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GREEN, RESILIENT, AND INCLUSIVE HOUSING



Creating Markets, Creating Opportunities

AGENDA

1. Business case for green and resilient housing
2. Case studies
3. EDGE Green Buildings Program
4. Building Resilience Index
5. Pillar Global Housing Platform

BUSINESS CASE FOR GREEN AND RESILIENT HOUSING

GREEN BUILDING DEFINITIONS ACCORDING TO REPUBLIC ACT NO 11201

GREEN HOUSING

- buildings designed and constructed to be environmentally sustainable, using materials and technologies that minimize environmental impact
- energy-efficient cooling systems, sustainable building materials, and renewable energy sources such as solar panels

RESILIENT HOUSING

- refers to buildings designed and constructed to withstand and recover quickly from natural and man-made disasters
- backup power generators, storm-resistant windows and doors, and reinforced structures

INTERNATIONAL RESILIENCE DEFINITIONS

Likely not withstand most applicable hazards, even at moderate level.

Will likely withstand some applicable hazards at a moderate level.

Will likely withstand some applicable hazards at a moderate-high level.

Will likely withstand all applicable hazards at high level.



The rating followed by '+' indicates that the building meets all requirements of the identified Building Resilience Index rating, plus **recommended operational continuity measures**.

* Probable Maximum Loss (PML) current replacement cost, including structural and equipment, excluding operational costs.

INTERNATIONAL GREEN BUILDING DEFINITIONS

Finance Standards



Reporting Standards



CERTIFIED GREEN

20%

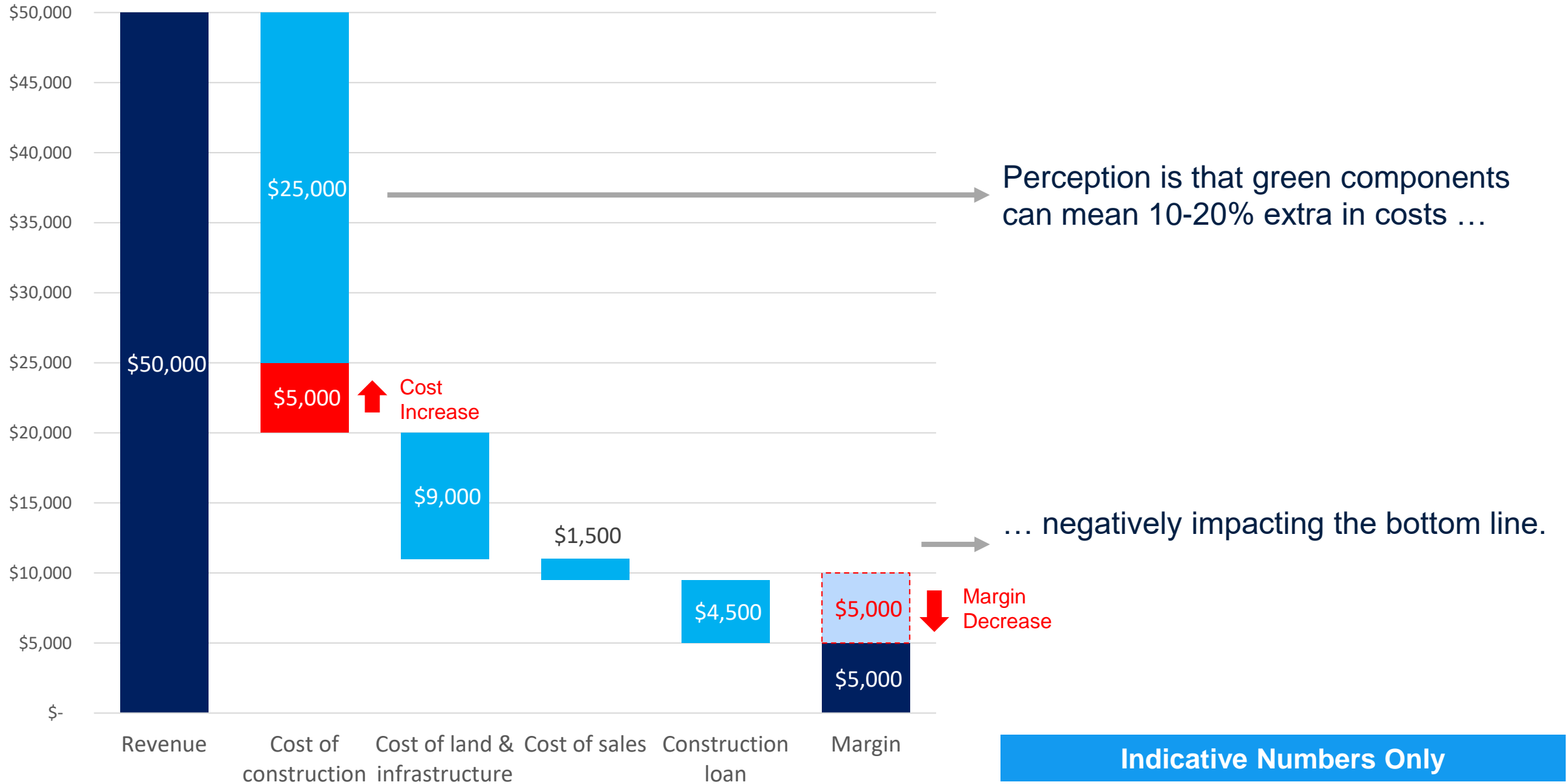
**BETTER PERFORMANCE
COMPARED TO BASELINE**



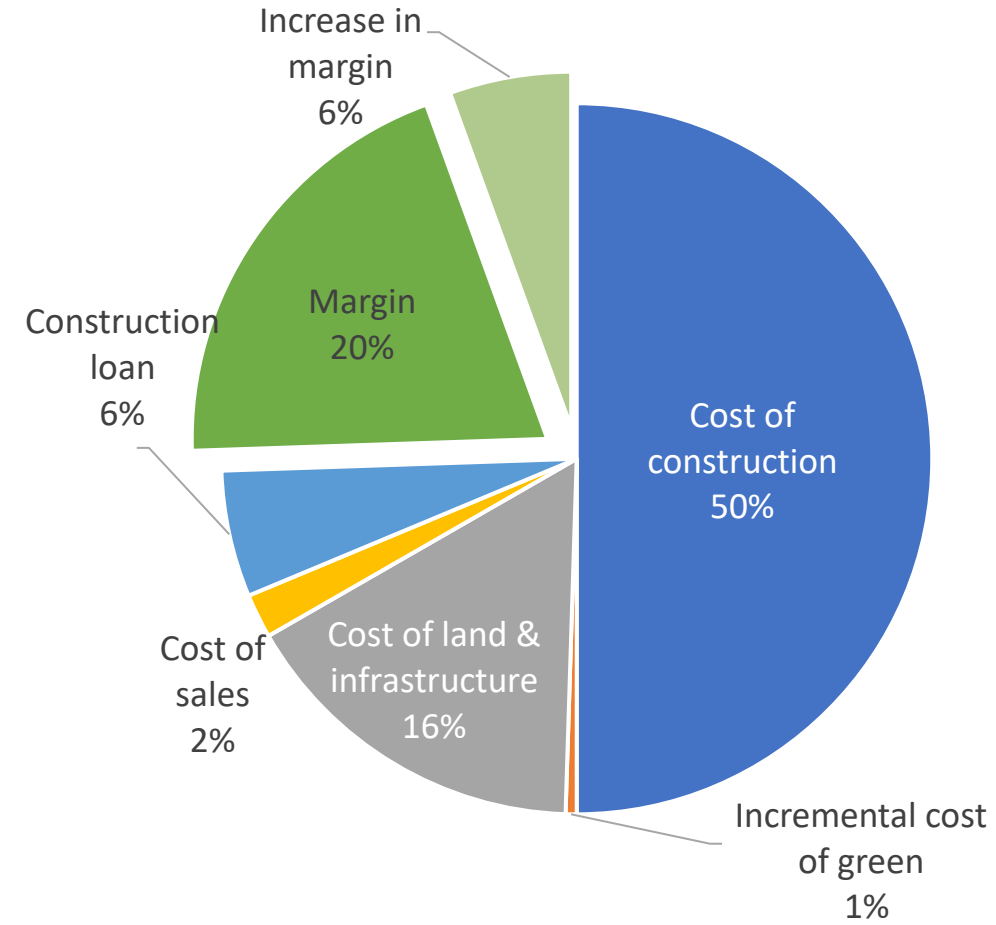
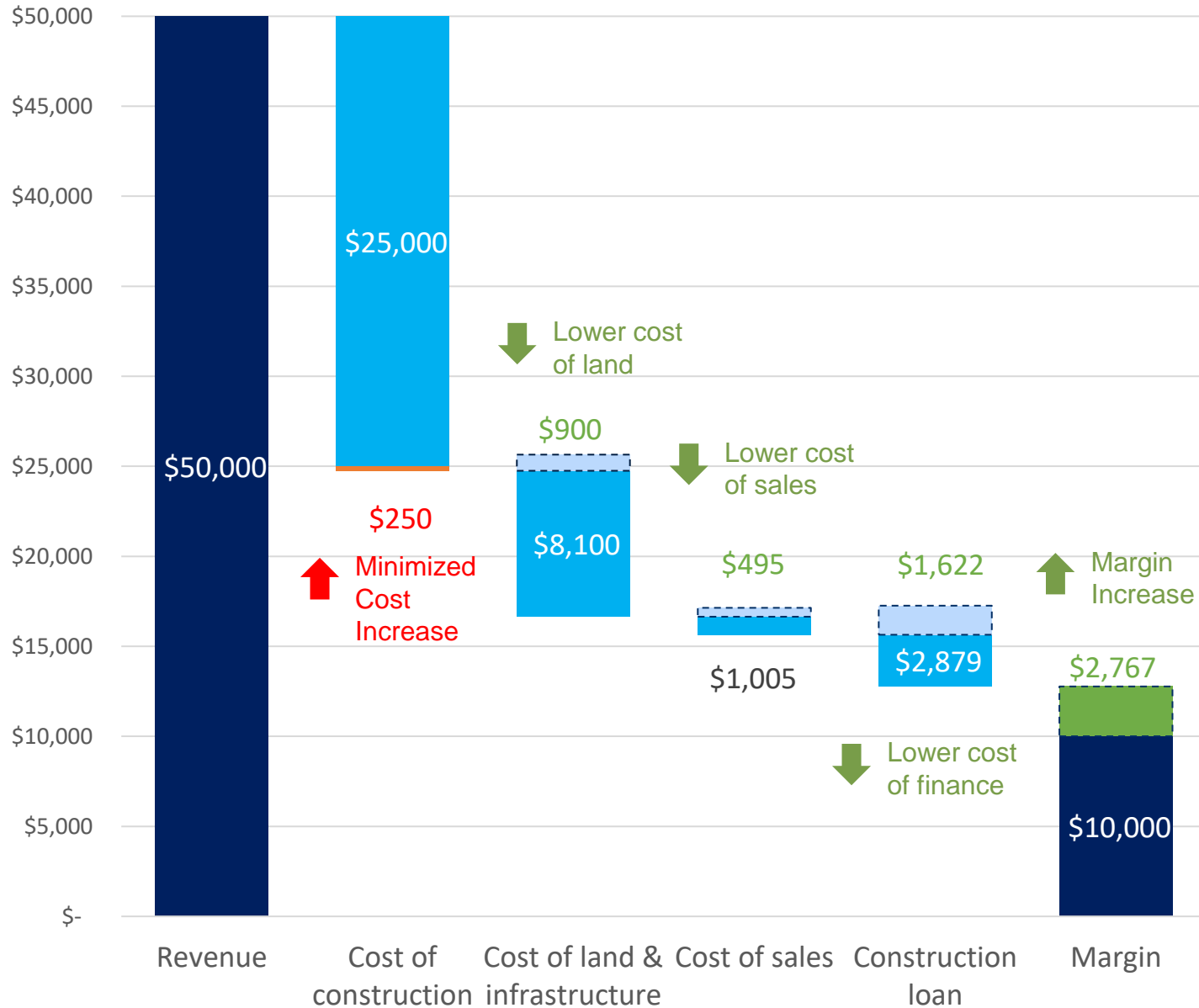
IMPACT REPORTING

Further resource: [Green Buildings – A Financial and Policy Blueprint for Emerging Markets](#)

DEVELOPERS BELIEVE GREEN HOUSING MAKES NO RETURNS



BUT INVESTING IN GREEN HOMES BRINGS MULTIPLE RETURNS



Indicative Numbers Only

DRIVERS OF PROFITABILITY FOR GREEN AND AFFORDABLE HOUSING



Access to international green finance flows for better financing terms



Minimized incremental cost through early planning



Faster sales through market differentiation



Savings on utility bills for owners and renters








Lowered default rates and superior collateral value for green mortgages



Government incentives

DRIVERS OF PROFITABILITY FOR GREEN AND AFFORDABLE HOUSING

	Main stakeholder			
Profitability driver	Government	Lender	Developer	Homebuyer
 Access to green finance	Attract better financing & increase access	Attract better financing	Attract better financing	Receive pass-through better financing terms
 Minimized costs	Minimize costs for socialized housing		Minimize costs for a differentiated product	
 Faster sales			Reduce total cost of financing	
 Utility bill savings	Lower burden on utilities	Leads to lower default rates	Marketing for differentiated product	Increase in disposable income
 Lowered default rates	Possibility for regulatory change	Possibility for financial innovation		Receive pass-through better financing terms

CASE STUDY: COLOMBIA



Investment Program by Bancolombia and Davivienda:

- Common green building **standard**
- **Incentivized** loans to developers
- **Education** and awareness campaigns to developers
- **Technical assistance**
- Partnerships and incentives for **green mortgages**

Government program:

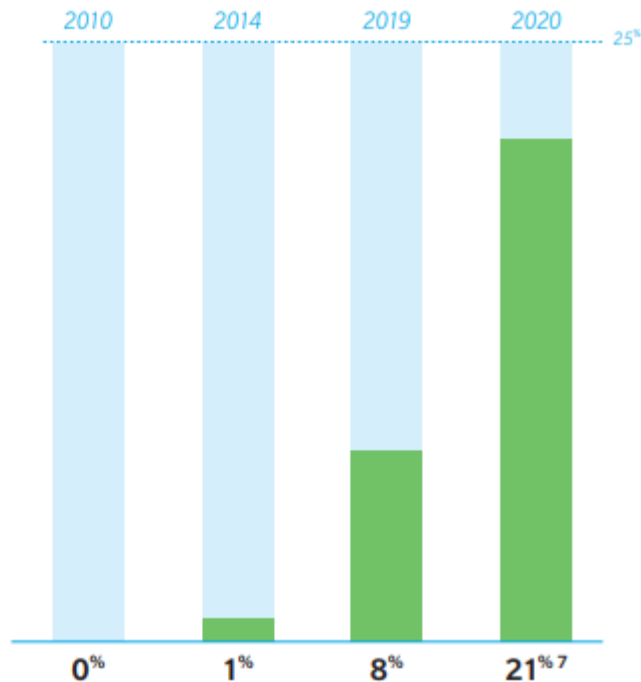
- **Tax incentives** for technical solutions

Results:

- **20% of new construction** certified as green
- **11.6 million m²** of certified residential space as of 2021
- **62%** in affordable housing

Further resource: [Green buildings through green bonds in Colombia](#)

Share of certified new green buildings among all new developments (based on square meters)





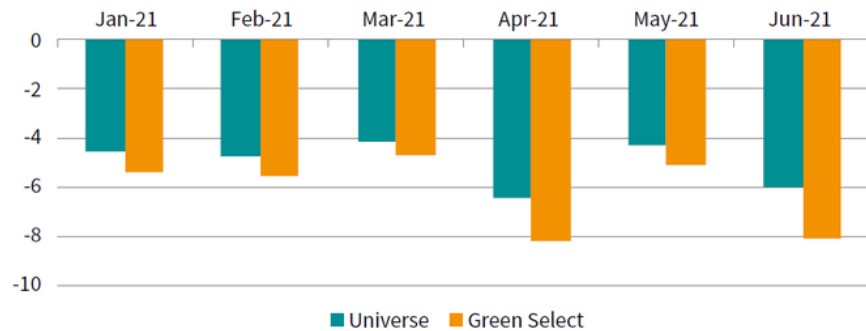
1 ACCESS TO INTERNATIONAL GREEN FINANCE FOR BETTER FINANCING TERMS

Greenium for Green Finance



Select Partner Case Studies

Greenium by index (bps)



Source: IHS Markit, Environmental Finance, Climate Bonds Initiative



Bond 2.7x oversubscribed, access to 72 new investors



Bond 1.5x oversubscribed, access to institutional investors, DFIs, etc.



NHMFC
National Home Mortgage
Finance Corporation

Issues green bond for secondary mortgage market

Further resources:

- [Climate Bonds Initiative – Green Bond Pricing](#)
- [Training: Green Bonds for Green Buildings](#)



Creating Markets, Creating Opportunities

CASE STUDY: CAPE TOWN, SOUTH AFRICA



- Supported by South Africa's Green Fund



- **Public-Private Partnership** model: city made land available for social housing
- Rental costs at affordable \$53-\$158
- Significant **savings** in part due to lower utilities
- Profiled in **video by BBC**

Energy

Reduced window to wall ratio, insulated roof and external walls, heat pump for hot water, energy-saving lighting and lighting controls for common areas and outdoors.

Water

Low-flow showerheads, low-flow faucets for kitchen sinks and dual-flush water closets.

Materials

Hollow core precast slab for flooring, micro concrete tiles on steel rafters for roof construction and solid dense concrete blocks for internal and external walls.

Further resource:

[BBC Video – Building a Better Future
Belhar Gardens case study](#)



Creating Markets, Creating Opportunities



2 MINIMIZED INCREMENTAL COST THROUGH EARLY PLANNING

PERCEPTION: *Very high incremental costs, 20-30% additional*

REALITY: *Less than 1% of total costs*

IHS South Africa	▪ Less than 1% of total costs
VINTE Mexico	▪ About 1% of total costs
CIPUTRA Indonesia	▪ 4.7% of total costs
CAPITAL HOUSE Vietnam	▪ 1% of total costs



Creating Markets, Creating Opportunities

Further resource: [Green Buildings – A Financial and Policy Blueprint for Emerging Markets](#)



CASE STUDY: IMPERIAL HOMES, PHILIPPINES



- Uses the Danish **Connovate construction system** for quicker construction
- Homes sell for about **\$28,000**
- Each unit is equipped with **PV system**
- Residents are able to sell electricity back to the grid thanks to **net metering regulation**
- Founding pledge for Building Resilience Commitment

Energy

Reduced window-to-wall ratio and solar photovoltaics.

Water

Dual-flush water closets and low-flow showerheads and faucets for washbasins and kitchen sinks.

Materials

Composite in-situ concrete and steel deck for the floors, steel sheets on steel rafters for the roof, cement fibre boards on metal studs for internal walls, and precast concrete panels for external walls.

Further resources:

[Imperial Homes Case Study](#)
[Building Resilience Commitment](#)



Creating Markets, Creating Opportunities



3 FASTER SALES THROUGH MARKET DIFFERENTIATION

Marketing Differentiation

EDGE marketing toolkit with templates for:

- model apartment showcase
- press coverage
- social media campaign, etc.

Government Incentives

- Lower down payment requirements for green homes.
- Case study of Indonesia: 5% lower loan-to-value ratio.

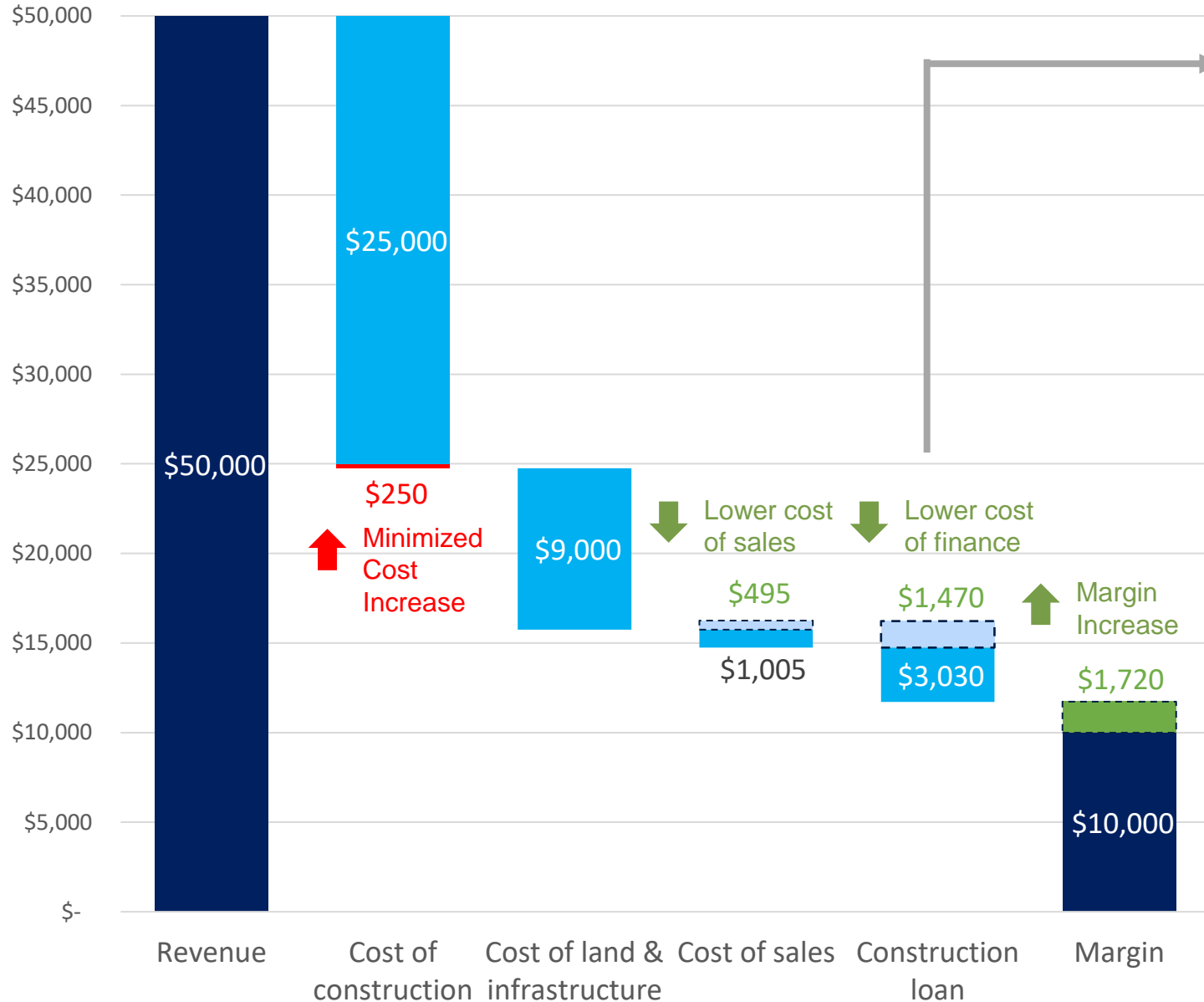
QUICKER SALES CYCLE

FASTER LOAN REPAYMENT

LOWERED COST OF FINANCING

Further resource: [EDGE Marketing Toolkit](#)

FASTER SALES LEAD TO LOWERED COST OF CAPITAL



With faster sales, developers can repay their construction loan more quickly, and save on their cost of finance.



CASE STUDIES:



Indicative Numbers Only

CASE STUDY: CAPITAL HOUSE, VIETNAM



- **20% faster sales**
after IFC branding partnership
- Reduced financing costs by **3%**
- Achieved 30% **efficiency** in energy and water with only **1% incremental cost** of construction
- **Stimulus program** for buyers with 0% interest rate
- Winner of **Financial Times** Award

Energy

Reduced window to wall ratio; reflective paint for external walls; external shading devices; insulation of roof; insulation of external walls; energy-saving lighting for external spaces, internal spaces and common areas; lighting controls for common areas and outdoor spaces and solar photovoltaics.

Water

Low-flow showerheads, low-flow faucets, and dual-flush water closets.

Materials

Concrete filler slab for flooring and cellular light-weight concrete blocks for internal walls.

Further resource: [Capital House receives international recognition](#)





4 SAVINGS ON UTILITY BILLS FOR RESIDENTS AND RENTERS



Development:	Ravenswood	Candlewood	Goedeberg
kWh savings	54%	68%	41%
Total savings per year (\$)	\$128	\$181	\$338

Energy

Roof insulation, reduced window to wall ratio, solar hot water collectors and smart meters.

Water

Low-flow showerheads, low-flow faucets and dual-flush water closets.

Materials

Hollow core precast floor slabs, steel sheets on timber rafters, facing brick and solid concrete blocks for external walls, and solid dense concrete blocks for internal walls.

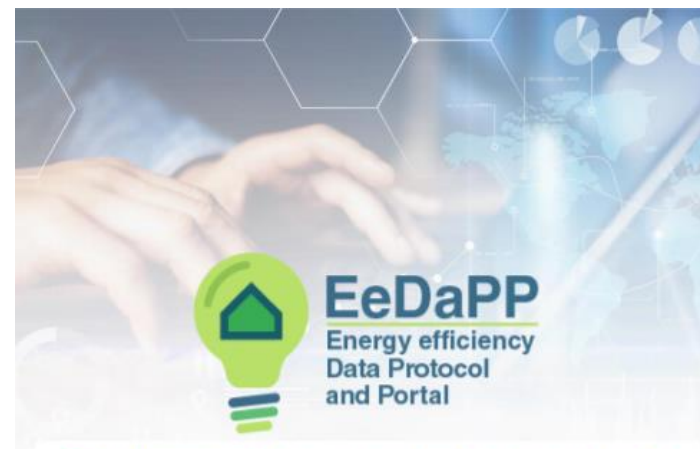
Further resource: [Housing Finance International Journal](#)



5 LOWERED DEFAULT RATES FOR GREEN MORTGAGES



RESEARCH REPORT March 2013
Home Energy Efficiency and Mortgage Risks
Research funded by the Institute for Market Transformation



Final report on correlation analysis
between energy efficiency and risk

Default risks on average 32% lower
in energy-efficient homes

More efficient homes are at
lower risk of default

Home owners use **utility savings** toward **mortgage repayment**


Further resources:

- [Home Energy Efficiency and Mortgage Risks](#)
- [Correlation analysis between energy efficiency and risk](#)

Green Mortgage Scenarios	Base Case: Conventional Home, Conventional Mortgage	Scenario 1: Green Home, Conventional Mortgage
Price of conventional home	15,000	15,000
Incremental cost of green measures	-	150
Price of green home	15,000	15,150
Down payment (% of price)	20%	20%
Down payment (\$)	3,000	3,030
Loan amount	12,000	12,120
Interest rate	18%	18%
Term (years)	10	10
Monthly mortgage	216	218
Monthly utility savings	-	-15
Monthly cost of ownership	216	203
Change in resident's monthly cost of ownership	-	-6%
Change in bank's monthly income	-	1%

 Price Increase

 Mortgage Increase

 Lower utility bills

 Lower cost of ownership

The larger monthly mortgage is offset by lower utility bills for lower overall monthly cost of ownership.

Green Mortgage Scenarios	Base Case: Conventional Home, Conventional Mortgage
Price of conventional home	15,000
Incremental cost of green measures	-
Price of green home	15,000
Down payment (% of price)	20%
Down payment (\$)	3,000
Loan amount	12,000
Interest rate	18%
Term (years)	10
Monthly mortgage	216
Monthly utility savings	-
Monthly cost of ownership	216
Change in resident's monthly cost of ownership	-
Change in bank's monthly income	-

Scenario 2: Green Home, Developer Absorbs Incremental CapEx
15,000
150
15,000
20%
3,000
12,000
18%
10
216
-15
201
-7%
0%

■ Price Stays the Same

↓ Lower utility bills

↓ Lower cost of ownership

Developers usually choose to absorb incremental CapEx and offset the additional costs through faster sales

CASE STUDIES:





CASE STUDY: VINTE, MEXICO



- Affordable **communities** with hospitals, parks, schools
- Financing through a **green bond** listed on Mexico Stock Exchange
- Bond had **50% more interest** than funding - growing interest from pension funds, development banks, and commercial banks
- **Fortune Magazine's** recognition

Energy

Reduced window to wall ratio, hot pump for hot water generation and energy-saving lighting.

Water

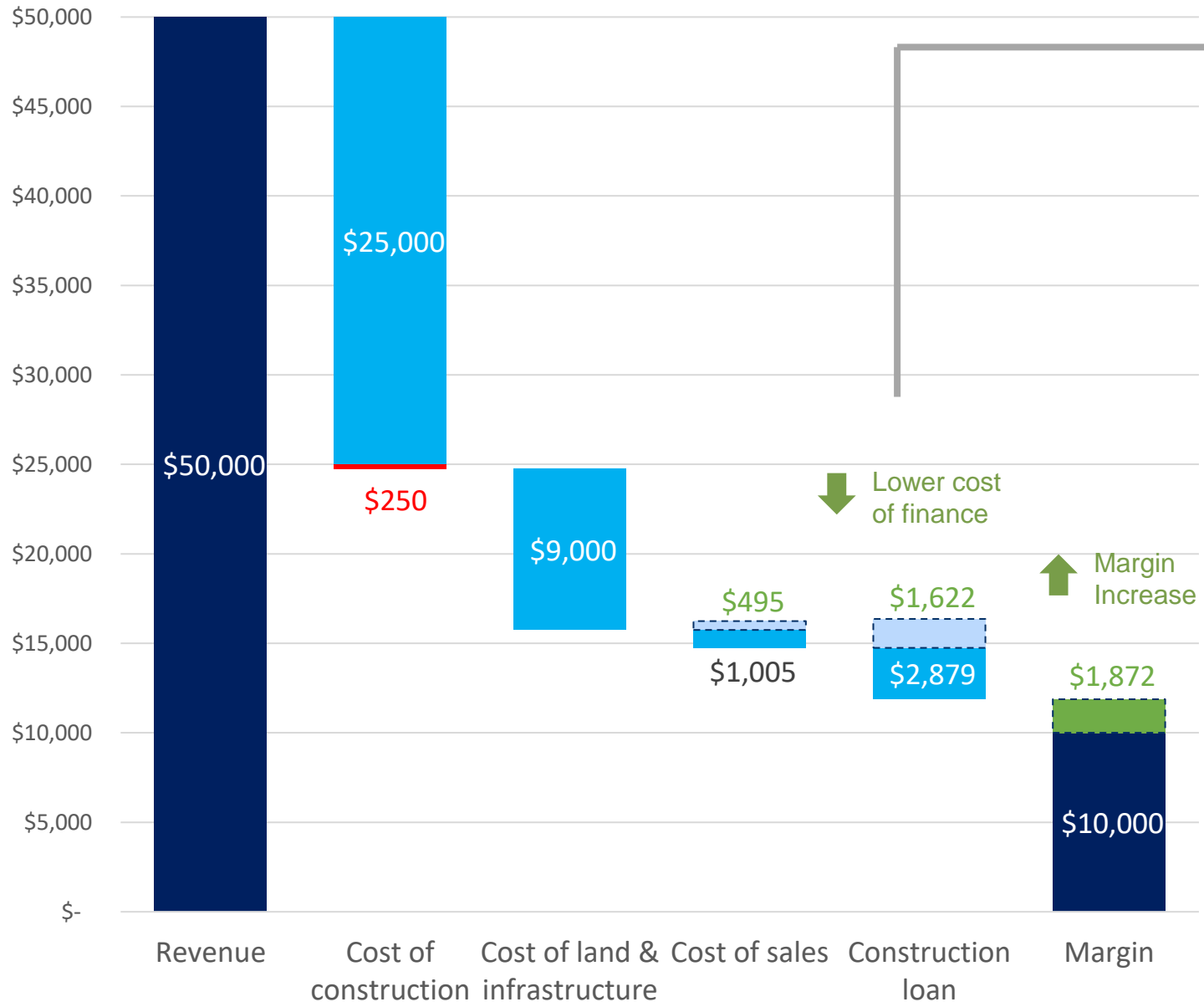
Low-flow showerheads and faucets and water-efficient single-flush water closets.

Materials

Controlled use of concrete for internal and external walls and finished concrete flooring.

Further resource: [Green homes in Mexico](#)

INVESTORS ARE LOWERING INTEREST RATES FOR GREEN



Investors are lowering interest rates for green projects, in order to fulfill their green pledges, to pass on their lowered cost of capital, or to try to gain market share.



CASE STUDIES:



Indicative Numbers Only

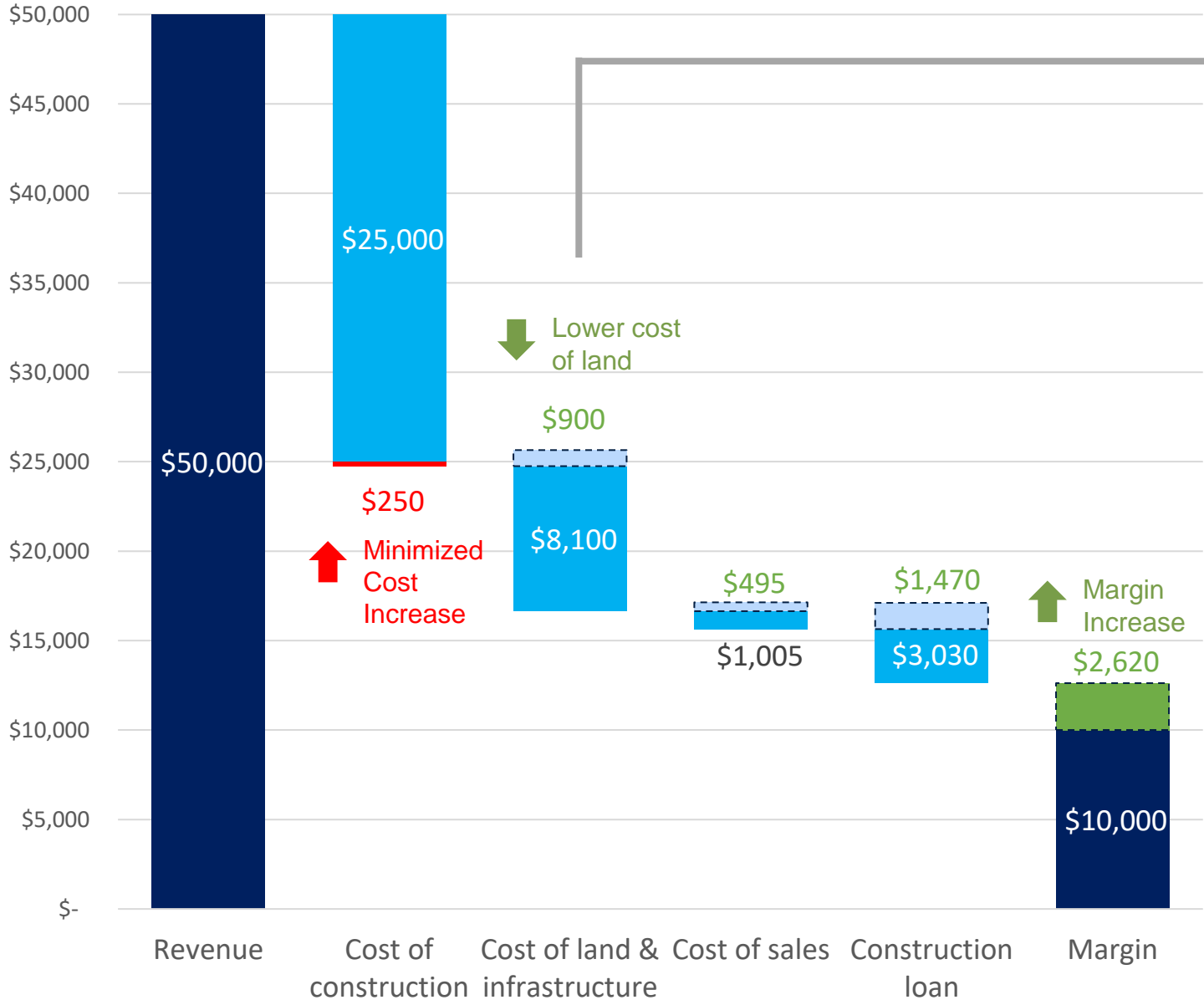
CASE STUDY: NEDBANK, SOUTH AFRICA



- **\$63 million green bond** anchored by IFC
- Green bond funds green construction finance; Nedbank **cross-sells** through preferential rates for green mortgages
- Developers receive **financial rebates and technical assistance** for green certification
- Assistance provided through **MAGC Program** (available in Côte d'Ivoire, Egypt, Ghana, Kenya, Morocco, Nigeria, South Africa, Senegal)

Further resource: [Nedbank Green Bond Press Release](#)

GOVERNMENT INCENTIVES BRING DOWN COSTS



Governments can provide incentives, including non-fiscal ones such as bonus density, in order to bring down the cost of construction.



CASE STUDIES:



Indicative Numbers Only










CASE STUDY: SAN BORJA, PERU

- Zone-based **height bonus** for one or two extra floors if project is certified
- **Non-fiscal incentive** is valuable to all: developers sell more apartments on same land, consultants get business, government takes in more real estate tax
- Over **15,000 units** certified nation-wide for a total of **1.56 million m2**
- **\$387,000** in annual utility cost savings for residents

Further resource: [San Borja Incentive](#)

GLOBAL RESULTS (as of June 2023)

Focus Countries	Residential Space in the Affordable Housing Segment Certified by EDGE (million m ²)	Number of Units in the Affordable Housing Segment Certified by EDGE	All Residential Floor Space Certified by EDGE (million m ²)	All Residential Units Certified by EDGE
Colombia 	7.24	116,200	11.64	16,000
Indonesia 	0.41	8,500	0.82	13,000
Mexico 	1.36	17,500	2.36	27,500
Peru 	0.20	2,500	1.56	15,000
Philippines 	0.22	3,000	0.25	4,000
South Africa 	0.65	11,000	3.61	48,000
Vietnam 	1.86	18,000	2.53	22,500
Other Countries	2.88	33,300	6.40	224,000
Global Total	14.81	210,000	29.17	370,000

Numbers as of February 2021. Further resource: [EDGE website](#)

EDGE GREEN BUILDINGS BUILDING RESILIENCE INDEX



Creating Markets, Creating Opportunities



Green & Resilient Buildings

IFC has a four-part strategy to support green building growth



Residential projects registered or certified with EDGE in the Philippines



Sevina Park Villas
Biñan, Laguna



Victoria Highlands
Iriga City, Camarines Sur



Pueblo de Oro Residences
Malvar, Batangas



Solana Verde
Silang, Cavite



Vion Towers
Makati City



Miramonti Green Residences
Santo Tomas, Batangas



Grand Strikeville 4
Bacoor, Cavite



Bluhomes Gakakan
Caloocan City



Cielo Verde
Padre Garcia, Batangas



38 Park Avenue
Cebu City

Case study:
Imperial Homes
portfolio EDGE
certification



Via Verde Batangas

- Imperial Homes uses 'Connovate' technology developed for fast and quality construction.
- Company worked on Net Metering rules which make even stronger case for solar powered homes, as home-owners can sell back to grid.
- Imperial Homes is certifying their units through a simplified portfolio approach, utilizing similarities in design.
- Measures include solar panels, low WWR, precast panel technology, low-flow faucets.

Utility savings

*allows homebuyers
to start their own
micro enterprises*

Office buildings registered or certified with EDGE in the Philippines



Arthaland Century Pacific Tower



Cebu Exchange



Savya Financial Center



A Space



Damosa Diamond Tower



Faustina Center



Menarco Tower



NEO Group Portfolio

Case study:
Publicly-listed
company,
ArthaLand is a
pioneer in
the development
of premium
sustainable projects



ArthaLand Century Pacific Tower (ACPT)

- The company's flagship building in Manila is the only triple-certified project in the Philippines, with EDGE Zero Carbon, LEED Platinum, and BERDE 5-star certification
- The office is projected to have energy savings of 45% with 100% offsite renewable energy procurement from a hydroelectric plant
- Green solutions include higher thermal performance glass, occupancy sensors and daylight photoelectric sensors, condensate water recovery, and a grey water treatment and recycling system
- ACPT is able to charge some of the highest rents for office space in the country

Predicted Savings of
EDGE Certification
ArthaLand Century Pacific Tower

45%
Energy Savings

100%
Energy Savings through Offsite
Renewable Energy Sources

64%
Water Savings

34%
Less Embodied Energy in Materials

Case study:
NEO as upcoming
global EDGE Zero
Carbon Champion
with seven office
buildings certified



NEO Office Portfolio

- NEO has embarked on a portfolio EDGE Zero Carbon certification, becoming the first EDGE Zero Carbon Champion in the world
- Using the EDGE App to identify retrofit measures to further increase energy efficiency of buildings, to align with EDGE Zero Carbon standard
- Has renewed power supply agreement (PSA) with Aboitiz Power Corporation in July

Predicted Savings of
EDGE Certification
NEO Office Portfolio

>40%

Energy Savings

100%

Energy Savings through Offsite
Renewable Energy Sources

>20%

Water Savings

>20%

Less Embodied Energy in Materials

BCDA
Bases Conversion and
Development Authority

**NEW
CLARK
CITY**

CRK

Clark International Airport

EDGE Certified



Who's certifying with EDGE

- 50 projects certified, 845,000 sqm (423,000 sqm was certified in CY2021)
- 3.77 million sqm currently registered



Can be used for any building typology



EDGE is growing fast because it's a tool to tap into green finance

EDGE aligns with all the Major International Green Finance Standards



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

EDGE Simplifies the Green Bond Issuance Process

Criteria	EDGE can be used to establish criteria for use of proceeds.
Second Opinion	EDGE has been accepted by international bodies as a second opinion, streamlining the process for the selection of assets.
Allocation Process	EDGE certification ensures an easy compliance process without adding an extra burden on the issuer.
Reporting	EDGE supports environmental impact reporting through the EDGE software.

The EDGE Team is also available for Green Bond Support, providing issuers with technical support.

Case study:
NHMFC launches
BALAI BERDE using
EDGE as criteria



SECTIONS Tuesday, June 15, 2021 INQUIRER.NET TODAY'S PAPER

NEWS OPINION SPORTS LIFESTYLE ENTERTAINMENT BUSINESS TECHNOLOGY GLOBAL NATION

INQUIRER FEATURES

BALAI BERDE promotes resilient recovery in PH housing with IFC's EDGE

NHMFC National Home Mortgage Finance Corporation

NHMFC BALAI BERDE and EDGE

- Liquidity facility available to public or private housing loan originators using EDGE as criteria
- NHMFC to pay the originator the outstanding principal balance (OPB) of the residential portfolio
- Up to P3 million or P6 million per housing unit
- Loan term: up to 30 years

Benefits for borrowers

- **3-6% fixed interest rate**
- **0.5-1% interest subsidy**

Free technical assistance and marketing support

An architectural rendering of the Citra Landmark residential complex. The image shows several tall, modern apartment buildings with a mix of light and dark facades. The windows are illuminated from within, suggesting dusk or dawn. In the foreground, there is a landscaped area with palm trees, a walkway, and a sign that reads "CITRA LANDMARK". A road with cars is visible on the left. The sky is a mix of blue and orange, indicating a sunset or sunrise. A green speech bubble in the top right corner contains the text "EDGE: An International Green Building Certification System".

EDGE:
An International
Green Building
Certification System

Citra Landmark developed by Ciputra Citra Trisula with Asia Green Real Estate as an investor.

EDGE is different from other certification systems



International Acclaim

Integration of the EDGE brand into your marketing efforts distinguishes your projects and brings global prestige.



Cost Calculator

EDGE helps you to decide the best green options and estimate the incremental cost (typically less than 2%).



Focus on Resource Efficiency

EDGE focuses on energy, water, and embodied energy in materials, for a quantitative approach.



Bio-Climatic Modeling

EDGE is location-specific, with climate and lifestyle data for thousands of cities.



Streamlined Process

A shorter certification workflow saves you time, with most required documentation already on hand.

Projects can be Certified Anywhere Around the World

EDGE-certified projects can be found globally



**55 mn
square meters
certified**

**1.2 mn
tCO₂/
year saved**

Certification Systems for Emerging Markets are Needed to Transform the Market at Scale

Only a small number of projects in Emerging Markets go green

There is a need for simple, quick, and affordable system



A metrics-driven, scalable voluntary standard is needed to bring together market players, prove the case for building green, and reward innovative design.



**How to
certify
with EDGE**

The Gerardo Arango S.J. Building – School of Arts at the Pontificia Universidad Javeriana.

EDGE: Excellence in Design for Greater Efficiencies

1. Free Software



Further Resource: [EDGE Software Demo](#)

2. Achievable Standards



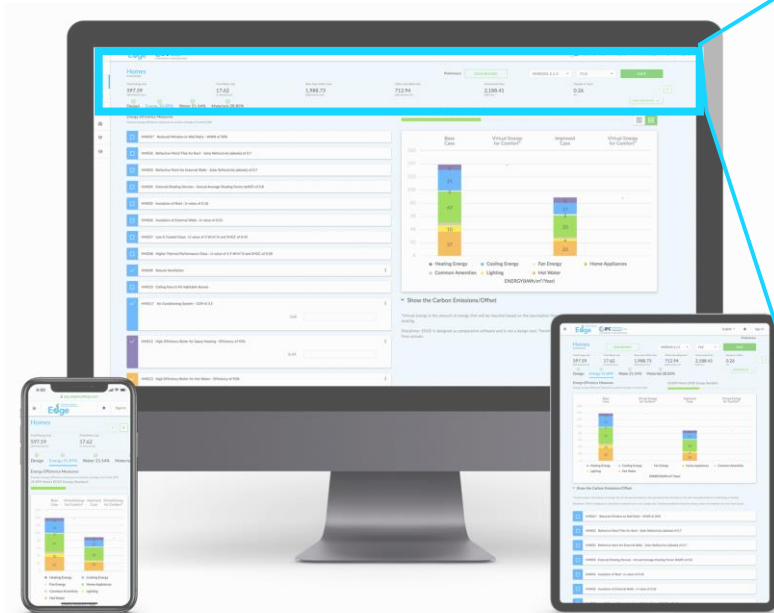
Energy | Water | Materials

3. Verified Green Label



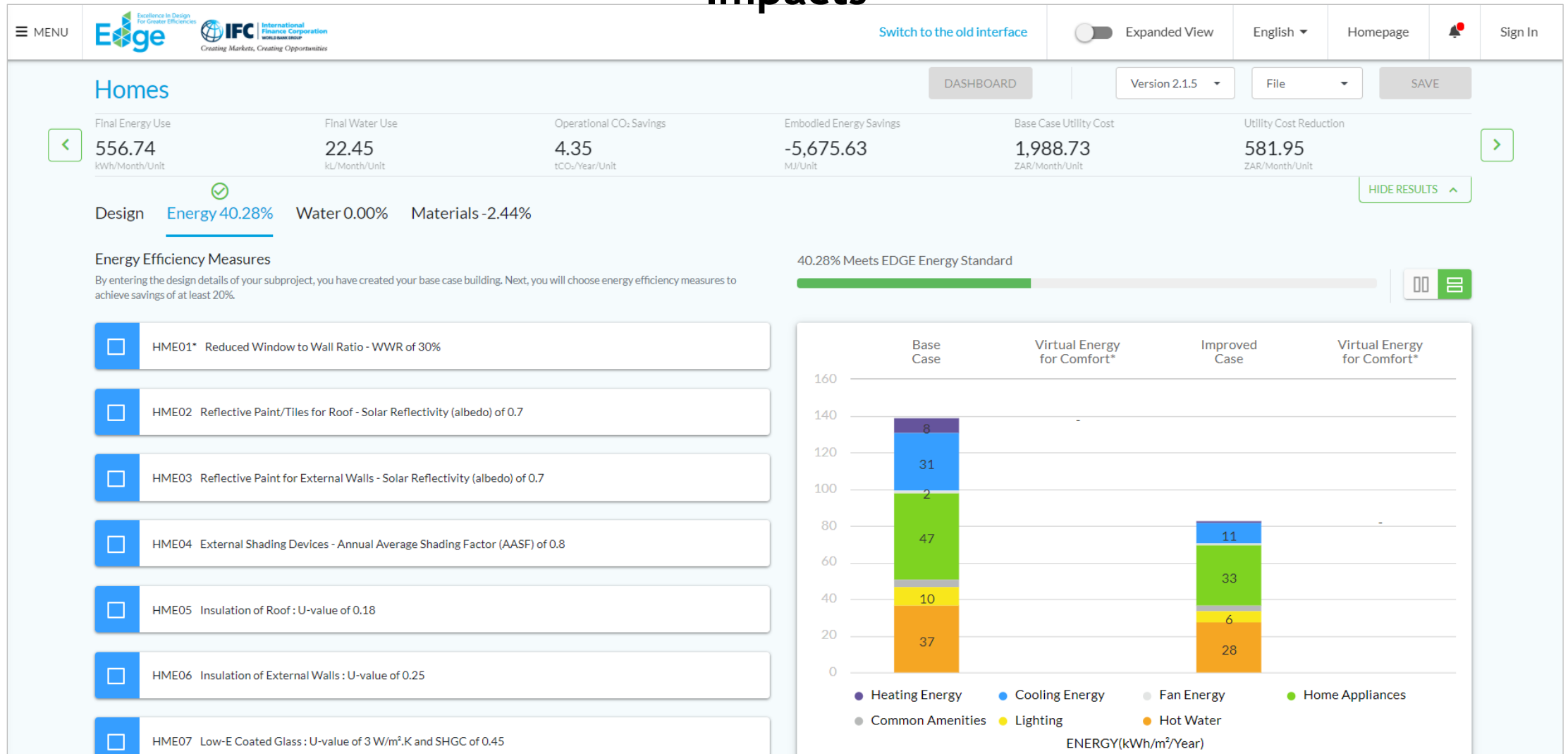
The Free EDGE Software Shows the Payback for Each Efficiency Measure - Reducing Costs and Speeding up Design and Decision-making

Real-Time Feedback on Green Options



<p>✓ Energy 36.52%</p>	<p>✓ Water 32.77%</p>	<p>✓ Materials 47.67%</p>	Progress Toward Certification
<p>Utility Cost Reduction 9,788.45 PAB/Month</p>	<p>Incremental Cost 49,753.26 PAB</p>	<p>Payback in Years 0.42 Yrs.</p>	Incremental Cost and Payback
<p>Embodied Energy Savings 1,056.04 MJ/m²</p>	<p>Energy Savings 506.90 MWh/Year</p>	<p>Water Savings 4,520.42 m³/Year</p>	Energy, Water, & Materials Savings
<p>Operational CO₂ Savings 155.89 tCO₂/Year</p>	<p>Carbon Emissions 265.92 tCO₂/Year</p>		Carbon Tracking

Choose Green Building Strategies and Calculate their Financial and Environmental Impacts



Preliminary and Final EDGE Certification

THIS CERTIFIES THAT
**Clubview Residential Development
Unit 1**
HAS ACHIEVED AN
EDGE PRELIMINARY CERTIFICATE
CERTIFICATE NUMBER
LP4-ZAF-15129665500123-1-P

**Exemplifying achievement in
the following areas:**

25%
Energy Savings
24%
Water Savings
54%
Less Embodied Energy in Materials

EDGE Homes
Excellence In Design
For Greater Efficiencies

DEVELOPED BY
Kale Developments

CERTIFIED BY
Green Building Council South Africa

Brian Wilkinson
Brian Wilkinson, CEO
Date of Issue: 11/1/2015

GREEN BUILDING COUNCIL SOUTH AFRICA

WORLD BANK GROUP
THE WORLD BANK IFC International Finance Corporation

EDGE
Excellence In Design
For Greater Efficiencies

THIS CERTIFIES THAT
**Oficinas Santa Catarina
Parque Finsa Santa Catarina
Nuevo León,
México**

DEVELOPED BY
MIFINSA

HAS ACHIEVED AN
EDGE CERTIFICATE

CERTIFICATE NUMBER
GP2-MEX-17120610012949

WAS AUDITED BY
Maria de Lourdes Salinas
EDGE Software Version: v2.1.5

CERTIFIED BY
Green Business Certification Inc. (GBCI)

Mahesh Ramanujam
Mahesh Ramanujam, President and CEO, Green Business Certification Inc.

GBCI

DATE OF ISSUE
21-FEB-2019

www.edgebuidings.com
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The EDGE standard requires 20% efficiencies in energy, water and materials compared to a local benchmark. Predicted efficiencies are not a guarantee of future operational performance. Energy savings may be associated with virtual energy for comfort depending on the presence of heating and cooling systems. Virtual energy does not contribute savings to utility bills.

This certificate is issued by the Certifier based on information provided by the client and the audit by the Auditor, and is subject to the terms and conditions of the Certifier. Contact edge@ifc.org if the above measures are not consistent with your observation on the project.

WORLD BANK GROUP
THE WORLD BANK IFC International Finance Corporation

EDGE
Excellence In Design
For Greater Efficiencies

ENERGY MEASURES
Reduced Window to Wall Ratio
Reflective Paint/Tiles for Roof
Variable Refrigerant Volume (VRV) Cooling System
Energy-Saving Light Bulbs - Internal Spaces
Energy-Saving Light Bulbs - External Spaces
Occupancy Sensors in Bathrooms, Conference Rooms, and Closed Cabins

WATER MEASURES
Low-Flow Faucets in Bathrooms
Dual Flush for Water Closets in Bathrooms
Water-Efficient Faucets for Kitchen Sinks

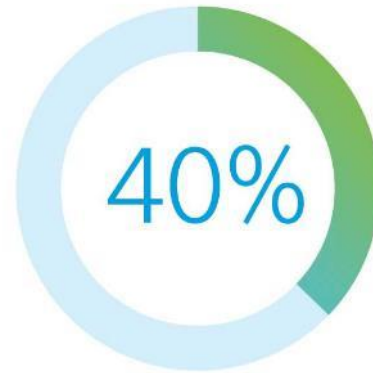
MATERIALS
Floor Slabs - Concrete Filler Slab
Roof Construction - In-Situ Reinforced Concrete Slab
External Walls - Precast Concrete Panels
Internal Walls - In-Situ Reinforced Wall
Flooring - Finished Concrete Floor
Window Frames - Aluminium

There are Three Levels of EDGE Certification



Level 1 - EDGE Certified

20% or more savings in energy, water, and embodied energy in materials.



Level 2 - EDGE Advanced

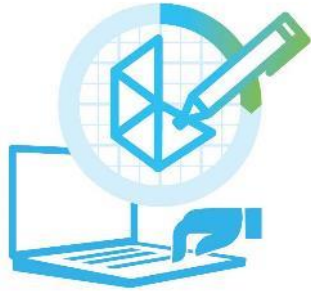
EDGE certified with 40% or more on-site energy savings.



Level 3 - Zero Carbon

EDGE Advanced with 100% renewables or purchased carbon offsets.

The Certification Flow Has Three Steps



STEP 1: Register

Design your project in the EDGE App and click apply for certification.

Hire an auditor directly or request a certifier to assign one. The certifier will follow up to confirm certification pricing.



STEP 2: Certify

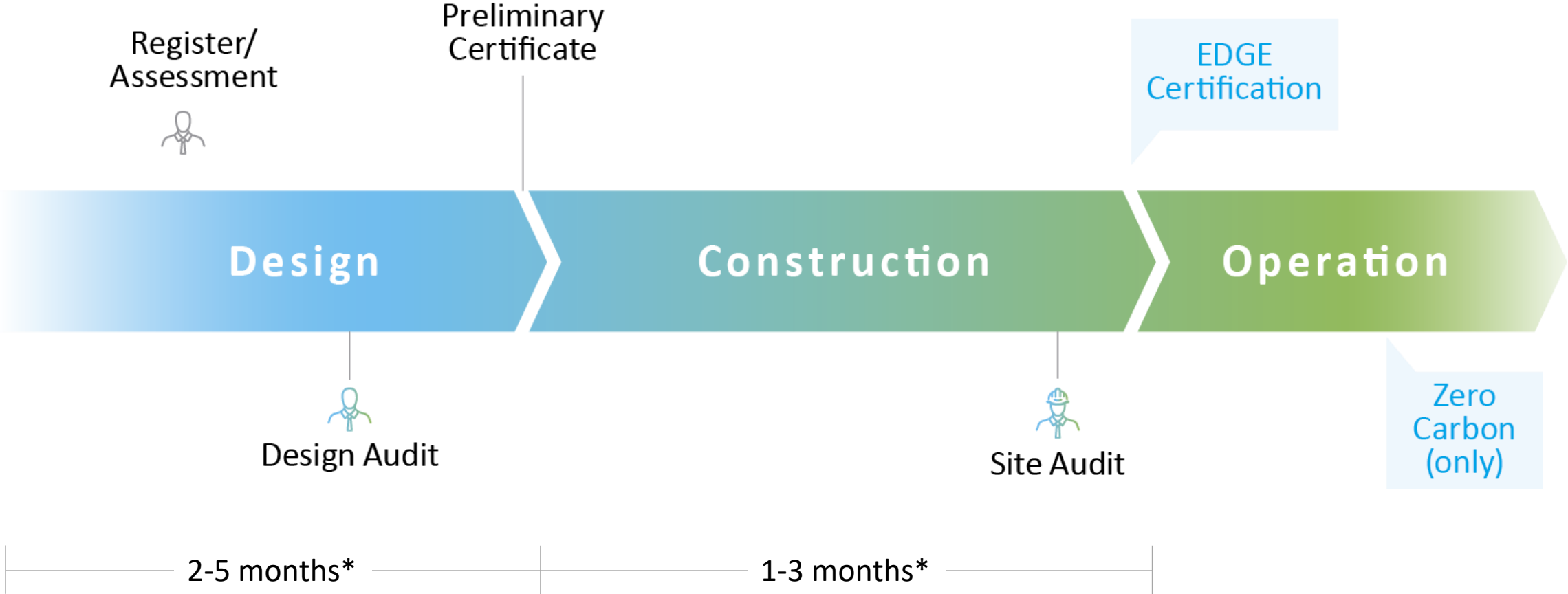
Once your project is registered, upload your documentation into the EDGE App. When you're ready, go to your dashboard and initiate the certification workflow.



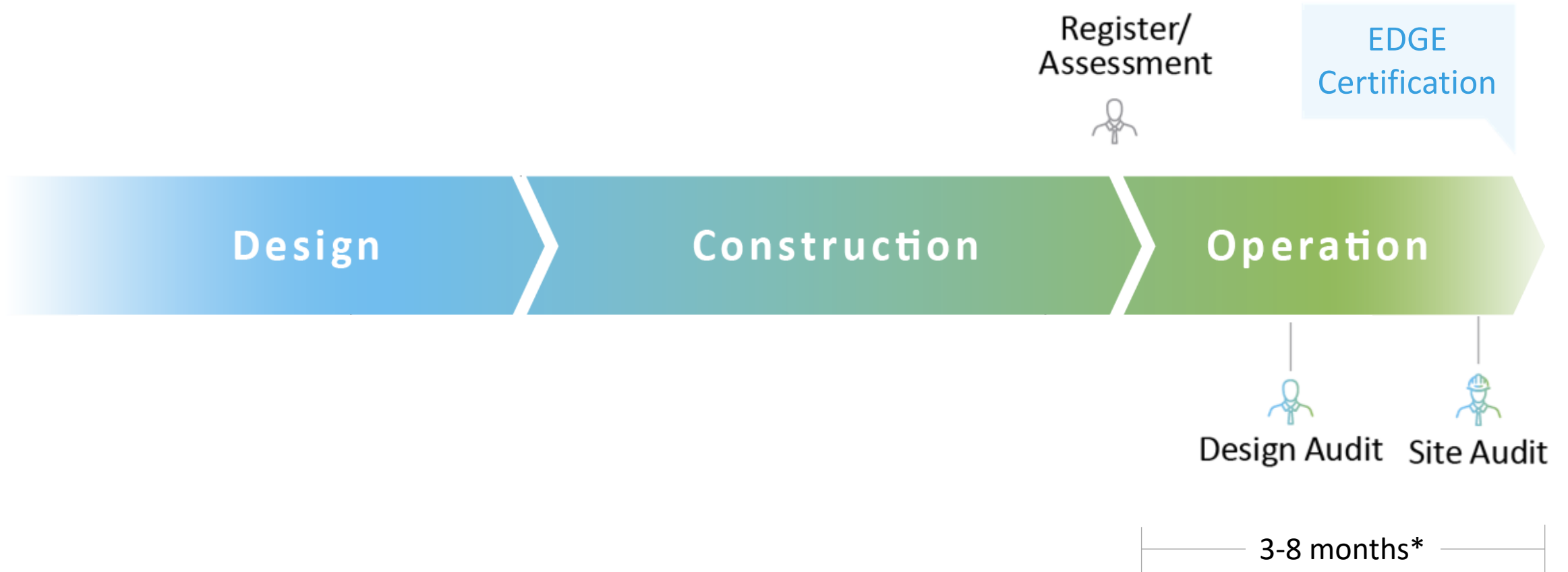
STEP 3: Validate

After you've received a preliminary certificate, repeat Step 2 at the post-construction stage, uploading any fresh design changes and documentation to the EDGE App.

EDGE Preliminary Certificate and Final Certificate For Projects Under Planning/Construction



EDGE Final Certificate For Retrofit Projects/Operational



**Existing projects can go straight to EDGE Final Certification; indicative timelines (based on current projects; may vary depending on quality of submissions; excludes construction period)*

Consider the Valuable Support of an EDGE Expert



Role of EDGE Experts:

- Embedded within the certification process.
- Provide design advice to developers and fulfill compliance requirements.
- Ensure certification awarding within the requisite time frame.

Levels of technical advice possible:

- Basic or advanced services for developers.
- Training for investment officers.
- Comprehensive advisory services agreement with IFC.

Amplify
your voice
with EDGE



Leverage the Promotional Support that IFC Provides Through the Marketing Toolkit



Issue a press release



Submit a project study



Launch a social media campaign



Publish your story



Create a brochure



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 or host a webinar



Hold a certification ceremony

Green and resilient buildings

Started with climate change mitigation using EDGE;
Building Resilience Index expands this work to climate change adaptation



Green buildings
Climate change mitigation



Resilient buildings
Climate change adaptation

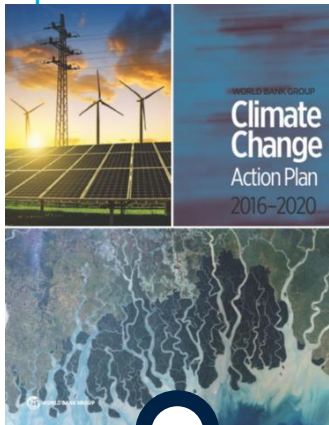


BUILDING RESILIENCE INDEX

LAY THE FOUNDATIONS FOR RESILIENT CITIES,
ONE BUILDING AT A TIME.

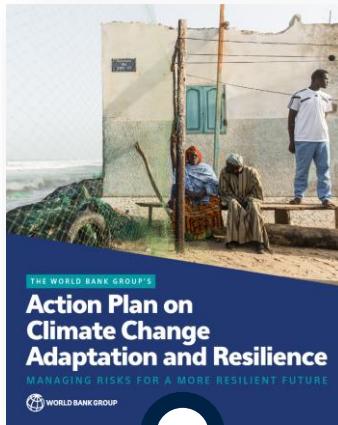


BUILDING RESILIENCE INDEX'S RELATION TO WBG STRATEGY



Priority III. Increase its investments with climate co-benefits, focusing on a few high-impact areas and **rebalancing its portfolio with more focus on adaptation and resilience**

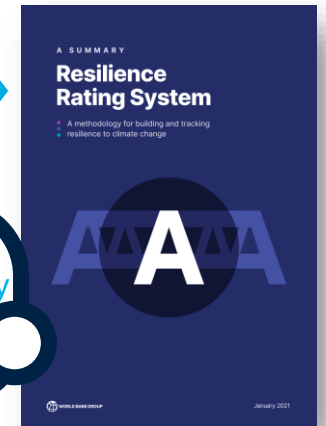
June 2016



Core objectives:

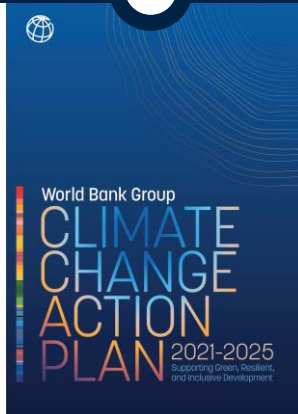
- Boost adaptation financing - direct adaptation climate finance to reach \$50 billion over FY21–25.
- Drive a mainstreamed, whole-of-government programmatic approach
- **Develop a new rating system to incentivize investments in adaptation and resilience and improve tracking.**

January 2019



January 2021

June 2021



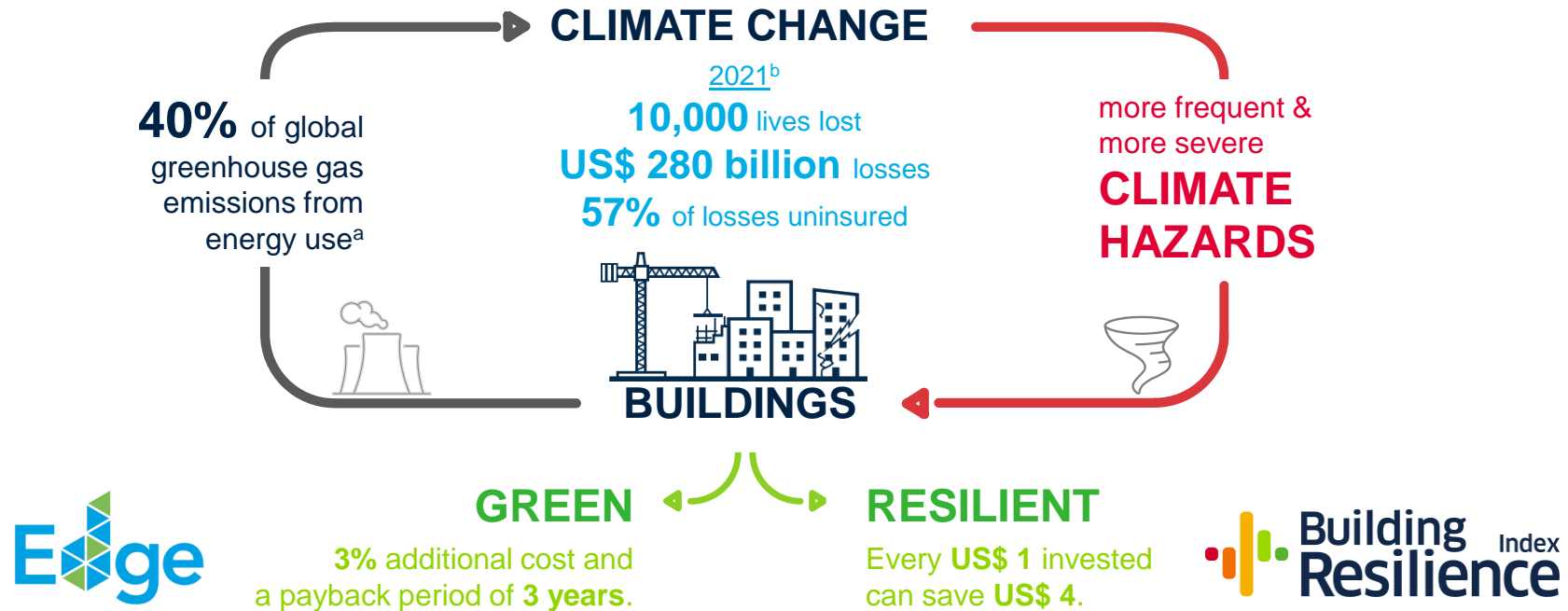
- Country Climate and Development Reports (CCDRs)
- **July '23:** 85% of all operations Paris-aligned
- **July '24:** 100% of all operations Paris-aligned
- **Climate finance:** 35% of overall flows
- **Adaptation:** 50% of climate finance (IDA & IBRD)
- **Cities & buildings** are one of the 5 key investment areas
- **Direct reference to Building Resilience Index**

Main approach:

- Resilience of the project
- Resilience through the project
- Letter grade rating system



THE ROLE BUILDINGS PLAY IN CLIMATE CHANGE



FOLLOWING EXPERIENCE OF EDGE

IFC's track record on buildings started with **climate change mitigation** using EDGE. Building Resilience Index complements it by addressing **climate change adaptation**.

a: emissions including embodied carbon; b: includes data from all natural disasters
 Graphic created by Building Resilience Index team with data from: IFC, Munich RE, and National Institute of Building Science.

Building Resilience Index is an innovation of IFC, a member of the World Bank Group.



Identify Risk

Identify applicable natural hazards and vulnerabilities based on the location and design of a building.



Manage Risk

Explore a list of risk mitigation measures for enhancing the physical integrity and operational continuity of a building.



Disclose Risk

Communicate the resilience of a building by using a standardized letter grade rating system.



WIND

air motion

- Downburst
- Tornado
- Storm



WATER

liquid motion

- Local/Urban Flooding
- Coastal/Tidal Flooding
- River/Lake Flooding
- Flash Flooding
- Storm Surge
- Tsunami



FIRE

rapid oxidation

- Local Fire
- Wildfire



GEO-SEISMIC

ground motion

- Subsidence
- Volcano
- Landslide
- Earthquake

PHYSICAL INTEGRITY

RATING QUESTION	RESPONSE	COSTS (US\$)	
		DEFAULT	PROJECT
C WT13. Sealed Openings ^ Hide Description The windows and doors are properly installed and sealed to prevent rainwater from infiltrating to the building's interior. + Add Comment	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	500,000	500,000
B WT14. Backflow Valves ^ Hide Description If the ground elevation is less than 5 m above sea/lake/river level, backflow valves are installed to wastewater/sewage flow lines to prevent backflow during flooding. + Add Comment	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	300,000	300,000

OPERATIONAL CONTINUITY



* Probable Maximum Loss (PML) current replacement cost, including structural and equipment, excluding operational costs

IDENTIFY RISK: HAZARD MAPPING

PROJECT RATING (In Progress)

1 Background 2 Location 3 Mitigation Measures 4 Documents 5 Review and Submit 6 Share

Explore map layers

HAZARD LAYERS

- Wind
- Tropical Cyclone
- Water
- Fire
- Geoseismic
 - Earthquake
 - Volcano Locations
 - Landslide

← Previous Next →

Access to local hazard maps

View which hazards are applicable to the project's location

Applicable Hazards

	Tornado	APPLICABLE
	Cyclone	APPLICABLE
	WIND SPEED	67 m/s
	Urban Flood	APPLICABLE
	Wildfire	APPLICABLE
	Local Fire	APPLICABLE
	Earthquake	APPLICABLE

IDENTIFY RISK: AN ASSET-FOCUSED APPROACH



PHYSICAL INTEGRITY

WIND
air motion



WATER
liquid motion



FIRE
rapid oxidation



GEO-SEISMIC
ground motion



Default Hazards

Downburst
Tornado
Storm (Cyclone, Typhoon, Hurricane)

Local/Urban Flooding
Coastal/Tidal Flooding
River/Lake Flooding
Flash Flooding
Storm surge
Tsunami

Local Fire
Wildfire

Subsidence
Volcano
Landslide
Earthquake



OPERATIONAL CONTINUITY

MANAGE RISK: NEW BUILDINGS & RETROFITING EXISTING BUILDINGS



RESIDENTIAL



OFFICE



RETAIL



HOTEL/RESORT



SCHOOL



HOSPITAL



UNIVERSITY



WAREHOUSE



INDUSTRIAL



MIXED USE



AIRPORT



PORT

RISK MITIGATION MEASURES

- Site Selection
- Foundation Design
- Structural Design
- Building Services (Mechanical, Electrical and Plumbing Systems) Design & Installation

- Material Selection
- Landscape & Site Design
- Design & Construction Audits

MANAGE RISK: MITIGATION MEASURES

PROJECT RATING **C** (In Progress) | Background | Location | **3 Mitigation Measures** | Documents | Review and Submit | Share

Hazard Mitigation Measures

HAZARD CATEGORY

- Wind **B**
- Water **C**
- Fire **A**
- Geoseismic **A**
- Operational continuity -

MITIGATION MEASURE

Tornado
APPLICABLE

Cyclone
APPLICABLE
WIND SPEED 67 m/s

Downburst
NOT APPLICABLE

Explore how to reach the next rating level

Select suitable mitigation measures

WD01. Steel Reinforced Concrete Primary Structure and National Code Applicable to Essential Facilities ⓘ **A**

The primary structure is designed/built with steel reinforced concrete (poured and/or block) and according to either the most recent national structural code wind maps applicable to essential/critical service buildings (e.g. 2015 National Structural Code for Philippines) or the global best practice which can withstand wind speed levels of 290km/h (180mph) for storms and tornados, whichever is higher.

Yes No N/A

Provide optional explanation

WD02. Primary Structure Built to National Code Applicable to Essential Facilities ⓘ **B**

The primary structure is designed/built according to either the most recent national structural code wind maps applicable to essential/critical service buildings (e.g. 2015 National Structural Code for Philippines) or the global best practice which can withstand wind speed levels of 290km/h (180mph), whichever is higher.

Building Resilience Index User Guide

WD02. Primary Structure Built to National Code Applicable to Essential Facilities ⓘ **B** Rating

Primary structural elements³⁶, which include columns, beams, load bearing walls, floor framing, and foundations, such as footings will need to be designed to withstand the wind levels for essential facilities (critical infrastructure or essential service buildings)³⁷ set in structural codes of each country. This is applicable to any wind hazard (storm, tornado and downburst).

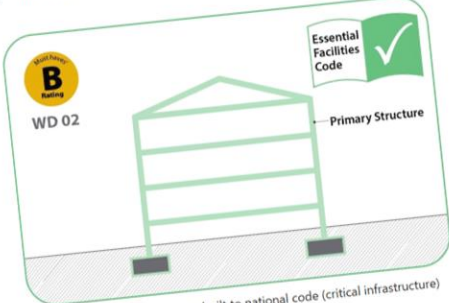


Figure 14. Primary structure built to national code (critical infrastructure)

Note that this mitigation measure is similar to WD01, except that this does not require steel reinforced concrete construction. However, to achieve an B rating this measure applies to all buildings (residential, commercial, offices, retail, hotels, or recreational), regardless of being an essential/critical service building or not.

Country specific resources can be found in Appendix B, where for example, the Philippines National Structural Code wind map is shown, as it was strengthened in 2015 for multistory and critical structures particularly near the Pacific Coast.

Access a comprehensive User Guide

MANAGE RISK: MITIGATION MEASURES

MITIGATION MEASURES	HAZARDS			RATING 'MUST HAVE'S		
	Earthquake	Landslide	Volcano	C	B	A
GS01. 1 km Distance from Earthquake Fault or Seismically Designed/Built						
GS02. Foundation Seismically Designed for Site-specific Soil Conditions						
GS03. Foundation piling adequately secured in rock below subsiding soils						
GS04. Foundation designed for site-specific subsiding soil conditions						
GS05. Slope of Neighboring Area < 30 degrees						
GS06. 15 km Distance from a Volcano (50 km, if in a valley)						
GS07. Not a Historically Recorded Landslide Area						
GS08. Lateral Force Resistance System in All Floors and First Level Anchored to Foundation						
GS09. Connected and Braced Main Structure						
GS10. Steel Reinforced Walls						
GS11. Steel Reinforced Fireplaces and Chimneys						
GS12. Structure with Seismic Base Isolation						
GS13. Defensive Structures for Landslides						
GS14. No Vertical Irregularities						
GS15. Flexible Gas Piping with Automatic Seismic Shut-off Valves						
GS16. Design Review for Geoseismic Hazard Mitigation Measures						
GS17. Construction Independently Audited for Geoseismic Hazard Mitigation Measures						
GS18. Engineering Geological and Geohazard Assessment (EGGAR) Study or Equivalent						

DISCLOSE RISK: RESILIENCE RATING

The building fails to incorporate most recommended resilience practices of Building Resilience Index. It will likely not withstand most applicable hazards, even at moderate level.

The building incorporates some recommended resilience practices of Building Resilience Index. It will likely withstand some applicable hazards at a moderate level.

The building incorporates most recommended resilience practices of Building Resilience Index. It will likely withstand some applicable hazards at a moderate-high level.

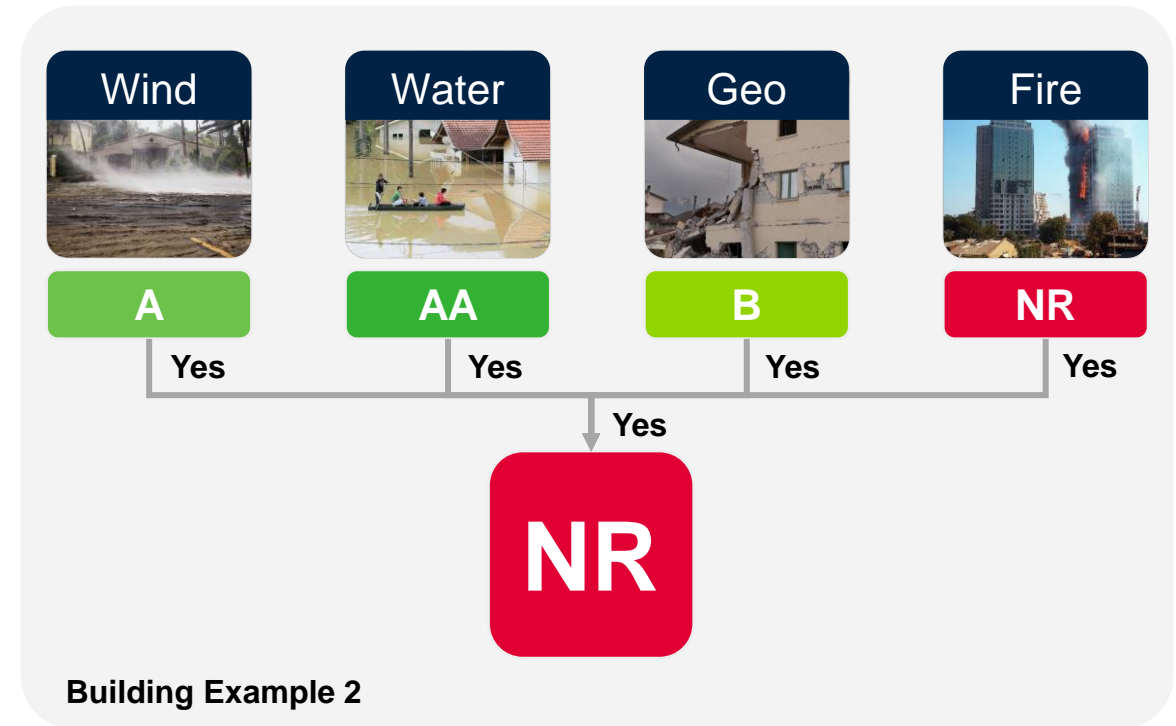
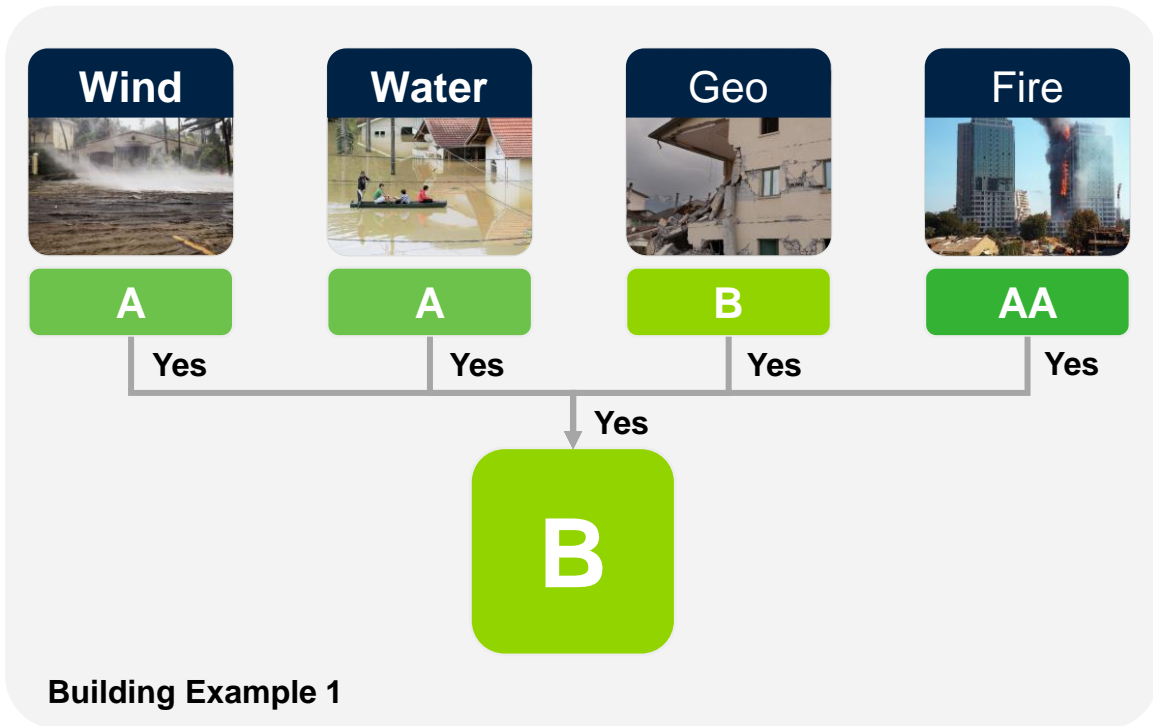
The building incorporates ALL recommended resilience practices of Building Resilience Index for all applicable hazards, which are generally set above the local building standards. It will likely withstand all applicable hazards at high level.



The rating followed by '+' indicates that the building meets all requirements of the identified Building Resilience Index rating, plus recommended operational continuity measures.

* Probable Maximum Loss (PML) current replacement cost, including structural and equipment, excluding operational costs.

DISCLOSE RISK: WEAKEST LINK PRINCIPLE



All applicable local hazards must be addressed in order to achieve overall resilience.

The building resilience cannot be higher than the weakest level vis-a-vis any relevant hazard.

DISCLOSE RISK: SELF-ASSESSMENT & VERIFICATION



Who? by the Developer's in-house design and code-responsible engineering team, as well as administrative staff if need be

- Steps**
1. Create a Project
 2. Respond to each mitigation measure
 3. Request verification from verifiers

two licensed code-responsible engineers or parties appointed by the Developer for each mitigation measure

1. Review responses to each mitigation measure
2. Submit review

PHILIPPINES – STAKEHOLDER ENGAGEMENT

Construction Developers

- **2+ million m²** residential and commercial space across 52 projects is pledged as part of **Building Resilience Commitment** by 12 developers



Public Sector

- Engagement with LGUs to adopt BRI as a resilience rating standard in building construction

Financial Institutions

- Discussion with National Home Mortgage Finance Corporation to use BRI rating to qualify for the BALAI BERDE Program
- Discussion with insurance companies on how BRI can be used in the underwriting process

VERIFIED PROJECT EXAMPLE

Project: **Via Verde** by **IMPERIAL HOMES CORPORATION**
Padre Garcia

Stage: Design

Scale: 1,018 units, each 50-100 m²

Main Hazards: Typhoons, Floods, Earthquakes



- A** Wind
- A** Water
- A** Fire
- AA** Geoseismic



RESILIENCE HACKATHON



RESILIENCE HACKATHON

Co-creating Solutions for Resilience in the Built Environment

Duration: 8 April 2022 – 27 May 2022

Partners:



Private Sector Alliance for Disaster Resilient Societies

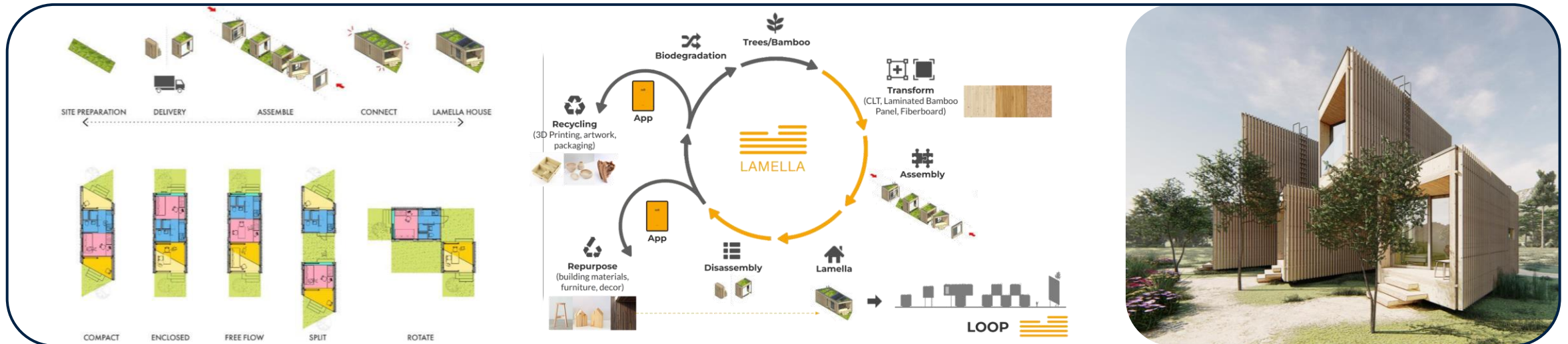


AIM-DADO BANATAO INCUBATOR



300 registrations for the Event Launch

13 teams joined - 5 finalists



Entry Example: Lamella





CARIBBEAN ISLANDS

Start Date	September 2022
Knowledge Products	<ul style="list-style-type: none">• Market Assessment: Jamaica, Dominica, Dominican Republic• Cost Assessment: Dominican Republic, Haiti
Key Activities	<ul style="list-style-type: none">• Training for 10+ staff from local FI
Key Partner(s)	
Projects Pipeline	<ul style="list-style-type: none">• 100,000 m² residential & commercial space• Industrial park assets
Investments	Resilient Buildings Financial Product (undergoing design)



VIETNAM - PROGRAM

Start Date	January 2023
BRI App Enhancements	<ul style="list-style-type: none">• Hazard Maps• Vietnam construction standards
Key Activities	<ul style="list-style-type: none">• Awareness raising events• Trainings for architects and engineers• Pilot implementation on volunteer projects• Cross promotion of green and resilience assets
Priority Building Types to Mainstream Resilience	<ul style="list-style-type: none">• Residential• Hospitality• Commercial• Critical Infrastructures (<i>e.g., hospitals, schools</i>)• Industrial buildings and parks

WAYS TO BENEFIT FROM THE BUILDING RESILIENCE INDEX



CONSTRUCTION DEVELOPERS

- Assess and improve resilience to site-specific natural hazards
- Disclose resilience rating to your financiers, insurers, and users
- Differentiate your brand as a developer of resilient buildings



BANKS

- Make informed investment decisions based on climate risks on buildings
- Save time and resources on project evaluation processes
- Reduce property investor risk exposure



INSURANCE COMPANIES

- Complement catastrophe modeling with a multi-hazard approach
- Review resilience rating of assets before underwriting
- Save time and resources on project evaluation processes



GOVERNMENTS & LOCAL AUTHORITIES

- Create skills in the market for more resilient construction practices
- Reduce repetitive costs of post-disaster recovery and reconstruction
- Create an enabling environment for mainstreaming resilient buildings



PROPERTY BUYERS & OWNERS

- Make informed investment or retrofit decisions
- Learn the resilience value of your investment
- Minimize operational disruptions and insurance costs



OCCUPANTS & LESSORS

- Choose to live and work in safer buildings
- Minimize operational disruptions
- Reduce risk of losses due to natural disasters

EDGE is currently funded by the UK Government with original funding by Switzerland's State Secretariat for Economic Affairs (SECO)



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

Additional support has been provided by Austria, Canada, Denmark, ESMAP, EU, Finland, GEF, Hungary, and Japan.

Building Resilience Index is funded by the Government of the Netherlands, the Australian Government, and the Rockefeller Foundation



Kingdom of the Netherlands



Australian Government

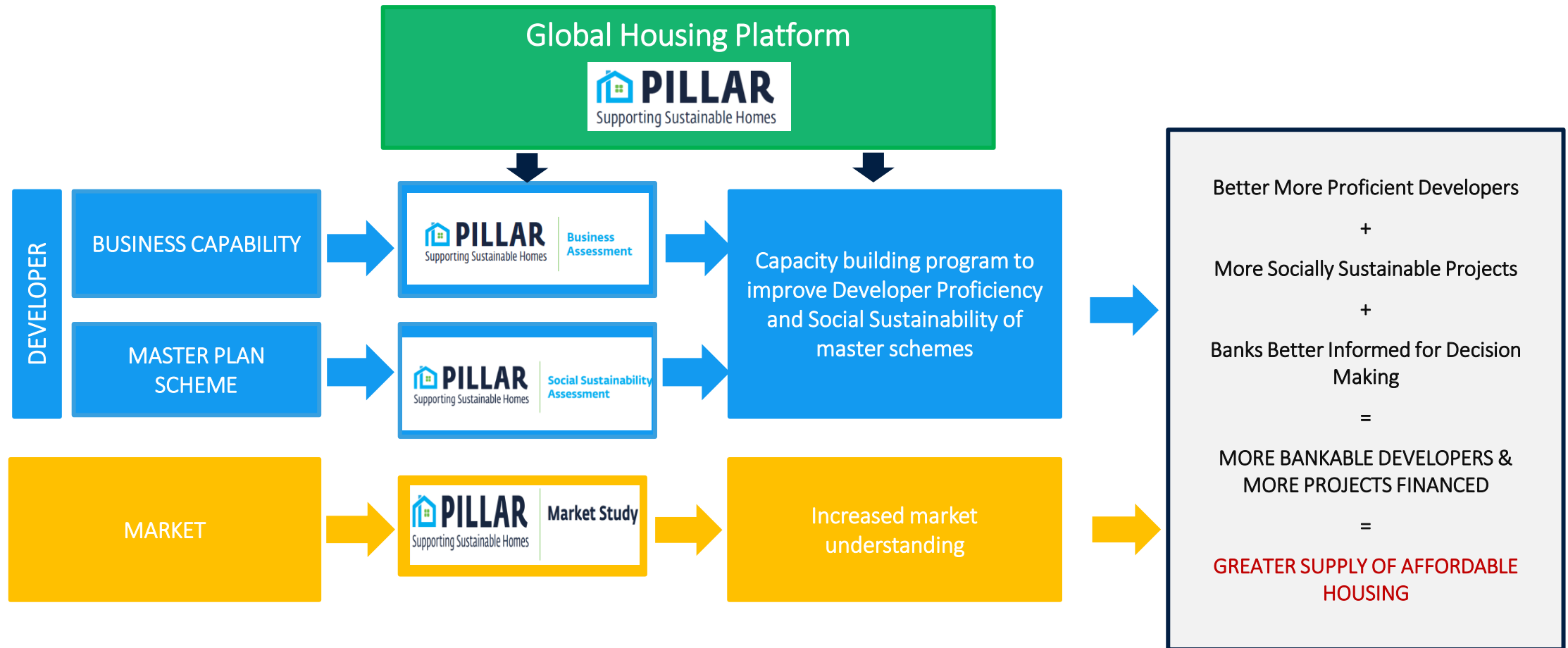


PILLAR GLOBAL HOUSING PLATFORM

WHAT IS PILLAR?

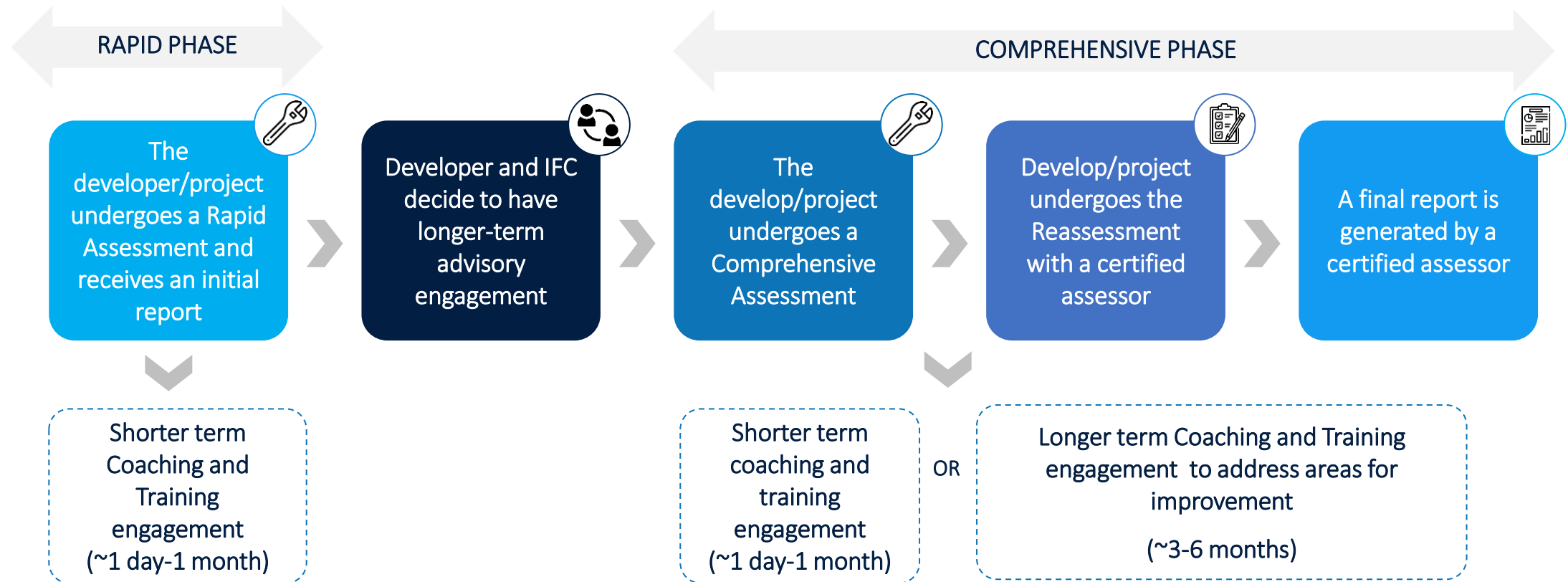
A housing advisory platform that:

- Developer level: Assesses housing developer's strengths, helps plug their capacity gaps and enhances the quality of their master planned communities - thereby helping build more bankable projects
- Market level: Researches high priority markets to understand market dynamics and growth opportunities



ASSESSMENT PROCESS: A TWO-PHASE APPROACH

The Pillar Assessment process is divided into two phases. A rapid version of the tool allows for a quick initial understanding of a developer's or project's strengths and weaknesses and identifies preliminary areas for capacity building. The comprehensive version of the tool is used for a more thorough assessment and helps identify opportunities for longer term coaching and training.



BENEFITS FOR USERS

Housing developers

- ✓ Validate business proficiency and project quality/standards
- ✓ Provides a roadmap for continuous improvement
- ✓ Help support access to finance from banks and other financial institutions

Financial Institutions

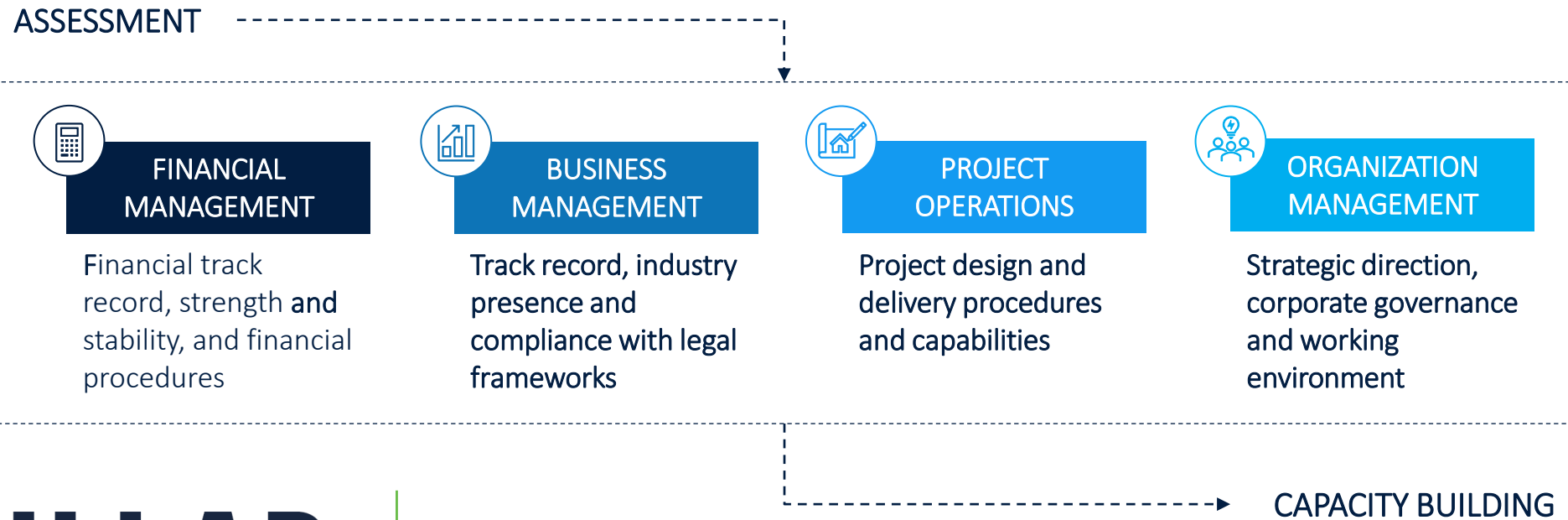
- ✓ Support due diligence of a housing developer
- ✓ Helps reduce risk of loans and investments
- ✓ Lower default rates abandonment

Governments

- ✓ Aids screening/selection of partner developers and projects
- ✓ Ensure higher quality and efficiency in affordable housing delivery
- ✓ Can help to inform government policy

ASSESSMENT FRAMEWORK – BUSINESS ASSESSMENT

Pillar Business Assessment is designed to enable 360-degree performance review of the business proficiency of a housing developer across 4 Performance Objectives (POs).



PILLAR SOCIAL SUSTAINABILITY ASSESSMENT

- Considers a development's social sustainability credentials across 4 phases of development.

PILLAR SOCIAL SUSTAINABILITY IS CATEGORIZED INTO 4 PHASES OF DEVELOPMENT

1 PROJECT DEFINITION

Identify the need, opportunity, viability and parameters based on the developmental goals, socioeconomic drivers and appropriate location.

Topics:

- ✓ Stakeholder participation
- ✓ Access to housing finance
- ✓ Diversity of land use
- ✓ Exposure to environmental hazards
- ✓ Neighborhood safety
- ✓ Affordable access to amenities
- ✓ Access to employment
- ✓ Diversity of housing

2 PLANNING AND DESIGN

Examine the physical and technical planning and design of the development prior to proceeding with construction.

Topics:

- ✓ Stakeholder participation
- ✓ Mitigation of risks and hazards
- ✓ Safe, inclusive and quality design
- ✓ Affordable access to amenities
- ✓ Local employment and supply chain
- ✓ Affordable utilities

3 CONSTRUCTION

Identify provisions to complete the site works safely and to the quality as required by the design and specifications, on time and within budget.

Topics:

- ✓ Sound construction management
- ✓ Quality of construction
- ✓ Local employment and supply chain

4 OPERATIONS

Examine aspects related to running and maintaining the facility to maximise utility over time.

Topics:

- ✓ Affordable access to utilities
- ✓ Sound maintenance planning
- ✓ Affordable maintenance
- ✓ Long-term access to amenities

Please help us improve the delivery of our initiatives through this 1-min survey:

<https://cutt.ly/adbifcworkshop>



Reach out to us!

For The Business Case for Green
& Resilient Housing and Pillar
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