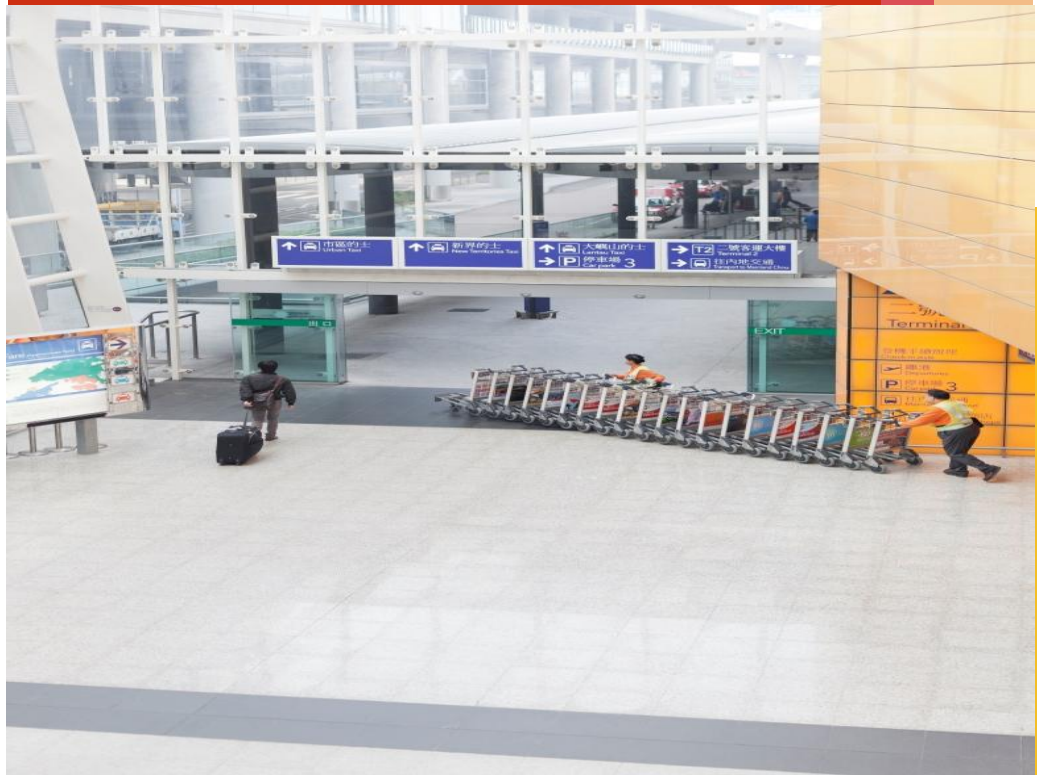


Cleantech in China

Building a green future

November 2013



When people think of rapid urbanization, China often comes to mind. Just as quickly as cities are being built, people are moving in; in fact, more than half of the 1.34 billion population is now living in urban areas.¹ This ongoing migration has ramped up demand for residential as well as commercial space across China's cities which, in turn, has dramatically increased the country's demand for energy.

Given the central government's focus on energy efficiency and conservation, the environmental impact of China's buildings, which account for one third of the country's total energy use, is a critical factor when considering urban development. China currently has approximately 40 billion square meters of building space, which is about five times as much as the U.S.² Each year, more than two billion square meters are added, giving developers ample opportunity to incorporate green elements into the building designs.³ Recent government declarations highlight this trend, as policies promote green building objectives and energy-saving standards for new construction.⁴

Although the green building concept is not new to China, adoption of sustainable designs and technologies has been slow. This is due to a number of factors, including higher upfront costs versus traditional buildings, lack of experience and expertise with green building design, poor operations and maintenance, and difficulty projecting and measuring return on investment.

For foreign companies focused on real estate and sustainability in China, we believe these barriers can be converted into opportunities. Demonstrating the value proposition – via a comprehensive sustainability strategy that includes building performance metrics – should drive demand for green buildings from both a residential and commercial standpoint.

1. Rising demand and support

Green buildings are typically defined as incorporating best practices in design, materials, construction, and operations to enable resource efficiency, realize cost savings, and reduce environmental impact while delivering an improved environment for inhabitants. To justify higher upfront costs, building developers usually seek to formally certify these elements by applying for a green building designation. The U.S. LEED system, short for Leadership in Energy and Environmental Design, is often considered the de facto standard, although many other countries have developed their own standards. This includes China, which has developed the Green Building Design Label (GBDL), also known as the Three Star rating system.

¹ Fang, Lan. "China Urbanization Must Focus on Helping Migrants." *MarketWatch*. The Wall Street Journal, 26 Feb. 2013. Web. 16 Apr. 2013. <<http://www.marketwatch.com/story/china-urbanization-must-focus-on-helping-migrants-2013-02-26>>.

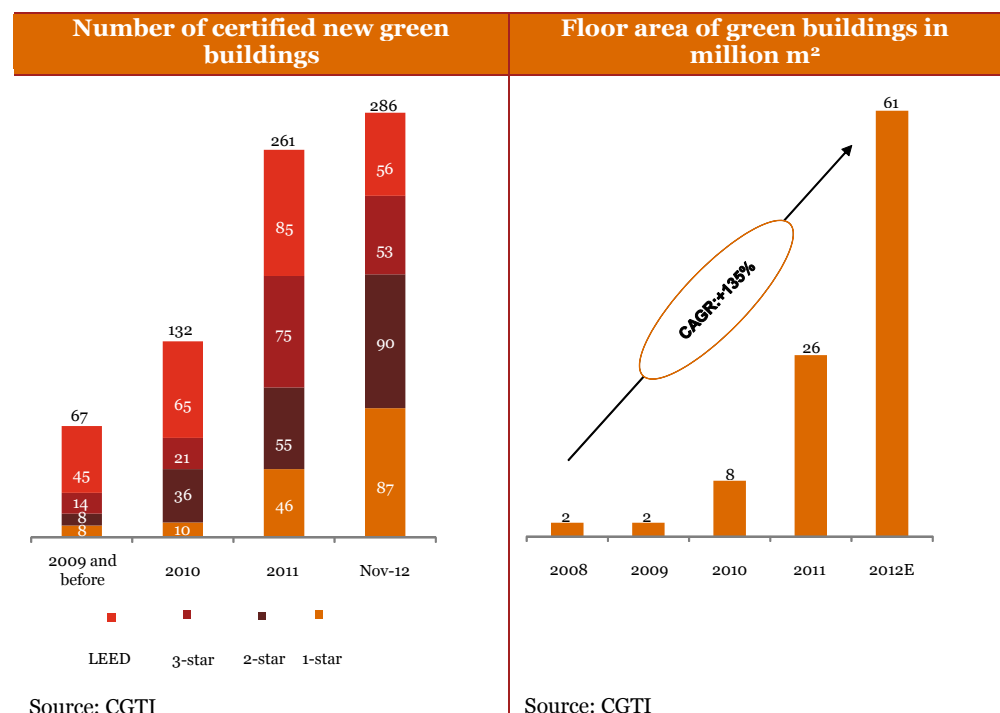
² "Energy-efficiency retrofits ramp up in China." *GreenBiz*, 04 Jun 2013. Web. <<http://www.greenbiz.com/blog/2013/06/04/energy-efficiency-retrofits-ramp-up-china>>

³ "China to push for green buildings starting 2014." *EcoSeed*, 18 Feb. 2013. Web. 2 May. 2013. <<http://www.ecoseed.org/low-carbon/green-buildings/16147-china-to-push-for-green-buildings-starting-2014>>

⁴ "China to Promote Green Buildings." *China Daily*, 13 Feb. 2013. Web. 16 Apr. 2013. <http://www.chinadaily.com.cn/bizchina/2013-02/13/content_16221877.htm>.

LEED	Three Star
Developed by the U.S. Green Building Council in 2000, LEED evaluates buildings in the categories of site selection, water efficiency, energy, materials, indoor environment, and design. Buildings can achieve a rating of Certified, Silver, Gold, or Platinum, based on the total number of points achieved across all categories. LEED has different scales for new construction buildings, existing buildings, schools, retail and residential, among others.	Implemented in 2007, China's Three Star rating system is similar to LEED, with tracks for residential and public buildings. There is some overlap in terms of the categories that are evaluated, though in contrast to LEED, the Three Star system requires a minimum score in each category in order to achieve a rating on the three-point scale. While 1-star and 2-star ratings are administered at the provincial level, 3-star ratings only come from Beijing.

In China, multinational companies once led the implementation of LEED projects as they extended their environmental and sustainability initiatives abroad. However, nearly half of the LEED-registered projects in China today belong to Chinese companies.⁵ This is certainly a positive development, given the Chinese government's goal to develop one billion square meters of new green building floor space by 2015, up from the 69.5 million square meters in existence at the end of 2012.⁶ To encourage green building nationally, per-square-meter subsidies of \$7 and \$13 have been offered for buildings that target 2 and 3 star ratings, respectively.⁷ However, distribution of the subsidies has been inconsistent from one province or city to the next, and many developers have found the terms of the subsidies ineffective due to the fact that payments are typically made upon completion of a project.



⁵ Galbraith, Kate. "International Interest Grows in Green-Building Certification." The New York Times, 7 Mar. 2012. Web. 16 Apr. 2013. <<http://www.nytimes.com/2012/03/08/business/global/international-interest-grows-in-green-building-certification.html>>.

⁶ *Vision and Roadmap to Meet China's Goals for the Green Built Environment. The China Greentech Executive Briefs.* China Greentech Initiative, 9 Apr. 2013. Web. 16 Apr. 2013. <<http://www.china-greentech.com>>.

⁷ Ibid

Looking ahead, the Chinese government will be instituting new guidelines that require certain types of new buildings constructed from 2014 onward to include energy saving standards. The National Development and Reform Commission estimates that complying with the minimum requirements will add an additional cost of approximately \$8 per square meter, though developers applying for 2 and 3 star ratings will be eligible for subsidies, as noted above, to offset some costs.⁸ And by 2015, existing buildings in China will be required to implement greener standards as well, including the upgrading of energy efficient heating systems.

2. Delivering quantifiable benefits

Given the demonstrable benefits of green buildings, below are a number of ways to accelerate the development of green buildings in China, as outlined by the China Greentech Initiative⁹, of which PwC is a strategic partner:

- Integrated solutions – Taking an integrated approach to implementing green building solutions can help to alleviate cost concerns. By incorporating multiple solutions, synergies can be achieved, especially with complementary technologies. For example, by employing a rainwater collection system, high efficiency plumbing fixtures, and appropriate water management practices, one can yield better results than by deploying these solutions individually. Taking synergistic considerations into account at the planning stages of development not only reduces costs, but yields greater benefits than performing retrofits later down the road.
- Measurable results – While the benefits of various green technologies are likely to be disputed, it is important to accurately capture the precise value they bring to the bottom line. In order for investors, developers, and occupiers to embrace such solutions, it is critical that lifecycle costs and benefits be modeled and verified to assess expected performance and projected return on investment. Monitoring systems that help to track performance will also assist in identifying operational issues and optimizing performance.
- Replicable solutions – The promotion of proven technologies, solutions, and models is important to gaining widespread acceptance of green buildings among developers, investors, and occupiers in China. By demonstrating best practices that can be replicated and easily adapted for China, perceptions about the costs and benefits of green building will slowly start to shift.

While many companies view the value of sustainability initiatives such as green buildings in terms of cost reduction, we believe that leading companies are incorporating sustainability into their strategy and decision making with the notion that it can be a revenue driver that enables them to capitalize on the rising demand for environmentally friendly concepts. A report from the World Green Building Council notes that green building is now a key business imperative. In 2008, the top motivation behind pursuing green building was “doing the right thing,” but by 2012, client and market demand were noted as the key factors driving companies to pursue green building practices.¹⁰ Obtaining a LEED or Three Star rating provides external validation of those initiatives.

⁸ “China to push for green buildings starting 2014.”

⁹ *Vision and Roadmap to Meet China's Goals for the Green Built Environment. The China Greentech Executive Briefs.*

¹⁰ *World Green Building Trends Smart Market Report.* World Green Building Council, 15 Mar. 2013. Web. 16 Apr. 2013. <<http://www.worldgbc.org>>.

For companies in China, it is important to align green building and other sustainability initiatives with overall business strategy in order to effectively drive business value. By integrating these concepts across the entire value chain, beyond real estate, and into product lines, supply chains, and operations, companies will be able to realize the benefits of being green in a quantifiable manner. This is one reason why many companies are eager to pursue certifications through LEED, Three Star or other rating systems, so that they can deliver verifiable and credible efficiencies and savings.

Benefits of green building

	Operating costs	Building value	ROI	Occupancy	Rent
New Construction	Drop 13.6%	Rises 10.9%	Improves 9.9%	Rises 6.4%	Rises 6.1%
Existing Building Projects	Drop 8.5%	Rises 6.8%	Improves 2.5%	Rises 1%	Rises 19.2%

Source: U.S. Green Building Council

As more buildings in China gain green certification, they serve as proof of concept for subsequent green building designs and related technologies. And while many international companies have already demonstrated a willingness to pay a premium for green space, an increasing number of Chinese companies and more importantly, consumers, are gaining exposure to the economic and lifestyle benefits of green buildings and will soon demand similar surroundings. Given the rapid urbanization of China and the associated environmental impact worldwide, not only is green building good for the country, but it's good for the world.

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