



IS CHINA READY TO TAKE THE LEED?

Taking action on China's environmental crisis is no longer an option – it is a necessity. Office buildings consume approximately one quarter of all electricity in the country, and about 80% of China's power is generated from coal. Burning coal is the cheapest way of producing power, but is also the most pollution intensive¹. It is estimated that by 2015, half of the world's new building construction will take place in China², leading to an important conclusion: **sustainable building presents China with a unique and enormous opportunity to make concrete progress in the effort to improve its environment.**

Executive Summary

- > China's environmental problems are severe and worsening, and energy use in commercial buildings is a major culprit
- > Cities in China are in the midst of a major building boom, creating tense competition in the major markets and increased energy needs
- > Sustainable building is a significant solution – both to the need for market differentiation and to the need for greater energy efficiency
- > **Leadership in Energy and Environmental Design (LEED)** is emerging as the preferred method for certifying sustainable buildings in China
- > It is important that developers and occupiers develop an understanding of LEED and the overall sustainable building movement as it has significant business implications and is an opportunity to make a real contribution in the effort to improve China's environment

'When the well's dry, we know the worth of water.'

- Benjamin Franklin

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Ben has been with Jones Lang LaSalle since 2005. He focuses on the industrial market and also leads investment and advisory assignments on behalf of international investors and developers. The importance of sustainable buildings in China is integrated into his work whenever possible as he is convinced that it has widespread repercussions and will be a key trend moving forward.



The term sustainable building conjures up various assumptions, but ‘green’ or sustainable building is defined by the United States Green Building Council (USGBC) as ‘...design and construction practices that meet specified standards to reduce the negative impact of building and tenant spaces on occupants and the environment.’³ How can one objectively measure and certify that a building is indeed sustainable in China, where there are very limited, established standards in the market? Prosper Centre, a 148,000-sqm office and retail development in the Beijing CBD, illustrates one potential path as it will be the first Leadership in Energy and Environmental Design (LEED) certified office project to be completed in the Capital.

What is LEED though, and why is a Chinese developer importing a foreign-based rating system to evaluate a building in Beijing? In this report, Jones Lang LaSalle addresses these questions, while also providing the context and background on the sustainable building movement in China, enabling developers and tenants to better understand how this trend impacts them.

The International Sustainable Building Movement

Quality rating systems are developed by a wide range of stakeholders and are realistic and widely applicable in the geographic area for which they are intended. There are several different rating systems in existence and are typically applied on a geographic basis; for example, CASBEE in Japan, BREEAM in Europe and NABERS in Australia (see Beyond LEED for more details).

Europe has been the leader in sustainable building since the concept became a key environmental issue in the 1990s. The European movement was largely led by government regulations on minimum sustainability requirements for buildings, but increasingly, government-enforced energy use regulations are only one small piece of the European sustainable building movement. Many architects, developers, and end-users in the region seem to have a fundamental appreciation for the value of a sustainable structure. This gradual shift has been greatly supported by the increasing promotion of sustainable building technology, as well as the fact that a sustainable building can achieve the same architectural and usability level as one that is non-sustainable.

Dongtan Eco-City

The amount of new construction in China presents an opportunity to build sustainable communities on a scale that would be unfathomable in other countries. The Dongtan Eco-City Project on Chongming Island at the mouth of the Yangtze River is one telling example. If built according to the plans and vision of the project’s designer, Arup, it will eventually be a community of 500,000 people where 90% of waste is recycled and none of the automobiles within the city emit carbon dioxide. This grand vision has received full commitment from the developer and the Shanghai government. There is some concern that as the project progresses – ground-breaking is this fall – the vision of the project will be compromised by efforts to cut costs. Assuming that the project is completed according to the current plans and timeline, when the first condos and commercial space hit the market in 2010, Dongtan Eco-City will be a paradigm of sustainable urban development not just for China, but for the world.

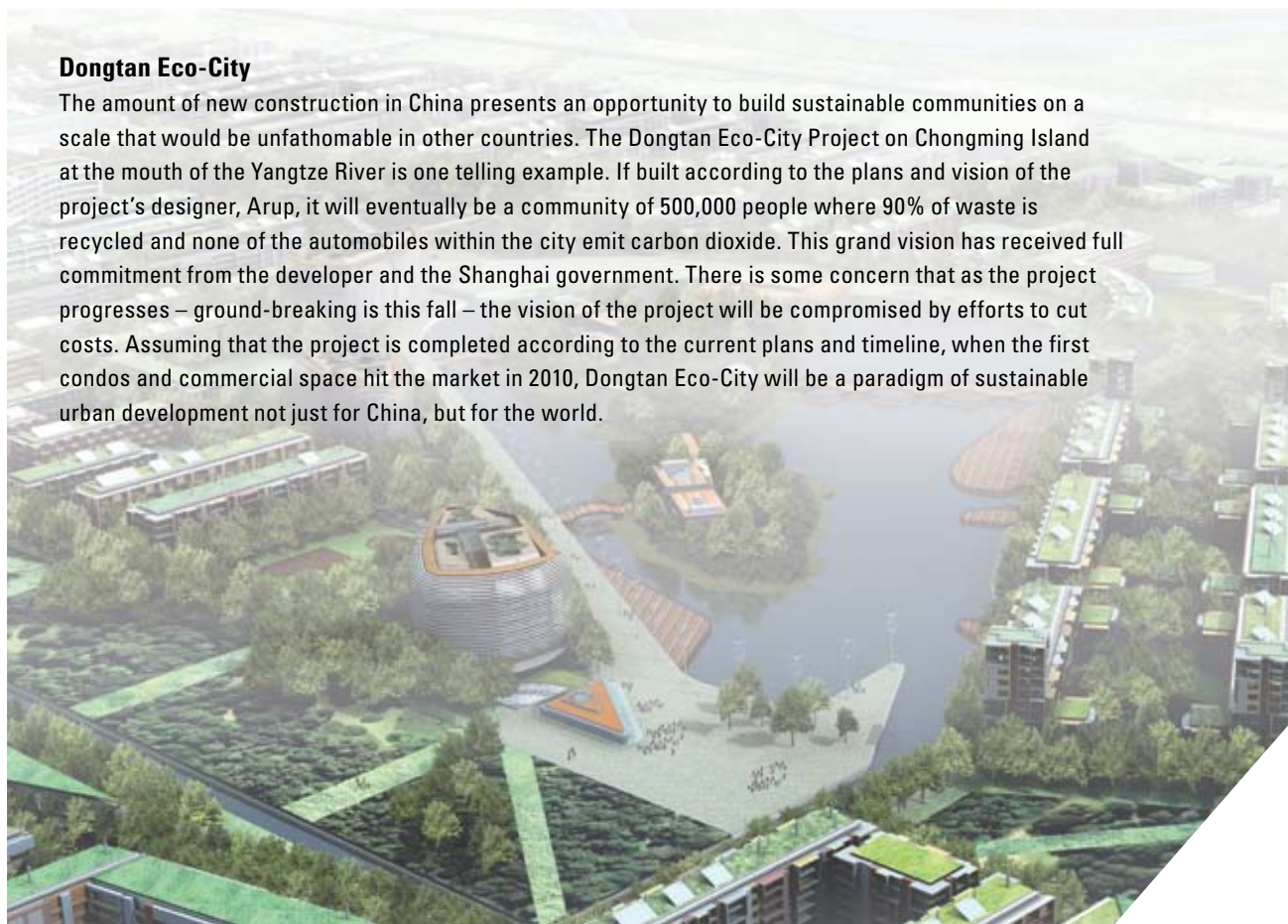


Photo courtesy of Arup

World Financial Centre

GFA: 199,000 sqm

Henderson Land, the developer, is aiming for World Financial Centre to be the pre-eminent Grade A office building in Beijing, stating that the market demands that a building of this calibre be highly sustainable. World Financial Centre is currently pre-certified for LEED and is aiming for LEED platinum upon completion. Simultaneously, Henderson Land will obtain a HK-BEAM rating for the project.



Photo by Ben McMillan, Courtesy of Henderson Land Development

The green building movement in the United States officially began in 1993 with the creation of the United States Green Building Council (USGBC). The objective of this non-profit organisation is to bring together the various stakeholders in the green building movement and to provide a platform and network for the growth of the sustainable building industry. While some argue that the organisation has too much industry influence, others highlight the fact that sustainable building technologies and materials are a critical piece of the overall movement. By creating a convergence of these different voices, the USGBC is well equipped to develop systems, conferences, and literature that are applicable and useful.

The growth of the USGBC has coincided with the emergence of very strong demand from corporations in the United States for high-quality, sustainable rated office space and facilities. Simultaneously, government regulations have emerged, which require new government buildings to meet stringent sustainability benchmarks. This government push is also occurring at the state and municipal levels where certain governments are enforcing even stricter requirements. For example, in the north-western city of Seattle, the government requires that all new construction over 463 sqm achieve a minimum sustainability rating of LEED silver.

What is LEED?

LEED was created by the USGBC in 1998 with the input of a variety of stakeholders including scientists, architects, engineers, and the construction industry. The measurement system is transparent and applicable to a diverse variety of geographic areas. Mr. Wang Hong, a sustainable building expert with EMSI (a sustainable design consulting firm) in Beijing, explains that ‘Taking the LEED energy efficiency category as an example, one sees that the system does not state which technology is preferred. Instead, it gives a powerful tool, energy modelling (DOE2), to evaluate different energy savings strategies / scenarios.’ LEED, in many experts’ opinion, is currently the most effective system in striking the fine balance between being broad enough to be applicable to a variety of different types of new construction and countries, but specific enough to deliver ratings that truly reflect the sustainability of a building.

LEED does have its critics as some feel that obtaining LEED certification is unnecessarily costly and that the system was shaped with too much input from industry. On the surface, obtaining LEED certification is nearly cost-free. In reality though, it is a demanding process and in order to negotiate the maze of application forms and necessary documents, many developers choose to hire specialised consultancies as well as rely on LEED trained architects and engineers that can ensure that a building is certifiably efficient from the beginning of the development process. Some critics also feel that certain elements of the evaluation criteria are overly qualitative and that it is difficult to ensure that a building will meet the LEED evaluator’s expectations. The counter point to this perceived lack of transparency is that this type of qualitative analysis creates flexibility in the LEED system, making it applicable for a greater variety of construction types and locations.

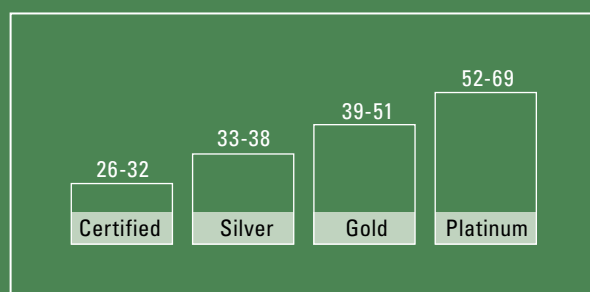
LEED: the Details³

LEED awards points in five categories (69 total points possible):

	Possible points
<input type="checkbox"/> Sustainable site	14
<input type="checkbox"/> Water efficiency	5
<input type="checkbox"/> Energy and atmosphere	17
<input type="checkbox"/> Materials and resources	13
<input type="checkbox"/> Indoor environmental quality	15
<input type="checkbox"/> Innovation and design process	5

These categories are broken down into individual credits as well as several prerequisites such as construction activity pollution prevention and storage and collection of recyclables. Credits include things such as bicycle parking provision, percentage of office space that has daylight views, as well as several credits related to the toxicity and reusability of materials.

LEED has four levels of certification:



Based on United States standards, a platinum rated building has at least 70% less negative impact on the environment than a standard building.

Beyond LEED

Below are several of the other systems that have been developed around the world to assess sustainable buildings.

- BREEAM** Building Research Establishment Environmental Assessment Method (BREEAM) is a United Kingdom-based evaluation system that was created in 1990, and has become the industry standard in the UK. There have been efforts on the part of a major UK engineering firm to introduce BREEAM to China, but the system is very focused around the building industry in Europe and has not yet been tailored to better suit the Chinese market.
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- NABERS** The National Australian Building Environmental Rating System (NABERS) was developed by the Australian Government in 2001 to provide a system of evaluating the energy efficiency of Australian office buildings and now also homes. NABERS incorporates their own water use rating system as well as the energy efficiency rating system of the Australian Green Building Rating (AGBR) system. The government agency behind AGBR is reportedly working on adapting their rating system such that it is suitable for the Chinese market.
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- HK-BEAM** Hong Kong Building Environmental Assessment Method (HK-BEAM) was created in 1996 and is the most recognised and widely used system for evaluating sustainable buildings in Hong Kong. The system is voluntary although it is widely accepted in Hong Kong that for a building to be considered as a top-quality project, it must have a high HK-BEAM rating.
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- CASBEE** The Comprehensive Assessment System for Building Environmental Efficiency (CASBEE) was developed in 2005 by the Japan Sustainable Building Consortium. CASBEE is aimed at being applicable to a variety of different stages in the building process, including pre-design, new construction, existing buildings and refurbishments. The system puts equal weighting on the quality of the indoor environment and the impact that the building has on the surrounding area.

The Added Significance of a LEED Certified Building in China

Considering that current building regulations in China are less rigorous than what international rating schemes dictate, why would a developer take the necessary steps to build a LEED-certified structure? The most critical reasons are differentiation and cost savings. With 1.9 million sqm of new office space expected in Beijing in 2007 alone and very strong demand across all sectors of the market, developers are striving to find ways to differentiate their projects. Creating a certified, sustainable building is a relatively inexpensive (See The Economics of Sustainability Building on the following page) way to achieve this while simultaneously making a tangible difference in the battle to curb China's environmental degradation.

The impact of this differentiation is especially clear when one considers the growing importance of corporate social responsibility (CSR) in Asia Pacific and the fact that a key part of many companies' CSR programmes is occupying sustainable office space. In China, companies were previously limited to focusing on increasing sustainability levels in their individual tenancy but when more certified green buildings enter the market, the sustainability of these buildings will be a significant draw for demanding tenants. This will be the case not only because of the fact that this type of office space satisfies CSR demands, but also because sustainable buildings are proven to increase work productivity, decrease employee turnover, and very importantly, save money on energy costs.

Case Study

Prosper Centre

GFA: 148,000 sqm

Prosper Centre is located in the heart of Beijing's Central Business District and upon completion in the second half of 2007, will be the first LEED-certified office building in the Beijing market. The developer, Fountainwood Real Estate Co., is aiming for LEED Gold and is working with a sustainability consultant, EMSI, to help them navigate the application process. The feedback that Jones Lang LaSalle was able to gather regarding the impetus for achieving LEED with Prosper Centre indicates that market differentiation was the developer's key motivation.



The Economics of Sustainable Building⁴

A recent survey by the USGBC of 33 diverse, LEED-certified buildings constructed over the past 10 years found that on average, the cost increase of developing a LEED-certified building was an additional 1.8% of the total construction cost. On average, this 1.8% additional cost up front results in a 20% reduction in costs over the building's lifetime. The numbers speak for themselves but it is important to note that this type of economic justification for sustainable buildings does occasionally fail for two primary reasons:

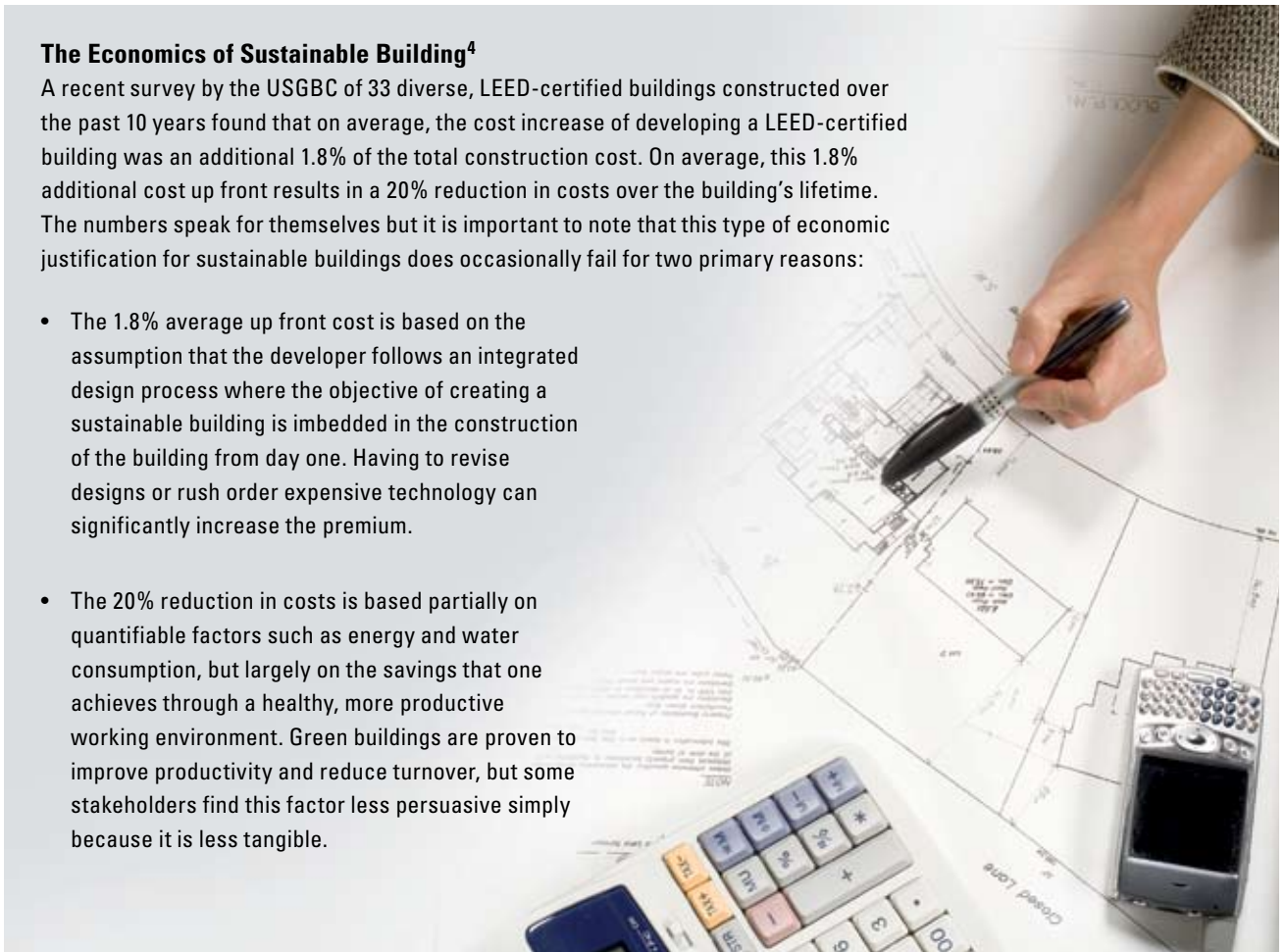
- The 1.8% average up front cost is based on the assumption that the developer follows an integrated design process where the objective of creating a sustainable building is imbedded in the construction of the building from day one. Having to revise designs or rush order expensive technology can significantly increase the premium.
- The 20% reduction in costs is based partially on quantifiable factors such as energy and water consumption, but largely on the savings that one achieves through a healthy, more productive working environment. Green buildings are proven to improve productivity and reduce turnover, but some stakeholders find this factor less persuasive simply because it is less tangible.

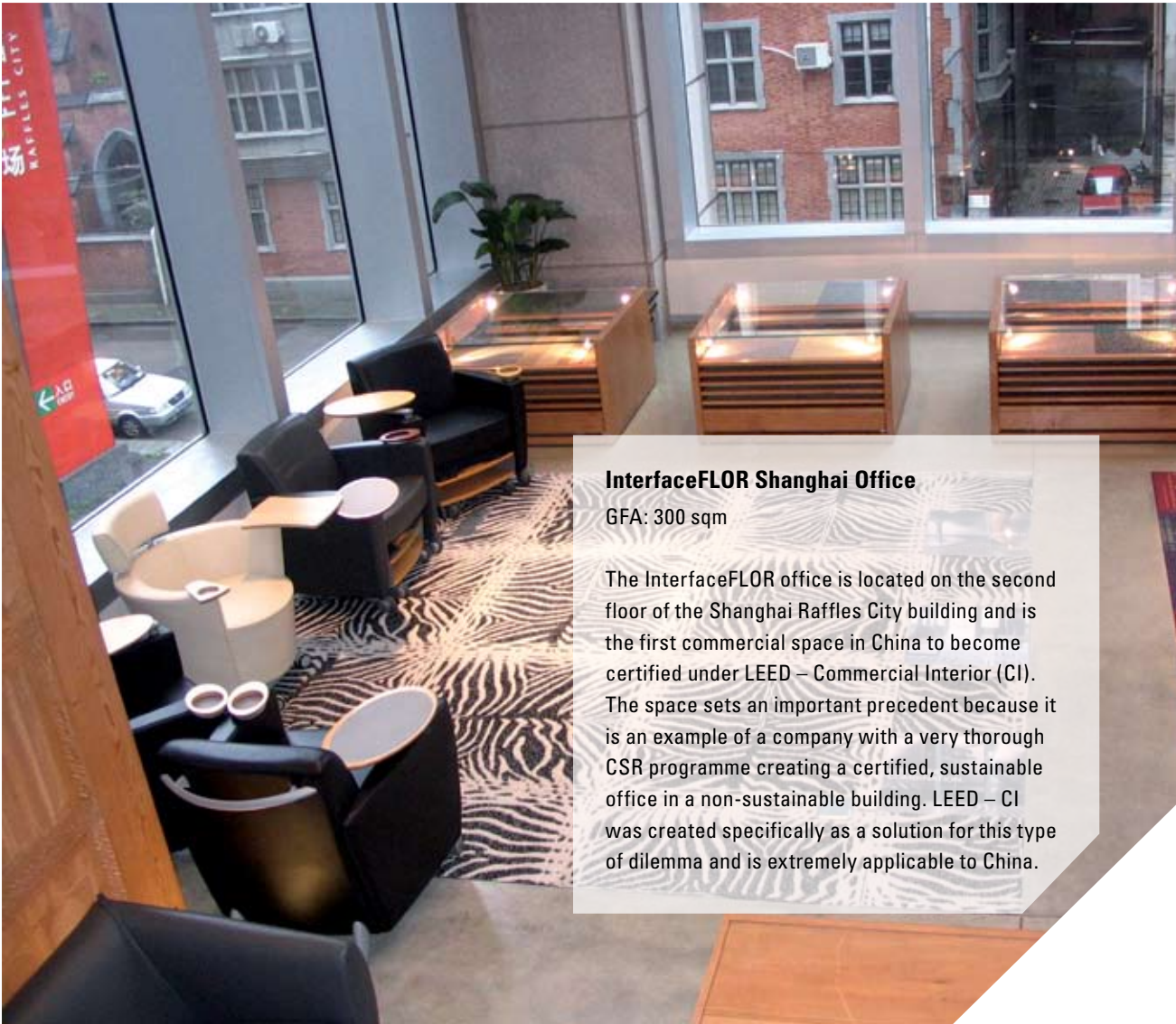
Why LEED?

LEED is solidly established as the preferred rating system for evaluating sustainable buildings in China. This trend should not be interpreted as irrefutable proof that LEED is a more effective rating system, but rather that for a variety of reasons, it is more applicable to the Chinese market:

- > When market differentiation is a key driver behind the creation of a sustainable building, the international recognition that LEED has is critical.
- > Many of the international engineering and architecture firms with a presence in China have LEED-accredited staff. This means that developers can cooperate with design experts who fully understand the LEED rating system and are capable of designing a building that will most likely obtain LEED certification.

- > Many of the MNC tenants that are searching for sustainable office space in China are American companies and are therefore more likely to be familiar with LEED than with any of the other international rating systems.
- > LEED creates a certain amount of space for interpretation. The categorised point system, instead of mandating a specific technology, requires that the evaluator fully analyse the context of the project and the environmental impact that the building has on its surroundings and the people that work inside of it. This flexibility makes LEED applicable in a diverse variety of markets – in both developed Western countries, and a developing country such as China. It is important to note that the level of subjectivity that is inherent to LEED is also one of its most heavily criticized characteristics.





InterfaceFLOR Shanghai Office

GFA: 300 sqm

The InterfaceFLOR office is located on the second floor of the Shanghai Raffles City building and is the first commercial space in China to become certified under LEED – Commercial Interior (CI). The space sets an important precedent because it is an example of a company with a very thorough CSR programme creating a certified, sustainable office in a non-sustainable building. LEED – CI was created specifically as a solution for this type of dilemma and is extremely applicable to China.

Looking Ahead

The push towards more sustainable construction in China is being led by both the market and the government. Tenant demand for sustainable office space is very strong and developers of top-quality buildings are responding accordingly. On the other end of the spectrum, the Chinese government, recognising the dire environmental situation in the country, has established minimum energy efficiency requirements (See The Government Approach on the following page) aimed at decreasing energy use in commercial space throughout the country.

Integrate Design for Success

Key to efficiently developing a green building is instituting an integrated design process where the entire development team is committed to the goal and process from day one. This approach minimises the additional costs that creating a sustainable building entails and ensures that the entire process flows as efficiently as possible. One example of a key piece in the integrated design process is constantly bringing all stakeholders together to assess progress and reconfirm the target (i.e. LEED platinum).

The Government Approach

The Chinese Government has created a framework of minimum requirements on energy efficiency in all new construction. The requirements are based on the average energy efficiency of Chinese buildings in 1980 and aim at decreasing energy use in all new construction in China by 50% before 2010 and by 65% before 2020. The current requirement across China is 50%, but in both Shanghai and Beijing, the local governments have already increased the minimum requirement to 65%.

According to experts in Beijing, the requirement is generally enforced and the energy efficiency that is mandated is actually similar to the energy efficiency requirements of LEED silver. However, the Chinese government has yet to create any sustainability requirements that look at any other factors besides energy use, for example, site planning, internal air quality, or water conservation.



Developers of high-end sustainable buildings will continue to rely on the LEED system because their primary objective is differentiation and LEED is a recognisable, respected, and applicable methodology. The government, alternatively, will continue to enforce their requirements through the complicated approval process that all new building projects go through. There are annual rewards given out by the Ministry of Construction that celebrate exemplary sustainable buildings, but these awards are not widely publicised and lack the international recognition of LEED.

Ideally, the Chinese government will create a framework of sustainable building policies that combine their current approach with a LEED-type system of staggered

certifications that look at more than basic energy efficiency figures. Enforcing a minimum energy efficiency on new construction is critical in a country where the level of development differs so significantly between locations. Simultaneously though, adding advanced certifications that identify those projects that achieve a higher level of sustainability and widely publicising them will create incentives for developers and a more transparent framework by which occupiers can evaluate their options. Until such a system is created and enforced, developers of projects like the World Financial Centre will continue to lead by example and rely on imported rating systems to validate that their projects are indeed outstanding.

What does the emergence of LEED certified buildings mean to developers?

- It means that the China office market is reaching a new level of sophistication and that sustainable design will increasingly be a pre requisite for top projects.
- It means that the technology and expertise necessary to design and build a sustainable building will be more readily available in the China market.
- It means that the public and the government will be more knowledgeable about sustainable buildings and rating systems such as LEED provide developers with a new opportunity to enhance public image and a platform for marketing new projects.

What does the emergence of LEED certified buildings mean to tenants?

- It means that tenants will have office options that better satisfy global corporate social responsibility requirements.
- It means that tenants who choose to occupy sustainable buildings will likely save money on energy use and increase productivity due to the improved internal office environment.
- It means that when evaluating office options, it is important to get all available information on a building's sustainability specifications. Any building that has LEED certification should have detailed energy modelling data as well.

References

1. "Dirty King Coal." The Economist 2 June, 2007: 21-22.
2. Taylor, Robert P. "China: Opportunities to Improve Energy Efficiency in Buildings." Asia Alternative Energy Program and the World Bank. May 2001: vi.
3. <https://www.usgbc.org/ShowFile.aspx?DocumentID=1095>, August 2008
4. Kats, Greg. "The Costs and Financial Benefits of Green Buildings." California's Sustainable Building Task Force. October 2003: ii
5. <http://www.nokia.com/A4359341>, August 2008

About Jones Lang LaSalle

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management business, is one of the world's largest and most diverse real estate money management firms, with approximately USD 45.8 billion of assets under management. For further information, please visit our Web site, www.joneslanglasalle.com.

Jones Lang LaSalle has over 45 years of experience in Asia Pacific. With over 12,800 employees operating in 60 offices in 13 countries across the region, the company is positioned to partner with clients to provide the quality advice needed for making quality decisions.

The Little Book of Real Estate Definitions - Asia Pacific by Jones Lang LaSalle is a useful resource to gain a better understanding of the most commonly used real estate terms in the region. To enhance your knowledge, please visit www.joneslanglasalle-dictionary.com.

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