IFC International Finance Corporation WORLD BANK GROUP

Creating Markets, Creating Opportunities

IFC'S TOOLS FOR
GREEN, RESILIENT, AND
SOCIALLY SUSTAINABLE
AFFORDABLE HOUSING

WEBINAR 1

GREEN & RESILIENT TOOLS

EDGE & BUILDING RESILIENCE INDEX

ABOUT THIS WEBINAR

Webinar Series:

June 22 **Green & Resilient Tools - TODAY!**

June 29 **Pillar – Supporting Sustainable Homes**

Webinars are being recorded.

Presentation and recording shared on the landing site.

INTRODUCING IFC – INTERNATIONAL FINANCE CORPORATION

WORLD BANK GROUP

IBRD	IDA	IFC	MIGA	ICSID
International Bank for Reconstruction and Development	**International Development Association**	**International Finance Corporation**	**Multilateral Investment Guarantee Agency**	**International Centre for Settlement of Investment Disputes**
Loans to middle-income and creditworthy low-income country governments	Interest-free loans and grants to governments of poorest countries	**Solutions in private-sector development**	Guarantees for foreign direct investment's non-commercial risks	Conciliation and arbitration of investment disputes

THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP

IDA
International Development Association
WORLD BANK GROUP

IFC
International Finance Corporation
WORLD BANK GROUP

MIGA
Multilateral Investment Guarantee Agency

ICSID
INTERNATIONAL CENTRE FOR SETTLEMENT OF INVESTMENT DISPUTES

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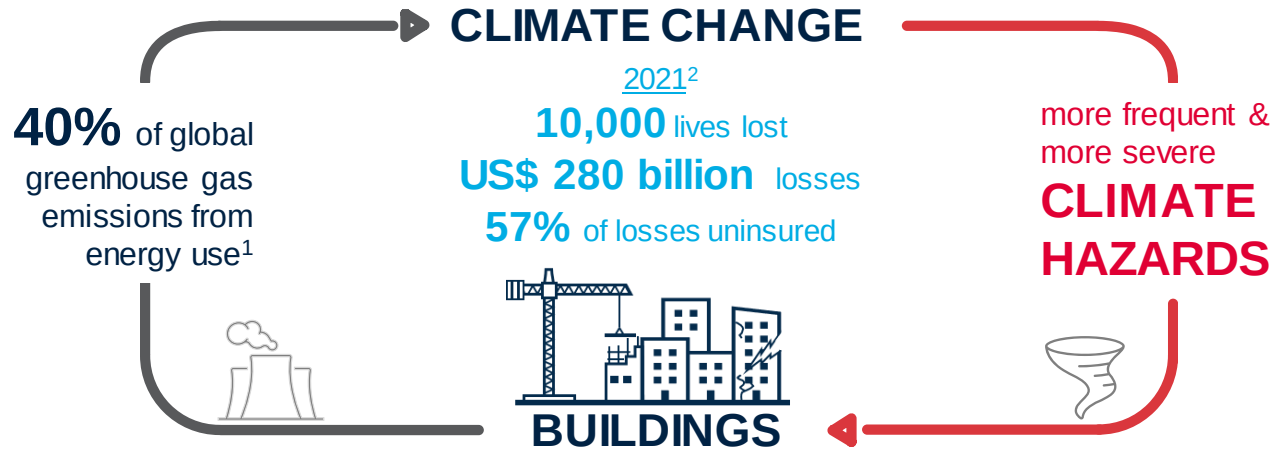
THE ROLE BUILDINGS PLAY IN CLIMATE CHANGE



GREEN

3% additional cost and a payback period of **3 years**.

RESILIENT

Every **US$ 1** invested can save **US$ 4**.

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

[1] Emissions including embodied carbon; [2] 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

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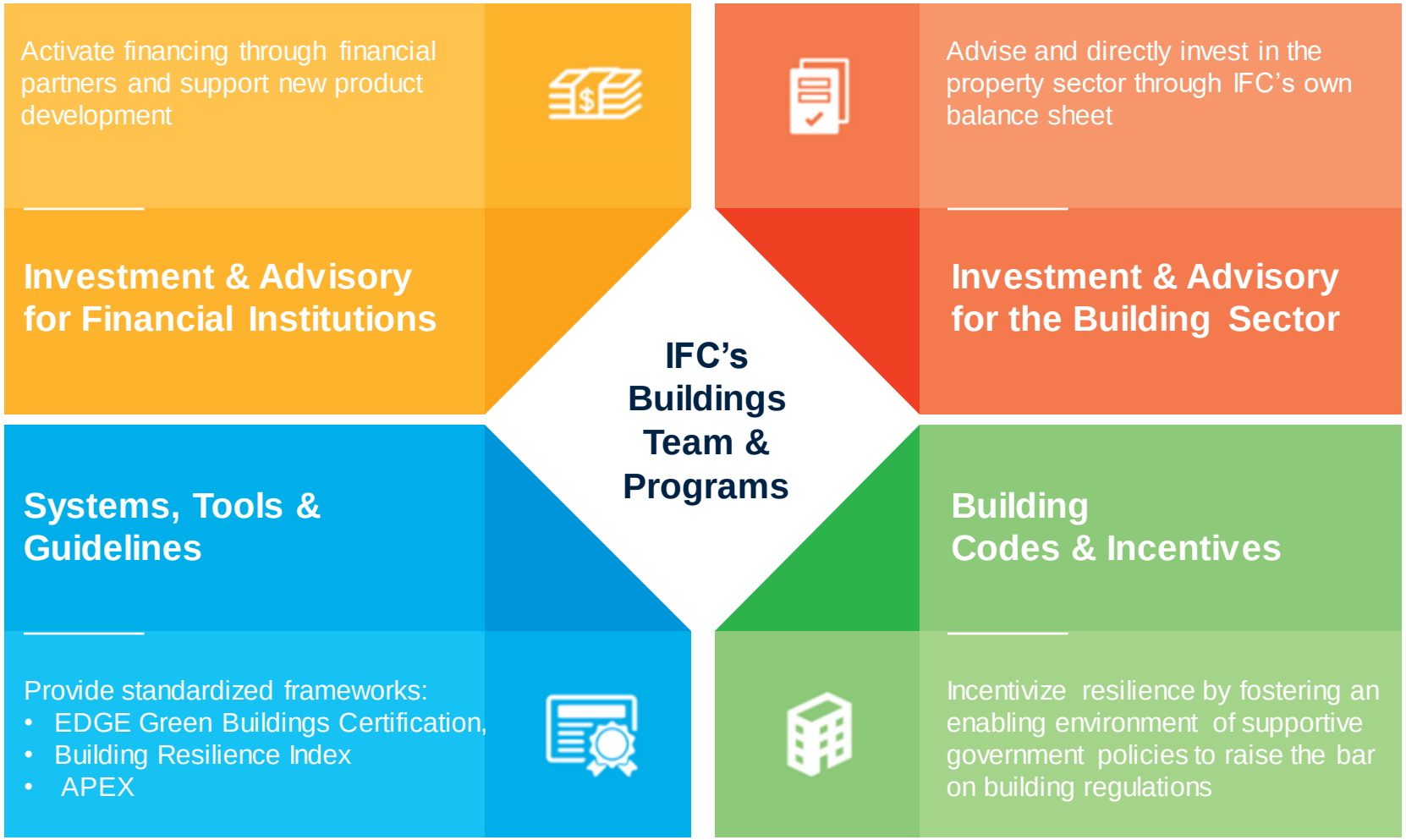
IFC'S APPROACH TO CREATING IMPACT



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Edge

EDGE: EXCELLENCE IN DESIGN FOR GREATER EFFICIENCIES

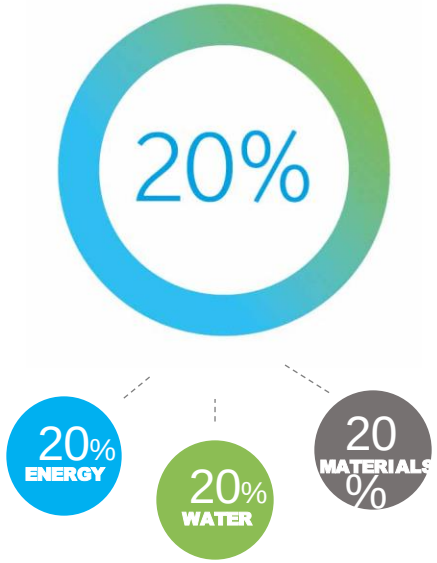
1.

Free Software

Further Resource: EDGE Software Demo

2.

Locally Relevant Standard

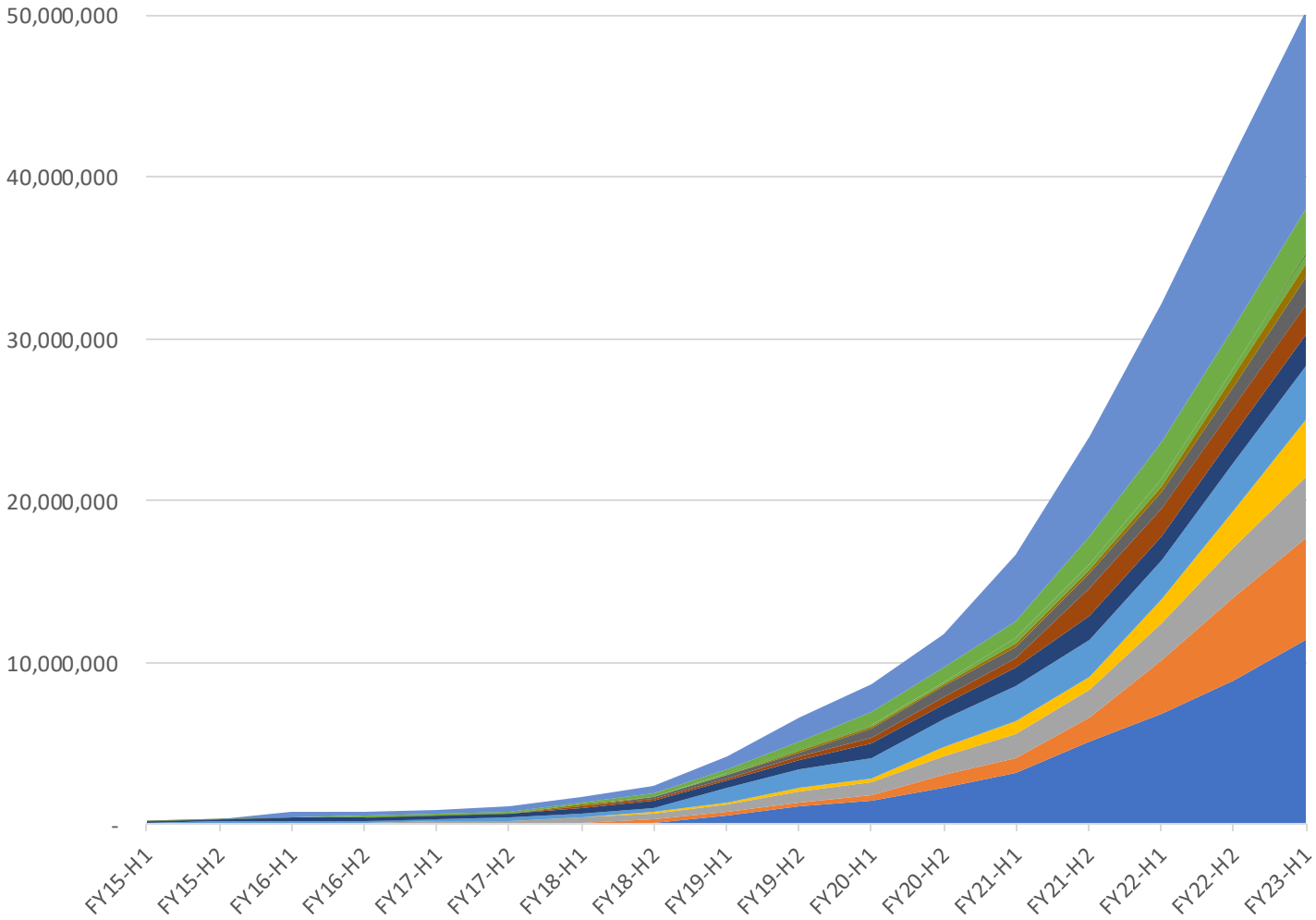


3.

Verified Green Label

EDGE CERTIFICATION IS GROWING EXPONENTIALLY ACROSS SECTORS AND GEOGRAPHIES, WITH TOTAL CERTIFIED REAL ESTATE ASSETS OF OVER 50 BILLION USD IN VALUE.

Cumulative EDGE certified floorspace area (in million m2)



Rest of the World (24%)

Other IFC MAGC Countries (7%)

Brazil (2%)

Peru (3%)

China (4%)

Indonesia (4%)

Vietnam (7%)

Mexico (7%)

South Africa (7%)

India (13%)

Colombia (23%)

Colombia mainstreams green buildings:
from zero in 2017 to over 27% of new build currently

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SUCCESS OF EDGE: A RECORD OF EXPONENTIAL GROWTH AND GLOBAL IMPACT

EDGE is certification of choice in emerging markets & beyond

89
Countries have projects certified*

8,184
Projects certified*

357k
Housing units certified*

1.1m+
tCO_2/year saved

$53 bn
value of assets certified since 2015 by EDGE IFC Advisory projects*

$10.2 bn
IFC investments in green buildings*

** Cumulative results since 2015 (as of February 2023)*

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EDGE IS AVAILABLE WORLDWIDE FOR ALMOST ALL BUILDING TYPOLOGIES

Hospitals
- Clinics
- Nursing Homes

Industry
- Warehouses
- Light Industrial Buildings

Homes
- Landed Homes
- Apartments

Offices

Retail
- Department Stores
- Shopping Malls
- Supermarkets
- Big Box Stores
- Food Stores
- Airports

Education
- Pre-schools
- Schools
- Universities
- Sports Facilities
- Religious Facilities

Warehouses

Hospitality
- Hotels
- Service Apartments
- Resorts

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EDGE IS GROWING FAST BECAUSE IT'S A TOOL TO TAP INTO GREEN FINANCE

EDGE aligns with all the major International Green Finance Standards for green buildings

ICMA International Capital Market Association

- 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).

Climate Bonds Initiative

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

EU TECHNICAL EXPERT GROUP ON SUSTAINABLE FINANCE

- 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.

GRESB

- 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.

CDP

- 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.

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 in second opinions as a robust eligibility criterion
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.

EDGE IS ALIGNED WITH EU TAXONOMY

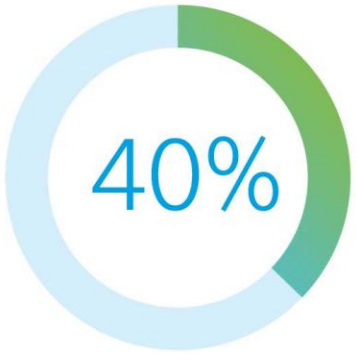
	EU Taxonomy	EDGE
Measurement Criterion	**"Primary Energy Demand" measured in kWh/m²/yr**	**EDGE building assessments output is provided in the same units: kWh/m²/yr**
Construction of new buildings	10% savings on Primary Energy Demand based on EU member states' "Nearly Zero Energy Building" (NZEB) standards	EDGE requires minimum 20% savings over local EDGE baseline * (EDGE baselines are derived from current "Business-as-Usual' for new construction)
Building renovation	Meet local requirement as per the Energy Performance of Buildings Directive, or 30% savings over the performance of the same building before the renovation	20% savings over local EDGE baseline
Acquisition and ownership	Built on or after 2021– 10% savings over NZEB standards, or Built before 2021 – comparable performance to the top 15% of the national stock or it has an EPC class A	20% savings over local EDGE baseline

FINANCIAL INSTITUTIONS FIND EDGE GENERATES PIPELINE AND STREAMLINES GREEN REPORTING

EDGE: EXCELLENCE IN DESIGN FOR GREATER EFFICIENCIES

Level 1 - EDGE Certified

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

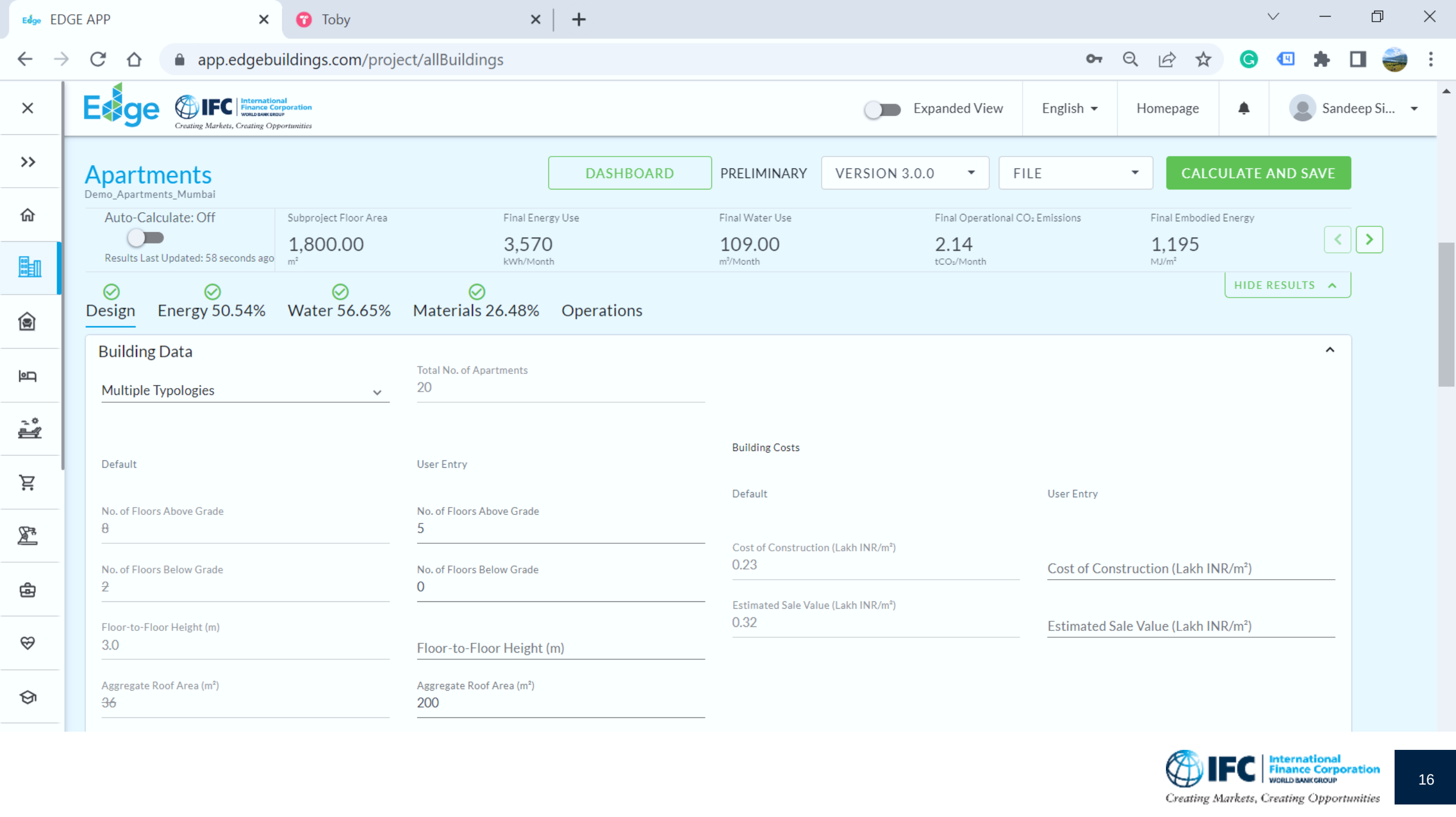


Level 2 - EDGE Advanced

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

Level 3 - Zero Carbon

- ✓ EDGE Advanced with
- ✓ 100% renewables or purchased carbon offsets.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Toby
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Edge
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Creating Markets, Creating Opportunities
Expanded View
English
Homepage
Sandeep Si...
Apartments
Demo_Apartments_Mumbai
DASHBOARD
PRELIMINARY
VERSION 3.0.0
FILE
CALCULATE AND SAVE
Auto-Calculate: Off
Results Last Updated: 58 seconds ago
Subproject Floor Area
1,800.00
m²
Final Energy Use
3,570
kWh/Month
Final Water Use
109.00
m³/Month
Final Operational CO₂ Emissions
2.14
tCO₂/Month
Final Embodied Energy
1,195
MJ/m²
HIDE RESULTS
Design
Energy 50.54%
Water 56.65%
Materials 26.48%
Operations
Building Data
Multiple Typologies
Total No. of Apartments
20
Default
User Entry
No. of Floors Above Grade
8
No. of Floors Above Grade
5
No. of Floors Below Grade
2
No. of Floors Below Grade
0
Floor-to-Floor Height (m)
3.0
Floor-to-Floor Height (m)
Aggregate Roof Area (m²)
36
Aggregate Roof Area (m²)
200
Building Costs
Default
User Entry
Cost of Construction (Lakh INR/m²)
0.23
Cost of Construction (Lakh INR/m²)
Estimated Sale Value (Lakh INR/m²)
0.32
Estimated Sale Value (Lakh INR/m²)

EDGE APP

app.edgebuildings.com/project/allBuildings

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Auto-Calculate: Off

Results Last Updated: Just now

Subproject Floor Area	Final Energy Use	Final Water Use	Final Operational CO_2 Emissions	Final Embodied Energy
1,800.00 m^2	6,180 kWh/Month	109.00 m^3/Month	3.71 tCO_2/Month	1,195 MJ/m^2

HIDE RESULTS

Design | Energy 50.54% | Water 56.65% | Materials 26.48% | Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

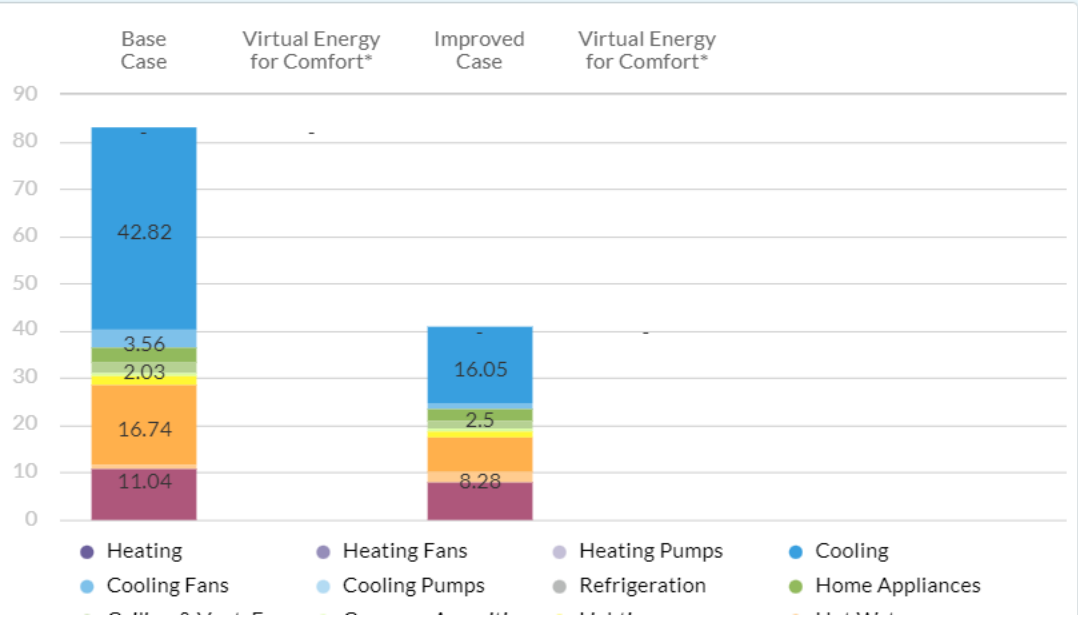
50.54% Meets EDGE Energy Standard — EDGE ADVANCED

EEM01* Window-to-Wall Ratio: 12%
Base Case Value: 15%
WWR (%) 12

EEM02 Reflective Roof: Solar Reflectance Index 85
Base Case Value: 45
SRI

EEM03 Reflective Exterior Walls: Solar Reflectance Index 85
Base Case Value: 45
SRI

EEM04 External Shading Devices: Annual Average Shading Factor (AASF) 0.15
Base Case Value: No Shading
AASF



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1,800.00 m^2	3,570 kWh/Month	109.00 m^3/Month	2.14 tCO_2/Month	1,195 MJ/m^2

HIDE RESULTS

Design | Energy 50.54% | Water 56.65% | Materials 26.48% | Operations

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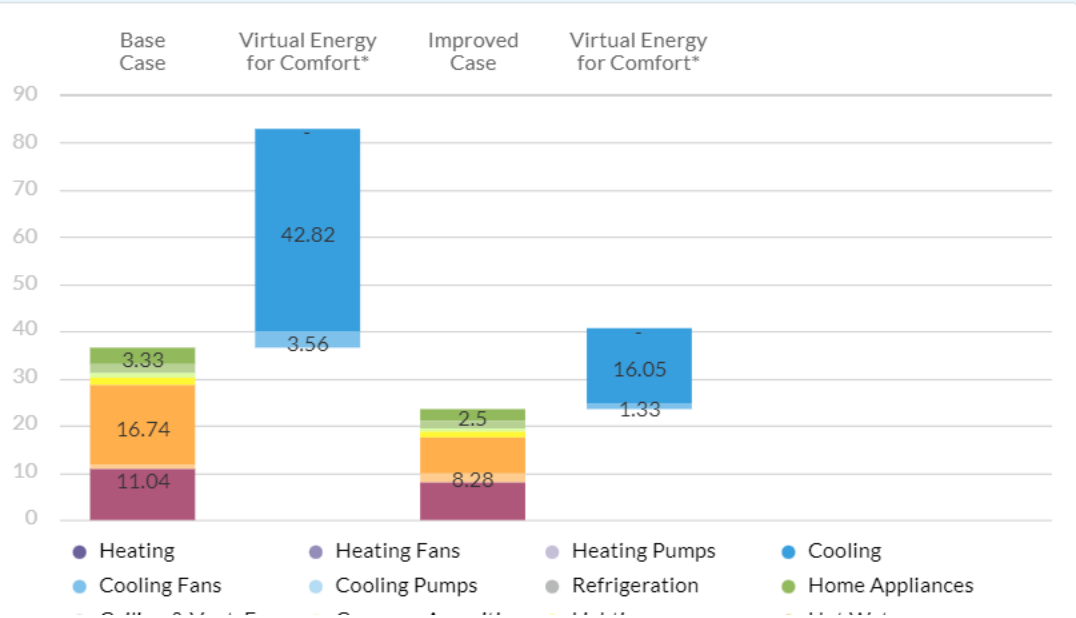
EEM01* Window-to-Wall Ratio: 12%
Base Case Value: 15%
WWR (%) 12

EEM02 Reflective Roof: Solar Reflectance Index 85
Base Case Value: 45
SRI

EEM03 Reflective Exterior Walls: Solar Reflectance Index 85
Base Case Value: 45
SRI

EEM04 External Shading Devices: Annual Average Shading Factor (AASF) 0.15
Base Case Value: No Shading
AASF



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HIDE RESULTS

Design | Energy 50.54% | Water 56.65% | Materials 26.48% | Operations

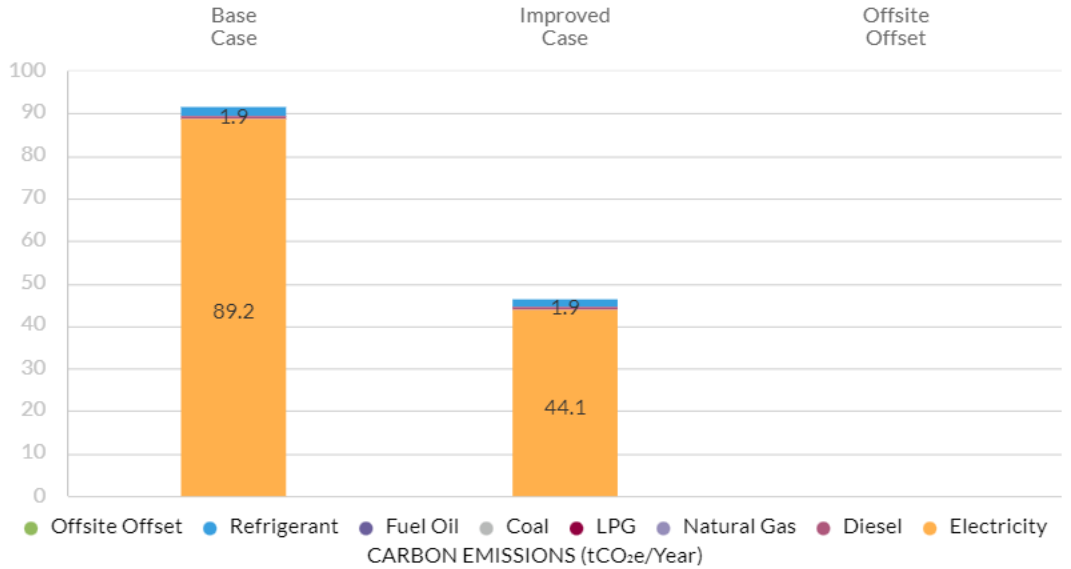
Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

50.54% Meets EDGE Energy Standard — EDGE ADVANCED

- EEM28 Efficient Refrigeration for Cold Storage
- EEM29 Efficient Refrigerators and Clothes Washing Machines
- EEM30 Submeters for Heating and/or Cooling Systems
- EEM31 Smart Meters for Energy
- EEM32 Power Factor Corrections
- EEM33 Onsite Renewable Energy: 25% of Annual Energy Use
  Base Case: No Onsite Renewable Energy
  Annual Ele... 25% Annual En... 1,235
- EEM34 Other Energy Saving Measures
- EEM35 Offsite Renewable Energy Procurement: 100% of Annual Operational CO_2

Net Carbon Emissions: 46.8 tCO2e/Year



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HIDE RESULTS

Design | Energy 50.54% | Water 56.65% | Materials 26.48% | Operations

Water Efficiency Measures

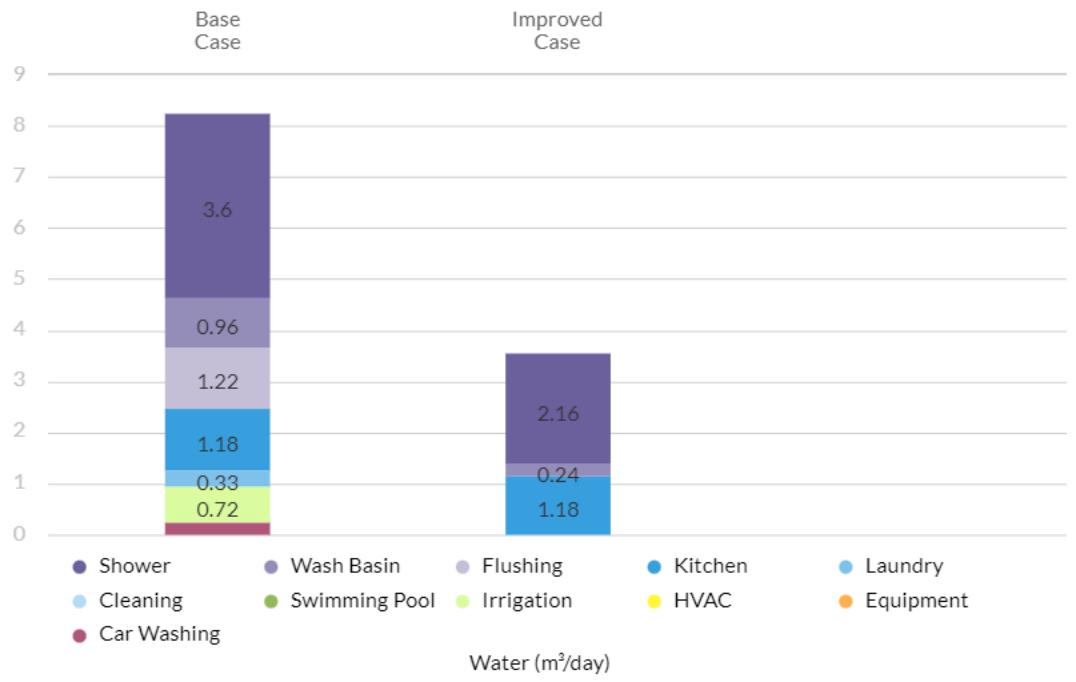
Choose water efficiency measures to achieve savings of at least 20%.

WEM01 Water-efficient Showerheads: 6 L/min
Base Case Value: 10 L/min
Bath Type: Showerheads | Flow Rate ...
Hot Water...: Yes

WEM02* Water-efficient Faucets for all Bathrooms: 2 L/min
Base Case Value: 8 L/min
Faucet Type: Faucets With Aerators | Flow Rate ...
Hot Water...: Yes

WEM04* Efficient Water Closets for All Bathrooms: 6 L/High volume flush and 3 L/Lo...
Base Case Value: Single Flush,6 L/flush
Type Of W...: Dual Flush
High Volu... | Low Volum...

56.65% Meets EDGE Water Standard



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Subproject Floor Area	Final Energy Use	Final Water Use	Final Operational CO_2 Emissions	Final Embodied Energy
1,800.00 m^2	6,180 kWh/Month	109.00 m^3/Month	3.71 tCO_2/Month	1,195 MJ/m^2

HIDE RESULTS

Design | Energy 50.54% | Water 56.65% | Materials 26.48% | Operations

Materials Efficiency Measures

Choose building material options to achieve savings of at least 20%, indicating thickness.

26.48% Meets EDGE Material Standard

MEM01*

Bottom Floor Construction

Base Case Material: Concrete Slab | In-situ Reinforced Conventional Slab

Thickness : 100mm & Steel : 35kg/m^2

Type 1

Concrete Slab | In-situ Reinforced Slab with >30% PFA

Proportion %	Thickness (mm)	U-Value (W/m^2·K)	Steel Rebar (kg/m^2)
100		0.54	

MEM02*

Intermediate Floor Construction

Base Case Material: Concrete Slab | In-situ Reinforced Conventional Slab

Thickness : 250mm & Steel : 35kg/m^2

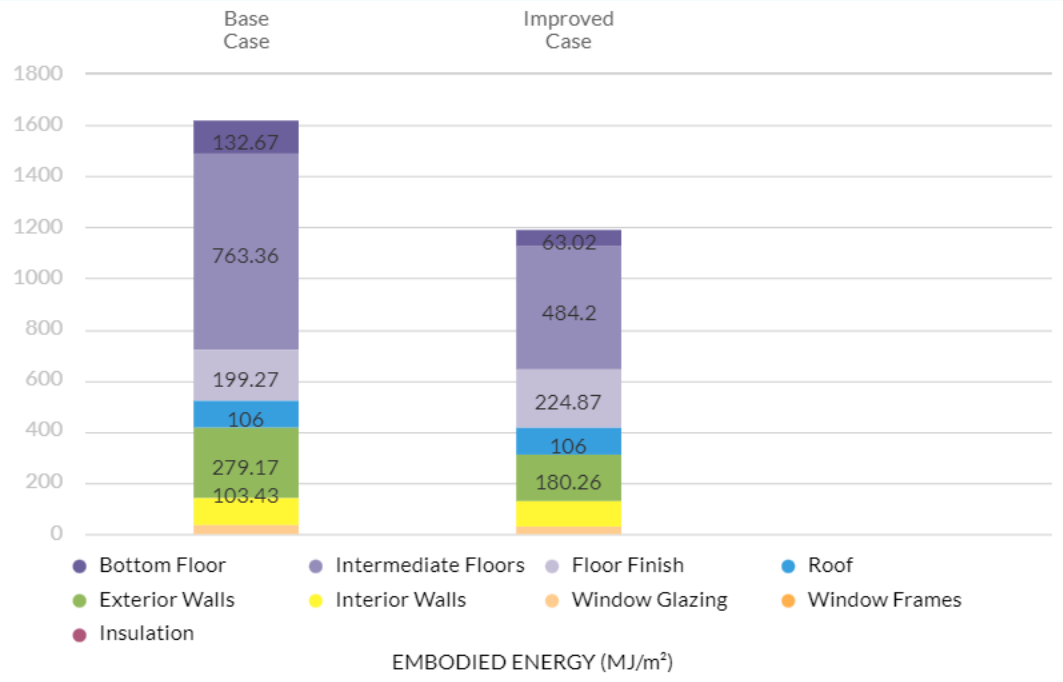
Type 1

Concrete Slab | In-situ Reinforced Slab with >30% PFA

Proportion %	Thickness (mm)	Steel Rebar (kg/m^2)
100		

Floor Finish

Base Case Material : Tiled | Ceramic Tiles



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THE FREE EDGE SOFTWARE SHOWS THE PAYBACK FOR EFFICIENCY MEASURES

Reduces Costs and Speeds up Design and Decision-making

Real-Time Feedback on Green Options

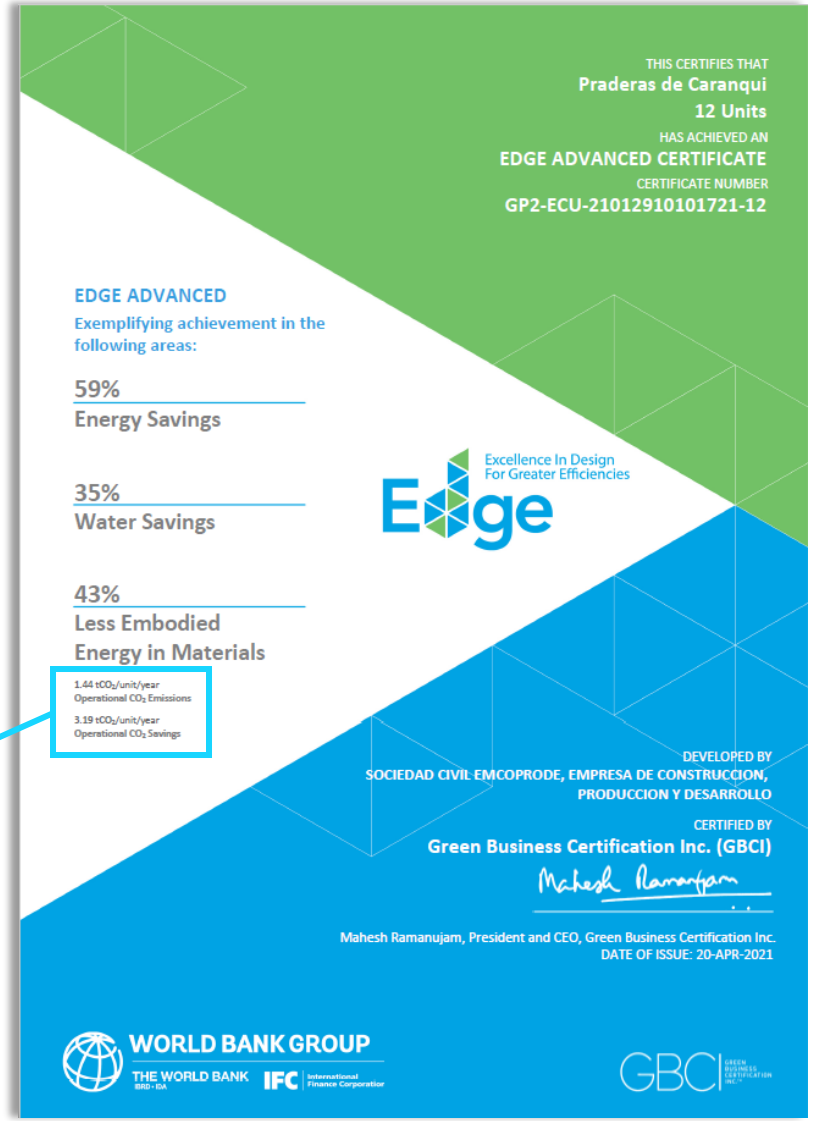
✓ Energy 36.52%	✓ Water 32.77%	✓ Materials 47.67%	Progress Toward Certification
Utility Cost Reduction 9,788.45 PAB/Month	Incremental Cost 49,753.26 PAB	Payback in Years 0.42 Yrs.	Incremental Cost and Payback
Embodied Energy Savings 1,056.04 MJ/m²	Energy Savings 506.90 MWh/Year	Water Savings 4,520.42 m³/Year	Energy, Water, & Materials Savings
Operational CO_2 Savings 155.89 tCO_2/Year	Carbon Emissions 265.92 tCO_2/Year		Carbon Tracking

THE EDGE CERTIFICATE DISPLAYS THE KEY INDICATORS FOR IMPACT REPORTING

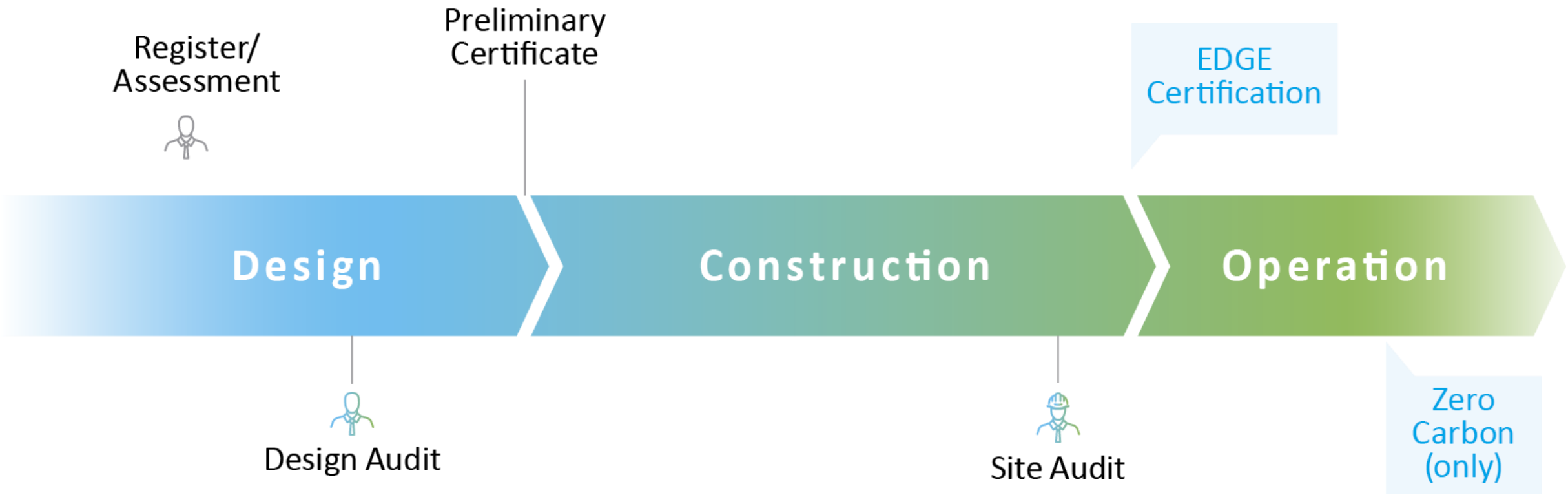
- Operation Energy Savings %
- Operational Water Savings %
- Embodied Energy in Materials Reduction %
- GHG Footprint (tCO2e)
- GHG Savings (tCO2e)

1.44 tCO_2/housing unit/year
Operational CO_2 Emissions

3.19 tCO_2/housing unit/year
Operational CO_2 Savings



THE CERTIFICATION FLOW



TYPICAL COST: ~ USD 10,000

TYPICAL COST: ~ USD 500

APPROVED CERTIFIERS PROVIDE EXCELLENCE IN SERVICE

Sintali path to a sustainable future

SGS

GBC | GREEN BUSINESS CERTIFICATION INC.™

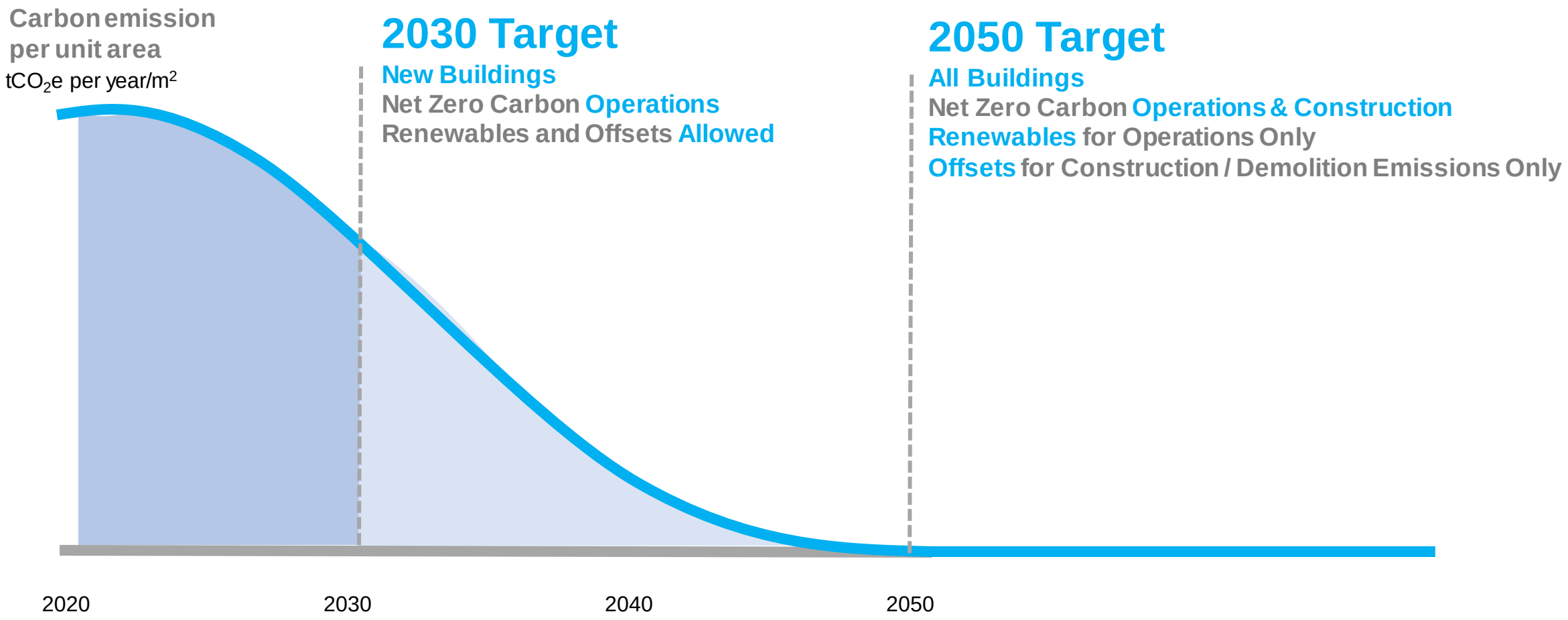
The consortium of Sintali and SGS sets the global benchmark for quality and integrity.

- Flat fee for projects with one typology that includes both audit and certification
- Discounts available for hiring an EDGE Expert or portfolio certifications
- Pricing includes travel and incidentals

GBCI is the premier organization independently recognizing excellence in green business industry performance and practice globally through rating systems such as LEED, WELL, GRESB, SITES, PEER and EDGE.

- Sliding scale fee based on floor area (excluding parking), capped for projects larger than 50,000 m^2
- Developers may select and negotiate a competitive audit services price with their own local EDGE Auditor
- Discounts available for multiple buildings

Mapping a Zero Carbon Pathway for Buildings



New EDGE Decarbonization Retrofit Planning tool for portfolios (Beta version)

Set **2030** & **2050** Targets for decarbonization

Enter EDGE assessment data for all buildings for "**As Is**" and "**Retrofit**" assessments

The tool plots a "**Target Pathway**" for portfolio emissions

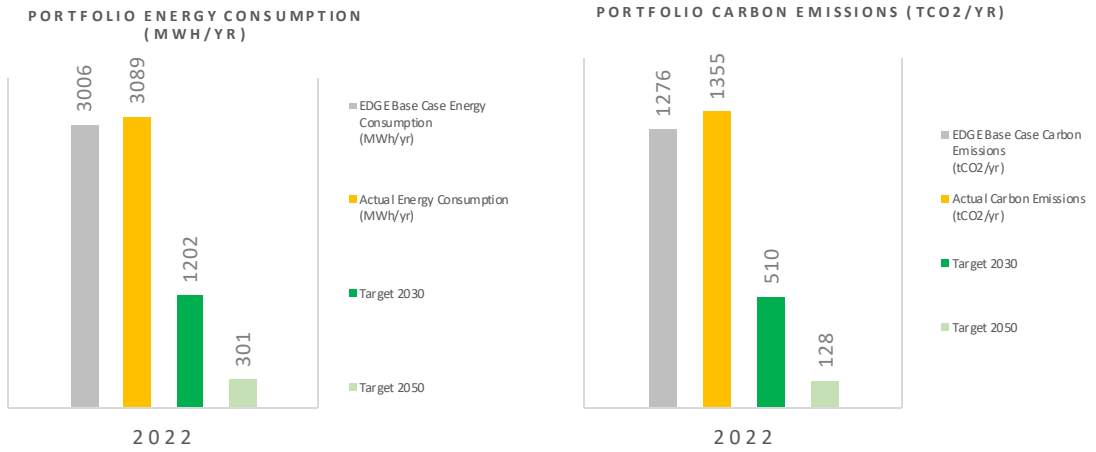
Use Retrofit Planning feature to plot a "**Portfolio Retrofit Plan**". (retrofit costs vs. CO_2 reduction)

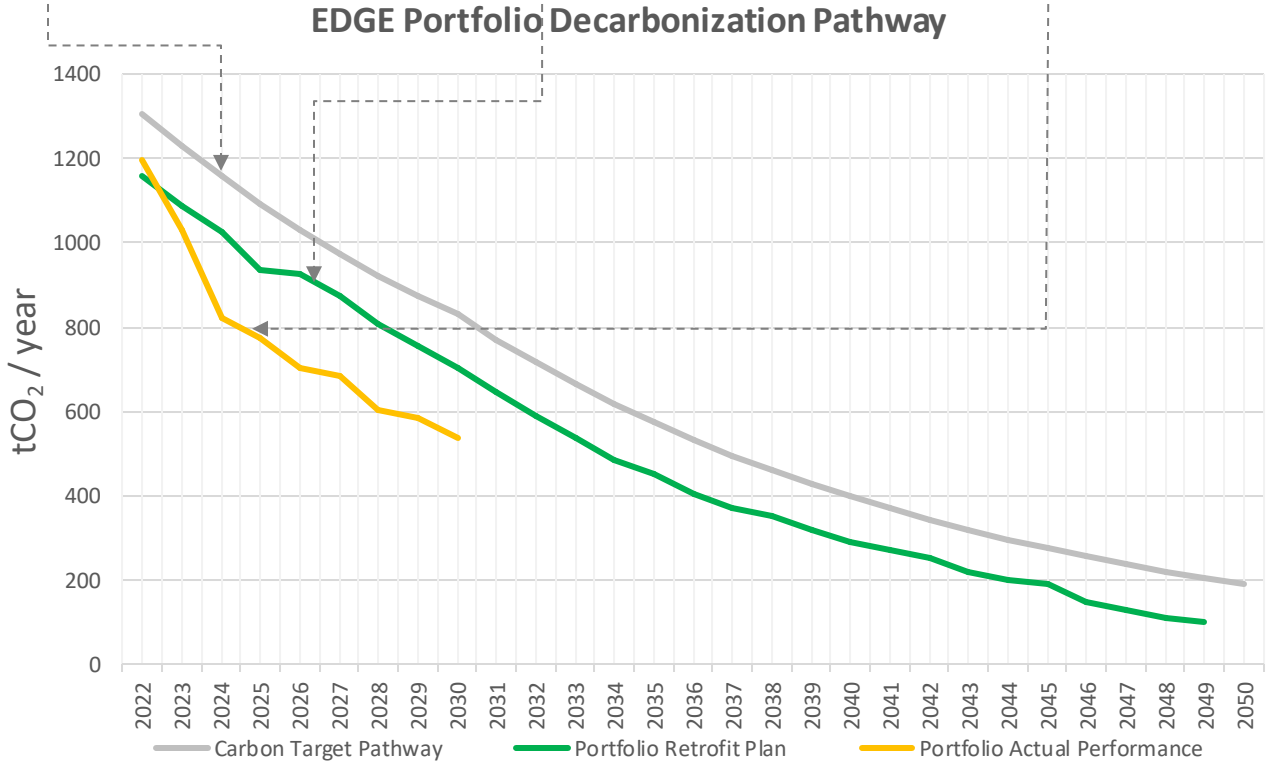
Track "**Actual Performance**" every year and compare

Portfolio / Project Name	Portfolio ABC
Number of Buildings	20
Starting Year (Year 0)	2022
CO_2 Reduction by 2030 (%)	**35%***
CO_2 Reduction by 2050 (%)	**85%***
Balance Off-site Renewable Energy Required for Zero Carbon	15%

** Compared to EDGE base case*

** Includes on-site renewable energy*





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Drivers of Profitability for Green Housing

1

Access to international green finance flows for better financing terms

2

Minimized incremental cost through early planning

3

Faster sales through market differentiation

4

Savings on utility bills for owners and renters

5

Lowered default rates and superior collateral value for green mortgages

6

Government incentives

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Creating Markets, Creating Opportunities

Minimized Incremental Cost Through Early Planning

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

REALITY: ***About 1% incremental cost***

IHS South Africa	▪ Less than **1%** of total costs
VINTE Mexico	▪ About **1%** of total costs
SHAPOORJI India	▪ Less than **1%** of construction costs
CAPITAL HOUSE Vietnam	▪ About **1%** of construction costs

Further resource: Green Buildings – A Financial and Policy Blueprint for Emerging Markets

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Leverage the EDGE Marketing Toolkit to sell faster and save on financing costs

- Issue a press release
- Submit a project study
- Launch a social media campaign
- Publish your story
- Include EDGE in your mission
- Shoot & publish a video
- Use EDGE in your sales strategy
- Display EDGE at site & sales gallery
- Speak at a conference or host a webinar
- Hold a certification ceremony

Case study:

Capital House of Vietnam increased sales

EcoLife Riverside Statistics

- Green construction cost only **1%** more in capital costs.
- Reduced financing costs by **3%**
- Capital House held a model apartment showcase with EDGE branding, which increased their sales.
- **20%** faster sales
- Winner of Financial Times **Transformational Business Award**

20%
Faster Sales
By leveraging
EDGE
brand recognition.

Case study:

Vinte is certifying thousands of homes with EDGE, winning international acclaim

Vinte Statistics

- In 2018, Vinte became the first housing developer in Latin America to issue a sustainability bond
- Well-organized and secure communities include health clinics, parks, and schools
- Homes feature solar technologies, state-of-the-art induction stoves, smart meters, and more, at an affordable price
- In 2019, Vinte **won** a spot on the **Fortune Magazine's Shared Value Initiative** listing companies that change the world

Predicted Savings of EDGE Certification *Real Valencia*

36%
Energy Savings

48%
Water Savings

65%
Less Embodied Energy in Materials

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Case study:

Riovivo – Menta & Turquesa, Colombia,

offers 44% savings in utility costs for its home buyers

Riovivo highlights

- This twin towers, 14 story project's phase one is home to 338 families
- Received EDGE Advanced certificate
- Residents will save approx. 44% in utility bills
- Key features include LED lighting, reflective paint, external shading devices, and low-flow plumbing fixtures

Predicted Savings of EDGE Certification *Riovivo*

44%
Energy Savings

42%
Water Savings

52%
Less Embodied Energy in Materials

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Case study:

Signature Global, an Indian developer, sells 3X faster, thereby saves on financing costs

Signature Global Portfolio

- Affordable housing portfolio
- Signature Global claims to have 3x faster sales for his EDGE certified green homes
- Certified over a million square meters of floor space
- Green features include shading devices, low-flow water fixtures, reduced window-to-wall ration, and more.

Predicted Savings of EDGE Certification
Signature Global Park 3

23%
Energy Savings

39%
Water Savings

52%
Less Embodied Energy in Materials

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Case study:

ABSA launches South Africa's first Green Mortgage

ABSA Statistics

- ABSA Bank collaborated with Balwin Properties to launch an eco-home loan for homebuyers interested in purchasing the developer's green homes.
- Qualifying homebuyers can get **a reduced interest rate** on their mortgages at Balwin Properties' EDGE-certified residential communities.

Balwin Properties sold a record

807 homes

in a month.

Case study:

Shapoorji Joyville, keeps incremental costs of greening at less than 1%

Shapoorji Joyville Cost Advantage

- Shapoorji Joyville, a developer in India, keeps incremental costs of building green at less than 1% compared to traditional buildings.
- The Kolkata West International City is a multi-phase project
- Over 600 homes EDGE certified
- These non-air-conditioned homes, use features such as reflective paint and low-E coated glass in windows to keep the heat at bay

Predicted Savings of EDGE Certification
Kolkata West Intl City

27%
Energy Savings

35%
Water Savings

36%
Less Embodied Energy in Materials

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Why EDGE?

International Acclaim/Green Finance

EDGE enables green-finance and brings global prestige and distinguishes your projects/portfolios.

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.

Portfolio Decarbonization

EDGE is helping large portfolio clients map a Paris-aligned path to decarbonization with its direct carbon reporting, retrofit module and Pathway Planning Tool.

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Building Resilience Index

IMPACTS ACROSS THE CLIMATE SYSTEM

Chronic Stresses

Mean global temperature increase

Precipitation pattern changes

Sea level rise

Fire weather

Glacial retreat

Ice sheet loss

Northern Hemisphere snow cover change

Mean ocean temperature increase

Ocean acidification

Acute Shocks

Heatwaves

Extreme precipitation

Tropical Cyclones

Storm surges

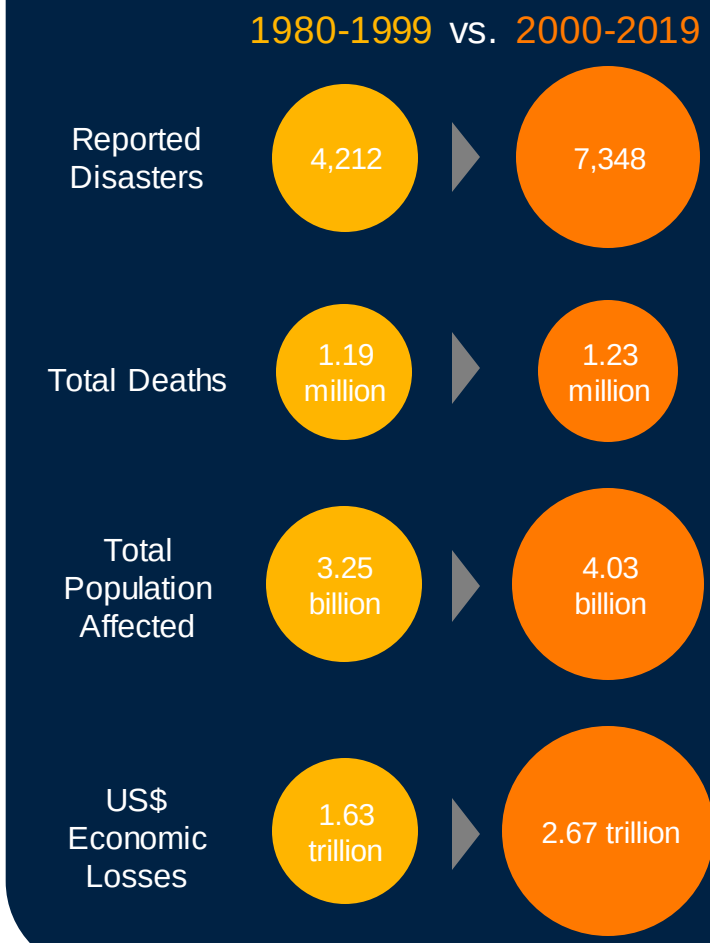
Floods (fluvial, pluvial, coastal…)

Droughts

Wildfires

Marine heatwaves

Decadal Disaster Impact Trends



Data Source(s): IPCC, AR6 Climate Change 2021: The Physical Science Basis, 2021. CRED & UNDRR, Human Cost of Disasters, 2020.

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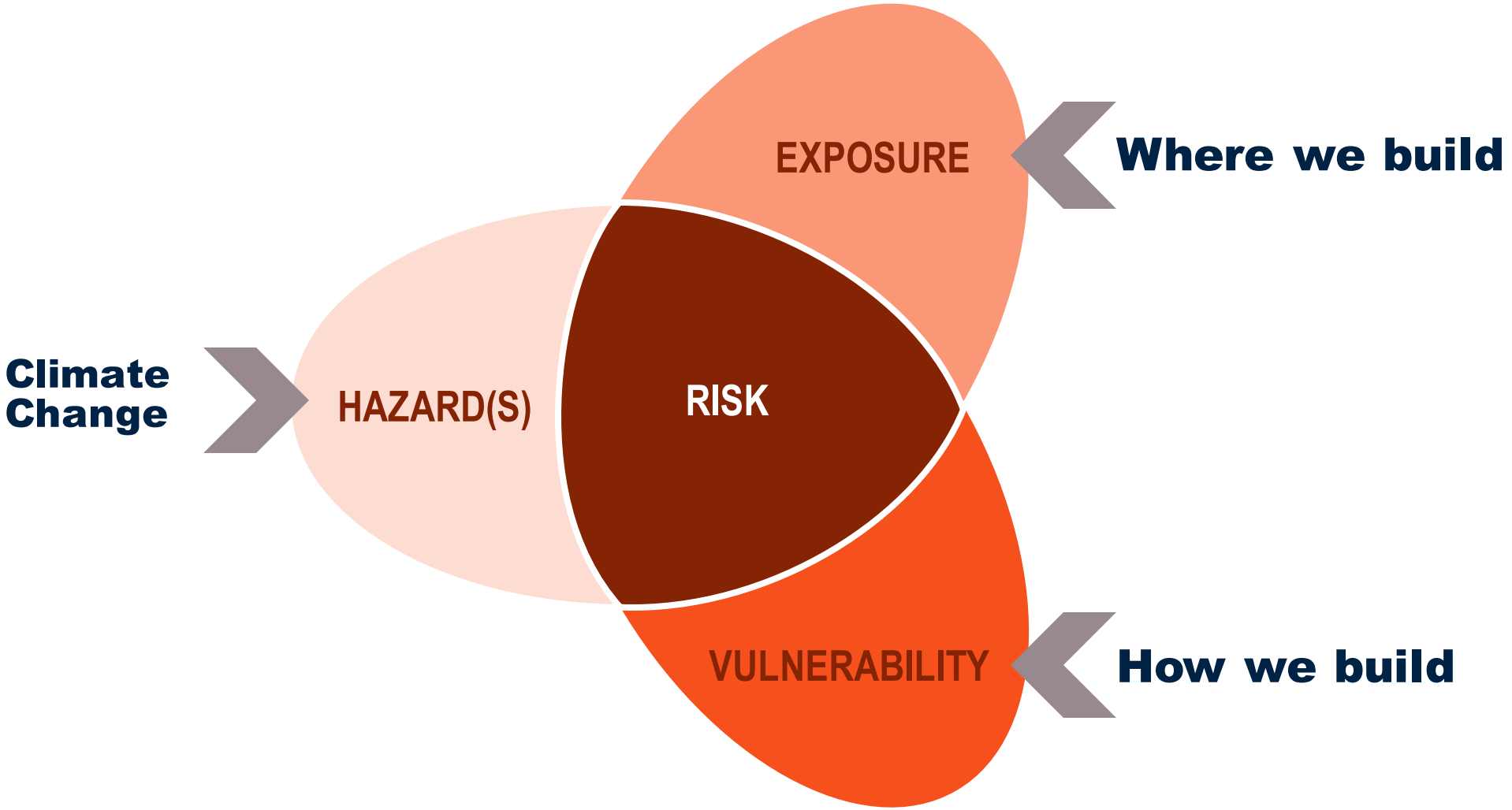
CLIMATE CHANGE IMPACTS ON HOUSING



WHEN BUILDINGS ARE AFFECTED BY DISASTERS

Buildings

- Total loss of the asset due to structural collapse
- Structural damages varying from irreparable to minor
- Loss of non-structural building components (e.g., roof tiles, windows)
- Disruption of utility connections due to damages sustained by utility infrastructures
- Damages to mechanical, electrical, plumbing systems
  - Risk of secondary hazards being triggered (e.g., fire)
- Damages to equipment, furniture, stock…etc.
- Contamination (water hazards)
- Mold development (water hazards)
- Disruption of building's operations and/or services

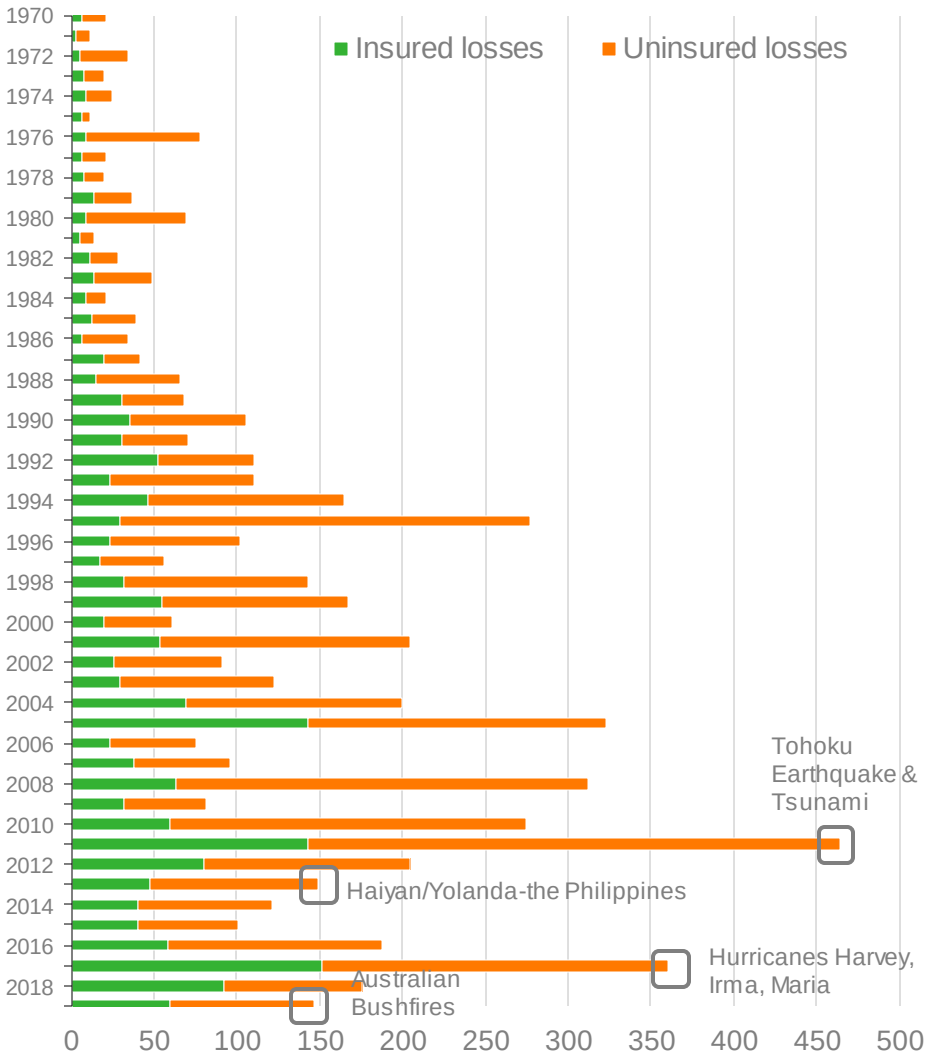
People

- Deaths
- Physical injuries
- Mental health consequences
- Displacement

Economy

- Business disruption
- Loss of livelihoods, income, revenues…etc.
- Reconstruction costs

DISASTERS ARE COSTLY AND ASSETS ARE MOSTLY UNINSURED



2011: Tohoku Earthquake

2013: Haiyan/Yolanda- the Philippines

2017: Hurricanes Harvey, Irma, Maria

2019-2020: Australian Bushfires

Data Sources: *Swiss RE, EMDAT, NOAA*

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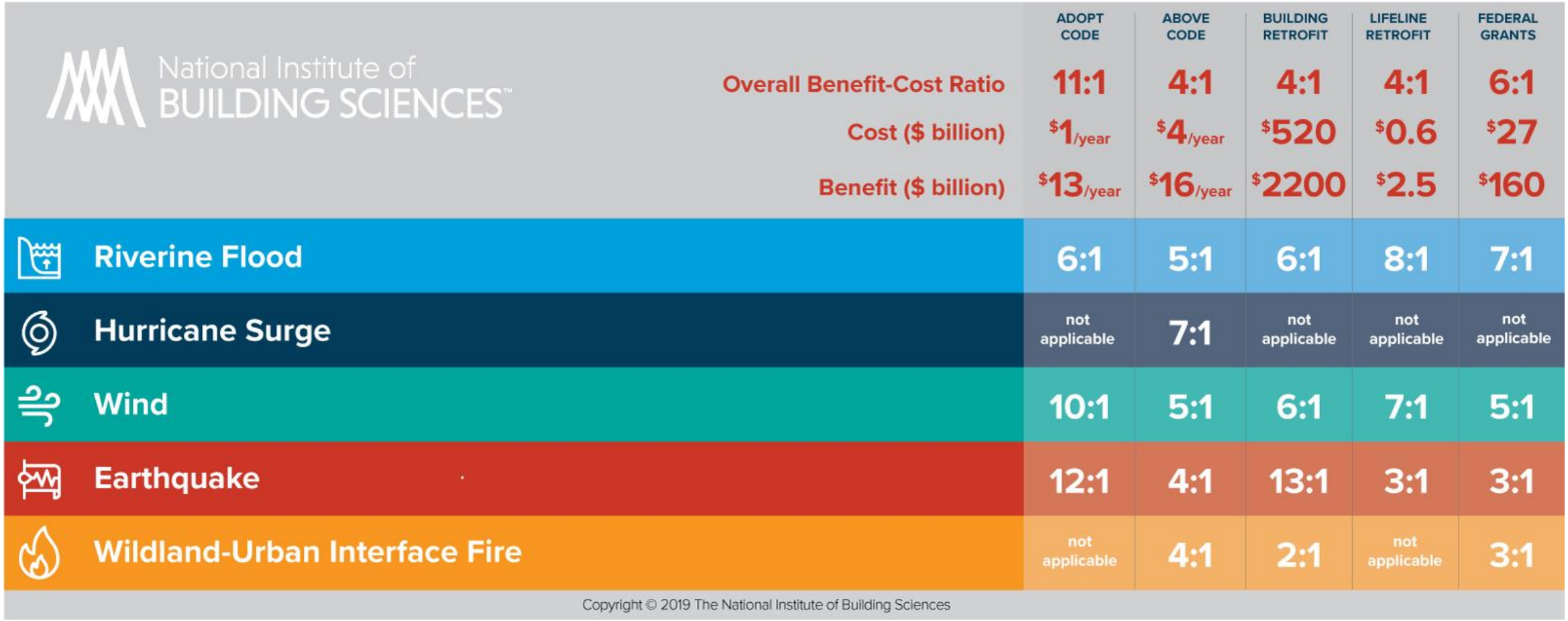
BUSINESS CASE FOR INVESTING IN RESILIENCE MEASURES



Source: National Institute of Building Science, Natural Hazard Mitigation Saves 2019 Report

RESILIENT BUILDING

a building which can withstand the natural and climate hazards it is exposed to, and ideally continue its operations without disruption following an intense hazard event

Photo: Andrei Miranchuk (Unsplash)

Building Resilience Index

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.

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

IDENTIFY RISK: **LOCATION-SPECIFIC** & **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

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

DISCLOSE RISK: **RATING LEVELS** OF BUILDING RESILIENCE INDEX

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.

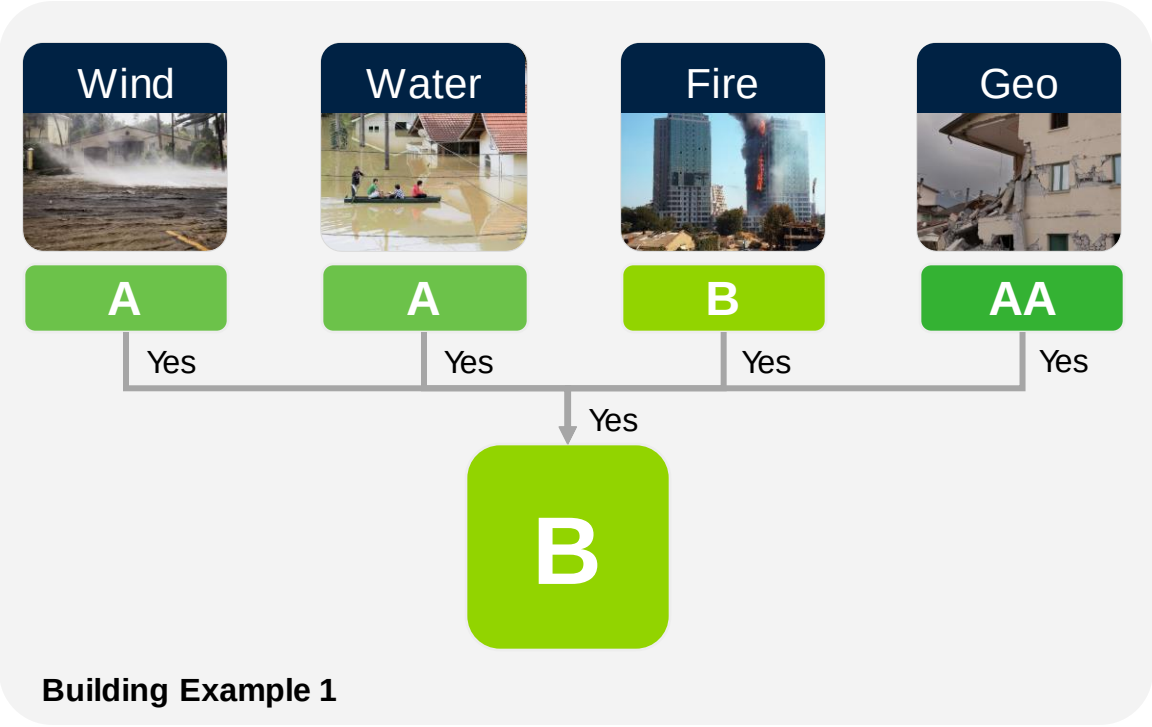
The **building incorporates most recommended resilience practices** of Building Resilience Index. It will likely withstand some applicable hazards at a moderate-high level.

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.

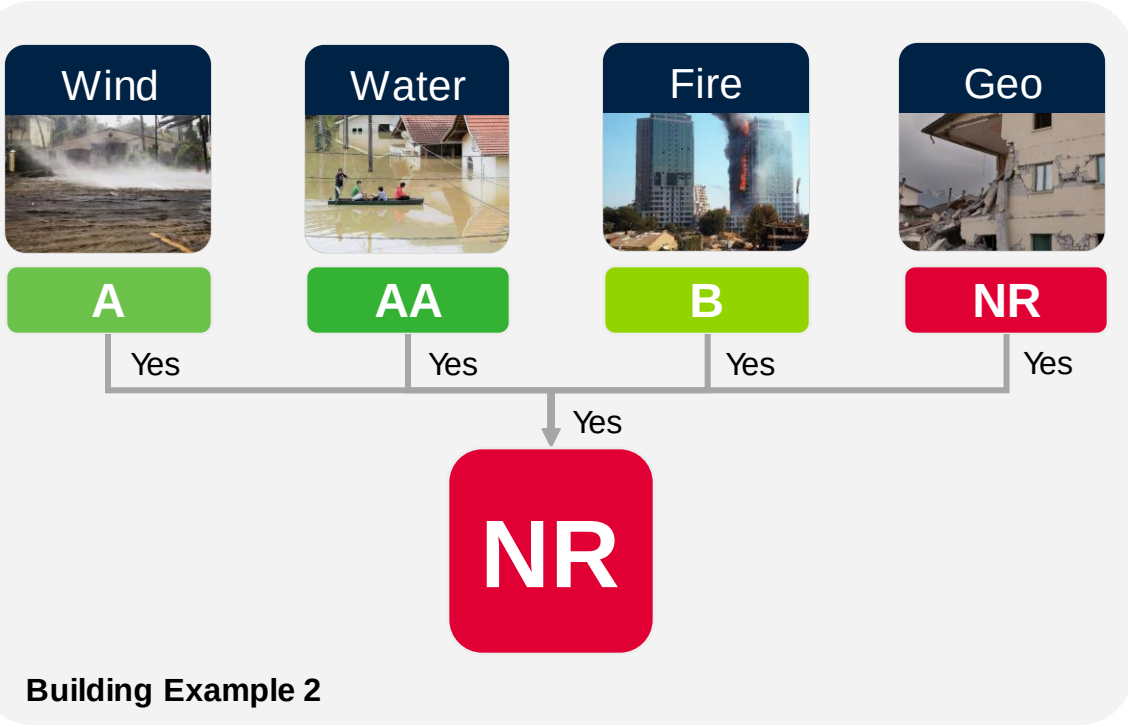
The rating followed by '+' indicates that the building meets all requirements of the identified Building Resilience Index rating, plus **recommended operational continuity measures**.

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

THE WEAKEST LINK PRINCIPLE



Building Example 1



Building Example 2

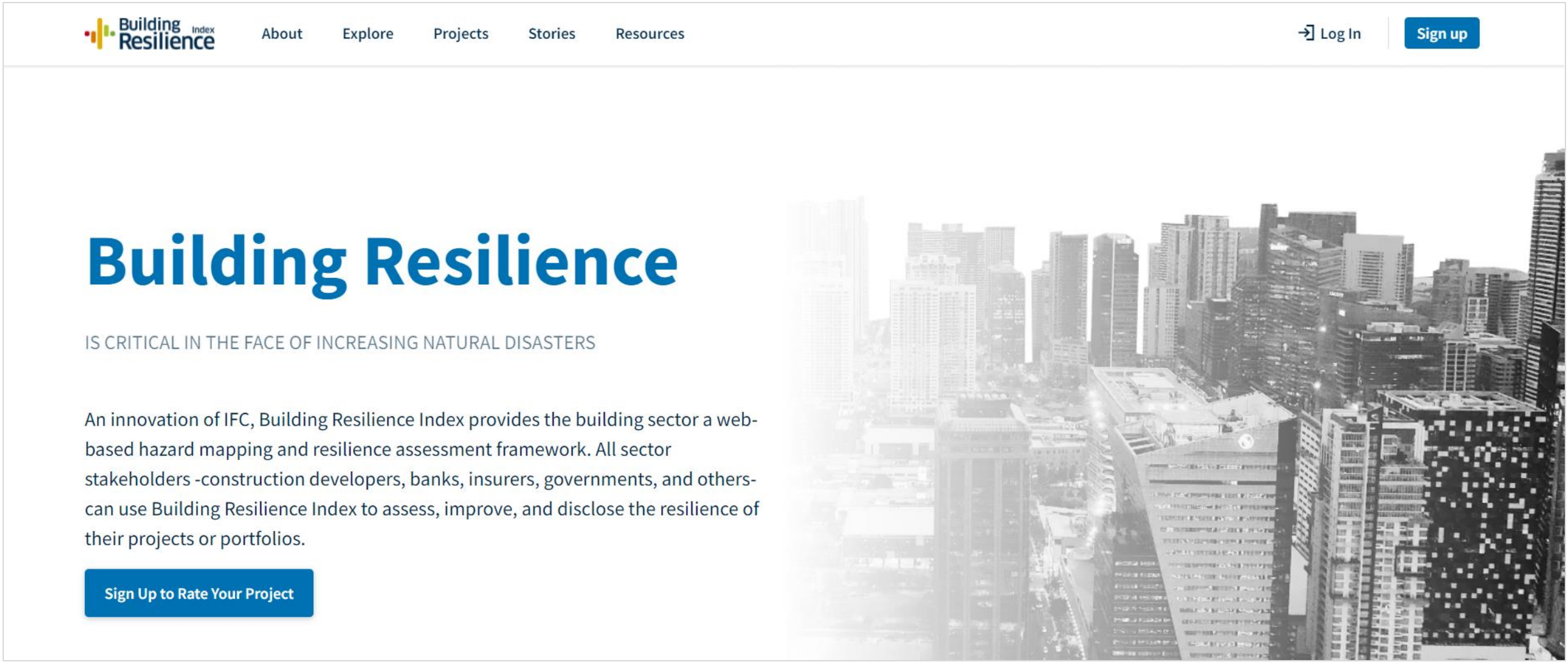
All applicable local hazards must be addressed in order to achieve overall resilience.

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

SELF-ASSESSMENT & **VERIFICATION** PROCESSES

Who?	by the Developer's in-house design and code-responsible engineering team, as well as administrative staff if need be	**two licensed code-responsible engineers** or parties appointed by the Developer for each mitigation measure
Steps	1. Create a Project 2. Respond to each mitigation measure 3. Request verification from verifiers	1. Review responses to each mitigation measure 2. Submit review

APP DEMO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Building Resilience
IS CRITICAL IN THE FACE OF INCREASING NATURAL DISASTERS
An innovation of IFC, Building Resilience Index provides the building sector a web-based hazard mapping and resilience assessment framework. All sector stakeholders -construction developers, banks, insurers, governments, and others- can use Building Resilience Index to assess, improve, and disclose the resilience of their projects or portfolios.
Sign Up to Rate Your Project

BUILDING RESILIENCE COMMITMENT - PHILIPPINES

2+ million m² residential and commercial space across 52 projects is pledged by 12 developers

Amaia Kaya ko na! · aztala corporation · D.M. WENCESLAO AND ASSOCIATES, INCORPORATED · Habitat for Humanity · IDC Italpinas Development Corporation · IMPERIAL HOMES CORPORATION · MENARCO DEVELOPMENT CORPORATION · NEO · PHINMA PROPERTIES · SM SUPERMALLS · YUCHENGCO GROUP OF COMPANIES

VERIFIED PROJECT EXAMPLE

Project: Via Verde Padre Garcia by IMPERIAL HOMES CORPORATION

Stage: Design

Scale: 1,018 units, each 50-100 m²

Main Hazards: Typhoons, Floods, Earthquakes

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

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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

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UKaid from the British people

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

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Government of the Netherlands

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BUILD CHANGE

FM Global

Resilience Action Fund — For a Stronger and Safer Built Environment

miyamoto.

GFDRR — Global Facility for Disaster Reduction and Recovery

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Q&A