



Global Alliance
for Buildings and
Construction

UN
environment
programme



finance
initiative

Principles for
Responsible Banking

Banking on Green Buildings

Background material to build
capacities at commercial banks

May 2024

About UNEP FI

UNEP Finance Initiative brings together a large network of banks, insurers and investors that collectively catalyses action across the financial system to deliver more sustainable global economies. For more than 30 years the initiative has been connecting the UN with financial institutions from around the world to shape the sustainable finance agenda. We've established the world's foremost sustainability frameworks that help the finance industry address global environmental, social and governance (ESG) challenges.

UNEP FI supports its members with various means, among them capacity building to implement the Principles for Responsible Banking.

unepfi.org

About GlobalABC

Founded at COP21, hosted by the United Nations Environment Programme and with 290 members, including 41 countries, the Global Alliance for Buildings and Construction (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 advocates for market transformation and focuses on catalyzing action by defining a carbon neutrality strategy for the built environment. It also supports countries in setting priorities and measures based on their situation as well as private sector transition towards decarbonisation and resilience of buildings.

globalabc.org

Cover image: unsplash.com/@vadikfi



Acknowledgements

Lead authors

Energy Shrink: Smita Chandra Thomas, Aditya Desai, Kara Hausamann

Publication supervisors

UNEP: Jonathan Duwyn, Gennai Kamata

UNEP FI: Gabor Gyura (gabor.gyura@un.org)

Acknowledgements (alphabetical order)

The following individuals provided valuable contributions to this report. Their extensive knowledge and insights have significantly enriched the content, ensuring its accuracy and comprehensiveness.

Andreas Jäger (ICLEI)

Anna Zinecker (GIZ)

Joel Sanchez Brisen (IFC)

María Fernanda Aguirre (Chile Green Building Council)

Nicolás Ramírez (Green Building Council Costa Rica)

Ommid Saberi (IFC)

York Ostermeyer (Chillservices)



Contents

Acknowledgements	iii
Executive summary	v
Introduction	1
1. Targeting the buildings sector holds the key to impact	2
1.1 The buildings sector is a key focus of responsible and sustainable banking	2
1.2 Evaluating the climate risk for real estate portfolios is the financially responsible approach	5
1.3 Targeting the buildings sector is one of the most cost-effective pathways for climate impact	7
1.4 The buildings sector also holds potential for impact at scale	8
1.5 Global trends indicate rising investments in energy-efficient buildings.....	9
1.6 There is a strong business case for investments in clean energy technologies	10
2. Where banks can have impact on the buildings sector	11
2.1 What are some important targets to set in buildings?.....	11
2.2 Large scale investments are needed to achieve a net zero emissions scenario	17
3. How banks can impact the buildings sector	18
3.1 Develop green buildings asset strategies	18
3.2 Develop sustainable financing and green banking products for the real estate sector.....	21
3.3 Banks can also stimulate change within their organisations	23
3.4 Bank actions can impact the whole lifecycle of buildings.....	24
4. Conclusion	26
5. Bibliography	27



Executive summary

The buildings sector offers an impactful pathway for the financial sector in general to contribute to sustainability, and specifically for signatory banks of the Principles for Responsible Banking (PRB) to meet their commitments. The buildings sector is both at risk and offers one of the largest opportunities for impact. Evaluating the risks and rewards of investing in buildings that are energy-efficient and resilient to climate change is the financially responsible approach for commercial banks.

The decisions of some major insurance companies to move out of large markets that are at greater risk of flooding and wildfires is a strong indicator of risk that financial markets must note. The buildings sector also offers great opportunities for impact. The technology to achieve efficient and climate-resilient buildings already exists. The concepts are proven and are some of the most cost-effective compared to other methods of reducing carbon emissions, such as carbon capture or reforestation. Hundreds of net-zero buildings exist around the world today.

There is also a strong business case for investing in green buildings. Green buildings sell faster on average and at a higher premium. Energy efficiency has also been linked to a lower risk in case of mortgages. The benefits can create a win-win for banks and consumers alike. These indicators have led to a global trend in green buildings.

Green buildings also provide banks with a pathway to meet investor expectations by meeting their ESG targets. One way to meet ESG targets is by utilising reporting tools such as GRESB® which is a global standard for ESG benchmarking. Many trusted international certifications, which require third-party verification, are prevalent globally. Most follow a similar process for certification. Banks can hire consultants or staff to verify the compliance of their portfolios. Some banks also create their own green building certification systems.

Buildings provide banks with the opportunity to align on all six principles of the PRB—Alignment, Impact and Target Setting, Clients and Customers, Stakeholders, Governance & Culture, and Transparency & Accountability across different impact areas. Some important targets to set for green buildings include reductions in lifecycle carbon emissions, and improvements in resilience, and circularity in the impact areas of climate change mitigation, adaptation or resource efficiency and circular economy.

Carbon emissions from buildings are broadly classified as operational and embodied emissions. Carbon emissions resulting from the energy use to operate buildings over their lifetime are referred to as operational emissions, while the carbon emissions associated with the building materials because of the manufacturing and construction processes over their lifetime are referred to as embodied emissions. While both types of emissions are caused mostly at the sources of the energy and materials, both can be reduced greatly at the building level.

Energy efficiency and resilience are inherently linked. A more efficient building is able to withstand chronic and acute shocks more successfully—embodying the definition of resilience. The concept of circularity alludes to the idea of keeping materials in circulation as long as possible to prolong their useful life to avoid new extraction of raw materials and manufacturing processes, reducing the associated environmental harm.

Banks can actively participate in the green building economy by developing sustainable financing products such as green bonds and green construction loans, blended financing in partnership with development institutions, and by providing technical assistance. Banks can also have external impact by supporting green regulations and policies and partnering with various stakeholders. Finally, by understanding the value of green buildings as a distinct financial category with better returns and lower risk, banks can more effectively align with the PRB.

This paper serves as background material for and as a summary of the capacity building program run in 2023 for PRB banks by UNEP FI and the GlobalABC, in cooperation also with further international partner organisations. Nonetheless, it can provide useful insights also to banks that are not signatories of the PRB. In any case, the paper should not be considered as an official and mandatory PRB guideline.

Introduction

This background analysis paper provides actionable information in order to support commercial banks building capacities to align with the Principles for Responsible Banking (PRB) and create impact in the buildings and construction sector, leading the buildings sector towards zero-emissions, efficiency, and resilience. This background analysis paper provides actionable information in order to support commercial banks building capacities to align with the Principles for Responsible Banking and create impact in the buildings and construction sector, leading the buildings sector towards zero-emissions, efficiency, and resilience.



Figure 1: Green buildings can help achieve PRB and ESG targets

Included are key trends, concepts, and solutions related to green buildings, and resources to enable bankers to create pathways to achieve impact through their financial products and other internal and external-facing organisational strategies.



1. Targeting the buildings sector holds the key to impact

The buildings sector is both at risk and offers some of the largest opportunities for banks to contribute to sustainability, also when implementing the PRB. Same as any other business sector, the global buildings sector is at risk from climate events. When including the construction industry, the buildings sector is responsible for over 37% of GHG emissions globally (IEA, 2019). However, the buildings sector is also the most cost-effective and impactful sector to address the risk. The technology already exists, and the concepts to make buildings resilient to this risk are tried and tested and are some of the most cost-effective compared to other methods of reducing carbon emissions, such as carbon capture or reforestation.

Buildings provide a clear pathway for target setting and achieving impact with existing technologies and strategies. Retrofitting existing buildings at scale and constructing new buildings to greener standards has the potential to achieve a massive reduction in global emissions.

This potential impact in the buildings sector can only be achieved by unlocking access to capital to make the necessary improvements.

1.1 The buildings sector is a key focus of responsible and sustainable banking

The buildings sector provides a prime opportunity for banks to align with the six principles of responsible banking. The Principles for Responsible Banking were developed by a group of banks and the United Nations Environment Programme Finance Initiative (UNEP FI) in 2019 and have now been adopted by over 300 banks worldwide. PRB provides a framework for banks to support the transition to a more sustainable and equitable economy. By adopting the PRB, banks commit to align their business strategies with the Sustainable Development Goals (SDGs) and the Paris Agreement on climate change, as well as meet other ESG goals.

Read more

Principles for Responsible Banking (PRB)—the global framework for aligning bank strategies with the United Nations Sustainable Development Goals and the Paris Agreement ([UNEP FI, 2019](#))

UNEP FI has also published an official guidance about Climate Target Setting for Real Estate Sector Financing ([UNEP FI, 2023](#))

Net-Zero Banking Alliance is the climate focused accelerator for UNEP-FI's PRB ([UNEP FI, 2023](#))

GlobalABC is United Nations Environment Programme's global initiative that mobilises action towards a resilient, efficient, and zero-emissions buildings and construction sector ([UNEP, 2023](#))

International Energy Agency (IEA) is an intergovernmental organisation that serves as a policy recommendations, data, and analysis on the global energy sector while also guiding banks and financial institutions to make informed decisions about energy investments and transition to clean energy. Learn more about the critical role of private finance in accelerating in emerging and developing economies ([IEA, 2023b](#))

The World Green Building Council (WorldGBC) is the largest local-regional-global action network accelerating sustainability in the built environment. It catalyses the uptake of sustainable buildings for everyone, everywhere.

Sustainable Buildings for Everyone, Everywhere ([WorldGBC, 2020](#))

Beyond the Business Case ([WorldGBC, 2021](#))

Strategies and actions aimed at making the building sector green will directly help to meet the PRB goals in several impact areas. The following points such links at a high level.

Principle	Bank action
<p>1  Alignment</p>	<p>The first PRB principle states that 'banks will align their strategy and business practices with the United Nations Sustainable Development Goals (SDGs) and the Paris Agreement'. Greening the buildings sector contributes directly towards carbon reductions as called for in the Paris Agreement. In addition, greening the building sector serves to meet several UN SDGs such as SDG 7: Affordable and Clean Energy, SDG 11: Sustainable Cities and Communities, SDG12: Responsible Consumption and Production, and SDG 13: Climate Action. Banks can play a role in financing the construction and renovation of energy-efficient and sustainable buildings. By providing loans and other financial products to developers and building owners, banks can help to make it more affordable to build and operate green buildings.</p>
<p>2  Impact & target setting</p>	<p>The buildings sector lends itself well to the second principle 'banks will set and achieve ambitious targets to reduce their negative impacts and increase their positive impacts on society and the environment.' As physical assets with measurable performance in terms of energy and water use and carbon emissions, buildings offer a tangible path to setting impact goals and targets. Banks can do this by financing both new, green constructions and also investments in energy-efficient lighting and appliances, installing renewable energy systems, and making other energy-efficiency improvements to the existing buildings.</p>
<p>3  Clients & customers</p>	<p>In alignment with the third principle, 'banks will work with their clients and customers to support them in achieving their own sustainability goals,' banks can support the adoption of sustainable building practices by their clients and customers. Banks can provide both sustainable financial products and technical assistance to their clients working towards greening their real estate portfolios. For example, banks can offer financial incentives to clients who invest in energy-efficient upgrades or renewable energy systems for their buildings. Banks can also provide their clients with access to information and resources on sustainable building practices.</p>
<p>4  Stakeholder engagement</p>	<p>On stakeholder engagement, 'banks will engage with stakeholders to develop and implement their responsible banking strategies', banks can actively engage with policymaking and support regulatory developments in their areas of influence to promote the development of greener buildings.</p>
<p>5  Governance & culture</p>	<p>On the fifth principle, 'banks will embed responsible banking into their governance and culture', banks can demonstrate financial responsibility by building capacity within their organisations, educating and training their staff, and incorporating incentives into their compensation structures to promote a better understanding of and the development of green buildings.</p>
<p>6  Transparency & accountability</p>	<p>The sixth principle, 'banks will be transparent about their responsible banking commitments and progress, and they will be accountable for their actions' can be applied by participating in programs such as green building certification programs that utilise independent third parties to measure and verify the impacts from these green building initiatives, and then reporting the outcomes transparently.</p>

Figure 2: PRB elements and some possible related bank actions

Note: the above chart should not be understood as official guidance how banks should implement the PRB.

1.2 Evaluating the climate risk for real estate portfolios is the financially responsible approach

The climate risk for real estate portfolios lies in the potential loss of value or income due to the impacts of climate change on the physical assets and the regulatory environment. Mitigation actions are the measures taken to reduce the exposure or vulnerability of the assets to climate risk. These actions may include improving the resilience of the building stock, enhancing energy efficiency, or diversifying portfolio locations. By taking mitigation actions, real estate investors can protect their portfolios from the negative effects of climate change and enhance their long-term performance and sustainability.

Increasing wildfire risk is increasing the risk of default on mortgages

Due to the rising risk of severe wildfires and the impacts of climate change, many home insurance companies are leaving the California market or reducing their coverage. This leaves the assets vulnerable to financial losses and limits their options for buying or selling homes.

According to a study by Verisk, out of the 7.8 million single-family homes in California, more than 8% are at high to extreme risk of wildfire damage, and another 12% are at low to moderate risk. Although the year 2020 had the highest loss of forested land due to wildfires (1 million acres), the highest aggregate insured wildfire loss in the state was in the year 2017 costing approximately USD 14 billion ([Verisk, 2023](#)).

As a result of the increased wildfire risk, some of the largest home insurance providers in California have announced that they will stop writing new policies or renewing existing ones in the state. For example, State Farm, the largest home insurer in California by market share, said it would halt the sale of new home insurance policies in California starting from May 2023, citing wildfire risk and inflation of construction costs ([Hussain, 2023](#)).

The withdrawal of these insurers from the California market has significant implications for homeowners and the real estate industry. Many homeowners are facing higher premiums, reduced coverage, or nonrenewal notices from their insurers. The lack of affordable and available insurance also makes it harder for homeowners to buy or sell homes, as lenders usually require proof of insurance before approving mortgages. As a result, the risk of defaulting on existing loans and mortgages increases.

In contrast, green building portfolios are increasingly proving to be safer assets regarding physical and transition risks.

Bank of England staff find energy efficiency a relevant predictor of lower risk of mortgage default

In an internal study in 2018, the Bank of England staff compared loan performance data for residential mortgages in the entire UK (which is greater than >1.8 million observations) with the energy performance certificates (EPCs) of the underlying properties, controlling for several factors (borrower income, etc.). They concluded that the energy efficiency of a property is a relevant predictor of lower risk of mortgage default. (the source is referenced above). Although they did not prove that energy efficiency is the cause of the reduced mortgage arrears, they cite that some banks in UK and Europe have started to price mortgages against energy-efficient properties at lower rates, implying a lower risk premium ([BankUnderground, 2018](#)).

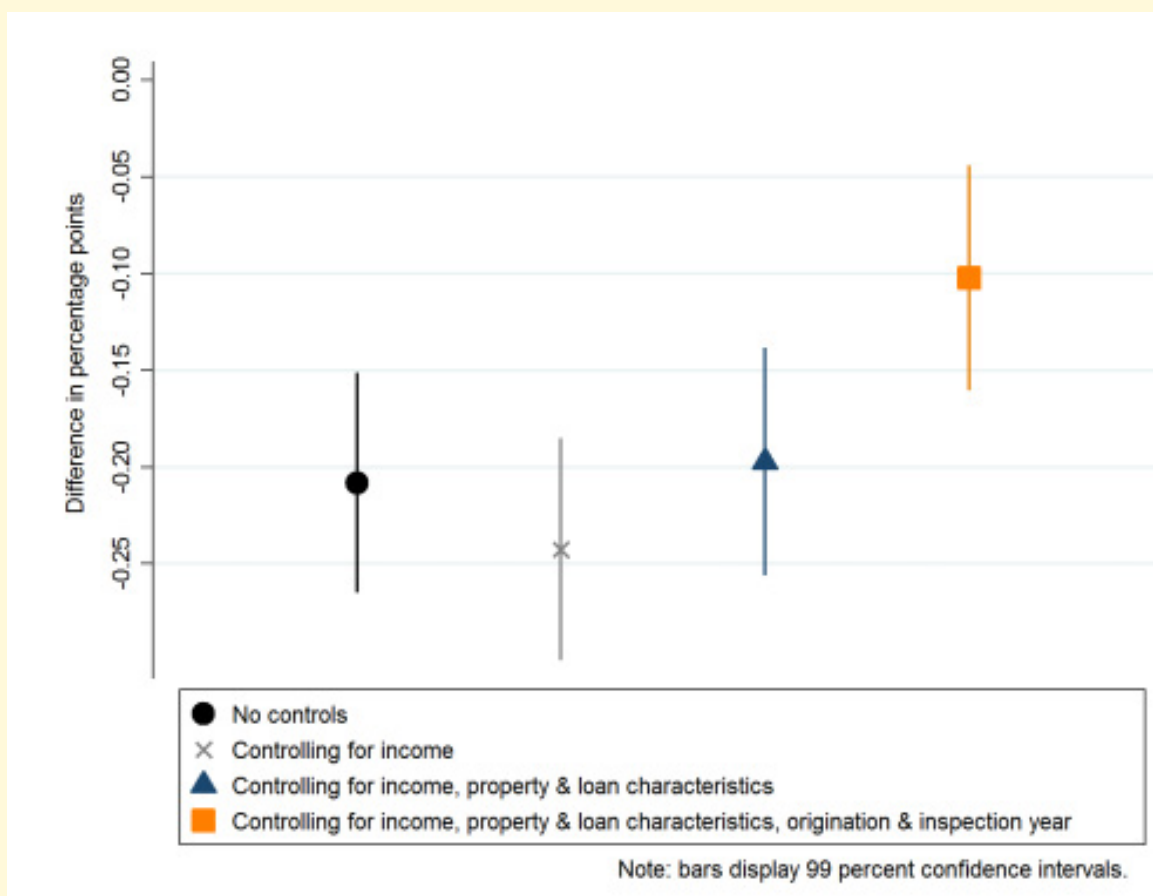


Figure 3: Difference in mortgage arrears (high energy efficiency vs low energy efficiency), (BankUnderground, 2018)

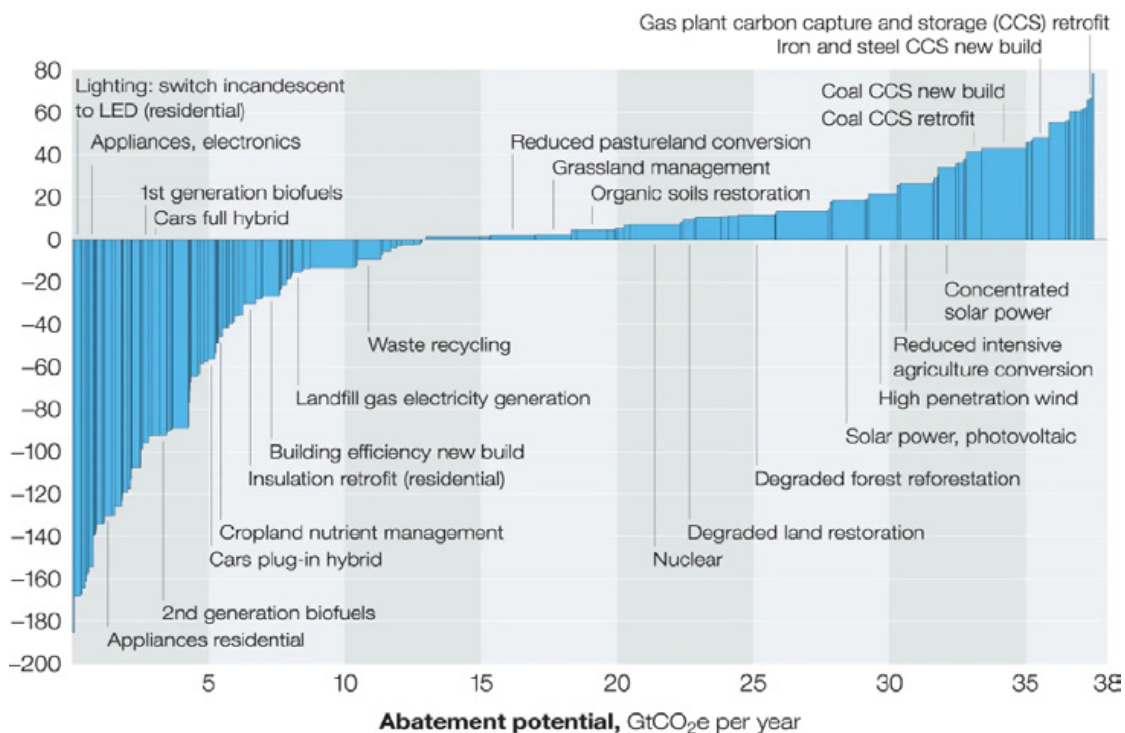
1.3 Targeting the buildings sector is one of the most cost-effective pathways for climate impact

The cost-effectiveness of reducing emissions in buildings as compared to other sectors has been shown in various studies. For example, the well-known McKinsey cost curve shows that the carbon abatement potential from energy efficiency in measures buildings has a negative cost (returns are greater than investment). This can be seen in the graphical representation in Figure 4 of the estimated cost and potential of different methods to reduce greenhouse gas emissions to compare and prioritise the most effective and economical ways to mitigate climate change. The cost curve was developed by the global management consulting firm McKinsey & Company in 2007 and was updated and refined in 2017.

Energy efficiency measures can pay for themselves by saving money on energy bills over time, but the payback period depends on several factors, such as the initial cost, the energy savings, and the discount rate. Some general factors that can affect the payback period are:

- Initial cost of the measure
- Energy savings of the measure
- Discount rate considered in payback calculations

Abatement cost, € per tCO₂e



Note: The curve presents an estimate of the maximum potential of all technical GHG abatement measures below €80 per tCO₂e if each lever was pursued aggressively. It is not a forecast of what role different abatement measures and technologies will play.

Figure 4: Global GHG Abatement Cost Curve 2.1 (McKinsey & Company, 2017)

1.4 The buildings sector also holds potential for impact at scale

China and energy efficiency

China is currently the world's biggest energy user and the largest producer of global GHG emissions. In 2018, China consumed 22% of the world's energy and emitted 29% of the global GHG emissions.

Over the past two decades, China has made significant progress in improving energy efficiency and reducing carbon emissions. The country has implemented mandatory energy efficiency policies that cover various sectors such as industry, transport, and buildings ([IEA, 2021](#)). China has also invested in renewable energy sources and has committed to achieve carbon neutrality by 2060 ([Lee, 2021](#)).

Between 2016 and 2020, China reduced its energy consumption intensity by almost 19%. Without the energy efficiency improvements made since 2010, China would have used up to 25% more energy in 2018 ([ACEEE, 2022a](#)).

Locations with strong energy regulations for buildings show a large positive impact. For example, the United States of America has been improving its energy regulations steadily. It has successfully decoupled energy consumption from economic growth and its energy use today is about 80% lower than it would have been without the investment in energy efficiency

Ritchie & Roser, 2023

Read more

Investments and financing highlights from **ACEEE, ALLIANCE**, and the **Business Council for Sustainable Energy's Energy Efficiency Report, 2022** ([Energy Efficiency Impact, 2023](#))

United States has many state and local **Green Banks** which use public funds to leverage private capital for clean energy projects. They aim to address market failures and barriers that prevent the deployment of low-carbon technologies and solutions. Learn more about **US Green Banks** investment and financing *Energy Efficiency Impact Report* ([Energy Efficiency Impact, 2023](#))

Building energy regulation improvements save 40% energy in US homes compared to 15 years ago. National adoption of these regulations could save 2 billion metric tons of CO₂.

Through investments in energy efficiency since 1970, the USA has decoupled energy consumption and economic growth—increasing energy productivity by 170%. Today, 40% of all energy jobs in the USA relate to energy efficiency—totaling 2.2 million workers in 2021. In 2021, the USA would have produced 78% higher carbon emissions without the energy efficiency investments already in place ([ACEEE, 2022b](#)).

Homes built to today’s energy codes are 40% more efficient than homes built just 15 years ago, dramatically cutting energy costs for consumers. If all states updated to the latest model energy codes, over the course of 30 years, this action would save enough energy to power all households in the United States for a full year. Switching to the updated energy codes would equate to almost 2 billion metric tons of CO₂ emissions reduction ([US DOE, 2023a](#)).

1.5 Global trends indicate rising investments in energy-efficient buildings

Global trends are showing rising investments in energy-efficient buildings across several metrics. Globally, emissions intensity—measured in carbon emitted per square meter—is going down. So is energy use per square meter. Meanwhile, gross floor area with green buildings, NDCs which mention buildings, countries with building energy codes are all up from 2015 to 2021 according to the data compiled by GlobalABC. Investments are up 51% from 2015 to 2021. Globally, the world will build about 80 billion square meters of new construction by 2030, a majority of it (all but 3 billion) in developing economies. For example, the investment opportunity for green buildings in Latin America alone is USD 4.2 billion (IFC, 2023).

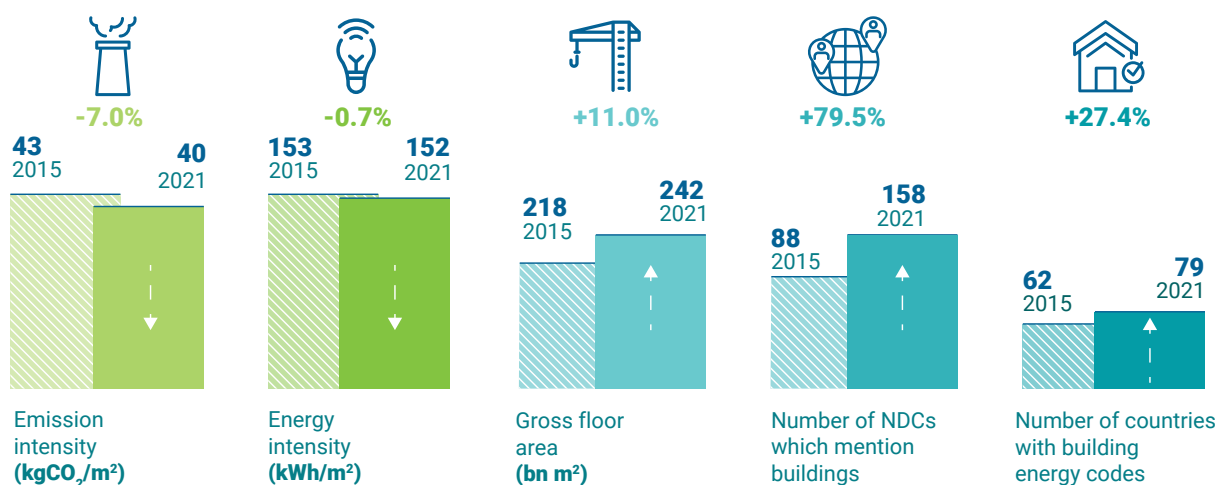


Figure 5: 2022 Global Status Report for Buildings and Construction (GlobalABC, 2022)

On the flip side, not investing in decarbonisation is leading to existing buildings being devalued if they have high energy consumption and cannot show eligibility for inclusion into the financial portfolios interested in green buildings. These real estate holdings that were previously considered assets are at risk of being categorised as stranded assets, that is, being unexpectedly devalued or converted to liabilities (UNEP, 2022).

1.6 There is a strong business case for investments in clean energy technologies

Global venture capital investments in clean energy are on the rise. While early-stage ventures saw some decline in 2021 the overall trendline is still on the rise. And late-stage ventures saw a significant increase from 2020 to 2021. Areas such as distributed energy resources—which include renewable energy and batteries—and its interaction with the grid, EV charging as a service, and providing energy—heating, cooling, and lighting—as a service, are seeing increasing activity.

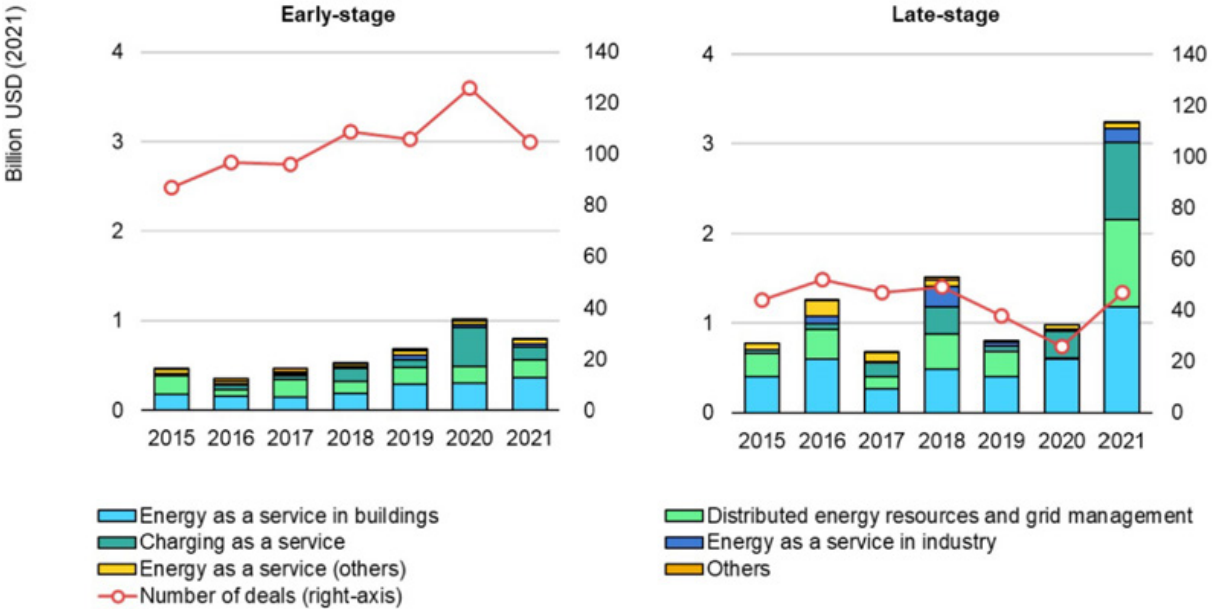


Figure 6: Boosting efficiency: delivering affordability, security and jobs in Latin America (IEA, 2023a)



2. Where banks can have impact on the buildings sector

An understanding of some of the key concepts about green buildings will help commercial banks to set effective targets and achieve impact.

2.1 What are some important targets to set in buildings?

To align with the PRB, it is important to set clear, quantifiable, and verifiable targets for impact areas prioritised in banks' impact analysis process. The buildings sector is highly relevant for several impact areas. Among these, the current paper focuses on two impact areas, namely climate change mitigation and resource efficiency & circular economy. Within these impact areas, there are several aspects that will directly improve the ability of the building stock to meet environmental goals—building emissions, circularity, and resilience—and to tie investment goals to these targets.

2.1.1 Understanding building emissions

Building emissions are primarily of two types, referred to as operational and embodied emissions.

Operational emissions refer to the greenhouse gas emissions resulting from operating buildings as a result of the energy used for functions such as heating, cooling, lighting, and ventilation. The production of each unit of energy consumed in a building produces emissions at the source of that energy, such as at a power plant. The electricity used in a building is typically measured in kWh, which can be directly converted to emissions produced at the electricity generation plant. Other energy fuels for buildings that may be measured in other units can also be similarly converted to emissions.

Embodied emissions refer to greenhouse gas emissions resulting from the raw material extraction, production, transportation, and disposal of building materials as well as the construction process itself.

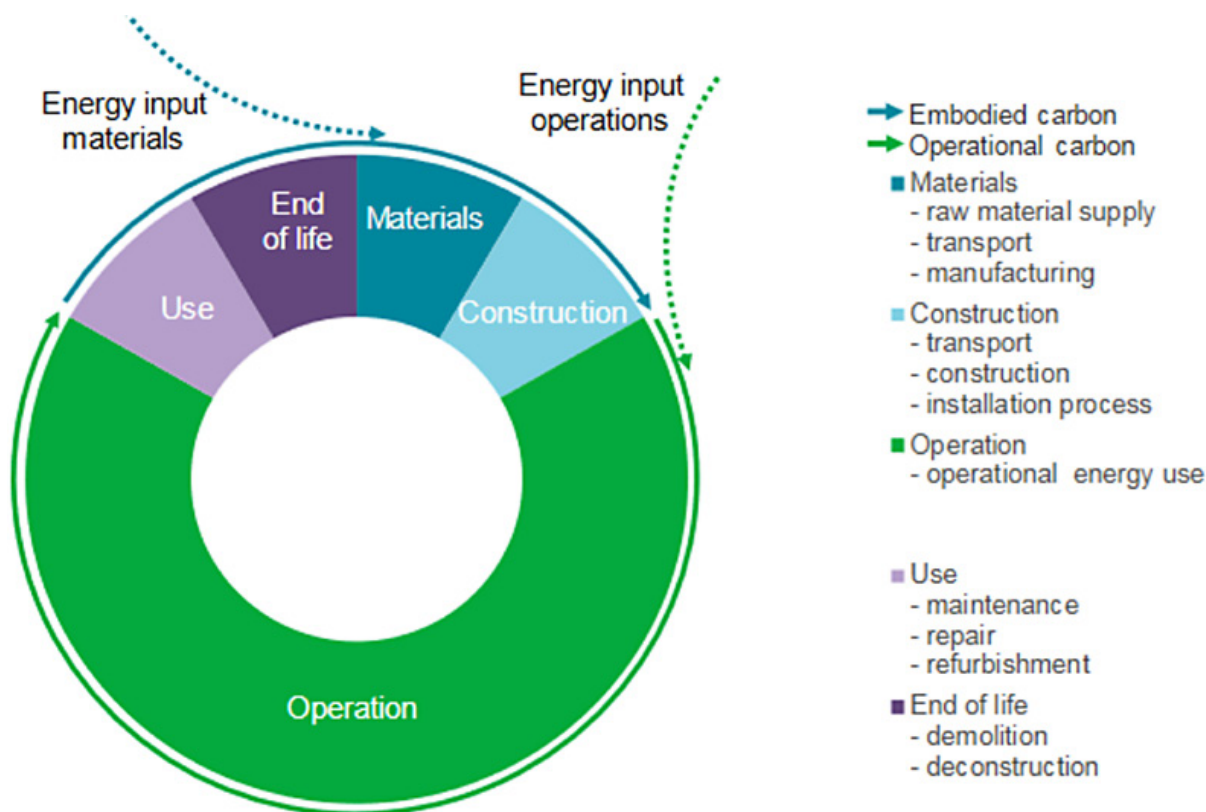


Figure 7: Operational versus Embodied Emissions, GlobalABC Roadmap for Buildings and Construction: 2020–2050) (UNEP FI, 2020)

According to the 2022 Global Status Report for Buildings and Construction, 73% of the global emissions from buildings were operational emissions while 27% were embodied emissions in 2021 (UNEP, 2023).

2.1.2 Lifecycle analysis

It is important to consider the emissions of a building over its full lifecycle, referred to as Life Cycle Assessments (LCA). LCAs for entire buildings are referred to as Whole Building LCA (WBLCA). LCA calculations quantify the emissions from the building's construction, through its operation and maintenance, and finally to its eventual destruction and disposal.

Figure 7 represents the emissions of a building over its lifecycle. The embodied emissions are in green, while the operational emissions are in blue. Note the downward slope on the operational emissions. It is expected that operational carbon will continue to decrease as the energy grid becomes cleaner, while embodied carbon is set to remain high without meaningful action.

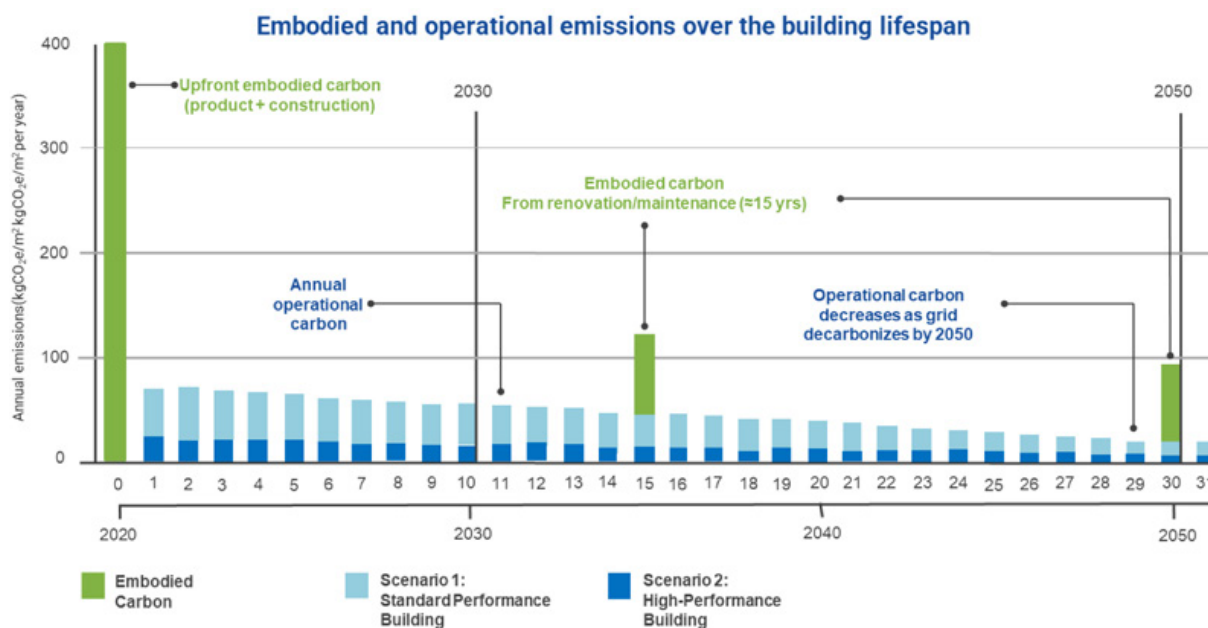


Figure 8: Adapted from Embodied Carbon Primer, Low Energy Transformation Initiative (LETI, 2019)

2.1.3 Metrics for emissions

Carbon dioxide gas is the most abundant greenhouse gas, referred to as ‘carbon’ in shorthand. There are other greenhouse gases, and some, such as refrigerants, are much more potent than carbon dioxide in their potential to cause global warming. The **amount** of greenhouse gases emitted are measured in tons of carbon emitted (tCO₂e, where ‘e’ stands for equivalent). The emissions of all other greenhouse gases are expressed as ‘equivalent’ relative to carbon. Each ton is 1,000 kilograms of carbon, so smaller amounts of emissions are measured in kilograms or kgCO₂e.

The **warming effect** of greenhouse gases is measured in units of Global Warming Potential (GWP). GWP is a measure of how much energy one ton of a greenhouse gas will absorb over a given period of time, and therefore contribute to global warming. The GWP of one ton of carbon dioxide (CO₂) over 100 years is set as 1, and all other greenhouse gases are measured relative to it. The larger the GWP of a gas, the more it warms the earth compared to CO₂ over that time period. For example, the GWP of the most common refrigerant used in air-conditioning systems (R410A) is close to 2000 times that of carbon dioxide per ton over 100 years.

GHG emissions are categorised as Scope 1, 2, and 3. Scope 1 refers to on-site emissions from direct combustion, Scope 2 refers to purchased electricity, and Scope 3 refers to emissions associated with the broader value-chain of a building.

Read more

The **UK Green Building Council** explainer guide provides a concise overview OF Scope 1, 2, and 3 emissions ([UK GBC, 2023](#)).

2.1.4 Technology pathways to reduce emissions in buildings are well understood

From a technological point of view, the strategies to reduce emissions are well understood.

Reduction of operational emissions starts with energy efficiency. The cleanest energy is the energy never used. A low cost, no cost strategy to reduce operational emissions is to induce behavior change and educate the building users. The use of renewable energy and smart building technologies can further reduce operational emissions. Energy efficiency has been researched for decades and today hundreds of net-zero energy (NZE) buildings around the globe are proof that it is possible to operate buildings with net zero emissions ([Net Zero Buildings, 2023](#)).

In Figure 9, the operational emissions in green and the embodied emissions in blue. The first bar shows these emissions for a conventional building. The next two bars show an ultra-efficient building with a gas boiler and a heat pump. Electric heat pumps are far more efficient than gas boilers, so the green bar is even shorter in that case. In the first three bars, the embodied emissions stayed fairly constant. The last two bars show emissions lowered even further when embodied emissions are also reduced.

To reduce embodied emissions, project teams can consider strategies such as building using existing materials, natural and low-carbon materials, lighter-weight materials, and using modular construction and local materials to reduce material waste and transportation.

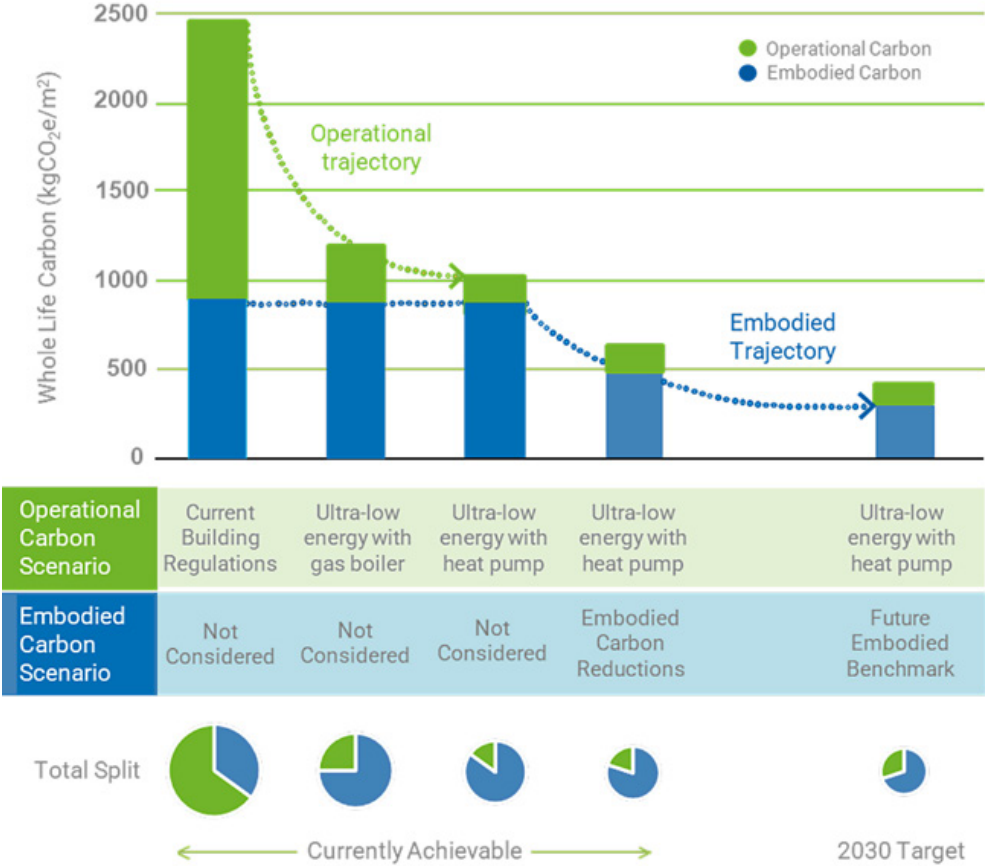


Figure 9: Adapted from Embodied Carbon Primer, Low Energy Transformation Initiative (LETI, 2019)

2.1.5 Circularity can reduce embodied emissions

Circularity refers to the concept of a resource being renewed or regenerated, rather than wasted. Building circularity refers to the design, construction, and operation of buildings in a way that keeps material resources in circulation for as long as possible before they are considered as waste. While energy efficiency and renewable energy have been the main areas of focus for sustainable buildings—and their adoption in buildings has been quite impactful—construction materials have not played a prominent role until recently. But the need for circularity is evident due to the large amounts of global emissions associated with building construction and the expected levels of construction globally through the year 2050.

One pathway for integrating building circularity into sustainable finance is by incorporating the various circularity metrics into building certifications. Some certifications like BREEAM, and LEED already have criteria in place for reusing building materials and reducing material input.

Read more

Low carbon technology strategies toolkit from the **USA Department of Energy's Better Buildings Initiative** ([US DOE, 2023b](#))

Building Materials And The Climate: Constructing A New Future ([UNEP, 2023](#))

AIA-CLF embodied carbon toolkit for architects from the **Carbon Leadership Forum**, 2021 ([Carbon Leadership Forum, 2023](#))

Financing Circularity: Demystifying Finance for Circular Economies by **UNEP FI** ([UNEP, 2020](#))

Whole-building life-cycle assessment (WBLCA): Current tools and practices in industry from the Center for the Built Environment, **University of California, Berkeley**, USA, 2022 ([CBE, 2023](#))

WorldGBC's Circular Built Environment Playbook (2023) promotes resource-efficient buildings and offers practical tools and case studies, and aims to transform the construction industry and open new economic opportunities ([WorldGBC, 2023](#))

Specialised LCA software like **One Click LCA**, **OpenLCA**, **SimaPro**, **GABI**, etc. can be used to find the emissions profile of the entire building from each phase—construction, operation, maintenance, and disposal ([One Click LCA, 2023](#); [OpenLCA, 2023](#); [SimaPro, 2023](#); [Sphera, 2023](#))

2.1.6 Resilient buildings reduce physical and financial risk

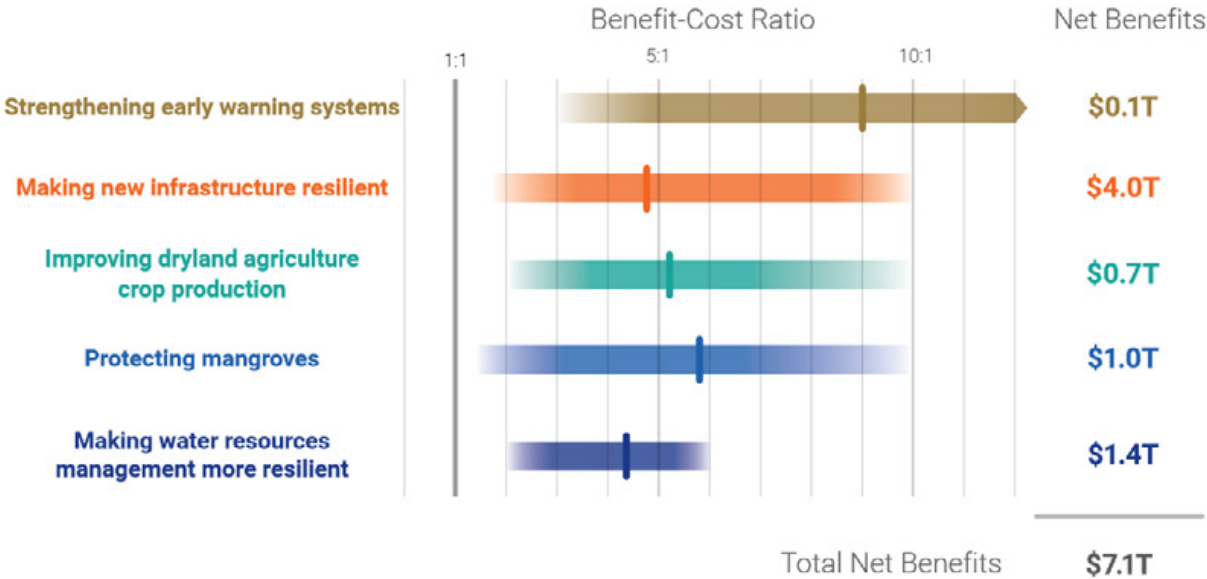


Figure 10: The broad economic case for investment in adaptation approaches—investing USD 1.8 trillion in these five categories by 2030 could yield total net-benefits of USD 7.1 trillion (WRI, 2019)

The increasing frequency and intensity of climate-related disasters are highlighting the financial risks associated with poorly constructed buildings that are vulnerable to such events. In 2022, natural disasters caused losses of USD 313 billion globally, out of which USD 131.5 billion were insured losses (approximately 42%) (AON, 2023).

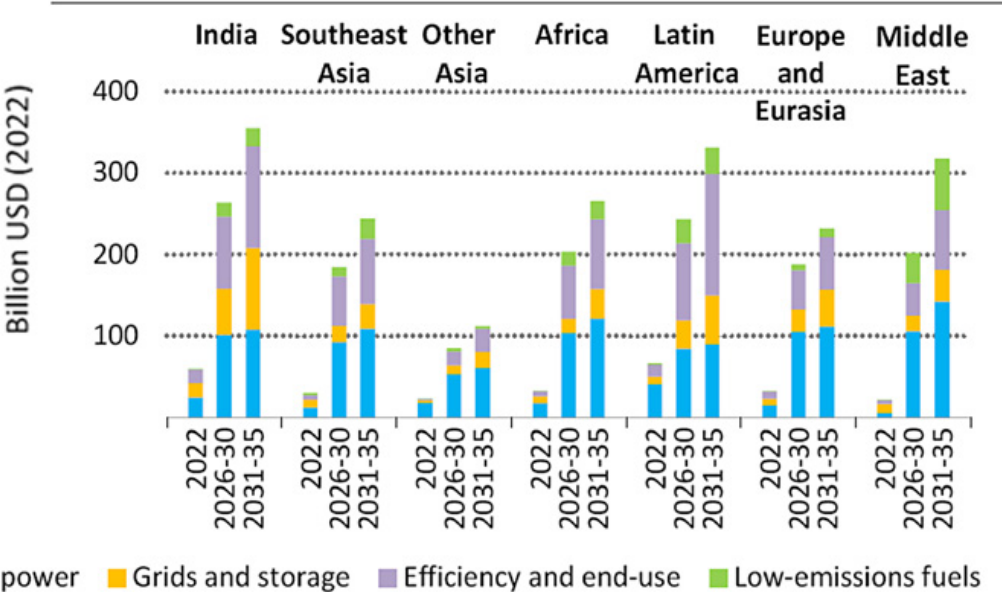
A 2019 report by Global Commission on Adaptation and WRI suggests that investing in climate change adaptation measures by 2030 can yield net-benefits of over USD 7.1 trillion, with the highest net-benefits from the development and construction of new resilient infrastructure (WRI, 2019). Development of such climate-resilient buildings will mitigate risks, secure long-term returns, and safeguard assets for banks and financial institutions.

Resilience and energy efficiency are complementary goals. Improving energy efficiency not only reduces emissions, but it also makes our energy systems more resilient to disruptions and climate change. Energy efficient communities recover from disruptions more quickly. A community with energy efficient buildings is able to maintain operations for a longer time by using less energy per hour during events such as blackouts. This also extends the life of generators and other backup power systems. Energy efficiency also has social and economic benefits. When utility bills are lower, housing and commercial activity becomes more affordable, leading to more local economic activity.

Investors can align their portfolios with sustainability goals by incorporating resilience metrics like location-based risk assessment and adaptive design features into their investment evaluations.

2.2 Large scale investments are needed to achieve a net zero emissions scenario

As per IEA’s report ‘Scaling Private Finance for Clean Energy in Emerging and Developing Economies’, more than USD 300 billion investment will be needed in Latin America between 2031 and 2035 to stay on course to achieve the Net Zero Energy scenario by 2050. This makes banks and the financial sector pivotal in the pursuit of clean energy (Scaling Private Finance for Clean Energy in EMDE, IEA 2023).



IEA. CC BY 4.0.

Figure 11: Scaling up Private Finance for Clean Energy in Emerging and Developing Economies (IEA, 2023)

3. How banks can impact the buildings sector

3.1 Develop green buildings asset strategies

To unlock financing and mobilise green building construction, banks can create a strategic roadmap for their real estate investment portfolios. The roadmap should contain some of the key milestones outlined below.

3.1.1 Impact assessment¹ of a bank's building portfolio is a good starting point

The impact of a building portfolio can be assessed in terms of carbon emissions, energy use, and resilience indicators. Some indicators may be more critical than others depending on the global region. Overall impact must be quantified to set targets. A more detailed assessment of the portfolio will allow the development of a more strategic pathway to achieve results. For example, benchmarking the buildings in the portfolio against each other and against industry standards using the metrics above helps to identify outlier properties requiring attention, and to prioritise action. Real estate investment firms are increasingly utilising Environmental-Social-Governance (ESG) criteria to assess their portfolios.

Several ESG tools have been developed globally. GRESB® is one such framework developed by a number of pension funds to have access to reliable data on ESG performance of investment funds. GRESB has high credibility and broad uptake by the market, including banks, but several other ESG frameworks are also available. The environmental section of most ESG frameworks includes criteria such as reduction in emissions and resilience.

[Read more](#)

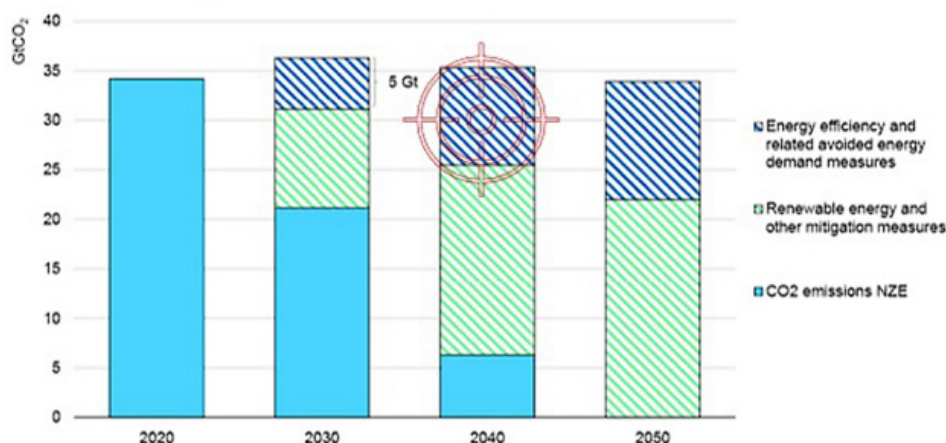
[GRESB's investor case studies \(GRESB, 2023\)](#)

¹ Impact assessment should not be confused with the impact analysis step of the PRB, which is a comprehensive analysis about a bank's total business, covering not just financed buildings but all other sectors too.

3.1.2 Science-based target setting, and implementation is important

Efficiency provides one-third of the mitigation in the Net Zero Scenario

CO₂ emissions and main mitigation measures in the Stated Policies Scenario and the Net Zero Scenario, 2020-2050



Annual efficiency improvements needs to double, from 2 to 4% per year during this decade to match the ambition of the IEA Net Zero by 2050 Scenario

Over 5 Gt CO₂ can be avoided through energy efficiency related measures through to 2030

Figure 12: The value of urgent action on energy efficiency (IEA, 2022)

After assessment, the next step is to set clear targets for areas such as carbon reduction and resilience. Science-based targets provide organisations with clearly defined metrics and pathways to reduce emissions in line with the Paris Agreement goals. These organisational targets show how much, and how quickly, organisations need to reduce their Greenhouse Gas emissions in order to prevent the worst effects of climate change from happening.

Read more

Science Based Targets Initiative (SBTi) is a collaboration between the **United Nations, Carbon Disclosures Project (CDP)** and **World Resources Institute (WRI)** that provides a framework to reduce GHG emissions by setting science-based targets. Their guidance document for banks and financial institutions provides more information ([SBTi, 2023](#)).

3.1.3 Selecting an appropriate green certification provides a practical pathway to build a green portfolio

To meet the targets, banks must evaluate the building improvements. Green building certifications offered by neutral third parties provide a practical pathway to perform these evaluations and build a green portfolio. The variety of certification systems available vary in their rigor, cost, and availability for various building types in various markets. In most certification systems, the process is initiated by the customer registering their building project with a certification agency. The customer then must prove that their design for a new building or their existing building meets the certification criteria. Once a customer receives their certification, they can apply for green banking products. Banks often issue

preferential loans and finance the construction based on preliminary certification which is based on the design intent. Final verification can be made once the project has been completed. Banks build portfolios of such buildings to build a pipeline for products such as green bonds.

When using such certification systems, it is important to understand the criteria that get points in the system and ensure that targets for energy efficiency and related emissions are clearly set. If these are not mandatory in a system, banks can choose to set these mandatory criteria in addition to a certification system. For example, banks may accept LEED certification and ask that, in addition, buildings must be 50% more energy efficient than the standard buildings to get a certain preferential loan from the bank ([IEA, 2022](#)). Other sustainability variables, such as biodiversity and nature, might add additional points to an ESG rating system.

Read more

Leadership in Energy and Environmental Design (LEED) is an internationally recognised building certification ([LEED, 2023](#))

Excellence in Design for Greater Efficiencies (EDGE) is another internationally recognised building certification ([EDGE, 2023](#))

Building Research Establishment Environmental Assessment Method (BREEAM) is a sustainability assessment method for buildings and infrastructure that measures ESG performance of a project ([BREEAM, 2022](#))

Building Resilience Index (BRI) provides location specific hazard information, provides resilience measures to mitigate applicable risks, and helps improve transparency for disclosing resilience information across sectors ([BRI, 2023](#))

Whole-building life-cycle assessment (WBLCA): Current tools and practices in industry from the **Center for the Built Environment, University of California, Berkeley, USA** ([CBE, 2023](#))

UNEP FI's Financing Circularity: Demystifying Finance for Circular Economies provides guidance on accelerating finance circularity ([UNEP, 2020](#))

3.2 Develop sustainable financing and green banking products for the real estate sector

Banks can tie green building certification systems to their financial products in the five broad categories of bonds, mortgages, loans, insurance, and equity. In addition, banks can provide blended finance by partnering with development finance institutions to develop and implement concessional financial products targeting green building activities and innovations, e.g., blended finance solutions, financial products including de-risking mechanisms. Banks can also provide technical assistance in green buildings to clients by hiring qualified in-house staff or third-party consultants.

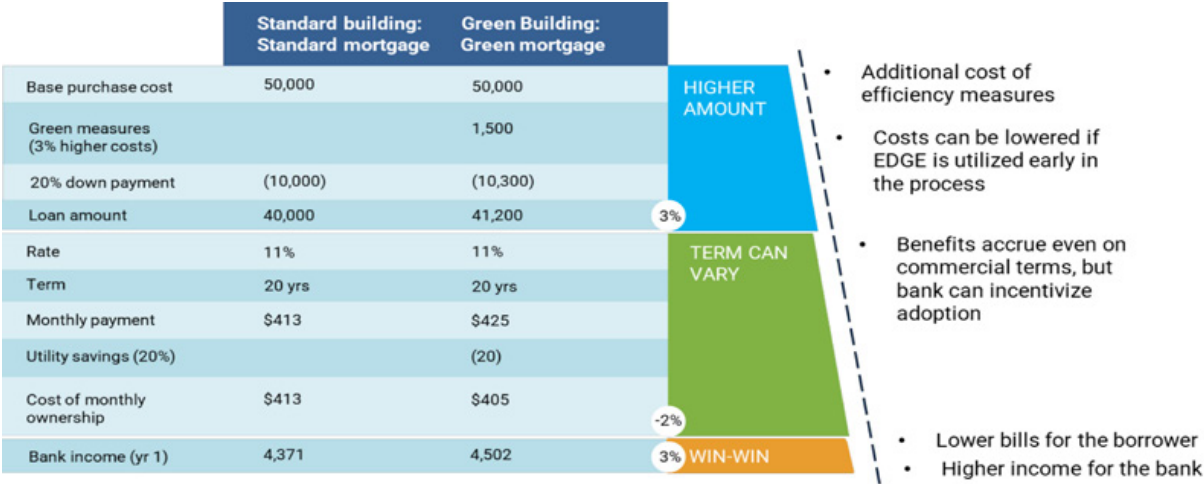


Figure 13: Green Buildings: A Finance and Policy Blueprint for Emerging Markets (IFC, 2019)

Figure 13 shows an illustration of how these mechanisms can be a win-win for both the banks and the consumers. This illustration compares a standard mortgage (left column) with a green mortgage (right column). In both cases, the base purchase cost is the same. But green measures add 3% to the cost of a green building. This increases the loan amount and the down payment by 3%. This in turn increases the monthly payments to the bank. However, in this green building, the consumer is also saving on their electricity and gas bills in an amount that is larger than the extra mortgage payment. This reduces the true monthly cost of home ownership, improving a homeowner’s ability to pay back the loan. In other words, a bank can make a green loan at a slightly higher amount to cover the green building features, without increasing their risk. It is a win-win for both.

Many banks around the world have issued Sustainability-linked Bonds (SLBs) to finance green building construction, renewable energy, and improving energy efficiency.

Commercial Bank of Dubai raises USD 500 million through sale of green bonds

In June 2023, Commercial Bank of Dubai issued a green bond of USD 500 million to finance projects eligible under the bank's Sustainable Financing Framework. These projects can include green buildings, energy efficiency upgrades, renewable energy, and clean transportation. HSBC and Standard Charter are the joint global coordinators on the CBD's debt sale, while the lead managers and bookrunners are Citi, Emirates NBD Capital, First Abu Dhabi Bank, JPMorgan, and Natixis. This issuance was timed ahead of the COP28 summit being hosted in Dubai as we speak.

The First Abu Dhabi Bank (which goes by FAB) itself raised USD 600 million in green bond in May 2023. The 5-year Green Bond was upsized from the initial target amount of USD 500 million to USD 600 million because of a remarkable 2.8x oversubscribed orderbook. 34% of the allocation was dedicated to green investors, representing one of the highest proportions in the market. The first public Green Bond in the region of USD 587 million issued by FAB in 2017, matured in March 2022. Through its tenure, it helped finance 13 green projects across UAE, USA, Africa and France in areas of Energy Efficiency, Renewable Energy, and Sustainable Water Management. FAB was recognised for "Outstanding Leadership in Sustainable Finance" and "Outstanding Leadership in Green Loans" in the Middle East in Global Finance's inaugural Sustainable Finance Awards 2021 ([International Finance, 2023](#)).

Wienerberger successfully places its first sustainability-linked bond in a volume of EUR 350 million

Wienerberger—the global construction materials manufacturer (and also the world's largest brick maker), issued a sustainability linked bond of EUR 350 million in September 2023; the first retail company to issue such a bond on the Austrian capital market. This issuance was made available at Erste Bank and various Sparkasse (public banks), along with a few other credit institutions. This bond is linked to Wienerberger's ESG targets which include reducing its GHG emissions and increasing revenue from products that support net-zero buildings ([Wienerberger, 2023](#)).

EIB finances climate action solutions in Chile with more than EUR 300 million

At the 2023 EU-CELAC Summit the European Investment Bank (EIB) pledged multifaceted support for Chile's ambitious decarbonisation goals through a three-pronged approach. Firstly, a EUR 200 million loan that would facilitate the construction of 2,600 energy-efficient housing units, reducing energy consumption and a EUR 100 million investment in the nascent renewable hydrogen industry in Chile, fostering green job creation and aligning with Europe's burgeoning demand for clean hydrogen imports. This paves the way for expanded collaboration between EU and Chile in critical areas such as green hydrogen development, renewable energy deployment, and sustainable transportation solutions. This collaborative initiative exemplifies the transformative potential of international cooperation in addressing global climate challenges ([EIB, 2023](#)).

IFC and IDEI (Mexico) announce green bond issuance for MXN 800 million pesos to promote sustainable construction

IFC and IDEI announced the issuance of a green bond for MXN 800 million pesos (USD 45 million) in two series (of MXN 500 and MXN 300 million pesos). The bond will contribute to financing construction of additional areas in properties certified by EDGE (which was one of the certifications that we discussed earlier in the presentation; developed by IFC). The bond will also strengthen the country's climate financing market by promoting the broader adoption of certified sustainable construction and green financing standards ([IFC, 2023](#)).

3.3 Banks can also stimulate change within their organisations

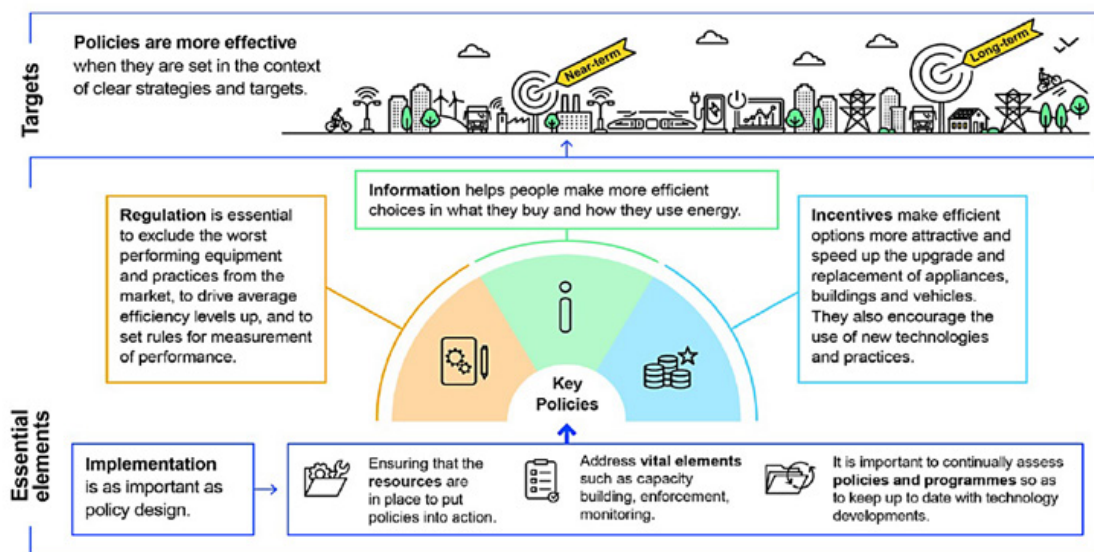
Banks can incentivise employees and put in place other internal policies and processes to encourage sustainability both externally and internally. Banks and financial institutions can develop and deploy capacity building. They can also actively stimulate and scale innovation for the circular economy, for example, by connecting growth-stage entrepreneurs to corporate clients within their client base. Banks can also manage their own financed emissions—the emissions that they finance in the economy by lending towards polluting technologies and industries. This would require assessing and setting targets, with a clear definition of what the banks will measure.

LAGreen and UNEP FI's capacity building program for Latin American banks

LAC Green Bond Training Program, by LAGreen and UNEP FI, is a capacity building program aimed at promoting and facilitating more thematic bond issuances and promote capital market financing for green and social project investments in Latin America. The program is provided by a consortium of international and regional organisations and is delivered in partnership with national banking associations in each country. The training courses are designed to help participants identify the potential advantages of issuing thematic bonds and to gain a comprehensive understanding of the structuring process. The end-goal of these trainings is to raise awareness about the available financial instruments and their requirements to put them into place. These trainings have been conducted in Bolivia, Brazil, Costa Rica, Ecuador, Mexico, Panama, Peru, and the Dominican Republic (LAGreen, 2022).

3.4 Bank actions can impact the whole lifecycle of buildings

A package of policies and implementation are needed to deliver energy efficiency



IEA. CC BY 4.0.

Figure 14: The value of urgent action on energy efficiency (IEA, 2022)

Beyond their own products and practices, banks can impact the whole lifecycle of a building. A combination of policies and implementation are needed to deliver energy efficiency. Bankers can help support regulation, disburse information, and provide incentives. For example, many countries have energy codes that are mandatory for some parts of a sector. However, many countries do not have mandatory building energy codes for some or all parts of a sector. Banks can support regulation for improved energy codes across sectors in their respective operating areas.

Broadly speaking, bankers can stimulate external impact by taking action such as:

- Supporting industry initiatives
- Partnering with various stakeholders
- Engaging in industry-wide initiatives to foster the financing of green buildings
- Supporting policy and regulatory developments, and
- Engaging with policy makers, regulators, standard setters

First Bank of Abu Dhabi (FAB) provided analysis and advisory to Ministry of Finance, Egypt

The First Bank of Abu Dhabi (FAB) played a lead role in analyzing the eligibility criteria and advising Ministry of Finance, Egypt on the financing of eligible Green projects under Egypt's Green Financing Framework, for their USD 3 billion 'Debut Green Term Loan' and Murabaha Facility ([FAB, 2023](#)).

Bancolombia issued green bonds to finance green buildings and incentivises energy efficiency through preferential interest rates, technical assistance, and tax benefits

In Latin America, Colombia has made exceptional progress in green buildings adoption and serves as a great example. In 2016, Bancolombia was the first bank in Latin America to issue green bonds to finance green buildings. And as of 2021, Colombia had close to 73,000 green homes, of which two thirds are affordable housing. It is estimated that over 20% of new buildings were certified green in the year to July 1, 2021.

Bancolombia also has the Linea Verde program which incentivises energy efficiency upgrades for businesses and homes. The program grants preferential interest rates to finance sustainability projects, provides expert technical assistance, and grants tax benefits. As of 2021, Bancolombia had financed over 7,813 houses (over 1,880,938 sq. meters floor space) through the Linea Verde program and its green bonds ([Bancolombia, 2023](#)).



4. Conclusion

Green buildings have become a distinct financial category that has proven itself to be a lower risk investment. Investor calls for green buildings will ensure long-term returns. There has been a rise in demand for sustainable buildings by investors and consumers alike. For investors, a green portfolio is both a reflection of their environmental stewardship and a safer and better performing asset. For consumers, residing or working in green properties is a matter of pride and lowers their operating expenses and risk of defaulting on mortgage payments. With green buildings commanding premium rents, selling faster, and at a higher price, this is the decade to bank on green buildings.

5. Bibliography

ACEEE. (2022a). *International Energy Efficiency Scorecard* | ACEEE. [aceee.org/international-scorecard](https://www.aceee.org/international-scorecard)

ACEEE. (2022b). *New Report Showcases the Far-Reaching Benefits of Energy Efficiency* | ACEEE. [aceee.org/press-release/2022/12/new-report-showcases-far-reaching-benefits-energy-efficiency](https://www.aceee.org/press-release/2022/12/new-report-showcases-far-reaching-benefits-energy-efficiency)

AON. (2023). *2023 Weather, Climate and Catastrophe Insight* | Aon. www.aon.com/weather-climate-catastrophe/index.aspx

Bancolombia. (2023). *Línea Verde—Productos Financieros Pymes*. [bancolombia.com/negocios/productos-financieros/linea-verde](https://www.bancolombia.com/negocios/productos-financieros/linea-verde)

BankUnderground. (2018, October 16). *Insulated from risk? The relationship between the energy efficiency of properties and mortgage defaults*. Bank Underground. [bankunderground.co.uk/2018/10/16/insulated-from-risk-the-relationship-between-the-energy-efficiency-of-properties-and-mortgage-defaults/](https://www.bankunderground.co.uk/2018/10/16/insulated-from-risk-the-relationship-between-the-energy-efficiency-of-properties-and-mortgage-defaults/)

BREEAM. (2022, April 11). *How BREEAM Works*—BRE Group. [bregroup.com/products/breem/how-breem-works/](https://www.bregroup.com/products/breem/how-breem-works/)

BRI. (2023). *Building Resilience Index*. Building Resilience Index. [resilienceindex.org](https://www.resilienceindex.org)

Carbon Leadership Forum. (2023). *AIA-CLF Embodied Carbon Toolkit for Architects—Carbon Leadership Forum*. [carbonleadershipforum.org/clf-architect-toolkit/](https://www.carbonleadershipforum.org/clf-architect-toolkit/)

CBE. (2023). *Embodied Carbon in the Built Environment*. Center for the Built Environment. [cbe.berkeley.edu/research/embodied-carbon-in-the-built-environment/](https://www.cbe.berkeley.edu/research/embodied-carbon-in-the-built-environment/)

EDGE. (2023). *Certification & FAQ's*. EDGE Buildings. [edgebuildings.com/resources/certification-faqs/](https://www.edgebuildings.com/resources/certification-faqs/)

EIB. (2023, August). *Chile: EIB to finance climate action projects in Chile with more than EUR 300 million including its first green mortgage loan outside Europe*. European Investment Bank. [eib.org/en/press/all/2023-279-chile-eib-to-finance-climate-action-projects-in-chile-with-more-than-eur300-million-including-its-first-green-mortgage-loan-outside-europe](https://www.eib.org/en/press/all/2023-279-chile-eib-to-finance-climate-action-projects-in-chile-with-more-than-eur300-million-including-its-first-green-mortgage-loan-outside-europe)

Energy Efficiency Impact. (2023). *Investment and Financing* | Energy Efficiency Impact Report. [energyefficiencyimpact.org/investment-and-financing/](https://www.energyefficiencyimpact.org/investment-and-financing/)

FAB. (2023). *FAB successfully prices USD 600 million 5-Year Green Bond*|FAB—UAE. [bank-fab.com/en-ae/about-fab/group/in-the-media/fab-successfully-prices-usd-600-million-5-year-green-bond](https://www.bank-fab.com/en-ae/about-fab/group/in-the-media/fab-successfully-prices-usd-600-million-5-year-green-bond)

GRESB. (2023). *Investor case studies*. GRESB. [gresb.com/nl-en/investor-case-studies/](https://www.gresb.com/nl-en/investor-case-studies/)

Hussain, N. Z. (2023, May 30). State Farm stops new home insurance sales in California as wildfire risks grow. *Reuters*. [reuters.com/world/us/state-farm-stops-new-home-insurance-sales-california-wildfire-risks-grow-2023-05-30/](https://www.reuters.com/world/us/state-farm-stops-new-home-insurance-sales-california-wildfire-risks-grow-2023-05-30/)

IEA. (2019). *Global Status Report for Buildings and Construction 2019—Analysis*. IEA. [iea.org/reports/global-status-report-for-buildings-and-construction-2019](https://www.iea.org/reports/global-status-report-for-buildings-and-construction-2019)

IEA. (2021). *E4 Country Profile: Energy Efficiency in China—Analysis*. IEA. [iea.org/articles/e4-country-profile-energy-efficiency-in-china](https://www.iea.org/articles/e4-country-profile-energy-efficiency-in-china)

IEA. (2022). *The value of urgent action on energy efficiency—Analysis*. IEA. prod.iea.org/reports/the-value-of-urgent-action-on-energy-efficiency

IEA. (2023a). *Boosting Efficiency in Latin America—Analysis*. IEA. [iea.org/reports/boosting-efficiency-in-latin-america](https://www.iea.org/reports/boosting-efficiency-in-latin-america)

IEA. (2023b). *Scaling Up Private Finance for Clean Energy in Emerging and Developing Economies—Analysis*. IEA. [iea.org/reports/scaling-up-private-finance-for-clean-energy-in-emerging-and-developing-economies](https://www.iea.org/reports/scaling-up-private-finance-for-clean-energy-in-emerging-and-developing-economies)

IFC. (2019). *Green Buildings: A Financial and Policy Blueprint for Emerging Market*. IFC. [ifc.org/en/insights-reports/2019/green-buildings-report](https://www.ifc.org/en/insights-reports/2019/green-buildings-report)

IFC. (2023). *IFC and IDEI announce green bond issuance for 800 million pesos to promote sustainable construction in Mexico*. IFC. [ifcpressreleasesprod.aseprod.ifc.org/all/pages/PressDetail.aspx?ID=27707](https://www.ifcpressreleasesprod.aseprod.ifc.org/all/pages/PressDetail.aspx?ID=27707)

International Finance. (2023). *Commercial Bank of Dubai raises USD 500 million through sale of green bonds—International Finance*. [internationalfinance.com/banking/commercial-bank-dubai-raises-through-sale-green-bonds/](https://www.internationalfinance.com/banking/commercial-bank-dubai-raises-through-sale-green-bonds/)

LAGreen. (2022, August 17). *LAGreen and UNEP-FI join forces to deliver green bond training series for the banking sector in eight Latin American and Caribbean countries*. LAGreen. lagreen.lu/lagreen-and-unep-fi-join-forces-to-deliver-green-bond-training-series-for-the-banking-sector-in-eight-latin-american-and-caribbean-countries/

Lee, J. (2021). *Greater energy efficiency could double China's economy sustainably—Analysis*. IEA. [iea.org/commentaries/greater-energy-efficiency-could-double-china-s-economy-sustainably](https://www.iea.org/commentaries/greater-energy-efficiency-could-double-china-s-economy-sustainably)

LEED. (2023). *LEED rating system | USA Green Building Council*. [usgbc.org/leed](https://www.usgbc.org/leed)

LETI. (2019). *Embodied Carbon Primer*. LETI. [leti.uk/ecp](https://www.leti.uk/ecp)

McKinsey & Company. (2017). *A revolutionary tool for cutting emissions, ten years on*. [mckinsey.com/about-us/new-at-mckinsey-blog/a-revolutionary-tool-for-cutting-emissions-ten-years-on](https://www.mckinsey.com/about-us/new-at-mckinsey-blog/a-revolutionary-tool-for-cutting-emissions-ten-years-on)

Net Zero Buildings. (2023). *Net Zero Projects & Sustainable Spaces | Net Zero Buildings*. [netzerobuildings.co.uk/case-studies/](https://www.netzerobuildings.co.uk/case-studies/)

One Click LCA. (2023). *One Click LCA—World's Fastest Building Life Cycle Assessment software*. One Click LCA® Software. [oneclicklca.com/](https://www.oneclicklca.com/)

OpenLCA. (2023). *openLCA.org | openLCA is a free, professional Life Cycle Assessment (LCA) and footprint software with a broad range of features and many available databases, created by GreenDelta since 2006*. [openlca.org/](https://www.openlca.org/)

- Ritchie, H., & Roser, M. (2023). A number of countries have decoupled economic growth from energy use, even if we take offshored production into account. *Our World in Data*. ourworldindata.org/energy-gdp-decoupling
- SBTi. (2023). *Financial institutions*. Science Based Targets. sciencebasedtargets.org/sectors/financial-institutions
- SimaPro. (2023). *SimaPro | LCA software for informed changemakers*. SimaPro. sima-pro.com/
- Sphera. (2023). Life Cycle Assessment Software—Sphera LCA For Experts | Sphera (GaBi). *Sphera*. sphera.com/life-cycle-assessment-lca-software/
- UK GBC. (2023). *Bitesize Explainer Guides*. UKGBC. ukgbc.org/resources/bitesize-explainer-guides/
- UNEP. (2020). *Financing Circularity: Demystifying Finance for the Circular Economy*. unepfi.org/publications/financing-circularity/
- UNEP. (2022). *2022 Global Status Report for Buildings and Construction*. globalabc.org/our-work/tracking-progress-global-status-report
- UNEP. (2023). *2023 Global Status Report for Buildings and Construction*. globalabc.org/our-work/tracking-progress-global-status-report
- UNEP. (2023, September 12). *Building Materials And The Climate: Constructing A New Future*. UNEP—UN Environment Programme. unep.org/resources/report/building-materials-and-climate-constructing-new-future
- UNEP-FI. (2019). *Principles for Responsible Banking*. unepfi.org/banking/bankingprinciples/
- UNEP-FI. (2020). *Roadmaps for Buildings and Construction | GlobalABC*. globalabc.org/roadmaps-buildings-and-construction
- UNEP-FI. (2023). *Net-Zero Banking Alliance*. unepfi.org/net-zero-banking/
- US DOE. (2023a). *Biden-Harris Administration Announces USD 400 Million for States to Improve Building Energy Efficiency, Save Consumers Money, and Make Buildings More Climate Resilient*. Energy.Gov. energy.gov/articles/biden-harris-administration-announces-400-million-states-improve-building-energy
- US DOE. (2023b). *Low Carbon Technology Strategies Toolkit | Better Buildings Initiative*. betterbuildingssolutioncenter.energy.gov/toolkits/low-carbon-technology-strategies-toolkit
- Verisk. (2023). *Wildfire State Risk Report—California*. verisk.com/siteassets/media/campaigns/gated/underwriting/fireline-state-risk-report/california.pdf
- Wienerberger. (2023). *Wienerberger successfully places its first Sustainability-Linked Bond in a volume of EUR 350 million*. Corporate Website. wienerberger.com/en/media/press-releases/2023/20230928-Wienerberger-successfully-places-its-first-Sustainability-Linked-Bond.html
- WorldGBC. (2023, May). *The Circular Built Environment Playbook*. World Green Building Council. worldgbc.org/article/circular-built-environment-playbook/
- WRI. (2019). *Adapt Now Report*. World Resources Institute. wri.org/initiatives/global-commission-adaptation/adapt-now-report

UN 
**environment
programme**

**finance
initiative**

UNEP Finance Initiative brings together a large network of banks, insurers and investors that collectively catalyses action across the financial system to deliver more sustainable global economies. For more than 30 years the initiative has been connecting the UN with financial institutions from around the world to shape the sustainable finance agenda. It has established the world's foremost sustainability frameworks that help the finance industry address global environmental, social and governance (ESG) challenges. Convened by a Geneva, Switzerland-based secretariat, more than 500 banks and insurers with assets exceeding US\$100 trillion work together to facilitate the implementation of UNEP FI's Principles for Responsible Banking and Principles for Sustainable Insurance. Financial institutions work with UNEP FI on a voluntary basis and the initiative helps them to apply the industry frameworks and develop practical guidance and tools to position their businesses for the transition to a sustainable and inclusive economy.

unepfi.org



unepfi.org



info@unepfi.org



[/UNEPFinanceInitiative](https://www.facebook.com/UNEPFinanceInitiative)



[UN Environment Programme Finance Initiative](https://www.linkedin.com/company/UNEPFI)



[@UNEP_FI](https://twitter.com/UNEP_FI)