



Green Buildings

POLICY PATHWAYS FOR
EMERGING MARKETS



IFC

**International
Finance Corporation**
WORLD BANK GROUP

Creating Markets, Creating Opportunities

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About IFC

IFC – a sister organization of the World Bank and member of the World Bank Group – is the largest global development institution focused on the private sector in emerging markets. We work with more than 2,000 businesses worldwide, using our capital, expertise and influence to create markets and opportunities where they are needed most. In fiscal year 2019, we delivered more than \$19 billion in long-term financing for developing countries, leveraging the power of the private sector to end extreme poverty and boost shared prosperity.

For more information, visit www.ifc.org.

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IFC Helps Governments to Create Solutions to Unlock Green Building Growth

For the past decade, IFC has provided specialized advice and technical support to governments in emerging markets that has fostered the design and implementation of policies that form the foundation of thriving green building markets. This report shows how progressive policies reduce costs for citizens, create new economic opportunities and ultimately build a better world.

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The NEED

An Urgent Response is Needed to Address Challenges Posed by Buildings:

- Almost half of all energy generated is used for cooling, heating and lighting buildings.
- Buildings produce 28 percent of global greenhouse gas emissions.¹
- The floor area of buildings is expected to double by 2060, with the majority of growth in emerging markets.²

The OPPORTUNITY

There are Abundant Advantages to Better-Designed Buildings:

- Protection from future redundancy due to energy, water and materials resource depletion.
- More competitive cities that attract leading multi-national companies.
- Lower utility bills, higher resale values and a shorter time on the market (a benefit to both homeowners and the real estate sector).
- A \$24.7 trillion investment opportunity in emerging market cities by 2030 (a benefit to the financial sector).³
- More high-tech jobs, such as in renewable energy, smart technologies and eco-friendly construction materials.



The home of Asia Green Real Estate, an asset manager in Jakarta that has committed to certifying all of its projects with IFC's EDGE green building certification.

How We DELIVER

Green building policy is not a one-size-fits-all scenario. IFC helps national, provincial and municipal governments to tailor a policy mix that is most relevant to local needs. Here are a few of the ways that IFC has successfully engaged with governments:

- Developing a **customized, long-term roadmap**, which helps to define targets for greenhouse gas reduction and set a strategic direction for the future. (This roadmap often begins with a sector study, includes advice on how to improve building codes and streamline procedures and permitting, and evolves into the development of innovative tools and practical user guides for implementation).
- Helping to develop, establish and assess **building codes** that set mandatory resource efficiency standards.
- Creating building **energy labels** to identify the efficiency of new and existing buildings.
- Offering **green building incentives** such as height bonuses, lower tax rates or expedited permitting.
- Working with **central banks** to support climate-smart growth, such as more lenient loan-to-value ratios for banks' green building portfolios.
- Increasing **internal capacity** for governments to deliver policy initiatives through training, demonstration projects and implementation tools.
- Inspiring the **public sector** to lead through certifying buildings such as hospitals, schools and social housing.



Developed by PPP Habitacional, the EDGE-certified Julio Prestes apartment complex is part of São Paulo's efforts to revitalize its urban core.

Steps to **SUCCESS**

Since 2011, IFC has partnered with governments worldwide to create green building policies that deliver lasting benefits for the private sector and communities. While IFC always fine tunes strategies to meet local needs and conditions, the following steps have shown to be effective for any government seeking to grow the climate-smart building sector:

- Collection of local data on existing building stock.
- Inputs from local experts, the private sector, manufacturers and civil society to develop policies that meet the needs of multiple stakeholders.
- Capacity building of government staff to implement policies through ongoing training and guidance.
- Promotion of voluntary incentives to complement mandatory code requirements.



IFC worked with the government of Jakarta to create green building policy guidelines.

Tools for **SCALING UP** Green Buildings

IFC's comprehensive Green Buildings Toolkit encapsulates global learnings from green building policy development into a user-friendly format that can be used by trained government staff to scale up code development and implementation, with limited external support. The toolkit provides a rich array of resources and proven pathways for successful policy making at the national or municipal level, including:

- Strategies for securing political commitment and local support.
- An interactive tool to establish baselines, improvement scenarios and impacts.
- Training materials on technologies and design interventions.
- An implementation, compliance and monitoring plan.
- A long-term road map to achieve pre-determined climate targets in a phased manner.

Already in use in municipalities across Indonesia, the Green Buildings Toolkit can be customized for other national governments seeking to support policy makers at the local level to set up resource-efficiency codes that align with targets. For more information, email edge@ifc.org.



Green building codes that have been enacted with IFC's support have led to the avoidance of two million tons of greenhouse gases annually.

RESULTS from IFC's Work in Green Building Codes

Annual Basis

2.0 million tons

Greenhouse gases avoided, which is equivalent to removing 426,600 cars from the road annually.

3.2 million MWh

Estimated energy use reduction, which is enough to power more than 2.59 million homes annually.

\$310 million

Operational cost savings from less energy and water consumption.

Projected Results*

100 million tons

Greenhouse gases avoided.

160 million MWh

Energy saved.

\$15.5 billion

Operational cost savings in energy and water.

**Projected over a 50-year building lifespan*

Case Study No. 1: INDONESIA

Planting the Seed for Climate-Smart Cities

Indonesia's cities are among the fastest growing in Asia. With this growth, air pollution, water shortages and rising sea levels are making Jakarta and other cities increasing less livable. In response, Jakarta authorities teamed up with IFC to draft the country's first green building code in 2012. The objective of the collaboration was to realize the city's 30/30 Commitment to cut energy and water use as well as greenhouse gases from the building sector by nearly 30 percent by 2020.⁴

Turning Commitment into Action

The process behind creating Jakarta's green building code was replicated in Bandung and Semarang. For additional cities, IFC worked with the Ministry of Public Works and Housing to develop the comprehensive Green Buildings Toolkit, which enables jurisdictions to select and adopt policies that are right for them. Training was provided for more than 1,000 local officials which included checklists, guides and online tools. Awareness raising about the short payback times for resource-efficient buildings and their projected operational savings reached architects, engineers, developers, financial institutions and the general public.

Generating Green Finance and Incentives

With new policies in place and a viable pipeline needing financing, banks are starting to partner with IFC to develop sustainable financing for buildings, including green mortgages and green construction loans. Local governments are creating incentives for developers to go green. In Bandung, for example, authorities have reduced property taxes for developments that exceed code standards. Most recently, IFC provided recommendations to Indonesia's Central Bank to increase the loan-to-value ratio by five percent for second homes that are certified green, including with IFC's EDGE.

As part of its 30/30 Commitment, Jakarta plans to cut its energy and water use as well as greenhouse gases from the building sector by nearly 30 percent.



“With technical assistance from IFC, we created a national building code and green building roadmap, which are critical to our strategy to achieve our Nationally Determined Commitments of a 29 percent reduction in greenhouse gas emissions by 2030.”

— Diana Kusumastuti, *Director for Building Development, Indonesian Ministry of Public Works and Housing*



Key Results from Indonesia

As of December 2019, more than 8,000 new buildings met the code standard with the following projected reductions:

1.7 million MWh per year

Estimated energy use reduction.

\$150 million per year

Operational cost savings from less energy and water consumption.

1.3 million metric tons per year

Reduction of greenhouse gases annually.

The EDGE-certified Samara Suites, a mixed-use building developed by Asia Green Real Estate and Sintesis Kreasi Utama, is located in the heart of Jakarta.

Case Study No. 2: THE PHILIPPINES

Attracting Business Through a Better Building Code

The Philippines has one of the most expensive electricity rates in Southeast Asia,⁵ adding to both the cost of doing business and household expenses. In 2012, the national government partnered with IFC and the city of Mandaluyong in metro Manila to pilot a green building code. Mandaluyong wanted to attract new business, so the code had to involve minimal capital outlays and result in rapid pay-back times and significant operational savings.

Analysis, Training and Popular Incentives

IFC teamed up with the city of Mandaluyong to conduct market surveys and collect building data. The results were input into a cost-benefit analysis to determine the most achievable and impactful green measures to incorporate into the new code. To help support the roll-out, IFC created checklists, user guides and measurement tools, training more than 4,000 building professionals and officials. For developers who exceed the code standard, the city offers lower property taxes and the opportunity to add floor space. The incentives encourage projects not governed by the code to begin complying with its criteria.

Serving as a Replicable Model

Mandaluyong's experience led to the government using it as a template for a countrywide building code that mandates energy and water efficiency, materials and site sustainability, solid waste management and indoor air quality. The city now mentors other local governments on how to create green building codes. Mandaluyong has earned the reputation of being business-friendly and progressive, giving it a competitive edge in attracting new enterprises.

The Philippines has one of the most expensive electricity rates in Southeast Asia, which puts pressure on owners and renters of both commercial and residential buildings.



“Our standards had to add value, otherwise we would risk driving away investment. The response was overwhelmingly positive, with many investors coming to our city and not one backing out.”

– Benjamin de Castro Abalos, Jr., *Former Mayor of Mandaluyong*



Key Results from the Philippines

920,000 MWh per year

Estimated energy use reduction.

\$200 million per year

Operational cost savings from less energy and water consumption.

440,000 metric tons per year

Reduction of greenhouse gases annually.

The national government of the Philippines' "Build Build Build" initiative includes both increased infrastructure development and building construction.

Case Study No. 3: COLOMBIA

Gearing Up for Green Buildings

Colombia is Latin America's second most populous country, and with nearly 80 percent of its people living and working in cities,⁶ the construction sector is key to national development. The government knew that to take a sustainable approach to the economy, the construction industry had to go green. In 2011 it enlisted IFC's support to create the first mandatory green building code in Latin America. The challenge was to ensure the new decree was not only climate-smart, but business-friendly, too.

Participation Through Consensus and Capacity Building

For the code to be successful, it needed support from all stakeholders, particularly the private sector. IFC worked closely with Colombia's national chamber of construction, CAMACOL, as well as the Ministry of Housing to ensure the code met industry needs. CAMACOL also played a leading role on an advisory council that gave public and private stakeholders a voice in the process, helping to raise awareness about the ease, affordability and cost benefits of green buildings. IFC, CAMACOL and the government worked together to strengthen the capacity of architects, engineers and other building practitioners to ensure a smooth roll-out.

Satisfying Demand with Green Building Finance

By 2015, Colombia had enacted one of Latin America's first green building codes for new residential and commercial developments. The code fueled demand and helped build a viable pipeline of green construction needing financing. This paved the way for IFC to partner with Colombia's two largest commercial banks, Bancolombia⁷ and Davivienda,⁸ to issue \$260 million in green bonds. These landmark bonds are financing resource-efficient buildings and other climate-smart projects across the country. By working with IFC to create supportive policies and fuel the demand for financing green buildings, Colombia has grown vital sectors of its economy while making progress with its climate goals.

IFC, CAMACOL and the Ministry of Housing worked collaboratively to create Colombia's first mandatory green building code.



“Sustainable practices are transforming the construction market in Colombia. As building activity and market needs evolve, developers have responded with a value proposition that emphasizes resource efficiency.”

— Sandra Forero, *President, CAMACOL*



Key Results from Colombia

28% reduction

Colombia's code supports its goal to cut greenhouse gases from the construction sector by 28 percent by 2021, versus a business-as-usual scenario.

10 million square meters

Green buildings have more than doubled in Colombia since 2015. With EDGE alone, more than 1.7 million square meters of floor space has been certified.

66,300 MWh per year

Estimated energy use reduction from EDGE-certified projects.

Developed by INCOL and EDGE-certified by CAMACOL, Mirador del Jaboque is a social housing project in Bogotá that features 544 green apartments.

Case Study No. 4: VIETNAM

Economic Growth Drives a Need for Green Buildings

Over recent decades Vietnam's rapid economic growth lifted millions of people from poverty. New buildings mushroomed in its buzzing cities. As a direct result, energy use skyrocketed, and the country's greenhouse gas emissions began to rise at one of the highest rates in the world. With Vietnam already feeling the impact of climate change, flooding and severe storms, policy makers knew "business as usual" couldn't continue, so the government partnered with IFC to create a market for green buildings.

A Foundation for a New Green Building Code

In 2012, IFC embarked on a careful analysis of local conditions, including a survey of existing buildings in the country's three major climate zones, to ensure regulations would be cost-effective, relevant and impactful. Using the results, IFC helped the government create the 2013 Building Energy Efficiency Code.⁹ In tandem, projects of different typologies in various cities were provided technical support to meet code requirements to demonstrate to the market that climate-smart construction is both practical and profitable.

Rolling out Change Through Technical Guidance

To scale up code compliance, IFC trained more than 1,000 officials, architects and other industry professionals. A checklist and code compliance guide were produced with technical advice on how to meet requirements. IFC also helped to streamline reporting procedures and created a monitoring and evaluation mechanism, including digital tools, that enabled government officials to track code implementation and analyze dynamics in the green buildings market. In 2017, IFC helped the national government update and expand the Building Energy Efficiency Code.

IFC helped the Vietnamese government to create its 2013 Building Energy Efficiency Code.



“As Vietnam expands, our aim is to be sustainable and smart.”

– *Thinh Nguyen, Deputy Director, Science, Technology and Environment Department, Ministry of Construction, Vietnam*



Key Results from Vietnam

552,000 MWh per year

Estimated energy use reduction.

\$55 million per year

Operational cost savings from less energy and water consumption.

8% reduction

Reduction of greenhouse gas emissions by 300,000 metric tons annually, which contributes to Vietnam's COP 21 commitment of 8 percent reduction.

1.58 million square meters

The code paved the way for EDGE-certified floor space that equates to 59 percent of Vietnam's total green building certification.

The Bac Ninh Exhibition Center of Urban Development and Architecture, which has been certified with EDGE, celebrates the architecture of Bac Ninh province in northern Vietnam.

Case Study No. 5: PERU

Recognizing the Need for Change

In 2014, Peru hosted global leaders at the COP 20 summit, with a slogan declaring “Don’t come to Peru if you don’t want to change the world.” Recognizing the urgent need to curb the high environmental impact of the construction sector in its own country, Peru’s local governments joined with IFC to put that slogan into practice by offering incentives that would reward climate-smart development and help grow the green buildings market.

Rewarding Developers with Height Bonus Incentives

After Peru’s national government passed a decree mandating sustainable urban planning in 2016,¹⁰ IFC supported Arequipa,¹¹ Cusco¹² and the district of San Borja¹³ in Lima to craft ordinances to incentivize green buildings through height bonus incentives. To make verification easy for local officials, eligibility is tied to certification with EDGE or another internationally-recognized standard.

Building Capacity for Knowledge Sharing and Traction

IFC trained local officials how to best roll out their new ordinances, align certification and permitting processes, and created an easy-to-use guide that enabled other districts to generate similar incentives. IFC also worked in tandem with municipal governments and the Peru Green Building Council to raise awareness of the benefits of green buildings through knowledge-sharing sessions with developers and civil society. Recognizing the incentives’ popularity, five more local governments have partnered with IFC to replicate the ordinance framework, with two more districts in Lima – Miraflores¹⁴ and Surco¹⁵ – enacting similar schemes.

IFC supported Arequipa, Cusco and the district of San Borja in Lima to craft ordinances to incentivize green buildings through height bonuses.



“If I were to give advice to other governments pursuing this, I would encourage them to think about future generations. It’s our responsibility to adopt a sustainable perspective.”

– Guillermo Valverde, *Urban Control and Authorizations Manager, Municipality of San Isidro*



Key Results from Peru

20 - 30% reduction

Local green building ordinances are contributing to Peru’s Nationally Determined Commitments to cut greenhouse gases by 20 to 30 percent by 2030, versus business-as-usual.¹⁶

3 ordinances

Three green building ordinances have been enacted, offering incentives to property developers to certify their buildings green.

43 residential projects / 750 residential units

In Lima’s district of San Borja, dozens of projects have been certified with EDGE since the incentive was enacted.

2,947 MWh per year

In addition to estimated energy use reduction, greenhouse gases have been reduced by 882 metric tons of CO₂e per year from EDGE-certified projects in San Borja.

The process for creating incentives in Peru included town hall meetings with property developers and civil society.

Case Study No. 6: CHINA

Helping to Realize China's Green Potential

China is home to the largest construction market in the world, with ambitions for 50 percent of its new stock to be built green.¹⁷ Given the size of its market, this would deliver tremendous greenhouse gas reductions and energy savings. To help realize ambitions, IFC worked with CSTID, a public service unit under China's Ministry of Housing and Urban-Rural Development (MOHURD), to benchmark and align the EDGE software with China's Green Building Label (GBL), which is commonly known as the Three-Star rating system. This marks a historic milestone in the collaboration of green rating systems.¹⁸

Benchmarking, Alignment and Customized Reporting

The benchmarking and alignment included customized outputs to create an easy process for users to earn points in the Green Building Label, as well as to gain access to a cost-benefit analysis for design alternatives and projected CO₂ emissions. Thirty pilot projects achieved two-star or three-star level GBL certifications, which led to significant savings in time and resources, as EDGE replaced the complex modeling that is typically required.

Supporting the Scale-up of Green Public Buildings and More

IFC assisted the local government of Fuzhou on designing an eco-industrial park to achieve its green building target. This included a feasibility study of approximately 500,000 square meters of new buildings financed by the government. The park project serves as a foundation for greening all existing buildings in the high-tech zone. IFC is also contributing to the scale-up of China's green building stock through EDGE certification adoption by a number of clients, including the Asian Development Bank, Asia Green Real Estate, Carlyle Group, China Education Group, Jointown Pharmaceutical Group and Landsea Group.

IFC worked with CSTID, a public service unit under China's Ministry of Housing and Urban-Rural Development (MOHURD), to benchmark and align the EDGE software with China's Green Building Label (GBL).



“The aim of our collaboration is to connect China’s green building standard with EDGE, to create an international platform to enable continuous improvements for our buildings sector.”

– Song Ling, *Former Vice Director, Green Buildings Development Department, CSTID, China*



Financed by the local government, the 500,000-square-meter Fuzhou High-tech Zone in Jiangxi province is targeting EDGE certification for all new buildings.



The Fuzhou High-tech Zone of Jiangxi province includes smart factories, offices, dorms and a research and development center, which the government plans to certify green with EDGE.

The Power of INCENTIVES

Green building codes deliver a solid foundation for better-performing buildings. They work best, however, when paired with incentives to encourage voluntary green building certification. Together, these factors deliver the “push and pull” that is required to achieve true market transformation.

10 Ways for Policy Makers to Generate Demand for Certified Buildings

1. **Property Tax Incentive** – Offer a lower property tax rate to developers for one or more years to offset the extra costs of building green.
2. **Density Bonus** – Allow developers to increase the height of their buildings, either as extra floors or a percentage of total floor area.
3. **Expedited Permitting** – Limit the permitting process to a minimum number of days for green construction.
4. **Reduced Permitting** – Waive or partially reimburse permit fees for developers who certify their projects green.
5. **Grants** – Incentivize solutions such as solar power by providing block grants to cities and states. Or grants can go directly to developers to subsidize the cost of certification.
6. **Central Bank Programs** – Set up mechanisms at the central bank or financial regulator level to channel existing funding flows towards green developments.
7. **Technical Assistance** – Train planners, building inspectors and other government staff how to evaluate green building design with a software solution such as EDGE.
8. **Net Metering** – Work with utility companies to enable building owners to generate renewable energy to the grid, resulting in carbon-positive buildings which can be certified.
9. **Public Campaigns** – Strengthen consumer demand through public advocacy. Work with utility companies to build evidence of results and communicate successes to the public.
10. **Green Building Legislation** – Include voluntary certification as an optional route for green code compliance.

For examples of where incentives exist with detailed information, visit <https://www.edgebuildings.com/market-players/governments/>

IFC's Comprehensive **APPROACH** to Green Buildings

IFC uses a holistic approach that brings together governments, financial institutions, industries and communities to work together on policies and private sector investments. From offering a certification system to direct financing and mobilization, IFC plays a catalytic role in creating markets for green buildings.

EDGE

An innovation of IFC, EDGE proves the business case for building green and helps unlock financial investment. EDGE empowers developers to build and brand green in a fast, easy and affordable way, providing a competitive advantage through independently-verified certification. Available in more than 170 countries, EDGE includes free software to identify the most cost-effective design solutions to reduce resource consumption by at least 20 percent, which is the minimum standard for EDGE certification. A global network of certifiers and trained EDGE Experts support the collective ambition to mainstream green buildings and help fight climate change.

Financing

IFC works with banking partners to offer loans for developers building green, and to develop innovative products such as green construction finance, green mortgages and green bonds. With more than \$4.9 billion in green building projects in its own portfolio, IFC has mobilized an additional \$1 billion of financing for green homes, hospitals, schools, retail complexes and other buildings.

IFC's EDGE certification has been critical to the strategy of the district of San Borja and the Cities of Arequipa and Cusco in providing a mechanism for rewarding property developers with height bonus incentives.

EXPANDING Policy Pathways

IFC has a track record of partnering with governments in emerging markets to create and implement green building codes. Now IFC is broadening its focus to include new areas that will strengthen the green building sector.

Green Building Labels

Governments can create green building labels to dovetail into policy making, help budget for expenditures, or as criteria for awarding incentives or prioritizing retrofits. Typically in the form of stars, numbers or letters, green building labels make it easier for potential buyers, renters and investors to assess the benefits of higher-performing buildings. IFC has developed building energy labels for the Government of Mongolia and Changning district in Shanghai.

Financial Regulations

Central banks and financial authorities can create regulations to encourage the financing of green buildings. IFC worked with Otoritas Jasa Keuangan (the Financial Services Authority in Indonesia) to include green buildings among its asset classes that qualify for green bonds,¹⁹ and provided assistance to the country's Central Bank to increase the loan-to-value ratio by five percent for properties that are certified green.

Next Generation

In Indonesia, South Africa and Vietnam, IFC helped introduce green building courses in universities with the latest evidence-based learnings and technologies. Green building knowledge and technical skills are key to fostering the next generation of urban planners and building professionals in both the public and private sectors.

IFC wishes to express its appreciation to the government leaders that have played an active role in laying a solid foundation to transform their built environments. By continuing to support the creation of new markets for green buildings, together we can build a brighter future.



IFC is broadening its green building focus to include support on green building labels, financial regulations and university courses.

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