

# LEED<sup>®</sup> IN MOTION:

**GREATER CHINA:** CHINA, HONG KONG, TAIWAN



**LEED® in Motion: Greater China** builds on the LEED in Motion report series, launched in 2013. It is one of many in a special series of reports focused on the use of LEED in different countries and regions.

Its purpose is to equip readers with the insight and perspective they need to understand LEED as a global rating system that remains flexible enough to support regional and local needs.

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*Data in this report is current  
as of February 2015*

*References to China in this document  
refer to “mainland China.” References to  
“Greater China” include mainland China,  
Hong Kong, Taiwan and Macau.*

*This is a living document and will be  
updated regularly. For questions, please  
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# INTRODUCTION

Leaders guide. They inspire. They challenge us to nobler heights.

Greater China continues to define leadership. Nowhere is this more evident than in the region's built environment and its conscious decision to embrace LEED® certification.

Today, Greater China is home to some of the most ambitious, awe-inspiring LEED-certified buildings in the world. Within mainland China, Hong Kong, Taiwan and Macau there are more than 2,200 projects participating in LEED representing 110 million gross square meters. That makes this region the world's second largest market for LEED.

Mainland China is home to Haworth Showroom, the first project in the world to certify under the latest version of LEED. LEED v4 places a deep emphasis on building performance and human health. Haworth Showroom is located in the LEED Platinum Parkview Green building, a soaring glass pyramid rising in the heart of Beijing. TAIPEI 101 in Taiwan, once the tallest building in the world, is another LEED Platinum skyscraper designed to withstand typhoons and earthquakes. Resiliency at its finest.

Mainland China will also be home to the future Shanghai Tower, soon to be the world's second tallest building. This architectural marvel will feature several fifteen-story vertical gardens designed to pay homage to Shanghai's many historic gardens and courtyards, albeit, this time, with a 21st century twist. The project, is pursuing LEED Gold certification.

LEED buildings stand for quality. They are structures that improve our indoor health in the spaces where we spend 90 percent of our time. They help us heal faster, reduce sickness and disease and boost our productivity. More importantly, they are not only structures designed to stand the test of time but structures that inspire and make their occupants happy. This is critical in a country like mainland China that is grappling with a serious assault on human health: poor outdoor air quality. LEED is one of many solutions to this growing problem.

Leadership does not end. It advances. We want Greater China to continue to be a leader. That starts with healthy people. We are happy to be a part of this great journey.

— The U.S. Green Building Council

LEED, or Leadership in Energy and Environmental Design, is a global green building certification system that provides third-party verification of the features, design, construction, maintenance, operation and effectiveness of green buildings.

Developed and maintained by the U.S. Green Building Council, LEED is a simple and effective program for navigating complex, often competing building and environmental issues affecting humans worldwide. It is a tool that can be used to improve the environment, create better performing buildings and enhance public health. With specific achievement paths built in, LEED is designed for use in a variety of climates and localities, often synching with local laws and requirements.

Every day, more than 170,000 gross square meters of space in more than 150 countries and territories certified with LEED. Over 68,000 commercial projects are participating in LEED, comprising over 1.1 billion total commercial square meters of construction space worldwide. Building projects earn points to achieve one of four different levels of LEED certification: Certified, Silver, Gold or Platinum.

With the support of LEED development committees, volunteers, practitioners, the LEED International Roundtable and more than 30 green building councils around the world, LEED is continually evolving and being optimized for various building types in all global markets.

# FOREWORD

from Pan Shiyi, Chairman of SOHO

China has experienced rapid development from a planned economy to market economy during the past thirty years. As China seeks to improve the quality of life and economy for all its citizens, our current rapid urbanization and widespread industrialization has ushered in some serious environmental degradations. In China's case, these include compromised air quality and declining reserves of fresh water that are imperiling public health.

As is the case with many in China, the most direct influence I've had is with our poor air quality. Since my wife Zhang Xin kept coughing two years ago, I began to care about particulate matter (PM2.5) in our air. For six months, I would post the air quality index from the U.S. embassy on Weibo, which was criticized by China's leadership and put significant pressures on me. Regardless, I insisted on posting the data and realized that the root cause of PM2.5 was that too much energy consumption was leading to environmental pollution causing significant harm to the human body, my family's health being no exception.

It is nice to see that the government recognizes these problems and is researching and formulating various policies to solve these issues. Since the government started taking action, I stopped posting about the air quality on Weibo. It has been my pleasure playing a small part that enabled the earlier implementation of China's PM2.5 national standard.

A difficult task is ahead of us if we want to reduce air pollution. However, it's very possible to control the indoor PM2.5 and improve the quality of indoor air.

One of our first orders of business was to improve the indoor air quality in Beijing Galaxy SOHO. Our mission failed after one year. Eventually, we hired two companies to supervise this matter and eventually we were successful. Due to the relationship between air quality and public health, we have been happy to share our successful experience with all developers and people throughout China.

At SOHO, we have pushed the architectural design, set high standards for design and innovation and transformed the skylines of cities like Beijing and Shanghai. From hiring global top-tier architects to continually raising the bar on design, from hiring external organizations to review the quality of all the projects to publicly posting the quality rankings of the project construction with video on Weibo, quality is and will always be the cornerstone of everything we do at SOHO.

The environmental quality, as well as the quality of design and construction, is of great concern to us. Early on, we integrated Leadership in Energy and Environmental Design (LEED) into our building portfolio. LEED is the world's premier green building certification program and now twelve of SOHO projects are LEED registered and certified. It is a globally accessible and robust rating system that honors and supports our diverse building portfolio regarding energy, material, water efficiency and atmosphere issues.

Pursuing LEED certification raises a higher environmental quality bar for our programs and buildings. As I stated previously, we must improve air quality. Since the root of air pollution is energy consumption, we have made the decision to reduce it.

It is estimated that 200 million rural people will migrate to cities in China during the next twenty years. This dramatic population shift is creating great demand for buildings. And this demand must be supported not only through cutting-edge design, but also through sustainable design that reduces energy and resource waste and creates healthier spaces for the people of our country.

Being a developer as well as an ordinary citizen, I hope to build a better home through my own efforts so that our families, friends and all Chinese people can have a healthier living environment.



**Pan Shiyi**

Chairman of SOHO China Limited

# WHY LEED?

“Through the LEED rating system, we are able to optimize sustainable development in every aspect of the project. This improves product quality and saves development cost. For customers, the use of better indoor environmental design and healthy materials are a natural benefit.”

- Niu Qian,  
GREEN BUILDING SENIOR MANAGER,  
FRANSHION PROPERTIES (CHINA) LIMITED

Today, Greater China architects, construction firms, energy companies, city planners, enterprises and politicians are working together to create the sustainable cities of tomorrow. In fact, people in more than 150 countries and territories around the world use LEED because of its:

1. Global recognition
2. Quality
3. Focus on healthier, energy-efficient, high-performing buildings

## LEED-Certified Commercial Projects by Certification Level



**CHINA:** 50  
**HONG KONG:** 11  
**TAIWAN:** 7



**CHINA:** 132  
**HONG KONG:** 25  
**TAIWAN:** 5



**CHINA:** 347  
**HONG KONG:** 39  
**TAIWAN:** 41




**CHINA:** 37  
**HONG KONG:** 15  
**TAIWAN:** 8

## TOTAL COMMERCIAL LEED PROJECTS IN GREATER CHINA (LEED-registered, LEED-certified): 2,244



## GROSS SQUARE METERS OF LEED-CERTIFIED AND REGISTERED SPACE: Over 125 MILLION



# GREATER CHINA: A LANDSCAPE RIPE FOR LEED AND GREEN BUILDING

“100 year buildings.”

- Dr. Qiu Baoxing

CHINA'S VICE MINISTER OF HOUSING AND URBAN-RURAL  
DEVELOPMENT TO USGBC LEADERSHIP.

Minister Qiu says that all too often in mainland China buildings are taken down after a few years because they are in the wrong location. A better planning process must be in place to prevent this from happening so that all parties, when it comes to future buildings, are thinking about buildings standing the test of time.

In 2011, more than 250 million rural Chinese residents and their dependents relocated to urban areas to find work.<sup>1</sup> Currently, over 680 million people—or 51% of mainland China's 1.35 billion total population—live in cities. The World Bank estimates that between now and 2015, roughly half of the world's new building construction will take place in mainland China. As Greater China continues to solidify its position as a global powerhouse, green buildings are a key solution to meeting market demand of the stresses placed on our built environment.

“Urbanization should not just be about enclosing land or constructing buildings. It needs to reflect green, intensive, smart and low-carbon concepts.”<sup>2</sup>

By 2020, mainland China aims to certify 30% of all new construction projects as green. It experienced 25% growth in green building certifications during the first quarter of 2011.

To achieve its energy efficiency goals, mainland China's Government extended favorable policies for green buildings in its 12<sup>th</sup> Five-Year Plan, which is in effect through 2015.

<sup>1</sup> [https://www.cia.gov/library/publications/the-world-factbook/geos/print/country/countrypdf\\_ch.pdf](https://www.cia.gov/library/publications/the-world-factbook/geos/print/country/countrypdf_ch.pdf)

<sup>2</sup> Quote Zhang Xiaoqiang, Chairman, China National Development & Reform Commission, China Morning Post September 13, 2013  
<http://www.scmp.com/business/economy/article/1308918/li-keqiang-focus-smart-and-green-urbanisation>

# HOW LEED WORKS IN GREATER CHINA

LEED-certified buildings are among the most efficient and sustainable in the world. LEED credits and strategies are meant to push the limits of convention for maximum outcomes. Outcomes are measured in five key areas:



## ENERGY AND ATMOSPHERE



## WATER



## WASTE



## TRANSPORTATION



## HUMAN EXPERIENCE










### LEED® Dynamic Plaque™

The LEED Dynamic Plaque is a building performance monitoring and scoring platform for LEED-certified projects, providing annual LEED recertification and global benchmarking. The plaque displays a LEED performance score, which reflects the measured performance of the building across five categories: energy, water, waste, transportation and human experience. Learn more at [LEEDON.io](https://leedon.io)



## Top LEED Credits

LEED is organized by credits. A credit represents a specific strategy or outcome to create a green building. This table shows the percentages of projects in Greater China that have attempted and successfully achieved select credits\* compared to projects in the rest of the world.

CREDITS	GREATER CHINA	GLOBAL
 <b>SSc4.1</b> Alternative transportation public transportation access	99%	63%
 <b>SSc4.4</b> Alternative transportation-parking capacity	93%	72%
 <b>SSc5.1</b> Site development- protect or restore habitat	46%	20%
 <b>SSc7.1</b> Heat island effect- nonroof	86%	49%
 <b>WEc2</b> Innovative wastewater technologies	59%	22%
 <b>EAc4</b> Enhanced refrigerant management	90%	57%
 <b>EAc5</b> Measurement and verification (NC only)	67%	44%
 <b>MRc2</b> Building product disclosure and optimization - Environmental product declarations	89%	88%
 <b>IEQc2</b> Optimize energy performance	81%	46%

\* LEED v 2009

# LEED AND HEALTH

“China’s air quality is grim, and the amount of pollution emissions far exceed the environment’s capacity.”

- Zhou Shengxian,  
ENVIRONMENT MINISTER OF CHINA<sup>3</sup>

The built environment has profound effects on human health and the world around us. At their best, our buildings and communities are powerful promoters of health and well-being. At their worst, they contribute to some of the key public health concerns of modern society, from asthma to cancer to obesity.

When we first introduced LEED fourteen years ago, we viewed each building—or building project—as a living, breathing organism. As with any living organism, each system within a building—the heating, cooling, plumbing, lighting, etc.—has a distinct role, a unique purpose, much like the human body. Today, with a LEED building, all of those systems must work together to achieve excellence in operational performance to be considered healthy.

Whereas our original version of LEED focused on limiting damage caused by a building project, the latest generation of LEED emphasizes the potential for projects to contribute positively to their communities and the planet. This is done with the introduction of new impact categories: climate change, human health, water resources, biodiversity, green economy, community and natural resources.

We ask project teams to optimize the amount of fresh air coming in to the building with energy use. But that word “fresh” can be deceptive when the outside air is dirty. So we require filtration that reduces particulate matter when bringing dirty air in from outside.

Green buildings with good indoor environmental quality protect the health and comfort of building occupants. Researchers have also found that high-quality indoor environments also enhance productivity, decrease absenteeism, improve the building’s value, and reduce liability for building designers and owners.

In the new version of LEED, we are focusing on creating tools that provide information to specifiers and decision makers so they can choose alternatives that do not bring unhealthy chemicals into the building. In addition to these direct issues of health, we know that there are many other aspects of an indoor environment that give it quality and make it healthy. These include a connection to the outdoors, daylit spaces, and controllability of systems, so you can control the temperature enough to feel comfortable. Even small features like the ability to control your own lighting through task lights can add a sense of control in your

Currently, only 1% of Greater China’s 560 million city dwellers breathe air considered safe by the European Union’s standards.<sup>4</sup>

<sup>3</sup> “Life in a Toxic Country” August 3, 2013 New York Times <http://www.nytimes.com/2013/08/04/sunday-review/life-in-a-toxic-country.html>

<sup>4</sup> “As China Roars, Pollution Reaches Deadly Extremes, The New York Times, August 26, 2007 <http://www.nytimes.com/2007/08/26/world/asia/26china.html?oref=slogin>

space, making you feel like you are part of the place instead of ruled by it. These are all items that impact our health in spaces either directly (as in air quality and lack of pollutants) or indirectly (as in comfort and connection to the outdoors).

The Indoor Environmental Quality category rewards projects for choices related to improving indoor air quality and thermal, visual, and acoustic comfort. This section combines traditional approaches, such as ventilation and thermal control, with emerging design strategies.

“Official measurements of fine particles in the air measuring less than 2.5 micrometers, which pose the greatest health risk, rose to a record 993 micrograms per cubic meter in Beijing in January 2013, compared with World Health Organization guidelines of no higher than 25.”<sup>5</sup>



Photo Credit: Joe Crea

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<sup>5</sup> Bloomberg Business Week: China Boosts Energy & Emissions Goals After Record Smog March 5, 2013









## Regional Priority Credits

Regional Priority Credits (RPCs) are specific LEED credits for Greater China that further enhance the rating system's applicability in mainland China, Hong Kong and Taiwan. They incentivize the achievement of credits that address geographically specific environmental priorities. They are not new LEED credits, but instead are existing credits that have been designated as particularly important for their areas. The incentive to achieve the credits is in the form of a bonus point. If an RPC is earned a bonus point is awarded to the project's total points. Since RPCs are not new credits, LEED project teams do not need to attempt them in addition to the existing LEED credits they are attempting.



### LEED 2009 FOR NEW CONSTRUCTION & MAJOR RENOVATIONS

	<b>SSc6.1</b>	Stormwater Control - Quantity Control
	<b>WEc1</b>	Water Efficient Landscaping
	<b>WEc2</b>	Innovative Wastewater Design
	<b>EAc1</b>	Optimize Energy Performance: Threshold: 14%
	<b>EAc3</b>	Enhanced Commissioning
	<b>EAc5</b>	Measurement and Verification

### LEED 2009 FOR CORE & SHELL

	<b>SSc6.1</b>	Stormwater Control - Quantity Control
	<b>WEc1</b>	Water Efficient Landscaping
	<b>WEc2</b>	Innovative Wastewater Design
	<b>EAc1</b>	Optimize Energy Performance: Threshold: 14%
	<b>EAc3</b>	Enhanced Commissioning
	<b>EAc5.2</b>	Measurement & Verification- Tenant Submetering

### LEED 2009 FOR SCHOOLS

	<b>SSc6.1</b>	Stormwater Control - Quantity Control
	<b>WEc1</b>	Water Efficient Landscaping



**WEc2**

Innovative Wastewater Design

**EAc1**

Optimize Energy Performance: Threshold: 14%

**EAc3**

Enhanced Commissioning

**EAc5**

Measurement and Verification

## LEED 2009 FOR HEALTHCARE

**SSsc6.1**

Stormwater Control - Quantity Control

**WEc1**

Water Efficient Landscaping

**WEc2**

Water Use Reduction

**EAc1**

Optimize Energy Performance: Threshold: 14%

**EAc3**

Enhanced Commissioning

**EAc5**

Measurement and Verification

## LEED 2009 FOR RETAIL

**SSsc6.1**

Stormwater Control - Quantity Control

**WEc1**

Water Efficient Landscaping

**WEc2**

Innovative Wastewater Design

**EAc1**

Optimize Energy Performance: Threshold: 14%

**EAc3**

Enhanced Commissioning

**EAc5**

Measurement and Verification

## LEED 2009 FOR COMMERCIAL INTERIORS




**SSsc3.1**

Alternative Transportation - Public Transportation Access







**WEc1**

Water Use Reduction









	<b>EAc1.1</b>	Optimize Energy Performance - Lighting Power
	<b>EAc1.2</b>	Optimize Energy Performance - Lighting Controls
	<b>EAc1.3</b>	Optimize Energy Performance- HVAC
	<b>EAc2</b>	Enhanced Commissioning

### LEED 2009 FOR COMMERCIAL INTERIORS - RETAIL

	<b>WEc1</b>	Water Use Reduction
	<b>EAc1.1</b>	Optimize Energy Performance-Lighting Power
	<b>EAc1.3</b>	Optimize Energy Performance-HVAC
	<b>EAc2</b>	Enhanced Commissioning
	<b>EAc3</b>	Measurement & Verification
	<b>MRc2</b>	Construction Waste Management

### LEED 2009 FOR EXISTING BUILDINGS: OPERATIONS & MAINTENANCE

	<b>SSc8</b>	Alternative Commuting Transportation
	<b>WEc2</b>	Additional Indoor Plumbing Fixture Efficiency
	<b>EAc1</b>	Optimize Energy Performance
	<b>EAc2.3</b>	Ongoing Commissioning
	<b>MRc9</b>	Solid Waste Management – Ongoing Consumables
	<b>EQc1.4</b>	Best Management Practices – Reduce Particulates in Air Distribution

# LEED INTERNATIONAL ROUNDTABLE

The LEED International Roundtable is a team of practitioners and green building industry experts from across the globe. These members add deep insights about regional and local technical requirements, market dynamics and social aspects, helping LEED grow as a global rating system. As a result, LEED is able to maintain its rigor as a worldwide tool that provides support for regional and local needs. The collective objectives of the International Roundtable are to study LEED credits across all rating systems, evaluate their applicability in countries and recommend locally appropriate alternatives, while maintaining LEED's global consistency and technical stringency.

Greater China is represented on the International Roundtable by three active groups—the Green Building Professional Partnership (GBPP) in mainland China, Platinum in Hong Kong, and seed in Taiwan.

The Greater China member organizations of the LEED International Roundtable serve as centers for networking of subject matter experts, knowledge sharing, spurring innovation and community support. They also actively promote and support the LEED Green Associate and LEED AP professional credentials. (See page 23 for more information).

## Accomplishments

1. Developed LEED 2009 and LEED v4 Regional Priority Credits (RPCs) for all rating systems. Members have worked with LEED professionals across Greater China to select appropriate and regionally-specific RPCs for all systems, a significant development that represents a sizeable amount of volunteer work.
2. Hosted ongoing educational events including introductions to LEED v4 and ASHRAE seminars.
3. Hosted USGBC's Asia Pacific Technical Meetings in 2013 and 2014.

## Green Building Councils

Green building councils are member-based organizations that empower industry leaders to affect the transformation of the local building industry toward sustainability. In addition to USGBC's presence in mainland China with an on the ground representative, there are other green building councils, notably:

- China Green Building Council (China GBC)
- Hong Kong Green Building Council (HKGBC)
- Taiwan Green Building Council

### **Tim Shen,** LEED AP O+M Director, Sustainability, Asia CBRE Member of LEED International Roundtable

The main reason we use LEED so much in Asia is because our clients are asking for it. Nearly every country in Asia has its own green building rating system, and CBRE happily supports all of them. We were founding sponsors or members of the Hong Kong and Vietnam Green Building Councils and our colleagues in Japan have actively contributed to the development of CASBEE over the years. Nevertheless, we're seeing increasing requests for support on LEED projects by developers, investors, and occupiers across the region.

LEED has always offered investors and occupiers with pan-regional portfolios a consistent green building certification standard to use in different countries, and has always been popular with multinational firms because of this. However, with increased focus on localized applicability with regional priority credits and alternative compliance paths being developed by Asia members of the LEED International Roundtable, LEED has recently become even more relevant with respect to local context, whilst still providing that de facto international best in class approach to the design, construction and operation of green buildings. Consequently, we're also seeing growing demand for LEED certification from many local players across Asia.

# LEED AND THREE STAR

Mainland China's current Five Year Plan (2011-2015) acknowledges the environmental benefits of sustainable design and construction and aims to use green buildings as a means to reduce energy use by 16% and carbon dioxide by 17%.

In an effort to define green buildings within mainland China, the Chinese Building Science Research Institute developed the China Green Building Label, or Three Star Rating, as it is commonly known, in 2006. The Three Star Rating System is managed by the Ministry of Housing and Urban-Rural Development (MOHURD) and projects are certified by the China Green Label Office at the China Green Technology Centre.

Some projects have chosen to pursue dual certification using both LEED and Three Star such as Vanke's Shenzhen Headquarters (see below).

The use of a global standard, such as LEED, in conjunction with a local rating system, enables international comparability and standardization of environmental achievements. LEED seeks to work in harmony with Three Star and the U.S. Green Building Council is proud to continue working collaboratively with the China Green Building Council and MOHURD to strengthen and promote green buildings for all within a generation.

**Shenzhen Vanke Headquarters**  
Architects: Steven Holl Architects  
Location: Shenzhen, China 2006-2009  
120,000 gross square meters



# WHERE IN GREATER CHINA IS LEED BEING USED?





# SHANGHAI'S ASCENT

Three LEED skyscrapers anchor Shanghai's Pudong district, the financial hub of this vibrant city: Jin Mao Tower, Shanghai World Financial Center and the future Shanghai Tower which, when completed, will be the second tallest building in the world.

## SHANGHAI TOWER

**Height:** 632 meters

**Floors:** 121

**Architect:** Gensler

**Certification Level:** Pursuing both LEED Gold and China Green Building Three Star

## SHANGHAI WORLD FINANCIAL CENTER

**Height:** 492 meters

**Floors:** 104

**Owner:** Shanghai World Financial Center Co., Ltd.

**Certification Level:** LEED Gold

## JIN MAO TOWER

**Height:** 420.5 meters

**Floors:** 88

**Owner:** Franshion Properties (China) Limited

**Certification Level:** LEED Gold

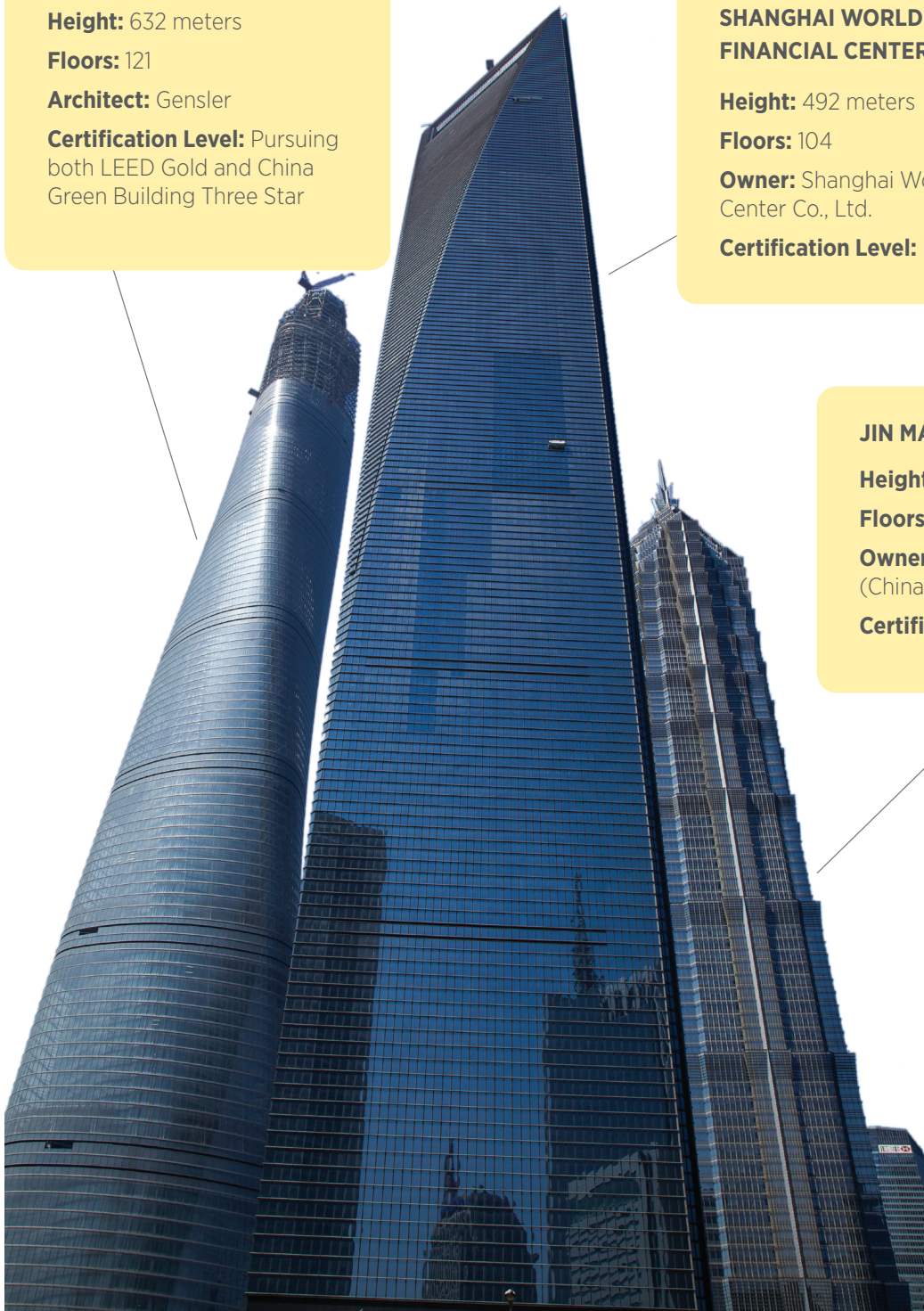


Photo Credit: Joe Crea

# PARKVIEW GREEN AND HAWORTH SHOWROOM

## THE PERFORMANCE MASTER HOUSE THAT IS HOME TO THE FIRST LEED v4 PROJECT IN THE WORLD

### LEED Dashboard

(Possible Points)

**Energy and Atmosphere: 12/14**

**Materials and Resources: 6/11**

**Indoor Environmental Quality: 9/11**

**Sustainable Sites: 11/15**

**Water Efficiency: 5/5**

**Innovation in Design: 5/5**

LEED was an afterthought for Parkview Green. Yet it became mainland China's first mixed-use LEED Platinum building.

LEED certification was not pursued for the four buildings that make up Parkview Green, according to the building's architect Winston Shu with Integrated Design Associates in Hong Kong. Yet, the intention of the project from the very beginning was to create a landmark piece of architecture that was highly energy efficient.

In development for over a decade, Parkview Green, situated between Beijing's embassy and Central Business Districts, had a key challenge to overcome: Beijing law stipulates that every neighboring building window have at least one hour of direct, natural light each day. Parkview Green was faced with the "Goldilocks Syndrome:" The building could not be too tall, or too short. It had to be just right, while still reducing energy consumption. The solution? A pyramid structure. Architecturally speaking, triangles are incredibly durable. The theory behind the pyramid structure was that if you allowed the building to control the air coming in from the lower level, it would eventually release from the top. The pyramid would serve as a "solar chimney," pulling air out of the building while driving natural ventilation and minimizing annual heating and cooling demands.

Impressed by the building's efficiency, a colleague of Shu's suggested he pursue LEED certification. As Shu recalled:

"I was asked, 'Why didn't you go for LEED?' I thought, 'How were we going to do this? We have already passed the design stage!' But the consultant said we could achieve LEED Platinum certification. That was when we



Photo Credit: Dennis Wu



took LEED seriously. LEED's appeal is on a multinational level. We all recognize LEED is a high standard more so than others. It is more demanding. If you have LEED, it gives you a different status."

The result is a striking, iconic, highly performing landmark of a building in mainland China's capital city. Specifically, the indoor air quality is very good. Healthy air for our indoor spaces—where we spend 90% of our time— is critical in a city like Beijing which is experiencing serious air pollution as a result of its rapid urbanization.

## Key IEQ Credits that Parkview Green achieved include:

### **EQc1: Outdoor air delivery monitoring**

**Intent:** To provide capacity for ventilation system monitoring to help sustain occupant comfort and well-being

### **EQc2: Increased ventilation**

**Intent:** To provide additional outdoor air ventilation to improve (IAQ) for improved occupant comfort, well-being and productivity.

### **EQc5: Indoor chemical and pollutant source**

**Intent:** To minimize building occupant exposure to potentially hazardous particulates and chemical pollutants.



### **Mr. Frank Rexach**

Vice President and General Manager  
Haworth Asia Pacific, the Middle East, Africa, and Latin America

**Could you please share your company's sustainability vision and explain how LEED helps you to achieve your organizational goals?** The LEED certification process ensures a sustainable approach to building development and space design that matches Haworth's dedication to sustainability. That dedication is an integral part of our company's DNA. We design all of our spaces to LEED standards, from factories to offices, showrooms to co-working lounges, everything. This approach helps us understand, in detail, the paths and requirements our clients experience when obtaining LEED certification.

**How has LEED been incorporated into your built environment?** Haworth has been pursuing LEED certification for our global showrooms since the program's inception. In Greater China, we have obtained certifications for our Hong Kong and Shanghai showrooms under LEED v2009. When the next generation of LEED (LEED v4) became available for piloting, we saw an opportunity to push our knowledge and reach new sustainability targets. Through the process of certification, we have increased our technical rigor and streamlined our services.

**What do you perceive to be the benefits that LEED brings internally to an organization such as Haworth and to your clients?** Sustainable design can be a nebulous concept. LEED provides a global framework for the design and manufacturing community, as a whole, to better comprehend what it means to deliver an environmentally conscious space. Given Haworth's vast portfolio of product solutions and our global network of suppliers, LEED serves as a great starting point for us to explore the impact our products have on the future of commercial spaces around the world.

**What concepts within LEED are particularly aligned with your core values and core strengths? How has it encouraged innovation?** LEED's approach to sustainability mirrors our own core strengths: looking at sustainability not only as a box to tick, but as an ongoing process - always improving, continuously evolving. Specifically, the latest generation of LEED focuses on life cycle and transparency. We are in alignment with these overarching goals, both in terms of product design and our approach to market.

**Do you plan to use LEED in future projects?** Yes, our plan is to use LEED for future projects, including our showrooms, factories and club lounges across Greater China. As soon as the opportunity arises we will begin our integrated design process.



# LEED PROJECT SPOTLIGHT

## Haworth Beijing Showroom

Parkview Green, Beijing, China

LEED CI Gold

First project in the world to certify under LEED v4

"LEED v4 is about wellness. It's not just about the right materials, it's about the people. Their wellness. It will make people more concerned and want to learn more about it."

- Regina Tay

Marketing and Communications Manager  
Haworth China

Haworth has shown tremendous leadership by being the first project to certify under the latest generation of LEED. A helpful point on Haworth's journey towards LEED v4 certification was to be in a very energy-efficient and highly performing building such as Parkview Green. Healthy indoor air was critical for Haworth and is becoming a chief concern amongst many in Beijing, as Tay notes:

"When people here in Beijing look for office space, they want to see proof that the space is safe, that it is healthy. I have never seen such sentiment before. They want to see the certificate that the space is safe. There are people who come in to measure indoor air quality and customers want to know who is verifying the data.

Many people are now organizing events about indoor air quality. It's the younger generation taking over their parents' companies who are concerned about this. They get it."

### HAWORTH SHOWROOM SUCCEEDED IN:

**Indoor Environmental Air Quality:** Fresh air ventilation of the Haworth Beijing Showroom exceeds the required indoor environmental quality by 30%. All interior paints and coatings meet the VOC limits in LEED. The showroom also utilizes variable air volume diffusers under the floors to provide separate individualized controllability for each solar exposure.

**Energy Efficiency:** Through the optimization of efficient LED lighting design, fixtures and controls supplied by Philips, the project reduced energy consumption by 59%. The project further ensures energy efficiency through the use of Energy Star equipment for 90% of the equipment and appliances.

**Water Efficiency:** A grey water recycling system provided by the Parkview Green building combined with water efficient fixtures reduced water usage by approximately 53%.

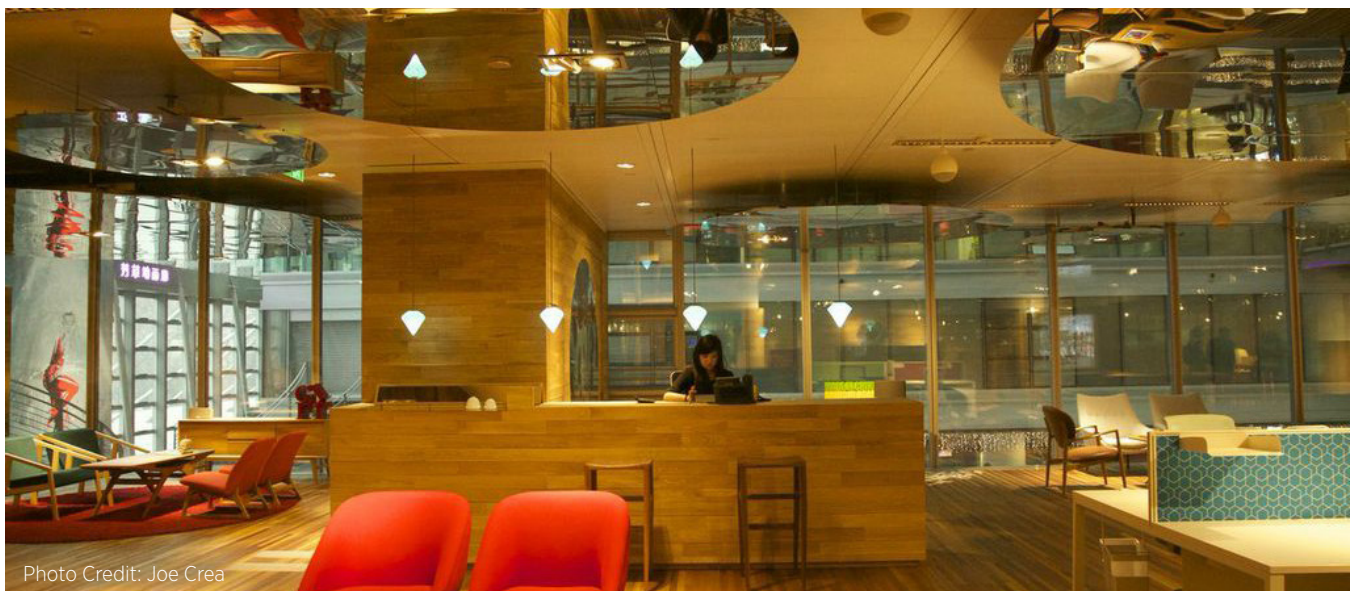


Photo Credit: Joe Crea

# SHANGHAI EXPO

*from Factories to Tomorrow*

“The revitalization of the former Urban Best Practices Area (UBPA) incorporates many of the themes from Shanghai EXPO 2010: low-carbon, green and eco-city principles. We chose to pursue the LEED ND Rating System as it subdivides and quantifies years of research achievements into applicable criteria that help shape best practices from a technical, practical and operational standpoint. LEED ND certification also brought valuable inspiration to us and provided new insights into how LEED was flexible enough to evolve from the inception of our ND project. Neighborhood planning not only requires investments for hardware systems, but more importantly, demands a “soft environment,” to allow for sustainable development. Many credits in LEED ND may not explicitly reveal their economic values. Nevertheless, if LEED is promoted widely enough to the general public, these low carbon and energy-saving strategies—once they are widely implemented—would bring unpredictable benefits to the urbanization of China” - **Fangming, CAI**, President, Shanghai EXPO Group

## **First LEED Platinum Certified ND Project in Greater China**

During Shanghai EXPO 2010, a 54-acre parcel of land once dominated by factories and other industries powering mainland China during the 19th century became a global showcase of low carbon and eco-friendly development.

Today, the Urban Best Practices Area (UBPA) development continues to live up to the vision set by Shanghai EXPO in 2010 of “Better City, Better Life.” The site is being redeveloped into a neighborhood and has achieved LEED Platinum certification, the first LEED Neighborhood Development Platinum project outside the U.S.

The project consists of two key blocks of land that, together, include 18 existing buildings from the EXPO period, now home to art galleries, retail and office spaces. Four new buildings will be constructed on the site in the coming years.

Shanghai EXPO has successfully integrated smart growth technologies, urbanism and sustainable green building practices to create a neighborhood of the future. One that promotes health and the needs of local residents while remaining aligned with Shanghai’s existing citywide planning agendas.

Many leaders were involved in this effort, notably design engineers at Arup, the firm behind Australia’s structural marvel, The Sydney Opera House. Their multi-disciplined

## **Shanghai EXPO UBPA Development**

**Project Site Area:** 54.15 Acres

**Total Buildable Land:** 38.72 Acres

**Non-Buildable Land:** 38.72 Acres

**Non-Buildable Land (ROW + Utility):**  
15.43 Acres

**Residential Buildable Land:** 1.10 Acres

**Non-Residential Buildable Land:**  
37.62 Acres





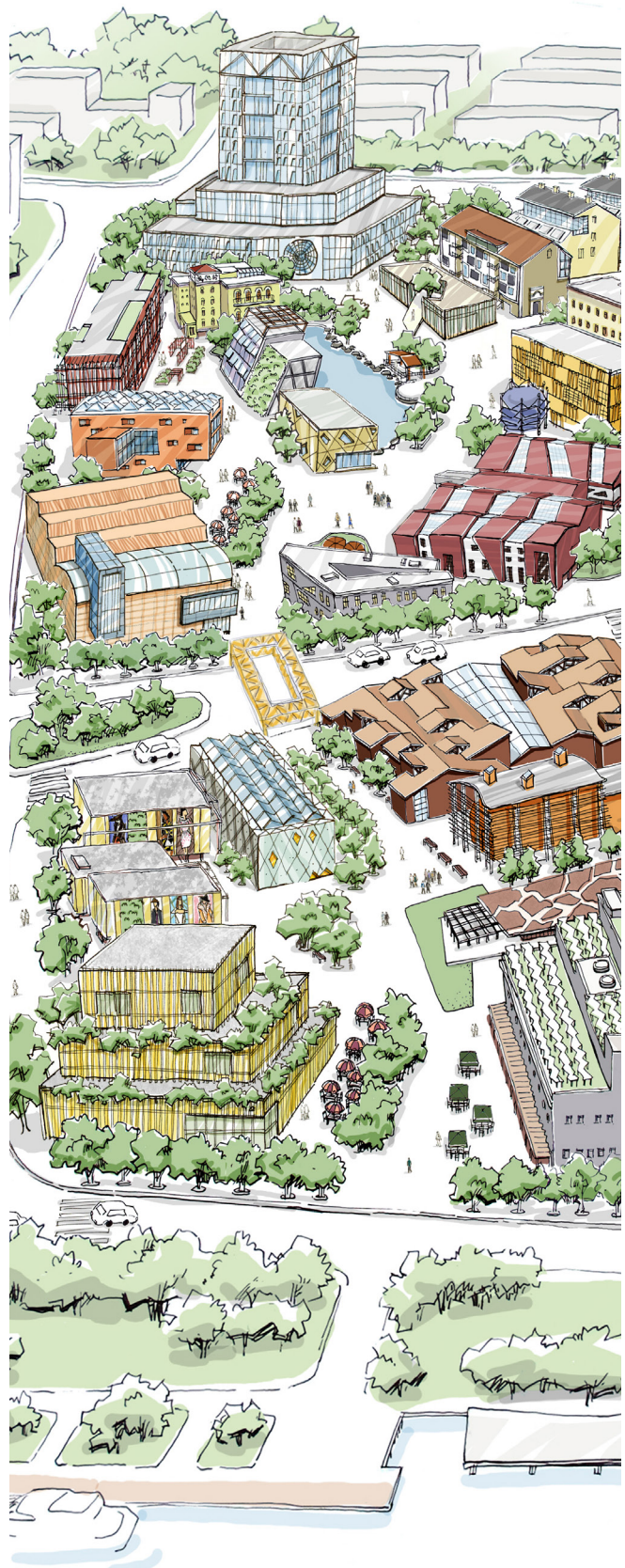
design team achieved 85 out of a possible 110 available LEED points for the project, which preserves the historic buildings on the site yet balances them with modern features and technologies to minimize carbon footprints.

### Key Features of the Site

- Accessibility to a variety of forms of public transportation.
- The infrastructure has been built to encourage bicycle usage.
- Construction impacts have been minimized and local habitats have been restored.
- Paving materials were selected to reflect sunlight yet still allow for water penetration to reduce heat island effect.
- A Low Impact Design storm water management strategy has been implemented to retain 90% of rainwater and prevent runoff and an overload of the municipal sewer system. Rainwater reuse is expected to save 40% of potable water annually.
- PV panels and solar collectors will capture sunlight to generate electricity and provide domestic hot water.
- All buildings on the site will receive cooling and heating from the adjacent Huangpu River through the existing District Energy System.
- Green building certification (LEED and Three Star) will be pursued for many of the buildings on the site.

“LEED allows a building to be rated quantitatively and qualitatively, and creates a platform for buildings to be compared on the same basis. By being a LEED AP, not only do I get to understand green buildings in a more in-depth way, but also my knowledge on sustainability extends from a single building to a much-integrated perspective. I am also glad to see the change in our clientele who moved forward from getting a certification to actually taking on their social and sustainable responsibilities.”

- **Frederick Wong, LEED AP, BD+C, ND**  
Associate Director and Project Manager at ARUP,  
the consultant on the Shanghai EXPO project





# LEED PROJECT SPOTLIGHT

## TAIPEI 101

Taipei, Taiwan

**LEED for Existing Buildings:**

**Operations & Maintenance - Platinum**

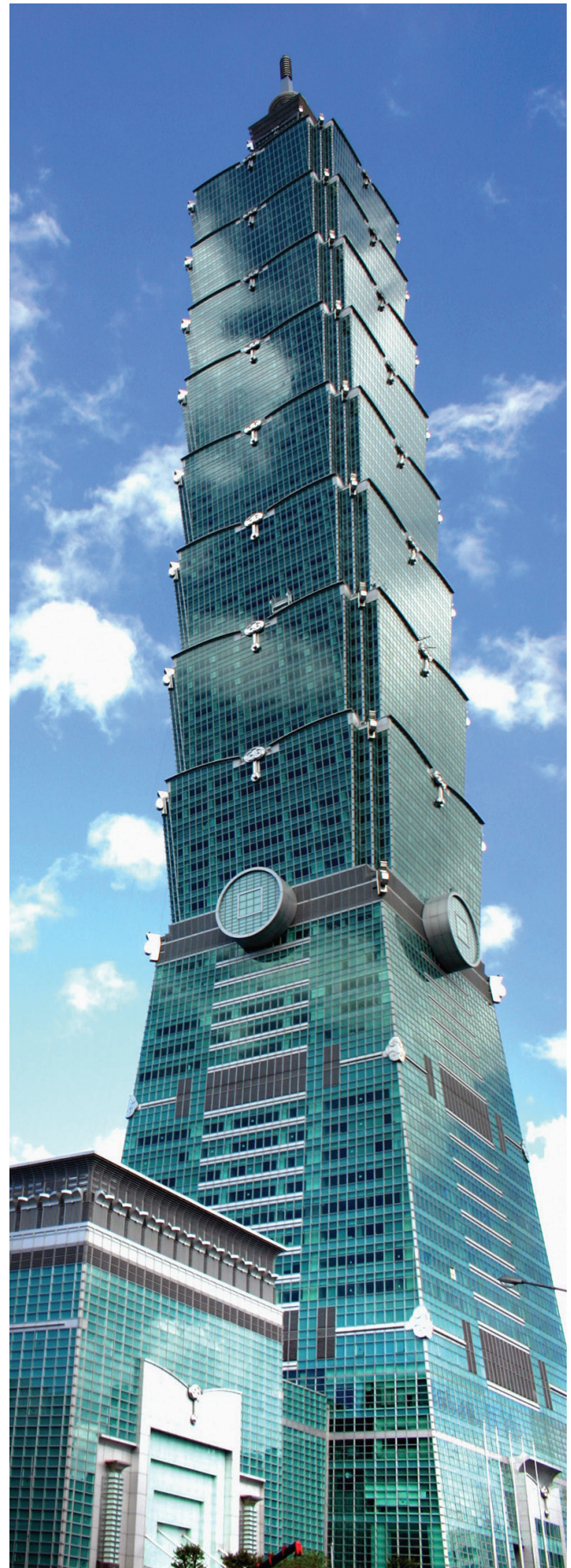
**Certified on July 7, 2011**

With 101 floors and nearly 186,000 gross square meters, TAIPEI 101 is one of the tallest buildings in the world. Since its completion in 2004, it has become an icon for Taipei City, Taiwan and has set the quality and performance benchmark for supertall buildings in Asia.

From 2008 to 2010, TAIPEI 101 invested in significant energy efficiency retrofit projects to generate energy and water savings. A review of public lighting was undertaken and resulted in the conversion to more energy efficient luminaires and lighting controls. By utilizing Energy Management and Control Systems (EMCS), building managers are able to adjust operating temperatures, modify chiller plant operating schedules and modify chilled water distribution according to actual tenant needs.

TAIPEI 101 earned LEED for Existing Buildings: Operations and Maintenance certification and succeeded in:

- Decreasing potable water usage by at least 30% compared to average building consumption
- Saving 28,000,000 liters of potable water annually
- Being ranked in the top 30% of high-rise office buildings as benchmarked by the U.S. ENERGY STAR database
- Reducing energy consumption by 33.41 million kWh per year
- Saving more than \$2 million per year



# WHO IN GREATER CHINA IS USING LEED?

“The LEED certification system provides a platform for owners, designers and consultants in the green building industry at home and abroad. LEED APs are the engine behind the commercialization of green building practices. The professionalism and devotion of LEED APs has boosted people’s confidence in the green building industry and its development. Personally, LEED AP means a lot more. I am one of the first green building consultants in China and I passed my LEED AP test in Dubai. It has not only proven my expertise and passion for green building, but I’ve also witnessed my personal career development in conjunction with China’s growing green building industry.”

- **Ning Bai, Ph.D, LEED AP BD+C**  
Head of Sustainability & Energy  
East & North China  
Faithful+Gould

In Greater China, some of the most innovative and successful architectural firms, people and corporations are using LEED.

LEED professionals are key leaders of the green building industry. Earning a LEED professional credential—including the LEED Green Associate; LEED AP (Accredited Professional); LEED Fellow and various certificate designations—denotes qualified expertise in green building. LEED credentials mean much more than just a professional accolade; those who earn them form a network of committed green building practitioners across an array of industries. As Greater China’s commitment to sustainability continues to evolve and grow, more and more of its building professionals are earning their LEED professional credentials.

LEED professional groups are independent, self-organized volunteer coalitions committed to advancing green building in countries around the world. LEED Professional Groups are not branches, chapters or extensions of USGBC but instead work alongside the U.S. Green Building Council’s mission of promoting green building. They also serve as proxies on the roundtable.

## **Christopher Chan, LEED AP BD+C** Principal, Moore Ruble Yudell Architects & Planners, Shanghai Office

The genius about LEED

accreditation is that it singularly accomplishes a couple important things: it shares that a person has acquired knowledge that allows him/her to be effective in the



sustainable design of projects. And because acquiring a LEED credential is not required for practice (unlike licensure), it also identifies that this person cares and believes sustainable design is critical to their career and work.

These factors are increasingly becoming important for designers/practitioners today: that progress and achievement in our careers is not guided by talent and technical ability/knowledge alone...but one shaped with social and environmental responsibility

# LEED PROFESSIONALS IN GREATER CHINA

# 2,776

## Total LEED Professionals

This includes the sum of LEED Green Associates, LEED APs with specialty, and LEED APs without specialty. Since LEED Fellows must have a LEED AP with specialty to qualify, they are not included in the count as they would be duplicates.

## 736 LEED Green Associates

A LEED Green Associate demonstrates a solid foundation in current green building principles and practices.

## 1,287 LEED APs with Specialty

This credential affirms advanced knowledge in green building as well as expertise in a particular LEED rating system.\*

## 754 Total APs without Specialty

**LEED  
AP  
BD+C**

**BUILDING DESIGN  
+ CONSTRUCTION**  
China: **824**  
Hong Kong: **272**  
Taiwan: **49**

**LEED  
AP  
ID+C**


**INTERIOR DESIGN  
+ CONSTRUCTION**  
China: **43**  
Hong Kong: **46**  
Taiwan: **9**

**LEED  
AP  
O+M**

**OPERATIONS  
+ MAINTENANCE**  
China: **43**  
Hong Kong: **25**  
Taiwan: **16**

**LEED  
AP  
HOMES**

**HOMES**  
China: **3**  
Hong Kong: **0**  
Taiwan: **0**

**LEED  
AP  
ND**

**NEIGHBORHOOD DEVELOPMENT**  
China: **35**  
Hong Kong: **8**  
Taiwan: **1**

\* Number includes people with multiple specialties

# PEOPLE

## **Liang Liao, LEED AP BD+C**

Associate at AECOM

Building Engineering Department

"I have been working with LEED for 10+ years. LEED has been a great link for myself to present green building knowledge and skills to government, end users, developers, designers, contractors, facility managers, and vendors. I am happy to be involved in this amazing historical movement; a booming new industry that is gaining much attention as more and more people become involved."



## **Shawn Jang, LEED AP ND**

General Manager

RCI Taiwan

"I use LEED because it is the perfect framework for achieving sustainable building design, construction and operation. It helps bring together all stakeholders into the planning process and achieves the desired outcome. LEED is unique because it encourages material transparency and high building performance. In short, LEED works!"



## **Phaelan Vaillancourt, LEED AP**

Project Manager, Construction

Lend Lease

"Being a LEED AP has not only helped guide my projects towards being better buildings for the future, but it has also helped guide my career by serving as a basis to learn new skills and grow professionally."

## **Lili Pan, LEED AP BD+C, O+M** Managing Director L. GEEES, Hong Kong

Last September, I set up my own company. One day, my father suddenly said to me, 'I find that you want to establish a big company!' I was surprised why he said this. And he said, 'Because you always think a little more about long-term development.' Yes, I do always tend to find a win-win situation for a client or a project and target long term collaboration. I'm curious myself as to when I became so thoughtful. Probably the experience as a LEED AP for six years helped shape my sustainability thinking.

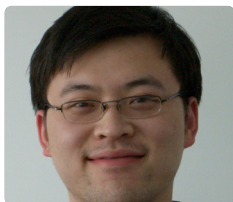


Pay less attention to temporary gains and or losses, but pay more attention to life cycles; Care less about ourselves, but care more about a healthy ecology and common development. These are both core concepts of LEED.

I cannot predict whether my company will really grow up to be a big one. Just like not all LEED registered buildings can become certified. But I think, standing at the height of sustainable development, at least, allows me to breathe more fresh air and have a wider vision.

So, look, LEED does not only teach me something about green building it also teaches me a very noble way of thinking about balance and harmony. Leaders have stressed the need to build a harmonious society, which may be quickly achieved if everyone learn a bit of green building.





## Wenmin Zhu, LEED AP BD+C, O+M

Project Director, Board Member  
Das Daring Energy Technology Co., Ltd.

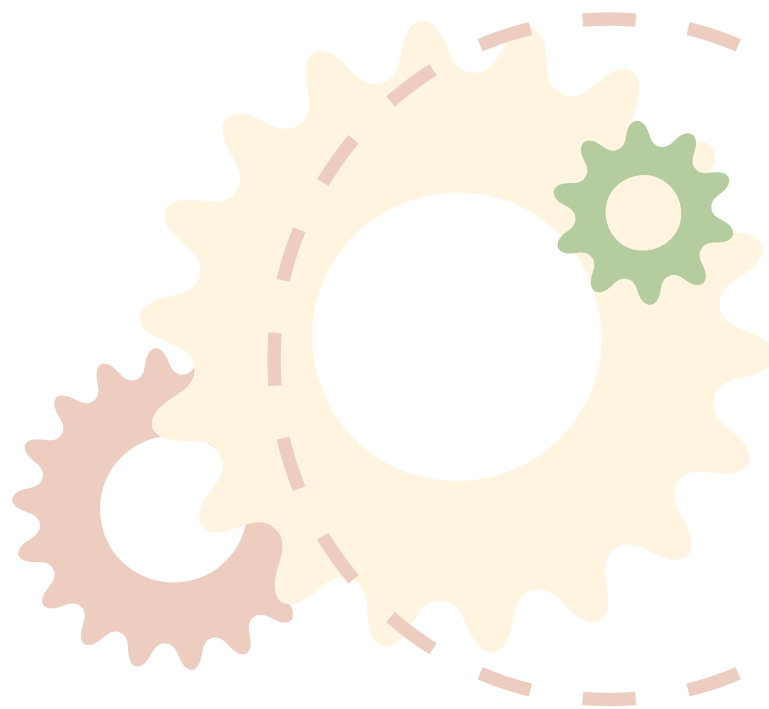
“I love to do great work on green buildings for our great green future.”

**Why do you use LEED?** LEED introduces the green building concepts to our company and our clients. The LEED rating systems provide us with quantifiable standards and toolsets to incorporate the green building requirements into our various projects to improve their total quality. LEED also provides our clients with a great promotional tool to demonstrate their commitments and acknowledge their efforts for a greener and more sustainable future.

**How does it help you in your profession?** LEED helps our company to earn our outstanding position in the China's green building industry based on our professional skills and 9-year dedication. As LEED certification creates a green building market in the industry, it allows us to build up and lead our team as the LEED consultant for more than 100 LEED projects in China's domestic market. Due to the fast growth of LEED projects in China, it also brings numerous opportunities for us to participate in mega green projects and learn from different project teams.

**What makes LEED unique?** In my opinion, USGBC is continuously listening to ideas and suggestions from a widespread green building community to enhance and improve the rating systems and make it more flexible and adaptive to local contexts. Furthermore, USGBC and GBCI put a lot of effort towards clarifying the technical definitions and specifications of each rating system and making the LEED certification process more streamlined to allow the project team to focus on improving the building's performances. Lastly, USGBC and GBCI provide more and more marketing tools and events for USGBC members to promote green building, LEED services and a sustainable future in their own markets. Personally, I do like “The Green Apple Day of Service” very much.

**What does being a LEED Professional mean to you?** I got my LEED AP BD+C credential in 2010. Since then, I always try my best to continuously study green building related knowledge and improve my own performance to face great challenges from our projects. One year later, I got my LEED AP O+M credential as well. Based on all the new knowledge regarding sustainable operation and maintenance, I am more capable of seeing the whole picture and consider the impacts of green building ideas on projects from the design and construction stage to operation and renovation stage. Being a LEED AP and working for LEED projects has been very helpful to improve my job skills, such as presentation, negotiation, project management, etc., which does allow me plenty of job opportunities.





# TOP TEN REASONS TO BECOME A LEED PROFESSIONAL

- Alessandro Bisagni, LEED AP BD+C

FOUNDER & MANAGING DIRECTOR OF BEE - BISAGNI ENVIRONMENTAL ENTERPRISE, SHANGHAI  
AND CO-FOUNDER OF GBPP CHINA, MEMBER OF THE LEED INTERNATIONAL ROUNDTABLE

1

It enables you to differentiate yourself professionally.

2

It opens up more job prospects.

3

It provides a framework to understand the interconnection between sustainability issues.

4

It presents a common global language for building sustainability.

5

It allows you to be part of an international network of like-minded professionals.

It will help identify innovative value propositions for both new and existing clients.

In a market with limited continuing education resources, it offers valuable learning opportunities for professionals in China.

A LEED AP can trust that LEED will continually evolve and introduce new issues that are at the forefront of today's green building industry.

As a green building consultant, LEED allows me to present sustainability features to clients that would normally not be open for discussion.

LEED is evolving to become more China-specific; with dedicated Alternative Compliance Paths, Regional Priority Credits, and local groups such as GBPP, Platinum, and seed working to give a voice to all LEED APs across the region.

6

7

8

9

10

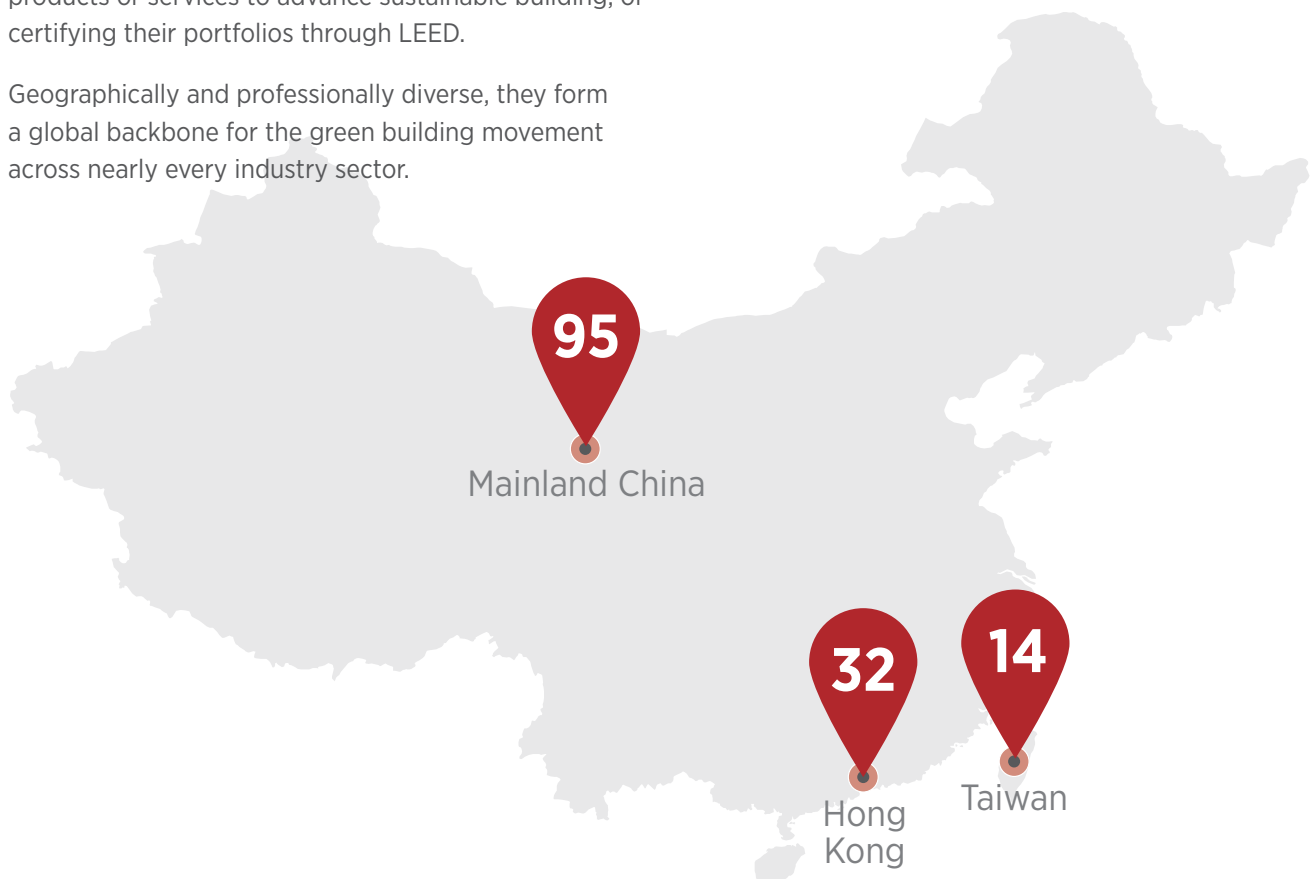
# MEMBER COMPANIES

"USGBC membership provides various privileges which matter to member companies, including project discount, educational assistance, and marketing support. It also facilitates a great platform so we can exchange ideas with green building professionals around the world." - Li Fei, General Manager, EMSI China

USGBC members are transformative leaders located across the world. They have joined a community of nearly 13,000 organizations, ranging from Global 1000 companies to small, family-owned businesses.

They support green building through their daily actions in sustainability. This includes contributing to the evolution of the LEED rating system, developing new products or services to advance sustainable building, or certifying their portfolios through LEED.

Geographically and professionally diverse, they form a global backbone for the green building movement across nearly every industry sector.



# ENVIRONMENTAL MARKET SOLUTIONS INC. (EMSI)



**Li Fei**

General Manager  
EMSI China

EMSI, a Carrier company (See United Technologies interview on page 32), is an international leader in green building and sustainable community design consulting. Clients include many of the world's largest companies in the industrial, retail, real estate, and service sectors, as well as numerous independent small private developers. Projects include commercial office buildings, shopping malls, hotels, factories, multi-family residential properties and education facilities.

EMSI also offers services of LEED consulting, and recently certified its 100th LEED building in mainland China and Singapore.

**Why have you chosen to use LEED?** EMSI was the first company to introduce LEED to mainland China back in 2003, when sustainability related opportunities were just gradually unfolding.

In our early days, a lot of our highlight projects were also notable milestones for the development of green building in mainland China. These include the first LEED commercial NC project, Shenzhen Taige Apartment; the first LEED CS commercial building, Beijing Prosper Center; and the first LEED ND project, the Beijing Olympic Village.

Major customers in our early days were multinational companies, like Caterpillar, Coca Cola, GM, GE, Otis, etc. They pursued LEED as part of their global sustainability requirement. Those initiatives helped to plant many green seeds and boost the markets.

The reason those companies chose LEED was that the standard itself had been well recognized overseas and proved to work very effectively. Our client segmentation started to spread to real estate development in 2008.

## EMSI's 100 LEED-Certified Buildings in Mainland China and Singapore

**LEED CERTIFIED: 9**

**LEED SILVER: 20**

**LEED GOLD: 66**

**LEED PLATINUM: 5**

EMSI has pursued LEED for 51 office buildings, 21 factories, 14 mixed-use buildings, 5 residential projects, 3 showrooms, 2 R+D buildings, 2 meeting centers, 1 community building and 1 commerce building.

The system is highly embraced by both multinational companies and real estate developers because the rating system can help companies to 1) achieve their corporate social responsibilities, 2) meet the market needs of green buildings and 3) achieve financial payback in the long run from the energy savings, etc.

**Does your company pursue certification through other than or in addition to LEED?** EMSI provides a full scope of green building consultancy to our clients. The scope includes LEED, Three Star certification, Cx service, M&V service, and sustainable design support.

**Are there specific LEED credits that you often pursue when beginning a project? Which credits, in your opinion, remain the most critical and why?**

EA related credits remain the most challenging ones among all credits, as they involve more interactions with owners, design firms, as well as more incremental costs. The energy simulation tools effectively helped to demonstrate the forecasted energy cost and savings. So the work from our simulation experts has proved to be one of the most valuable parts of the whole consultancy process. We run rounds of different solution packages to compare investment, returns, payback, etc., then come up with the best available solutions for different projects.

**Can you name a specific challenge with the LEED rating system you faced when you were implementing LEED?**

**What was your solution?** We have a would-be LEED NC v2009 Gold project in Shanghai, China, which is a facility for training. And the challenge is how to further improve the building energy saving performance by using renewable energy during the construction stage. In theory, it is easy to find a way out in the design stage; when it happens in the construction stage, several factors need to be considered, such as the selection and the availability of the renewable energy type, the integration with building structure, etc.

As the LEED consultant on the project, our technical team took into account all the factors and performed the technical support – analyzing the building structure, the size and the renewable energy type, researching renewable energy products, contacting the related suppliers, running models under different scenarios. Finally, our team recommended using the solar hot water system installed on the roof with the size 30m<sup>2</sup>, which contributes to EAc1 (the current is 19.3%) and EAc2 (1.55%). This support neither impacts the overall project schedule nor affects the building structure, also featured by its cost-effectiveness. More importantly, it further enhances the whole building's energy saving performance.

**Can you share a few specific anecdotes of how people feel living and working in your LEED-certified buildings?**

We interviewed almost all of our clients at post-occupant time, as part of our aftermarket follow-up. We received extremely positive feedback from the clients of both self-owned projects and commercial projects. The feedback generally focused on energy efficiency and air quality. With the latter, since PM 2.5 has become a really hot topic in mainland China, people feel much more comfortable and happier when they know that the building is designed and constructed in a caring and green way.

## EMSI's 100 Projects in Mainland China and Singapore



\* 1 project in Singapore not shown



# LEED PROJECT SPOTLIGHT

## **Verdant Place**

**Shanghai, China**

**LEED Platinum**

**Certified Sep 27, 2012**

With 22 floors and about 30,000 gross square meters, Verdant Place is one of the landmark buildings in Shanghai city.

From 2008 to 2012, Verdant Place invested in significant energy and water efficiency retrofit projects to achieve energy and water savings. The entire existing structural element was kept, but the single panel glass was replaced with double layer laminated low-e glass. The whole, old low-efficient MEP systems (including chiller, pump, fan, boiler, sanitary fixture, lighting fixture, and lift machine) were replaced with new equipment. A review of public lighting was undertaken and resulted in the conversion to more energy efficient luminaires and lighting controls. By utilizing Energy Management and Control Systems (EMCS), building managers are able to adjust operating temperatures, modify chiller plant operating schedules and modify chilled water distribution according to actual tenant needs.

Verdant Place succeeded in:

- Decreasing potable water usage by at least 40% compared to average building consumption
- Saving 2,861,770 liters of potable water annually
- Being ranked in the top 30% of office buildings as benchmarked by the U.S. ENERGY STAR database
- Reducing energy consumption by 989,839 kWh per year
- Saving more than \$128,495 per year (USD)

## UTC Building & Industrial Systems, North Asia

United Technologies (UTC) is a diversified company that provides a broad range of high-technology products and services to the global aerospace and building systems industries. Their commercial businesses are Otis elevators and escalators and UTC Climate, Controls & Security along with Pratt & Whitney. Carrier—a global leader in high technology, heating, air conditioning and refrigeration solutions—is a part of UTC. EMSI is a Carrier company.



### Ross Shuster

President, North Asia, United Technologies Building & Industrial Systems

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#### **What do you perceive to be the benefits that LEED brings internally to an organization such as UTC and to your clients?**

LEED, along with other prominent green building rating systems, provides a framework for defining, measuring and certifying green buildings. It establishes a common language for both building professionals and the market globally.

EMSI is a pioneer in mainland China and introduced LEED in the country more than ten years ago. EMSI offers LEED design consulting, sustainable building design support, as well as commissioning services for new construction, existing buildings and sustainable communities. In mainland China, our EMSI business is a leader in helping customers achieve LEED certification, which contributes to reduced usage of materials, improves the quality of the indoor environment and reduces energy and water use of buildings. LEED has also been used as a competitive advantage in the commercial building sector and gained wide recognition in the market.

#### **What has been the most exciting LEED project that you or your organization has worked on and why?**

Through our EMSI green building consultancy business, we have been a part of many unique LEED projects in mainland China. For example; the Century Prosper Center, the first commercial office building in China to achieve LEED Gold certification; the Pratt & Whitney facility in Shanghai, China's first LEED Platinum facility, and the Beijing Olympic Village, China's first LEED for

Neighborhood Development project.

Recently, we have been chosen to provide LEED consultancy services to the CITIC Z15 project. When completed, this will be the highest building in Beijing with a height of 528 meters. Ultra high-rise buildings pose unique challenges to building designers and engineers. We are very glad to be selected to help the design team overcome these challenges to build a LEED certified, sustainable, ultra high-rise building.

#### **What concepts within LEED are particularly aligned with your core values and core strengths?**

Responsibility is one of our core values at UTC Building & Industrial Systems and this includes environmental responsibility to drive sustainability globally. LEED is a platform that combines our core value of responsibility with our expertise in building systems in a measured and structured way.

UTC Building & Industrial Systems focuses on improving the energy efficiency of our products and systems through research & development to provide sustainable solutions to the building and construction market.

Carrier is committed to developing and implementing environmentally responsible solutions for buildings. We see LEED as a tool that can be used to improve our own facilities as well as an offering that brings value to our customers' businesses.



# LEED PROJECT SPOTLIGHT

## **Shanghai Pratt & Whitney Aircraft Engine Maintenance Co., Ltd. (Shanghai Engine Center)**

### **LEED Platinum**

Located in the Qingpu district, the Shanghai Engine Center officially opened in September 2009 as an environmentally friendly and highly efficient CFM56® engine maintenance, repair and overhaul facility. The first LEED Platinum facility in China, the Shanghai Engine Center is a joint venture between China Eastern Airlines and Pratt & Whitney, the latter being a United Technologies Corporation company. The facility incorporates high-performance building solutions from other UTC businesses such as Carrier.

Key LEED features at the 26,000 gross square meter facility include:

- At least 12.5% of the facility's energy is being produced from renewable sources such as solar thermal, photovoltaic, wind, geothermal and canal water sources.
- High performance, energy efficient windows contribute to the facility's daylighting system, reducing electricity requirements and the need for additional cooling.
- At least 20% of all construction materials were sourced locally, and 10 to 20% of materials contained recycled content. Use of certified stewarded wood products.
- About 70% of construction waste was diverted from landfills.
- Reduced usage of potable water and the construction of a large pond on site capture and stores rain water to meet all sanitary needs.



## Franshion Properties

Franshion Properties (China) Limited is a large-scale and high-end property developer and operator specializing in developing “world class artistic urban landmarks in pursuit of harmony between man, architecture and nature” in adherence to its corporate mission of “Unleashing Future Vitality of the City.” They cover high-end property development, business and commercial leasing as well as hotel investments and operations. They are an enterprise under the real estate and hotel segments of Sinochem Group, one of the world’s top 500 enterprises.

It also has a series of high-end products that feature “Jin Mao” as the core brand such as the Jin Mao Tower and the recently certified LEED Platinum Beijing Jinmaofu Elementary School.

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## Niu Qian

Green Building Senior Manager, Franshion Properties (China) Limited

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**Could you please share with us your company’s sustainability vision and how LEED helps you to achieve your organizational goals? Why did you choose to use LEED?** In 2010, Franshion Properties (China) Limited (FPCL) officially listed green strategy into the firm’s main strategy and corresponding management system. A green sustainable development strategy is not only responsible but it’s a part of a larger trend in the construction industry in terms of competition, protecting the earth’s resources as well as social responsibility as a corporate citizen.

**How has LEED been incorporated into your built environment?** At the beginning of a new project, we evaluate with the architectural design company for LEED on site selection, sustainable transport, project peripherals, environmental impact etc., to improve existing solutions to the greatest extent.

**What do you perceive to be the benefits that LEED brings internally to an organization such as yours and to your clients?** Through the LEED rating system, we are able to optimize sustainable development in every aspect of the project. This improves product quality and saves development cost. For customers, the use of better indoor environmental design and healthy materials are a natural benefit.

**What concepts within LEED are particularly aligned with your core values and core strengths? How has it encouraged innovation?** With our strong, high-end commercial real estate portfolio, LEED provides our customers—mainly international business leaders—a great service as we, more than any other Chinese real estate enterprise, provide our customers with a healthy, quality product.

The LEED rating system encourages innovation and recommends new eco-friendly building materials. These are in line with our core values and our belief in being socially responsible.

**Do you plan to use LEED in future projects?**

Currently the Chinese government is promoting Chinese Green Building Label as well as cooperating with the government’s financial policy, which is a huge challenge for LEED in mainland China. We will make a choice among green standards at home and abroad according to different project needs. However, when it comes to office buildings, high-end hotels, tourism resorts with high costs and a high need to attract international customers, we will continue to adopt LEED.

Many of their landmark projects include:

- Jin Mao Tower, Shanghai, LEED Gold
- Beijing Chemsunny World Trade Centre, LEED Platinum
- Shanghai International Shipping Service Center Project, LEED Gold



# JIN MAO TOWER

Shanghai, China  
LEED Gold

With a total construction area of 292,000 square meters, 88 floors and a height of 420.5 meters, Jin Mao Tower, built in 1999, embraces both a traditional Chinese architectural style along with the world's latest architectural technology.

When Jin Mao Tower was LEED certified in 2013, it became the longest-operating LEED existing building project in mainland China.

LEED Gold certification has resulted in:

- 25% reduction in indoor potable water use
- 63% reduction in potable water use for landscaping
- 75% of all durable goods being reused or recycled
- 70% diversion of waste resulting from facility alterations and additions
- 40% of total energy consumption being system-level metered
- 50% of occupied spaces having access to daylight and quality views

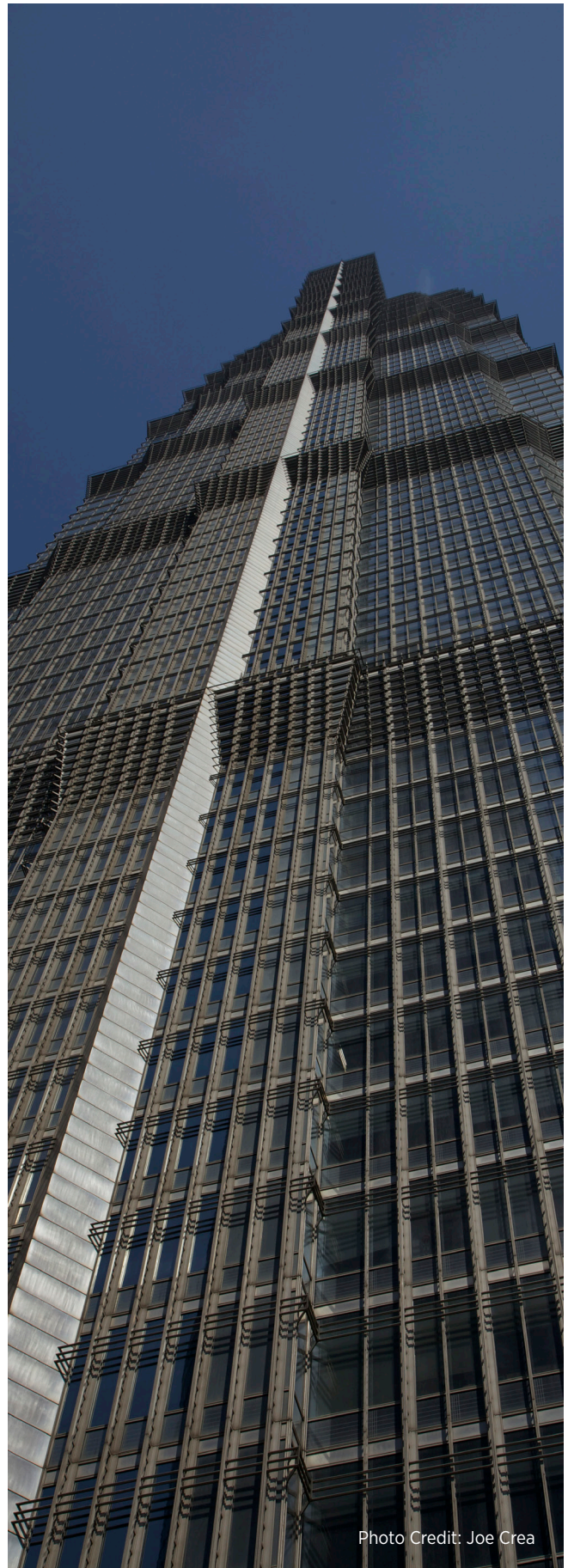


Photo Credit: Joe Crea



# BEIJING JINMAOFU ELEMENTARY SCHOOL

**Project Location:** Chaoyang District, Beijing  
**Certifications:** LEED Platinum and Three Star  
**Project Size:** 10,080 square meters

Fransion Properties' LEED Platinum Beijing Jinmaofu Elementary School features many sustainable features including:

- Energy-efficient lighting
- Solar photovoltaic panels
- Light lighting + LED
- Displacement ventilation system
- Same layer drainage
- Heat recovery and water-saving equipment

Being mindful of the health and wellbeing of the students, the building has a carbon dioxide concentration sensor that monitors air quality in the school classrooms, cafeteria and other spaces providing students with an optimal environment to learn.



Students at Jinmaofu  
Photo Credit: Joe Crea



Third Grade Classroom at Jinmaofu  
Photo Credit: Joe Crea

# Kohn Pedersen Fox Associates

Kohn Pedersen Fox Associates (KPF) is one of the world's preeminent architecture firms, providing architecture, interior, programming and master planning services for clients in both the public and private sectors.

**Could you please share with us your company's sustainability vision and how LEED helps you to achieve your organizational goals? Why did you choose to use LEED?**

Kohn Pederson Fox Associates applies our extensive global experience on a local scale for every project, developing holistic solutions that are unique to place and climate and that are evaluated through regional environmental performance standards such as LEED. By designing projects of the utmost quality, with contextual sensitivity, flexibility, and performance, we produce work that not only succeeds in the near term but also builds value over time.

Utilizing LEED for sustainable benchmarking is applicable to the multiple scales of design in a variety of climates and countries in which KPF works, and aids the firm in helping clients to develop and articulate their sustainable agenda while improving the urban environment. By publicly articulating a building, master plan, or space's sustainable accomplishments in an internationally appreciated format, our clients are given greater opportunities to market their building's sustainable accomplishments.

**How has LEED been incorporated into your built environment?** We aspire to integrate climate-based sustainable design strategies into all of our design work, through the incorporation of sustainable strategies related to siting, indoor air quality, energy and atmosphere, materials and resources, and water efficiency for each of our projects.

We endeavor to ensure our environmental, social, and economic values are reflected in both our business practice and our design process. The LEED Gold certification of our headquarters in New York City is one of many examples of how we fulfill this long-standing commitment both in our work and workplace.

**What do you perceive to be the benefits that LEED brings internally to an organization such as yours and to your clients?** LEED allows KPF to push our clients to obtain various sustainable goals with the incentive of a publicly recognized and appreciated declaration of that achievement. LEED certification has the benefit of being

applicable to the many different scales and types of projects that we do—from the large scale master plan of Hudson Yards in New York City, to the mixed use tower for Hysan Place (see page 38) in Hong Kong, to our extensive retrofit of the 5 story office building in Iselin, New Jersey.

**What concepts within LEED are particularly aligned with your core values and core strengths? How has it encouraged innovation?** The tall tower is a key part of KPF's sustainable paradigm in which individual buildings form part of a larger system of vertical centers linked by horizontal networks of public transportation. Rather than objects in isolation, these transit-integrated, mixed-use "vertical cities" represent a sustainable model for future development whereby public transport is encouraged, land is conserved, and energy and water uses are reduced. The manner in which these towers interface with their surroundings directly relates to LEED's concept of Sustainable Sites, while still allowing for innovative improvements to the environment through strategies such as Hysan Place's porous form to improve the thermal comfort of pedestrian's near the site.

**What is the occupant experience like in your LEED buildings? Do you track occupant experience?** We have reinforced our firm's sustainable agenda by incorporating the latest methods and technologies to maximize occupant comfort while minimizing a building's negative environmental impacts. Occupant behavior and experience is tracked with a number of different metrics for our various LEED projects including electrical and water submetering as well as through continued involvement with clients. The Ross School of Business, which opened for classes in 2009, is one example of this. While working on the Business School Expansion Plan, we have been able to hear both anecdotal examples, as well as through more formal feedback from staff and the facilities team, about the many successes and uses of the LEED Rating System.





Photo Credit: Grischa Rueschendorf,  
courtesy of Kohn Pedersen Fox (KPF)

# LEED PROJECT SPOTLIGHT

## **Hysan Place**

**Hong Kong**

**LEED Platinum**

LEED certification has resulted in:

- 22% total energy reduction compared to the ASHRAE 90.1 baseline.
- 30% increase in ventilation rate for the AC system
- Providing vertical sky gardens that not only reintroduce public green space to residents of Causeway Bay, but also offer light, air, and views not usually available in the region
- A value increase in the entire Causeway Bay portfolio.\*

By developing design and operations targets, monitoring changes, reviewing strategies, and reporting progress publicly, we strive to continually improve the firm and increase our positive contribution to the environment through business and design practices that are consistent with our broader social and environmental values, such as future LEED projects.

\*According to Standard & Poors: "Hysan has increased the quality and scale of its leasing property portfolio following the opening and satisfactory leasing of its new retail and office property, Hysan Place."

# Henderson Land Development

Listed in Hong Kong since 1981, Henderson Land Development is a Company Limited leading property developer with businesses in Hong Kong and throughout Mainland China.



## David Francis Dumigan

Former General Manager, Project Management Department and currently Consultant to the Group

**Why have you chosen to use LEED?** Our customers drive it all. For international buildings, there's been a huge demand from these multinational companies to have green credentials for their buildings. Because most of those companies are international, they are much more familiar with LEED than other assessment and accreditation systems. Here in Hong Kong we have HK-BEAM but once you move into China they are more familiar with LEED. Even in Hong Kong, new companies coming in are more familiar with LEED. Multinationals prefer LEED to other environmental assessments because it's more recognizable. LEED does cross all borders.

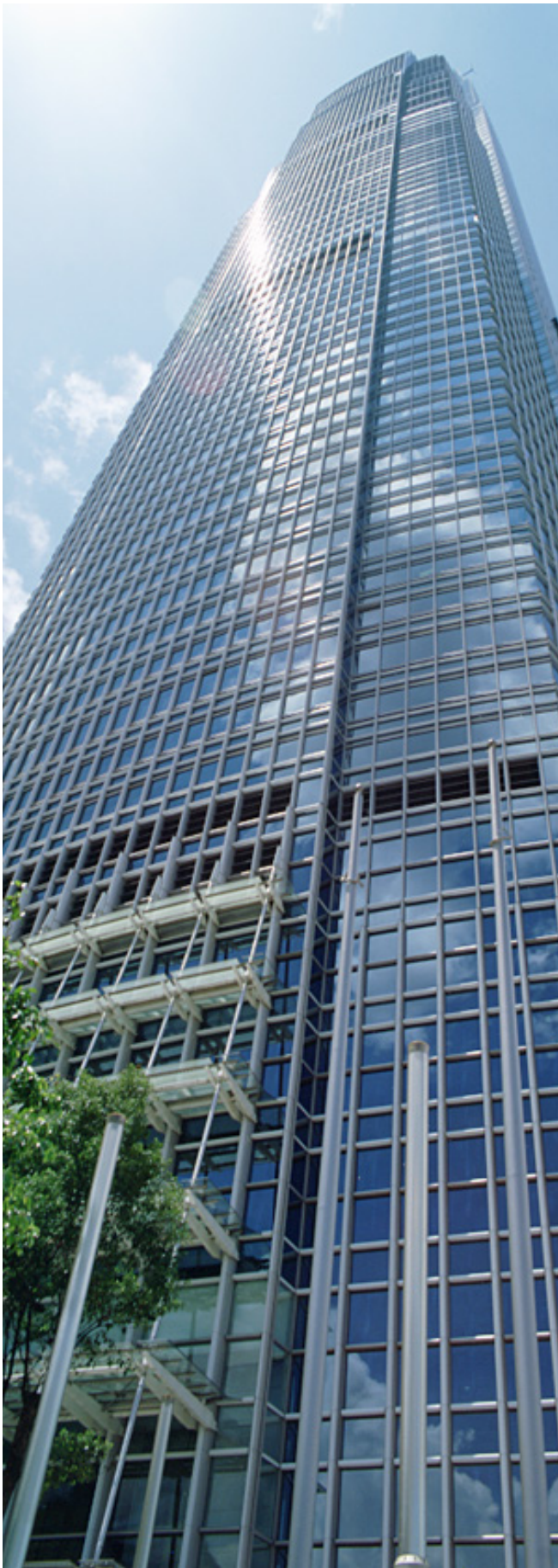
**What do you perceive to be the benefits that LEED brings internally to an organization such as yours and to your clients?** A company wants to be seen as looking after the environment and resources. That's an important issue. LEED is not more expensive if you make good decisions at the beginning. There's no extra cost and, in the long run, there's savings. It is efficient, you are saving the buyer in the long-term on their energy bills.

**What concepts within LEED are particularly aligned with your core values and core strengths?** Sustainability has been important to the company for many years. We talk about delivering a sustainable future. This cannot be just about words. There needs to be some independent method of demonstrating that we are doing something about it. LEED certification is something that can back up those words and show that we are committed to a sustainable future. Our two and a half million square

foot World Finance Centre (WFC) in Beijing is LEED Platinum. We also have four buildings in Shanghai that are LEED Gold. We can show the public and shareholders that LEED is an independent certification that demonstrates what we are doing and more importantly, what we are delivering to our customers.

**How are your LEED certified buildings performing? Do you have any pertinent data to share on their performance?** Very well, particularly for Two International Finance Centre (see page 40) in Hong Kong, which is LEED Gold. We have been monitoring the energy consumption closely. Its performance is very much consistent with the energy assessment and the building has been running for ten years now. We had some adjustments and tweaking to do in the systems over the years of operation. We have a sophisticated building management system (BMS) controlling ventilation, air conditioning, lighting and other electrical and mechanical systems from a space age room housing computers that ensures that all equipment is running at optimum efficiency. We have designed very good graphics so the information shown on the monitors can be easily understood. If a chiller unit is using more energy than it should, for example, the problem will be highlighted on the monitor and the maintenance team looks into it and rectifies the problem. A key strength of the building is that the BMS is very effective, resulting in savings in energy and money for both the building owner and the tenant.





# LEED PROJECT SPOTLIGHT

## **Two International Finance Centre**

**Hong Kong**

**LEED Gold**

With 88 floors and 186,000 gross square meters of international Grade A office space, Two International Finance Centre (Two IFC) is one of the tallest buildings in the world. Since its completion in 2004, it has become an icon for Hong Kong, has set the quality and performance benchmark for supertall commercial buildings in Asia and represents Hong Kong's position as one of the world's leading financial centres.

From the outset, the design of Two IFC incorporated energy-saving features to ensure the comfort of the occupants, as well as allow for environmentally friendly construction methods and the sustainability of the tower's operation.

The almost column free floors were designed to maximize natural light, while the low-e glazing was designed to minimize solar heat gain and noise intrusion. The sea-water cooled air-conditioning system uses at least 30% less power than an equivalent air-cooled system. Energy efficient electronic ballasts were adopted for the office lighting resulting in an energy saving of at least 15% compared with a conventional system. These features, together with numerous others, are managed by the fully integrated building management and control system.

Construction of Two IFC was also planned to be as environmentally friendly as possible. A marine access with dedicated road and bridge, and an on-site concrete batching plant were constructed to minimize the movement of construction vehicles on public roads. A self-climbing steel jump-form, together with system formwork for the concrete slabs, were used to minimize the use of timber formwork.

Two IFC was designed to maintain Hong Kong's position as one of the top financial cities of the world. The Developers are proud that it's intelligent design, construction and operation have enabled Two IFC to achieve LEED Gold.

# RESOURCES

## **General Information**

[usgbc.org/international](http://usgbc.org/international)

## **LEED Professional Groups in China**

Green Building Professional Partnership - GBPP (Mainland China)

[www.gbppchina.com](http://www.gbppchina.com)

Platinum (Hong Kong)

[www.platinumhk.org](http://www.platinumhk.org)

seed (Taiwan)

[www.seedtw.org](http://www.seedtw.org)

## **Regional Priority Credits**

[usgbc.org/rpc](http://usgbc.org/rpc)

## **Credit Library**

[usgbc.org/credits](http://usgbc.org/credits)

## **LEED v4**

[usgbc.org/leed/v4](http://usgbc.org/leed/v4)

## **LEED Green Associate Candidate Handbook – Chinese Translation**

[usgbc.org/resources/leed-green-associate-candidate-handbook-chinese-%E4%B8%AD%E6%96%87-translation](http://usgbc.org/resources/leed-green-associate-candidate-handbook-chinese-%E4%B8%AD%E6%96%87-translation)

## **LEED AP BD+C Candidate Handbook – Chinese Translation**

[usgbc.org/resources/leed-ap-bdc-candidate-handbook-chinese-translation](http://usgbc.org/resources/leed-ap-bdc-candidate-handbook-chinese-translation)

## **LEED AP O+M Candidate Handbook – Chinese Translation**

[usgbc.org/resources/leed-ap-om-candidate-handbook-chinese-translation](http://usgbc.org/resources/leed-ap-om-candidate-handbook-chinese-translation)



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