LEED® IN MOTION:
INDIA

LEED® in Motion: India 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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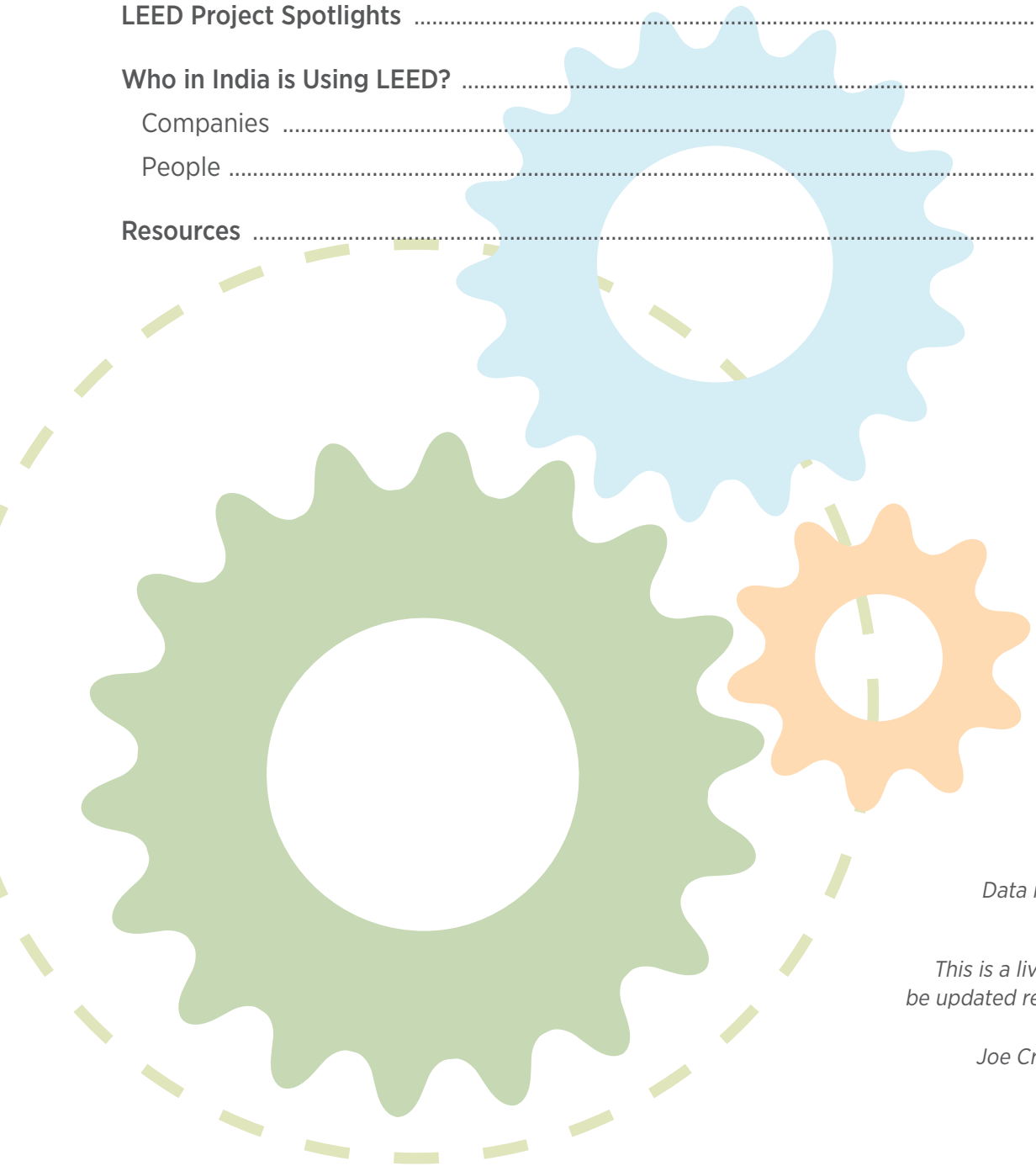


Data in this report is current as of December 2014

This is a living document and will be updated regularly. For questions, please contact Joe Crea at jcrea@usgbc.org

ABOUT LEED

LEED, or Leadership in Energy and Environmental Design, is a global, regional and local green building rating 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 1.7 million square feet of space in more than 150 countries and territories certifies with LEED. Nearly 62,000 commercial projects are currently participating in LEED comprising nearly 10 billion square feet of construction space worldwide. Building projects earn points to achieve one of four different levels of LEED certification: Certified, Silver, Gold or Platinum.

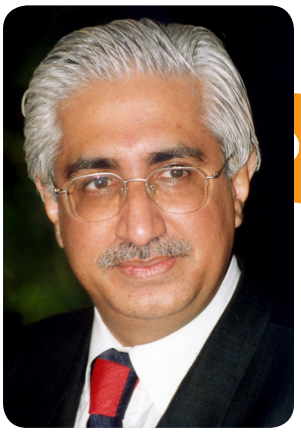
With the support of LEED development committees, volunteers, practitioners, the LEED International Roundtable and more than 30 green building councils around the world, LEED is continually evolving and being optimized for various building types in all global markets.

Indira Paryavaran Bhawan - Ministry of Environment & Forests (New Delhi)

ITC Grand Chola Hotel (Chennai)

FOREWORD

from Nakul Anand, Executive Director, ITC Limited



ITC entered the hospitality business to support a national priority of developing new avenues of foreign exchange earnings and boosting tourism. Today, ITC operates 90 hotels in more than 70 destinations across India. And though generating revenue and boosting tourism remain essential obligations, the company has evolved tremendously in regards to that initial mandate.

As a corporation, ITC is aware of environmental challenges, both on the Indian subcontinent and around the world. Many years ago, our management team decided to not just be aware, but to also do something constructive —to take meaningful action that would benefit the planet and our brand. As such, each of our ten luxury properties has earned LEED Platinum certification, the rating system's highest level.

We selected LEED because of its globally recognized, highly rigorous, and comprehensive standards. It also helped that LEED had built a uniquely strong and dedicated following throughout India.

LEED's world-class, high-quality standards are helping us to not only realize our corporate sustainability goals, but also to showcase our accomplishments around a rating system that our clientele recognizes and our investor's respect.

So what have we achieved using LEED?

- In regards to energy efficiency, a full 55% of our total energy demand is now met through renewable sources. The amount of energy we produce through our wind farms, alone, could light up a 1,400 km stretch of highway for one year.
- Over the past five years, we cut water consumption by 50%. Additionally, all of our wastewater is now treated and recycled. In fact, we recycle enough water to irrigate 65,000 trees, which aids in the sequestering of approximately 13,000 tons of CO.
- Nearly 100% of our solid waste is either reused or recycled. This eliminates up to 5,000 tons of solid waste per year, the equivalent of 6,000 tons of carbon emissions.
- Sustainable material sourcing also enhances our positive environmental footprint. We ensure that more than 30% of the food and beverages at each hotel are harvested and processed within a 100-mile radius. In keeping with our endeavor to promote local culture, generate regional employment and reduce our carbon footprint, we also ensure that 20% of the materials used in our new hotels are sourced regionally.

On newly constructed projects, we are even more performance driven:

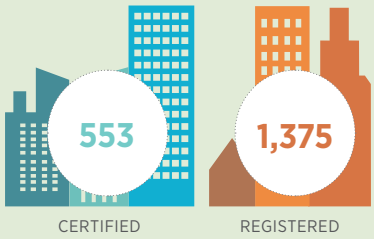
- 100% of related electrical energy demand is met through renewable sources
- All paints are 100% low VOC
- A percentage of our wood is FSC certified
- And 100% of all parking is covered, thereby reducing the heat island effect.

Many more items could be detailed here, but the main point is that LEED not only helped us to understand our many green building options, it also provided a framework by which we were able to package them consistently across properties and projects, and in a way that every team member readily understood. It helped us to set our green building standards very high. Which is right where we want to be.

WHY LEED?

"There's something nice about this building that we have never felt before about our previous buildings."

- Deepa Sathiaram, LEED Fellow
on how people respond to LEED buildings in India



Total of Registered and Certified LEED Projects in India:

1,928

Total of Registered and Certified Space:

833 million square feet

Today, Indian 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 Credits

LEED is organized by credits. A credit represents a specific strategy or outcome to create a green building. The following shows the percentage of projects in India that have successfully achieved select credits 20% above the Global Achievement Rate.

Sustainable Sites

SSc5.1: Site development - protect or restore habitat 25%

SSc6.1: Stormwater design - quantity control 32%

SSc6.2: Stormwater design - quality control 32%

Sc7.2: Heat Island Effect - roof 32%

Water Efficiency

WEc2: Innovative wastewater technologies 40%

Energy & Atmosphere

EAc4: Enhanced refrigerant management 35%

EAc5: Measurement and verification 40%

87% percent of Indian green building professionals indicated that they **anticipate** the use of LEED India to increase overall.*

** From a USGBC survey conducted between September and October 2014 with LEED users in India.*

HOW LEED WORKS IN INDIA

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**

9 out of 10 industry senior executives in India anticipate that their LEED-related **work will increase** over the next five years.*

More than two-thirds of green building professionals in India view LEED positively or very positively.*

LEED Hub

Based in New Delhi, the LEED Hub—responsible for the Asia-Pacific and Middle East regions—acts as an interface with industry stakeholders to inform the continuous improvement of LEED and to better address the needs of green building projects in India. This effort follows the international strategy for LEED to emphasize global consistency while allowing for regional solutions in current and future LEED rating system versions. The LEED hub helps project teams successfully navigate the design, construction and operations of buildings to achieve the requirements of LEED certification. It also delineates the local strategies for business development and brand advocacy. GopalaKrishnan P. is the director of the hub and is supported by Puneet Mital, regional director. They can be reached at gkrishnan@usgbc.org and pmital@usgbc.org, respectively.

Indian Green Building Council

Over the years, the Indian Green Building Council (IGBC) has been instrumental in mobilizing the green building movement in India and helping establish LEED as a key driver for market transformation. USGBC remains grateful to IGBC's early support of LEED India and its ongoing leadership in India. USGBC and IGBC continue their collaboration in advancing the uptake of green buildings in India. LEED India projects registered with IGBC till June 2014, will be certified by IGBC. LEED projects in India registered after June 2014, would be certified by the Green Building Certification Institute (GBCI), the certification body of USGBC. These efforts are in line with USGBC's goal to handle certification of LEED buildings across the globe, by one agency, GBCI.

** From a USGBC survey conducted between September and October 2014 with LEED users in India.*

Regional Priority Credits

Regional Priority Credits (RPCs) are specific LEED credits that further enhance the rating system's regional and local applicability in any given country or region. 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 these 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 pursuing.

Alternative Compliance Paths

Alternative Compliance Paths, or ACPs, are now available for all commercial projects pursuing LEED green building certification using the 2009 versions of the rating systems. ACPs offer a flexible method for projects around the world to demonstrate compliance with the LEED credits that are traditionally more challenging for projects outside of the U.S.

LEED International Roundtable

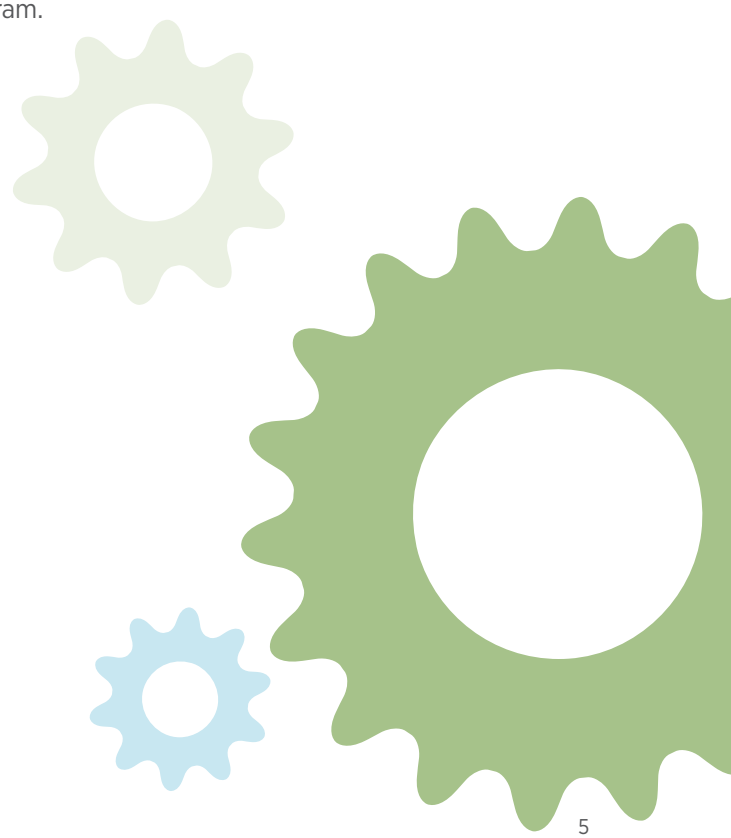
The LEED International Roundtable is a team of practitioners and green building industry experts from across the globe. These members add profound insights about regional and local technical requirements, market dynamics, profound social aspects, and promote LEED's growth as a global rating system. As a result, LEED maintains its rigor as a global 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. India is represented on the International Roundtable by The Energy and Resources Institute (TERI). **teriin.org**

LEED and Materials

The Materials & Resources section of our latest version of LEED applies lifecycle thinking at the whole-building and product levels. Credits reward projects for reusing as much material as possible and optimizing design to use less material overall. LEED currently paints a more complete picture of materials and products, increases stringency and enables project teams to make more informed decisions that will have a greater overall benefit for the environment, human health and communities.

LEED Volume Program

LEED volume certification meets the special needs of companies that are ready to apply LEED on a larger scale. Volume certification facilitates the advancement of a number of buildings through the process by focusing on similarities - regardless of the projects' geographic location. Leveraging prototype strategies in design and operations to certify a large number of buildings, LEED volume certification streamlines the process and reduces costs while still maintaining the quality associated with the LEED green building program.



EXISTING BUILDINGS

"Fighting climate change calls for innovation, cooperation and will power to make the changes that the world needs."

- Shri Narendra Modi

Existing buildings hold incredible promise. Many older buildings around the world are energy hogs and water sieves. With some keen attention to building operations, that can be turned around drastically by using LEED. You may have heard the phrase, "The greenest building is the one already built." It can take up to 80 years to make up for the environmental impacts of demolishing an old building and constructing a new one, even if the resulting building is extremely energy efficient.

To date, more than 3,000 existing projects worldwide have been certified using LEED.

The following Alternative Compliance Paths (ACPs) are available in India for existing building LEED projects.

SS credit 6 (Stormwater Quantity Control) is expanded to include appropriate sources for rainfall data specific to India and resources for stormwater management.

SS credit 8 (Light Pollution Reduction) clarifies that projects achieving certification under LEED 2011 for India CS or LEED 2011 for India NC and that and earn SSc8: Light Pollution Reduction can achieve this credit in LEED 2009 for Existing Buildings: Operations & Maintenance.

WE prerequisite 1 (Minimum Indoor Plumbing Fixture and Fitting Efficiency) is modified to align flow and flush rates to UPC- India and the 2013 Green Plumbing Code Supplement—India values.

WE credit 2 (Additional Indoor Plumbing Fixture and Fitting Efficiency) is updated to reflect Indian Standard values in WE Prerequisite 1 (Minimum Indoor Plumbing Fixture and Fitting Efficiency.)

EA prerequisite 1 (Energy Efficiency Best Management Practices—Planning, Documentation and Opportunity Assessment) and EA Credit 2.1 (Existing Building Commissioning—Investigation and Analysis) includes resources to locate energy auditors in India.

EA credit 4 (On-site and Off-site Renewable Energy) is expanded to define acceptable Green-e equivalent electricity in India.

LEED for existing buildings in India tend to **certify at higher levels** than projects located in other countries, with **80% of all projects** in India certifying at Gold or higher, as compared to 56% at Gold or higher globally.

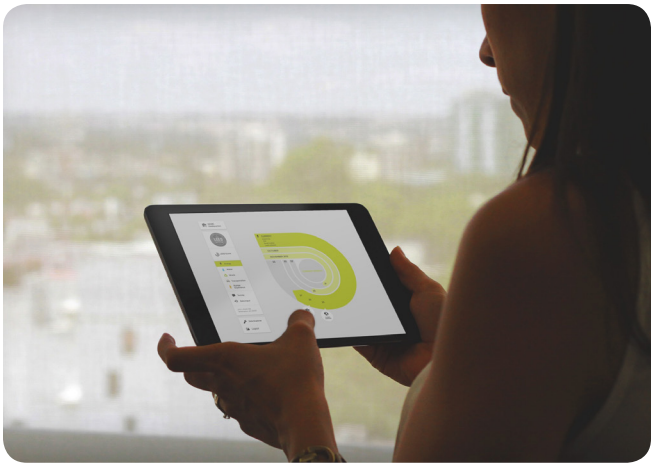
LEED DYNAMIC PLAQUE

70% of Indian green building professionals say they are willing and able to share useful data for the purposes of reporting building performance related to LEED-certified buildings.*

LEED certification was designed to reward projects for their building performance at the time of certification. But what about after? How can LEED buildings measure and maintain the level of building efficiency for which they achieved LEED certification?

Enter the LEED Dynamic Plaque. The product's concept was first announced by Scot Horst, USGBC's Chief Product Officer, at Greenbuild 2012. The plaque is now available to all LEED-certified commercial projects, and is on display at USGBC's headquarters in Washington, D.C. among a growing number of projects across the map. The LEED Dynamic Plaque is a visually engaging platform that displays a building's live performance in energy, water, waste, transportation and human experience. The platform is updated whenever new data enters the system, and displays a live LEED performance score based on current achievement. The LEED Dynamic Plaque is designed to work seamlessly with the LEED rating system: each enhances the other. The rating system advances smarter green building strategies, and the plaque then plots the ensuing impact and performance of those strategies, in near real time.

The goals of the dynamic plaque are multi-fold. First, it provides a solution for how to measure ongoing building performance in relation to the LEED certification level awarded. Second, it ignites awareness: it makes tenants, visitors and building staff aware of the building's performance at any given time, enabling them to make changes, if needed, to increase performance. Finally, it provides a common language to compare buildings to one another. Visit **leedon.io** to bring the LEED Dynamic Plaque to your project and join the future of building performance.



**From a USGBC survey conducted between September and October 2014 with LEED users in India.*

USGBC & TERI

The Energy and Resources Institute (TERI)

In 2014, USGBC and TERI formed a strategic partnership to accelerate the development of green, high performing buildings across India and Southeast Asia.

The demographic trends of India indicate a consistent rise in urbanization. It is estimated that by 2030, over 33% of the total Indian population would be in urban areas. The rising population and the rapid urbanization would push the demand for housing and commercial spaces, providing a further impetus to the rising growth of the construction sector in the country.

USGBC and TERI believe that LEED and GRIHA (Green Rating for Integrated Habitat Assessment, TERI's green building rating program)—proven market transformation tools—are essential for India's resource efficient future. This is why we have joined forces. Our partnership focuses on:

Building a green community: We want to deliver on a shared vision of bringing green buildings and communities to all, especially in India, within a generation. Jointly, we are working together on all aspects of sustainable development of the built environment. The States of Kerela, Uttar Pradesh, Rajasthan have adopted GRIHA and LEED green building rating systems and passed resolutions incentivizing buildings to be resource and energy efficient. The Ministry of Environment and Forests, Government of India lists GRIHA and LEED pre-certified projects for out of turn consideration, resulting in speedy approvals for buildings. With their longstanding presences and collaboration in India, LEED and GRIHA will allow us to take the conversation of green buildings to a much higher platform. As tools of market transformation, LEED and GRIHA will become even more available to the broader public.

Performance: What you cannot measure is not manageable. While incentives for new buildings rated under GRIHA are linked to performance validation, we will be measuring building performance at existing buildings, community and human health levels. How we resolve technical aspects and build performance metrics into the market is critical. USGBC's new LEED Dynamic Plaque allows us to calibrate each building on its real-time performance to further drive the market. We will explore many efforts to measure performance but our approach is to keep things simple so that the common man can understand and influence the metric. After all, behavioral transformation is key to success.

Capacity building: With businesses and stakeholders combining energies to design and construct sustainable buildings, the market needs to be aligned with the required skills and knowledge. It's not just about quantity. It needs to be about quality. Those two are essential. This is why we want to continue empowering existing leaders, influencers and media in India to help us in this effort. Education is a key anchor of our new partnership.

To learn more, visit **usgbc.org** and **teriin.org**

R.K. Pachauri and USGBC COO Mahesh Ramanujam

Mili Majumdar

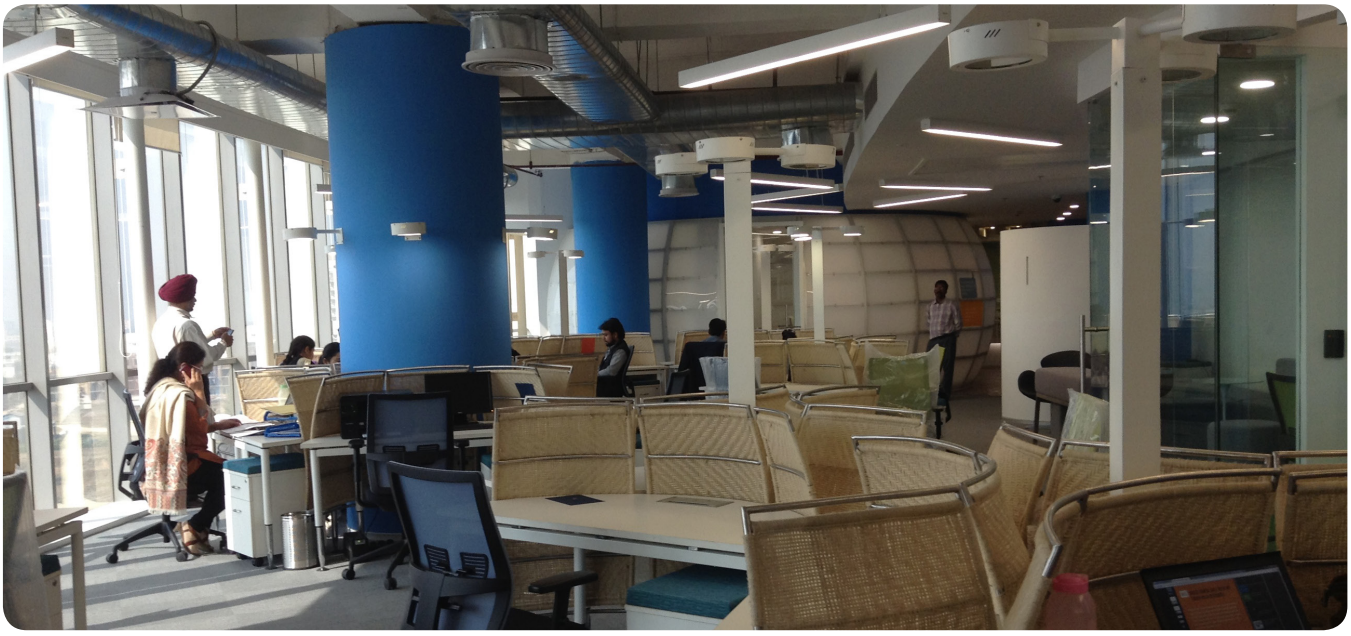
LEED PROJECT SPOTLIGHTS

GROUP10 TECHNOLOGIES

Gurgaon, India
Interior Design + Construction: Commercial Interiors (LEED Gold)
Certified August 2014
The First LEED v4 project to certify in India.

Key features:

- The project is located in a high density area with access to more than 10 basic amenities including restaurants, school, parks, banks, temple, pharmacy, grocery store, beauty salon and shopping malls.
- There is access to various public transit options including Delhi Metro and DTC bus lines. Additionally, shuttle service to the metro station is provided to 100% of the employees.
- Used low-flow plumbing fixtures to reduce potable water consumption by 28%.
- Used non-CFC based refrigerants in HVAC equipment and non-HCFC based fire extinguishers.
- Sustained energy and cost savings, and improved indoor environmental quality through monitor-based commissioning by a highly sophisticated building management system.
- With the use of daylight and occupancy sensors, the lighting power consumption was reduced by more than 30% compared to when using conventional light fixtures.
- Over 45% of the lighting controls have daylight sensors and over 60% of the lighting controls have occupancy sensors installed.
- 89% of the construction waste and debris was diverted from local landfills and into recycling facilities.
- 86% of the regularly occupied areas have access to daylight and views.
- Low-emitting construction materials including paints, carpets and adhesives were used to minimize harmful chemicals introduced into the workplace atmosphere.
- A green education program was established to help promote the benefits of sustainability and LEED.



INTUIT

Bangalore, Karnataka
Commercial Interiors (LEED Platinum)
Certified June 2013

Key features:

- This IT park project has more than two bus lines or routes within a walkable distance of 0.25 miles from the project building entrance for its building occupants thereby minimizing transportation pollution and strain on local infrastructure, protects green-field site and preserves habitat and natural resources.
- The project has reduced potable water use by 51.76% from the calculated baseline design fixture performance requirements established by the Energy Policy Act of 2005 through the installation of low flow urinals, showers, kitchen faucets and flush water closets.
- The highly reflective material on roof, high performance glazing, efficient HVAC design and heat recovery in the base building, have contributed to HVAC energy savings of about 30.82% over conventional building HVAC systems.
- In order to support enhanced IAQ and long-term well-being of all occupants, 30% more than the minimum ventilation rates as per ASHRAE standards have been provided.

Other Notable IT Park Projects

HSBC
Chennai, India
Commercial Interiors (LEED Platinum)
Certified April 2012

IBM–MANYATA EMBASSY BUSINESS PARK
Bangalore, India
Commercial Interiors (LEED Platinum)
Certified December 2011

ANS DHIVYAM JEWELS

Salem, Tamil Nadu, India
New Construction (LEED India Gold)
Certified January 2012
First jewelry store in India to achieve LEED Gold certification.

Dhivyam Jewels store is owned by ANS Jewelers. The project includes many green features that directly contribute to the environment in terms of reduced energy consumption, impact on the local environment and usage of natural resources.

Key features:

- The project is located in close proximity to public transportation thereby minimizing transportation pollution and strain on local infrastructure.
- The stormwater system was designed to remove 80% of the average annual post-development total suspended solids from the stormwater.
- Low-flow dual-flush toilets, sensor based urinals and other low-flow fixtures have been selected to install onsite to reduce water consumption by over 44%.
- Potable water consumption for site irrigation was reduced by at least 50%.
- 100% of wastewater is treated onsite to tertiary standards.
- The project has ensured up to 95.98% of total construction waste has been recycled or reused thereby diverting them from landfills.
- The project has achieved a combined recyclable content value of 13.22% of total material by cost thereby reducing virgin material exploitation.
- 79% of the total project's materials by cost were manufactured within 800 km of the project site. Materials sourced regionally include cement, sand, glass, steel, aggregate, brickwork, granite and ceramic tiles.
- In order to support enhanced indoor air quality and long-term well-being of all occupants, 30% more than the minimum ventilation rates as per ASHRAE standards is provided.

VOLVO-EICHER GROUP HEADQUARTERS

Gurgaon, India
New Construction (LEED India Platinum)
Certified January 2014

The headquarters of Volvo-Eicher Group was designed with worker health and productivity in mind. The air inside is cleaner and more oxygenated than the air in most other office buildings. The building was ahead of its time, as care was taken to eliminate all VOC in materials used in the building. Conservation of energy as well as occupant comfort were of equal consideration. At the center of the building is a 35-tonne suspended spiral staircase that heads right up to the sixth floor for occupants interested in getting some exercise in the middle of the day.

Two dozen varieties of indigenous plants—both flowering and non-flowering trees, shrubs, indoor plants and more—have been planted in and around steel frames that support the louvers which are covered with wood recycled from railway sleepers courtesy of Indian Railways.

The building's louvers, which act as blinds, are strung outside the glass walls of the office and have been painstakingly calibrated after a detailed solar ingress analysis. The architects and engineers studied the building's orientation, latitude and longitude and the angles at which sunlight reaches it. The 'blinds' were calibrated to minimize the direct inflow of harsh sunlight.

Key features:

- No false ceilings as the air-conditioning ducts—normally fitted in the false ceilings—are on the ground since cold air sinks while hot air rises. Through this placement of these ducts on the floor, the building's air-conditioning system uses less energy.
- With no false ceilings, there are several wooden discs suspended in the air. The wood is from pinewood that has been recycled from crates in which the assembling units of Volvo trucks travel to India all the way from Sweden. Normally these crates get auctioned off.
- The glass windows are a special type of glass manufactured by Saint Gobain Glass at its Chennai plant. It is insulated and double-glazed, allowing glare-free light but not heat into the building.
- The building has a specially-designed sewage treatment plant that recycles water for use in the HVAC cooling towers, landscape irrigation, washing cars and flushing. It has the capacity to treat 50,000 litres of waste. On average, it converts 30,000 litres of wastewater into usable water every day.

SUZLON ONE EARTH

Pune, India
New Construction (LEED Platinum) and
GRIHA 5 Star Rating
LEED Certified February 2010

Suzlon is India's largest and one of the world's biggest producers of clean wind energy.

One Earth succeeded in:

- Decreasing potable water usage in irrigation by 100% compared to average building consumption
- Saving 8.5 million liters of potable water annually
- Reducing energy consumption by 2.2 million kWh per year
- Saving more than INR 12.8 million per year

Dr. Sanjay Vashishtha
Senior Member
First Green Consulting

With 18 years of experience and as the senior member of his consulting firm, First Green Consulting in Gurgaon, Dr. Sanjay Vashishtha works on a variety of building projects for key companies in India, notably Suzlon Ltd. and DLF Ltd. Prior to the inception of his firm, he was general manager of business development at DLF Utilities Limited, a subsidiary company of DLF Limited, where he was responsible for the sustainability aspect of DLF's building portfolio: "My responsibility was to highlight that our buildings were energy efficient," Vashishtha said. "LEED was a tool, an internationally-accepted green building rating system."

Through his work as head of First Green Consulting, he and his team helped make DLF Limited the largest, private real estate company in India to have a self-sustained model of energy production and consumption. To date, DLF Limited has 14 buildings which have pursued LEED certification, 10 of which are already certified and 4 are under review. First Green Consulting performed all the related activities for these 14 buildings.

First Green Consulting was involved in notable projects in India including the DLF Mall of India, the largest LEED Gold certified mall in North India.

INFOSYS SDB 1 (POCHARAM CAMPUS)

Hyderabad, India
New Construction (LEED India Platinum) and GRIHA 5 Star Rating
Certified April 2012

With a total built up area of 2.7 lakh square feet, Infosys SDB 1, Hyderabad, is the first radiant cooled commercial building in India and the biggest comparison of HVAC systems in the world. Infosys has made this building a live lab wherein the building is split into two symmetric halves, one half with conventional air conditioning and the other with radiant cooling. Data over the last three years show that radiant cooling is 30% more efficient than conventional cooling. EPI of the radiant cooled building and conventionally cooled building are as low as 78 kWh/Sq. m/Year & 97 KWH/Sq. m/Year respectively. This is among the lowest in the world for this type of climate.

Efficient Building Envelope: The building has an efficient envelope with appropriate north-south orientation, insulated walls and roof, optimized window-wall ratio of less than 30%, and high performance glazing with adequate shading.

Day Lighting: Buildings are designed with day light, vision panels, and light shelves, which let in a good amount of natural light with little or no glare, removing the requirement to switch on lights during the day. Daylight and vision panels ensure over 91% of occupied spaces have natural light and all employees have access to views, adding to higher comfort and productivity.

Efficient Lighting Controls: The building has highly efficient lighting controls with the use of day lighting and occupancy sensors. The operating lighting power density is less than 0.17 W/square feet compared to ASHRAE baseline standards.

Building Management System: Building management system (BMS) to continuously monitor, manage, and optimize building operations and ensure efficient energy use. This has enhanced our operative effectiveness by improving diagnostic capabilities and also giving recommendations for new building designs

Energy Efficiency: The building design demonstrates 50% reduction in energy consumption compared to ASHRAE baseline standards.

Water Use: Water use reduction by over 48% compared to LEED standards with the use of efficient plumbing fixtures, recycle and reuse (used for flushing, landscaping, and in cooling towers) of waste water.

JAWAHARLAL NEHRU BHAWAN

New Delhi, India
New Construction (LEED Gold) and IGBC Certified
Certified July 2013

The office of Ministry of External Affairs is the first ministry office in India to receive LEED Gold Certification. The facility, covering 7.8 acres, was designed to promote daylight and ventilation. Insulated building envelope and energy efficient cooling systems have all been integrated. The project boasts many water-saving features including an onsite water treatment plant and low-flow water fixtures.

Key features:

- Decreasing potable water usage in irrigation by 100%
- Saving 11,700,000 liters of potable water annually
- Reducing energy consumption by 1.6 million kWh annually
- Saving more than INR 9.7 million per year

BANGALORE AIRPORT TERMINAL 1

Bangalore, India
New Construction (LEED Gold, IGBC Certified)
Certified December 2013

The Terminal 1 expansion is divided by three zones and is being developed to increase passenger traffic and to enhance the operational performance of the airport. The project incorporates many sustainability features including low-flow water fixtures and effective stormwater management systems.

A TALE OF TWO CISCO BUILDINGS
(B15 & B16)

Cisco B15

Bangalore, India
Commercial Interiors (LEED Platinum)
Certified June 2012

- The project has reduced potable water use by 50%.
- 27% of the building's materials and products were manufactured within 500 miles of the project site.
- HVAC energy savings are about 49% over a conventional building HVAC system.

Cisco B16

Bangalore, India
Interior Design + Construction (LEED Platinum)
Certified July 2012

- The project has reduced potable water by 51.3%.
- 26% of the building's materials and products were manufactured within 500 miles of the project site.
- HVAC energy savings are about 50% over a conventional building HVAC system.

ITC WINDSOR

Bengaluru, India
Existing Buildings (LEED Platinum)
Certified March 2011

ITC Windsor, spanning over 298,000 sq ft, is the first hotel in South India to earn LEED Platinum certification under the LEED for Existing Buildings program.

Innovation and cutting edge technology combined with an emphasis on responsible luxury have enabled ITC Windsor to create new benchmarks in energy, water efficiency, solid waste recycling and carbon reduction.

ITC Windsor succeeded in:

- Using 29% less energy than USGBC's national average for large size Luxury Hotels
- Harvesting 20% of the peak rainfall which helps in reducing demand for potable water
- Treating and recycling enough water to irrigate 65,000 trees annually
- Recycling more than 99% of total solid waste
- Meeting its total electrical energy demand through renewable sources of energy i.e. off-site wind turbine generators
- Reducing cooling demand by having over 60% of the roof area covered with materials having a high Solar Reflective Index
- Reducing annual emissions by approximately 13,000 tonnes of CO_2
- More than 60% of ongoing consumables used at ITC Windsor are either local or recycled

Other notable ITC LEED-Certified Hotels in India

ITC Royal Gardenia
Bengaluru, India
New Construction (LEED Platinum, IGBC)
Certified March 2010

ITC Grand Central
Mumbai, India
Existing Buildings (LEED Platinum)
Certified September 2012

CITIBANK, NA, FIFC

Mumbai, India
Commercial Interiors (LEED Platinum)
Certified February 2014

Citi in India has a footprint of 0.5 million square feet of office space certified under LEED. The five major facilities in Mumbai, Pune, Chennai and Bengaluru cater to over 5,800 employees.

The Citibank NA at FIFC, headquarters of Citibank operations in India include six floors measuring 149,295 square feet.

Citi was able to implement various sustainable and energy efficiency measures. The total connected lighting power is 32.59% below the ASHRAE standard, the lighting design is further optimized with daylight sensors in well day-lit areas and motion sensors in closed rooms. The air conditioning system design is zoned-based on the occupant use and space requirements. The facility purchased green e-certified products in renewable power equivalent to 50% of the energy use.

Citibank succeeded in:

- Decreasing potable water usage by 42.18% compared to average office consumption
- Saving 3.8 million liters of potable water annually through use of efficient water fixtures
- Reducing energy consumption by 637,290.8 kWh per year
- Saving more than INR 7.65 million per year on energy bills

Other Notable Financial Institution Projects in India

Deutsche Bank AG, The Capital BKC
Chennai, India
Commercial Interiors
Certified July 2013

Standard Chartered Bank 2nd-3rd Floor
Mumbai, India
Commercial Interiors (LEED Gold)
Certified May 2014

YCH LOGISTICS PRIVATE LIMITED

Chennai, India
New Construction (LEED India Gold)
Certified May 2010

YCH India is the Indian subsidiary of the Singapore-based logistics and supply chain management company YCH Group. The warehouse space was designed in such a way that it requires no artificial lighting during the day. At the time YCH was certified, there were no industrial warehousing projects that had pursued LEED. YCH was the first and even today they serve as an example for warehouses in the region.

GREAT LAKES INSTITUTE OF MANAGEMENT

Manamai Village, Tamil Nadu, India
New Construction (LEED Platinum)
Certified August 2010

One of the first educational institutes in India to achieve LEED Platinum for New Construction.

About 45% of the project's material and products by cost was extracted, harvested and recovered within 800 km of the project site and 60% of the total material cost was manufactured locally and regionally thereby reducing the pollution associated with transportation.

The Institute, a residential business school campus, is introducing a curriculum for global energy and environmental management degree in India.

MINDSPACE BUILDING NO. 06

Madhapur, Hyderabad, India
New Construction (LEED Platinum)
Certified August 2010

Mindspace Bldg. No 6 is the second largest LEED Platinum rated building in India in terms of built up area. The project began in 2009 and was completed in 2010. The project adopted energy efficiency and water conservation measures. The prominent energy onservation measures such as roof and wall insulation, Low “e” DGU glass, efficient water cooled chillers, VFD’s for HVAC equipment, heat recovery wheels, demand control ventilation and efficient lighting with sensors.

Mindspace Building No. 06 has succeeded in:

- An energy savings of 35% over & above the ASHRAE 90.1 -2004 baseline.
- A Water savings of 50% above standard baseline as prescribed by LEED.
- Enhanced ventilation, better views and day lighting that has improved the productivity of the occupants.
- An average energy consumption of 70-100 Kwh/ Mtr.2

WHO IN INDIA IS USING LEED?

In India, 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 India's commitment to sustainability continues to evolve and grow, more and more of its building professionals are earning their LEED professional credentials.

557

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.

LEED AP Event in New Delhi, July 2014

COMPANIES

Infosys

Infosys is a global leader in consulting, technology and outsourcing solutions. Infosys enables clients in more than 50 countries to outperform the competition and stay ahead of the innovative curve. Infosys has over 165,000 employees and $8.25 billion (USD) in revenue.

Guruprakash Sastry

Regional Manager, Infrastructure & Green Initiatives

Why have you chosen to use LEED? Our passion to conserve natural resources and create a sustainable environment has motivated us to develop solutions and technical expertise that help us carry out our business activities without damaging the environment.

We have been constantly setting reasonable goals to tread a sustainable path for other corporates to follow. We have implemented many innovative technologies in India, we are still trying out new things to bring about a transformative change and create environment consciousness in India.

Infosys SDB 6 | Mysore, India

"I could feel the difference in the way this building is designed, I hardly need to switch on lights throughout the day. The floor has daylight, making a natural and healthy work environment." — **Occupant, Infosys SDB 1, Hyderabad**

This is further strengthened by LEED as it provides us a platform to demonstrate our commitment to sustainability to others in the industry. Also, since LEED is a globally recognized rating system, it definitely gives additional credibility to our sustainable endeavors.

How does LEED fit into your company's overall sustainability goals and objectives? At Infosys, sustainability is embedded in the core business strategy and is the cornerstone of the business activities driving innovations. Our top management is actively involved in initiating sustainable practices and has set goals of becoming carbon neutral, achieving 50% reduction in per capita energy consumption by 2018 against the baseline year 2008, and meeting our entire electricity consumption from renewable sources, among other goals. The major focus of LEED is on sustainable sites, water, energy efficiency, indoor environment quality, and materials. These are in line with some of the goals we have set for ourselves to champion in the area of sustainability. Hence, LEED facilitates a comprehensive review of our efforts and adds value to it.

What's the value (marketing, ROI, business development and rental rates) LEED provides to your organization and stakeholders? LEED gives us recognition in environmental leadership. As it follows an intensive approach with different levels of certification, it re-confirms the reliability of the green features of the building and gives market recognition. For Infosys, which has a global client base, we feel LEED is an internationally recognized instrument which is more identifiable by our various stakeholders across the globe.

What measures have you put in place to ensure your LEED project continues to perform highly and improve over time? We have implemented the next generation of smart technology in our buildings. Our smart buildings use built-in artificial intelligence and energy saving algorithms to constantly optimize operations. We ensure that each and every piece of equipment and system is metered and accurately measured at a granular level. We have a building management system (BMS) which continuously monitors, manages, and optimizes our building operations.

We have a Central Command Center (CCC) at our Bangalore Campus which remotely monitors all equipment and consumption in real time, helping us identify and correct inefficiencies. It connects all building management systems and manages energy and other critical operations across all our campuses from one single place. We have experts in each of the critical areas at the central command center who constantly analyze buildings' data and optimize operations. This greatly helps us improve our operational efficiency and eliminates unwanted waste.

We constantly monitor our lighting, air conditioning, and UPS energy consumption along with the total EPI of the buildings. Efficiency of our equipment is reviewed on a weekly basis against the performance benchmarks we have set for ourselves. For example, the design and operating efficiency of chiller plant room is 0.8 kW/TR & 0.6 kW/TR, respectively. Similarly, for lighting it is 0.45 W/Sq.ft. by design and 0.17 W/sq.ft operating.

We are proud to disclose and share our green interventions through our sustainability reports/publications and other mediums as we have data to back all our initiatives.

Do you plan to use LEED in future projects? If so, which ones and how? We will continue to innovate to optimize our operations and increase efficiency. Hence, we plan to use LEED as one of the certifications for our future projects. Currently we have eleven LEED India Platinum rated buildings across our India campuses and we use LEED for New Construction (NC). We also plan to go for USGBC certifications in the future.

How do you envision your organization continuing to maintain LEED as a leadership tool? As mentioned earlier, LEED adds value to our sustainable actions. It gives us a platform to showcase to the world that we are leading the way for others in sustainability. We will continue to innovate in this area and also encourage others to follow the same path. LEED will act as a leadership tool for us and also as a medium to communicate with others about the significance of sustainable construction.

K Raheja Corp

K Raheja Corp is a leading real estate developer in India. Established in 1956, K Raheja Corp has diversified into real estate—commercial and residential, hospitality and retail. Their success story spans across decades and continues to achieve higher targets for quality of performance and service. K Raheja Corp leases out their commercial spaces to recognized MNC's and Fortune 500 listed companies such as Capgemini, WNS, Accenture, Facebook, HSBC, J. P. Morgan, Novartis Healthcare, etc. K Raheja has a company policy that its portfolio of commercial, residential, retail and hospitality projects will all be LEED-certified. Currently, 23 of their 45 projects are LEED-certified comprised of 8.45 million square feet of LEED-certified space.

Shabbir H Kanchwala

Senior Vice President

Why have you chosen to use LEED? LEED is an internationally accepted benchmark of excellence for the design, construction and operation of high performance green buildings and provides building owners and operators the tools they need to have an immediate and measurable impact on their buildings' performance.

The environmental impact of a building design, construction and operation is significant considering the fact that it is one of the major usages of energy generated in India.

LEED presents an opportunity for us to reduce the substantial impact buildings have on the natural environment, while increasing quality of life.

We want to be at the forefront of being environmentally responsible, albeit voluntarily, thereby paving a way for others to follow. Hence, the company has decided and is committed to LEED.

How does LEED fit into your company's overall sustainability goals and objectives? K Raheja is constructing its entire portfolio of commercial, retail and hospitality as LEED-certified buildings. The LEED system addresses sustainable sites, water efficiency, energy optimization, materials and resources, and indoor environmental quality and the implementation of these measures fulfills our company objectives of energy savings and water savings. LEED provides us with a good green corporate image and demonstrates our commitment to environmental protection.

"We believe, environmental stewardship makes good business sense. We adopt a preventive approach, striving to make efficient use of natural resources and to minimize the environmental impact of our activities. Our LEED Platinum rating is the feather in the cap of Novartis."

— Occupant, Mindspace building, Madhapur Campus, Hyderabad, India

Raheja Vistas Phase IV, Pune, India

What measures have you put in place to ensure your LEED project continues to perform highly and improve over time? India is tropical country, hence, to reduce heat in buildings, the roofs and walls are insulated and glazed with use of low "e" glass. Water-cooled centrifugal chillers are often installed with high coefficients of performance and eco-friendly refrigerant. Specifically:

- Air Handling Units (AHUs) are interlinked with Heat Recovery Units to reduce the cooling load on the building's chiller and AHUs.
- For better indoor air quality, we use demand control ventilation systems with CO_2 sensors.
- Efficient lighting with CFLs, T5 and LED lights with occupancy and daylight control sensors has been installed.
- Water saving technologies are incorporated into our LEED-certified buildings—native and draught tolerant species, water efficient plumbing fixtures, and rain water harvesting to recharge the ground water table.
- Tertiary treatment systems comprised of an activated carbon filter and multi-grade filter, to treat 100% of the wastewater generated on-site.
- The STP treated wastewater is used to meet 50% of HVAC makeup water and the balance for flushing and gardening.
- Construction waste like construction debris, steel scrap, broken bricks, interior waste etc. has been reused & recycled within the site & thus diverting the waste going to landfill.
- Regional material within 500 miles addresses the issue of optimizing indirect energy that goes into transporting goods from their place of manufacturing to the building site.

"I deeply appreciate the efforts towards reducing GHG emissions by K Raheja Corp. Water cooled chillers with Hi-COP in its class and integration of the same with the HVAC system has resulted in a considerable amount of energy savings."

— Occupant, Mindspace Building, Airoli Campus, Navi Mumbai, India

Grundfos Pumps India

The company's headquarters in Chennai has received LEED Platinum certification and is one of the first companies in India to voluntarily recertify its existing building. Grundfos is the first company in India to move from a Gold to a Platinum rating for a building after eight years.

Ranganath N.K
Managing Director, Grundfos India

Grundfos Pumps India Pvt. Ltd. is a wholly owned subsidiary of Grundfos Holdings, established in March 13, 1998. Grundfos India is responsible for sales of Grundfos products in India, Bangladesh, Bhutan and Maldives. Currently, Grundfos India has more than 250 employees and works with 200 distributors and dealers with 20 offices across India. Grundfos India provides pumps and pumping solutions for various applications – heating and hot water service systems, cooling and air-conditioning systems, industrial applications, pressure boosting and liquid transfer, groundwater supply, domestic water supply, sewage and wastewater, dosing, chlorination systems, disinfection systems and pumps running on renewable energy.

"Sustainability is a core value of ours at Grundfos. We not only are the largest manufacturer of energy efficient pumps, but also lead by example by having one of the greenest offices in India and in other countries too. Our green building in Chennai is an embodiment of what Grundfos stands for and is a proof that we walk the talk. The fact that we are able to maintain a green rated building and make it even more greener over a period of time proves that the green rating is not just a one-time effort but a continuous process."

— Ranganath N.K, Managing Director, Grundfos India

PEOPLE

Pramod Dhir, LEED AP BD+C

Dew Point Services Consultants LLP

"LEED definitely has provided me a platform (and confidence) to express my views on sustainability in a more structured fashion. I can now think more pragmatically, while applying the building sciences in the construction practices."

Why have you chosen to use LEED? The Indian air conditioning industry has seamlessly adopted ASHRAE standards to a large extent.

Traditionally, for some strange reason, all our local codes also stem from the spirit and essence of American Standards. LEED refers to all ASHRAE and AHRI standards, insofar as air conditioning and electrical designs are concerned. Thus, LEED becomes the natural choice for accreditation and validation for us in India.

How has LEED helped your career? How does it set you apart in the market? LEED definitely has provided me a platform (and confidence) to express my views on sustainability in a more structured fashion. I can now think more pragmatically, while applying the building sciences in the construction practices.

While I am not a practicing LEED accredited professional (my core expertise is MEP consulting), it has definitely given me an edge over my contemporaries (who are not LEED accredited professionals), in a way that I can now relate to the LEED process better and makes it easier for me to incorporate the LEED requirements latently in my MEP design for efficient buildings. A LEED AP designation definitely compliments my credentials and to a large extent creates a better perception.

Are there specific LEED credits that you often pursue when beginning a project? Which credits, in your opinion, remain the most critical and why? Energy and atmosphere credits are very close to my heart, and definitely are my core competencies and passion. Water, for all good reasons, is the next most critical component in today's scenario of global warming and depletion of our aquifers. Luckily energy has alternate sources. Water doesn't and it seems improbable that we can defeat the law of the water cycle.

Embodied energy seems to be taking a back seat in LEED certification (unlike TERI Griha standard), and it needs to be taken up seriously.

Why are people so drawn to LEED? I guess for the simple reason that it is the most evolved, systematic and transparent system, easy to understand and implement. It encourages the implementing team to understand the spirit of the requirement and allows all flexibility for compliance and execution. Last but not the least it is time tested and one of the oldest certification programs.

Dhruv K. Futnani, IGBC AP, LEED AP BD+C

"India has chosen LEED."

Why have you chosen to use LEED? India has chosen LEED. India is a country experiencing unprecedented growth in the last few years and it is critical that this development is sustainable. Unlike many countries, India's national building code does very little to address energy and water efficiency, indoor environment, materials and other environmental factors. The LEED system provides a much-required framework for upcoming projects. The difference seen in LEED-certified and most other projects is probably the most glaring in India than anywhere else in the globe! With many international companies setting up office or partnerships with Indian companies, I believe targeting a LEED rating is the logical way to ensure their employees and interests are protected.

How has LEED helped your career? How does it set you apart in the market? Providing LEED certification consultancy and green building services is the goal of the company. I was very fortunate to be pursuing my Masters in Architecture in the United States at the time when LEED was setting the benchmarks there. After completing my education and a few years of work experience on several LEED projects, I decided to move back to India. The first LEED project had just been completed in Hyderabad and many more were on the horizon, but there were only 7 LEED APs in the country! I have always believed in the architect being the leader of the LEED team, and our firm provides sustainability consulting from this approach of integrated design.

Are there specific LEED credits that you often pursue when beginning a project? Which credits, in your opinion, remain the most critical and why? As a policy, at the design stage we focus on sustainability and project specific opportunities and issues, not on credits. When a project is "green", a good rating will happen quite easily. Every project is unique and many credits are achieved inherently and some credits require incorporation or changes in the design. These credits become the focus, and as a consultant, we focus on the most efficient and economic way to meet the intent and requirements.

For example, in India, electricity and water are scarce resources and also equate to operational savings vis-à-vis money. The LEED system addresses these critical credits and further encourages implementation through the Regional Priority Credits.

Why are people so drawn to LEED? LEED provides an "international benchmark" for sustainability in buildings. Clients, who are committed to their employees and the environment, insist on LEED certified projects when they are looking to lease spaces anywhere in the world, this ensures a "world class" comparable building as well as the best indoor environment for the occupants, resulting in better health, productivity and savings. LEED is the most widely accepted rating system and since the project requires a third-party verification, the interests of the building occupants and owner are safeguarded. In India, LEED and green buildings are considered inseparable; this demonstrates the importance and association of the two.

Amor Kool, IGBC AP, LEED AP BD+C

Kaleidoscope, Architect, MSCM

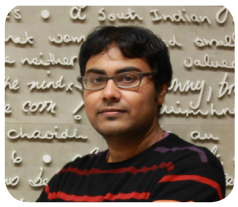
"LEED introduced me to the top brass of corporate management, from Bharti Airtel to DLF."

Why have you chosen to use LEED? LEED has a market reach beyond India and Asia; clients in most of the cases feel benefited by LEED's market outreach across the world. As the corporate social responsibility investments are made mandatory by the Government of India, more corporations and multinational companies are transforming their built environment utilizing opportunities available in LEED. LEED is marketable, and has global presence.

How has LEED helped your career? How does it set you apart in the market? As a sustainability consultant, I've presented LEED and its certifications to the best in India. LEED exposed me to the top brass of corporate management, from Bharti Airtel to DLF. LEED gives me an extra edge to deliver projects quickly and provides me with tools for the market.

Are there specific LEED credits that you often pursue when beginning a project? Which credits, in your opinion, remain the most critical and why? ESC Plan, Development Density, Public Transportation, Stormwater Quantity, Water Use Reduction, Innovative Wastewater Use, Optimized Energy Performance, Indoor Air Auality (Fresh Air), and Daylight. These are the credits, which are specifically targeted at the start of the project. The most critical are Water Use Reduction and Optimized Energy Performance.

Does the increased stringency of LEED v4 (material disclosure, performance, human health) meet your expectations for where the market is heading? How do you think the latest generation of LEED will play out in your market? The Indian market is not yet as matured for material disclosure, however, performance and human health are the topics of discussions at various platforms. Material disclosure may require a paradigm shift in the thought process of manufacturers in India. However, I am personally very optimistic about LEED v4 and one of those who advocates that very stringent norms should be implemented. LEED v4 may get some resistance initially, however, some clients have already asked me to prepare comparisons.



Gopal Np, LEED AP O&M

Project Manager, Architect, Environmental Design Solutions Pvt. Ltd. [EDS]

"Having a LEED AP accreditation illustrates exceptional understanding of concepts and principles that make a green building."

Why have you chosen to use LEED? I started my career as an architect and worked on several LEED Platinum rated buildings. As an architect, you mostly concentrate on design, whereas LEED brings about the integration of design, construction and operations, a perfect solution for being sustainable.

How has LEED helped your career? How does it set you apart in the market? LEED has helped me to recognize all the aspects that go into making a building 'green'. It is not only about materials and design. It also talks about green cleaning practices and indoor air quality management, which is ignored by most people. Having a LEED AP credential illustrates exceptional understanding of concepts and principles that make a green building.

Are there specific LEED credits that you often pursue when beginning a project? Which credits, in your opinion, remain the most critical and why? As we all know, water is an important resource and it is vital to maintain a healthy water cycle. It becomes important to save water, especially in a warm country like India. Irrigating landscape in such areas can be dealt with using recycled water or by using stormwater available during the brief monsoon periods. Saving potable water is of supreme importance and I encourage clients to lay emphasis on water efficiency and related credits.

Why are people so drawn to LEED? LEED has attained international recognition due to the holistic approach it offers as a rating system. USGBC was an early mover and they are pioneers of the green rating system. People are conversant with the system as it has been in the market for a long time. To add to that, LEED has a good support system.

Yusuf Turab, IGBC AP, LEED AP BD+C, GRIHA Trainer & CAPM

Managing Director, Y T Enterprises

"Most businesses that work with international clients pick LEED over other rating systems because of its popularity globally. There is a common perception that visitors from the United States and the Middle East appreciate buildings that are LEED-certified."

Why have you chosen to use LEED? About three years ago, when I started my career in the green building sector, LEED was the obvious choice simply for its sheer numbers. It was the most popular rating system in the world and at the time had a very holistic approach towards a sustainable built environment. Most of these features of LEED still hold true.

Are there specific LEED credits that you often pursue when beginning a project? Which credits, in your opinion, remain the most critical and why? In any project we first pursue the water use reduction and innovative wastewater technology credits. In India, water is a critical issue and many Indians prefer to invest in projects that are most likely to provide them with water security in times of drought. It's a shame LEED awards so few points for water efficiency.

Why are people so drawn to LEED? Most businesses that work with international clients pick LEED over other rating systems because of its popularity globally. There is a common perception that visitors from the United States and the Middle East appreciate buildings that are LEED-

certified. At a base price of $3000, it is also very affordable and in some cases cheaper than the Indian rating systems like IGBC Green Factory and GRIHA rating systems.

Does the increased stringency of LEED v4 (material disclosure, performance, human health) meet your expectations for where the market is heading? How do you think the latest generation of LEED will play out in your market? Constant increases in stringency and decreases in complexity are the needs of the hour. While LEED has come a long way in terms of setting higher performance benchmarks for projects to follow, there is still plenty of work to be done towards simplifying the whole system. Integrated design, project management and systematic documentation has never been a traditional strength of the Indian project teams. LEED is requiring more and more of that which puts teams out of their comfort zones. On the whole, LEED v4 is exactly what the Indian market needs but only time will tell if it will be embraced.

Shashikiran Udupi, LEED AP BD+C

"LEED actually enforces that the measures are undertaken and documented thoroughly, so there is no shortcut or bypass of any of the measures."

Why have you chosen to use LEED? LEED is a mature and all-inclusive system set-up that genuinely encourages different users to prioritize and adopt relevant credits so that the three key global issues of reducing harm to the environment, enhancing energy savings measures as well as building healthy living/working environments are met. Since the evaluation system is water tight, LEED actually enforces that the measures are undertaken and documented thoroughly, so there is no shortcut or bypass of any of the measures. Besides, the LEED system also gives an opportunity for appeals and credit interpretations thereby making it a continuously evolving system. It is up-to-date and relevant.

How has LEED helped your career? How does it set you apart in the market? I am an architect by qualification and experience and LEED has helped my career prospects immensely as the need to hire design professionals with an innate sense of environmental responsibility has only increased over the past decade. When I first became a LEED AP in early 2006, the system was getting traction in the 'energy conscious' state of California, but now, almost a decade later, the LEED rating system is a well understood and used system in India where I have been practicing for the last 5 years. In the last 5 years, I have worked on delivering 3 LEED Platinum buildings in Bangalore, India, totaling a portfolio of about 1.8 million square feet which adds great value to my resume and adds further responsibility towards sustainability in all the future works that we take up.

Are there specific LEED credits that you often pursue when beginning a project? Which credits, in your opinion, remain the most critical and why? There are specific credits that are pursued for two reasons.

Credits such as the sustainable sites category are easy to pursue in India. The inherent density of the population in the metro areas makes it easy to locate the building in an area with easy access to public transit and community facilities.

Some of the credits are pursued due to their local relevance and importance. For example, high population density metros such as Mumbai, Chennai and Bangalore face water shortages perennially (due to our over dependence on the monsoons) as well as energy crises pretty often and it makes perfect sense to target the maximum number of points for these categories. So, I would definitely lay an emphasis on the water efficiency credits along with all the possible measures to make the project as energy efficient as possible.

Does the increased stringency of LEED v4 (material disclosure, performance, human health) meet your expectations for where the market is heading? How do you think the latest generation of LEED will play out in your market? I think that the increased stringency is always going to get this movement going in the right direction as it makes the whole process water tight and closes the loopholes that might potentially encourage some players to derive shortcuts in achieving some of the credits, especially with the materials and resources category.

The latest generation of LEED is more spread out and encompassing in terms of the additional categories. I am sure that a few glitches that existed in the system have also been removed to enhance the user experience.

Anupam Jain, LEED AP BD+C, O+M, IGBC AP, GRIHA Evaluator & Trainer, Registered Architect

Founder and Principal Consultant, Rationale de Design, New Delhi
Adjunct Associate Professor, RICS School of Built Environment, Amity University

LEED Testimonial from India

As an architect, I found myself practicing in a market where short construction timelines and a lack of coordinated engineering efforts were more the norm than the exception. This made me wonder what impacts such a rapid pace of construction has on the local ecology of the place. While there were occasional mentions of "green buildings", there wasn't really a comprehensive framework acceptable in the industry (like LEED that we see today). There was also an acute shortage of people trained to deliver anything like it.

It was then, more than 10 years ago, that I decided to pursue the area of "green buildings" with nothing more than a strong desire to fill this skills gap. Well, am I glad I made that decision then? Oh yes! I was introduced to an eye opening education in building science that to date continues to amaze me with new possibilities.

My association with USGBC also introduced me to a new culture of working with people from different backgrounds, but with the same sense of urgency to act on behalf of the environment. The creation of the LEED rating system has empowered design teams across the globe to measure and time the progress of our efforts to build with the environment, and not against it.

The country is expected to see a rapid rise in infrastructure and real estate projects in the near future. And we need industry professionals and frameworks like LEED to bring lessons in responsible development to hold our hand during this journey—to learn from others' experiments and to enhance our own capacity to lead from the front.

An important characteristic of LEED that has made it an industry benchmark in India is its comprehensive set of solutions for new as well as existing buildings, which has enabled owners to quantify their "green" potential and use it for conducting third-party-endorsed responsible business. The global appeal of LEED makes it easier for clients to recognize environmental leadership seamlessly—providing an advantage to businesses while lowering their own operating costs. Overall, occupants of green buildings are much more satisfied with their working environment and able to relate to their organization's efforts to work sustainably.

What LEED has succeeded in doing is to inspire an entire generation of professionals in the built environment to pursue training and provide hands-on contributions to the design, construction, operations and maintenance of buildings around them. They have started to ask tough questions and come up with feasible options at the design table. They are creating their own solutions and creating new and innovative business plans. For them, insensitivity towards the environment is no longer an option - and that is the biggest contribution any framework can make.

Deepa Sathiaram, LEED Fellow

Executive Director, En3 Sustainability Solutions Pvt. Ltd.

Past President ASHRAE South India Chapter & Past National Environment Chair—CII Young Indians and has worked on over 450 LEED projects in India and over 50 LEED projects globally.

"LEED sets a unique global benchmark of excellence in green buildings. That puts you on a completely different level."

What can people expect from pursuing LEED? Sustainability is a problem that everyone wants to address. Every building wants to save on energy and water and provide a better environment for its occupants. The LEED rating system provides a great framework for people to be able to do that. But we also need to understand what to expect from it. I often compare the LEED certificate to a college degree. Let's take an example. Say we are both engineers. We both have just graduated from a top class university. We both have been through the same curriculum and academic rigor. Three to five years, beyond our degrees, you are a great performing engineer but I am may not be doing so great. Does that mean that the degree that my university gave me is at fault? No. What does a degree say? It says we have the foundation, knowledge and ability to perform. However whether we perform or not, only time will tell. LEED certification is very similar. It tells a client that this building has everything in it - the foundation, framework and the ability to perform. Now it is up to the building to be a performing building or not. Any certification is good and provides the basic foundation to move forward. Of course we can bring in many checks and balances to ensure that the building performs, but really it is up to the building to continue to perform.

RBS Chennai achieved LEED Gold certification for Commercial Interiors.

"LEED...tells a client that this building has everything in it—the foundation, framework and the ability to perform. Now it is up to the building to be a performing building or not."

What has been the primary motivator to going green in India? At the initial stages of the green movement, the primary motivator was energy conservation. Anything that could be done to save energy. That was the primary focus. The green movement grew here so quickly because there was a business case for recovering costs from an energy standpoint. The country grew so fast and energy could not keep pace with it and any initiative that could help clients save on recurring energy costs was the key. There was also a market pull from international and large socially responsible corporations that were growing rapidly in India. Other motivators of going green included water conservation, waste management and better recognition and branding by the industry.

How has LEED kept up with growth in India? The building segment has grown significantly in the last six to eight years in India and with more awareness about green buildings and LEED, more and more projects began exploring these areas. Moreover in the last ten years, a lot of multinational corporations have moved into India. They started saying: "We want to lease spaces in LEED-certified buildings" because they were sure that these buildings would perform better in terms of energy efficiency, water and indoor air quality. This has led to many builders and developers who

wanted these good, multinationals clients to pursue LEED certification for their buildings. If the developers had a LEED certification, they had an edge. That's how most of these commercial buildings started going with LEED. But as time evolved and many clients started occupying LEED buildings, they were able to feel the benefits and since then LEED has grown even more in India.

Was LEED just a hook to get multinational clients? At first maybe it was for many builders, but the builders and developers soon realized it was helping them beyond just securing high-paying tenants. They started to look at the return on investment: "Hey, I am getting tenants but it's [LEED] also a good thing to do." They were also able to optimize designs and specifications, cut out excess and optimize initial investments as well.

A lot of the early work with LEED in India was for new construction. What about existing buildings? It's one of the key areas of focus. The new buildings are coming up with better specifications and innovative designs. But ten year-old buildings in India? They are not so efficient from a water and energy standpoint and a lot can be done to help these buildings become high-performance buildings. Much of the energy efficient equipment & systems we see today was simply not available back then.

How challenging has it been to make a "LEED for existing buildings" pitch in India? We need to change the old paradigm of considering LEED EB as part of the "cost of doing business" to "LEED EB as part of sound asset management." Most building owners and operators have a huge mindset that any change to existing buildings is complicated, overwhelming and painful. We have done many feasibility studies for prospective clients about their existing buildings, where they stand and what improvements can be done to help them save energy, water and operating costs. But they often say it's too difficult or time consuming to do as there are inherent cultural, skill and operational challenges. That mindset needs to be broken and challenges overcome.

Existing buildings have huge potential and we have seen that projects that advance often result from an owner committed at the highest levels of their organization who ensures that this happens.

How do you demystify the LEED EB process for clients? We need to reach out to the facility managers of all buildings. We are closely trying to work with associations of such facility managers, the facility heads, the infrastructure heads to create more awareness and help them understand the huge potential in greening existing buildings and operations. They could become "leaders" within their organization by helping their organizations save millions through very cost-effective green initiatives. We converted close to 350,000 square feet of an existing non-green campus that eventually went on to achieve LEED Gold a few years back. That was a huge learning curve as it involved the procurement department, facility maintenance, building security...It involved everyone and was a challenge to get all of these guys on the same page to implement everything. They did it because there was a high commitment at all levels within the organization starting from the Board.

Are some buildings too damaged to bother with? Not really. Yes, there would be scope in all buildings that by doing some improvements, changes and modifications we could help conserve and also help get LEED EB certification. It's also about the timing. In many of these buildings, due to the aging of their various systems that were installed 10-15 years back, they would be due for a retrofit anyway. We say to clients, "Look, if you are going to replace existing systems and make changes within this building why don't you just go green?" That way your building not just becomes a high-performance building but also you could get recognition for the good work done through LEED EB certification as well.

What's the landscape like beyond existing buildings in India? Well, you still have a lot of buildings that have yet to be built in India. Statistics say that 70% of India is yet to be built. So there is no doubt there is huge scope in

"We are closely trying to work with associations of such facility managers, the facility heads, the infrastructure heads to create more awareness and help them understand the huge potential in greening existing buildings and operations. They could become "leaders" within their organization by helping their organizations save millions through very cost-effective green initiatives."

RBS Chennai office social hub

new buildings. But there are also thousands of existing buildings that can go green. There are also a lot of central and state government buildings that could go green, heritage buildings that can go green. So in terms of absolute numbers, there is huge number of existing buildings in India that can go green and save a lot for the country in general.

How has your background led you to your current work? My first job after I graduated was as a HVAC designer. Having worked for over 5 years in HVAC design in India, I got a chance to move to Los Angeles to work for the International Code Council (ICC) as an accreditation officer and quality manager for their subsidiary IAS. My husband was at UCLA pursuing an MBA degree. During my tenure at ICC, I have worked on various aspects of energy efficiency, building materials testing and evaluation, accreditation of testing and calibration laboratories and in various areas of sustainability. When we moved back to India, we conceived En3, a specialized design firm focusing on energy efficiency and green buildings. Being associated with sustainability, conformity assessment, building materials, design and testing for over fifteen years has been a huge advantage and this helped us provide valuable inputs to projects while helping them go green.

What is the current conversation around building materials in India like? For many years, we always talked about energy efficiency when it came to buildings. A lot of discussions about systems and equipment but not so much about building materials and such. We, however, never imagined that within a ten-year period we would begin looking at materials in a completely different way. It's ironic, because if you look back at Indian architecture 30 or 50 years ago, everything we did was green: we built climate-responsive designs and mostly used only local materials. But in the last two decades as we have aspired for contemporary buildings, modern materials and looks, we have kind of moved away from our Indian roots. Moreover, we now have some of the best access to material and technologies from all over the world that made projects easily procure them. It's now slowly dawning on us that this is important but we need to look at options at home. We need to change the paradigm that "My building was made from imported materials" to "My building is made from low-energy and green materials."

What needs to be done to restore sheen back to local materials? A lot has to be done in terms of developing materials locally. Take flooring. We rarely use carpets in India. We use hard flooring. Natural stone. Local stone. Now we have these modern materials so it's a question of no one wanting to use the local materials because your building will not look differently than the materials from the past. This is where the innovation comes in. A manufacturer recently approached us with material that looked like wood for floors but it was made from rice husks waste! These husks are usually thrown away. It's a wonderful idea, so why do we then need to import laminated wood from China when we can come up with products locally? Unfortunately, we need to have an infrastructure to fund such small manufacturers to take their products commercial. We need to develop an infrastructure to encourage such entrepreneurs to come up with such innovative green materials in all areas.

How important is indoor air quality in India? During the initial stages of the green movement, interest in indoor air quality was lower when compared to say energy savings or water conservation. But what happened is that when the first set of LEED buildings were built and occupied, everyone felt it was great they were saving on water and energy but many would also say, "There's something nice about this building that we have never felt before about our previous buildings." This was due to a healthier air quality, better natural lighting and an overall nicer indoor environment. It was a game changer. Today clients focus on IAQ to help them keep their employees healthy and happy and also to boost employee productivity and morale.

Juzer Kothari, LEED AP

Managing Director of Conserve Consultants, a consulting firm in India that works on sustainable buildings. Founded in 2005, Conserve Consultants was created to help organizations conserve energy, water, materials and resources. Mr. Kothari has worked on close to 50 LEED buildings in India for the past nine years.

"What interests me about LEED is that it is a very well-designed and articulated process. It's a step by step process. It quantifies things beautifully. It has a holistic approach in all areas of construction and design. The LEED process, the way the entire process gets communicated to all building stakeholders…it is managed quite well."

What is the pitch you make to clients as to why they should use LEED? The requirements of the client and the project have to be understood before making a suitable pitch. The application of the right green certification process is important to get the best results.

We try and communicate the features and the benefits that a green certification program offers. LEED, like most other green certification programs, has a set of standards and benchmarks to follow. You can actually measure, at every point of the design and project development, where you are and systematically build upon the performance of the building, where you want to be. If you want to see how you can go up the ladder of sustainable performance, you would want to use a suitable green rating process.

I also tell our prospective customers that a common rating target like Platinum, Gold or Silver brings a variety of people together with common backgrounds. The integration of all design parts, all the project teams…they get together to achieve a common goal. Otherwise, everyone is scattered. LEED, like most other rating programs, corrals everyone and gives them a set of focused and achievable aspirations.

In terms of benefits, you are quite sure of creating a valuable and well-performing asset. LEED and other green certification programs also enable clients to communicate their achievements to the market at large.

What should be done to articulate the value of LEED and green building in India? We should be able to make it clear to people that LEED or any other certification program is making good business sense for them. That the process creates a valuable asset and reduces operating costs. The owner must be able to see this. It also motivates and helps organizations and project teams to rally together to achieve a common set of goals. Case studies, white papers, seminars, one on ones with leaders and all stake holders, etc., should be done on a regular basis to disseminate the benefits.

Is this a challenge? These thoughts are appreciated by visionary leaders and managers in any organization. To meet these people in an organization is a challenge. To be able to articulate this without appearing to be "selling" to them is also a challenge. They must be able to see the return on investment. It should make business sense to them.

There is also a section of the market that has a different idea of green. They believe that green building certifications, like LEED and others, do not deliver their idea of green. To get them to be a part of this movement is also a challenge.

How do you continue raising awareness in the market for LEED? Awareness continues to grow. The challenge is how do we rally any third party verification system as a good choice for integrated design so LEED gets a certain level of importance? Any certification managed properly—which is communicated properly—will grow in India. Third party certification is there to stay.

Do you highlight the importance of LEED as it relates to human health? We have measured CO_2 levels inside offices and have shared this information with prospective clients and how that will affect the health of people inside the building. It's not a priority right now for clients but we are getting there. Consider air conditioning. Eight or nine years back, air conditioning was a luxury in office buildings. So older buildings never worried about fresh air. Now air conditioning is expected in buildings. The same will come true for fresh air.

Dr. Satish Kumar, LEED Fellow

Energy Efficiency Ambassador and also served as the Vice President of Professional Services at Schneider Electric, a global specialist in energy management. Satish Kumar has worked on nearly ten LEED projects in India.

How would you categorize the green building market in India today?

- Global brand recognition
- 3rd party verification
- Useful framework for our green building efforts

Why is this the case? By and large, the perception in the Indian commercial real estate sector is still that you can build a commercial building, load it up with glazed facade, use imported marble or granite, create a lovely lobby and that is likely to sell better than a well-designed green building with superior environmental performance. So, LEED is pursued often when there's financial security for a developer from a multinational tenant or an avant garde Indian company (e.g. Infosys or ITC Hotels) that realizes the value of sustainability and has both strong top management support and a highly competent in-house green building or facility engineering team. Otherwise most developers are not willing to take the risk as the average customer or tenant in India is still unwilling to pay for green buildings.

What will help raise this awareness amongst the general population in India? I believe there is good awareness and more and more companies are considering going green today than say, about ten to fifteen years ago. In my opinion, it is largely an opportunity cost issue when it comes to how capital is being deployed by Indian companies along with a perception that green costs more. This has been a personal challenge in India - trying to sell energy efficiency. Every customer that we speak to wants to invest in energy efficiency or green technologies but any investment with a ROI of more than three years has a much lower chance of getting approved.

When you look at India compared to China in terms of the demand for green building, China is much-better capitalized and the commercial real estate market is also much, much bigger. I see India moving in that direction but realistically speaking, we are about ten to fifteen years behind China. In my opinion, what will happen is that China will begin to saturate and the focus will pivot to existing buildings. In India, the focus will remain on new construction for a few more decades. Green buildings, in terms of newly built up area is probably 2-3% of the market currently, but this should increase as ECBC gets accepted at the national level and awareness and energy prices continue to rise in the coming years.

At the same time, the service levels and our expectations from newly constructed buildings and indoor environmental spaces are changing very rapidly. Compared to fifteen to twenty years ago when air conditioning was more of an exception rather than a rule, it is very much a given in class A commercial buildings today. So, we are still evolving in many fundamental ways, which is changing the baseline definition of green buildings in India.

Is disclosure of material ingredients part of your organization's overall sustainability metrics? If so, why is this important to you? Schneider Electric tracks its sustainability performance using Planet and Society Barometer, which has 14 indicators spread across the Planet, People and Profit categories. One of these indicators is "Products and Solutions", whereby our goal is to have 75% of our products' revenues achieved with "Green Premium" products. As an industrial company selling products all over the world, we want to make sure that our offers preserve biodiversity and the health of those who manufacture and use it. In response to the demand for eco-friendly products that meet or exceed regulations, Schneider has developed its Green Premium program. A Green Premium program, as defined by Schneider Electric, uses the following criteria:

1. Product Environmental Profile available online
2. End-of-life instruction manual available online
3. List of substances of concern according to European REACH regulation available online
4. Product does not contain lead, hexavalent chromium, cadmium, mercury, polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs) above the threshold set by the European RoHS directive

What measures have you put in place to ensure your LEED project continues to perform highly and improve over time? We have a cloud-based energy management information system (EMIS) installed at our facility, with a network of 80 sub-meters over 10 floors, capturing facility and system level Key Performance Indicators (KPIs), which help in tracking energy consumption at different levels. The EMIS records energy consumption at an interval of 15 minutes. Specialized energy dashboards have been

developed that track important energy KPIs such as energy performance index (kWh/m2), energy consumed per employee, lighting power density, floor wise EPI, etc., which can be compared and evaluated against relevant standards and global benchmarks. The energy dashboards provide the break-down of energy use by end use, enabling the facility management team to focus their energy saving initiatives on the areas where maximum impact can be achieved. The system also segregates the weekday energy consumption from weekend energy consumption and also the working-hours energy consumption from non-working-hours energy consumption, providing further opportunities for optimization by presenting insights into the leakages or avoidable energy expenditure.

Are there specific LEED credits that you often pursue when beginning a project? Which credits, in your opinion, remain the most critical and why? Commissioning and Measurement & Verification are the most critical credits as these ensure that energy consuming systems are actually operated and maintained as per energy efficient design intent and specification. We put in significant efforts to validate claims with regards to energy performance during the operation of the building. Further, we practice and preach the importance of load segregation and sub-metering to ensure superior building performance and the need to make energy use visible through Energy Management Systems/dashboards.

Is LEED appropriate for India? Absolutely yes. It is very important for the Indian building sector any way you look at it. Keep in mind that 60-70% of Indian buildings (both commercial and residential) are yet to be built. There is a huge opportunity here and we have barely started to tap the residential sector market in India. I graduated more than 20 years ago and sweating while working in architectural offices was acceptable because there were very few air-conditioned offices. Now, this is no longer acceptable. The market will change, no question about it and LEED will continue to become even more important in the future because of the framework that it provides to address sustainability as a holistic strategy.

Srinivasa Reddi Vanga, LEED AP BD+C

Senior Cost Estimator, Project Management Services, Inc.

Why have you chosen to use LEED? I chose LEED because I wanted to thank and give something back to the community. I also chose LEED because this is relevant to my educational background and I have great passion for LEED concepts. I firmly believe LEED is moving in right direction.

How has LEED helped your career? How does it set you apart in the market? I feel LEED is my ambition, though it is part of my career. Our notable client database includes the Department of State, GSA, the Navy, and the Department of Justice, who are all using LEED.

Are there specific LEED credits that you often pursue when beginning a project? Which credits, in your opinion, remain the most critical and why? Site selection, storm-water management, water efficiency, energy efficiency are key issues. We can avoid greenfield sites and can select brownfield sites. It plays an important role to preserve green habitat, connectivity and lower carbon emissions, etc.

Stormwater Management: If we target for net zero storm water management usage of recycled water, this could solve lot of future problems. The reason for getting heavy floods in India and in Indian cities, even for small rains is because of improper stormwater management, types of construction methods and lack of BMPs (Best Management Practices). Creating concrete jungles, spreading impervious pavements, creating heat islands, carbon emissions are the primary causes of global warming.

Water efficiency has a very important role in all the phases of the green building life cycle like energy efficiency. As a person who has avid working experience both in India and the U.S., I can mention lot of information about the present usage of water and energy resources of the people in India that will contradict green building standards.

Why are people so drawn to LEED? People are so drawn towards LEED because LEED buildings are quality high performance buildings and have less impact on the environment. Such buildings have good market value and can earn government incentives. It is really praiseworthy that LEED professionals are taking this green movement close to people's hearts.

Lopamudra Khanna

Vice President, Group10 Technologies, Gurgaon, India

Why have you chosen to use LEED? LEED is a universally accepted certification and the concept of Global-Regional-Local ensured that in India we could attempt the best level of quality and commitment of green building. Our commitment to sustainable habitat encouraged us to go for the latest and most stringent certification norms and thus we voluntarily went for LEED v4. We would like to be seen as an enterprise which professes, practices and encourages green.

What's the value (marketing, ROI, business development and rental rates) LEED provides to your organization and stakeholders? We have only been recently certified and are working to derive maximum visibility and gains from our association with LEED. The tangible returns of our investment in LEED will take some time to be visible however the non-tangible returns are being experienced.

Is disclosure of material ingredients part of your organization's overall sustainability metrics? If so, why is this important to you? Group10 takes pride in a linear organization model and transparency in all business aspects including disclosure of material ingredients. We maintain robust environmental policies and have a handbook for occupants and visitors of our building to learn more about the materials used in the building and other sustainable features.

What measures have you put in place to ensure your LEED project continues to perform highly and improve over time? We have set-up a team of senior members in the organization who will now dedicate their efforts on tracking the building performance through the LEED Dynamic Plaque. Efforts would include regular tracking, collection and analysis of performance data. Any corrective and improvement measures will be done on a monthly basis and performance metrics will be strictly adhered to.

We are very interested in learning more about the occupant experience of your LEED buildings. Can you share a few specific anecdotes of how people feel living and working in your LEED-certified buildings? The occupants and employees clearly understand and appreciate the environment that has been derived through the stringent LEED standards. Now occupants are well aware of the usage of waste management and have a clear knowledge on the energy efficiency process. All the employees really appreciated and commented on the missing odor that they usually find in other places after a paint job.

Do you plan to use LEED in future projects? If so, which ones and how? Yes. We would like to get our existing office space at Chennai certified in the future.

Does the increased stringency of LEED v4 meet your expectations for market transformation? How do you envision your organization continuing to maintain LEED as a leadership tool? Increased stringency of LEED v4 has raised the bar of performance and expertise required for sustaining and promoting a green economy. The changes to material credits in particular will have a huge impact on the Indian construction market where focused efforts will now have to be made to report material ingredients and EPDs.

LEED is a leader in green building rating systems and recognizes our organization's efforts to promote sustainability.

Tanmay Tathagat, LEED AP BD+C and LEED Fellow

Director, Environmental Design Solutions [EDS]

EDS has been involved in over 130 certified projects, which include 40 Platinum certified buildings; another 33 are pre-certified currently, including 14 Platinum pre-certifications. The projects range from ITC Hotels, Delhi International Airport, INFOSYS Hyderabad, Citibank offices, Government projects like Thyagraj Stadium and Jawaharlal Nehru Bhawan – the office of the Ministry of External Affairs.

"LEED often plays the role of a provocateur, and has resulted in the development of competing green building rating systems. This might yet be one of the most underrated achievements of LEED globally, not just in India. LEED has started the debate and has successfully engaged the design and construction industry in the discussion on green buildings in India."

How has LEED helped your career? How does it set you apart in the market? I got my LEED accreditation in early 2002, when interest in green buildings was emerging globally. My work at the International Institute for Energy Conservation [IIEC] enabled me put the newfound credentials to use immediately for building energy efficiency and policy projects in Asia, Africa, and the U.S. The first real life test was to introduce the concept of green buildings to a visiting Olympics preparation delegation from China at the Wilson Center in Washington, DC. It was my first presentation on LEED, and I still remember the wonderment of all the concepts produced among the delegation, led by the then Mayor of Beijing.

Later, once I came back to India, the first LEED-certified buildings were coming up, and I, for a while, was the only LEED AP in the country. Since then LEED has helped us establish our practice at Environmental Design Solutions [EDS] as the leading "building sustainability" firm in Asia with projects spread across the world. LEED rigor was evident in two of our projects winning the Holcim Award for Sustainable Construction awards in 2005 and 2008. The winning projects were recognized for pioneering sustainable construction.

At EDS, we are also working on a number of building energy policy, analysis and market research projects. The experience of hundreds of LEED projects is reflected in the unique way we approach the policy work with a rootedness, contextual approach, and a solid grounding of actual construction and design experience.

How does LEED work in India? LEED brought the concept of formal green building certification to India, especially at a time when the construction boom was just starting. LEED quickly became the benchmark for all green buildings in India. It is still the differentiator as well as the benchmark for sustainable building design and construction. LEED is now gaining wider recognition for certifying existing buildings and large neighborhood developments.

Why has India embraced LEED? India has a large number of buildings that aspire to be benchmarked globally and LEED has established itself as the de-facto standard for such high performance buildings. LEED is now a mandatory requirement for many large real estate firms, IT companies, and banks. LEED is also driven by green building incentives offered by many municipal authorities.

"The LEED framework can be used as a reference to address the critical issues of growing Indian cities. These issues range from urban sprawl, transportation networks, urban design practices, and most importantly prioritization of health, well-being, as well as quality of life considerations into our development agenda."

On a personal note, what is the experience like for you living or working in a LEED-certified building? Do you feel healthier? More productive? We are proud to be working in a LEED Platinum rated office. We were careful to look at the real intent of each of the credits we attempted and had the clear understanding that we will not attempt a credit to just get a LEED point. Each and every measure we implemented was based on the first principle. It was an endeavor to prove that LEED can be contextual as well as cost effective while creating a better, healthier workplace.

One of the most common problems in open office plans, for example, is the dissatisfaction with the thermal and visual comfort level. By integrating task lighting, indirect glare-free ambient lighting, and individual task fans have resulted in a much more customized and comfortable work environment for most people. The lights were assembled out of bamboo and recycled paper, and tasks fans were made from low voltage DC fans used in computer servers.

There are several such examples where LEED provided the framework for evaluating decisions based on health, productivity, comfort and environmental impacts of our design and construction choices.

Even the LEED plaque in our office was fabricated by a local stonemason, by hand, on a waste piece of granite, while still adhering to all the LEED guidelines.

How do you plan to use your influence as a LEED Fellow in India? LEED stands out for the technical rigor in development. LEED, through a continuous development process, keeps pushing the boundaries of conventional construction and operation of our buildings. I have been advocating similar approaches to look at the challenges of the built environment in India. The LEED framework can be used as a reference to address the critical issues of growing Indian cities. These issues range from urban sprawl, transportation networks, urban design practices, and most importantly prioritization of health, well-being, as well as quality of life considerations into our development agenda.

> "India has a large number of buildings that aspire to be benchmarked globally, and LEED has established itself as the de-facto standard for such high performance buildings."

RESOURCES

LEED is meant to help identify connections. From the built environment to the site it occupies, between people and the buildings where they live, work and learn and also connections between one building and another. LEED connects.

For more information about pursuing LEED in India, please contact GopalaKrishnan.P, director of our LEED hub in Chennai at **gkrishnan@usgbc.org**, or Puneet Mital, regional director at **pmital@usgbc.org**.

Learn more about our international activities and how you can get involved by contacting **international@usgbc.org**.

Go to **usgbc.org/leed/credentials** to learn more about earning your LEED credentials.

ACKNOWLEDGMENTS

This LEED in Motion report would not have been possible without the help of the following leaders in India: Nakul Anand, Pramod Dhir, Dhruv K. Futnani, Amor Kool, Gopal Np, Yusef Turab, Shashikiran Udupi, Anupam Jain, Deepa Sathiaram, Juzer Kothari, Satish Kumar, Lopamudra Khanna, Guruprakash Sastry, Shabbir H. Kanchwala, Tanmay Tathagat, Ranganath N.K and Srinivasa Reddi Vanga.

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