



The East is Green?

Green Building Opportunities in China

by STEFAN KRACHT

The biggest challenge China's new leaders are facing is steering sustainable growth – sustainable in terms of the pace of growth as well as of the social and environmental impact. Today, China is experiencing the fastest rate of urbanisation in world history. In 1990, only 26% of the population lived in urban areas; today it is around 52.6%. It is predicted that 70% of the population will live in urban areas by 2035. Over the next two decades China will build 20,000 to 50,000 new skyscrapers, and more than 170 cities will require mass transit systems by 2025. There is a growing consciousness among the Chinese of the severe environmental strains on infrastructure and the impact pollution has on their quality of life. These issues are highly interrelated. Well-designed green and sustainable buildings are part of the solution to these problems while simultaneously boosting the economy. The new leadership has acknowledged this, and translated it into government policy, pledging to reduce energy consumption and investing hundreds of billions of USD into the green building movement.

Momentum Driving the Green Building Movement

China's 12th Five-Year Plan emphasises the energy efficiency of buildings with specific targets as well as the promotion of low carbon sectors. This will form the core of a new industry strategy and an important pillar of growth. The energy saving target for new buildings has been increased from 30% to 50%. For some major cities, the target even mounts up to 65%. All in all, the government plans to build 10mn public housing apartments complying with green standards. Homes in China's northern region will have to upgrade their heating systems to become more energy efficient from 2015, and 120mn m² of public buildings have to be renovated to be more energy-efficient. Moreover, green buildings are supposed to account for 20% of all new buildings in the cities by 2015.

Commercial Opportunities

There are enormous opportunities currently available to green builders in China. China is both the world's largest producer and the world's biggest consumer of building materials. The USD 1.7tn construction market is forecast to grow at a 8.5% compounded annual growth rate, while the retrofitting market is expected to increase more than 1,000% from today, reaching RMB 30tn by 2020. China's new construction will equal the size of all existing buildings in the US within the next decade, and 20% of existing buildings will have to be rebuilt in the next two decades. 25% of building stock in large cities are to be retrofitted and all cities have to meet targets by 2020. With 4%, sustainable construction is currently underrepresented in the industry. The average energy consumption in buildings per m² is 75 watts, three times higher than in Europe.

In the last three years, the country has witnessed a continuous growth in the green building sector, which can be expected to continue. Many companies are involved in the market, though several Chinese companies currently suffer from quality controls and lack integrated design capabilities. International companies will play an increasingly important role to drive and develop the market. There are especially three specific sectors with high potential opportunities to be tapped by foreign businesses.

The first promising sector is green building materials. Wall materials account for about 70% of all building materials and are directly related to a building's insulation performance. As of 2011, the use of solid clay bricks was prohibited in urban areas. China's green building materials market has more than doubled every year since 2005, but currently many materials on the market do not meet the standards for both energy

efficiency and safety. Qualified products only represent only 5-10% of the total market.

Industry players remain positive about market prospects. Large companies like BASF are consolidating their internal resources to tackle the market by setting up specific industry teams. The BASF team coordinates different product lines and business units and acts as the single interface to develop the market in China. In a recent exhibition, BASF introduced comprehensive raw materials, products and system solutions from roof to floor. They also showcased the concept of "passive houses", an integrated solution from Europe, and how it could be applied in China. A passive house is an optimally insulated building constructed with various energy-saving technologies. Features maximise the building's insulation as well airtightness, which consequently minimises its demand for heating and cooling.

Commercial buildings, heating, ventilating and air conditioning (HVAC) as well as lighting account for the majority of energy consumption, making this a second promising sector. Modern technology could be applied to improve efficiency. In Germany, a reduction of 50mn tons of carbon dioxide emissions was achieved when new clean technologies were introduced. China is a large country crossing at least three climate zones. This makes it an ideal market for full range of HVAC innovations. Roughly 70% of China's renewable energy building demonstration programs have geothermal heat pumps. For example, ice storage air conditioning utilises heat exchangers during evening hours to chill water and create ice. This technology has been used in pilot projects, but the penetration rate is still very low.

Since 2012, China has phased out all 100W incandescent bulbs. This will be followed by the phasing out of 60W bulbs by 2014 and

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then of 15W bulbs by 2016. In 2014, halogen energy efficiency standards will be released, which may lead to a prohibition of the production, import and sale of unauthorised halogen lights. LED lights are expected to capture a majority of the market from 2016 on due to the above two movements. Moreover, there are good business prospects for integrated concepts. Companies such as Bosch are promoting total "smart" building solutions, integrating home and office automation, fire safety, HVAC and lighting.

A third promising sector is distributed power generation systems and their management. In the early 2000s China promoted pilot projects for building heating, cooling and power (B-CHP) systems, offering buildings with combined heating and power systems. However, B-CHP is hampered by higher upfront costs, low electricity prices and a lack of policy support for grid connectivity. Since 2012, China's government has announced new policies to enforce the grid connection of the distributed power generation systems. Such promotion of a more open power distribution market will create business opportunities along the entire value chain, especially for gas internal combustion generator manufacturers and solar companies. Foreign companies such as MWM (Caterpillar) can work with city gas operators to install combined systems in large buildings. Solar companies can provide energy efficient solutions for large commercial buildings and communities with integrated solutions for renewable energy and energy storage. Additionally, smart meters will improve data collection, enable time-of-use pricing and support real-time two-way communication between grid operators and power users. This will allow real-time power consumption adjustments facilitating power network management, distributed power generation sources and smart electricity consumption management.

Challenges & Solutions

Currently, government funding schemes and application processes lack transparency. Newly announced policies do not contain detailed implementation plans or timetables. Therefore, companies should regularly carry out focused market analysis to stay up to date on policies and relevant market movements. Different cities and industries have different energy saving standards and monitoring systems, which limits access to building performance data. Sometimes the different standards even contradict each other. It is thus important to refer

to European and Western standards as a comparison and to support government standardisation measures. Another problem is limited financial resources for project owners. High upfront costs and a long period before there is a return on investment dampen the enthusiasm of some investors for green buildings. The main benefits of green buildings are reaped by the users, not the construction developers or investors. Companies should perhaps resort to financial consulting. It is worth to look for tax incentives for the construction of new green buildings and the retrofit of green features. What is more, enterprises have to cope with a lack of efficient sales and marketing channels. The value chain is long and there are many different players and influencers. International companies find difficulties in identifying the right targets and deliver appropriate products and solutions. A solution may be to cooperate with local design institutes to conduct research on the demands of dedicated project owners in the market.

The Chinese government will continue to push the green building movement as one of the pillars of sustainable growth. With the combination of the rapid urbanisation rate in China and the political will of its leaders, the commercial opportunities are massive. The green building movement started much earlier in the West and now has a much more mature and integrated market. This gives foreign companies the advantage of already having products and services that can meet the new standards prescribed by the Chinese government. Furthermore, Chinese companies and institutions will be looking towards the West for best case practice, policy standards and certifications. These new opportunities and standards also bring numerous challenges and costs. However, it is an ideal time for Western companies to come in and build their market share as the momentum is set to rise.

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