



GREEN BUILDINGS MARKET INTELLIGENCE CHINA COUNTRY PROFILE



Creating Markets, Creating Opportunities

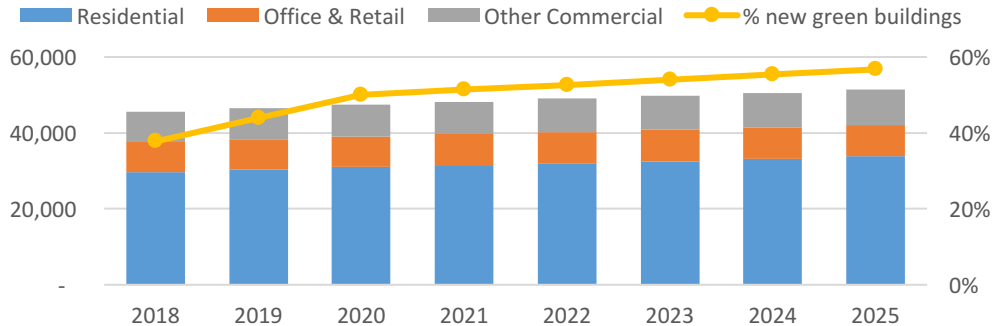


CHINA: COUNTRY SUMMARY

MARKET GROWTH



Building Stock (million m2)



Market through 2025

Commercial

Total market

USD 1.375 T

Green market

USD 718 B

Residential

USD 4.838 T

USD 2.361 T

Residential units

63,960,000

31,220,000

OTHER FACTORS



- 60 percent of the country's population projected to live in cities by 2020 and more than 1 billion by 2030.
- In many cities, the credit limit of the mortgage from the Housing Fund is up to 20% higher for green building residents.

GREEN BUILDING PROGRAMS



- Over 2,500 green projects tracked.
- IFC is Partnering with China's Center of Science and Technology and Industrialization Development (CSTID) to help improve the labeling system for green buildings in China, with MOU signed.
- A report is finished that compares China's code with EDGE in terms of energy and water saving.
- IFC and CSTID will explore ways to encourage green hotels in China, building on CSTID's existing work on its green label for hotels.

CLIMATE POLICIES (NDCS)



- China's 13th FYP targets energy reduction by 40 – 45 % from 2005 levels by 2020 and 60 - 65 % by 2030.
- 50% share of green buildings in newly built buildings by 2020.
- Peaking of CO2 emissions around 2030 or earlier.
- Strong desire for implementation.

MARKET STATUS



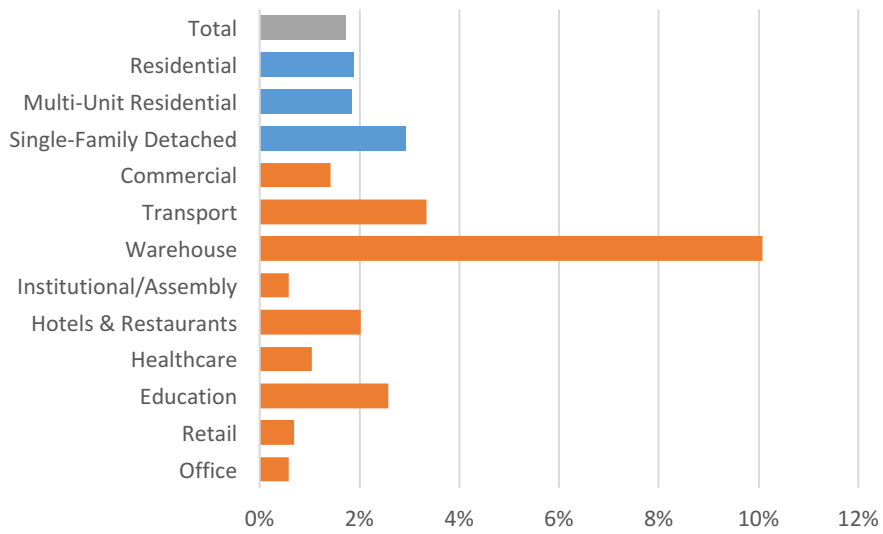
- During 13th Five-Year Plan period, RMB 2248 million (USD 34 billion) is needed as the incremental cost of new green buildings.
- Over 500 million square meters of buildings labeled green as of 2015.
- Over 80% of the retrofit costs were funded by governments subsidies, which alone will not be able to fill the huge financial gap.
- Guidelines for Establishing the Green Financial System is published with the goal of mobilizing and incentivizing more private capital to invest in green industries.

Source: Navigant Research Global Building Stock Database, World Bank NDC Database, IFC staff



STEADY GROWTH RESULTS IN MASSIVE MARKET SIZE

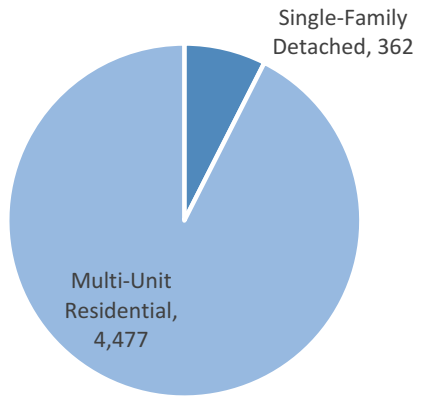
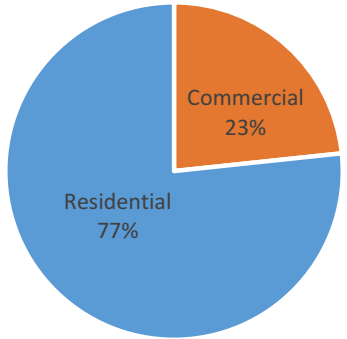
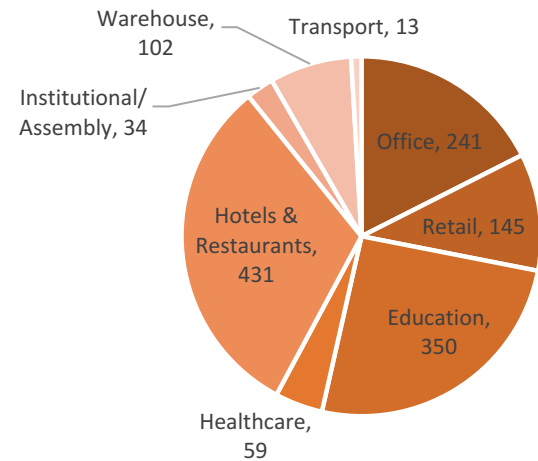
MARKET GROWTH BY SUB-SECTOR (CAGR)



China's building market is estimated to grow by 1.7% (CAGR) from 2018 to 2025.

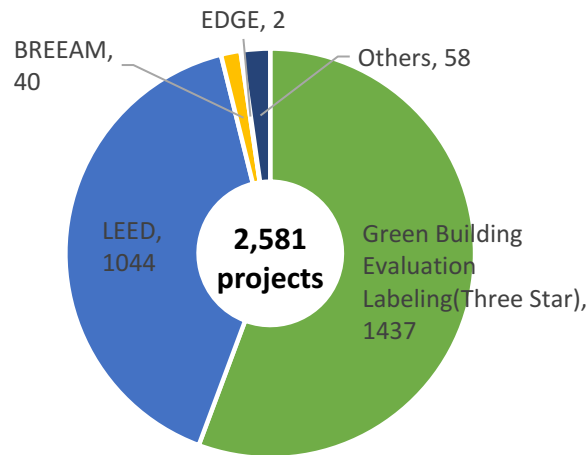
- Residential market CAGR is 1.9%, mainly driven by the urbanization. The single-family detached is estimated to grow faster than the multi-family due to the needs of improving standard of live, but the multi-unit still leads by square footage.
- Commercial market CAGR is 1.4%. Warehouse is estimated grow by about 10% considering the booming transportation and logistics estate. (2010-2015 CAGR 46.1%)

TOTAL MARKET SIZE 2018-25 (USD BILLIONS)

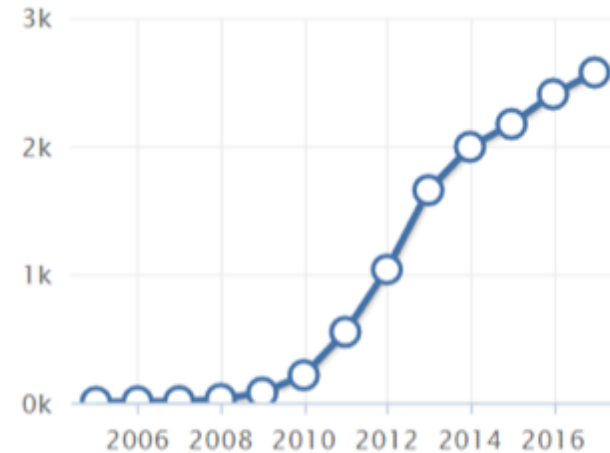




CHINA IS ALREADY EXPERIENCING RAPID GREEN GROWTH



Cumulative activity count, by year:



Projects are spread throughout the country.

Recent projects include:

- ThyssenKrupp Elevator
- BMBS NEW Beijing
- Zhongshan Office & Work
- Unilever Shanghai LK1
- JCI HQ Asia Pacific
- Hademen Center
- Bureau Veritas Chengdu
- CITIC Dicastal Innovation Center
- Citibank China Central Place Branch
- New World Hotel of Guiyang
- Shanghai Fenglin Medical Office
- New World International Trade Tower 1/II
- Xizi International Center
- PingAn International Financial Centre
- Nike SH GZ Store



GREEN MARKET PROJECTIONS ARE DRIVEN BY COUNTRY POLICY

HIGH GROWTH SCENARIO

Assumptions:

- Government will further straighten the regulation and require higher green share in new building, beyond 50%. improved efficiency and scale of economy dramatically lower the cost of design, construction, and material of green buildings, to the extent that the developers are not sensitive to the incremental cost.

Result:

- Green share grows by 5-6% annually.
 - 75% in Residential,
 - 80% in Office & Retail,
 - 80% in Other Commercial in 2025.

SLOW GROWTH SCENARIO

Assumptions:

- Government requires 50% green share in new buildings but does not incentivize adoption beyond this requirement.
- The incremental cost of green building is not ignorable and cannot be accepted by the market and consumers.

Result:

- Market grows by 1-2 percentage point annually and levels off.
 - 55% in Residential,
 - 60% in Office & Retail,
 - 60% in Other Commercial in 2025.



GOVERNMENT IS DEEPLY COMMITTED TO GREEN BUILDINGS

GOVERNMENT POLICIES AND SUPPORT

- Energy Conservation Law
- Regulations on Energy Conservation in Civil Buildings
- MOHURD 13th Five-Year Plan for the Development of Building Energy Efficiency and Green Buildings
- Guidelines for Establishing the Green Financial System



Detailed tracking on government pages

PROGRAM EXAMPLES

This table provides a detailed overview of a green building project. It includes a photograph of a lush green landscape. The table is organized into several sections: project information, a detailed list of green building features and their performance metrics, and a summary of the project's impact and certification status.

This table details another green building project, featuring a photograph of a modern architectural structure. Similar to the first table, it lists various green building attributes such as energy efficiency, water conservation, and indoor environmental quality, along with their respective performance levels and certification details.

This table describes a third green building project, accompanied by a photograph of a cityscape. It provides a comprehensive list of green building features and their performance metrics, including energy consumption, water usage, and material selection, along with the project's overall certification and impact.



OVER USD 23 BILLION GREEN BONDS ISSUED

Major retrofits have been subsidized by government, but new green buildings are financed through Green Finance System.

USD 350 million Green Bond issued by Mordern Land toward new green buildings

- As of June 30, 2016, the company recorded the revenue of RMB 4.3 billion (USD 625 million), representing a 118.6% increase YoY. In the period, presell increased by 37.5% to 658,689 sqm.



Typical eco-technologies incorporated in Dangdai MOMA 

- Building Envelope Insulation
- Ground Source Heat Pump
- Water Collection and Recycling
- Embedded Tube Heating and Cooling System
- More Higher Strength Steel Bar than As usual
- Energy Efficiency Management System For Managing and Auditing EE Performance

Strong growth in the past 3 year with Green Investment exceeding the Green Bond issuance



LEARN MORE ABOUT EDGE CERTIFIED PROJECTS IN CHINA



JOHNSON CONTROLS HQ ASIA PACIFIC

<https://www.edgebuildings.com/projects/johnson-controls-hq-asia-pacific/Offices>

Predicted Savings of EDGE Certification:



45% Energy Savings



43% Water Savings



21% Less Embodied Energy in Materials



BRUCK PASSIVE HOUSE HOTEL

<https://www.edgebuildings.com/projects/bruck-passive-house-hotel/Hotel>

Predicted Savings of EDGE Certification:



47% Energy Savings



42% Water Savings



34% Less Embodied Energy in Materials

Access more case studies at <https://www.edgebuildings.com/projects/>



PROJECTS CAN CHOOSE BETWEEN TWO EDGE CERTIFIERS FOR FAST, EASY, AND AFFORDABLE CERTIFICATION



CERTIFICATION	PRICE (PER M ² , EXCLUDING PARKING)	MINIMUM
0-25,000 FLOOR AREA (SQM)	\$0.27	\$2,250
25,000-50,000 FLOOR AREA (SQM)	\$0.22	\$6,750
50,000-75,000 FLOOR AREA (SQM)	\$0.17	\$11,000

*Price per m²; Project appoints an auditor



PROJECT TYPE	CERTIFICATION	DESIGN AUDIT	FINAL AUDIT	TOTAL
Residential (one unit type)	\$1,500	\$3,650	\$4,320	\$9,470
<i>Residential (per additional unit type)</i>	<i>\$490</i>	<i>\$890</i>	<i>\$460</i>	
Commercial (single end use)	\$1,550	\$4,005	\$4,710	\$10,265
<i>Mixed-Use Buildings (per additional end use)</i>	<i>\$990</i>	<i>\$2,670</i>	<i>\$1,560</i>	

*Price per type of project; Auditor fee is included

Details and registration forms can be found on the EDGE program website:
<https://www.edgebuildings.com/certify/other-countries/>



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 the [World Bank NDC Database](#).
- 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

IFC thanks the following national donors for their generous support of the EDGE program: the State Secretariat for Economic Affairs of Switzerland (SECO); the European Union; the Ministry of Finance of Japan; the Hungarian Export Import Bank; the Canada Climate Change Program and the Department of Foreign Affairs, Trade and Development Canada; the Royal Ministry of Foreign Affairs of Denmark and the Danish Green Growth Fund; the Federal Ministry of Finance of Austria; and the Ministry of Foreign Affairs of Finland.

In addition, IFC thanks contributors to the GEF-IFC Earth Fund Platform, and the Energy Sector Management Assistance Program (ESMAP) of the World Bank whose support helped seed EDGE.

COLLABORATION ACKNOWLEDGEMENT

IFC thanks the Georgetown University McDonough School of Business for collaborating on developing the market intelligence reports.

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