GREEN BUILDINGS MARKET INTELLIGENCE
INDIA COUNTRY PROFILE
INDIA: COUNTRY SUMMARY

MARKET STATUS

- Strong growth projected in the construction industry with focus on industry, residential and transport.
- 70% of buildings needed by 2030 yet to be constructed.
- Significant potential in residential construction with ‘Housing For All’ program requiring 20 million urban and 10 million rural homes.

OTHER FACTORS

- Real GDP growth expectations average 7.8% a year for 2018-2023.
- Pick-up in private consumption and gross fixed investment from 2018 as banks' balance sheets improve.
- Rapid urban growth with special initiatives for developing affordable housing.
- Push towards scaling up green bond issuances against backdrop of rapid urban growth with encouraged private sector participation.
- Stress on phasing out subsidies and government intervention to encourage private sector participation.

GREEN BUILDING PROGRAMS

- GRIHA: Indigenous rating system to promote and certify green buildings
- India Green Building Council: Implements certification services and training programs
- LEED: Partnerships with local developers like Tata Housing, etc. to provide certifications.
- IFC organizes the Sustainable Housing Leadership Consortium and promotes EDGE.

CLIMATE POLICIES (NDCS)

- Government push to have 200 million sq. meters of green certified buildings by 2022.
- States beginning to build awareness and provide tax incentives and subsidies to encourage investment in green buildings.
- Country wide green building policies have existed for many years but rate of adoption has been slow due to lack of a level playing field.

MARKET GROWTH

- Building Stock (million m2)
- % new green buildings
- Residential
- Office & Retail
- Other Commercial

Market through 2025

<table>
<thead>
<tr>
<th>Year</th>
<th>Residential</th>
<th>Office &amp; Retail</th>
<th>Other Commercial</th>
<th>% new green buildings</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>2,000</td>
<td>1,000</td>
<td>1,000</td>
<td>0%</td>
</tr>
<tr>
<td>2019</td>
<td>2,500</td>
<td>1,500</td>
<td>1,500</td>
<td>0%</td>
</tr>
<tr>
<td>2020</td>
<td>3,000</td>
<td>2,000</td>
<td>2,000</td>
<td>0%</td>
</tr>
<tr>
<td>2021</td>
<td>3,500</td>
<td>2,500</td>
<td>2,500</td>
<td>0%</td>
</tr>
<tr>
<td>2022</td>
<td>4,000</td>
<td>3,000</td>
<td>3,000</td>
<td>0%</td>
</tr>
<tr>
<td>2023</td>
<td>4,500</td>
<td>3,500</td>
<td>3,500</td>
<td>0%</td>
</tr>
<tr>
<td>2024</td>
<td>5,000</td>
<td>4,000</td>
<td>4,000</td>
<td>0%</td>
</tr>
<tr>
<td>2025</td>
<td>5,500</td>
<td>4,500</td>
<td>4,500</td>
<td>0%</td>
</tr>
</tbody>
</table>

Total market

- Commercial: USD 91B
- Residential: USD 455B
- Residential units: 13,000,000

Green market

- USD 11B
- USD 28B
- 810,000

Sources:
- EIU Country Reports: India, Global Building Information Gateway, Climate Investment Opportunity South Asia, Global Building Stock Database
STRONG GROWTH PROJECTED IN ALL SECTORS WITH RESIDENTIAL AS A KEY GROWTH DRIVER

- India is at the threshold of a commercial and residential construction boom.
- 700 million sq. meters of commercial building space built over the last 10 years with 40% of the building stock that will exist in India by 2037 yet to be built.
- Government’s ‘Housing for All by 2022’ program can act as a catalyst to propel growth in residential building.
- Net Profit Margins in Real Estate higher than total Indian market: Real Estate (D) 15%, (G) 25%, and (O) 30%, Construction 7% after tax and adjusting for lease.

Sources: Niti Aayog, Government, of India, Global Building Information Gateway, Global Building Stock Database
RAPID PROMISING GROWTH IN INDIAN GREEN MARKET

Certifications activity is dominated by LEED.

Green building construction is spread throughout the country but more prevalent around large Metros like New Delhi, Mumbai, Bangalore and Chennai.

Notable Green Projects include:

- **Hotels:**
  - Fairfield by Marriott
  - ITC Rajputana Sheraton Hotel

- **Offices:**
  - Quasitum Intelisoft India Pvt. Ltd.
  - Infinity Benchmark, Kolkata

- **Residential:**
  - Kolkata West International City
  - VBHC Bangalore

Total activity count is increasing per year.

Sources: Global Building Information Gateway.
DISTRIBUTION OF EXISTING GREEN BUILDINGS IS CENTERED AROUND METROS IN THE OFFICE SECTOR

Top sector for current projects: Offices/Commercial

Top sector for new projects: Offices/Commercial

Sectors with high potential: Residential

Significant opportunity for expansion as only 5% buildings in India are green.

Sources: Global Building Information Gateway, Climate Investment Opportunity South Asia.
GROWTH WILL BE DRIVEN BY RESIDENTIAL AND OFFICE CONSTRUCTION

GREEN MARKET SUPPORT RATING

GOVERNMENT

ENVIRONMENT

FINANCING

CURRENT GREEN MARKET

GROWTH POTENTIAL

Low High
Low High
Low High
Low High
Low High

HOUSING

- High demand for green buildings due to rising consumer awareness
- Strong push by current government to implement ‘Housing For All’ program to provide affordable housing to lower income groups by 2022.
- This will require new construction of 20 million urban homes and 10 million rural homes

70% of the buildings required by 2030 have not been constructed yet.

OFFICES

- India has the third highest green building growth rate in the world.
- Government has increased focus on increasing energy efficiency in industry.
- Environmental regulations introduced to set minimum energy standards for new commercial buildings.

Sources: Global Building Information Gateway, Climate Investment Opportunity South Asia.
Housing shortage is large and highlights the need for affordable housing

- Shortage of 20-70m units - housing 370m people.
- Housing market forecast to grow over $100 billion by 2017.
- 40% households have monthly income from Rs. 5,000 – Rs. 11,000 but no access to housing finance and home-ownership (20-25% of income for rent).
- Mounting congestion costs: More than 10m people in 5 cities, and over 1m in 52 cities.

Rural demand estimates 2X urban needs but rural is less attractive target for private sector developers in current environment.

SUSTAINABLE HOUSING LEADERSHIP CONSORTIUM IS LEADING THE WAY ON GREEN HOUSING

The Problems

- 40% of current energy consumption is contributed by buildings
- 22% of current greenhouse gas emissions are from buildings
- 300 million people in India will move to urban areas by 2035 and will require infrastructure, housing, jobs, and opportunities

Our Solution

- 100% of the Consortium’s housing portfolio to become sustainable by 2017 through appropriate green certification(s)
- 20% reduction in incremental variable costs for construction
- 20% of India’s new multi-family housing developments to be sustainable in 2022 through the Consortium’s leadership and advocacy

- Commitment to make green homes mainstream.
- Convened by IFC under the EU’s Eco-cities program.

Members include:

- Mahindra Lifespaces
- Shapoorji Pallonji
- REAL ESTATE
- TATA HOUSING
- Godrej Properties
- VBHC
- pnb Housing Finance Limited
- Ghar Ki Baat

Sources: Eco-cities in India
GREEN FINANCE PROVIDES MASSIVE INVESTMENT OPPORTUNITY

- IFC estimates investment opportunity of $1.4T in green buildings, with $1.25T in the residential and $228 billion in the commercial sector.
- Green Bonds: Key tool for Climate finance; India has $3 billion Green Bond market as of 2016, 7th largest in the world.
- PNB Housing Finance, raised INR 5Bn from IFC, becoming first Indian housing finance company to issue green bonds.
- High current cost of borrowing: Indian companies borrow at 220 basis points higher than China.

Only 14% of total green bond financing in India utilized towards low carbon buildings, leaving significant untapped potential.

GREEN MARKET IS SUPPORTED BY A BUILDING CODE AND INDIGENOUS RATING SYSTEM

**RATING SYSTEM, GRIHA**

- Independent rating system called Green Rating for Integrated Habitat Assessment, GRIHA.
- 31 rating criteria on a 100-point system with each criterion assigned certain points.
- Buildings, in design stage with built up area more than 2,500 m², eligible.
- 3 stages for evaluation.
- Fast track environmental clearance available through pre-certification.
- 1,000 registered projects covering approx. 40 million sq. meters.

**ENERGY CONSERVATION BUILDING CODE**

- Revised in June 2017 because of slow adoption of old code due to different jurisdictions at state and municipal levels and lack of stakeholder awareness.
- Varied approaches exist at state level - Haryana offers up to 25% additional FAR while Pimpri Chinchwad Municipal Corporation offers up to 50% discount on premium building permission charges.
- ECBC cells to be set up to coordinate State and Center level initiatives and establish level playing field.

Sources: Niti Aayog, Government of India, GRIHA India.
THE INDIAN GREEN BUILDING COUNCIL WORKS WITH INDUSTRY LEADERS TO PROMOTE GREEN CERTIFICATION

- Offers a wide array of services including developing new green building rating programs, certification services and green building training programs.
- Rating systems are based on the five elements of nature and are applicable to all five climactic zones in India.
- Organizes Green Building Congress, an annual flagship event on green buildings.
- **4,363 registered projects** with a footprint of over 4.71 Billion sq. feet and **1,257 certified** and fully functional existing projects.
- Long term goal of **positioning India as a global leader** in the green building movement by 2025.

Sources: Niti Aayog, Government of India, GRIHA India.
LWEARN MORE ABOUT EDGE CERTIFIED PROJECTS IN INDIA

**KESAR CITY**

Location: Ahmedabad, India
Architect: Aroma Realties
Sector: Residential
No. of Units: > 1,000

Resource-efficient 2-bedroom apartments that rely on practical strategies such as reducing the window size and using reflective paint to increase efficiency. The developer is placing green at the center of their market strategy.

Predicted Savings of EDGE Certification:
- 23% Energy Savings
- 24% Water Savings
- 71% Less Embodied Energy in Materials

**QUASITUM INTELISOFT INDIA PVT. LTD.**

Location: Bangalore, India
Architect: Fluid Space Architects
Sector: Commercial - Offices
Size: 5,000 m²

The project is projected to achieve 43% reduction in total energy consumption. It also includes a water conservation system with rain water harvesting.

Predicted Savings of EDGE Certification:
- 33% Energy Savings
- 68% Water Savings
- 32% Less Embodied Energy in Materials

Case studies from other countries: [www.edgebuildings.com/projects/](http://www.edgebuildings.com/projects/)
PROJECTS CAN GET CERTIFIED THROUGH FAST, EASY, AND AFFORDABLE CERTIFICATION

### Individual Homes/Single Family Dwelling Unit Pricing

<table>
<thead>
<tr>
<th>BUILT-UP AREA (SQM), EXCLUDING PARKING</th>
<th>0-200 (SQM)</th>
<th>201-350 (SQM)</th>
<th>351-500 (SQM)</th>
<th>501-750 (SQM)</th>
<th>751-1000 (SQM)</th>
<th>&gt;1,000 (SQM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>REGISTRATION</td>
<td>₹ 10,000</td>
<td>₹ 10,000</td>
<td>₹ 15,000</td>
<td>₹ 15,000</td>
<td>₹ 20,000</td>
<td>₹ 20,000</td>
</tr>
<tr>
<td>CERTIFICATION</td>
<td>₹ 20,000</td>
<td>₹ 25,000</td>
<td>₹ 30,000</td>
<td>₹ 35,000</td>
<td>₹ 50,000</td>
<td>₹ 80,000</td>
</tr>
</tbody>
</table>

### Group Housing/Multi-Dwelling Units/Commercial Buildings Pricing

<table>
<thead>
<tr>
<th>BUILT-UP AREA (SQM), EXCLUDING PARKING</th>
<th>0-5,000 (SQM)</th>
<th>5,001-50,000 (SQM)</th>
<th>50,001 (SQM) and Above</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE-CERTIFICATION (DESIGN)</td>
<td>₹ 80,000</td>
<td>₹ 80,000</td>
<td>₹ 1,00,000</td>
</tr>
<tr>
<td>FINAL EDGE CERTIFICATION (CONSTRUCTION)</td>
<td>₹ 40,000</td>
<td>₹ 40,000 + ₹ 9/ per each additional SQM above 5,000 SQM</td>
<td>₹ 4,50,000</td>
</tr>
<tr>
<td>TOTAL CERTIFICATION FEE</td>
<td>₹ 1,20,000</td>
<td>₹ 1,20,000 + ₹ 9/ per each additional SQM above 5,000 SQM</td>
<td>₹ 5,50,000</td>
</tr>
</tbody>
</table>

Details and registration forms can be found on the EDGE program website: [www.edgebuildings.com/certify/india/](http://www.edgebuildings.com/certify/india/)
EDGE EXPERTS CAN HELP PROJECTS NAVIGATE THE CERTIFICATION PROCESS

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Full list available at: www.edgebuildings.com/edge-experts/edge-experts-around-the-world
RESEARCH METHODOLOGY

COUNTRY LIST
- IFC chose countries that correspond to the Climate Investment Opportunity Report (CIO Report) as well as countries of strategic interest for IFC.
- IFC plans to release additional country analysis, pending resources.

TOTAL MARKET OVERVIEW
- Building stock was sourced from the Global Building Stock Database and confirmed by country experts, if possible.
- The research team found local prices for capital construction expenses, or used global proxies otherwise.
- Market sizing was executed for new construction and did not focus on retrofits.

SNAPSHOT OF THE CURRENT GREEN MARKET
- Main source of information was the Green Building Information Gateway, confirmed by local green building council reports, if such existed.
- The research team focused on properties certified as green.

GOVERNMENT POLICIES
- Main information was sourced from IFC’s Climate Investment Opportunities Report – South Asia.
- Additional information was found using various searches as well as government websites.

PROJECTIONS FOR GREEN PENETRATION
- Based on the total market growth, snapshot of the current green market, and the enabling environment of government policies, the research team projected green penetration per each of the sub-sectors.
- Weighted average of combined sector data produced the final penetration number.
- The analysis focused only on new construction, and focused only on certified properties.
- As tools for retrofits take off in the market (including IFC’s EDGE product), analysis may be amended to include the retrofit market.
- Market potential may be different from numbers reported in the CIO Report, as a more conservative estimate was used for business planning purposes.

OTHER
- Information for green building councils was sourced from World GBC website.
- Case studies were presented only for IFC’s EDGE green building software and certification system.
- However, lists of all green certified projects in a given country can be found through the Green Building Information Gateway.
- Finally, pricing for EDGE certification was included to illustrate that green certification is affordable and achievable in emerging markets.
ACKNOWLEDGEMENTS

DONOR ACKNOWLEDGEMENT

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