

The background features a detailed architectural drawing of a building's exterior, showing a series of cantilevered balconies or overhangs. The drawing is rendered in a light blue color against a darker blue background. The text 'Green Buildings' is overlaid on the right side of the image in a large, white, sans-serif font.

# Green Buildings

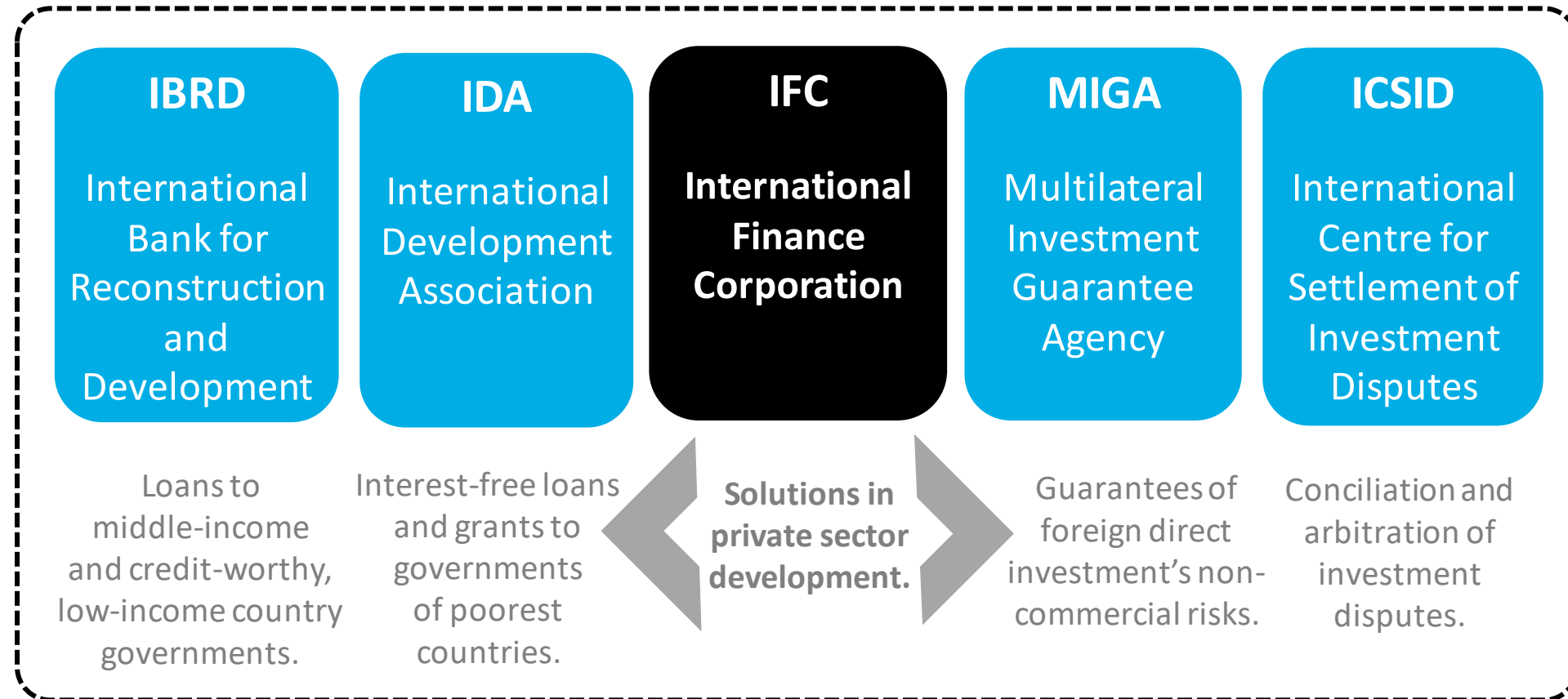
If you build it, build it green

More resources:

[www.ifc.org/greenbuildingsreport](http://www.ifc.org/greenbuildingsreport)

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

# IFC IS A MEMBER OF THE WORLD BANK GROUP



# IFC HAS A **FOUR-PART STRATEGY** TO SUPPORT GREEN AND RESILIENT BUILDING GROWTH



# CLIMATE CHANGE CANNOT BE SOLVED WITHOUT TACKLING BUILDINGS EMISSIONS

## URBANIZATION PRESSURES:

- **90 million** middle class growth p.a.
- **70%** world's population in urban areas in 2050.

## CLIMATE PRESSURES:

- Buildings account for **19%** of the world's GHG emissions.
- According to the IPCC's special report, by **2030** all new buildings must be zero net carbon.<sup>1</sup>
- Existing buildings must be zero net carbon by **2050**.

## ECONOMIC OPPORTUNITY:

- **80%** of viable potential is untapped.
- Solutions can benefit multiple stakeholders.



<sup>1</sup>IPCC 's Special Report on Global Warming

# BUILDINGS HAVE A SIGNIFICANT CLIMATE CHANGE IMPACT AND THERE ARE MORE NEW BUILDINGS TO COME

Current GHG  
from USA  
**6.8 Gt**



Current GHG  
from buildings  
**9Gt**



+

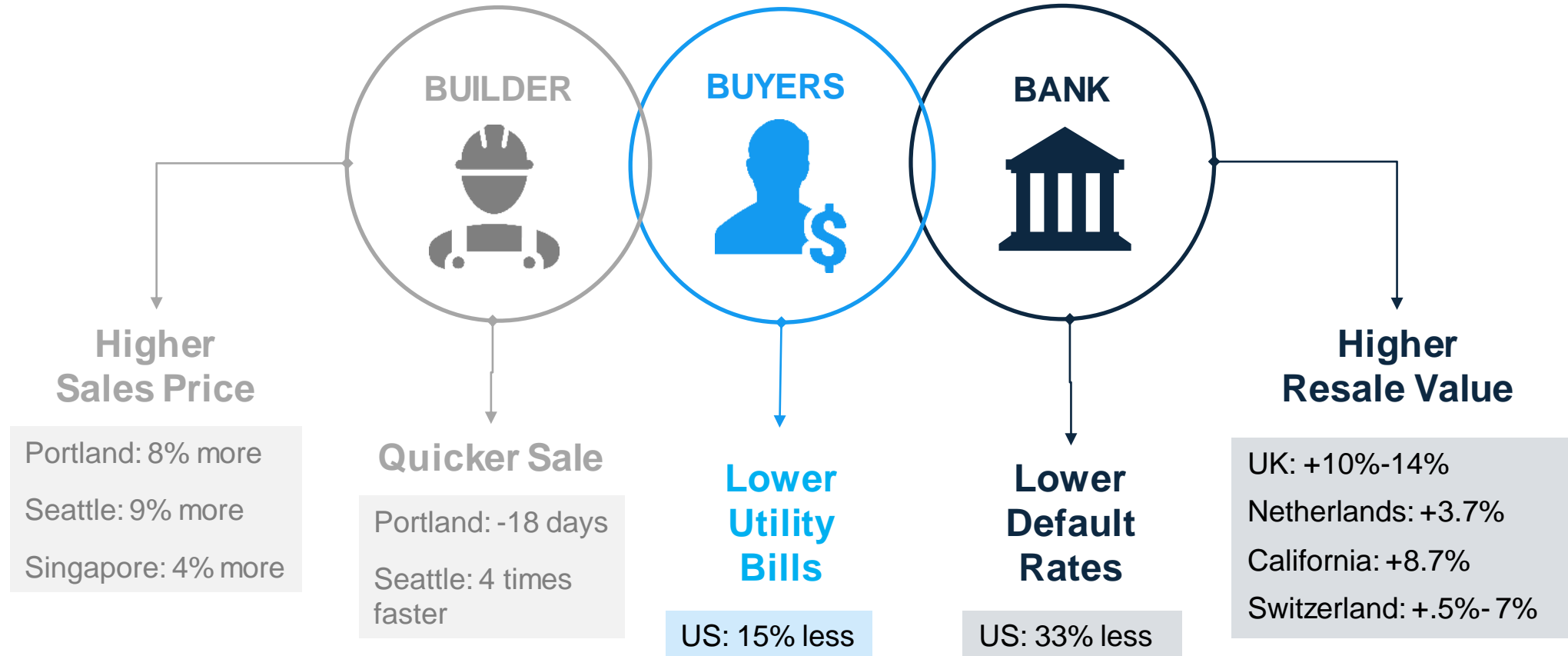
Additional GHG  
from buildings  
by 2030  
**7Gt**



If the right investment choices are not made today, we will be locking into high-carbon urban infrastructure for the next 40 to 70 years.

# GREEN BUILDINGS CREATE VALUE FOR ALL STAKEHOLDERS

Green buildings have higher sales prices, quicker sales cycles, lower operational costs, lower loan default rates, and higher resale values.



**Policy-makers**  
launching (non-fiscal) incentives

quantifiable results relevant to NDCs, more efficient infrastructure and hence more competitive businesses, lower subsidies for utility bills, and higher disposable income for all residents.

# DEFINITION OF A GREEN BUILDING



CERTIFIABLY GREEN  
AS VERIFIED BY  
AN INDEPENDENT  
THIRD PARTY

&



BETTER  
PERFORMANCE  
THAN THE  
LOCAL BASELINE

&



QUANTIFIED  
IMPACT REPORTING

100% OF FINANCE OR RE-FINANCE CAN BE COUNTED FOR CLIMATE CO-BENEFITS

# THE FREE SOFTWARE SHOWS RETURN ON INVESTMENT FOR RESOURCE EFFICIENCY MEASURES, TAILORED TO LOCAL CLIMATE

EDGEBUILDINGS.COM





# EDGE IS AVAILABLE ACROSS ALL SECTORS, FOR BUILDINGS OF ALL VINTAGES

**NEW BUILDINGS**

**EXISTING  
BUILDINGS &  
REFURBISHMENTS**

**PORTFOLIO  
CERTIFICATIONS**

**HOMES**

**HOSPITALITY**

- Hotel
- Serviced Apt
- Resort

**RETAIL**

- Department store
- Shopping mall
- Supermarket
- Big box store
- Food store
- Airport

**OFFICES**

**HOSPITALS**

- Hospital
- Clinic
- Nursing home

**EDUCATION**

- Pre-school
- School
- University
- Sports facility
- Religious facility

**INDUSTRIAL**

- Warehouse
- Light industrial

# EDGE WEBSITE HAS A LIBRARY OF CASE STUDIES GLOBALLY, WHICH CAN BE USED FOR PROMOTION OR PROOF-OF-CONCEPT



[Ecohome 3 \(VNM\)](#)  
Homes by Capital House



[Hilton Cucuta \(COL\)](#)  
Hotel by Hilton



[Johnson Controls HQ Asia \(CHN\)](#)  
Offices by Johnson Controls



[Sakura Montessori School \(VNM\)](#)  
School by EMC Education



[Antananarivo Airport \(MDG\)](#)  
Airport by Bouygues and Colas



[Revolucion 757 \(MEX\)](#)  
Homes by FICADE



[Villa del Rio \(COL\)](#)  
Retail by ASHMORE Avenida



[King Hussein Business Park \(JOR\)](#)  
Offices by the Business Park



[Komfo Anokye Hospital \(GHA\)](#)  
Hospital by ABP



[Esteban Echeverria \(ARG\)](#)  
Warehouse by Plaza Logistica

CLICK ON LINKS FOR IN-DEPTH PROJECT STUDIES

# IFC GREEN BUILDING PROGRAM – ASIA, LATIN AMERICA, AFRICA

## INDONESIA

IFC investment for Developer & Bank



IFC loans for green affordable housing and green properties

Jakarta, Bandung & Semarang adopts green buildings code



6 top universities offer EDGE training to students (UI, ITB, UGM, ITS, UNDIP, UNTAR)

Partnership with GBC Indonesia to offer EDGE



IFC invests in green bonds



## COLOMBIA

IFC investment in Bancolombia



IFC Partnership with Chamber of Construction on EDGE



Universities offer GB courses



Bancolombia issues offers green construction loans with 0.5% -2% interest



Homes owners save up to \$20/month in utility bills

## SOUTH AFRICA

IFC investment in IHS property fund

Investment with blended financing to green 2000 affordable homes



Partnership with Green Building Council South Africa to offer EDGE certification

KFW & EIB also invests in the funds using EDGE



Developers commit to certify >10k homes

# INDONESIA GREEN BUILDING PROGRAM POLICY ENGAGEMENT RESULTS

(IFC ADVISORY WORK 2011 - 2019)

|                |  |   |   |   |
|----------------|--|---|---|---|
| <b>Jakarta</b> | <b>453</b><br>buildings, with more than<br><b>26,000,000 m<sup>2</sup></b>   | <b>1,240,825</b><br>Metric tons/Year<br>Potential CO <sub>2</sub> Emission<br>Reduction | <b>1,591,948</b><br>MWh/Year<br>Potential Energy<br>Savings | <b>138,316</b><br>Million US\$/Year<br>Potential Electricity Cost<br>Saving |
| <b>Bandung</b> | <b>8,003</b><br>buildings, with more than<br><b>2,650,000 m<sup>2</sup></b>  | <b>119,646</b><br>Metric tons/Year<br>Potential CO <sub>2</sub> Emission<br>Reduction   | <b>142,436</b><br>MWh/Year<br>Potential Energy<br>Savings   | <b>15,668</b><br>Million US\$/Year<br>Potential Electricity Cost<br>Saving  |
| <b>TOTAL</b>   | <b>8,456</b><br>buildings, with more than<br><b>28,000,000 m<sup>2</sup></b> | <b>1,360,472</b><br>Metric tons/Year<br>Potential CO <sub>2</sub> Emission<br>Reduction | <b>1,734,384</b><br>MWh/Year<br>Potential Energy<br>Savings | <b>153,984</b><br>Million US\$/Year<br>Potential Electricity Cost<br>Saving |

IFC supported Jakarta, Bandung, Semarang, Ministry of Public Works and Public Housing and private sectors through EDGE on Green Buildings program, in partnership with: **SECO** (Switzerland's State Secretariat for Economic Affairs)

# GREEN BUILDING COURSE IN UNIVERSITY

- Globally, IFC developed Green Building Course Modules for universities.
- In Indonesia, since January 2019, 5 universities (UI, ITB, UGM, ITS, and UNDIP) has been offering the IFC's GB modules called Design for Greater Efficiency –DfGE as an elective course within their Department of Architecture.





# GREEN BUILDINGS INCREMENTAL COST VS RETURNS

---

# ACHIEVING 20% SAVINGS REQUIRE A FEW PRACTICAL ADJUSTMENTS



## ENERGY

- External Shading Devices
- Reflective Paint
- Insulation of Walls
- High Efficiency Boiler for Hot Water
- Energy-Saving Lighting Systems
- Low-E Coated Glass
- Energy-efficient Air Conditioning



## WATER

- Low-flow Showerheads
- Low-flow Faucets
- Water-efficient Water Closets
- Rainwater Harvesting System



## ENERGY EMBEDDED IN MATERIALS

- Hollow Core Precast Slab for Floor and Roof
- Honeycomb Clay Blocks or Hollow Concrete Blocks for Walls
- UPVC Window Frames

# CASE STUDY: INCREMENTAL COSTS FOR GREEN BUILDINGS ARE MUCH LOWER THAN MARKET PERCEPTION

**South Africa** – IHS: \$270 per residential unit = <1% of capital costs

**Vietnam** – Capital House: 1% more

**Mexico** – Vinte: \$300 per unit

**Indonesia** – Ciputra: 4.7% more with payback period of 1.8 years

Further resource: [Green Building Return on Investment](#)





# HIGH RETURNS ARE POSSIBLE IN ALL MAJOR BUILDING SECTORS

IFC EDGE estimates show payback periods of less than two (2) years in homes, hotels, shopping centers and in light industry buildings



|                 | Incremental Cost | Utility Savings/ Month | Payback Period in Years |
|-----------------|------------------|------------------------|-------------------------|
| Homes           | \$270/Unit       | \$15/Unit              | 1.5                     |
| Hotel           | \$153,000        | \$8,500                | 1.5                     |
| Shopping Center | \$132,700        | \$8,230                | 1.4                     |
| Light Industry  | \$117,490        | \$6,170                | 1.6                     |

Source: IFC's EDGE [Green Buildings ROI](#); costs are reflected in US dollars

## CASE STUDY: IHS SAVES RESIDENTS UP TO ONE MONTH OF RENT

| IHS Property  | Ravenswood | Candlewood | Goedeberg |
|---|------------|------------|-----------|
| Actual consumption figures (kWh)                            | 107        | 219        | 175       |
| kWh savings compared to a similar non-certified development | 54%        | 68%        | 41%       |
| Total savings per year (\$)                                 | \$128      | \$181      | \$338     |

Further Resource: [Housing Finance International Journal Spring 2020](#)

# CASE STUDY: CAPITAL HOUSE OF VIETNAM INCREASED SALES 3X AND WON THE FINANCIAL TIMES AWARD FOR LOW COST HOUSING



- Green construction costs only 1% more in capital costs.
- Design utilizes sensible features.
- Capital House held a model apartment showcase with EDGE branding, which increased their sales 3x.
- Capital House won the Financial Times Transformational Business Award in 2018.

Further Resource: [Capital House Story](#)




# HOW CAN I CAPTURE THE ECONOMICS OF GOING GREEN?

## Citra Maja Raya

Citra Maja Raya is a 2,000-hectare development of commercial and residential property in Banten that includes 373 affordable green townhouses. Developed by **Ciputra Group**.

<https://edgebuildings.com/project-studies/citra-maja-raya/>

### Savings Impact of Green Measures:

|  |  |   |
|--|--|---|
|  30%<br>Lower<br>Energy<br>Bill |  26%<br>Lower<br>Water Bill |  60% Less<br>Energy<br>In Material |
|--|--|---|

### Green Technical Solutions:

- Reduced window to wall ratio
- External shading device
- Energy-saving lighting
- Natural ventilation
- Low-flow faucets for washbasins, kitchen
- Micro concrete tiles on steel rafters for roof construction
- Autoclaved aerated concrete blocks



External shading devices



Low-flow faucets in kitchens and bathrooms



Autoclaved aerated concrete blocks



# GOVERNMENT INCENTIVES FOR GREEN BUILDINGS

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# GOVERNMENT INCENTIVES FOR GREEN BUILDINGS

## 1 TAX INCENTIVES

Offer a tax credit to developers to offset extra costs.



## 2 BONUS DENSITY

Allow developers to increase the height of their buildings.



## 3 EXPEDITED PERMITTING

Prioritize permitting for green construction and/or waive permit fees.



## 4 GRANTS & LOANS

Provide grants to cities to incentivize solar power or to developers to subsidize certification costs.



## 5 TECHNICAL ASSISTANCE

Train planners, building inspectors, and other government staff on how to audit green buildings.



## 6 NET METERING

Work with utilities to enable owners to generate renewable energy to the grid.



## 7 PUBLIC CAMPAIGNS

Generate public support through advocacy efforts.

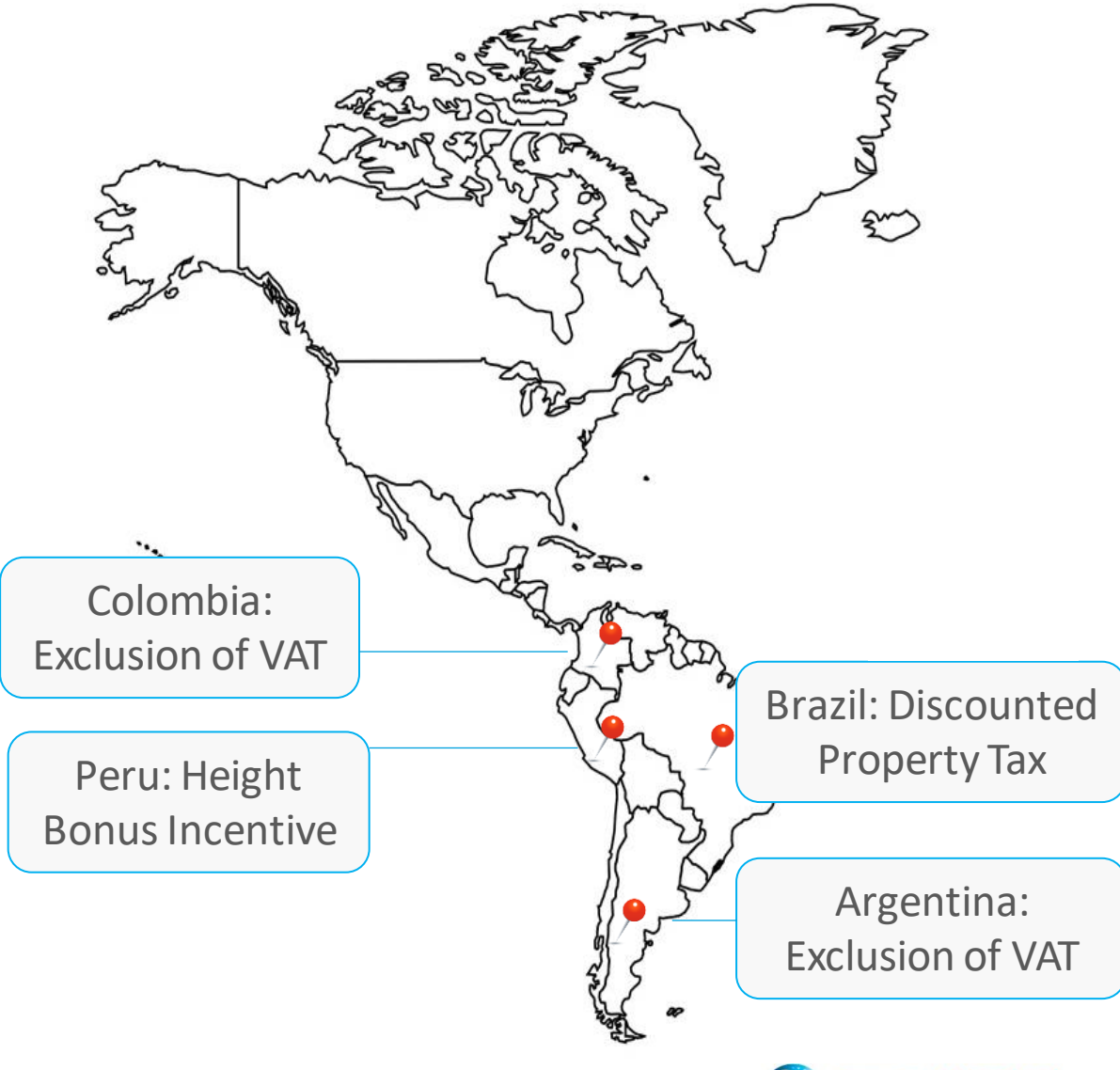
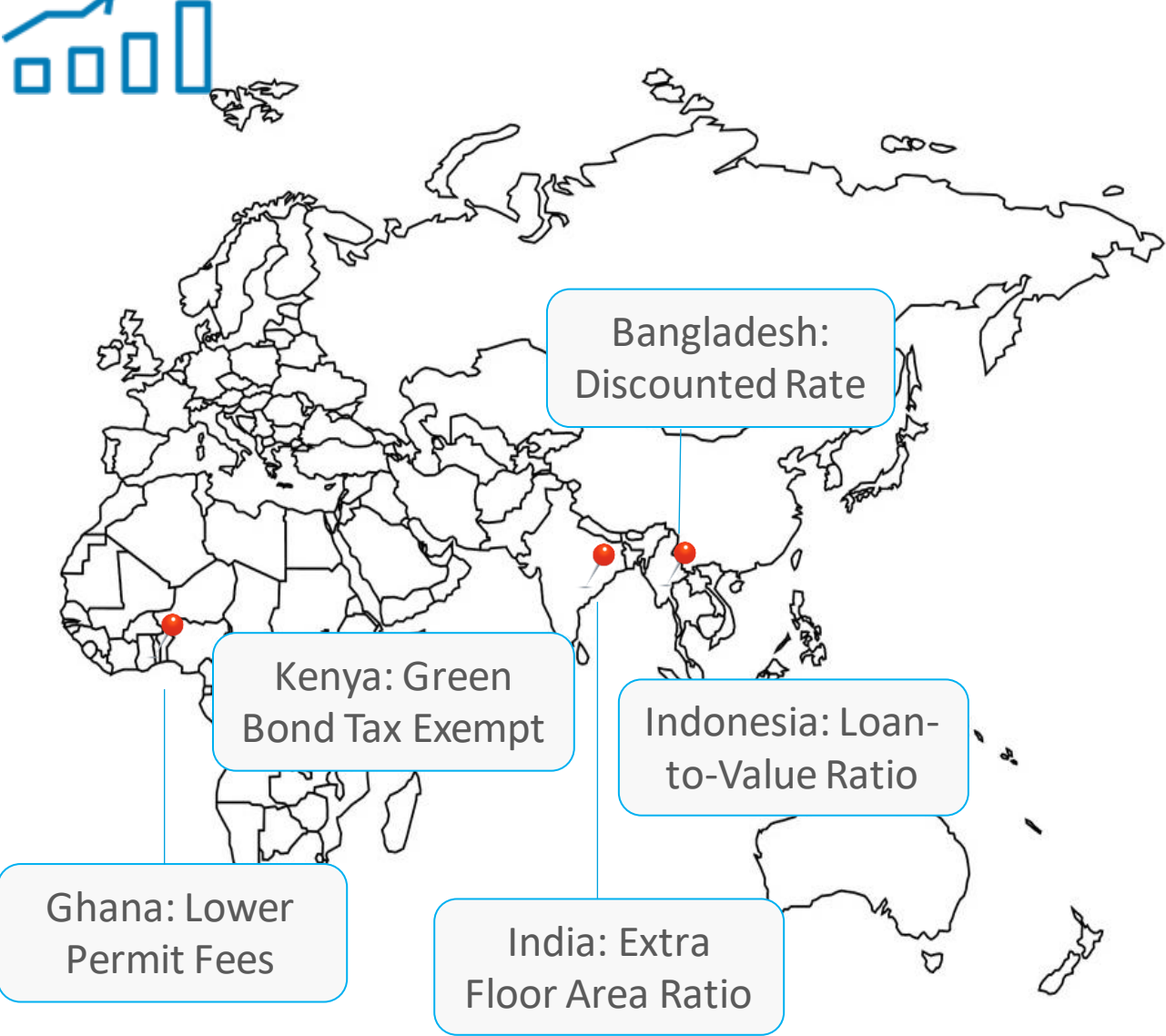


## 8 LEGISLATION

Bundle a certification standard directly into a new set of codes.



# GOVERNMENT INCENTIVES FOR GREEN BUILDINGS



Further Resource: [EDGE Government Pages](#)

CASE STUDIES ON LESSONS LEARNED AVAILABLE IN **POLICY PAPER**

# Green Buildings

POLICY PATHWAYS FOR  
EMERGING MARKETS

Download the [Policy Pathways Report](#)



CASE STUDIES ARE COMPILED IN IFC'S GREEN BUILDINGS REPORT

# Green Buildings

A FINANCE AND POLICY BLUEPRINT  
FOR EMERGING MARKETS

Download the report from [www.ifc.org/greenbuildingsreport](http://www.ifc.org/greenbuildingsreport)



THE FUTURE OF GREEN BUILDINGS:  
THE IMPORTANCE OF PARTNERSHIP  
INNOVATION AND TECHNOLOGY  
PATHWAY TO ZERO CARBON & RESILIENT BUILDINGS

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# CASE STUDY: CATALYZING THE GREEN BUILDINGS MARKET IN COLOMBIA

## PARTNERSHIPS

- Training, education, and marketing through CAMACOL, Chamber of Construction
- Demonstration investments with banks, universities, retail, and hotels
- First green bond in Colombia was for green buildings

## INCENTIVES BY BANKS AND GOVERNMENT

- Bancolombia: incentivized interest rate, assistance
- Davivienda: reduced rate and certification costs
- SURA: 10% insurance refund
- Government: VAT exclusion and income tax deduction

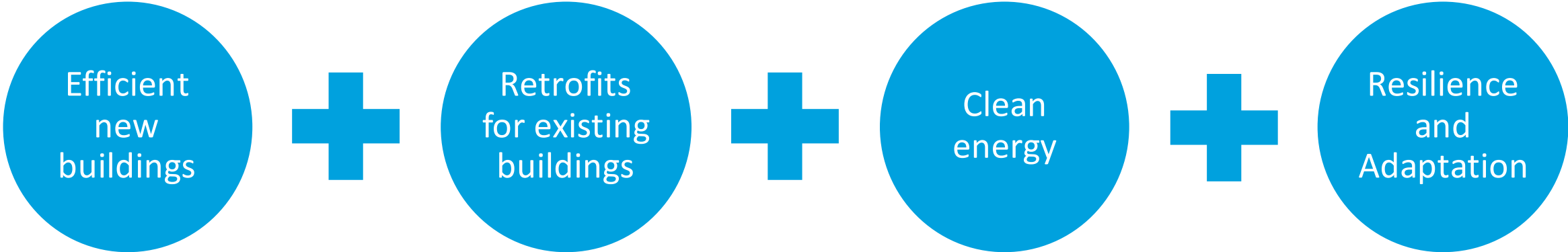
Further Resource: EDGE [Banking](#) and [Government](#) Pages

## RESULTS

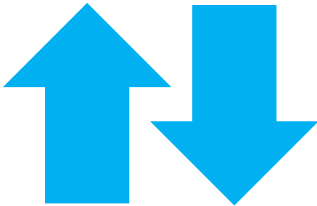
- 2.4 million m2 space certified or registered
- Green mortgages launched
- \$400 million program by Bancolombia, expanding into neighboring countries
- 80 technical experts accredited by IFC

Further Resource: [Colombia EDGE Page](#)

# PATH TO ZERO CARBON AND RESILIENT BUILDINGS



TECHNICAL PATHWAYS



GOVERNMENT ACTION



MINIMUM STANDARD



INCENTIVES



ENABLING ENVIRONMENT



ROLE IN FINANCING

# EDGE HAS A PATH TOWARD ZERO CARBON

---



## 1. EDGE Certified

Achieve the minimum standard of 20% in energy, water and embodied energy in materials.



## 2. EDGE Advanced

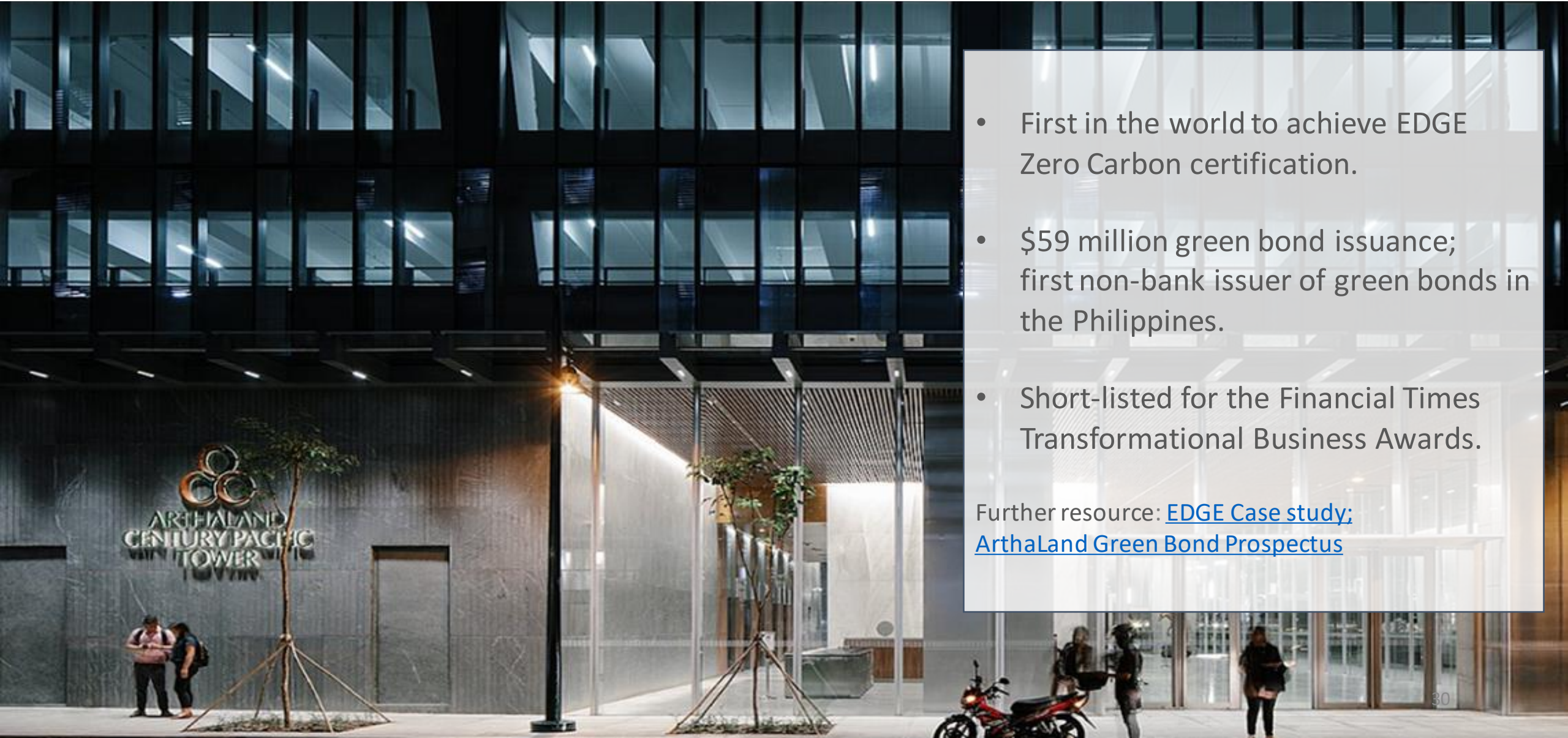
Earn 40% or more energy savings for a higher level of recognition, with at least 20% savings in water and materials.



## 3. Zero Carbon

Go all the way to carbon neutral with 40% or more energy savings on-site, achieving 100% through renewables or topping off with carbon offsets.

# CASE STUDY: ARTHALAND TOWER IS THE FIRST ZERO CARBON EDGE CERTIFICATION WITH A SUSTAINABILITY STRATEGY FUNDED BY A GREEN BOND



- First in the world to achieve EDGE Zero Carbon certification.
- \$59 million green bond issuance; first non-bank issuer of green bonds in the Philippines.
- Short-listed for the Financial Times Transformational Business Awards.

Further resource: [EDGE Case study](#); [ArthaLand Green Bond Prospectus](#)

# TOOLS FOR ACTION



TECHNICAL TOOLS



FINANCE CASE STUDIES



GOVERNMENT CASE STUDIES



IFC PARTNERSHIP



DISCLOSURE

# EDGE IS ALIGNED WITH INTERNATIONAL GREEN FINANCE STANDARDS FOR GREEN BUILDINGS

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- ICMA releases the [Green Bond Principles](#) as well as [guidelines for green buildings](#).
- EDGE is listed as an accepted certification standard. (See Section E: Certification Standards).



- CBI releases standards for green bonds funding [residential](#) or [commercial](#) buildings.
- EDGE is included as a qualifying certification system.



- [EU Taxonomy](#) was launched by the European Commission to guide sustainable finance.
- EDGE definition of 20% quantified resource efficiency is aligned with EU Taxonomy Principles.



- Used by property developers and investors to obtain data on the performance of their investments.
- EDGE can be used completing the [Real Estate Assessment](#) or the [Developer Assessment](#).



- Global disclosure system for [investors](#), [companies](#), [cities](#), [states and regions](#) to manage environmental impacts.
- Protocol for reporting to CDP using EDGE is forthcoming, following joint webinar.



# IFC'S MARKETING SUPPORT

+ Issue a Press Release

+ Submit a Project Study

+ Launch a Social Media Campaign

+ Publish Your Story

+ Send an Email

+ Include EDGE in Your Mission

+ Shoot a Video

+ Use EDGE in Your Sales Strategy

+ Construct an On-site Billboard

+ Add EDGE to Your Showroom

+ Win an Award

+ Speak at a Conference

+ Hold a Certification Ceremony

Further resource: [EDGE Marketing Toolkit](#)



IFC ALSO HAS RESOURCES FOR BUILDING RESILIENCE



<https://www.resilienceindex.org/>

Training and Promotional Video on  
[Innovate4Climate Platform](#)

# DONOR ACKNOWLEDGMENTS

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The following major donors have demonstrated their generous support of the EDGE program:



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs,  
Education and Research EAER  
**State Secretariat for Economic Affairs SECO**

*IFC also wishes to express its appreciation to the following donors:*

*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, the support of the GEF-IFC Earth Fund Platform and the Energy Sector Management Assistance Program (ESMAP) of the World Bank helped seed EDGE.*

The following donors have demonstrated their generous support of the Green Bond Technical Assistance Program:

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# CASE STUDY: SALVADOR, BRAZIL – DISCOUNTED PROPERTY TAX



**City:** Salvador

**Building Typology:** Residential

**Government Entity:**  
City of Salvador

**Incentive:**

Point-based system for a 5%, 7% or 10% discount on property taxes with re-application each year; certification guarantees a 7% discount.

**Available Certification Systems:**  
ACQUA, CASA AZUL, EDGE, GBC BRASIL, LEED

Source: IFC EDGE [Government Pages](#)

## CASE STUDY: SEKONDI-TAKORADI, GHANA – LOWER PERMIT FEES



**City:** Twin City of Sekondi Takoradi

**Building Typology:**  
Residential & Commercial

**Government Entity:**  
Mayor's Office

**Incentive:**  
30% reduction in permit fees.

Source: IFC EDGE [YouTube Video](#)

# CASE STUDY: LIMA, PERU – HEIGHT BONUS INCENTIVE



**City:** Lima (Miraflores)

**Building Typology:**  
Residential & Commercial

**Government Entity:**  
District Municipality of Miraflores

**Incentive:**  
15% extra floor ratio (FAR)

**Available Certification Systems:**  
EDGE, LEED, BREEAM

Source: IFC EDGE [Government Pages](#)

# EDGE DELIVERS VALUE

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FINANCIAL CALCULATOR



COST EFFECTIVE



SIMPLIFIED COMPLIANCE



EASY IMPACT REPORTING



REDUCED PROCESSING



WORLD BANK GROUP BRAND



# CERTIFICATION WORKFLOW FOR DEVELOPERS



## PRELIMINARY EDGE CERTIFICATE OR EDGE ADVANCED CERTIFICATE

- EDGE co-marketing and project study for sales promotion
- EDGE Advanced certificate automatically granted to projects with 40% energy savings

## FINAL EDGE CERTIFICATE OR EDGE ADVANCED CERTIFICATE

- Asset certification does not need to be renewed

## ZERO CARBON CERTIFICATE

- Project must have one year of operation & 75% occupancy
- Must renew operational certificate every 2-4 years

