Cleantech Innovation in China: From “Made in China” to “Created in China”

Before partnering or investing in Chinese cleantech innovation you must:

Understand the landscape.

Know the opportunities and pitfalls.

Make smarter decisions.

A summary of Cleantech Group’s Executive Brief “The rise of home-grown cleantech innovation in China”
Key takeaways

• Chinese cleantech entrepreneurs will focus on developing technologies to support sustainable growth in China. This will drive the shift to home-grown innovations “made in China”.

• The Chinese government has increased R&D spending while decentralizing R&D institutions and encouraging partnerships with the private sector. This new structure prepares China to be especially competitive in the world market.

• China is innovating beyond the solar sector. 70% of cleantech venture capital deals between 2006 and 2009 were outside of solar.

• All signs point to an upwardly-trending global innovation finance landscape, creating an expanding market for all cleantech companies throughout the next decade.

• China’s level of cleantech innovation today should not be over-inflated but nor should their potential heading into the 2010s be underestimated. The question is no longer whether a China strategy should be adopted for cleantech innovation, but rather how it should be adopted.

More from this report:

“Whilst the common game plan of American-backed innovation penetrating Chinese markets is changing, one must be careful not to over inflate where China’s cleantech innovation is today. China still needs to collaborate with companies and investors from other countries that have a longer heritage of cleantech innovation and expanding new industries.

This means that there is a large area of commercial opportunity. Corporations such as IBM, Siemens and General Electric have all take a new approach to cleantech in China whereby they are sourcing local ideas and expertise.”
Insight. Opportunities. Relationships.

Drivers of home-grown innovation in China

As the world’s largest cleantech investor since 2009, China is well established as a cleantech powerhouse. However, an important shift is taking place as well - China is not just an investor, exporter and manufacturer, but is becoming a source of innovation.

This shift is driven primarily through government investment in R&D and innovation incubators. This in turn is creating tremendous interest in China from the global marketplace.

However, Chinese companies will have the most success when they partner with multinational corporations from other countries with a tradition of cleantech innovation and expansion.

The consequences of rapid manufacturing and industrial expansion

China rapidly grew into a global industrial and manufacturing-based economy - and is now paying the price, experiencing serious shortages in critical resources such as water, has a well-known air quality problem and dramatic population growth has left China with contaminated soil and food shortages. 17 of the 25 most polluted cities in the world are in China.

Also of concern is energy for the booming population. Today they rely primarily on oil (58% of which is imported) and coal.

The largest green stimulus in the world

The government in China – concerned with issues of security, economic prosperity and keeping a growing population content – has made spending on green initiatives a top priority.

The Chinese government has set renewable energy targets of 20 GW of new solar and 150 GW of wind by 2010.

China contributed US$200 billion of the $521 billion in stimulus money set aside for cleantech initiatives worldwide.

More from this report:

“Energy insecurity and poor environmental quality are threats to those promise and addressing them is not only a key factor in managing the risk of domestic discontent but also a prime opportunity to create local jobs and develop local expertise.”
Beyond stimulus, stimulating innovation

China is in the midst of a shift from focusing on manufacturing to developing a cleantech innovation ecosystem. They are rapidly increasing funding for cleantech innovations and startups.

The government has several goals in their 5 year Science and Technology Plan to reduce China’s reliance on foreign technology and increase domestic contributions to technology and the number of Chinese working in the field. China has over 1600 government-supported incubators and science parks – many involving cleantech projects.

Incentives such as preferential tax treatments, favorable financing policies, and government procurement policies encourage R&D institutions to partner more with the private sector.

**China in the Lead: Country Allocation of 2010 Green Stimulus Funds**

Cleantech IP in China as an early indicator

Patent filing in China grew 29.7% in 2009, bucking the unprecedented decline in global patent filings due to the global economic crisis. China is now 4th in the world in patent origin in six key clean technologies including wind, biomass, and cleaner coal.

Chinese laws surrounding IP ownership differ compared to standard practices in the West. Companies need to pay attention to written laws, tax issues and complexities arising from multi-national joint efforts when developing IP in China.

*For further analysis on this topic, see the April 2010 report, Managing cleantech IP in China, available to Cleantech Group subscribers.*
Beyond state funding, Innovation financing is rapidly evolving in China. Venture investment seems small – China accounted for only 5% of global cleantech venture capital in 2009, but venture capital is a poor measure of Chinese innovation, even though it's often a good indicator in the West. Chinese start ups have access to a wide range of alternative funding sources including the government.

Chinese venture numbers also understate the value of the capital deployed – talented engineers command much lower average market salaries than those paid in the West.

Innovation is going beyond solar

While 51% of Chinese cleantech investment money was given to solar firms, the remaining 49% went to a diverse cross-section of the cleantech ecosystem.

Materials science, agriculture, water and wastewater, energy storage and energy efficiency have emerged as key areas of interest. This suggests China has a rich underlying talent pool in chemistry, electronics, biotechnology, nanotechnology, materials science, information technology, mechanical engineering and agronomy.

“Estimates say that business costs are three times less in China when compared to the West, meaning that in real terms China outperformed the most active European countries for cleantech financing in 2009.”
Cleantech IPOs in China strengthen while the rest of the world flails

For the first time, in 2009, China accounted for the largest share of money raised from cleantech IPOs (69%), well ahead of the US’s 26%. By number of deals China also had the majority with 17 of the 32 global cleantech IPOs tracked in 2009.

In 4Q09, the mid-to-small company board on the Shenzhen Stock Exchange, informally known as ChiNext, was launched and gives public listing priority to small-to medium-sized companies with cleantech-related innovations.

Of the flurry of Cleantech IPOs on the ChiNext exchange in 2010, many are from water and energy storage.

Looking ahead, China has the world’s largest pipeline of potential cleantech IPOs and is expected to account for a significant proportion of global cleantech IPOs in 2010.

Want more?

The full 31-page report contains rich detail on:

- The outlook for innovation in China
- Profiles of Chinese companies in renewable energy, clean transportation, energy storage, water, sustainable agriculture and more
- Government funded cleantech R&D projects
- Venture deals - sectors, players, recent activity and the future outlook
- The IPO pipeline for cleantech in China
- M&A activity
- Corporate investors
- Academic research institutions active in R&D in China
- And the five questions to consider when investing in the Chinese innovation ecosystem

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Three things to remember…

_Stakeholders must understand where Chinese cleantech innovation is today, and where it is heading_

China is dually motivated to pursue clean technologies: it desires to be more of a global force in innovation and entrepreneurship and it is striving to create a sustainable, resource efficient economy. Expect the domestic talent pool to grow and innovation to develop at a pace that many stakeholders under-appreciate.

However, it is equally important to not overinflate where China is today. The quality of the patents coming out of China may not be equal to those in the West, even though China is outpacing the rest of the world in number of patents.

_Developing Chinese cleantech innovation will require collaboration with the outside world – expect more cross-border investment in cleantech innovation across all investment classes._

An influx of Government funding alone will not be enough to galvanize the quantity and quality of innovative cleantech companies that it requires as its environmental problems become increasingly urgent.

Despite technically qualified domestic talent and a growing library of IP and patents, China will need to collaborate with foreign companies and nations with more experience developing successful innovations, commercializing new technologies, and taking them to scale.

_The Chinese economy is liberalizing but risks still exist for cleantech companies due to the Centrally Planned nature of its economy._

Even though Chinese policies are now emphasizing cleantech innovation, R&D and commercial partnerships, many still say that the Chinese government’s goal is still focused heavily on promoting domestic companies and technologies, potentially at the expense of overseas competitors.

The government still has a great deal of control and influence over China’s coveted industries predominantly through State Owned Enterprises – the government accounts for over a third of China’s GDP. This could be a concern for foreign cleantech who share IP with local firms – they may find themselves at risk should the government change the laws to favor the local firms.
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