



Conclusion and Recommendations



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The future of building construction is green. It must be if we are to reach global climate goals and restrict global warming temperatures to under 1.5°C from pre-industrial levels. Green buildings can substantially reduce the carbon emissions that come from heating and cooling spaces and powering multiple appliances and devices.

Reducing emissions through green buildings comes with a \$24.7 trillion investment opportunity over the next decade across emerging market cities, which are growing and building at a rapid pace.

There is a strong business case for investing in green buildings. They are more efficient than traditional buildings, driving up revenues and lowering operating costs. Equally important, they can reduce the risk of buildings becoming stranded assets as a result of their exposure to the physical and transition risks stemming from climate change.

Realizing the full investment potential in green buildings is within reach. Technologies to build green are well known and easy to implement; and the cost of applying these technologies continues to decrease with their greater adoption. Furthermore, financing and investment mechanisms for constructing and operating buildings are well known.

This report has identified and reviewed best practice approaches that can be replicated and scaled to move emerging markets towards green construction. A summary of recommended actions that key market players can take to translate the multitrillion-dollar investment opportunity in green buildings into investment projects is set out below.

Investors and financiers

Investors and financiers hold tremendous influence in shaping and accelerating the capital-intensive real estate market's transition to green construction. This shift will help take advantage of the significant green building investment opportunity and build stronger real estate investment portfolios resilient to financial, regulatory, and reputational risks associated with the transition to low-carbon economies. The valuation of green properties can be higher because they have lower operating costs and higher occupancy rates and rental income. In the clean energy transition scenarios, the valuation of green buildings can increase further because they avoid the increasing likelihood of penalties imposed on carbon emissions. All these factors also make green buildings a better credit risk asset and better collateral.

In emerging markets, banks and funds are starting to take it upon themselves to educate developers and customers about the benefits of building and buying green and, at times, offer favorable financing terms to incentivize green construction and green homeownership. By doing so, financiers can develop new green finance products, capitalize on the first mover advantage to expand into new market segments, access diverse and potentially cheaper sources of capital through the green bond market, and build higher-value and lower-risk portfolios.

Investors and financiers can do the following to build their green real estate portfolios:

- Develop a green buildings asset strategy and process, which relies on green building certification and labeling systems for industry-accepted definitions and eligibility criteria.
- Create green buildings finance products that could include favorable financing terms to offset higher upfront costs of green construction for developers and home buyers. This will help jump-start the market and ensure a pipeline of projects.
- Determine appropriate funding sources to support the rollout of green buildings finance products, such as rapidly expanding the green bond and loan markets to provide additional capital for expanding green buildings finance products.
- Generate a pipeline of eligible projects by actively engaging developers on the economic benefits of green construction and explaining the long-term advantages of green homeownership to prospective buyers.
- Collect, analyze, and report data on the environmental and financial performance of green real estate projects and the allocation of funds to green projects.

Governments as an investor and regulator

As the world's largest investor, owner, and operator of real estate, governments have significant power to shape the green buildings market. Governments set rules and create incentives for market players through policies, regulations, and monitoring compliance. By requiring and incentivizing green construction practices, governments can help create a strong pipeline of green assets for banks and investors to finance.

Governments stand to benefit from the transition to green construction both financially and in meeting their environmental and social objectives. Green public buildings deliver significant budget savings through paying lower utility bills. Green buildings can drive up tax revenue on profits from local businesses, which in turn are able to benefit from lower operating costs. Green buildings can help strengthen countries' energy and water security and help them achieve their goals to reduce emissions.

Governments can catalyze the green construction market by. They can:

- Require all new public buildings to be built green in line with well-established green building certification systems.
- Help build technical capacity in the market to design, build, appraise, and finance green buildings.
- Put in place procurement policies for green building systems and appliances to incentivize the cost-efficient production of green heating and cooling equipment, as well as energy-efficient appliances and lighting.
- Collect, analyze, and report data on the environmental and financial performance of green buildings to communicate the business case to the market.
- Develop incentives and programs to help cover higher upfront costs of green construction and green homeownership to accelerate the transition to green construction beyond public buildings.

Governments—national, subnational, and local—can create the right conditions for the growth of the green buildings market and provide clarity and policy certainty to the private sector through regulations. To do so, they can:

- Set national targets for emission reductions, sending a clear signal to the market and setting clear objectives across ministries and different levels of government to develop enabling policies and regulations (energy codes, building energy codes, and green building codes).
- Adopt mandatory labeling and certification systems that can help drive enforcement of policies and regulations and provide assurance to the market that buildings meet the requirements. Training government and industry professionals will optimize enforcement.
- Develop and implement programs to incentivize practices that go beyond mandatory codes, including, as appropriate, tax incentives— income tax, VAT, and real estate tax breaks, grants for capital expenditure buy-downs, interest rate rebates, and technical capacity-building programs.
- Implement effective non-financial incentives, such as expedited and/or preferential permitting processes and density bonuses—increased height and/or footprint allowances for green buildings.
- Align financial regulations to incentivize the flow of finance to green buildings, including the definition of the green buildings as an asset class, the mechanism for monitoring allocation of finance to green buildings, and reducing capital adequacy requirements for green buildings finance. Develop guidance for domestic markets on how to issue green bonds.

Not all of these steps can, nor should they, be taken simultaneously or in the same linear sequence in every market. They must be tailored and applied as best suited to local conditions, according to the legal frameworks, socioeconomic contexts, and developmental priorities in each market.

Developers and owners

The green buildings market can also be shaped by progressive companies—developers and owners—that demonstrate a proof of concept and pave the way for others to follow. Voluntary commitments and actions by these players have been critical in the absence of comprehensive policies and practices mandating and incentivizing green construction.

Standard-setting organizations have contributed to these efforts by developing green building certification systems, building technical capacity, and continuously advocating for higher standards and bolder commitments from leading market players towards net zero carbon buildings.

Certifying with well-established green building certification systems allows developers to differentiate their products in the market and reap the benefits of a green building label—including access to faster sales times and higher sale premiums; additional sources of finance earmarked for green lending, such as green bonds, green loans, and green funds; and lower-priced loans. Additional benefits to developers include tax incentives, expedited permitting processes, and permissions to build higher.

Based on best practice among progressive developers, others can consider the following recommendations:

- Integrate green features into the project specification, contracts, and early design to find the most cost-effective way to build green.
- Invest in green building certification to demonstrate compliance with today's green finance criteria and to ensure market recognition by customers.
- Explore financial and non-financial incentives, as well as support programs offered by national, subnational, and local authorities to build green.
- Explore specialized green construction finance products and other incentives offered by commercial banks and/or issue green bonds to access cheaper capital for green construction.

- Collect and analyze data comparing the business benefits of green and traditional properties. The data can be used to consider adjustments to the business model, such as integrating the impact of utility savings into building valuation models.
- Communicate data on the benefits of green buildings to customers and financiers to gain a competitive differentiation in the market.

Corporations and large brands around the world also drive voluntary adoption of green building practices, as they make commitments to reduce emissions from their buildings and operations. In the process they benefit from lower utility bills and lower maintenance costs, and reduced legal and reputational risk.

Recommendations for corporate property owners and operators include the following:

- Communicate sustainability goals and actions to send clear signals to developers and financiers.
- Acquire green buildings to benefit from lower operating costs and higher revenue, and to ensure the values of their assets are preserved over the long term.
- Measure, analyze, and report resource usage and emission reductions, as well as the financial benefits of owning and operating green buildings.

A common consideration for all market players is the importance of raising awareness of the business case for green buildings and building technical capacity across markets. All market players have stepped into this role, which not only serves their needs, but also contributes to advancing the green buildings market.

Awareness and capacity-building efforts intend to support both new entrants and those looking to increase their green building ambitions. Increased collaboration among these initiatives will help generate robust and transparent markets across all types of stakeholders.



Photo: A construction worker on the job at DCM's Elements near Mexico City, which has received EDGE Advanced certification. Rooftop co-generation systems will provide power to meet electricity and hot water demand.

Future direction

NEED FOR DEFINITIONS AND METRICS

Accepted definitions and metrics of what constitutes a green building are foundational to the efforts by all market players to catalyze investment at the scale required to green the massive new construction market.

Definitions and metrics are essential for:

- Policymakers to establish minimum code requirements and provide incentives for the private sector and financial innovation.
- Developers to create green building assets and get recognition from buyers and financiers for their superior quality.
- Financiers to access capital markets for their portfolio of green building assets.

To date, the most common material characteristics of green buildings have included energy efficiency and emission reductions measurements.

Clear definitions and metrics enable the collection and reporting of information on the size and performance of green building portfolios, bringing transparency to the market. The availability of larger datasets enhances investors' ability to make more informed decisions. Greater awareness of the business case for green buildings will help stimulate supply and demand in the market—growing a pipeline of green building assets and the financial products to finance them. Increased consumer awareness of the financial benefits of green buildings will further stimulate demand for green construction.

It is critical that the market players continue to work towards widely accepted definitions and metrics for green buildings that can apply across geographies and enable skills transfer. It is important to ensure that these definitions and metrics incentivize continuous improvement along a progression scale, from a minimum of 20 percent energy-efficient improvements towards net zero carbon buildings.

EXPANDING SCOPE

It is also vital to work towards reducing carbon emissions from the production of construction materials. The construction industry is the world's largest consumer of raw materials such as cement, steel, bricks, aluminum, and glass. If embodied carbon is taken into consideration, buildings are responsible for 40 percent of global greenhouse-gas emissions.¹⁸⁰ Addressing the issue of embodied carbon is particularly important because emerging markets are in a construction boom.

A holistic approach to construction is needed to reduce buildings' emissions, from their development to the end of their lives. While outside of the scope of this report, approaches to decarbonizing construction materials have been covered in separate IFC reports on the construction value chain.¹⁸¹ IFC is also working to address the issue of embodied carbon through its EDGE certification. EDGE is the only system that requires efficiency in embodied energy in materials as a certification parameter and IFC aims to measure embodied carbon in the future.

Annex

Building Awareness and Capacity Among Key Market Players

The complex nature of buildings—and green buildings in particular—has generated a range of legal requirements, certification schemes, and marketing initiatives. To build awareness and capacity, there are a variety of supporting initiatives, exchanges, hubs, programs, and projects. Efforts target a variety of audiences, including governments, developers, owners, investors, and financial institutions, at the local, national, regional, and global levels. Increasing awareness and building capacity can be done through policy development, financial support, and market building, with many additional cross-cutting initiatives:

- **Policy:** Capacity-building initiatives that focus on policy provide an overview of existing policies, as well as best practices and lessons learned.
- **Finance:** Financial capacity-building efforts can help develop a pipeline of creditworthy and bankable projects.
- **Cross-cutting** activities and initiatives incorporate both finance and policy approaches to create demand and generate markets. These types of initiatives develop reporting frameworks and create tools to assist, quantify, and reduce the built environment's impact.

A selection of relevant initiatives from these three categories is provided below.

Sample initiatives

Understanding the technical aspects of green buildings as well as the various certification schemes and marketing tactics can be overwhelming. There is a wide range of initiatives, alliances, coalitions, and other support mechanisms available to support new

entrants and existing participants looking to increase their ambitions. Increasing awareness and building capacity can be done through policy development, financial support, and market-building initiatives, many of which are cross-cutting. This annex looks at some of these efforts.

POLICY DEVELOPMENT AND SUPPORT

Implementation of Sustainable Consumption and Production in India

(SCP): Aims to generate awareness among policy and decision makers on the importance of adopting SCP approaches in India's sustainable development policy.

» More info: <https://www.oneplanetnetwork.org/initiative/implementation-sustainable-consumption-and-production-india>

International Energy Agency (IEA) Global Exchange for Energy

Efficiency: A resource for policymakers to learn about sector-specific policies and lessons learned around the world.

» More info: <https://www.iea.org/topics/energyefficiency/>

Regional Policies Towards Green Buildings (REGREEN): Operates across the EU, targeting developers and investors to improve regional development policies and promote green regions as part of a broader green economy.

» More info: <http://www.re-green.eu/en/go/objectives>

FINANCIAL SUPPORT AND MOBILIZATION

Asia Sustainable Finance Initiative (ASFI) Knowledge Hub: A multi-stakeholder forum in Singapore to support financial institutions in implementing ESG practices to harness and amplify the finance sector's ability to create resilient economies that deliver on the Sustainable Development Goals and the Paris Agreement.

» More info: <https://www.asfi.asia/#>

ENERFUND: An Energy Retrofit Funding Tool that rates and scores deep renovation opportunities based on a set of parameters, such as energy performance certificates, the number of certified installers, existing governmental schemes, and the quality of heating systems. It

aims to enhance investments in the refurbishment of buildings across Europe.

» More info: <http://enerfund.eu/>

European Bank for Reconstruction and Development (EBRD) Green

Cities: Has over €1 billion in committed funds and is operational in more than 20 EU cities. It is focused on building a better and more sustainable future for cities and their residents by identifying, prioritizing, and connecting cities' environmental challenges with sustainable infrastructure investments and policy measures.

» More info: <https://www.ebrdgreencities.com/about>

European Covered Bond Council: Energy Efficient Mortgages Initiative (EeMI): Organized by the European Covered Bond Council, it consists of EeMAP (Energy efficient Mortgages Action Plan) and EeDaPP (Energy efficient Data Protocol and Portal). Both projects are funded via the European Commission's Horizon 2020 Programme.

» More info: <https://hypo.org/ecbc/market-initiative/emf-ecbc-energy-mortgages-initiative/>

Financing Sustainable Cities Initiative (FSCI): A partnership between the World Resources Institute (WRI) Ross Center for Sustainable Cities, C40 Cities Climate Leadership Group, and Citi Foundation. Main components include the development of a peer-to-peer learning community, technical assistance, and an online engagement platform.

» More info: <http://financingsustainablecities.org/>

Global Alliance for Buildings and Construction (GABC): A UN initiative that aims to increase the pace and scale of the green buildings transformation and to keep the buildings and construction sector on warming path of well below 2°C. GABC's Programme for Energy Efficiency in Buildings (PEEB) combines financing for energy efficiency in large-scale projects with technical assistance through policy advice and expertise for building sector professionals.

» More info: <https://globalabc.org/> and <https://www.peeb.build/>

Kreditanstalt fuer Wiederaufbau (KfW) Energy Efficient Construction

Program: Supports building and acquiring new energy-efficient residential buildings with low energy consumption and reduced carbon emissions. It offers an incentive reduction of between 5 percent and 15 percent on the total amount on which interest is paid, depending on achieved KfW energy efficiency building standards, in addition to favorable interest rates.

» More info: <https://www.kfw.de/kfw.de-2.html>

MARKET BUILDING

Better Buildings Initiative: A U.S. initiative that aims to enforce multifamily affordable rental housing and acts as a non-profit developer to make commercial, public, industrial, and residential buildings 20 percent more energy efficient over the next decade.

» More info: <https://betterbuildingssolutioncenter.energy.gov/>

Concrete Sustainability Council: Partners from Europe, the United States, Latin America, and Asia promote and demonstrate concrete as a sustainable building material to enable informed decisions in construction. The council uses its certification system for responsibly sourced concrete, which includes the complete concrete supply chain: cement producers, aggregates suppliers, and concrete manufacturers.

» More info: <https://www.concretesustainabilitycouncil.com/>

Construction Industry Development Board (CIDB) Malaysia, Sustainable Construction Excellence Centre (MAMPAN), and Malaysian Carbon Reduction & Environmental Sustainability Tool (MyCREST):

CIDB Malaysia regulates, develops, and facilitates the construction industry by delivering a high-quality and sustainable built environment. MAMPAN focuses on sustainable construction. MyCREST aims to guide, quantify, and reduce the built environment's carbon impact while considering a more holistic view of the built environment and integrating socioeconomic considerations.

» More info: <http://www.cidb.gov.my/index.php/en/focus-areas/sustainable-construction> and <http://www.cidb.gov.my/index.php/en/bidang-utama/pembinaan-mampan/mycrest>

European Commission Level(s) program: A voluntary reporting framework to improve the sustainability of buildings. Using existing standards, Level(s) provides a common EU approach to the assessment of environmental performance in the built environment.

» More info: <https://ec.europa.eu/environment/eussd/buildings.htm>

Energy in Buildings and Community Program (EBC): Allows researchers and experts funded by national programs and industry to pool their collective expertise to produce high-quality project outputs, creating and reinforcing technical networks.

» More info: <https://iea-ebc.org/ebc/about>

Passive House Institute: Researches and develops construction concepts, building components, planning tools, and quality assurance for energy-efficient buildings. The institute provides building consultancy and technical guidance.

» More info: <https://passivehouse.com/>

SBT4buildings: A World Business Council for Sustainable Development (WBCSD) initiative to accelerate the transformation of the built environment to reduce carbon emissions and pave the way to a net zero built environment by 2050. It develops guidance for companies in the building and construction system that want to set their carbon reduction targets in line with keeping global warming below 1.5°C.

» More info: <https://www.wbcd.org/Programs/Cities-and-Mobility/Sustainable-Cities/Science-based-targets>

UNEP United for Efficiency (U4E): A UNEP-led global effort that informs policymakers of the potential environmental, financial, and economic savings of a transition to high-efficiency products; identifies and promotes global best practices in transforming markets; and offers tailored assistance to governments to develop and implement national and regional strategies and projects to achieve a fast and sustainable market transformation.

» More info: <https://united4efficiency.org/>

UN Green Growth Knowledge Partnership (GGKP): Consists of three knowledge platforms—the Green Growth Knowledge Platform, the Green Industry Platform, and the Green Finance Platform. They offer quick and easy access to the latest research, case studies, toolkits, learning products, principles, and protocols to empower policymakers and advisors, small and medium-sized enterprises, and banks, insurance, and investment firms to make evidence-based decisions about how to green their operations.

» More info: <https://www.greengrowthknowledge.org/sector/buildings>

UN Sustainable Housing Initiative (SBCI): A UNEP initiative that promotes and supports sustainable building practices on a global scale with a focus on energy efficiency and greenhouse-gas emissions reduction. SBCI brings together stakeholders involved in the building, planning, and policymaking process at the local, national, and international level by providing a platform for dialogue and collective action.

» More info: <https://www.unenvironment.org/explore-topics/resource-efficiency/what-we-do/cities/sustainable-buildings>

WBSCD Energy Efficiency in Buildings Amplify (EEB Amplify):

A convening vehicle for the private sector to engage with local governments and collaborate on ensuring that the right policies, funding mechanisms, capacity-building programs, and awareness initiatives are in place to maximize market growth of energy-efficient buildings.

» More info: <https://www.wbcd.org/Programs/Cities-and-Mobility/Energy-Efficiency-in-Buildings/Resources/EEB-Amplify-2017-2020>

Acronyms and Endnotes

Acronyms

BREEAM	Building Research Establishment Environmental Assessment Method
C	Celsius
ECBC	Energy Conservation Building Code
EDGE	Excellence in Design for Greater Efficiencies
ESG	Environmental, social, and governance
EU	European Union
GBEL	Green Building Evaluation Label
GRESB	Global Real Estate Sustainability Benchmark
IFC	International Finance Corporation
IHS	International Housing Solutions
LED	Light-emitting diode
LEED	Leadership in Energy and Environmental Design
NDC	Nationally Determined Contribution
REIT	Real estate investment trust
RoGBC	Romania Green Building Council
UK	United Kingdom
UN	United Nations
U.S.	United States
USD	United States dollar
VAT	Value-added tax

Endnotes

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