UNEP Finance Initiative

Energy Efficiency Finance capacity building

11-12 July 2023

Workshop 2#

Financing new green buildings and renovations in the real estate sector

12 July 2023

MINISTERO DELL'AMBIENTE
E DELLA SICUREZZA ENERGETICA

We would like to thank the Italian Ministry of Environment and Energy Security for supporting the UN system's contribution to a green and inclusive recovery by harnessing the power of financial systems to support the SDG Decade of Action, access of developing countries to sustainable finance and Multilateral Environmental Agreements.

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- Recordings and materials will be shared after the meeting to participants

Our agenda today

12 July

9.00 Opening

9.05 **EE Underwriting toolkit** (Steven Fawkes/EEFIG)

9.45 **Towards a zero-emission, efficient and resilient buildings and construction sector in Sub-Saharan Africa / MENA** (Jonathan Duwyn / UNEP-GlobalABC and Lenore Cairncross/IFC)

10.45 **Break**

10.50 **Using ESCOs to scale up energy efficiency investments** (Jalel Chabchoub/African Development Bank)

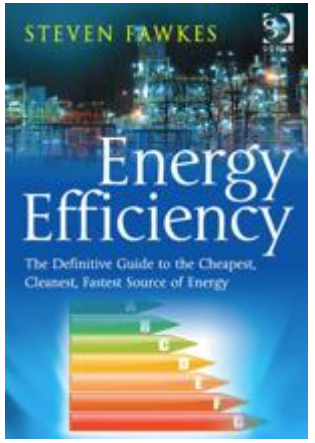
11.50 **Wrap-up and closing** (UNEP FI)

UNEP Finance Initiative

The EEFIG Underwriting Toolkit

Introduction

- Dr. Steve Fawkes
  - PhD on the potential for energy efficiency in UK industries
  - 40+ years experience in energy efficiency
  - Advised corporates, investors, multi-lateral institutions and governments
  - Experience:
    - designing and implementing large-scale energy management programmes (up to 1,500 buildings)
    - Developing and implementing innovative energy outsourcing contracts for Sainsburys, Diageo, Corus
    - Introduced the Investor Confidence Project to Europe and secured €3.5m of H2020 funding
    - Corporate finance raising capital for energy transition and clean-tech companies
    - Co-leader EEFIG consortium 2016-2017 and leader of Working Groups in EEFIG 2019-2023
  - Current roles
    - Founder and Managing Partner ep group
    - Partner Cameron Barney
    - Independent member of IC for London Energy Efficiency Fund
    - NED for EESL EnergyPro Assets Ltd – JV with Indian state owned energy efficiency company
    - NED for Latvian and Baltic Energy Efficiency Fund
    - NED for ZPN Energy
  - More than 350 publications – mainly on energy efficiency & energy services – including 3 books and a blog called onlyelevenpercent.com



Contents

Workshop 1#

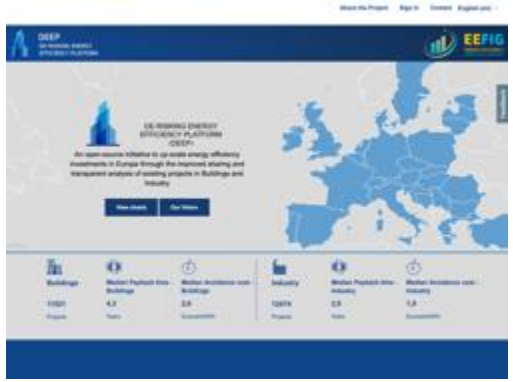
Introduction to the EEFIG Underwriting Toolkit

EEFIG Derisking project 2016-2017

- Phase II of EEFIG delivered two tools to help derisk energy efficiency:

Derisking Energy Efficiency Platform (DEEP)

An open-source database of >11,500 energy efficiency projects in buildings and industry across Europe



Underwriting Toolkit

A guide for financial institutions better able to assess the value and risk of energy efficiency projects

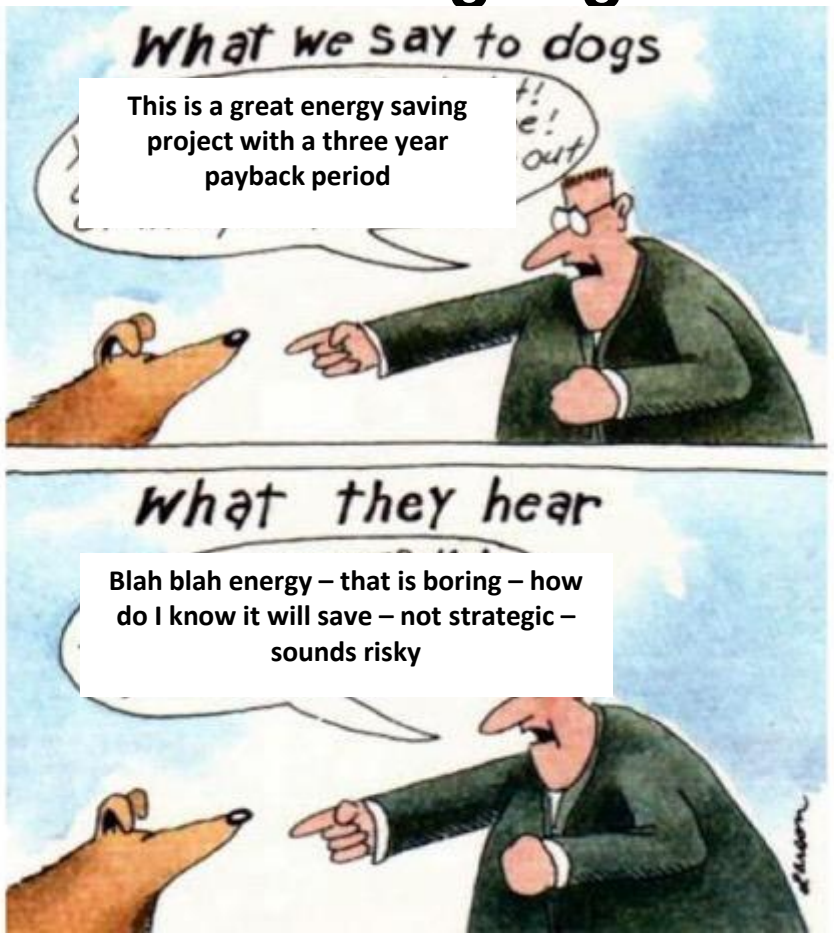
EEFIG Underwriting Toolkit

- **Designed to assist financial institutions to scale up their deployment of capital into energy efficiency.**

- **Objectives:**
  - to help originators, analysts and risk departments within financial institutions **better understand the nature of energy efficiency investments** and therefore better evaluate both their value and the risks.
  - to provide **a common framework for evaluating energy efficiency investments and analysing the risks** that will allow training and capacity building around standardised processes and understanding.
  - **to help developers and owners** seeking to attract external capital to energy efficiency projects to develop projects in a way that better addresses the needs of financial institutions.
  - **to foster a common language** between project developers, project owners and financial institutions.

- Although **the focus is on value and risk appraisal**, additional material on the size of the potential market, methods of financing and the project life cycle have been included to give a fuller picture and **help build capacity** within financial institutions.

The need for a common language



Structure of the Underwriting Toolkit

- Introduction
- Financial institutions and energy efficiency
  - Why?
- Financing energy efficiency
  - How?
- The project life cycle
  - Stages of a project
- Value and risk appraisal
  - How to assess value and risk
- Resources

Types of energy efficiency financing

Types of energy efficiency financing

- On Bill Recovery (OBR)
- Property Assessed Clean Energy (PACE) financing
- Energy efficient mortgages
- Specialised funds – public or blended
- Energy Service Companies (ESCOs)
- Bonds
- Yieldcos
- Normal lending taking into account energy efficiency (see Energy Efficiency First section)

On Bill Recovery (or On Bill Finance)

- Customer repays a loan for energy efficiency equipment through an additional line item on their electricity bill
- Advantages to financial institutions:
  - Uses existing electricity company billing system
  - Large customer base
  - Low default rate
  - Transferable as it is tied to property
- Used in several US states and was basis of UK Green Deal (which failed for other reasons)

Property Assessed Clean Energy (PACE)

- PACE is a way of repaying loans for energy efficiency improvements (and other measures including solar, water projects and in some cases earthquake protection measures)
- A PACE repayment is added to the property taxes and collected by the local authority
- Developed in US, also applied in Australia and Canada, Horizon 2020 project to introduce it to Europe
- Highly dependent on property tax system – the US property tax system puts local taxes above mortgages so minimal default risk
- Can be long-term – up to 20 years
- Can be residential (R-PACE) or commercial (C-PACE)
- R-PACE active in 3 states
- C-PACE active in 30 states
- In US $11.9 billion invested across 325,000 projects

Energy Efficient (or Green) Mortgages

- Mortgages where some portion of the loan funds energy efficiency (green) upgrades to the home
- Energy Efficiency Mortgages Initiative (an EU funded project) includes 70 lenders
  - Energy Efficiency Mortgage valuation checklist
  - Harmonised Disclosure Template for portfolio reporting
  - Energy Efficient Mortgage Label
- Green mortgages in Romania developed in conjunction with Romania Green Building Council

Specialised funds

- Can be private, public or blended (private/public)
- Can be debt or equity
- Can be focused on specific sectors eg property
- Examples
  - The European Energy Efficiency Fund
  - Carbon Neutral Real Estate Fund
  - Mayor of London's Energy Efficiency Fund
  - Credit Suisse European Climate Value Property Fund
- Experience shows that these kinds of funds are helped by having some Technical Assistance (TA) facility to help develop projects

Energy Service Companies (ESCOs)

- Much talked about – little understood
- An Energy Service Company (ESCO) develops and implements energy efficiency (and sometimes energy supply) projects and guarantees a level of energy performance through an Energy Performance Contract (EPC)
- Projects are usually financed by a financial institution
- Often the guaranteed level of savings will exceed the repayments, making the project cash flow positive for the client from the beginning

ESCOs and EPCs are useful but not *the* answer to every problem

- Complex
- Suitable for large projects (€ millions)
- High transaction costs
- Measurement and Verification issues
- Balance Sheet issues
- 80-90% of global ESCO EPC business is in the public sector – it has never caught on in other sectors

Note: ESCOs are not new – Boulton & Watt

Super ESCOs

- In some countries there are now Super ESCOs being promoted by IFIs as a way of accelerating uptake of energy efficiency
  - Etihad Super-ESCO
  - Tarshid
  - Kenya Super ESCO
- Super ESCOs develop projects at scale, using standardized approaches and contracts, arrange finance, and then let projects to ESCOs

Varieties of ESCOs and contracts

- Energy Performance Contract is the standard and most talked about
- Variations include:
  - Chauffage (supply of heat)
  - Efficiency Services Agreement (ESA)
  - Managed Energy Services Agreement (MESA)
  - Metered Energy Efficiency Transaction Structure (MEETS)
  - Lighting as a Service (LaaS)
  - Cooling as a Service (CaaS)
- With the exception of Chuaffage, the others are relatively new and emerging, reflecting the general growth of ‘as-a-service’ models

Bonds and yieldcos for energy efficiency

- Bonds often talked about in relation to energy efficiency but problem is one of scale and the fact that bonds are most often used for re-financing
- Berlin Hyp has used bonds to finance green, energy efficient commercial property
- Some energy efficiency focused yieldcos have appeared in the last few years
  - SDCL Energy Efficiency Investment Trust
  - Triple Point Energy Transition
  - Hannon Armstrong

Normal lending taking into account energy efficiency

- See section on Energy Efficiency First

The risks of energy efficiency projects

The old view of energy efficiency

"Energy efficiency has high returns and virtually no risk"

Energy efficiency text book from the 1980s

"The returns are tremendous, and there's virtually no risk," said Mark Orlowski, the founder and executive director of the Sustainable Endowments Institute"

New York Times, 6 February 2015

Energy efficiency projects do have risks

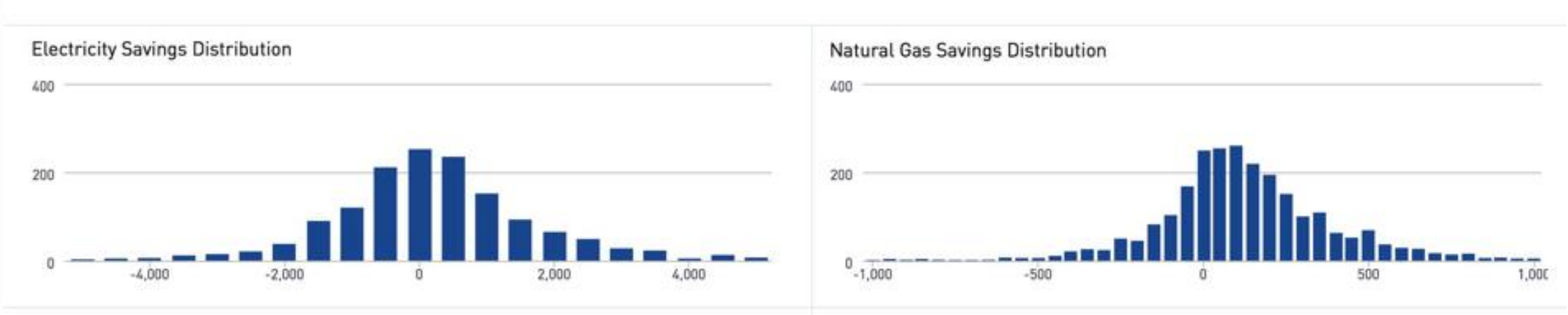
- Energy efficiency projects, like all investments, have risks

- The main types of risk are:
  - Performance risks (NB the performance gap)
  - Equipment risks
  - Operation and Maintenance risks
  - Weather risks
  - Changes in production volume, production mix, patterns of building use (e.g. COVID!!)

- All these can be mitigated and transferred to the correct party
  - Contracts e.g. ESCO through an EPC
  - Insurance

In reality energy efficiency is low risk but not no risk

- Portfolios of projects perform – individual projects may not
- Only just beginning to get the actual performance data that allows us to measure this performance



Value of energy efficiency

The old view of energy efficiency

"Implement this project, spend €1,000 and save €300 a year"

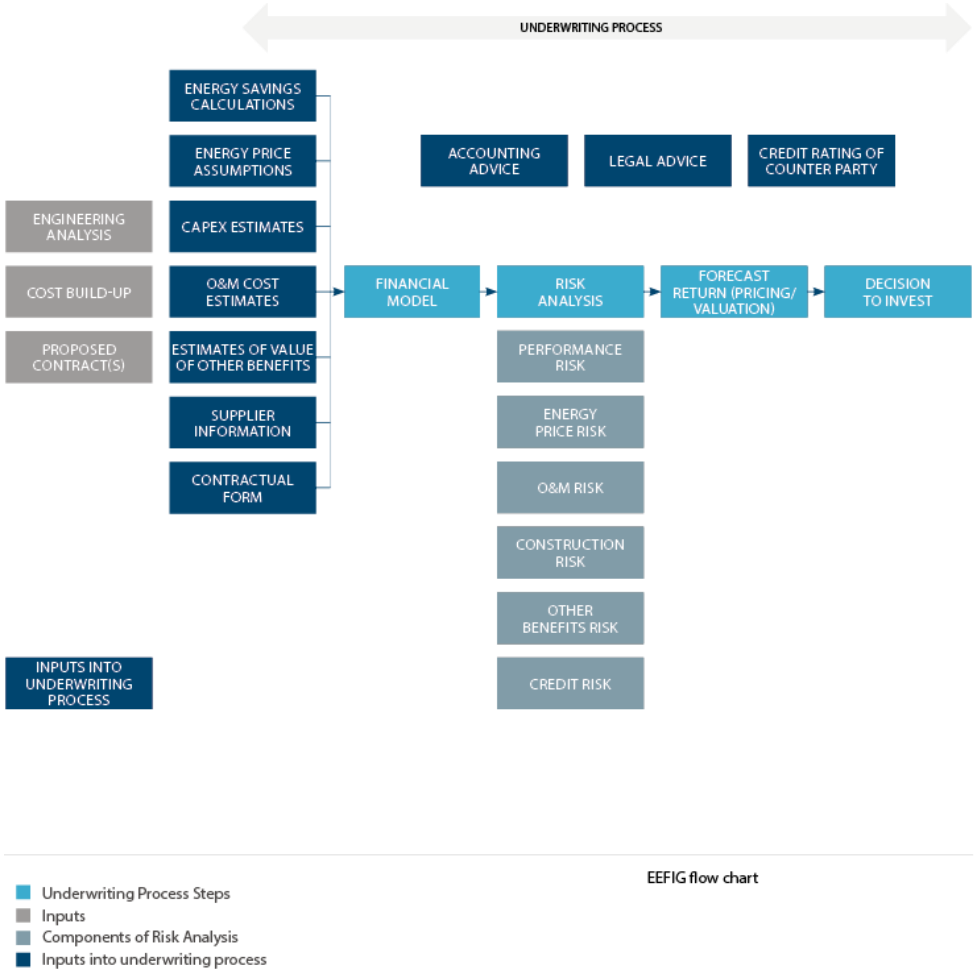
- Boring
- Non-strategic
- 'Defensive' spending versus 'offensive' spending
- Non-core

The new view of energy efficiency – multiple benefits

- Energy efficiency projects create multiple benefits
- Many of these benefits can be valued and included in investment case
- Many of them are much more strategic and interesting to decision makers than just energy cost savings e.g. improved health, improved customer experience
- Tools exist to help assess multiple benefits e.g. M-BENEFITS

The valuation and risk assessment process

Value and risk process



EEFIG flow chart

Energy Efficiency First

Energy Efficiency First

- Often implementing energy efficiency is cheaper, faster and cleaner than energy supply options
- Energy Efficiency First is a pillar of EU energy policy
- It means that energy efficiency options *should* always be considered as an alternative to energy supply options
- In practice they are not considered on most investment or lending options
- Every day buildings and assets are financed that don't even include the *cost-effective level of energy efficiency*
- Why?
  - Lack of capacity on supply side, demand side and finance industry
  - The need for speed
  - Standard supply side solutions are developed
  - Financial institutions don't want to add 'bureaucracy' and hamper themselves in relation to competition
  - Typically they review projects as they are delivered to them and are not proactive in their development

EEFIG Energy Efficiency First Working Group

- Final Report coming out soon
- Studied practices on energy efficiency within public and private financial institutions
- Identified processes and tools that could help financial institutions operationalize energy efficiency first
- Tools are required at 3 levels:
  - Policy and governance
  - Portfolio
  - Deal
- Examples:
  - CREFC Europe Due diligence questions
  - ING REF app for real estate owners
  - D-fine and SkenData portfolio tool
  - Green Technology Selector
  - Investor Confidence Project protocols
  - International Performance Measurement and Verification Protocol

The energy efficiency financing jigsaw

Scaling up EE needs more than just finance

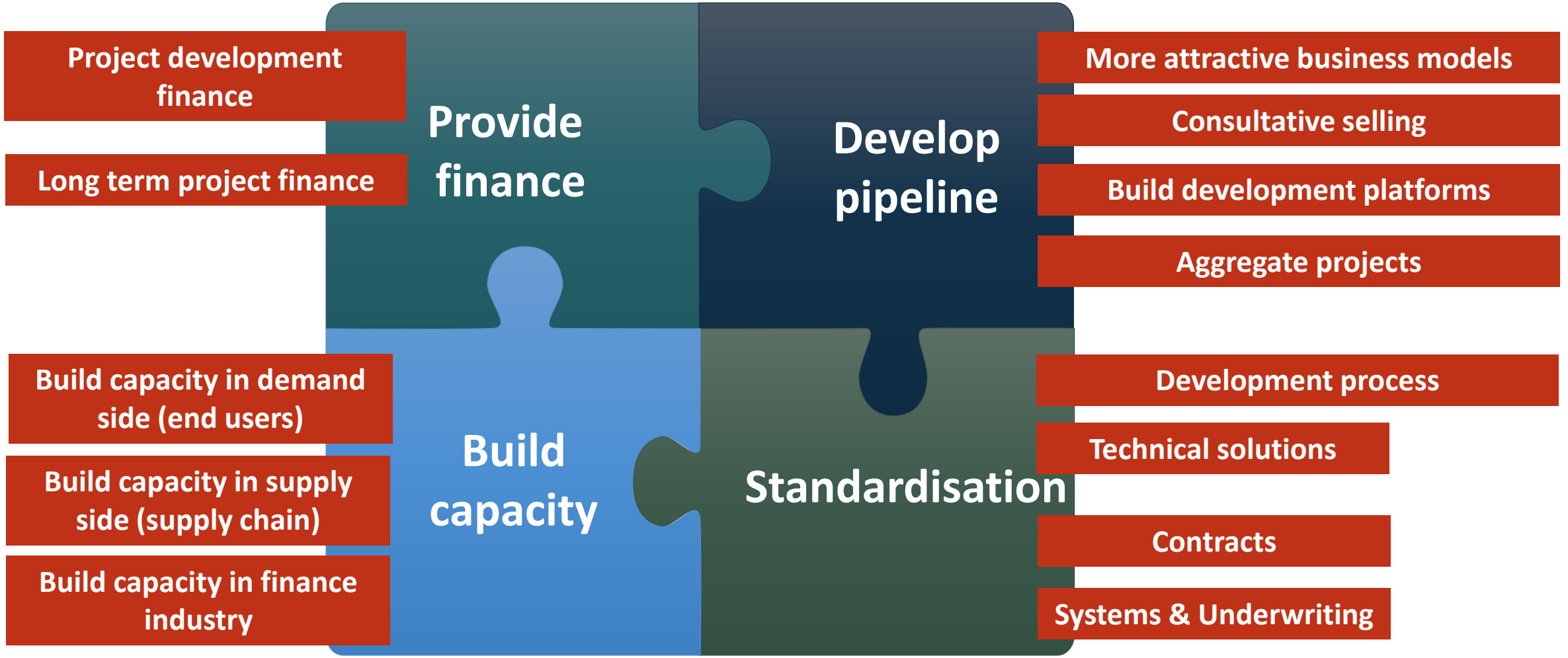


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Photo credit: Junar Eliang

UN environment programme

Global Alliance for Buildings and Construction

Towards a zero-emissions, efficient and resilient buildings and construction sector

Key trends, concepts and solutions

12 July 2023

Agenda

1 **Why buildings?**
>Key trends

2 **Towards net zero buildings?**
>key concepts
>Solutions

3 **The GlobalABC**

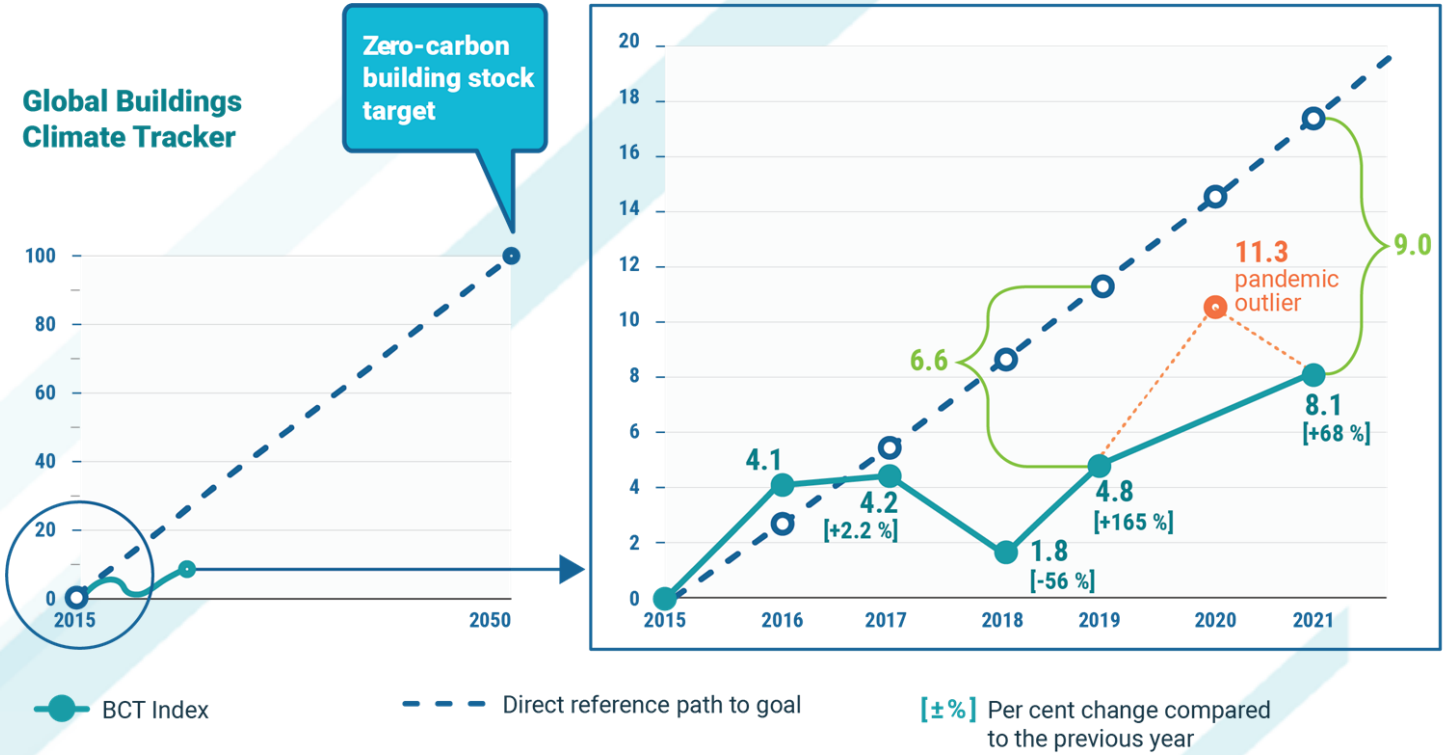
1. Why buildings?

- The equivalent of Paris is added in floor space **every 5 days**
- **Half of the buildings standing in 2060 have not yet been built**.
- Most **existing buildings need retrofitting** to increase energy efficiency and/or climate resilience
- **The most cost-effective mitigation potential of any industrial sector**. Co-benefits including job creation, improved climate resilience.

The Global Buildings Climate Tracker

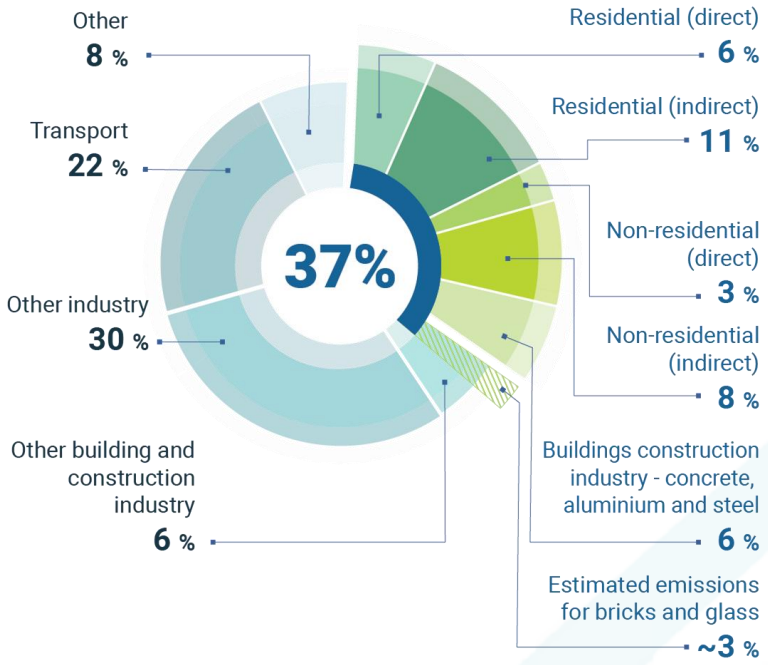
Decarbonisation index trend for buildings and construction

- **The BCT shows a negative rebound since 2020 in the decarbonization of the buildings sector, with increased energy intensity and higher emissions.**
- **No structural, systemic improvement was achieved in the buildings sector, leaving it vulnerable to external factors.**



Source: Adapted by the Buildings Performance Institute Europe.

EMISSIONS:
Global share of buildings and construction operational and process CO2 emissions, 2021



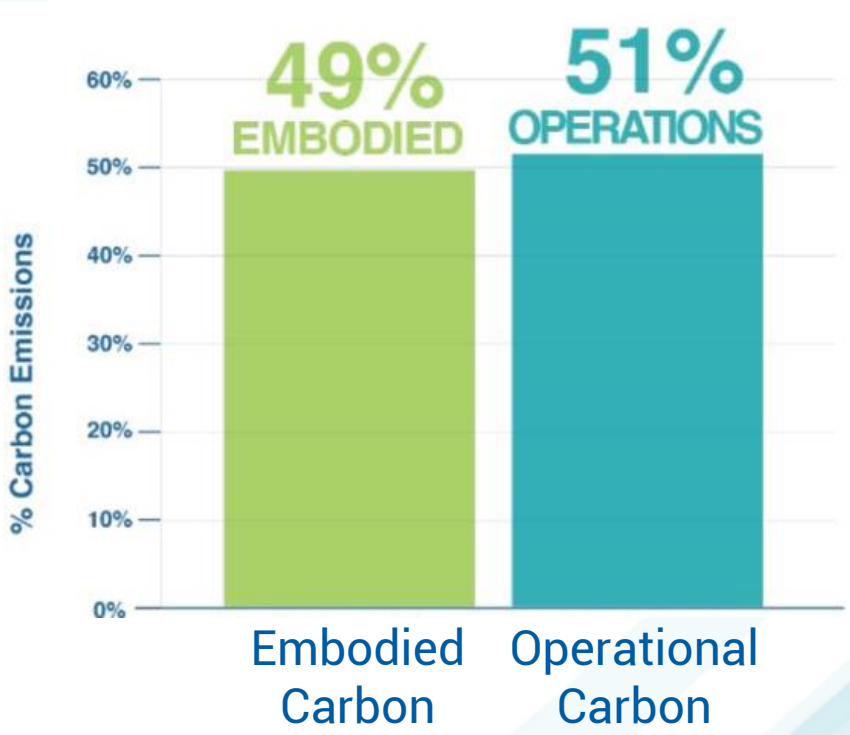
- **Operational energy-related CO_2 emissions from buildings grew by around 5% in 2021 compared to 2020 to around 10 $GtCO_2$, exceeding the previous 2019 peak of 9.6 $GtCO_2$ by 2%.**
- **Emissions from producing buildings materials are around 3.6 $GtCO_2$ (concrete, steel, aluminium, glass, and bricks).**
- **Together buildings represented around 37% of global emissions in 2021.**

Source: International Energy Agency (2022). Tracking Clean Energy Progress. Paris.

Pay more attention to embodied carbon

Embodied carbon will be responsible for almost half of total new construction emissions between now and 2050.

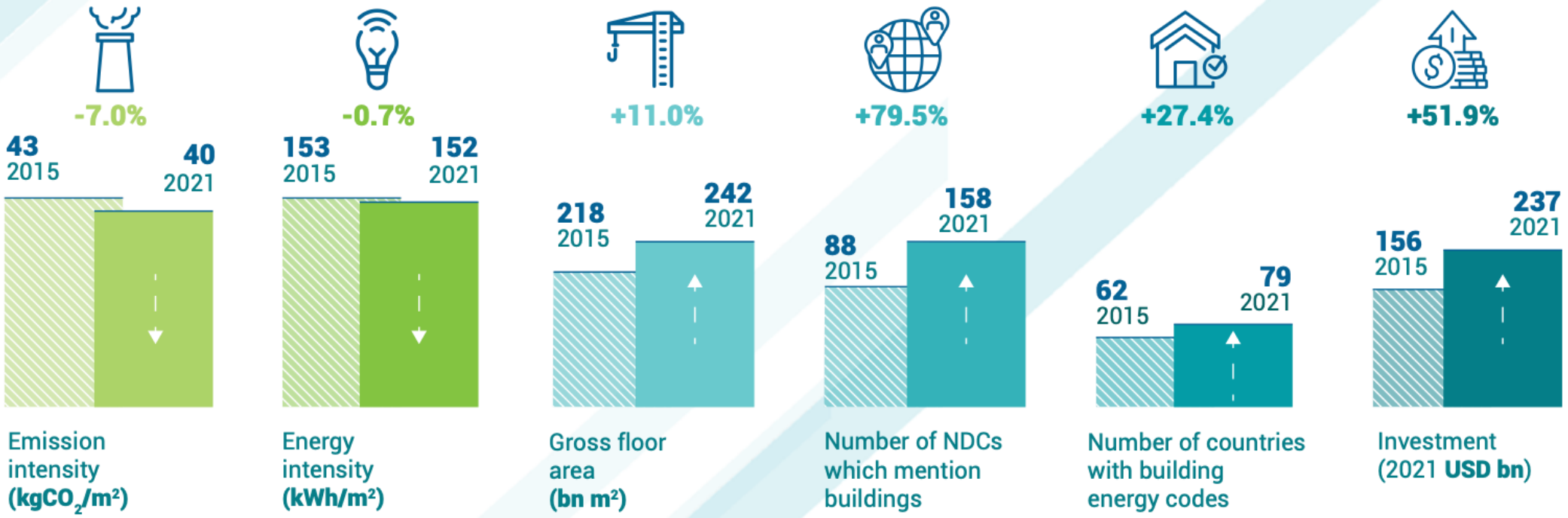
Total Carbon Emissions of Global New Construction from 2020-2050



"As building operations become more efficient, embodied impacts related to producing building materials become increasingly significant."

Source: IEA 2022. All rights reserved. Tracking Clean Energy Progress 2022.

Change in global drivers since 2015



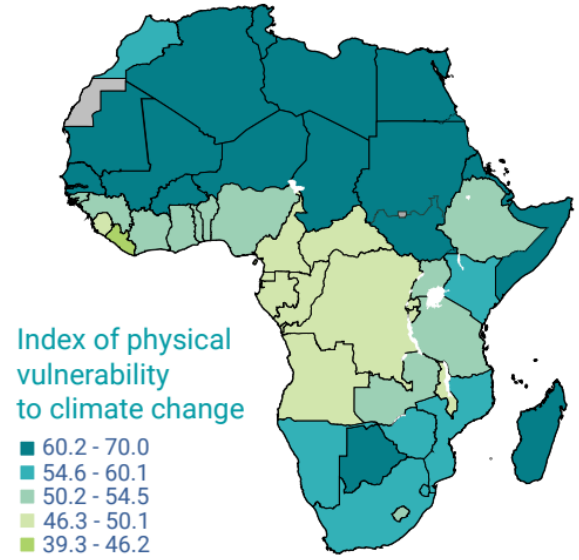
[1] Values included for the baselines have been updated from previous versions of the Buildings-GSR due to both historic input data updates for emissions and floorspace, and also deflation factors for USD. The proportional changes between previous years remains similar.

Regional Context in Africa

- The continent's population is projected to **double by 2050**, reaching approximately 2.4 billion (ADB 2019).
- **Seventy per cent** of the African building stock expected for 2040 has yet to be built (IEA 2019) and more than 80% of that growth will **occur in cities**, especially slums (Myers 2016).
- Africa is one of the regions most vulnerable to the effects of climate change: around **56%** of the population lives in informal housing (UN-Habitat 2016), while the frequency of natural disasters has **tripled** in the last 30 years (UNICEF 2021).
- The buildings and construction sector in Africa is worth USD 5.4 billion and is expected to **grow at a compound annual rate of 6.4% by 2024** (Cheong et al. 2021). Moreover, the economy is anticipated to expand 2.8% in 2022 and 2.7% in 2023, powered by the construction and services industries (Nwamarah et al. 2018a).

Figure 22. Vulnerability to climate change. The lowest level of vulnerability is given a score of 0, the highest 100

This map is without prejudice to the status of or the sovereignty over any territory, to the delimitation of international frontiers and boundaries, and to the name of any territory, city, or area.



Source: Feindouno et al (2020). Adapted from "The Physical Vulnerability to Climate Change Index: An Index to Be Used for International Policy". (Feindouno et al 2020).

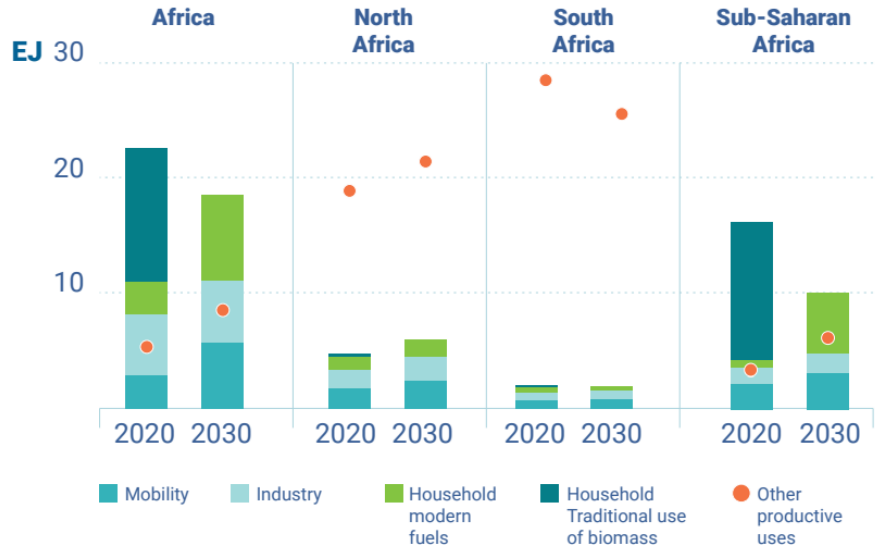
Buildings and construction, a heavyweight for climate action in Africa

- The continent accounts for around **6% of global energy demand** and contributes **less than 3% of GHG emissions** (IEA 2022b). In 2018, **buildings contributed 61% of Africa's final energy consumption and 32% of CO2** (IEA 2019). Households in Africa accounted for 56% of total final energy consumption in 2020.

- The IEA projects that, by 2030, African household energy demand for **cooling** will increase the most and energy demand for **appliances** will quadruple, whereas energy demand for lighting in the residential sector will decrease due to the movement towards energy-efficient lamps (IEA 2022b).

- Given that increased use of **materials** is strongly associated with urban growth, a rise in GHG emissions is also predicted as the **steel and cement industries account for 38% of African emissions** (Nwamarah et al. 2018b)

Figure 23. Africa's final energy consumption by sector 2020-2030



Source: IEA 2022. All rights reserved. Adapted from "Africa Energy Outlook 2022" (IEA 2022b).

Notes: Other productive uses include services and agriculture. Household modern fuels include fossil fuels, electricity and renewables, such as the use of biomass in modern stoves.

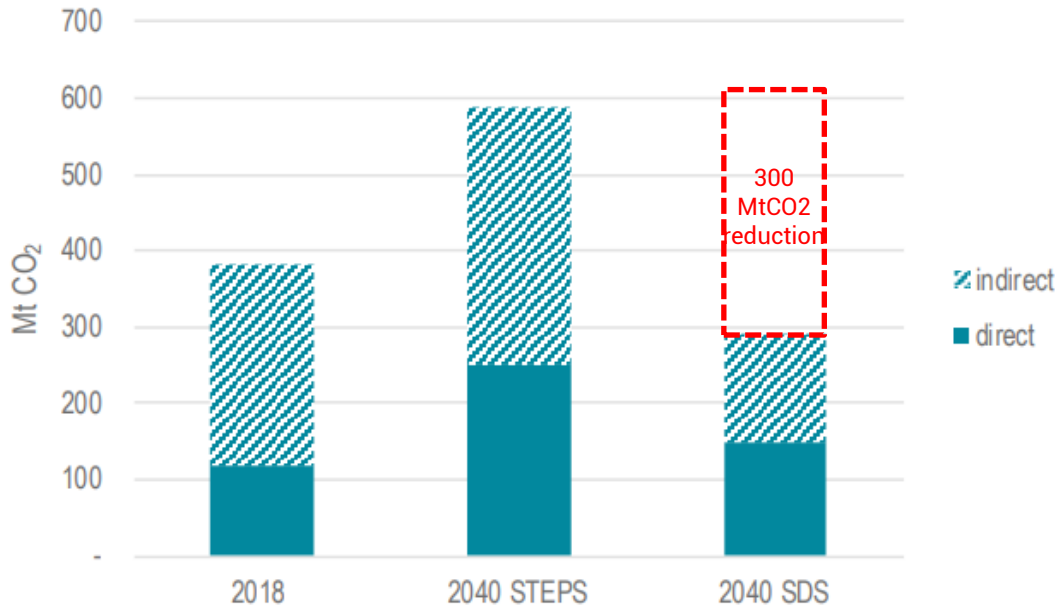
Sustainable Building Scenario in Africa

- Sustainable Development Scenario (SDS) proves that emissions from buildings in Africa in 2040 could be up to 300 million tonnes of CO2 (MtCO2) per year lower than they are on track to be in the Stated Policies Scenario (STEPS)

- The above scenario supports growth in GDP per capita of **over 50%** and an almost doubling in floor area. This is equivalent to taking 50 million cars off the roads.

- These savings from buildings would contribute to almost **half of the total emissions reductions required to get on track with the SDS** (IEA, 2019a)

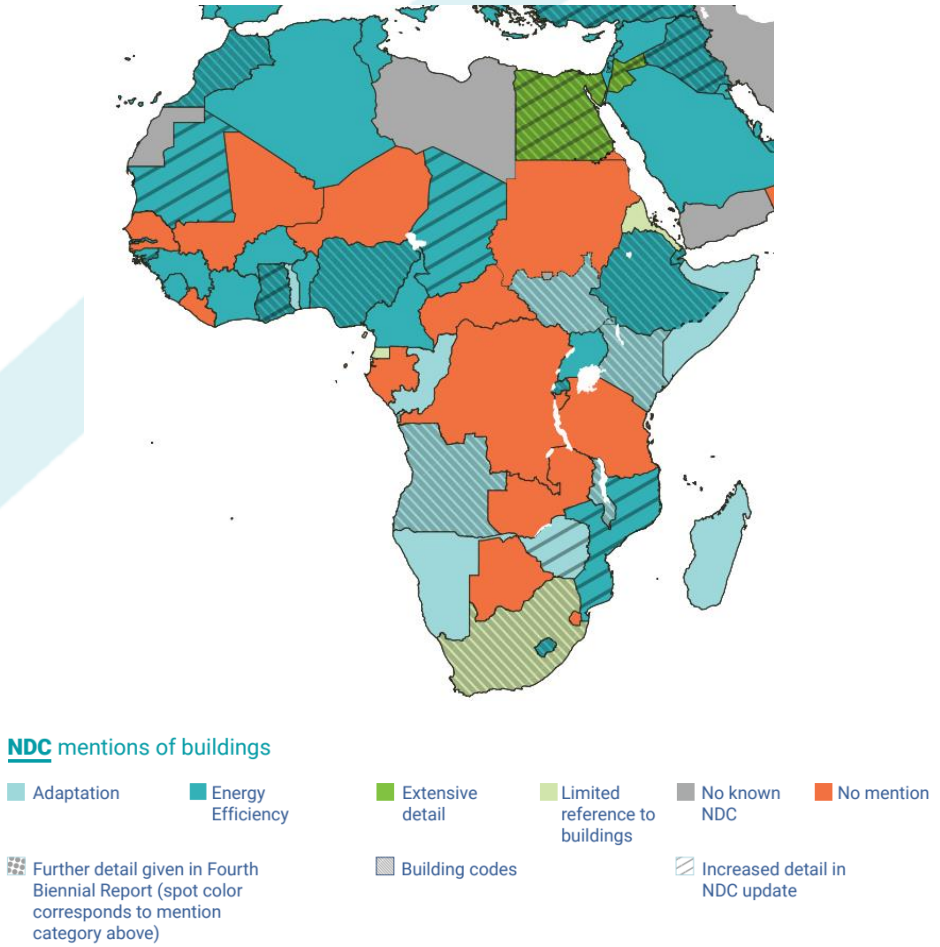
Figure 5 • Emissions from buildings in Africa in 2018 and in 2040 under the IEA STEPS and SDS



Regional Context in Africa: Building codes, certifications & NDCs

- **All African countries except Libya have submitted their first NDCs**, and 38 countries out of 54 have submitted their updated NDCs. Many of these address the buildings sector in a variety of topics, including building codes, energy-efficient appliances and lighting, integration of renewable energy, and the use of local and traditional construction materials and techniques

- **Only five African countries (9%) have a mandatory building code** (South Africa, Ghana, Nigeria, Tunisia and Morocco), while Egypt has a voluntary code. At least seven other African countries are in the process of developing building codes.



Regional Context in Africa: Building codes, certifications & NDCs

- The number of **LEED-certified** buildings in Africa stands at approximately 80.

- **African labelling schemes include**: Green Pyramid (Egypt), Green Mark (Kenya), Green Star (South Africa, Botswana, Ghana, Kenya, Mauritius, Morocco, Namibia, Rwanda, Tanzania, Uganda), Tunisia building energy labelling system etc.

Green certification projects across Africa (blue labels) and **initiatives relating to construction materials** (orange labels)

2. Towards net zero buildings?

Emission goals to achieve the Paris Agreement Goals - UNFCCC Marrakech Partnership for Global Climate Action (MPGCA)

- **By 2030, the built environment should halve its emissions, whereby 100 per cent of new buildings must be net-zero carbon in operation.**

- **By 2050, all buildings must be decarbonized along the lifecycle.**

Two Types of carbon emission in buildings and construction

Embodied Carbon

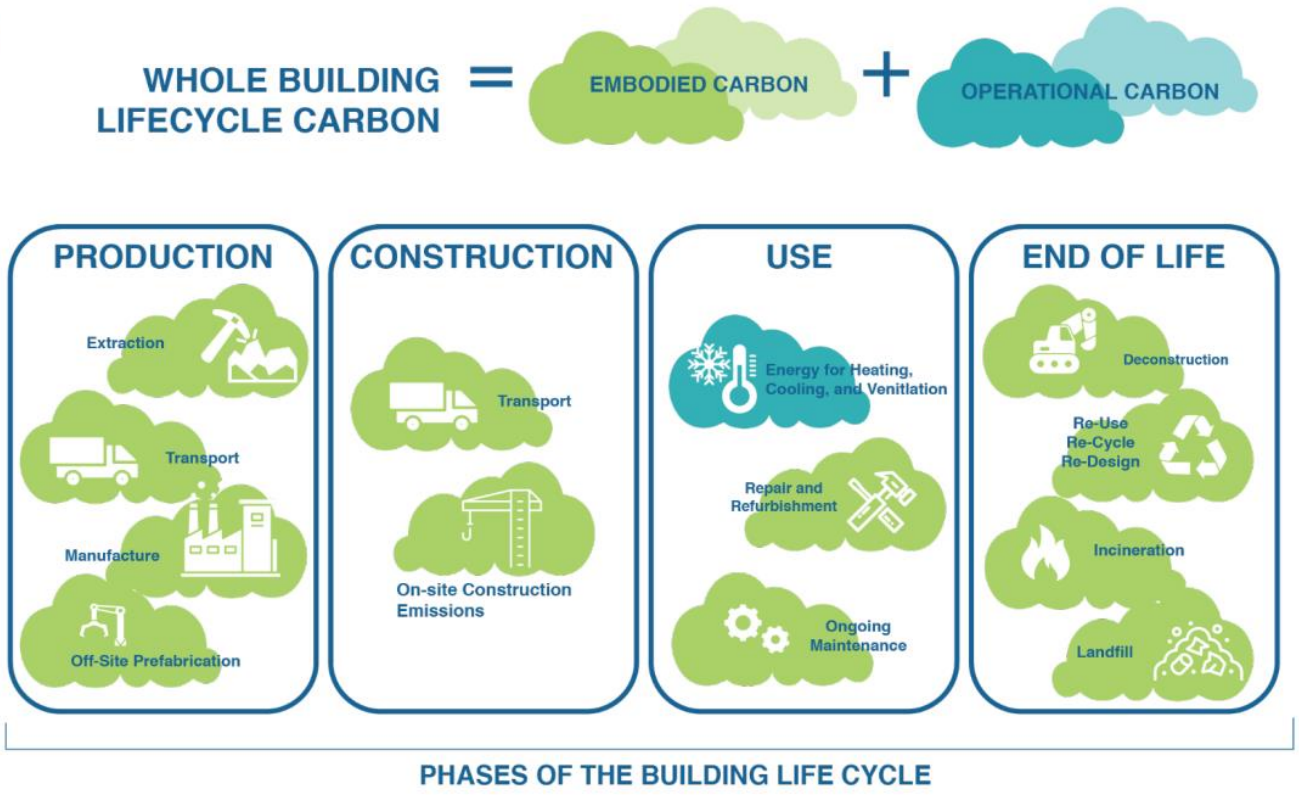
Manufacture, transport, and installation of construction materials

Operational Carbon

Building Energy Consumption

Image; Carbon Leadership Forum 2020

Decarbonizing along the lifecycle



A **Whole Building Life Cycle and Systems Approach** to decarbonization is essential to maximizing long-term sustainability.

To address embodied carbon, there's no one magic solution… but multiple measures must be combined

AVOID

CIRCULAR APPROACHES AND RESOURCE EFFICIENCY IN DESIGN AND CONSTRUCTION

- **Life-cycle analysis** to guide design decisions
- **Resource-efficient construction** techniques that save material
- **Adaptability and durability** for a long lifetime
- **Circular economy:** Recyclability and reuse of components („urban mining")
- **Local value chains** to lower transport emissions

IMPROVE

DECARBONISE CONVENTIONAL BUILDING MATERIALS

- **Energy-efficiency and decarbonising energy supply** in production
- **Process innovation** to reduce CO2
- **Substitution** with waste materials or natural fibres

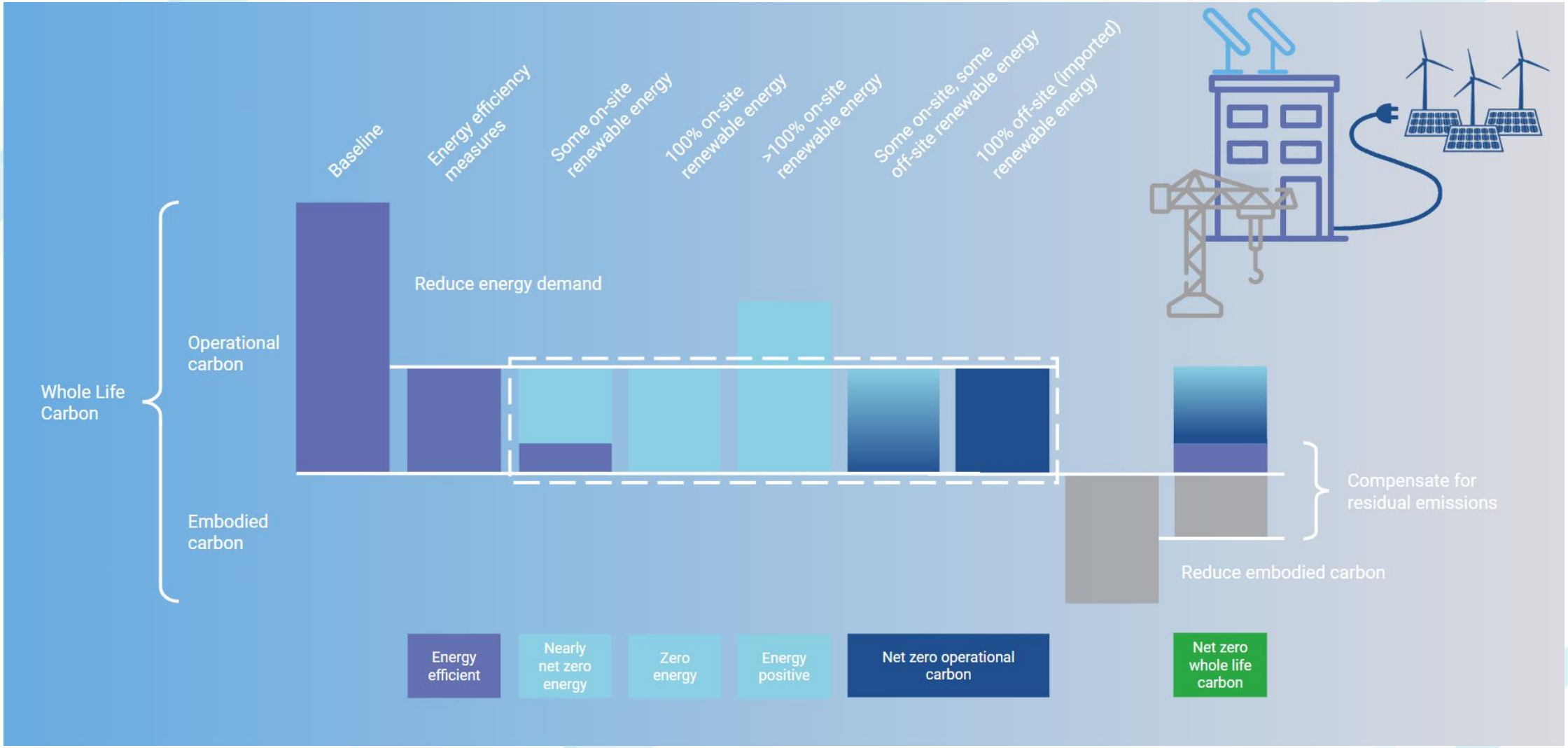
INCREASE THE SHARE OF ALTERNATIVE BUILDING MATERIALS

- **Develop supply chains** for locally available materials
- **Standardise and certify** materials, e.g. **bio-based** (clay, wood, natural fibres) and **recycled** materials
- **Use** in " conventional" construction

SHIFT

Global Alliance for Buildings and Construction (GlobalABC)

Net Zero Building Definition



Source: WorldGBC What is a net zero carbon building? - World Green Building Council (worldgbc.org)

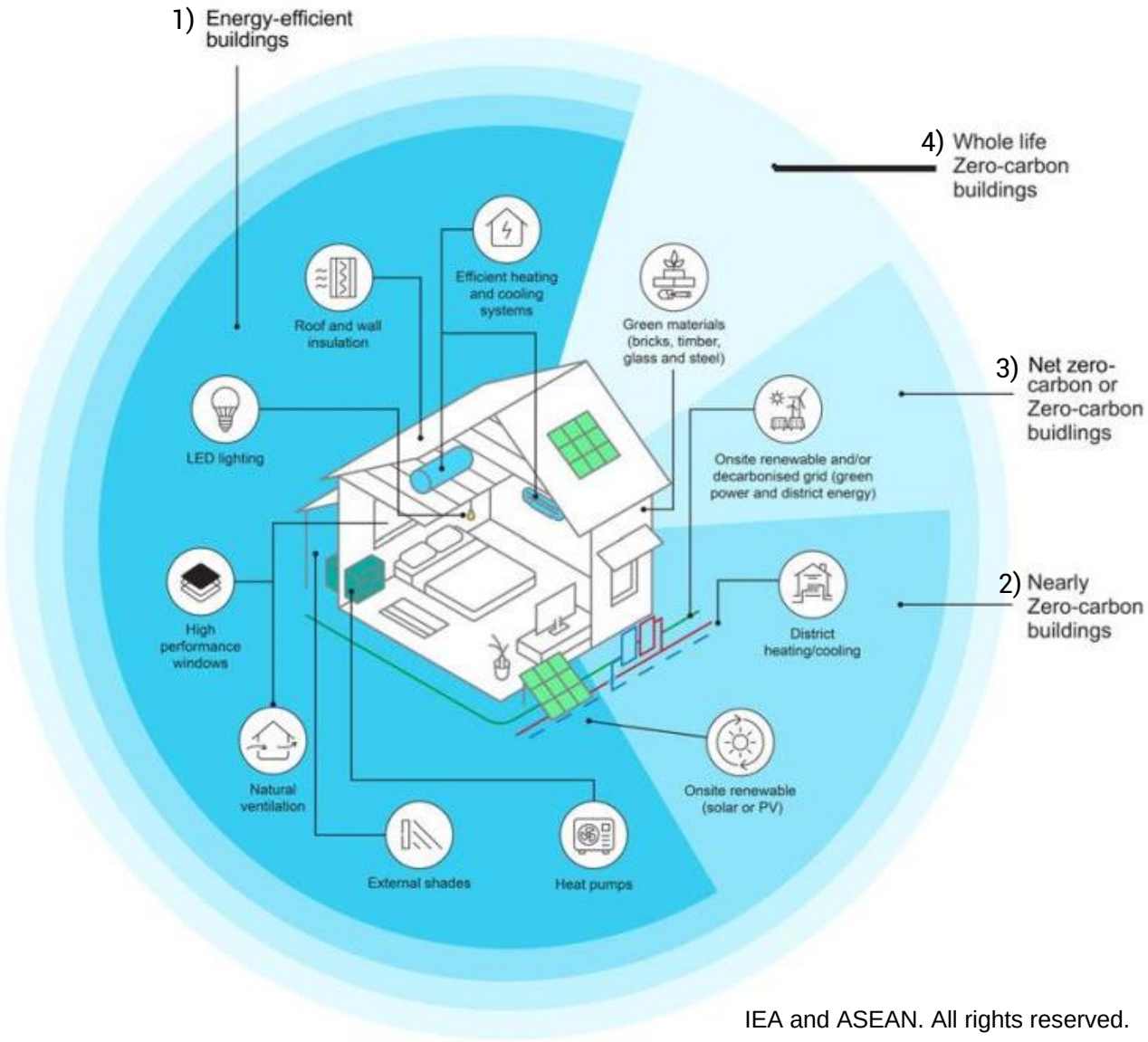
Key Green Building Concept

1) Energy-efficient Buildings :
a building with a high degree of energy efficiency in its fabric and building services that consume energy, e.g. heating, cooling, cooking, lighting, ventilation, hot water and appliances.

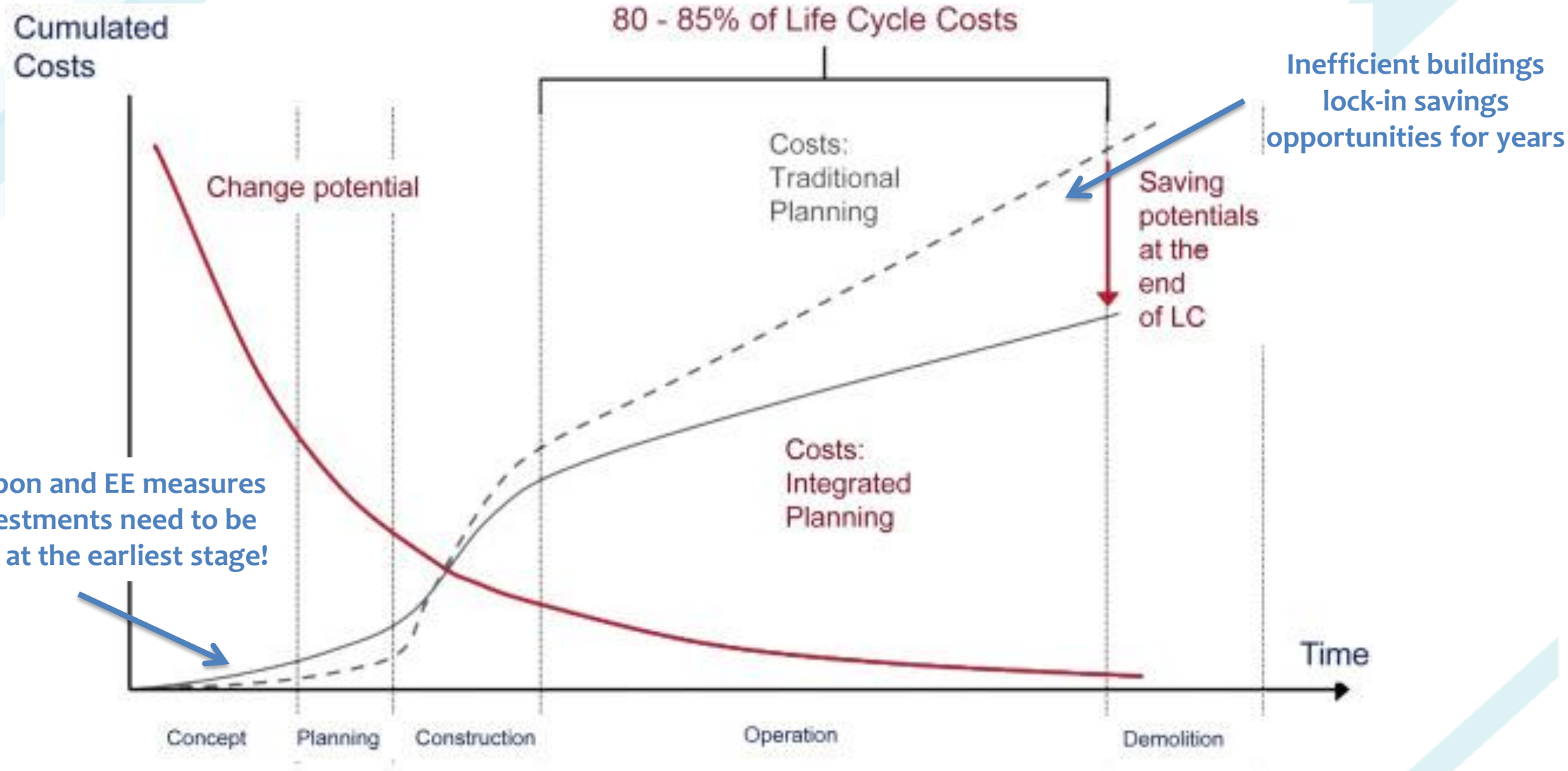
2) Nearly Zero-carbon Buildings:
a building that is energy-efficient and may have some available zero-emission energy supply (onsite or offsite), but that does not offset 100% of the building's energy demand.

3) (Net) Zero-carbon Buildings:
a building that is energy-efficient and has its energy demand completely met through zero-emission energy generated either onsite or offsite.

4) Whole Life Cycle, Zero-carbon Buildings:
zero-carbon buildings, in which embodied carbon emissions from the materials used in their construction are decarbonized and/or offset, alongside the operational carbon emissions, over the building's lifetime.



Whole Life Cycle Carbon approach – new buildings



Source: Building life cycle optimization tools for early design phases, https://www.sciencedirect.com/science/article/abs/pii/S0360544215003217

Reducing carbon in buildings

Energy efficiency	 **Building envelope**	 **Heating, ventilation & air conditioning**	 **Lighting & appliances**
	• Best possible thermal insulation of façade, roof, windows, round floor • Effective shading • Air tightness and air leakage testing	• Highly efficient heat pumps • Highly efficient biomass boilers • Building automation • Natural refrigerants or sorption cooling technologies • Highly efficient district heating • Mechanical ventilation heat recovery	• Optimized lighting technology (LED) • Energy efficient appliances (A+++, Energy star) • Occupancy and daylight sensors

Source: PCAF https://carbonaccountingfinancials.com/financing-towards-net-zero-buildings

Reducing carbon in buildings

Efficiency in operation	***Efficient use*** • Awareness raising campaigns on efficient user behavior • Energy managementsystem (incl. sensors, controls, smart meters)	***Monitoring & Maintenance*** • Monitoring and evaluation of consumption • Benchmarking and performance guarantees • Optimization of building operation • Timely maintenance
Renewable energy	***On-site renewable energy*** • Solar thermal • Solar photovoltaics (PV) • PV thermal • Geothermal • Storage	***Renewable energy procurement*** • Renewable Energy Certificates (RECs) • Guarantees of Origin (GOs) • Power Purchase Agreements (PPAs) conveying RECs or GOs • Direct procurement

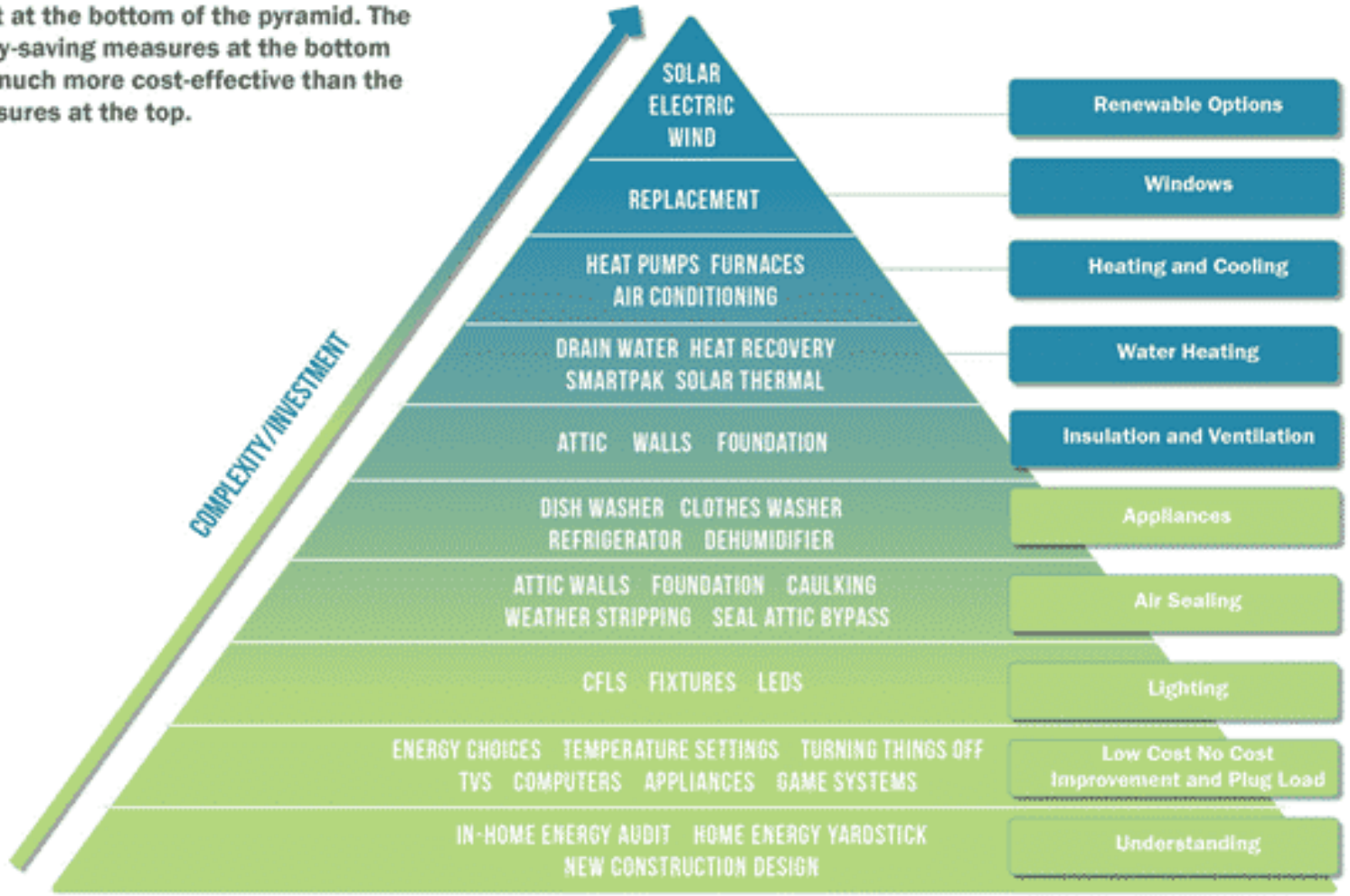
Source: PCAF https://carbonaccountingfinancials.com/financing-towards-net-zero-buildings

Reducing carbon in buildings

Embodied carbon	***Transform & reuse*** • Maximize use of existing assets • Refurbishment as preferred option • Reuse materials • Review of material efficiency	***Build low carbon*** • Whole life cycle assessment (WLCA) • Smart design (e.g. lean construction, smart floor plan) • Natural and renewable materials (fostering carbon storage) from sustainable forestry • Building site selection (e.g. availability of locally sourced materials/structures) • Streamline delivery processes

Source: PCAF https://carbonaccountingfinancials.com/financing-towards-net-zero-buildings

Reducing carbon existing buildings



Source: Holland Home Energy Retrofit programme

→ Don't forget shading

→ Select low carbon materials

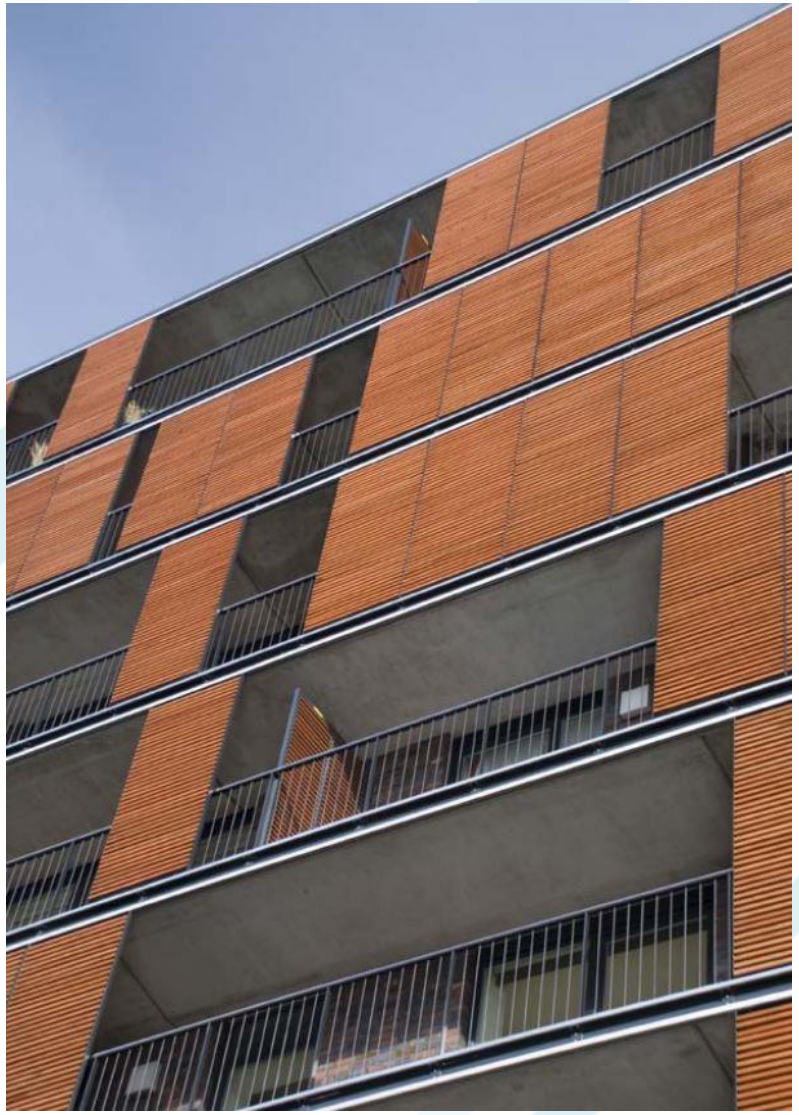
- *Quality **upgrade and up-size** buildings*
- ***Repurpose** vacant buildings*
- *Adapt under occupied buildings*
- *Nature based solutions and technology for climate adaptation*

Key Actions for Financiers toward Sustainable Buildings

Property and project developers:
Developers can make decisions about how property will be used, including cost-benefit assessments for different building and construction approaches. These early decisions can have **far-reaching impacts into what options are considered in a building or construction project.**

Upfront Investment for Sustainable Buildings

Financial institutions:
Financiers can provide mechanisms to make the **necessary upfront investments** for sustainable buildings and construction, with **repayment often coming from the energy saving benefits** that develop over several years.



Source; GlobalABC Regional Roadmap for Buildings and Construction in Asia

3. The GlobalABC

- Founded at COP21, hosted by UNEP and **with 267 members, including 38 countries**, the GlobalABC is the leading global platform for ALL buildings stakeholders committed to a common vision: **A zero-emission, efficient and resilient buildings and construction sector**.
- The GlobalABC aims to:
  - **Be a global advocate and a catalyst to action**
  - **Be a trusted platform to set targets and track progress**
  - **Support countries in setting priorities and measures based on their situation**

You have questions on buildings and construction?
Contact us at global.abc@un.org

GlobalABC :
https://globalabc.org/database
https://globalabc.org/index.php/roadmaps-buildings-and-construction
https://globalabc.org/our-work/tracking-progress-global-status-report

PEEB
https://www.peeb.build/knowledge-network/downloads
https://www.peeb.build/knowledge-network/external-ressources

IFC Edge
https://edgebuildings.com/

PCAF's Financing towards net-zero buildings closely on the project website:
https://carbonaccountingfinancials.com/financing-towards-net-zero-buildings

CCFLA
https://citiesclimatefinance.org/financial-instruments/

WorldGBC:
https://worldgbc.org/sustainable-building-certifications/
https://worldgbc.org/sustainable-finance/

Global Alliance for Buildings and Construction

Find out more:

www.globalabc.org

global.abc@un.org

Key buildings trends: The 2022 Global Status Report for Buildings and Construction

A global reference document:

Seventh edition of this annual snapshot on the progress of the buildings and construction sector globally towards achieving the Paris Agreement goals:

- An update on the drivers of **CO_2 emissions and energy** demand globally and
- Status of **policies, finance, technologies, and solutions** that support a zero-emission, efficient, and resilient buildings and construction sector

A collaborative effort, building a global community.

This year's Buildings-GSR features contributions from:

Input from over 70 GlobalABC members and experts.

Download the Buildings-GSR

TOWARDS A ZERO-EMISSION, EFFICIENT AND RESILIENT BUILDINGS AND CONSTRUCTION SECTOR IN AFRICA

PRB Energy efficiency capacity building (Africa and MENA) | Part II: Financing new green buildings & renovations in the buildings sector

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Funded by the European Union

UKaid from the British people

Lenore Cairncross,
EDGE Green Building Lead for Africa, IFC

July 2023

BUILDINGS SECTOR CHALLENGE: CLIMATE CHANGE AND PHYSICAL RISKS

Reducing GHG emissions and enhancing resilience for the Building sector is key to addressing the climate challenge.

Global Challenge

CLIMATE CHANGE

Buildings sector accounts for 28% of energy-related GHG emissions in emerging markets, with the floor area of global buildings sector expected to double by 2060. Without the right choices today, **high-carbon urban infrastructure** will be locked-in for the next 50+ years.

NATURAL DISASTERS

Building sector is highly vulnerable to physical risks due to climate induced natural disasters**. Example,** recent major events caused **Turkey up to $84b in economic losses** (2023) and **Pakistan around $15b for reconstruction in a resilient way** (2022).

73

55% of the world's population
lives in cities

Buildings sector:
28% of energy related CO2
in emerging markets

$313b in economic losses
from natural disasters
(globally, 2022)

The sector remains off track to achieve decarbonization by 2050. Major opportunities exist in new construction and building renovation to improve *resource and energy efficiency* and *asset resilience*.

IFC'S GREEN BUILDINGS MARKET TRANSFORMATION PROGRAM

IFC innovated a complete solution to mitigate emissions and increase resilience in buildings with three proprietary products: EDGE, APEX and BRI.

The Green Buildings program offers a comprehensive, low cost, cross-industry approach for clients, governments, financial and development partners.

EDGE, launched 2013, (2015 in South Africa) provides a measurable way for builders to cost-effectively optimize designs for new build and retrofits for existing buildings. EDGE certification demonstrates 20 percent reduction in energy, water, and embodied energy in materials compared to a new "business as usual" building. EDGE also certifies levels of ambition up to Zero Carbon.

APEX Green Cities, launched in 2022, supports cities in emerging economies to achieve maximum benefits from investments with appropriate policies and planning measures. APEX informs the most impactful actions in cities to reduce GHG emissions, improve energy efficiency, waste management, water security, higher use of public transportation.

Mitigation

Building Resilience Index (BRI), launched 2021, provides web-based hazard mapping and a resilience assessment framework. Helps real estate investors evaluate location-specific, seismic and climate-related risks taking into account buildings' actual specifications. BRI creates new investment opportunities to improve resilience of buildings and cities.

Adaptation

IFC HAS A FOUR-PRONG STRATEGY TO SCALE UP GREEN BUILDING FINANCE

*The IFC has developed a multi-pronged approach to incentivize market adoption of green building practices. The approach has been designed to **CREATE**, **CERTIFY** and **SCALE green stock**.*

IFC'S **DEFINITION** OF A GREEN BUILDING FOLLOWS INTERNATIONAL BEST PRACTICES

IFC APPROVED CERTIFICATION

&

20%

BETTER ENERGY PERFORMANCE THAN LOCAL BASELINE

&

QUANTIFIED IMPACT REPORTING

100% OF FINANCE OR RE-FINANCE COUNTED AS CLIMATE

IFC IS HELPING FIS TO CREATE **INNOVATIVE FINANCIAL PRODUCTS** FOR GREEN BUILDINGS

CROSS-SELLING OPPORTUNITY

Our partner FIs include:

OCBC Bank
ProCredit Bank
DAVIVIENDA
Aavas Financiers Ltd
SAPNE AAPKE. SAATH HAMAARA
BDO
Piramal Capital & Housing Finance
Priorbank
RBI Group
YapıKredi
Banco General
Grupo Bancolombia
HDFC BANK
BUSINESS/PARTNERS
absa
NEDBANK
International Housing Solutions
EIB
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EDGE - EXCELLENCE IN DESIGN FOR GREATER EFFICIENCIES

EDGE is Recognized by all major international green finance standards.

1. Free Software

EDGE Software Demo

2. Achievable Standards

20% minimum Energy, water and materials savings over a local baseline

3. Verified Green Label

Cost of certification

4. Simplified Impact Reporting

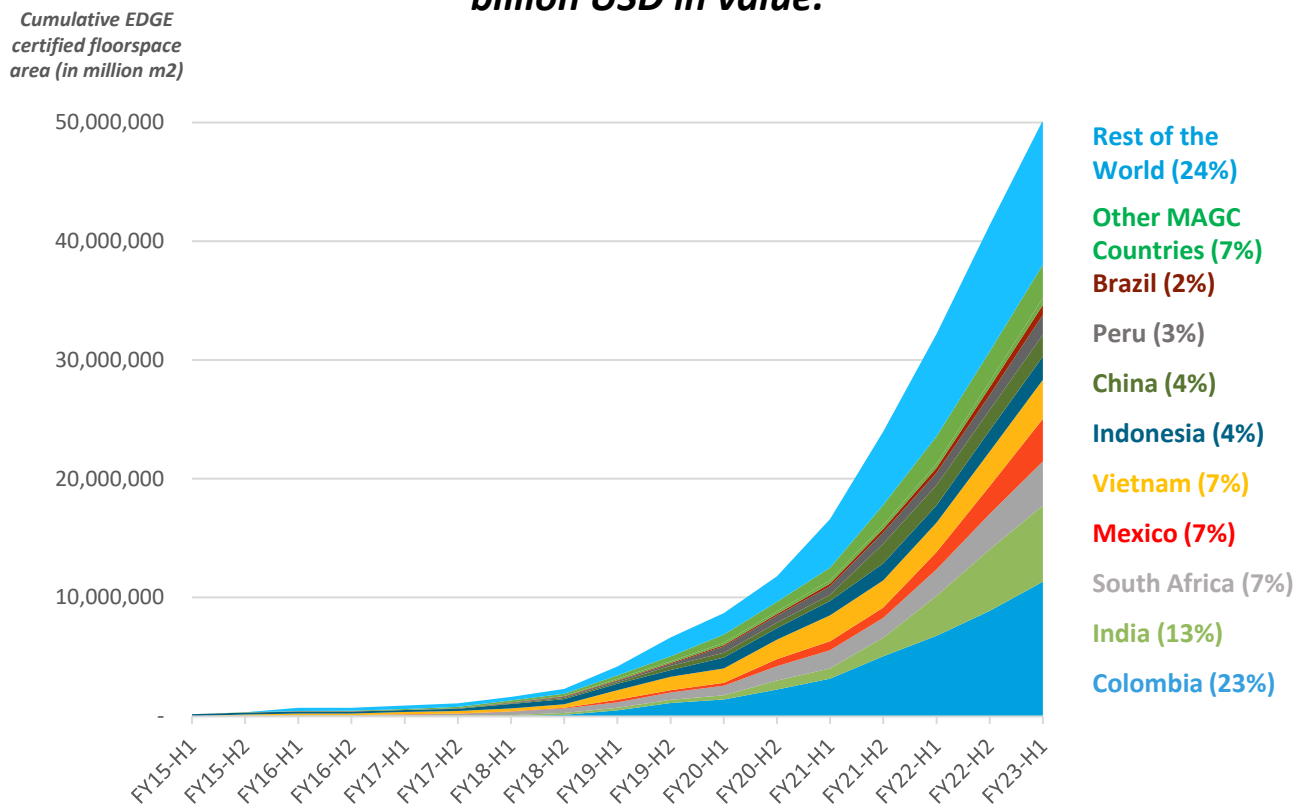
Energy 36.52%	Water 32.77%	Materials 47.67%

Utility Cost Reduction	Incremental Cost	Payback in Years
9,788.45 PAB/Month	49,753.26 PAB	0.42 Yrs.

Embodied Energy Savings	Energy Savings	Water Savings
1,056.04 MJ/m²	506.90 MWh/Year	4,520.42 m³/Year

Operational CO_2 Savings	Carbon Emissions
155.89 tCO_2/Year	265.92 tCO_2/Year

EDGE certification is growing exponentially across sectors and geographies, with total certified real estate assets of over 50 billion USD in value.



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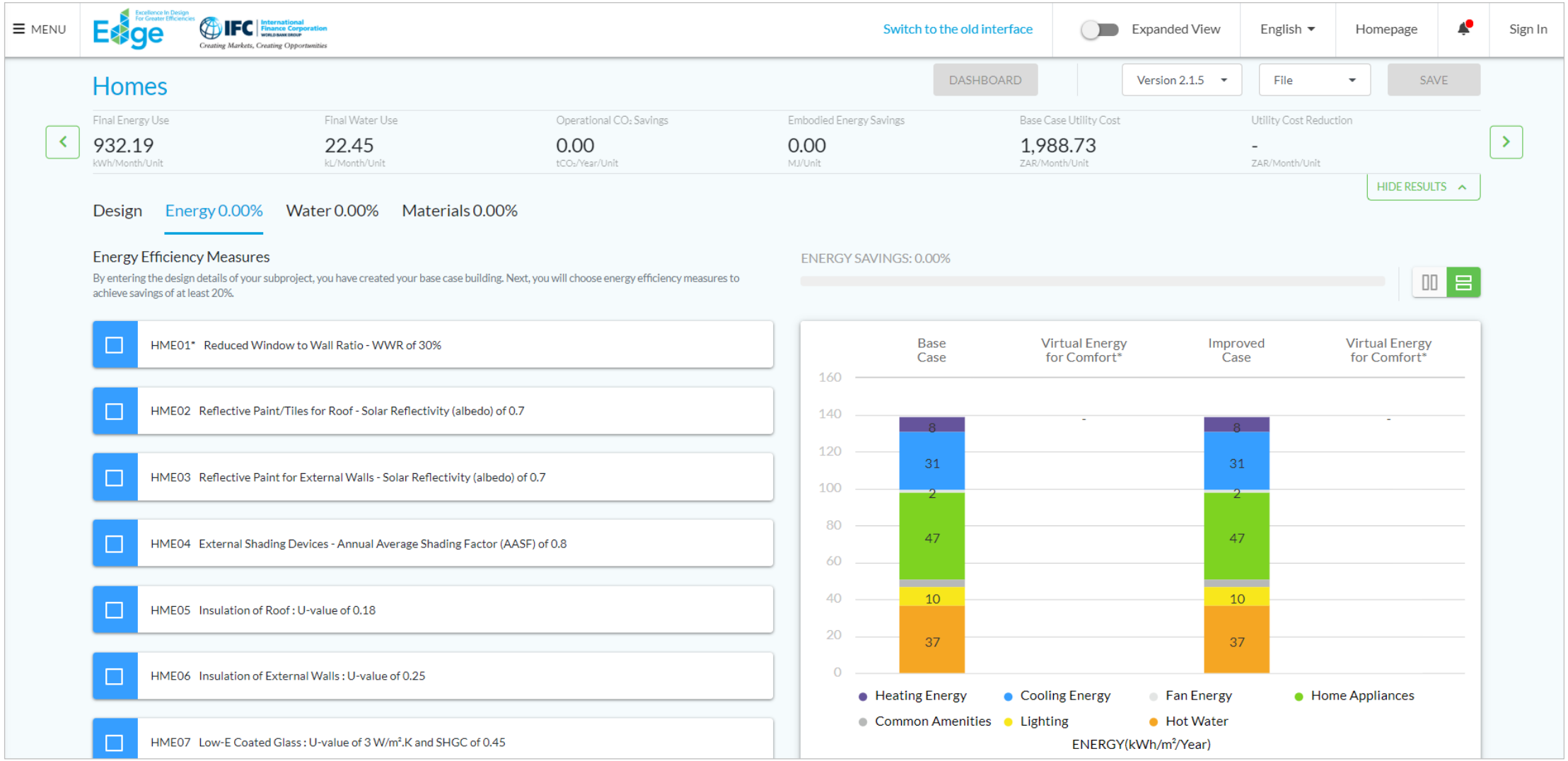
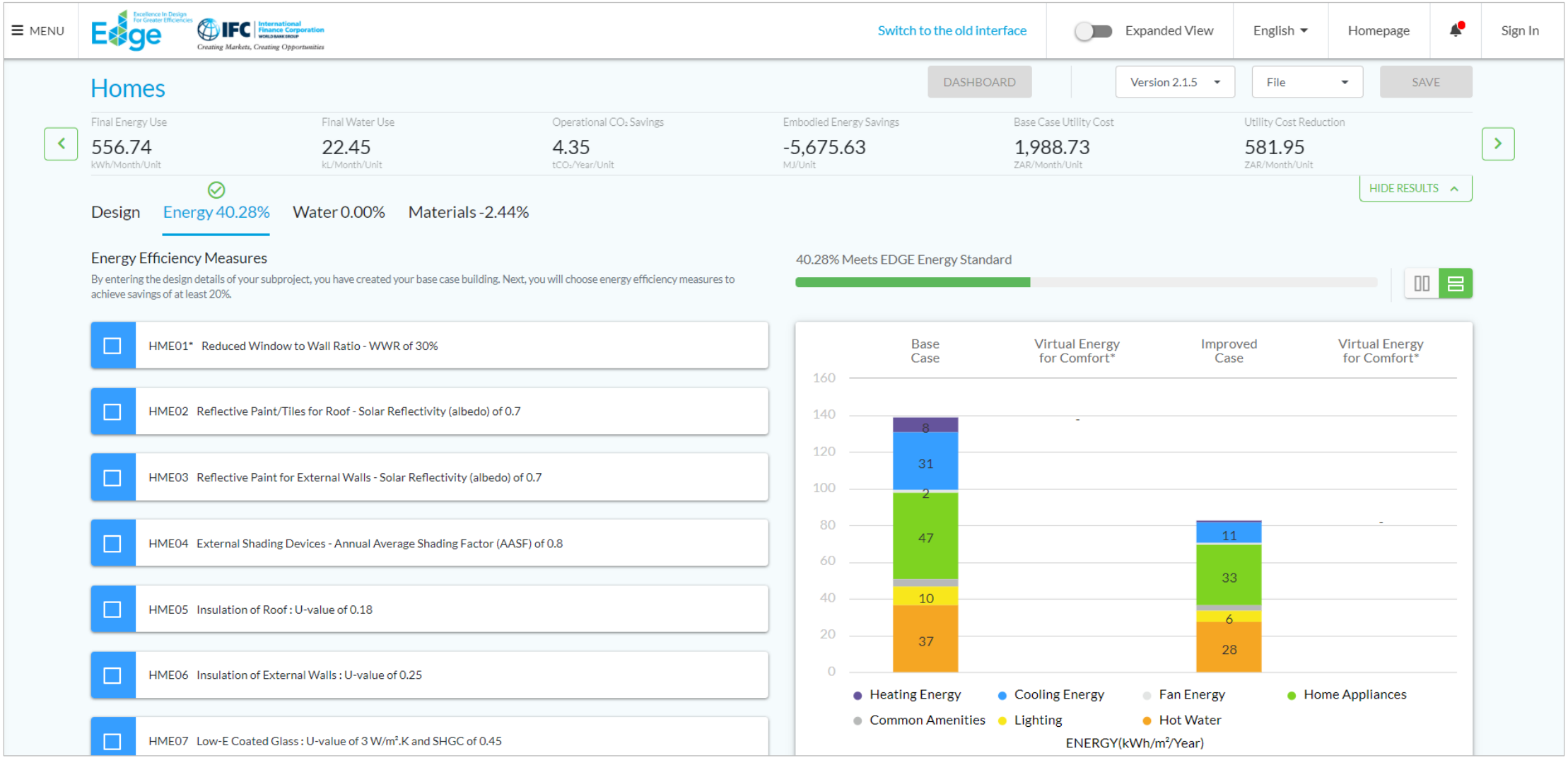
EDGE COMPARES YOUR GREEN BUILDING TO A CONVENTIONAL BUILDING



CHOOSE GREEN BUILDING STRATEGIES AND CALCULATE THEIR FINANCIAL AND ENVIRONMENTAL IMPACTS



THERE ARE THREE LEVELS OF EDGE CERTIFICATION

Level 1 - EDGE Certified

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

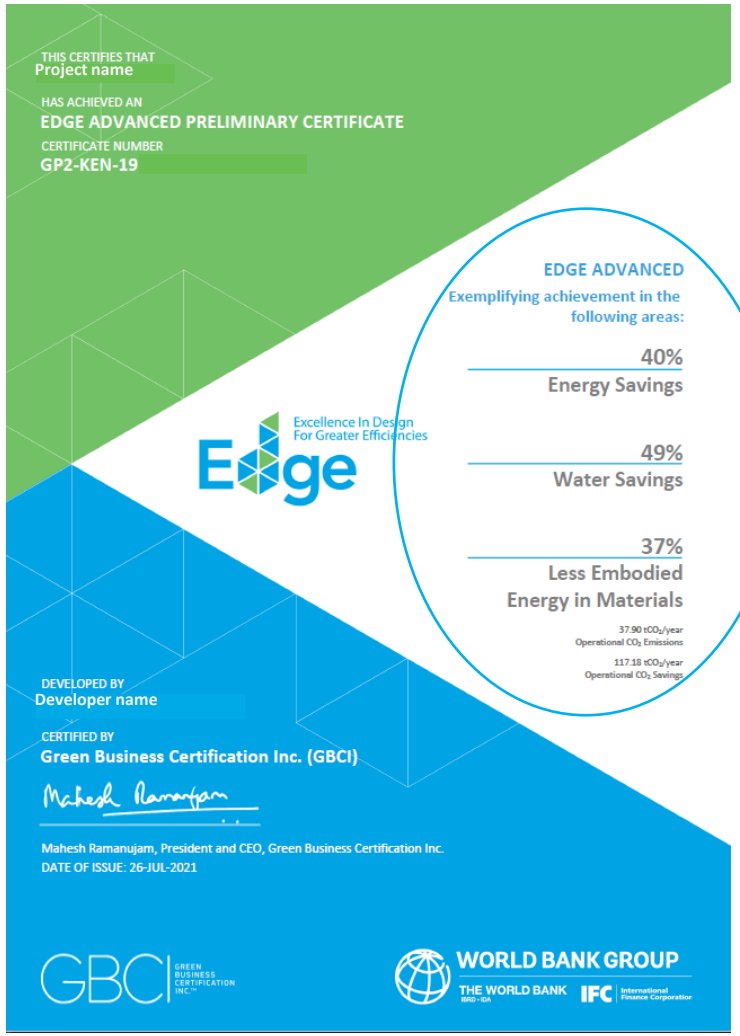
Level 2 - EDGE Advanced

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

Level 3 - Zero Carbon

EDGE Advanced with 100% renewables or purchased carbon offsets.

AN EDGE CERTIFICATE REDUCES REPUTATIONAL RISK AND CAN BE USED AS A VERIFICATION INSTRUMENT TO SIMPLIFY COMPLIANCE



EDGE: A RECORD OF EXPONENTIAL GROWTH AND GLOBAL IMPACT

89
Countries have projects certified*

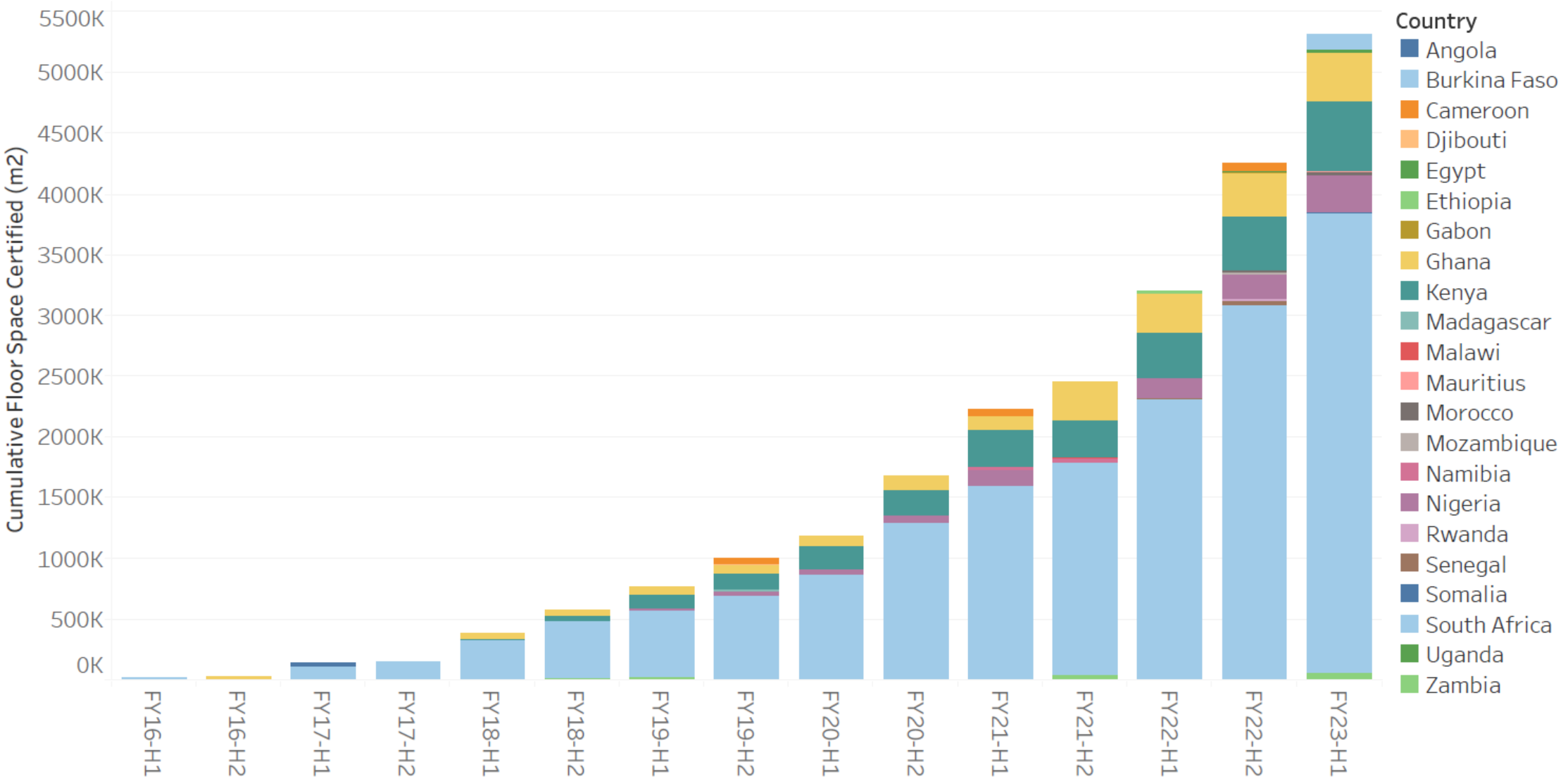
8,184
Projects certified*

357k
Housing units certified*

1.1m+
tCO_2/year saved

** Cumulative results since 2015*
as of February 2023

AFRICA – CUMULATIVE EDGE CERTIFIED FLOORSPACE: 2016 TO FEB 2023



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EDGE - EXCELLENCE IN DESIGN FOR GREATER EFFICIENCIES

Green Building Certification

New and Existing Buildings

Access Green Finance

Issue Green Bond, establish a green portfolio for a REIT, access green finance

Future proof your assets

Identify underperforming buildings and address ahead of legislation

Streamline ESG Reporting

Easily prove compliance with ESG Reporting requirements

EDGE IS ALIGNED WITH INTERNATIONAL GREEN FINANCE STANDARDS FOR GREEN BUILDINGS

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.

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.

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.

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EDGE IS AVAILABLE IN A VARIETY OF 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

Edge

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SOUTH AFRICA:

Balwin Properties' Commitment to Green Housing Catalyses

First Green Mortgage in South Africa

Statistics as of July 2023:

- 37, 800 units
- 3.4 million square meters
- 5.6 million square meters certified and registered for certification.
- Sold a record 803 green homes in one month.

- In 2019, Balwin Properties registered 13,000 units (~ 1 million m2) for largest registration for EDGE globally.
- In March 2020, Balwin partnered with Absa Bank to launch Eco Home loans, **South Africa's First Green Mortgage** providing lower mortgage rates for home buyers of EDGE certified homes.
- In 2021, Balwin registered an additional 12,000 units (~ 1 million m2)
- By 2022, all 4 major retail banks (Nedbank, Standard Bank and FNB, as well as Absa) in South Africa created green mortgage products with preferential rates for home buyers purchasing EDGE certified homes.

SOUTH AFRICA:

International Housing Solutions (IHS) Green Homes Provide Large Savings to Rental Tenants

Erand Creek by IHS, 2021.

Examples of IHS Projects:

- Erand Creek
- Devland Social Housing
- Rivergate Social Housing
- Spruitview Social Housing
- Selcourt Estate
- Ballito Groves

- IFC invested $25m in IHS – 1st in Africa to certify with EDGE in 2015.
- IHS has over 13,100 units certified to date with simple technical features, including passive design.
- Incremental costs minimized from 2-6% (2017) to 0.25-0.8% (2020) per unit.
- Sales pitch to tenants: Save up to 1 month of rent, with rentals between R5,500 – R7,500/month (in the affordable housing market).

Further Resource: IFC's Green Building Report (p. 44)

KENYA:

Africa Logistic Properties (ALP) is fulfilling its vision for more sustainable warehouses

Predicted Savings of EDGE Certification
ALP North Logistics Park

41%
Energy Savings

52%
Water Savings

50%
Less Embodied Energy in Materials

ALP Statistics

- In 2018, ALP certified its ALP North Logistics Park, the first modern grade-A logistics and distribution park in Kenya
- Green solutions for three warehouses include solar photovoltaics, skylights, insulation, and low-flow plumbing fixtures
- Projected utility savings are nearly $16,000 per month, cutting operational costs almost in half.
- The project won “Best Logistics/Industrial Development” at the 2019 African Property Investment Summit and Expo

ALP Reports Actual Operational Savings of up to

$20,000 per month for tenants

KENYA:

Acorn Used EDGE Green Building Definition to Launch Kenya's First Green Bond

Acorn – Kenya's First Green Bond ~$50m

- Kenya's 1st green bond with structuring by Stanbic Bank.
- Use of proceeds for new student accommodations that are EDGE certified.
- EDGE preliminary and final (post-construction) certificate ensure green standard.
- EDGE provides reporting in line with ICMA standards.
- Benefited from government tax incentive that made interest from green bonds tax exempt.

Further Resource: Acorn Green Bond Framework

Côte d'Ivoire :

HC Capital's Green Bond Refinances the Cosmos Shopping Centre

Green Bond Issuance for $18 m

- EDGE certification accepted for refinancing through a green bond.
- Cote d'Ivoire's first corporate green bond
- Green Bond was oversubscribed and priced at 150 basis points lower than the 9% interest rate that the issuer was paying on an existing bank loan.

Cosmos Shopping Centre Interventions

- **Energy:** Reflective exterior paint and insulation for roof and external walls.
- **Water:** aerators/auto shut-off faucets and water efficient water closets, urinals and kitchen faucets

Predicted Savings of EDGE Certification

29%
Energy Savings

41%
Water Savings

44%
Less Embodied Energy in Materials

Ghana:

Pullman Shows Commitment to Sustainability with Certifications (EDGE and Green Star)

Pullman Ghana Statistics

- First hotel to be double certified in Ghana
- 15-storey mixed-use development in Airport City with 214 room Pullman-branded hotel, 150-serviced residential apartments and conference centre.
- Certified through Green Star and EDGE standards
- ***Interventions to achieve savings:*** **Energy:** Reduced window to wall ratio of 30%, well insulated external walls, high energy efficiency boiler for water heating. **Water:** Low flow fittings such as showerheads and faucets throughout the hotel, efficient dual-flush water closets for bathrooms and water efficient kitchen faucets. **Materials:** Medium weight hollow concrete blocks used for internal and external walls and improved wall insultation with a 100mm wider air gap.

Predicted Savings of EDGE Certification

29%

Energy Savings

41%

Water Savings

44%

Less Embodied Energy in Materials

Edge

Role of retrofit: Are there cost-efficient technologies available to convert brown buildings to green?

- The reduction potential will depend on the Energy Unit Index (EUI) of the existing building -**Lower the EUI before a retrofit, the higher the costs** will be of reducing EUI even further.
- **Deep retrofits that include building envelope and HVAC improvements, will require patient capital** –The payback period can exceed 25 years in cities with low electricity tariffs like Jakarta.

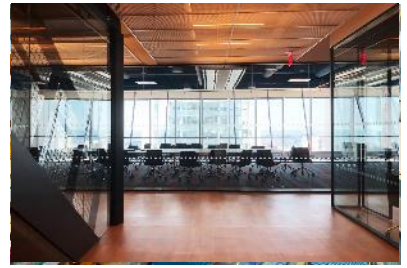
Efficient cooling and heating systems
Savings 6-10%

Ceiling fans for higher temp setpoints
Savings 6-8%

Façade improvements
Savings 10-15%

On-site renewable energy
Savings 10-60%

Efficient Lighting
Savings 3-5%



Daylight and daylight sensors
Savings 3-5%

Retrofit Certification:

The Block,

By Transcend Property Fund (REIT)

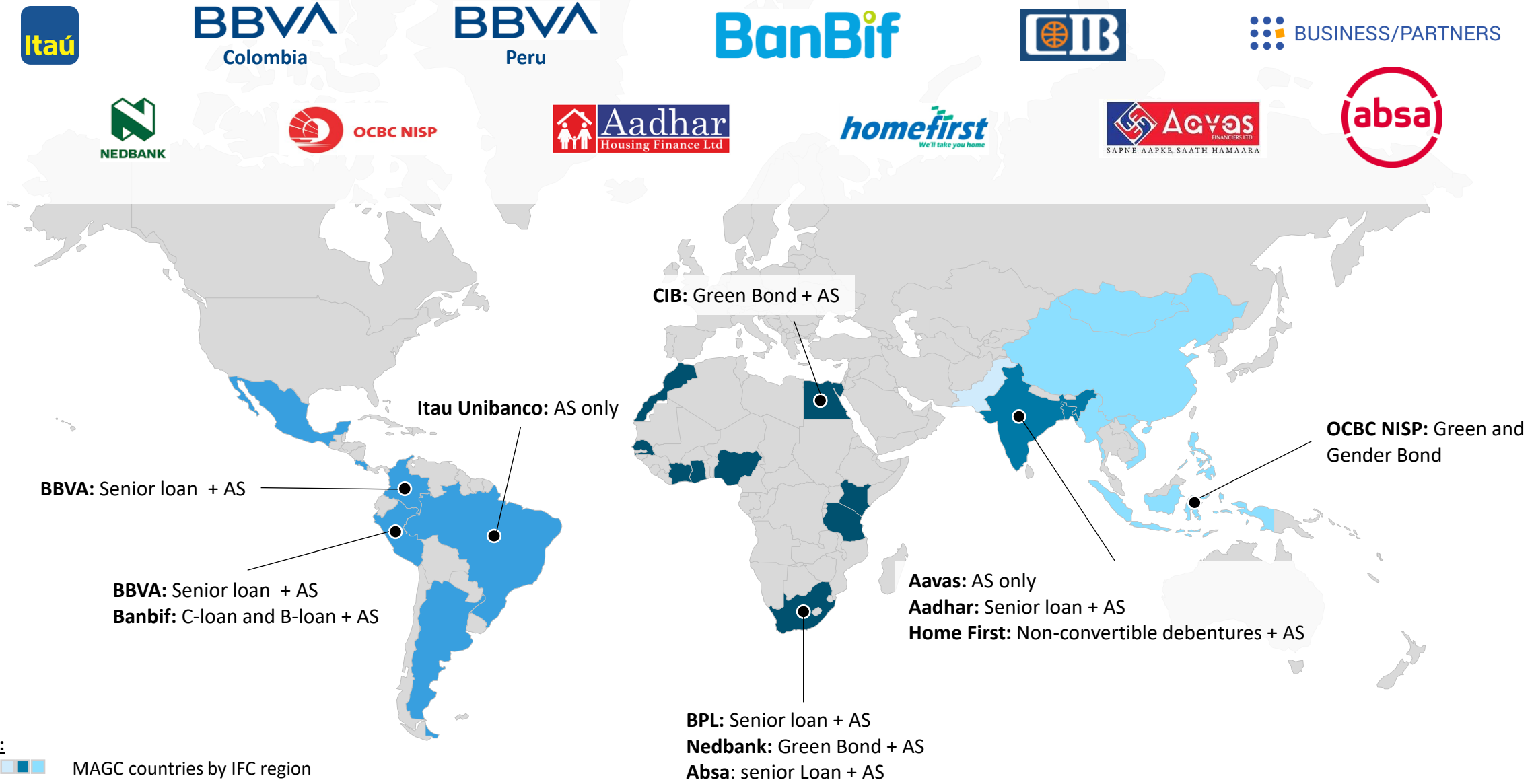
The Block (2021)

- Retrofit affordable housing in Bellville, Cape Town.
- 253 existing housing units are being fitted with higher-efficiency fittings and finishes.
- Water-efficient plumbing features, heat pumps, energy-efficient glazing and reflective paint.
- Minimal use of new materials due to the project being a retrofit.

29% Energy Savings
36 % Water Savings
50% Material Savings

Edge

MAGC PROGRAM AND PORTFILIO TO DATE



Key:

MAGC countries by IFC region

Portfolio as of January 31st, 2023

FINANCIAL INSTRUMENTS FOR GREEN CONSTRUCTION FINANCE – MAGC PROGRAM

IFC utilises a range of financial instruments for Financial Institutions designed to maximise impact and illustrate the commercial case for green construction. MAGC concessionality will be provided based on market need, barriers and the principle of using minimal concessionality.

MAGC is available across Africa in: Côte d'Ivoire, Egypt, Ghana, Kenya, Morocco, Nigeria, South Africa, Senegal.

Senior Loan

- **Straight capital** at suitable tenor for certified green construction loans either to developers or property owners.
- This tool includes **Performance-Based Incentives** that provide a rebate on the interest paid by IFs on the loan or principal forgiveness.
- These incentives are often passed on to the end user, e.g. developer or owner.

Subordinated/Mezzanine Loans/Quasi-Equity

- Newly originated loans/leases have to meet **pre-agreed eligibility criteria**
- **Lower seniority** is an effective tool to share and alleviate project-related risks
- Used for **first-of-kind projects/ untested technologies/ untested business models with little or no track record**

Risk Sharing Facility

- The investor(s) shares the **credit risk** on an underlying portfolio of newly originated loans
- RSFs consist of **first loss tranche and senior tranche**
- **First loss tranche** covers the expected losses of the facility
- **Senior tranche** covers the losses of the facility that are still outstanding after the first loss account(s) have been depleted

CASE STUDY:
BUSINESS PARTNERS LIMITED (BPL) – SOUTH AFRICA

First IFC loan in South Africa exclusively dedicated to SME green lending for commercial properties

BUSINESS/PARTNERS

Investment component

- 5-year senior secured loan of **up to ZAR600 million** (~$41 million) committed in June 2021
- MAGC will provide a Performance Based Incentive (PBI) for pre-agreed eligibility criteria as well as an Interest-Rate Buy-Down
- The proceeds from IFC's loan are fully earmarked for EDGE-certified, or equivalent international certifications, of green commercial buildings to be owned by or leased out to SMEs.
- The Project will enable BPL to enhance its existing property business line, create market differentiation, and to expand its existing property offering into green buildings that will benefit SMEs as end beneficiaries.
- BPL will report green building (GB) transactions to IFC through the CAFI platform.

Advisory component

- Timeline: around 12 months
- Main activities will include:

✓ Green building capacity building for BPL staff, including on certification principles

✓ Support on product development, communication & marketing for BPL's green building offering as well as impact reporting through the CAFI tool

✓ Green building capacity building to BPL's external construction stakeholders

CASE STUDY:
NEDBANK LIMITED GREEN BOND – SOUTH AFRICA

First green bond issued by a commercial bank in Africa focused on green residential housing development

NEDBANK

Investment component

- 7-year ZAR1.090 billion (US$71.1 million equivalent) senior unsecured green bond, with **IFC anchor investment of ZAR500 million (US$32.6 million equivalent)** committed in December 2021
- MAGC will provide a Performance Based Incentive (PBI), for pre-agreed eligibility criteria, that will partly offset greening and EDGE certification costs for developers
- The proceeds from IFC's loan are fully earmarked for EDGE-certified residential housing developments, 75% of which are expected to be in the affordable housing segment
- Nedbank will report green building (GB) transactions to IFC through the CAFI platform

Advisory component

- *Capacity building of Property Finance Team* including Energy Efficiency for Buildings Training, Underwriting, EDGE-tool training and certification support to the Bank and its prospective developers

UKaid from the British people

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Creating Markets, Creating Opportunities

CASE STUDY:
COMMERCIAL INTERNATIONAL BANK – EGYPT

- **Egypt's first bond ever issued by a bank, and first private sector Green Bond**
- **50% of the Green Bond proceeds to be used for green buildings**

Investment component

- IFC subscribed to a senior green bond of USD100m issued by Commercial International Bank (CIB), the largest private sector bank in Egypt. The project was committed in June 2021 and has a 5-year maturity.
- At least USD50m of the Green Bonds proceeds will finance construction of certified green buildings.
- MAGC will provide USD1.4m as a Performance Based Incentive (PBI) to developers of certified green buildings.
- The green bond is the result of a multi-year effort between the government, Egypt's private sector and IFC to grow the country's capital market for green finance.

Advisory component

- Committed: Jene 2021
- Timeline: 24 months
- Technical assistance will:

(i) Help developers adopt low-cost & eco-friendly building solutions and participate in IFC's EDGE certification program for green buildings
(ii) Help CIB in developing its capacity on green bond financing
(iii) Support green bond issuance, impact reporting and communication

Commercial International Bank

5

CIB Clients supported to assess their project

1

Project EDGE advance Certified

1

Project to be certified in H2FY23 (16 buildings portfolio)

1

CIB HQ to be certified in H2FY23

206

Professionals attended IFC organized or supported workshops Construction and real estate development professionals

1

Green building market awareness workshop organized by CIB

15+

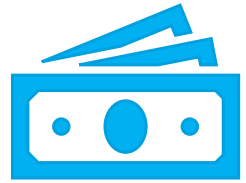
Work sessions and workshops with CIB clients

30

Building professionals from CIB ecosystem (including CIB Internal resources) attended Edge expert training in Sep. 2022

6

CIB internal resource passed the EDGE expert exam

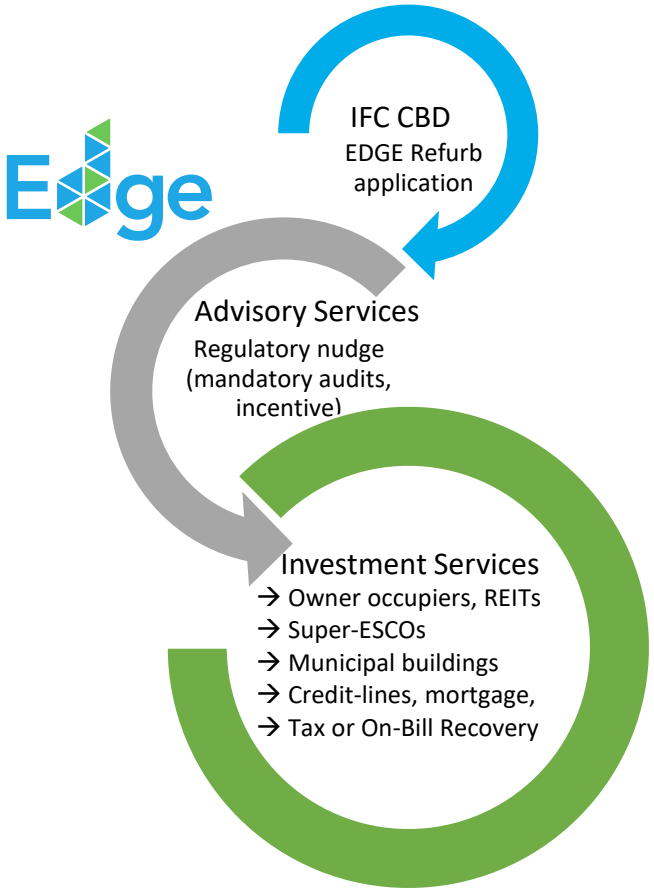


Portfolio and pipeline in numbers:

- **Projects EDGE Advanced certified:**
  - **1 project (CIB loan amount USD 10.6 Million);**
  - **7 Buildings : CIB loan amount: USD 10 Million**
- **On going audit: 2 projects (8 + 1 buildings): CIB loan amount USD 10 Million**
- **Pipeline: USD 45 Million under business development and loan appraisal by CIB**

LEVERAGING EXPERIENCE TO SCALE UP BUILDING RETROFIT AND RESILIENCE

EDGE Retrofits



A multi-pronged approach to incentivize market adoption of green refurbishment. It incorporates EDGE certification system to define and validate green retrofits for existing buildings.

Building Resilience Index

The BRI pilot program facilitates identification, management and disclosure of disaster risks at building level in order to ensure risk information is accessible for all market stakeholders. Using BRI new or existing buildings can set up and invest in improvement plans.

BANKS ARE PROVIDING INCENTIVES TO CATALYZE THE MARKET

GLOBAL CLIMATE PARTNERSHIP FUND managed by responsAbility

100% coverage of EDGE technical fees, global reach

Banco Promerica

Lower interest rate, longer tenor & grace period, Costa Rica

Bancolombia

Lower loan pricing for green construction & mortgages, Colombia

GRUPO SURA

10% refund of insurance premium, Colombia

DAVIVIENDA

Lower pricing for green construction & 50% off certification, Colombia

BANCO PICHINCHA

Technical assistance & free certification, Ecuador

ProCredit Bank

0.5% lower interest rate, significantly longer tenor, free technical assistance

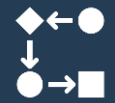
Itaú

Loan discount rate for EDGE-certified constructions

Further Resource: [EDGE Banking Pages]

STEPS TOWARDS A SUCCESSFUL GREEN BUILDING PORTFOLIO

1 REVIEW CURRENT PIPELINE



- Review bank client base, pipeline and portfolio
- Market sizing and identification of developers
- Spot check clients interest using EDGE

2 CATALYZE DEAL FLOW

- Raise developer awareness though workshops and training of developers.
- Communicate preference for green assets to developers

3 EXECUTION AND DELIVERY

- Design green construction loans and mortgages which take lower risks into account
- Establish investment criteria and compliance procedures
- Train staff

4 IMPACT REPORTING

- Tagging
- Measurement
- CAFI Tool
- EDGE certificates

SUMMARY

- ✓ Green Buildings are one of the **largest opportunities** for climate-related finance globally
- ✓ IFC has a **track record** of financing and providing advisory support to FIs for green building projects
  - ✓ $2.3 billion investment to FIs since 2005 for green mortgages or green construction-related projects as of June 2022
- ✓ IFC's **EDGE platform** is an efficient ambassador for green buildings with FIs:
  - ✓ Affordable certification standard, tailored to emerging markets, convenient for residential
  - ✓ Projects in 88 countries, 50+ million sqm certified as of December 2022
- ✓ The **MAGC Program** has a pool of concessional finance available to help offset incremental costs for IFC's investment partners. Similar programs can be created for Europe.

IFC teams can support FIs in all steps of green building products development

RESOURCES

WWW.EDGEBUILDINGS.COM

YOUTUBE CHANNEL @EDGEBUILDINGS

Lenore Cairncross

Green Building Lead for Africa

lcairncross@ifc.org

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

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

EDGE Retrofit and Building Resilience Index program is currently funded by the Government of Netherland:

Government of the Netherlands

Additional support has been provided by Australia, Rockefeller foundation, Austria, Canada, Denmark, ESMAP, EU, Finland, GEF, Hungry, and Japan.

ANNEXES

MAGC CASE STUDY:
OCBC NISP GREEN AND GENDER BOND - INDONESIA

- 2nd Green Bond of OCBC NISP
- Strategic focus on Green Building (use of proceed for green construction finance)
- US$100 million,
- 5-year green bond with Performance Based Incentives (PBIs) for pre-agreed eligibility criteria and stretch targets

Investment component

Deal overview:

- US$100m green bond
- Up to US$1.92m UK finance to support green building lending, construction & certification
- Performance-based Incentive: client submitted initial request for consumer financing and were found to have met targets
- Commitment: February 2020
- IFC Disbursement: October 2020

Expected use of proceeds

- Green construction finance to developers
- Green mortgages to end-borrowers

MAGC CASE STUDY:
ADVISORY ONLY PROJECTS: AAVAS (INDIA) & ITAÚ (BRAZIL)

Aavas Financiers Ltd - *India*

Developing an affordable green housing finance product for low-income borrowers (incl. self-built)

Main advisory activities

- Market study of the demand for affordable green mortgages and supply of green construction materials
- Introduction of green affordable homes and EDGE certification process to Aavas
- Review of Aavas application process and customer survey to understand typical utility consumption, to define an EDGE certification process adapted to low-income housing*
- Support to the creation and piloting of a financial product

Itaú Unibanco- *Brazil*

Creating a green building finance product

Main advisory activities

- Support to Itaú in the design of a green financial product “Plano Empresário Verde”, which would provide a discount rate for EDGE-certified buildings - the product was launched in June 2021
- Completion of an ebook on green buildings for internal and external dissemination
- Launch of EDGE preliminary certification process pilot

*The project also has a Gender angle, supported by other donor funding.

Regional:

Kasada commits hotel portfolio to EDGE certification

Kasada Portfolio

- New and existing hotels that will be retrofitted to achieve EDGE.
- Hotels under certification in Senegal, Cote D'Ivoire, Namibia, and more on the way.

20 Hotels to be EDGE certified across Africa

Ghana:
Rehoboth Properties

Rehoboth Properties

Typology: Residential, Homes

Location: Accra

Owner / Developer: Rehoboth Properties

Floor Space: 191, 215 m^2

Total CO2 savings: 0.01 tCO_2/Unit/year

Key features: Reduced window to wall ratio, Natural ventilation with no AC, energy-saving lighting for internal and external, water-efficient fixtures.

Final Predicted Savings of EDGE Certification

32%
Energy Savings

31%
Water Savings

72%
Less Embodied Energy in Materials

Edge

IFC International Finance Corporation WORLD BANK GROUP
Creating Markets, Creating Opportunities

Ghana:
Earlbream One Place

Earlbeam One Place

Typology: Mixed Use

Location: Accra

Developer: Earlbeam Company Limited

Floor Space: 32,504 m^2

Total CO_2 savings:278.4 tCO_2/year

Key features: reflective paint/tiles, insulation for the roof, Efficient glass, energy-saving lighting internal and external, low -flow water efficient fixtures, and low embodied carbon material

Preliminary Predicted Savings of EDGE Certification

24%
Energy Savings

36%
Water Savings

21%
Less Embodied Energy in Materials

Edge

IFC International Finance Corporation WORLD BANK GROUP
Creating Markets, Creating Opportunities

Kenya:

Executive Residency by Best Western Nairobi,

Executive Residency Statistics

- Situated in a prime location, along Riverside Drive, the Executive Residency by Best Western offers an upscale hotel experience.
- Natural ventilation and a reduced window to wall ratio have eliminated the need for an HVAC system.
- LED lighting, solar photovoltaics and a heat pump for hot water generation have further reduced the building's energy use.

35% Energy Savings

and

32% Water Savings

per year.

Ghana:

National Homeownership Fund Estate

National Homeownership Fund Estate

Typology: Homes

Location: Accra

Owner / Developer: National Homeownership Fund

Floor Space: 24733 m^2

Total CO_2 savings: 0.78 tCO_2/Unit/year

Key features: Reduced window-to-wall ratio, reflective paint on roof and walls, high-performance glass, natural ventilation, efficient water heating, energy-saving lighting internal and external.

Preliminary Predicted Savings of EDGE Certification

48%
Energy Savings

32%
Water Savings

44%
Less Embodied Energy in Materials

Edge

IFC International Finance Corporation WORLD BANK GROUP
Creating Markets, Creating Opportunities

Ethiopia:

Pullman Hotel, Addis Ababa,

Pullman Statistics

- Developed by Enyi Hotel plc for Accor Group, one of the world's largest hospitality companies.
- Reduced window to wall ratio, higher thermal performance glass, air-conditioning with water-cooled chiller and lighting controls for common spaces are some of the energy-saving measures adopted.
- Preliminary certification achieved through Sintali SGS.

26% Energy Savings

and

27% Water Savings

per year.

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

SUPER ESCO

FOR SUSTAINABLE ENERGY EFFICIENCY MARKET DEVELOPMENT IN AFRICA

Jalel Chabchoub

Chief Investment Officer

July 12th 2023

SUPER ESCO: LEADING BY EXAMPLE

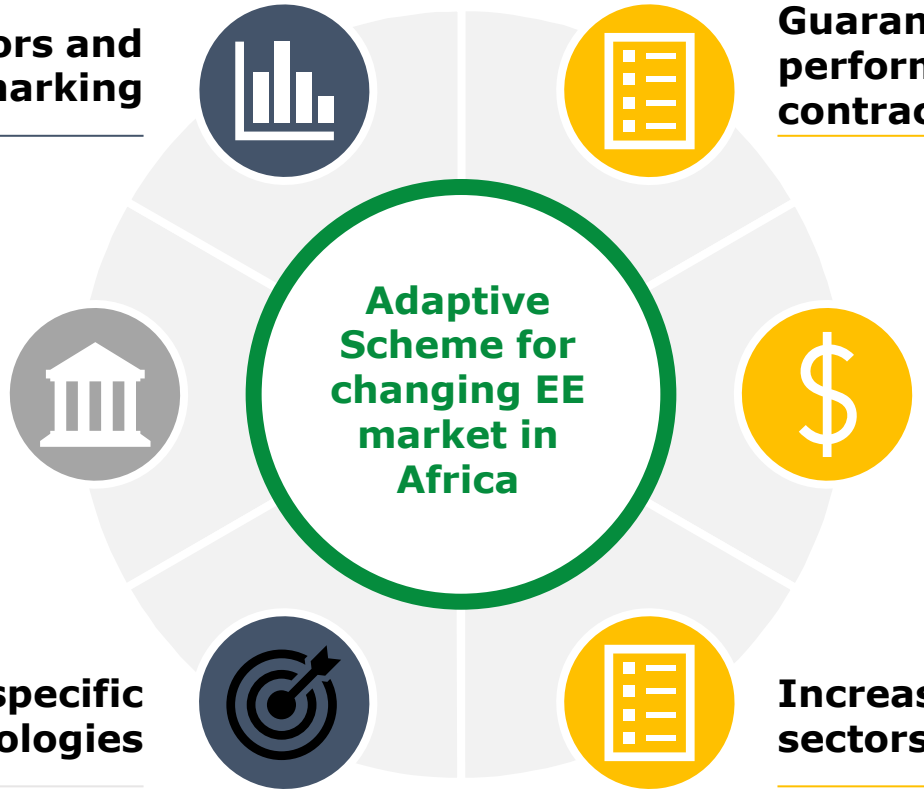
- To increase awareness
- To initiate/drive/organize the “EE stream”
- To put in place an “enabling environment”
- To provide “useful capacity building”
- To put in place “seed financing” as catalyst for “appropriate financing mechanisms”
    - Dedicated fund for government facilities
    - ESCO specific fund
    - ESCO Guarantee Fund
    - ESCO EPCs Insurance scheme
    - Etc….

SUPER ESCO: FLEXIBLE SCHEME

Real efficiency indicators and benchmarking

Guaranteed project performance and flexible contracts

Different SUPER ESCO structures



Adapted financing schemes

Targeting specific facilities/technologies

Increasing pipeline and sectors

AFRICA SUPER ESCO ACCELERATION PROGRAM (ASAP):

- Approved in February 2023 with an overall dedicated envelop of 5 M USD
- The Africa Super ESCO Acceleration Program (ASAP) is a TA program with the overarching objective of catalyzing private sector investments in EE
- The first phase : Three countries Rwanda, Senegal, and South Africa
- In the process of assessing opportunities for Super ESCO Implementation in Burkina Faso and Cote d'Ivoire

AFRICA SUPER ESCO ACCELERATION PROGRAM (ASAP):

- Main Objectives:
  i. Pillar 1: Creating and operationalizing Super ESCOs in the selected countries;
  ii. Pillar 2: Developing harmonized regional certification schemes for ESCOs; and
  iii. Pillar 3: Program management

Pillar 1: Creating and operationalizing Super ESCOs in the selected countries;

Activity 1: Enabling environment for the development and operationalization of the Super ESCO

- Business Plan development
- Hands-on Capacity Building
- Organize fundamental training for the Super ESCO, private ESCOs, financial intermediaries and other key actors
- Set up internal processes and procedures and develop planning and management tool
- Promote the establishment of Super ESCO and EE projects

Pillar 1: Creating and operationalizing Super ESCOs in the selected countries;

Activity 2: Developing an initial pipeline of EE investment projects

- Conduct energy audits
- Develop innovative and viable business models for the implantation of EE projects
- Support the competitive procurement process for at least two project

Pillar 2: Developing harmonized regional certification schemes for Energy Service Companies(ESCOs) and individual professionals

Activity 1: Development of a framework and process for a harmonized regional certification scheme for ESCOs and EE professionals

Activity 2: Development of tools for the operationalization of the harmonized regional certification scheme

Activity 3: Communication and Awareness Raising

Pillar 3: Program Management

THANK YOU

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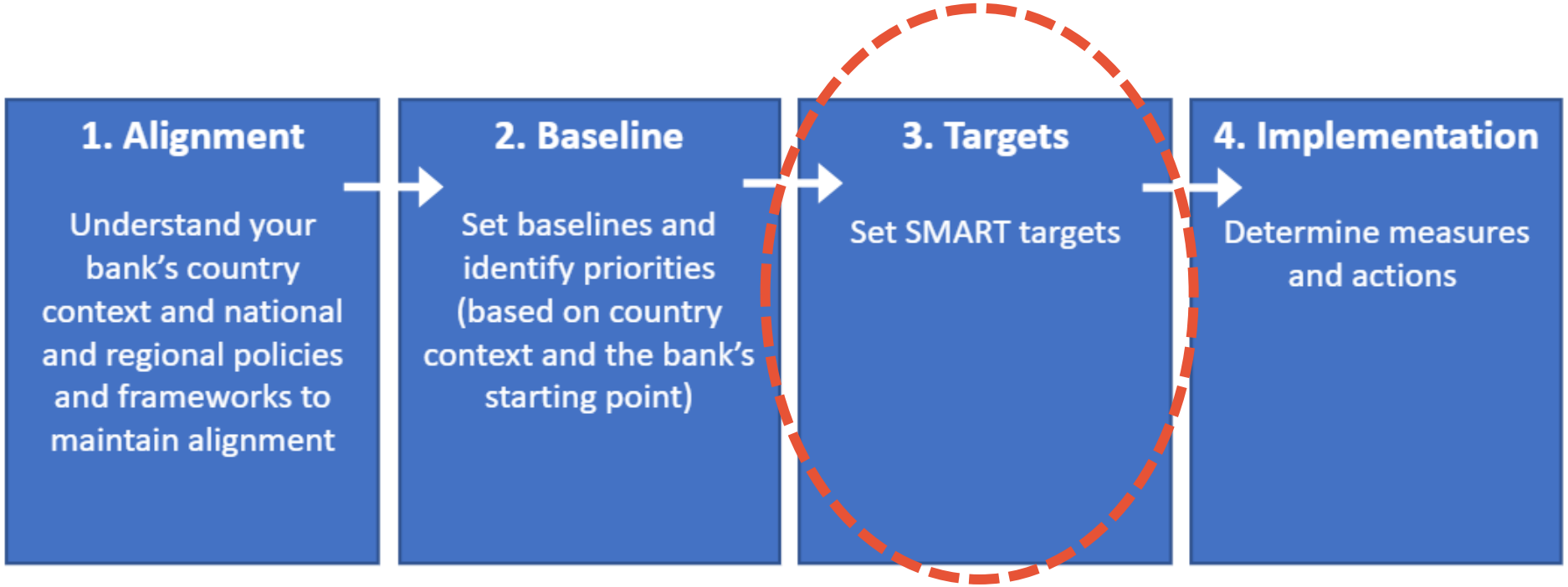
The target setting process (climate or resource efficiency)

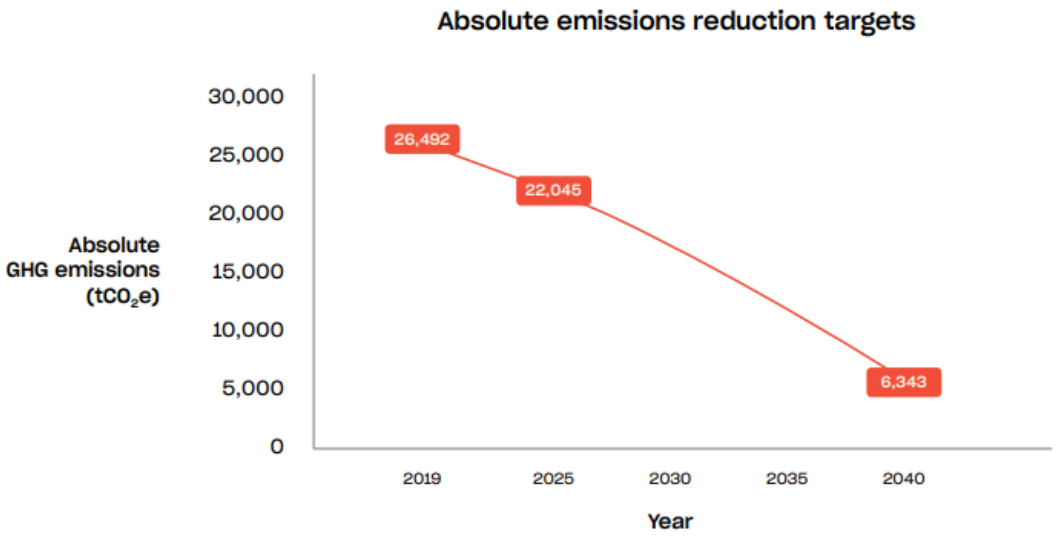


Public examples from banks for climate targets with EE focus (Canada, Vancity

Residential buildings

- A 17% reduction in absolute emissions by 2025 from base year
- A 76% reduction in absolute emissions by 2040 from base year

Year	Target emissions (tCO2e)
2019 (base year)	26,492
2025	22,045
2040	6,343



- To establish our 2025 targets, we used the Science Based Targets initiative Sectoral Decarbonization Approach (SBTi's SDA) tool for residential and service buildings. The SBTi defines and promotes best practice in science-based target setting,
- This tool uses data from the International Energy Association's Energy Technology Perspectives (IEA's ETP) 2017 and applies a 'beyond 2 degrees' scenario (B2DS), which falls within the Paris Agreement range of ambition: >50% probability of limiting global warming to 1.75°C above pre-industrial levels.
- While the scenario we used meets the *Guidelines for Climate Target Setting for Banks*, it does not meet the NZBA's ambition of >50% probability of limiting global warming to 1.5°C.
- However, we believe our targets meet the NZBA's ambition for two main reasons: our pathway and endpoint were modified to meet 2050 targets by 2040; and the SBTi's SDA tool resulted in more aggressive targets than the CRREM's Carbon Risk Assessment 1.5 degree aligned tool. This is because the SBTi tool uses global data whereas the CRREM tool considers a cleaner grid in Canada.
- Once updated SBTi tools become available based on a net-zero scenario, we will revisit our approach and look at updating targets if needed.

Explaining scenario choice

[See details in Vancity's Technical Report]

Public examples from banks (Canada) - Vancity

PCAF data quality score	Mortgage balance ($ million CAD)	% loan balance	% emissions
5	683 (A)	5%	6%
4	12,381 (B)	95%	94%

Emission factors and external data used

Grid factors	British Columbia	Ontario[1]	Year	PCAF database	Source	Publication date
Generation intensity gGHG/kWh electricity generated	18.6	30	2019	Same source but more recent year[2]	BC: National Inventory Report 1990-2019 Part 3 – Page 70[3] Ontario: Page 66 of the same report	2021

[1] We applied this emission factor to commercial real estate residential homes located on Ontario (see commercial real estate section)
[2] PCAF uses 2018 data that references the National Inventory Report. We used 2019 data, drawing directly from the National Inventory Report 1999-2019
[3] https://publications.gc.ca/collections/collection_2021/eccc/En81-4-2019-3-eng.pdf

Energy use by building type in British Columbia	Energy use/GHG emissions	Year	PCAF database	Source
Electricity use	**PJ**	2018	Same source but more recent year	Office of Energy Efficiency, Natural Resources Canada and Statistics Canada Tables 32, 34 and 36[1].
Detached homes	44.0			
Attached homes	8.2			
Apartments	15.4			
GHG emissions – non electricity	**Mt of CO_2e**			
Detached homes	2.8			
Attached homes	0.5			
Apartments	0.8			
Data quality 5: Building stock in British Columbia	**# Buildings (thousands)**	**Year**	**PCAF database**	**Source**
Detached homes	959.9	2018	Same source but more recent year	Office of Energy Efficiency, Natural Resources Canada and Statistics Canada Table 14[1].
Attached homes	250.7			
Apartments	689.9			
Data quality 4: Floor area by building type in British Columbia	**Million m^2**	**Year**	**PCAF database**	**Source**
Detached homes	189.0	2018	Same source but more recent year	Office of Energy Efficiency, Natural Resources Canada and Statistics Canada Table 18[1].
Attached homes	36.6			
Apartments	69,8			

[1] https://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/menus/trends/comprehensive/trends_res_bct.cfm. At the time of writing, data for energy use by building type is now available for 2020. We understand that 2019 building stock data will be published in 2022. We will formalize our approach to applying updated emission factors in 2022.

Explaining energy use/ GHG estimation data sources

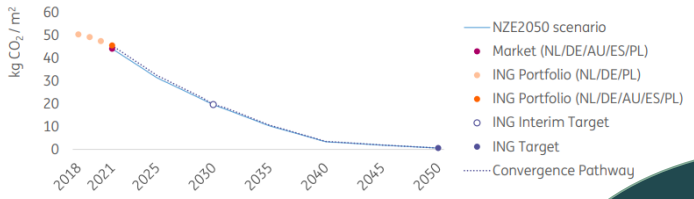
Public example from a global bank: ING

Residential real estate

€ 297 billion
Outstanding in scope

3.2%
Performance vs. 2021 net-zero benchmark

-57%
2030 reduction target vs. 2021



Buildings account for 40% of EU energy consumption and 36% o
direct and indirect GHG emissions, two-thirds of which can be at
housing. More than 95% of EU buildings are not energy efficient
1% of buildings undergo energy-renovation per year, according to
to reach the EU's climate ambitions and shows the need to addr
the existing building stock.

At year-end 2021 our combined mortgage port Netherlands, Germany, Australia, Spain, and Poland) reached a C sity of 45.7 kg per m². Belgium is not included in this total, as their w of calculating the emission intensity (including power generation) is not comparable with the other countries in our portfolio.

In previous years we compared our portfolio results with the Beyond 2°C Scenario (B2DS) for the EU. Starting this year, we can not only compare with the more ambitious IEA Net Zero by 2050 scenario, but also calculate a country weighted starting point, based on country level net-zero pathways, as published by Carbon Risk Real Estate Monitor (CRREM) in 2022. We have used the CRREM scenario to model the targets we describe below.

Clarifying science-based scenario used for target setting

See further details: ING Climate Report 2022

In **Poland**, we noted a decrease in emission intensity, reaching 53.5 kg CO_2/m², an improvement of 7% from 2020. This is mainly related to new loan origination for buildings constructed with tighter energy efficiency norms. Slight improvement in national energy mix also contributed to this result. Data availability still remains one of the key challenges, where we continue working with other Polish banks to establish access to central EPC databases.

Public sector engagement to ensure access to relevant data

Public example from a global bank: ING

In line with the recommendations for mortgages outlined by PCAF, w
use energy labels as a proxy for properties' energy performance. We
collect EPC labels for new mortgages in our markets, meaning eac
an increasingly accurate picture. However, data on energy l
available in most of our markets outside of the Nethe
to develop our own means of determining CO_2 intensity for those mark
other available data such as building year, modernisation, and subsidise
markets we aim to align these methods with local peers and stakeholders.

Using proxies until granular data is available

We have focused on tracking primary energy demand of the homes, but some of our markets are including other energy use at the home into account, such as that used for cooking. Recently published joint guidance from PCAF, CRREM, and GRESB on measuring GHG emissions for real estate suggests that over time we should expand our focus to all emissions from within the building boundary and not only of the building itself. As scenarios and data become available to do this, we will explore how our reporting can adapt to accommodate for this ambition.

In the Netherlands, we also started a pilot with other banks to explore the option of using real energy usage data, which can improve our methodology beyond the use of energy labels. Shifting to a methodology based on real-energy use is key to uncovering the real picture of housing emissions, and we continue to urge governments and other stakeholders to work together to make data available for this purpose.

countries where those homes are located. Meaning that governments and institutions steering and installing new renewable electricity capacity and shifting away from fossil fuels like natural gas, thereby greening the energy mix available to homeowners, is the most important factor for the residential real estate sector to

Importance of combining EE and renewable energy

Next to this the energy efficiency of those homes, as represented by t
label is likely to be the next largest factor. This is something which we
influence as a joint stakeholder with homeowners, where the willingnes
of the homeowners is critical to unlock progress. Finally, homeowners influ
additional factor, in terms of how much energy they use at home. This is likely to be the third most important element in reaching those milestones and requires the involvement of all members of a household to succeed.

To show the significance of how these factors relate, even if all homes in our portfolio were label A or equivalent in the six markets by 2030, houses in our portfolio would not reach the milestone described above unless a significant and rapid greening of the grid continues in all countries, and homeowners consciously use less energy. At the same time, it is possible that a greening of the energy mix in many markets could carry the sector well towards the targets without major improvements to the energy label composition.

Like in other sectors, we take an inclusive approach in empowering our customers to improve their efficiency. We do not see our role as a bank to limit finance to customers with G and F label homes for example, where doing so may show positively in our portfolio reporting but would not create real-world change to helping homeowners' transition. Should a national government regulate minimum energy labels for example, in line with the EU's Energy Performance of Buildings Directive, such as barring G label properties from 2030 and F labels from 2033, then we as a bank can support customers with those labels, facilitating them in financing their renovations ahead of those deadlines, but for now it is not our place to directly exclude such houses from access to our lending.

Public example from a global bank: ING

Products and Services

In order to leverage our financing toward net zero, w
alternatives for our key retail products will be offered in a

In 2022 in the Netherlands and Germany, we launched new Eco Mortgages, which offer a discount, of 10 basis points in Germany and 15 basis points (energy label A+ and higher) or 10 basis points (energy label A) in the Netherlands, for homes with energy labels of A and above. In the Netherlands this was offered to both new and existing customers with those labels. We also launched an Eco mortgage in our Italian market in 2022. This accompanies our Eco Mortgage in Poland, which was recently redesigned in order to adjust towards some of the requirements under the EU Taxonomy (EUT). ING is planning to roll out Eco Mortgages in all countries where we offer mortgages product model in all mortgage markets, and to align our definition of eco-mortgage products with the EUT definition of Green Mortgages.

However, in order to achieve net zero, we need to empower customers in homes with lower energy labels in their eco renovations. ING also continues to tackle this challeng where we have lending products in place in both Belgium and Poland for customers that are renovating to improve the energy label of their home by for example improving insulation or adding solar panels. In the Netherlands, clients can also extend their mortgage loan to cover additional eco-renovations. Further eco-renovation products are planned for launch in Romania.

Internal training + Client engagement

We continue to build our customer advisory services. In the Netherlands, our mortgage advisors received external training on advising clients on how they can improve the sustainability of their homes. This is then discussed in every mortgage consultation. Furthermore, ING intensifies the use of a tool where people can not only become aware of the improvements they can make, but also can have them realised. ING also participates in the National Insulation Week programme of the Dutch government.

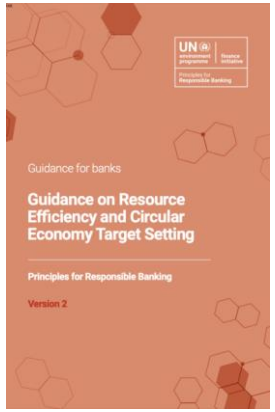
In Germany we launched a renovation calculator with KfW bank in September 2021, where ING customers are offered insights into what sustainability measures they can take in their homes. Traction since then has shown growing relevance for customers, where those taking part have mostly implemented the suggested measures. The calculator will now be rolled out gradually to all our brokers to reach larger customer groups.

While our products have shown the promise of change to come, we note that demand among clients is still not at the level required to drive the transition. We continue to call on governments to implement ambitious and consistent legislation that mandates sidential real estate.

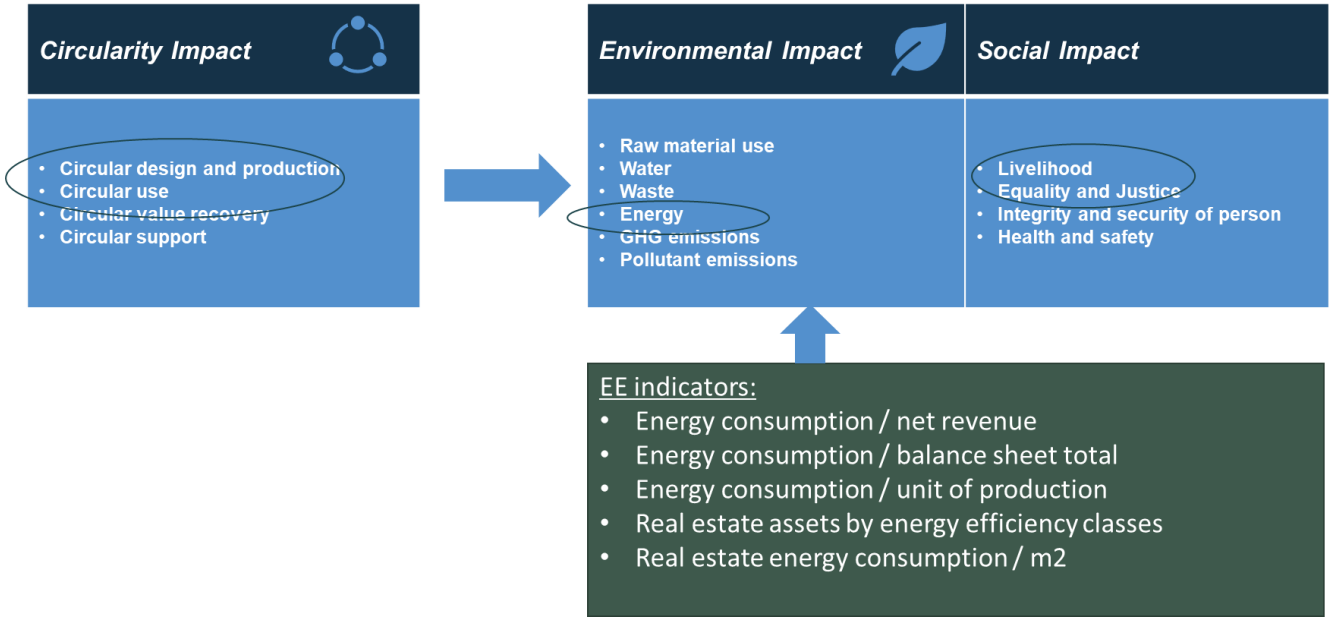
Product development for both new constructions and renovations

Target setting – circular economy/resource efficiency focus

- You should set both long term targets (e.g. 10 years or longer), and interim targets (to be delivered in 1-5 years).
- Impact targets should be set using the impact indicators set in the Guidance (see also previous slide!), adjusted as needed by your bank.
- It is recommended to use EE indicators together with increase in **renewable energy**
- Ideally, your bank should set impact targets on environmental impact (energy efficiency + renewable energy) and circularity impact.
- You are also encouraged to set social impact targets.



Resource efficiency & Circular economy



Target setting – circular economy/resource efficiency focus - Example

	Circularity Impact	*Environmental Impact*	*Social Impact*
Impact targets		Mandatory Mortgage portfolio **EE target** for avarage primary energy consumption 290 kWh/m2 for **2026** and 200 kWh/m2 for **2033** (baseline 2022: 320 kWh/m2). The bank also set a **renewable energy production** target (solar and wind): 1250 MW installed capacity for **2026** and 2700 MW for **2033** (baseline 2022: 600 MW)	

Target setting – circular economy/resource efficiency focus - Example

	Circularity Impact	*Environmental Impact*	*Social Impact*
Impact targets	(Optional, but recommended) Increasing the share of recycled materials in the operation of our construction company clients to 25% by 2026 (baseline 2022: avarage share: 7%).	Mandatory Mortgage portfolio **EE target** for avarage primary energy consumption 290 kWh/m2 for **2026** and 200 kWh/m2 for **2033** (baseline 2022: 320 kWh/m2). The bank also set a **renewable energy production** target (solar and wind): 1250 MW installed capacity for **2026** and 2700 MW for **2033** (baseline 2022: 600 MW)	(Optional, but recommended) At least 3000 borrowers affected by energy poverty benefiting from retrofit loans by 2026, bringing down their energy cost/income ratio by 15pp (baseline 2022: avarage ratio is 40%)

Target setting – circular economy/resource efficiency focus - Example

Impact targets

Circularity Impact	*Environmental Impact*	*Social Impact*
(Optional, but recommended) Increasing the share of recycled materials in the operation of our construction company clients to 25% by 2026 (baseline 2022: avarage share: 7%).	Mandatory Mortgage portfolio **EE target** for avarage primary energy consumption 290 kWh/m2 for **2026** and 200 kWh/m2 for **2033** (baseline 2022: 320 kWh/m2). The bank also set a **renewable energy production** target (solar and wind): 1250 MW installed capacity for **2026** and 2700 MW for **2033** (baseline 2022: 600 MW)	(Optional, but recommended) At least 3000 borrowers affected by energy poverty benefiting from retrofit loans by 2026, bringing down their energy cost/income ratio by 15pp (baseline 2022: avarage ratio is 40%)

Practice targets

Portfolio composition and financial flows

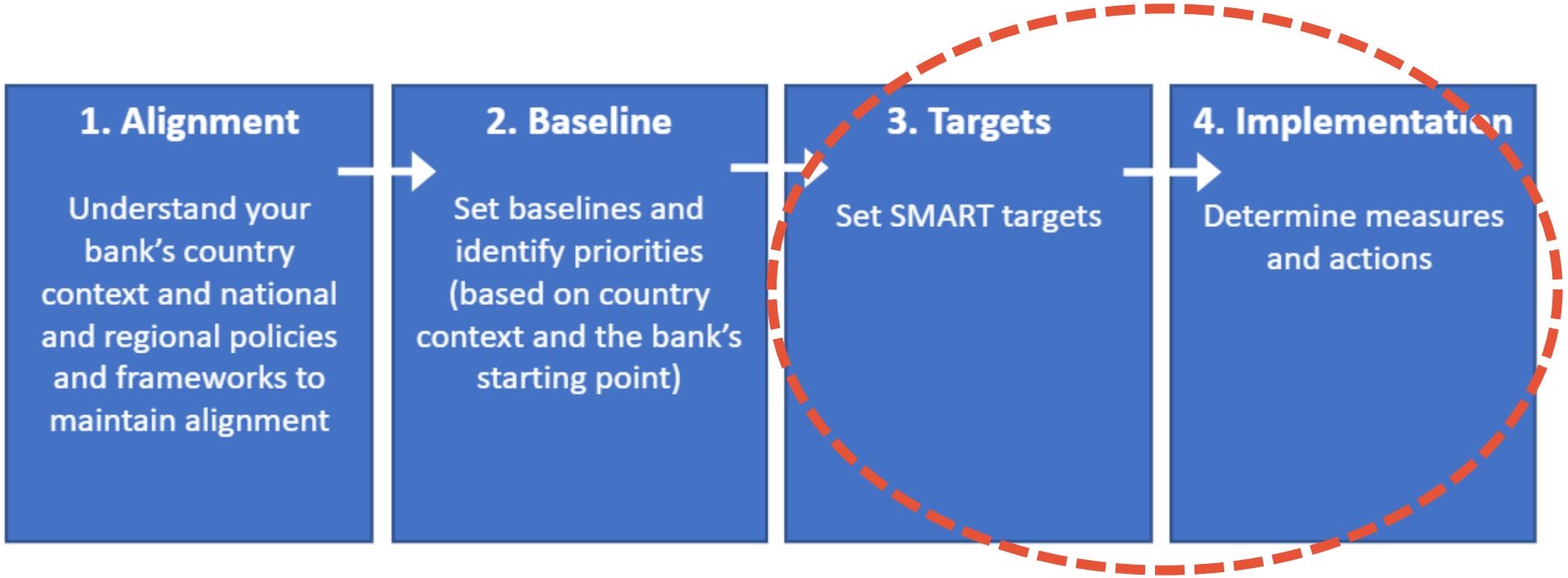
By **2026,** ensure that at least 30% of new mortgages meet the local green taxonomy criteria / certified as green usinc

Client engagement

By **2024,** ensure that every year at least 5% of clients are advised about behavioral and renovation opportunities to improve energy efficiency and make their buildings more circular.

Can be similar as in the case of climate targets

The target setting process (climate or resource efficiency)



Implementation measures

- Portfolio composition & financial flows
  - ✓ Targets for new lending (x EUR mln; Y %) or for outstanding stock (reach Z% by target year)
- Client engagement
  - ✓ Engage with key clients to develop data collection templates
  - ✓ Engage with clients to collect data, starting with key clients and progressively broadening to all clients
  - ✓ Engage with clients to raise awareness and share knowledge
- Financial products and services
  - ✓ Develop new financial products
  - ✓ Develop technical assistance to clients
  - ✓ Develop tools for clients
  - ✓ Helping clients' access to government grant programs about EE

Green Mortgages

Goal of the loan
- New green building
- Retrofit

Property type
- Residential
- Commercial

Risk considerations
- Effects on Probability of Default
- Effects on Loss Given Default

Green mortgages – risk considerations

Econometric analysis demonstrates a negative and significant correlation between the buildings' energy efficiency and the probability of mortgage default

Studies evaluating the correlation between EE and probability of default (PD)

Country	Studies	Findings
USA	Kaza, Quercia, Tian (2014)	lower default risk
USA	An and Pivo (2015)	lower default risk
USA	An and Pivo (2020)	lower default risk
USA	Wallace, N., Issler, Mathew, Sun (2018)	lower default risk
USA/EU	Zancanella, Bertoldi, Boza-Kiss (2018)	lower default risk
World	Pelizzon And Riedel (2017)	lower default risk
UK	Guin and Korhonen (2018)	lower default risk
Netherlands	Billio, Costola, Pelizzon, Riedel (2020)	lower default risk
UK	Guin and Korhonen (2020)	lower default risk

Table 5 – Studies evaluating the correlation between EE and property value (PV)

Region	Country	Studies	Findings
US	US	Eichholtz, Kok, and Quigley (2010)	higher property value
		Bloom, Nobe, and Nobe (2011)	higher property value
		Fuerst and McAllister (2011)	higher property value
		Aroul and Hansz (2011)	higher property value
		Dastrup and Zivin (2012)	higher property value
		Kahn and Kok (2014)	higher property value
		Bruegge, Carrion-Flores, Pope (2016)	higher property value
		Qiu, Wang and Wang (2017)	higher property value
		Szumilo and Fuerst (2017)	higher property value
EU	Netherlands	Brounen and Kok (2011)	higher property value
	Netherlands	Chegut, Eichholtz, and Holtermans (2016)	higher property value
	Netherlands	DNB (2019)	higher property value
	Sweden (Stockholm)	Högberg (2013)	higher property value
	Sweden	Wahlström (2016)	higher property value
	Germany	Cajias and Piazolo (2013)	higher property value
	Germany	Surmann, Brunauer, Bienert (2015)	No evidence, but important restrictiveness of the data sample
	UK	Fuerst, McAllister, Nanda, Wyatt (2015)	higher property value
	UK	UK Green Building Council, LENDERS project, Core report (2017)	higher property value
	Spain	De Ayala, Galarraga, and Spadaro (2016)	higher property value
	Italy	Mangialardo, Micelli, Saccani (2018)	higher property value
	Austria, Belgium, France, Ireland and the UK	Mudgal et. alii (DG Energy) (2013)	higher property value
	Austria, France, Germany, Italy, Norway, Poland, Romania and Spain	Pascuas, Paoletti and Lollini (2017)	EPCs considered unreliable or difficult to understand by real estate agents
	EU	Pascuas et alii (ZEBRA 2020) (2017)	higher property value
	EU	Brocklehurst (2017)	higher property value
	EU	Heijmans and Loncour (2019)	higher property value
ROW and world	Singapore	Deng and Wu (2014)	higher property value
	Japan	Yoshida and Sugiura (2015)	higher property value
	Japan	Yoshida, Onishi, and Shimizu (2016)	no effect
	China	Zhang, Liu, Wu and Zhang (2020)	higher property value
	World	Ankamah-Yeboah and Rehdanz (2014)	higher property value
	World	Zancanella, Bertoldi, Boza-Kiss (2018)	higher property value

See: energyefficientmortgages.eu

Green mortgage example

- **Sustainability** — Get financing for the sustainable home of your dreams
- **Mobility** — Apply your mortgage loan with our mobile app DBS HOME360 anytime, anywhere
- **Availability** — Get an instant 1-minute mortgage approval
- **Reward** — Earn an extra cash rebate for going green
- **Treasures** — With DBS Treasures, you can benefit from wealth management advice and solutions

Eligible are mortgage loan customers for a designated residential property that has received the BEAM Plus Platinum or Gold Rating issued by the Hong Kong Green Building Council.

Under the Promotion, an Eligible Customer will enjoy an extra cash rebate ("Extra Cash Rebate") as follows: a. DBS Treasures customer will enjoy an extra 0.1% cash rebate of the total Mortgage Loan amount. b. DBS Account customer will enjoy an extra 0.05% cash rebate of the total Mortgage Loan amount.

Source: Green Mortgage | DBS Hong Kong

Green mortgage example

Personal Loans and Mortgages > Mortgages > Green Mortgage

Green Mortgage

Make a positive impact on society and the environment

How does the Green Mortgage Promotion work?

You will enjoy a pricing discount on your mortgage loan should you meet the following conditions:

- Your mortgage property must have a valid Building and Construction Authority (BCA) Green Mark rating of Green Mark Gold, Green Mark GoldPlus, Green Mark Platinum, or Green Mark Super Low Energy (SLE), which includes Green Mark GoldPlus SLE and Green Mark Platinum SLE, which is within 3 years from the certification year
- You must apply for a new mortgage loan or reprice your existing loan with the bank
- You must take up a floating rate package, which is a SORA-Pegged package.

Refer to the Standard Chartered Green Mortgage Terms and Conditions which apply[1].

Source: Green Mortgage - Standard Chartered Singapore (sc.com)

Green mortgage example

Energy efficiency loan

Improve your home's energy certification, and make sustainable savings on your energy bill.

> **Start paying off the loan when work has been completed.**
>
> **Repayment terms of up to 7 years.**

Santander

Purpose of the Energy Efficiency Loan

Self-consumption

- Installation of solar panels.
- Storage batteries.

Heating, cooling and hot water

- **Installation of heating, cooling and domestic hot water systems with** energy ratings A+, A++, A+++ (old labelling between A+++ and D) and A, B or C (new labelling between A and G).
- **Condensing boilers:** installation of heating and hot water systems using condensing boilers.
- **Heat pumps:** installation of heat pump heating and cooling system by means of splits or ducts.
- **Aerothermal:** installation of heating, cooling and domestic hot water system using aerothermal system.
- **Geothermal:** geothermal installation, systems that convert heat from the ground into thermal energy (heating, cooling and domestic hot water).

Control and automation

- Intelligent control devices for water, electricity, ventilation and air-conditioning for integrated efficient energy management.

Façade and building envelope insulation

- Replacement of exterior carpentry: Installation of aluminium or PVC windows with thermal break, low-emission double glazing, complying with the limits established in the Technical Building Code (CTE) for Energy Saving.
- External thermal insulation system (SATE).
- Ventilated façade.

Implementation measures

- Portfolio composition & financial flows
  - ✓ Targets for new lending (x EUR mln; Y %) or for outstanding stock (reach Z% by target year)
- Client engagement
  - ✓ Engage with key clients to develop data collection templates
  - ✓ Engage with clients to collect data, starting with key clients and progressively broadening to all clients
  - ✓ Engage with clients to raise awareness and share knowledge
- Financial products and services
  - ✓ Develop new financial products
  - ✓ Develop technical assistance to clients
  - ✓ Develop tools for clients
  - ✓ Helping clients' access to government grant programs about EE

Public examples from banks: KBC in Europe

Real estate

Mortgages, residential and non-residential commercial real estate

Context

Mixed forces are influencing renovation trends in the real estate sector. For many years, the EU has had a regulatory framework in place, imposing high energy-efficiency standards on new buildings. However, with its 'Fit for 55' package, the EU is now also laying down rules targeting the radical renovation of existing buildings and the replacement of polluting energy technologies. All EU Member States will be required to facilitate and encourage this endeavour through amongst others gradual financial incentives, when and where possible. At the same time, high energy prices are acting as additional impetus to invest in renewable energy technologies and deep renovation, whereas, by contrast, high commodity prices may act as a brake given the subsequent rapidly increasing construction costs they trigger.

KBC portfolio

Loan exposure

Real estate financing accounts for around 47% of KBC's total outstanding loan portfolio. Retail mortgage loans are a core financial product in all our core countries, accounting for financing of 77.6 billion euros at year-end 2021. Commercial real estate financing[6] for developers and investors amounted to 11.5 billion euros in the same year.

Financed emissions

According to the 2021 Sustainability Report financed emissions calculations, KBC's real estate portfolio accounts for around 12% of the total GHG emissions financed by KBC, of which 3% relates to mortgage loans and 9% to commercial real estate. In total, this amounts to around 6.9 Megatonnes CO_2e (Mt CO_2e) in 2021.

[6] Commercial real estate finance relates to the development of or investment in real estate assets (or a portfolio of such assets) by property developers or investors, which are subsequently sold or let to third parties.

Targets

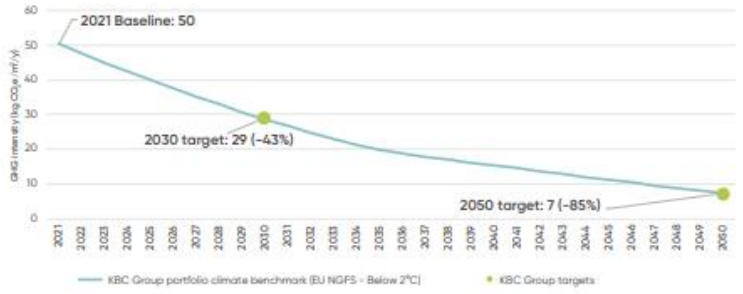
Residential property

For the residential property sector (financed both privately and commercially), a target was set for the relative emission intensity of CO_2e emitted per financed m^2 per year. The target scope focuses on emissions from building operations and therefore includes real estate ownership and investments but excludes pure commercial real estate development as this financing exclusively relates to the construction phase.

Residential real estate	Baseline 2021 (kg $CO_2e/m^2/y$)	2030 target (kg $CO_2e/m^2/y$)	2050 target (kg $CO_2e/m^2/y$)
Aggregated KBC Group target	50	29	7
Percentage reduction		-43%	-85%

Residential real estate GHG intensity targets (kg $CO_2e/m^2/y$)

The graph with baseline 2021 shows the 2030 and 2050 KBC targets (dots) for this loan portfolio and the main climate benchmark (line) that has informed our target setting.



See further details: KBC Climate Report 2022

Public examples from banks: KBC in Europe

All real estate

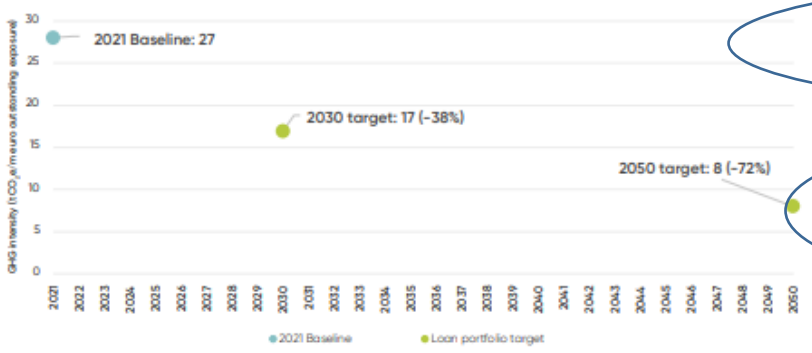
For the commercial real estate sector (including business premises, schools and shops), there is currently a lack of data to set physical GHG emission intensity targets. Therefore, a financial emission intensity target was set for the real estate sector as a whole, in addition to the targets for residential real estate. The target scope focuses on emissions from building operations and is therefore limited to real estate ownership and investments. Pure commercial real estate development is excluded as such financing exclusively relates to the construction phase. This target is expressed in financed tonnes of CO_2e per one million euros.

Real estate whole sector	Baseline 2021 (t CO_2e/m euro)	2030 target (t CO_2e/m euro)	2050 target (t CO_2e/m euro)
Aggregated KBC Group target	27	17	8
Percentage reduction		-38%	-72%

The financial targets have not been adjusted for inflation.

Real estate GHG intensity targets (t CO_2e/m euro outstanding exposure)

Scenario benchmarks are not shown in these charts, as this sector consists of a combination of several sub-sectors for some of which the necessary data are lacking and/or for which no uniform scenario benchmarks exist.



Actions

To achieve these targets, KBC will [illegible] encourage its clients to improve the energy performanc[illegible]eir properties, and also focus on real estate with a (n[illegible]avourable EPC (Energy Performance Certificate) rating. W[illegible]ll do so by sharing information on sustainable const[illegible]ion and renovation, advising on subsidies, working with partn[illegible] on energy efficiency exercises and the supervision of construc[illegible]ns or renovations. We also aim to gradually offer the best [illegible]vailable interest rates on loans for buildings with a favourable EPC rating and/or incentivise this aspect through energetic renovation upon purchase, in many cases backed by government support.

Note: These targets are set and expres[illegible]ed against a background in which not all of KBC's [illegible]me countries already have government schemes and inc[illegible]ve packages in place to substantially boost the much nee[illegible]building energy efficiency improvements.

Client engagement

Products with pricing linked also to energy efficiency

Implementation measures

- Portfolio composition & financial flows
  - ✓ Targets for new lending (x EUR mln; Y %) or for outstanding stock (reach Z% by target year)
- Client engagement
  - ✓ Engage with key clients to develop data collection templates
  - ✓ Engage with clients to collect data, starting with key clients and progressively broadening to all clients
  - ✓ Engage with clients to raise awareness and share knowledge
- Financial products and services
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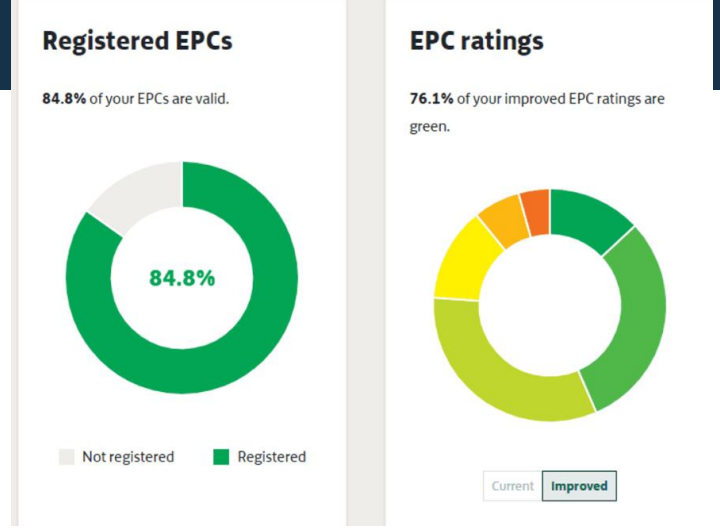
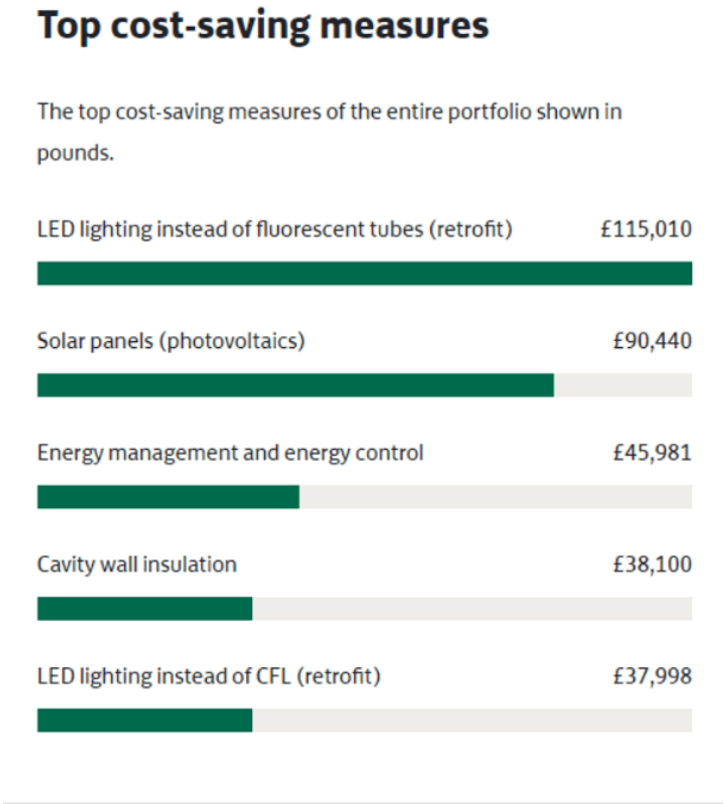
  - ✓ Develop technical assistance to clients
  - ✓ Develop tools for clients
  - ✓ Helping clients' access to government grant programs about EE

Example: Lloyd's Green Buildings Tool

- The Green Buildings Tool helps clients (who own or lease properties) understand their emission reduction opportunities and build a sustainability strategy.
- The tool has a simple interface allowing customers to assess the business cases for up to 58 cost-saving measures to improve the green credentials of a property or portfolio of properties.
- The impact of all measures can be viewed in terms of their potential impact on EPC ratings, estimated payback period and annual savings, investment required and the reduction in carbon emissions.
- The tool is free to use and designed for clients of all sizes, from SMEs with single premises to the largest companies in the UK.
- The tool is also designed to be updated after measures have been implemented so that clients can review their progress.
- Once clients have determined the optimal investments to reduce the emissions of their properties, they can apply for discounted financing





See details at www.lloydsbank.com/business/sustainability/green-buildings-tool.html

Implementation measures

- Internal measures
  - ✓ Awareness raising & trainings
  - ✓ Incentivise (e.g. bonuses tied to energy efficiency mortgage volume target etc.)
  - ✓ Internal policies and processes
  - ✓ Bank or staff building energy efficiency improvements to enhance credibility and build internal awareness
- Partnering and engaging in industry initiatives
- Partnering with Development Financial Institutions
- Policy advocacy to support the transition to a low-carbon and circular economy
  - ✓ Cooperationg with governments to design grant+loan subsidy schemes
  - ✓ Access to EPC data
- Public awareness raising and research

The Energy Efficient Mortgages Initiative at a glance

1
Creating a 'virtuous circle'
EEM definition, property valuation guidelines & building energy performance parameters

2
Making the business case
Dedicated to empirical evidence gathering

3
Building confidence through transparency
Launch of the EEM Label

4
Roll out across EU markets
National hubs & consumer research

5
Keeping pace with EU legislation
EEMI as a bridge

See www.energyefficientmortgages.eu

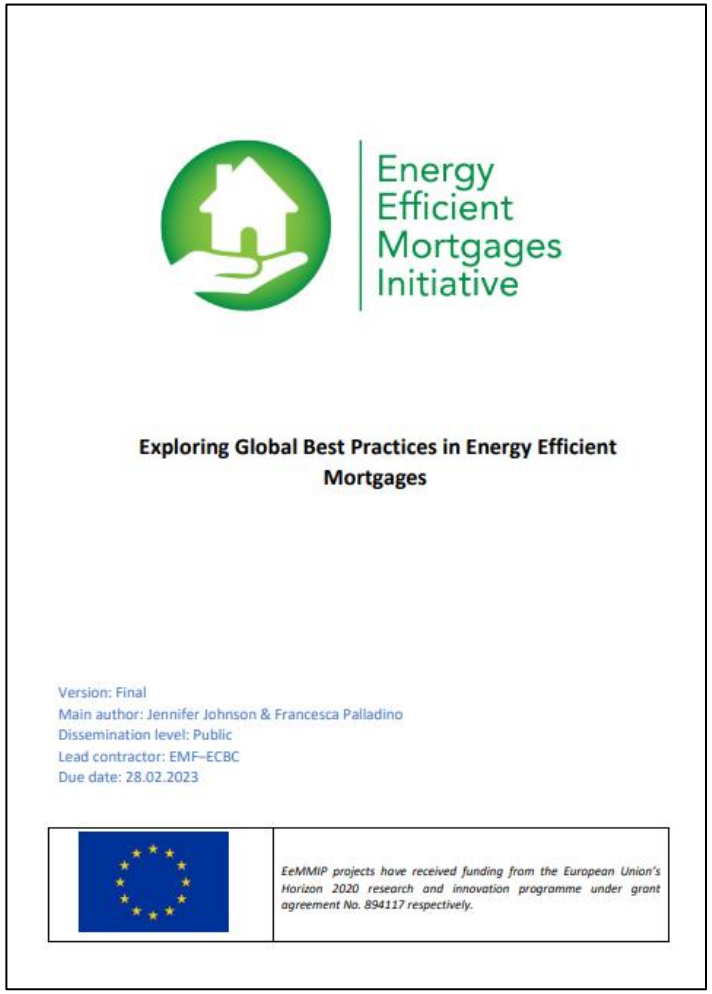
Recommended resource

Case study analysis in the following global jurisdictions: EU, **Kenya**, Malaysia and Japan.

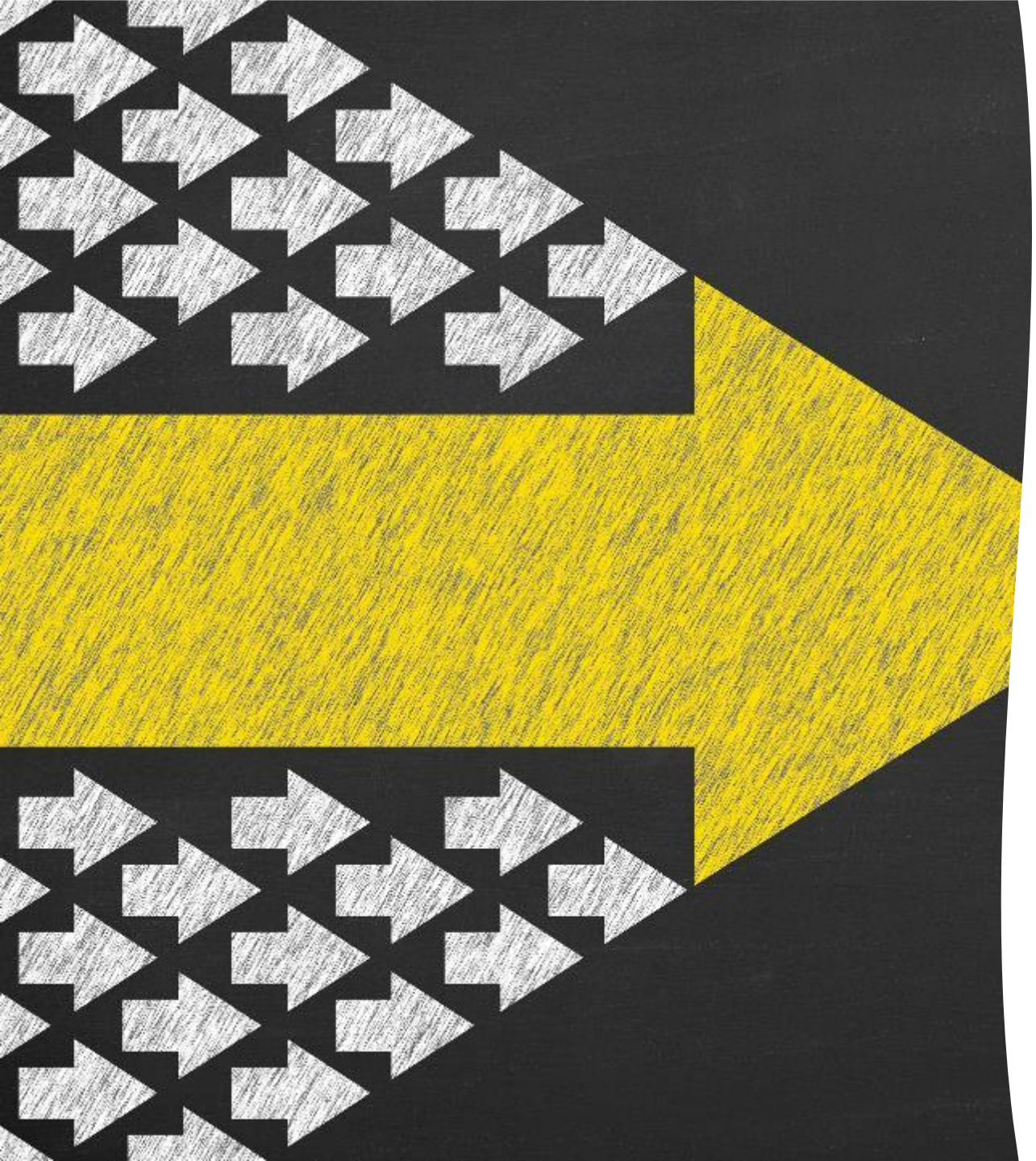
(1) the key pillars for accelerated market development in relation to energy efficient mortgages as identified under the Energy Efficient Mortgages Initiative (EEMI),

(2) the regulatory framework for Sustainable Finance and building energy performance in each of the jurisdictions and

(3) the different public support actions in place in each of the jurisdictions



[Exploring-Global-Best-Practices-in-Energy-Efficient-Mortgages.pdf (energyefficientmortgages.eu)]



Opportunity to receive individual technical assistance from UNEP FI

- We hope the workshops were useful and provided you good ideas.
- We encourage you to start taking concrete steps to implement what was covered during the workshop.
- If you have questions / want to set energy efficiency targets and/or develop your energy efficiency financing, feel free to contact us to see how we can further help you bilaterally.
- Contact: gabor.gyura@un.org

Evaluation - UNEP FI Energy Efficency capacity building works hops Africa & Middle East

Please evaluate the workshops and give us ideas how to develop further the training

Please complete our quick survey (takes only 2-3 minutes) which you can access on the link below or with the QR code

https://forms.office.com/e/hNhTj1NiSn

Would your bank need capacity building in any other sustainability area?

- We would like to plan our future capacity building programs based on your actual demands as much as possible.
- With that objective, we would kindly like to ask for your support by completing our short survey (which takes just 3 minutes) about your capacity building support needs.
- **Link to the survey: https://forms.office.com/e/gfdvD8T9Fj**
- We would kindly request to complete the survey by **17 July** the latest.
- Thank you for all the banks who already completed the survey!

Thank you for your attention!

Slides + evaluation form will be shortly shared in email.

Contact: gabor.gyura@un.org