In South Africa, supply of affordable quality housing falls far short of the demand. To address the shortage of low-income houses, in 2015, IFC invested $21 million in a $300 million fund managed by the IHS—a large equity investor in South Africa’s affordable housing sector. The fund focused on building, buying, renting, and selling single and multifamily housing, along with converting existing real estate to multifamily housing.

IFC saw an opportunity to open the market in South Africa for green residential construction through the IHS Fund. However, the developers could not pass the extra cost of greening measures to low-income homeowners and renters. This meant that the fund’s expected returns to investors would take a hit.

To encourage the fund and partner developers to incorporate cost-effective green technologies in the design of their projects without affecting the expected returns to investors, IFC structured a $10 million concessional equity investment with funds from the Global Environmental Fund to partially cover the incremental greening costs. KfW, a partner in the IHS Fund, followed suit using the same structure.

In addition, IFC helped build technical capacity within the IHS Fund on applying the EDGE certification standard. The fund then trained the developers and provided technical support at the design, construction, and operation phases to meet the certification requirements.

The fund succeeded in convincing developers to adopt green technologies, which have demonstrated 20 percent energy and water savings, lowering utility bills for home buyers and renters. The greening costs also decreased substantially over time, from 2-6 percent to 0.25-0.8 percent per unit in 2018 in the fund-supported green projects.

IHS also compared the performance of a 200-unit green development against a similarly sized non-green development next door. Green homes demonstrated annual utility savings equal to one month’s rent. Such significant savings make green homes attractive to buyers and renters, helping developers compete for buyers and tenants in a price-sensitive affordable housing market. This competitive advantage, in combination with decreased incremental costs of green measures, convinced the developers of the advantages of EDGE certification. Most of the builders participating in the IHS Fund have pledged to build all their properties as EDGE-certified.
Today, the IHS Fund has 4,900 EDGE-certified homes, and is on track to exceed its target of 6,000 homes. Another 7,000 homes are being planned for green construction. Furthermore, IHS is expanding into Botswana, Kenya, and Namibia and has announced that all new projects will be EDGE-certified.

The blended finance and technical support from IFC were critical to opening the market for green homes in South Africa. The partnership with IHS Fund has had a far-reaching demonstration effect: it created broad market awareness among the developers and consumers about the financial benefits of green construction and demonstrated how to implement existing green technologies cost-effectively. IHS plans to apply this knowledge and experience to projects in other countries.

**GOVERNMENTS**

As a large owner of and investor in real estate, governments significantly influence the development of the green buildings market. As an investor, they can influence green construction directly by setting and requiring green standards for all the buildings they own, finance, and buy. By taking the lead in requiring public buildings to be built green, governments catalyze and enable markets through building technical capacity and skills among designers, engineers, and workers, who can then build privately financed green buildings. In addition, they can catalyze the market for a green supply chain such as producing energy-efficient cooling and heating systems and appliances. For example, China’s Ministry of Housing and Urban-Rural Development mandated that all public buildings, including offices, schools, hospitals, and affordable housing in major cities, meet green building standards from 2014 onwards.85

Governments can also play a critical role in developing financial incentives and programs to promote green construction and energy efficiency improvements and make green homeownership affordable. For example, a U.S. government-sponsored residential lender, Fannie Mae, has introduced a range of green lending products that offer preferential pricing (at least 10 basis points) and a free energy and water audit report to borrowers to finance green property improvements.86 The U.S. government’s Property Assessed Clean Energy model is an innovative mechanism that allows building owners to repay the upfront costs of investing in energy efficiency and renewable energy over time (10 to 12 years) through property assessments.87 Under the Pay As You Save program, utilities finance and install energy efficiency technologies at no upfront cost, and subsequently recover the costs through tariffs included in customers’ monthly bill for their meters. Since 2011, Mexico’s federal organization INFONAVIT (“Instituto del Fondo Nacional de la Vivienda para los Trabajadores”), the fourth largest mortgage institution in the world, has required all of its mortgages to be for green homes or green home improvement measures.88
Policy and Regulatory Building Blocks

One of the main barriers to unlocking the $24.7 trillion investment opportunity in green buildings across emerging markets is the lack of green buildings for investors and financiers to finance. The previous section, Financing Green Buildings, provides examples of banks and funds that are developing a pipeline of green properties to finance by offering better financial terms and actively reaching out to and educating developers. Not all financiers are willing to undertake such efforts, however. This is where the government’s role is critical to create an enabling environment for developers to build green and, thus, create a robust pipeline of green assets for financiers to finance, while creating conditions for the growth of green finance practices in the financial sector.

Governments have already signaled their interest in “building it right”—the buildings sector is referenced in 136 countries’ NDCs, and several cities are incorporating green buildings into their Climate Action Plans. Ambitious targets and high-level policies must be complemented by regulations and incentives if governments are to translate policy into action.

Clear market signals are needed to amplify the pace and scale of green construction. Policymakers must drive performance through stricter building codes to improve benchmarks. They can also incentivize the private sector to outperform those codes. Building codes that incorporate energy efficiency and green measures will move developers to build a pipeline of green buildings, aided by fiscal and non-fiscal incentives to exceed the minimum code requirements.
Governments can demonstrate their commitment by requiring publicly owned and financed buildings to be green, but they can also go further, shifting the market with their huge aggregate demand, which in turn can trigger the development of a pipeline of green buildings and related products. Policymakers can help incentivize banks to provide direct capital to the sector by establishing guidelines for green finance instruments and requiring reporting on climate risk in investment portfolios. Green labeling or performance certificates can help investors verify, compare, and manage their investments to expand their green portfolios.

Economy-wide energy efficiency policies and NDCs can indicate priority sectors for investment and growth, working in concert with market-based mechanisms that can make green buildings more cost-effective than higher-carbon alternatives. These not only create the underlying policy framework to develop green project pipelines, but also signal the opportunities that can arise from investing in climate-smart assets such as green buildings.

These examples are a few among the vast suite of regulatory options that are being deployed by governments to help developers create a pipeline of investable green buildings projects and incentivize investors to direct their capital to them. The following section reviews some of the best-practice policy and regulatory instruments related to building enabling environments for green buildings and green finance. Not all of these will be applicable in every context in the same way—governments across emerging markets can work with experts to choose which of these policy options might be relevant in their jurisdictions. These must be tailored to legal frameworks, socioeconomic contexts, developmental priorities, and other local conditions.

**Nationally Determined Contributions (NDCs)**

Since December 2015, 194 countries have submitted NDCs—national plans that outline governments’ commitment to reducing emissions through climate solutions, including renewable energy, low-carbon cities, and energy efficiency. Of these, 136 mention the role of the buildings sector, with 104 citing energy efficiency and 51 committing to using renewable energy in buildings as ways to reduce their economy-wide emissions. These government priorities signal to investors and developers where future demand can come from.

- **India’s** NDC calls specific attention to a “building sector based on energy conservation,” pledging to make its Energy Conservation Building Code (ECBC) stricter, highlighting its domestic building rating system GRIHA (Green Rating for Integrated Habitat Assessment), which scales energy efficiency in buildings.

- **Lesotho’s** updated NDC, released in 2017, commits the country to decarbonizing its buildings sector by implementing climate-smart building codes and standards, launching energy efficiency programs, and encouraging the use of energy-efficient appliances.

- **Grenada’s** NDC commits the nation to achieving energy savings targets of 30 percent for new construction through new energy efficiency codes, in addition to a 20 percent reduction in energy consumption of existing buildings through retrofits by 2030.
ENERGY EFFICIENCY POLICIES

In 2017, mandatory energy efficiency policies covered 34 percent of energy use from buildings worldwide, increasing to about 40 percent in 2018. Demand for energy-efficient buildings can be created by policies at regional, national, and local levels, particularly as governments attempt to translate their NDCs into concrete policies, and enhance the energy security and energy efficiency of their economies. For example:

As of 2018, the Energy Efficiency Directive and the Energy Performance of Buildings Directive by the European Commission includes a non-binding target to improve energy efficiency by 32.5 percent by 2030, to be reviewed again in 2023. As part of this, the Energy Performance of Buildings Directive will require member states to develop long-term strategies to fully decarbonize and reduce the energy use of their entire building stock.

In 2017, China released its 13th Five-Year Plan for Building Energy Efficiency and Green Building Development. This plan mandates that 50 percent of all new urban buildings are certified green and includes pilot programs for energy-efficient schools, hospitals, and public buildings. Following this national directive, almost 20 Chinese cities have set even more ambitions targets, with cities including Shanghai, Beijing, Shenzhen, and Chongqing requiring all new commercial buildings to be certified green.

In conjunction with energy efficiency policies, incentives and regulations that encourage distributed renewable energy sources for buildings and otherwise green the electricity grid will also reduce carbon emissions from buildings.

GREEN REQUIREMENTS FOR GOVERNMENT-OWNED OR -FINANCED BUILDINGS

As owners of a large portfolio of real estate and buildings, governments have significant sway to shift market demand. Many governments begin by mandating energy efficiency in public buildings.

For example, Gabrovo, Bulgaria, has adopted an energy-saving target of at least 30 percent for its public buildings, committing to track progress using an energy management system. To help meet this target, Gabrovo aims to develop and implement a program that will include portfolio benchmarking, energy audits, operational and maintenance improvements, energy efficiency standards, and energy performance contracts.

Given that public procurement accounts for about 12 percent of gross domestic product in OECD countries and up to 30 percent in emerging markets, governments can significantly influence markets to shift to green products, and align the use of public funds to achieve governmental priorities such as reducing carbon emissions.

If structured correctly, green public procurement policies can incentivize suppliers to develop climate-smart products and processes without increasing the initial purchase price, helping to reduce green building emissions. Public procurement policies and distribution schemes have been particularly effective at creating markets for greener appliances and products, which in turn increases private demand.

Increases in procurement costs can be avoided by aggregating the public sector’s buying power through bulk procurement. India’s UJALA scheme—the largest non-subsidized LED distribution program in the world—lowered the upfront cost of investment in LEDs for public utilities and state governments by creating mass awareness and buying in bulk. The scale of public demand shifted the whole market, incentivizing private consumers to also switch to LED, making India the second largest LED market in the world in 2015. This scheme was part of the Indian government’s efforts to facilitate energy efficiency projects under Energy Efficiency Services Limited, a company that
is also promoting energy-efficient cooling through its Super-Efficient Air Conditioning program. Product and design specifications that incorporate energy and water efficiency into such policies can help incentivize the use of, and thus create demand for, energy-efficient appliances.

Both national and subnational governments are developing guidelines and implementing policies for green public procurement to suit their contexts:

- In **South African City of Tshwane's** Integrated Environmental Policy outlines a strategy to promote and implement municipal green procurement practices. The intention is to develop a green procurement guideline that will select five categories of green products each year to be included on the city’s procurement list.106 With a specific section dedicated to green buildings, Tshwane specifies how to incorporate sustainable technologies in all buildings and advocates for sustainable supply chains.107

- In **South Korea**, government agencies submit implementation plans on green purchases every year, along with the previous year’s performance records, to the Ministry of Environment.108 Each institution must also set its own green purchase target and a corresponding implementation plan. Green purchases can include items such as energy-efficient appliances that help reduce emissions from the day-to-day use and occupation of public and government buildings.

As of 2017, there is now a global standard for sustainable procurement. The International Standards Organization launched ISO 20400 to help companies improve the sustainability and ethical levels of their supply chains.109 This standard aims to build global consensus around what responsible procurement means. It describes the principles and core ideas behind sustainable procurement, and provides guidance on how to integrate sustainable procurement practices at both strategic and operational levels within an organization.110 While the standard is not specifically tied to green buildings, it aligns with the UN Sustainable Development Goals and includes environmental and climate-related practices.
design principles and renewable energy sources to be integrated into building design, and mandates that new buildings demonstrate energy savings of at least 25 percent to be code-compliant. This code is also one of the first to make provisions for improvement and performance beyond minimum code compliance by defining incremental, voluntary energy efficiency performance levels: ECBC compliant (energy savings of 25 percent), ECBC Plus (energy savings of 35 percent), and Super ECBC (energy savings of 50 percent). Continuously improving building codes also forces voluntary certifications to improve to retain their additionality.

In order to decarbonize the buildings sector effectively, building codes need to incorporate energy and water efficiency requirements. Such codes could also benefit from input from the private sector and taking locally available technology into consideration. Various government departments need to be engaged to ensure adequate resources are budgeted for long-term enforcement. The codes should account for the costs and benefits of different options and should initially streamline suggested approaches to a limited number of requirements, which can then be built on incrementally. Finally, governments must invest in capacity building for enforcement for building codes to be effective.

**GREEN BUILDING CODES**

The most cost-effective way to reduce the use of resources during a building’s life is to integrate green measures during design and construction. Mandatory building codes ensure that green measures are considered from the start, playing a significant role in promoting green construction and raising market awareness in a cost-effective way.

When mandatory codes are enforced, they establish the minimum requirements for performance and energy efficiency across the building types covered by the policy, reducing the entire sector’s energy intensity and emissions. However, in 2018, two-thirds of all countries lacked mandatory building energy codes, resulting in new construction that potentially locks in low performance and high energy and carbon intensity for a building’s lifetime. Even once passed, building codes take a long time to implement and significant resources to enforce.

To encourage developers to sufficiently reduce emissions from their new constructions, building codes must continuously raise the baseline. For example, India updated its ECBC for commercial buildings in 2017 and its ECBC-R for residential buildings in 2018. The ECBC now includes energy performance standards for commercial buildings, requires passive design principles and renewable energy sources to be integrated into building design, and mandates that new buildings demonstrate energy savings of at least 25 percent to be code-compliant. This code is also one of the first to make provisions for improvement and performance beyond minimum code compliance by defining incremental, voluntary energy efficiency performance levels: ECBC compliant (energy savings of 25 percent), ECBC Plus (energy savings of 35 percent), and Super ECBC (energy savings of 50 percent). Continuously improving building codes also forces voluntary certifications to improve to retain their additionality.

In order to decarbonize the buildings sector effectively, building codes need to incorporate energy and water efficiency requirements. Such codes could also benefit from input from the private sector and taking locally available technology into consideration. Various government departments need to be engaged to ensure adequate resources are budgeted for long-term enforcement. The codes should account for the costs and benefits of different options and should initially streamline suggested approaches to a limited number of requirements, which can then be built on incrementally. Finally, governments must invest in capacity building for enforcement for building codes to be effective.
Such policies can help reduce the upfront cost of implementing green measures and incentivize builders to choose green alternatives, expanding the pipeline of green building projects for investors.

**Non-fiscal incentives**

Because buildings are local, city-level permitting processes and regulations can have a greater impact on the sector than those from national governments.

In **Argentina**, residential buildings receive a 10 percent VAT exclusion if they include insulation Class B, solar hot water collectors, and LED lighting up to 140,000 UVA. The tax exemption is for the first 60,000 units that apply and are built by August 2022.¹¹⁶

Both residential and commercial buildings in **Colombia** qualify for a 19 percent VAT exclusion and a 25 percent income tax deduction for using project design services and technical solutions such as insulation and energy-efficient air conditioning systems.¹¹⁷

**Japan** offers tax deductions for installing energy-efficient equipment such as high-efficiency air conditioning systems, highly insulated windows, and LEDs in the residential sector.¹¹⁸

In **Bulgaria**, a 100 percent real estate tax exemption is given to building owners for 10 years for installing renewable energy technology. Building owners are required to obtain a certificate under the Energy Efficiency Act and the Building Certificate Regulation.¹¹⁹

The **City of Mandaluyong** in the Philippines worked with IFC to develop a green buildings ordinance that compensated property owners for compliance through several measures such as a real property tax discount of 50 percent on machinery installed in accordance with the green building regulation.¹²⁰ These discounts, independent of others applicable through the city’s tax code, were found to be attractive enough for developers to adopt even if their buildings were not required to comply.

**San Borja**, a residential district in the capital of Peru, passed an ordinance¹²¹ that allows property developers to build three or four stories higher, depending on the zone, if the apartment buildings are certified green, are set back from the curb, and have green roofs and gardens that are at least 50 percent visible by pedestrians. The ordinance, the product of a collaborative approach, resulted in a new style of architecture and increased uptake in certified green buildings, demonstrating how public-private engagement can help achieve green goals.¹²²

**Arequipa, Peru**, also used height bonus incentives to encourage green construction of residential, commercial, and educational buildings. Developers can build one extra floor and benefit from a reduction in parking space requirements if their building is certified green, has 40 percent green roofs, has 50 percent transparent fences, and includes waste segregation and bicycle racks.¹²³

Other non-fiscal policies available to local authorities include expedited permitting processes and reduced permitting requirements. Such incentives and policies can help reduce the emissions intensity of individual buildings and projects, as well as encourage cities to move towards green urban development. Providing incentives for waste segregation and distributed generation in building complexes, as well as for the construction of mixed-use buildings near transit nodes, can help reduce city-wide emissions and generate a pipeline of green projects that create value for investors.
MARKET-BASED MECHANISMS

Market-based mechanisms like carbon taxes and cap-and-trade programs place an explicit price on emissions or energy use to encourage businesses to find innovative, cost-effective ways to reduce their energy consumption or carbon footprint.\(^{125}\)

Given that emissions from electricity and gas consumption can significantly outweigh emissions from other stages of a building’s life such as raw materials manufacturing or demolition,\(^ {126}\) several governments are implementing regulatory instruments that encourage green design and target efficient energy and water use by tenants. The following are examples of market-based mechanisms aimed at reducing emissions by incentivizing the use of green, energy-efficient building design:

**India**’s Perform, Achieve, and Trade program is a regulatory cap-and-trade instrument that aims to reduce energy consumption in specific energy-intensive sectors using a market-based mechanism through which participants (known as designated consumers) can get certification for and trade excess energy savings.\(^ {127}\) While the program was initially created for large industrial businesses, it was extended to hotels for the year 2020–2021.\(^ {128}\) Energy-saving certificates equivalent to 1 metric ton of oil equivalent of energy savings are awarded to designated consumers when they meet their savings target, and can be sold to other designated consumers that fail to do so at a price set by market supply and demand.\(^ {129}\) As of 2017, 150 to 200 hotels consuming about 1,000 million metric tons of oil equivalent have already been appointed as designated consumers\(^ {130}\) eligible to receive and trade energy-saving certificates, provided they meet their targets.\(^ {131}\)

**South Korea** applied an emissions trading system at the point of electricity consumption to expand the mechanism’s scope to include entities such as large buildings that would have otherwise been exempt.\(^ {132}\)

LABELING AND ENERGY PERFORMANCE CERTIFICATION

Labeling and energy performance certifications for buildings and appliances help ensure compliance with green standards, and help investors measure, verify, and compare their green building investments. For example:

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The European Energy Performance of Buildings Directive introduced an energy performance label for buildings from “A” to “G,” with “A” being the most energy efficient. In 2018, the Dutch government adopted a decree requiring office buildings to have an energy performance label of “C” or higher by 2023 and an “A” label by 2030. An office building falling short of the requirements can no longer be used, sold, or leased, effectively making it a stranded asset.

Similarly, the EU’s mandate to require Energy Performance Certificates was strengthened by instituting independent quality control of Energy Performance Certificates, introducing penalties for non-compliance, requiring the energy label to be displayed in advertisements, requiring sellers or landlords to provide buyers or tenants with a copy of the Energy Performance Certificate on sale of the building or rent transactions, and improving renovation recommendations.\(^ {124}\)

Labels are an important tool for governments to implement new policies and for financial intermediaries to manage climate transition risk in their portfolios and select energy-efficient buildings for financial support. Labeling existing buildings also provides market data to developers, which influences the design decisions of new buildings.
Ireland has levied a carbon tax on fossil fuel imports for sectors other than heavy industry and power as covered under the EU’s emissions trading system, including on heating in buildings. This tax is passed on to consumers at the point of purchase.133

Subnational governments are also using similar mechanisms:

Tokyo’s emissions trading system covers urban facilities, including public institutions, commercial buildings, lodging, educational facilities, medical facilities, and office buildings—the latter accounts for four-fifths of the covered entities.134

Shanghai’s pilot program for an emissions trading system covers “indirect” emissions, calculated using electricity consumption and a default grid emissions factor, from entities including large buildings such as hotels. Such measures can incentivize consumers and owners to choose green buildings that are energy efficient or incorporate renewable energy such as rooftop solar, thus driving demand and creating a market for the sector.135

British Columbia’s 2008 carbon tax on fuel use reduced natural gas consumption in commercial buildings “by a much larger amount than would be expected on the basis of the normal response to changing natural gas prices”.136

However, market mechanisms like carbon pricing can be politically unfeasible for the residential sector and may disproportionately affect vulnerable groups.137 Hybrid models that combine elements of quantity-based emissions trading systems and price-based tax instruments can provide the flexibility needed to maximize the emissions coverage while accommodating socioeconomic priorities and variances in building type, asset class, and market type.138 Hybrid models could also help to minimize price volatility, which would appeal to investors and governments.
At a sectoral level, financial regulation and policy incentives are being used to target high-emitting industries—including the buildings sector:

The Bank of **Bangladesh** has mandated that all commercial banks must provide a discounted financing rate of 9 percent for the extra cost of green measures applied to light industry buildings.\(^142\)

The **Lebanese** government has implemented a National Energy Efficiency and Renewable Energy Action initiative, which encourages commercial banks to provide cheap credit to the private sector for renewable energy, energy efficiency, and green building projects.\(^143\) The Lebanese Central Bank reduces the obligatory reserve requirements of commercial banks that provide green loans to such projects by an amount equal to 100 percent to 150 percent of the loan.\(^144\)

In **Indonesia**, the Financial Services Authority (Otoritas Jasa Keuangan) issued a national regulation that requires banks to report annually on their green financing products and services; growth in green finance portfolios; organizational, governance, and risk management changes to ensure their compliance with ESG norms; and internal capacity building related to sustainable finance. This regulation has pushed banks to recognize green assets as a separate asset class and develop green growth strategies. A second regulation which defined green bonds in terms of eligible use of proceeds, reporting requirements, and obligatory third-party verification, included certified green buildings as an eligible use of funds. Building on this foundation, policymakers are exploring how lower mortgage rates could be made available for green homes. The Bank of Indonesia has announced a 5 percent increase in the maximum loan-to-value ratio for green property.