Automotive* - US\$315m from Kleiner Perkins Caufield & Byers, New Enterprise Associates and others.

The allocation of this venture funding globally shows that the majority of deals and investment dollars occurred in North America, driven by its strong well funded venture capital industry. The average deal size in America was US\$14.5m, in Europe/Israel was US\$7.6m and in Asia was US\$12.4m.



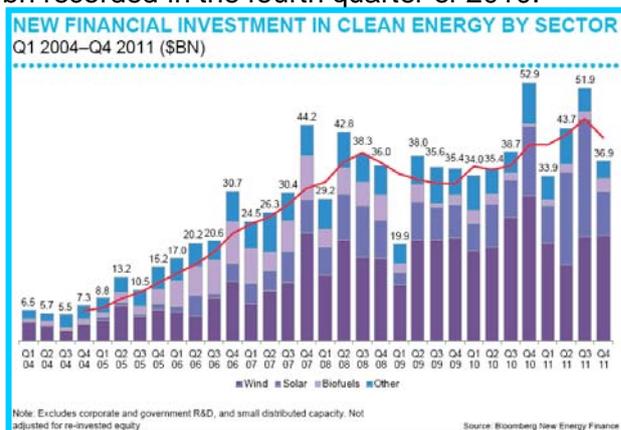
According to the Cleantech Group, there were 51 clean technology IPOs during the year totaling US\$9.59 billion, down from the US\$16.41 billion in 2010. The largest IPO was for Sinohydro, a Chinese state-owned hydropower company, which raised US\$2.12 billion on the Shanghai Stock Exchange.

Bloomberg New Energy Finance research shows that the total new investment in clean energy exceeded the 2010 level of US\$243bn to reach US\$260bn in 2011. This figure includes the clean energy components of the US\$8.99bn of venture capital detailed by the Cleantech Group above. This figure is up 5% from US\$247bn in 2010, and makes 2011 the strongest year so far for investment in clean energy – more than double the figure recorded in 2006 and five times that from 2004.



The subsectors with the greatest spends were solar and wind which dominated the overall clean energy investment. The figure to the right shows the quarterly investments in each sector and how the solar investments dominated in the middle two quarters of 2011, driving the total figures for these quarters higher. The third quarter total was nearly as high as the previous record quarterly investment of US\$52.9bn recorded in the fourth quarter of 2010.

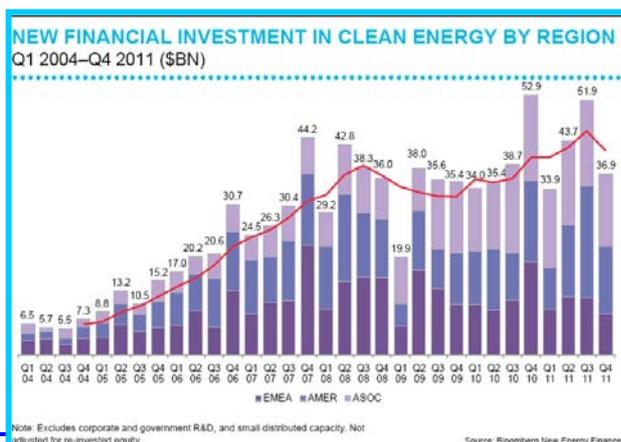
Over the year, the investment in solar increased by 36% to US\$136.6bn. Wind however had a 17% reduction in its total investment to US\$74.9bn. The third-largest sector for investment in 2011 after solar and wind was energy-smart technologies, including smart grid, power storage, efficiency and advanced transport. This area saw total investment of US\$19.2bn, the bulk of it in corporate R&D and venture capital and private equity raisings. This was however down 17% on 2010 levels.



Among the smaller renewable energy sectors in 2011, biofuels saw total investment edge up from US\$8.6bn to US\$9bn, biomass and waste-to-energy suffered an 18% setback to US\$10.8bn, geothermal slipped from US\$3.2bn to US\$2.8bn, marine marked time at US\$0.3bn, and small hydro fell 25% to US\$3bn.

The high levels of 2011 investment are in some ways surprising as the sector has been under pressure from global financial instability, reduced availability of project finance, falling equipment prices and reducing government subsidies.

In 2011, the Americas regained its place as the region in which the greatest investment occurred. Whilst 2008 saw the US as the largest single country worldwide in terms of total investment in clean energy, it was overtaken by China in 2009 and 2010. However in 2011, the US increased its total investment by 33% to reach a total of US\$55.9bn whilst China only increased its investment by 1% to US\$47.4bn.



Europe as a whole saw clean energy investment rise 3% to US\$100.2bn, with the strongest features being solar installations – both large-scale and distributed – in Germany and Italy, and offshore wind financings in the North Sea. India led the table in terms of growth in investment with a jump of 52% to US\$10.3bn, while Brazil clocked up a respectable 15% increase to US\$8.2bn.

China CleanTech Index Overview

The China CleanTech Index provides the definitive measure of the performance of Chinese cleantech companies that are listed on stock exchanges around the world.

With 135 companies falling under the coverage of the Index and with a combined market capitalisation of nearly 700 billion Renminbi (US\$112 billion), the China CleanTech Index presents for the first time a picture of the Chinese cleantech industry’s growth in a single measure.

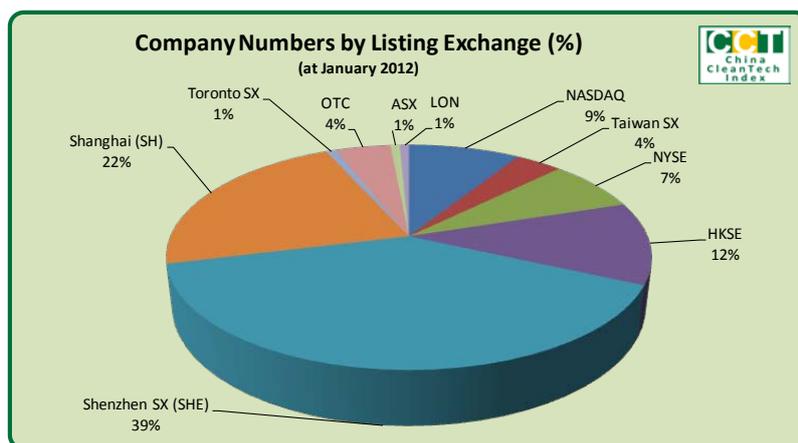
The Index is weighted by market capitalisation, rebalanced quarterly and is benchmarked against the Wilder Hill New Energy Global Innovation Index (NEX), the Cleantech Index (CTIUS), the China Shanghai Composite Index (SHCOMP) and the MSCI World Index (MSCI).

There are other stock market indices that track the performance of some of China’s cleantech stocks. However, none of these is as comprehensive as the China CleanTech Index because all cleantech companies that have headquarters in Mainland China, Hong Kong and Taiwan are included in the China CleanTech Index. This provides much wider coverage than other indices. In addition, there is no lower limit to market capitalization for inclusion in the China CleanTech Index meaning that all cleantech companies are included.

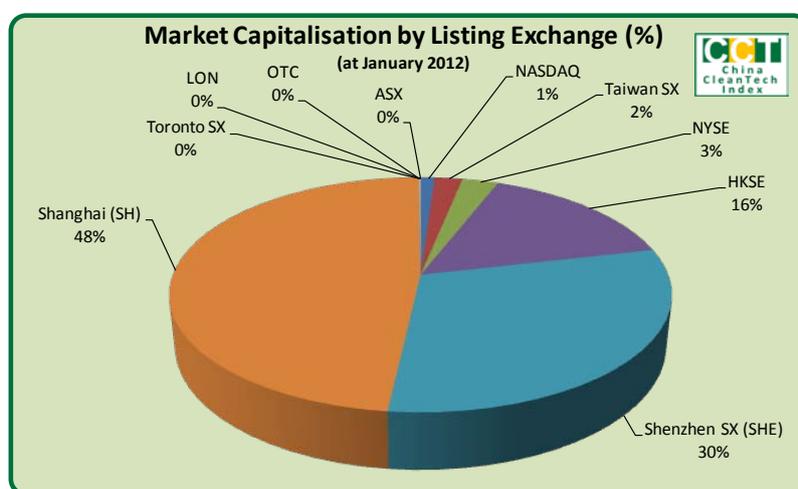
The China CleanTech Index excludes nuclear, clean coal and natural gas, which are not considered to be ‘cleantech’, and includes biofuels, green buildings, biomaterials, carbon trading, geothermal and environmental services, which appear to be generally missing from other indices.

The profile of the constituent companies that comprise the China CleanTech Index provides some context for its performance. The 135 constituent companies are listed on ten different exchanges, although 73% of them are listed on the exchanges in Shanghai, Shenzhen and Hong Kong. There are a further 21% listed on exchanges in North America.

Listing Market	Number of Companies	Market Capitalisation (RMB million) Jan 2012
NASDAQ	12	¥7,531
Taiwan SX	5	¥14,724
NYSE	10	¥19,074
HKSE	16	¥108,337
Shenzhen SX (SHE)	53	¥212,806
Shanghai (SH)	30	¥336,857
Toronto SX	1	¥60
OTC	6	¥381
ASX	1	¥501
LON	1	¥12
TOTAL	135	¥700,283

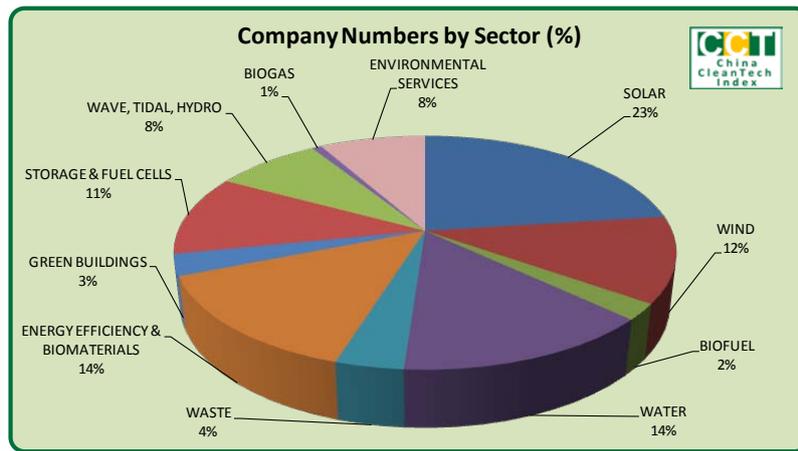


When considering the total market capitalisation on each exchange, the figures show an increased focus on the Chinese exchanges. With only 22% of the companies, the Shanghai Exchange holds 48% of the Index's total market capitalisation. Combined with Shenzhen and Hong Kong, these three exchanges hold 94% of the total market capitalisation.

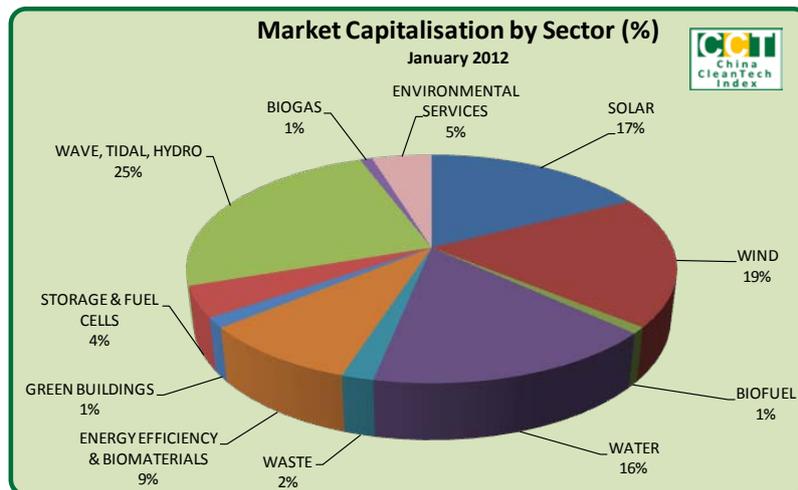


When considering the various sub-sectors present in the China CleanTech Index, the company numbers are lead by Solar (23%) followed by Water and Energy Efficiency (each 14%) and Wind (12%).

Sector	Number of Companies	Market Capitalisation (RMB million) Jan 2012
SOLAR	31	¥122,449
WIND	16	¥129,676
BIOFUEL	3	¥6,168
WATER	19	¥114,061
WASTE	5	¥12,464
ENERGY EFFICIENCY & BIOMATERIALS	19	¥63,066
GREEN BUILDINGS	4	¥ 9,811
STORAGE & FUEL CELLS	15	¥ 30,479
WAVE, TIDAL, HYDRO	11	¥172,301
BIOGAS	1	¥6,698
ENVIRONMENTAL SERVICES	11	¥ 33,109
TOTAL	135	¥700,283



The market capitalisation of the sub-sectors shows that Wave, Tidal and Hydro (25%) is the largest sub-sector primarily due to the presence of the recently listed SinoHydro. The next biggest subsectors are Wind (19%), Solar (17%) and Water (16%). Poor performances in these larger sub-sectors will therefore impact the overall Index performance to a greater extent than the smaller sub-sectors.



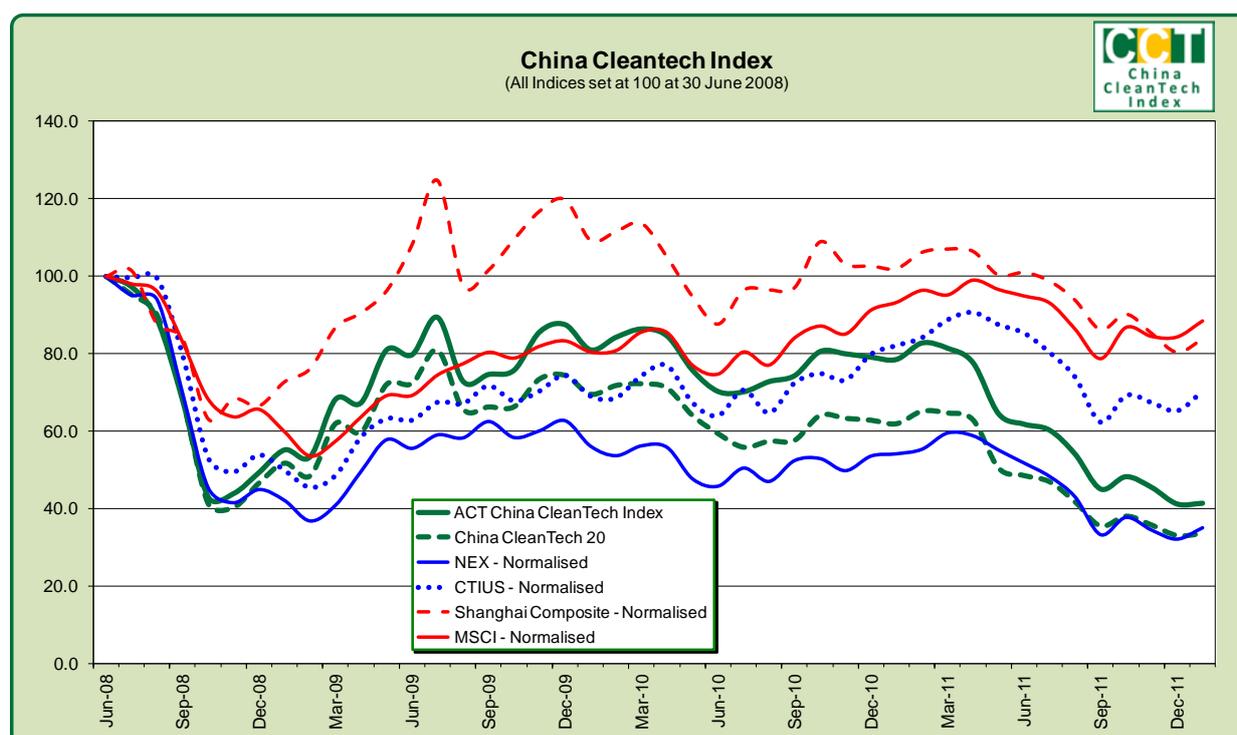
China CleanTech Index Performance

For the 2011 calendar year, the China CleanTech Index significantly underperformed all of its benchmarks driven by the collapse of the solar and wind stocks. For the full year, the China CleanTech Index recorded a loss of 48.0%, compared to the NEX loss of 40.2%, the CTIUS loss of 18.3%, the Shanghai Composite loss of 21.7% and the MSCI loss of 7.6%.

The primary drivers for this underperformance were the collapse of both the solar and wind energy stocks due to global demand reductions due to reducing tariffs and increasing difficulty in securing project finance coupled with and increasing supply capacity through factory expansions.

Percentage Change	2009	2010	2011
China CleanTech Index (CCTI)	77.5%	-9.6%	-48.0%
China CleanTech 20 (CCT20)	59.6%	-15.6%	-47.4%
Wilder Hill New Energy Global Innovation Index (NEX)	39.7%	-14.6%	-40.2%
Cleantech Index (CTIUS)	38.1%	7.3%	-18.3%
China Shanghai Composite Index (SHCOMP)	80.0%	-14.3%	-21.7%
MSCI World (MSCI)	27.0%	9.6%	-7.6%

The market capitalisation of the 135 stocks in the China CleanTech Index is RMB 697 billion (US\$111 billion), after its rebalance, falling from its peak of RMB 911 billion in February 2011.



The best and worst performers in terms of share price performance over 2011 are shown in the table below.

Full Year 2011	
Best Performers Share Price Gain > 20%	Worst Performers Share Price Loss > 80%
Shanghai 3F New Materials Co Ltd Chaowei Power Holdings Limited	SmartHeat Inc Xiamen Changelight Co., Ltd. Daqo New Energy Corp. Hanwha Solarone Co Ltd JA Solar Holdings ReneSola Ltd. (ADR) Advanced Battery Technologies China Sun Group High Tech Co. Beijing Water Business Doctor Co., Ltd. China Hydroelectric Corporation A-Power Energy Generation Systems Ltd China Ming Yang Wind Power Group Ltd Cleantech Solutions International Inc

Two companies that were added to the index at the end of December following ongoing research by Sino Cleantech into the activities of Chinese listed companies were:

- Beijing Jingyuntong Technology Co Ltd (SHA:601908)** - Beijing Jingyuntong Technology is principally engaged in the manufacture of photovoltaic equipment, mono-crystalline silicon growth and silicon chip businesses. The Company raised ¥2.5 billion (US\$394 million) in its IPO and listed on the Shanghai Stock Exchange on 7 September 2011.
- Sinohydro Group Ltd (SHA:601669)** - the Sinohydro Group is principally engaged in project contracting, electricity investment and operation, equipment manufacturing and leasing, as well as real estate development. The Company constructs water conservancy and hydropower projects, amongst other construction activity and is active in Asia, Africa and South America. The Company raised ¥13.5 billion (US\$2.1 billion) in its IPO and listed on the Shanghai Stock Exchange on 18 October 2011.

To provide an analysis of the China CleanTech Index, eight sub-indices have been developed. The performance of each of these sub-indices over the last three financial years is shown in the table and charts below.

Over 2011, whilst all sectors showed poor performance, the best performing sectors were China Waste Index and the China Hydro Index and the worst performing sectors were the China Efficiency Index, the China Solar Index and the China Wind Index, each of which lost more than half of their value.

China CleanTech Sub-Indices

	2009	2010	4Q11	2011
China Efficiency Index	102.4%	31.8%	-7.3%	-60.4%
China Environment Index	157.4%	13.5%	-5.6%	-31.1%
China Solar Index	92.4%	-13.0%	-10.7%	-57.5%
China Storage Index	141.0%	-15.1%	-21.6%	-36.6%
China Waste Index	65.7%	99.1%	-0.6%	-25.9%
China Water Index	113.5%	9.6%	-4.5%	-49.7%
China Hydro Index	78.9%	-35.6%	-1.5%	-23.0%
China Wind Index	45.8%	-21.0%	-15.6%	-57.7%

Cleantech Investing in and from China

Venture Capital investment in China in 2011 was reported as having been more than double that recorded in 2010. ChinaVenture Source reported that by November 2011, clean energy investment had reached US\$1.4 billion invested in 51 companies and averaging US\$27.4 million per company.

CV Source also indicates that the clean energy investment in China had shifted from wind and solar energy to the investigation, monitoring and management of pollution.

In 2010, the subsectors that attracted the most VC investment in China were wind, energy storage and energy-efficiency. In 2011, this changed to be focused on the investigation, monitoring and management of pollution which attracted US\$500 million, solar energy (US\$400 million) and energy storage (\$230 million).

Not only is there significant investment into the Chinese cleantech market, but Chinese investors are now starting to invest into cleantech globally. In 2011, US companies Boston-Power, Sunpreme and Prudent Energy all raised funds from Chinese venture capital firms.

- Lithium-ion battery maker **Boston-Power** raised US\$125 million led by Beijing-based GSR Ventures and will build its battery manufacturing plant in China.
- In mid-October, thin-film solar manufacturer **Sunpreme** raised US\$50 million from the International Finance Corporation, Capricorn Investment Group and Beijing-based China Environment Fund, managed by Tsing Capital. Sunpreme will build its first manufacturing facility in China.
- Also in October, US- and China-based flow battery manufacturer **Prudent Energy** raised US\$29.5 million, which included new capital from existing Chinese venture investor DT Capital Partners.

Another recent example of Chinese investors seeking international cleantech investments was the announcement in December of the establishment of the A\$200 million Southern Cross Renewable Energy Fund in Australia. The funding has been provided by the Australian Government and Shanghai-based Softbank China Venture Capital (SBCVC). Southern Cross Venture Partners (SXVP) will be the manager of the fund which will invest in early stage Australian renewable energy companies.

At Sino Cleantech, we are working with a number of Chinese investment groups seeking international investments. We are seeing a far greater willingness to invest in the industries of the future from our Chinese investment partners than from investors elsewhere. We are

looking at development and project finance for large renewable energy projects and also at specific technology investments. With the tightening of the European and North American economies, China is one of the few countries that is still an active international investor.

This development in the growth of the global cleantech market is fascinating and will be critical to the ongoing global deployment of technologies that have both environmental and economic benefits.

China's position as both the leading adopter of cleantech solutions and as a fast growing source of investment funds into the best global cleantech products creates an enormous opportunity for the country's investors.

The success of the industries of tomorrow such as Boston-Power, Sunprime and the many early stage but unfunded technologies coming out of Australian research institutions will flow back to the Chinese investors that have funded their growth.

The ability for Chinese investors to both connect international companies with the ability to manufacture in China and to benefit from the massive demand growth, means that the investment offering is compelling for any emerging cleantech company. These additional benefits will mean that Chinese VC investors may be able to get a better deal for their investment than VCs from North America or Europe. That the Chinese cleantech IPO market is also currently stronger than other markets may also mean that the VCs can then exit these investments as they grow and reinvest into the next wave of cleantech innovations.

This pattern is self-reinforcing and will result in the emergence of the world's leading cleantech investment groups. China's role in the future of global cleantech is currently being formed and it appears highly likely that these investment trends will establish the country as the global hub for cleantech activity in the near future.

John O'Brien is Managing Director of Sino CleanTech. Sino CleanTech (www.sinocleantech.com) is the Beijing based operations of Australian CleanTech, a research and broking firm that provides advice to cleantech companies, investors and governments seeking economic development. Australian CleanTech works across Australia, China, Korea and Malaysia and publishes the Australian Cleantech Review, the Australian CleanTech Index and the China CleanTech Index.