Green buildings represent a major global investment opportunity, with buildings making up the largest segment of the US$ 231 billion energy efficiency market. In the EBRD’s countries of operations, buildings also represent a challenge. Currently, building renovation rates and practices in these countries are far below Paris Agreement targets. Furthermore, most of these efforts are not cost-optimal due to capacity and supply-chain limitations, as well as regulatory and policy constraints. Combining a decade of green finance experience with technical assistance and policy dialogue, the EBRD’s Green Economy Transition (GET) approach aims to turn green building challenges into solid investment opportunities with clear economic, environmental and social benefits.
GREEN BUILDING INVESTMENTS

In developing countries and transition economies, rising populations and increased purchasing power are expected to drive considerable growth in construction and real estate. As building investments grow, energy consumption and CO₂ emissions will also rise: buildings currently account for over a quarter of global CO₂ emissions and more than a third of the world’s energy consumption. With the global building area likely to double by 2050, energy consumption in buildings is expected to increase by 50 per cent. To keep international climate goals on track, substantial and advanced green building investments are needed in the EBRD’s countries of operations, along with significant changes to building policies, standards and technologies.

AN URGENT NEED

In recent years, countries in which the EBRD invests have taken important steps to curb CO₂ emissions and environmental degradation. Despite these efforts, they still lag significantly behind the EU-28, with four times the average energy consumption per unit of GDP and five times the average carbon intensity. This is largely due to the prevalence of fossil fuels and historic subsidies in these countries, which have generated artificially low prices for electricity and heat. However, the social and environmental costs have been high: with 9 of the 10 fastest-warming cities in the world located in the EBRD region, these areas are extremely vulnerable to the effects of climate change. Particulate emissions in many cities far exceed levels considered safe for human health, while water pollution and other forms of environmental damage remain major problems.

THE EBRD’S GREEN ECONOMY TRANSITION (GET) APPROACH

Preserving and improving the environment are central features of a modern, well-functioning market economy and therefore key goals of the transition process that the EBRD was set up to promote. Building on a decade of green finance experience, the EBRD launched the GET approach in 2015 to put investments that bring environmental and climate benefits at the heart of the Bank’s mandate. GET combines innovative green finance with technical assistance and policy dialogue to promote the growth of the green economy in its countries of operations. Through GET, the EBRD intends to increase its volume of green financing from an average of 24 per cent of annual business volume over the previous 10 years, to 40 per cent by 2020.

GREEN BUILDING RENOVATIONS VITAL TO MEETING PARIS AGREEMENT TARGETS

Although many new buildings in the EBRD’s countries of operations are three to four times as energy efficient as existing ones, a high proportion of existing buildings will still be standing in 2050. To reach minimum targets defined in the Paris Agreement, rates of basic green renovations of existing buildings in these countries must reach 6 to 8 per cent by 2040 (to exceed these standards and achieve nearly zero carbon performance, rates of advanced, deep renovations would need to reach 1.5 per cent by 2025 and 2 per cent by 2040). However, these countries are far behind renovation targets: only 1 per cent of existing buildings have been renovated to meet minimum standards, and renovation efforts typically fail to exploit the full potential of energy efficiency.

INVESTING IN PEOPLE AND PLANET

Undertaking green renovations and ensuring high green building standards for new builds can reduce energy consumption and decrease greenhouse gas (GHG) emissions. They can also help limit climate-related risks that buildings face, such as extreme weather events, heat stress and reduced water availability. Green building investments are not just about mitigating climate change, however; they also yield important socioeconomic benefits.

In 2015 the building renovation market in the EU-28 was valued at nearly €109 billion and was responsible for 882,900 direct and indirect jobs. The installation of energy efficient technologies is labour-intensive, so green building investments help drive local employment growth in the EBRD region. By 2020 investments in energy efficiency in the European green buildings sector are expected to deliver around 19 net jobs for each €1 million invested.

Green buildings also have an important health dimension. Better insulation and more effective heating systems help ensure adequate warmth in cold climates, while extra daylight and better ventilation are associated with further health benefits. According to an EU study, standard energy efficiency renovations could yield health cost savings of €33-€73 billion per year by 2020. With high-efficiency renovations, this figure increases to €64-€140 billion.

A 2016 survey by the World Green Building Council found that social impact was a main driver for green building investments throughout Europe. This was particularly evident in Poland, where nearly three quarters of respondents cited socioeconomic benefits – including worker productivity and supporting domestic economies – as their top reasons for investing in green buildings. These benefits were also considered important by a large percentage of other EU respondents.
Green buildings are often difficult to finance at scale due to the fragmented nature of the market, capacity constraints, information asymmetries, and split incentives between building owners and those in control of public assets and energy budgeting. Combining innovative green financing with technical assistance and policy dialogue, the GET approach helps overcome these challenges and create alignment to exploit the full potential of green-building investments.

**GREEN FINANCING INSTRUMENTS**

The GET approach enables both direct and indirect green building investments through a range of innovative channels and financial instruments, including:

- direct finance, including debt, equity or quasi-equity financing with a focus on green investments and use of advanced resource-efficiency techniques
- intermediated finance through local financial institutions or through non-financial intermediators, such as utilities, energy service companies (ESCOs) and supply chain
- large-scale public-private partnership (PPP) framework programmes (greenfield and brownfield public buildings)
- sustainable property funds (commercial and private residential buildings)
- performance-based finance and other market-based climate finance products that provide additional revenues for EBRD clients
- green-labelled property bonds (commercial/public buildings)
- structured financing: EPC/ESCOs/forfeiting (residential, public buildings).

If market barriers are very high, donor-funded concessional elements, grants and incentives are available to help early movers implement selected measures. The EBRD’s Finance and Technology Transfer Centre for Climate Change (FINTECC) supports the implementation of advanced climate technologies with low market penetration rates.

**TECHNICAL ASSISTANCE**

The GET approach offers technical assistance to overcome market barriers, provide know-how and ensure the successful planning and implementation of green building projects, including:

- assistance in structuring transactions that will benefit from carbon finance
- market analysis
- resource efficiency audits, feasibility and pre-feasibility studies of specific technologies and investments
- training (for example, on energy management and internationally recognised sustainability certification)
- awareness raising and/or green marketing and promotion.

**POLICY DIALOGUE**

Policy dialogue is an integral part of the Bank’s business model for implementing GET. Through policy dialogue, the Bank works with governments and other stakeholders to remove institutional and market barriers to green building investments. The EBRD deploys effective policy tools that complement and support its innovative financial instruments to incentivise the sustainable use of resources.

*Please see table “Policy tools for green building investments” overleaf.*

**€15 BILLION OF GREEN BUILDING INVESTMENTS ENABLED UNDER GET APPROACH**

Under the GET approach, the EBRD has financed more than 200 large-scale projects for the development, upgrade and refurbishment of more than 62,000 building assets, with the overall building area exceeding 25 million square metres. These investments enabled €15 billion of green building investments, including €2 billion from the EBRD. Investments in building assets under the GET approach vary from a few thousand euros to over €100 million in larger, structured finance projects. The EBRD can fund 30 to 100 per cent of investment costs. The Bank’s green building investments include commercial, public and residential buildings and yield aggregate lifetime (15-25 years) savings of 71,000 GWh of energy and 335 million tonnes of CO₂. Finance is available through different direct and intermediate channels.
<table>
<thead>
<tr>
<th>BARRIER TO GREEN BUILDING INVESTMENTS</th>
<th>EXAMPLE POLICY TOOLS TO ADDRESS THE BARRIER</th>
<th>DESCRIPTION OF MAIN POLICY TOOLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building owners do not consider lifecycle cost and split incentives</td>
<td>Minimum energy performance requirements for buildings</td>
<td>Introduction of legislation, regulations and modifying building codes to mandate minimum energy performance requirements for buildings (for example, transposition of EPBD Art. 4 &amp; 5), based on local climatic conditions and costs.</td>
</tr>
<tr>
<td>Limited information suppresses demand</td>
<td>Energy Performance Certification</td>
<td>Energy Performance Certification (for example, transposition of EPBD Art. 11) gives information on building performance – ensuring that it is communicated in a clear and consistent way – and associated support for data management and IT systems.</td>
</tr>
<tr>
<td>Up-front cost, constrained budgets</td>
<td>Mandatory public renovation programmes</td>
<td>Mandatory renovation programmes covering 3% of floor area per year of sizeable public buildings (for example, EED Art. 5) helps allocate government budget to green building investments.</td>
</tr>
<tr>
<td>Lack of technical capacity in the market</td>
<td>Public procurement of high energy efficiency buildings</td>
<td>Government acts as a first-mover through public procurement of high energy efficient buildings (for example, EED Art. 6) helps allocate government budget to green building investments.</td>
</tr>
<tr>
<td>Dispersed actors and transaction costs</td>
<td>Energy efficiency obligation (EEO) schemes</td>
<td>Energy efficiency obligation schemes (for example, EED Art. 7) engage energy distributors and/or retail energy sales companies to help customers save energy.</td>
</tr>
<tr>
<td>Lack of overarching strategic framework</td>
<td>National Energy Efficiency Action Plans (NEEAPs)</td>
<td>National Energy Efficiency Action Plans (NEEAPs) (for example, EED Art. 24) set out estimated energy consumption and planned energy efficiency measures, providing a strategic framework.</td>
</tr>
<tr>
<td>Existing legal frameworks limit effectiveness of ESCO business models</td>
<td>Legislative and regulatory reform for ESCOs / Energy Performance Contracts</td>
<td>ESCO market assessments to identify potential barriers for ESCOs. Amendments and / or introduction of primary law and secondary regulation(s) to enable ESCO business models through Energy Performance Contracts.</td>
</tr>
<tr>
<td>Lack of information</td>
<td>Information and awareness raising</td>
<td>Website development, workshops, targeted information campaigns.</td>
</tr>
<tr>
<td>Low government capacity</td>
<td>Support for voluntary, industry-led green building certification</td>
<td>LEED and BREEAM certification.</td>
</tr>
</tbody>
</table>
Cities are a major driver of climate change and environmental impact. Globally, cities account for up to 70 per cent of energy use and 80 per cent of greenhouse gas (GHG) emissions – figures which are set to rise over time. Cities also host most of the infrastructure exposed to risk from climate change, requiring them to invest in resilience as well. Further, energy and resource use in cities creates major environmental concerns ranging from the quality of air, to pressure on water resources and loss of green areas due to land use change. Urban activities and how they are organised are a key determinant of GHG emissions, resilience and wider environmental health, and deeply affect the overall quality of life of urban populations. The EBRD is taking up the challenge of supporting cities in their climate and environmental actions through the development of its Green Cities Framework.

The EBRD’s Green Cities Framework was developed to systematically and comprehensively address the common environmental and climate change challenges that cities face. Eligible cities must:

- have a population of at least 100,000
- undertake an initial project in urban infrastructure with meaningful climate or environmental benefits
- commit to develop a Green City Action Plan (GCAP) to help municipal authorities and key urban areas.

The Framework is helping the Bank to scale up investments in the municipal sector. Since November 2016, four projects have been signed under this Framework in Batumi, Belgrade, Chisinau and Sarajevo. Six more projects are in the immediate pipeline.

The Framework’s key tool is the GCAP. This helps municipal authorities and key urban stakeholders to identify, benchmark, prioritise and guide green city actions. Importantly, the GCAP leads to a prioritised green investment plan for the city – a necessary condition for addressing the pressing environmental challenges faced by all cities in the EBRD’s countries of operations.

The EBRD has completed two GCAPs to date in Tbilisi and Yerevan. In the case of Yerevan, many of the GCAP actions and investments relating to air pollution, water quality, energy efficiency in buildings and climate change are being integrated into the city’s five-year capital expenditure plan. This lays the foundation for a strategic approach to future green investments there.

The successes in Yerevan and Tbilisi are being rolled out to other cities. A GCAP is currently being prepared for Tirana and a further six GCAPs are scheduled to be initiated by June 2018.

The EBRD provides financing and technical support to municipalities and private companies undertaking urban regeneration projects. Many cities have been left with dilapidated brownfield sites consisting of former industrial or residential estates – sometimes close to, or directly in, their downtown areas. Some of these brownfield sites are contaminated, so environmental remediation is needed before any further development work can begin.

Urban regeneration can be turned into a commercially attractive opportunity with significant social and environmental benefits, but only with cooperation among public and municipal landlords, commercial entities and local communities. In addition to providing debt and equity financing, the EBRD helps foster alignment among interested parties by providing donor-funded technical support for master planning, environmental risk assessment, policy dialogue, inclusion and resource efficiency. Recent EBRD urban regeneration projects have taken place in Egypt, Jordan and Ukraine.

CASE STUDY
REGENERATION OF DOWNTOWN CAIRO

In 2016 the EBRD signed a loan of up to EGP 145 million (€6.9 million equivalent) with Al Ismaelia for Real Estate Investment to finance the refurbishment of a number of buildings located in the historic area of downtown Cairo. The project aims to revitalise the centre of the capital city of Egypt by preserving its architectural grandeur, while restoring and upgrading the buildings to suit contemporary requirements for commercial and entertainment uses.

The Bank also mobilised technical assistance funds from the government of Austria to support the regeneration of downtown Cairo through a strategic implementation plan, energy audits and policy dialogue in the field of sustainable urban regeneration. The sustainability assessment method was tailor-made for cultural heritage in collaboration with the Egyptian Green Building Council and will be used for further projects across the country.
Local financial institutions play a key role in growing the green economy in the EBRD’s countries of operations, but are often reluctant to invest in green building projects due to insufficient scale, experience, expertise and know-how. Under the GET approach, Green Energy Finance Facilities (GEFFs) help stimulate green economy growth by providing credit lines to local partner financial institutions (PFIs) for on-lending to small and medium-sized enterprises and homeowners wishing to undertake green building projects. Credit lines are complemented with technical assistance for PFI capacity-raising and project assessments, and occasionally with low-intensity grants to reward and offset the cost of adopting advanced technologies.

The GEFF programme operates through a network of more than 120 local financial institutions across 24 countries, targeting the industrial, commercial, residential and municipal sectors. To date, GEFFs have facilitated the refurbishment of 60,832 buildings. Interestingly, the design of dedicated residential facilities allows the processing of tens of thousands of applications for recognised technologies that meet minimum energy performance requirements.

### Key Stats 2006-16

<table>
<thead>
<tr>
<th>Buildings refurbished</th>
<th>Total budget (€, million)</th>
<th>EBRD loan (€, million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60,832</td>
<td>1,148,243</td>
<td>724,321</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GET investment in buildings (€, million)</th>
<th>Primary energy savings (MWh/year)</th>
<th>CO₂ emissions reduction (tonnes/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>463,854</td>
<td>926,309</td>
<td>325,535</td>
</tr>
</tbody>
</table>

### Facilitating Public-Private Partnerships

Specific products have been developed to finance public buildings under public-private partnership (PPP) arrangements between public authorities and private concessionaires. The EBRD has introduced a PPP framework for the development, construction and operation of public hospitals under long-term, concessional agreements with private operators in Turkey. In 2014, Turkey’s Ministry of Health PPP programme launched with total investments of €12 billion to deliver more than 60 new hospitals with more than 50,000 beds. The EBRD offered financing on commercial terms under its A/B financing structure to interested concessionaires upon conclusion of specific hospital PPP tenders.

The EBRD also provided the Turkish health ministry with technical assistance for value-for-money analysis on PPP structures, as well as contract support to train a dedicated PPP unit inside the ministry for monitoring. As part of the EBRD engagement, the Bank assisted the ministry in establishing advanced technical requirements at levels of best industry practice. These include advanced thermal protection; efficient mechanical and electrical services; on-site trigeneration; use of renewables; advanced, open-protocol, integrated

### CASE STUDY

**Residential Energy Efficiency Credit Line, Bulgaria**

The first residential GEFF was the Residential Energy Efficiency Credit Line (REECL) in Bulgaria. REECL provides loans to Bulgarian banks to on-lend to individuals, homeowners’ associations, utility companies and energy service companies for energy efficiency and renewable energy improvements in residential buildings. The credit line of over €100 million is the result of cooperation between the EBRD, the Bulgarian government and the Kozloduy International Decommissioning Support Fund. Launched in 2005, REECL has achieved significant outcomes in Bulgaria’s carbon-intensive and fragmented residential sector, including annual cost savings of €19 million, energy savings of 240,132 MWh and reductions of 249,680 tonnes of CO₂ equivalent.

Among the innovative features of REECL is implementation of the demand-side measures by service providers, such as construction and heating companies. Service providers can reach thousands of dwellings with a comprehensive refurbishment delivering higher efficiency and savings. Veolia Energy Bulgaria is one successful example: together with REECL, the private heating company is implementing a project in more than 500 apartment buildings in Varna, Bulgaria. New heating systems, hot and cold water pipes, water circulation systems, individual water and heat consumption radio meters, and rooftop photovoltaic units have yielded significant benefits for both the residents and the environment.

Construction companies implementing building upgrades to energy efficiency class B+ and higher under REECL are issued with energy performance certificates. This approach kick-starts the EPC culture in the country, leading the market towards low carbon buildings and preparing Bulgaria for nearly zero carbon buildings after 2020, as required by the EU Building Directive.
GREEN BUILDING INVESTMENTS

Building and energy management systems; water-saving techniques and other sustainable measures, leading to state-of-the-art environmental performance and ultimately to lower operation costs.

By mid-2017 the EBRD had invested more than €762 million under the hospital PPP framework, including €570 million of climate and resource efficiency investments. Following the success of several hospital projects, the EBRD is currently working with national authorities to replicate the hospital PPP framework in other countries of operations, including Croatia, Kazakhstan and Romania, and will also consider extending the approach to other types of public buildings.

MAKING RETAIL MORE SUSTAINABLE

Retail is one of the most energy-intensive building sectors, with high levels of energy consumption year-round for air conditioning, heating, ventilation, lighting and food refrigeration. In the countries where the EBRD operates, energy performance benchmarks show that energy use in retail is four times higher than in other building sectors (such as residential and office), and almost twice as high as retail buildings in developed markets.

The EBRD was the first international financial institution to develop a dedicated approach to promoting energy efficiency in retail buildings. As of mid-2017 the EBRD had provided €550 million for green retail investments in 15 corporate projects in its countries of operations.

In addition to financing, the EBRD provides technical assistance for retail projects, including identification and assessment of green investment plans, capital appraisal and development of smart-retail store concepts that incorporate best international practices. All aspects of the building that are important for higher environmental performance are considered, including the design and quality of building infrastructure, professional facility management and engagement with building occupants (commercial tenants, residents and so on).

To facilitate green investments in retail, the Bank introduced the Sustainable Enterprise and Environmental Diagnostic (SEED) toolkit in 2015, which provides quick screening and benchmarking of retailers in EBRD countries of operations. The Bank offers further assistance by conducting feasibility/pre-feasibility studies of specific technologies (for example, efficient mechanical and electrical services, energy management systems, logistic management tools, water and waste management techniques) and establishing key performance indicators for resource efficiency. The Bank has assessed dozens of retailers, including large, multinational chains with hypermarket, supermarket or convenience store formats, as well as smaller local chains with convenience or discount stores. Areas of improvement include: advanced energy efficiency in stores and warehouses, modern logistic infrastructure, resource efficiency in the supply chains, energy and water management, environmental management, carbon footprint reporting and so on.

RAISING STANDARDS THROUGH SUSTAINABLE PROPERTY FUNDS

Sustainable property funds are based on a set of criteria encompassing all aspects of sustainability and resource efficiency that are applicable to a portfolio of buildings. After an initial sustainability assessment, a plan for sustainability-focused upgrades is established, along with measurable objectives that align with and exceed national targets. Sustainability performance assessment is conducted by an independent and accredited third party.

Building occupants are involved and contribute to the resulting environmental performance improvements in a number of ways, depending on the type of building. Examples include the use of green leases in buildings with commercial tenants, community engagement plans for student or other accommodation assets, and awareness-raising activities in the hotel and lodging sector. In addition, a resource-efficiency facility management contract can ensure that a committed and professional management team makes optimal use of building infrastructure during the operational stage.

CASE STUDY
HINES POLAND SUSTAINABLE INCOME FUND

In 2014 the EBRD assisted Hines Poland – a privately owned Polish real estate investment firm with a presence in 19 countries – in the development of the first green property fund in the Bank’s central and eastern European region. With a capital commitment of €50 million, the EBRD is one of the largest partners of the Hines Poland Sustainable Income Fund, which was valued at €155 million at final closing. The fund aims to raise standards of business conduct through sustainability improvements to its acquired assets. Requirements include: (i) making sustainability improvements to existing buildings, taking into account best international practice; (ii) introducing sustainability-focused facility management at asset and fund level; (iii) targeting opportunities for more efficient and less resource-intensive use of buildings by their occupants; and (iv) documenting fund achievements with internationally recognised certification, following LEED or BREEAM schemes. Fund activities are expected to result in the emergence of new policies (such as green leases, sustainable facility management) and standards in the Polish market. The concept is also expected to be replicated throughout central and eastern Europe.
PROMOTING GREEN ECONOMY AND CAPITAL MARKET GROWTH THROUGH GREEN-LABELLED PROPERTY BONDS

The EBRD has been a leading issuer of Green Bonds since 2010. The proceeds of Green Bonds are earmarked to support projects in energy efficiency, renewable energy, water management, waste management and environmental services and sustainable public transport. In 2017 the EBRD’s Green Project Portfolio included more than 388 projects worth €3.8 billion. The EBRD’s largest green issue of US$ 650 million three-year bonds came in July 2016.

The Bank also supports capital market transactions by purchasing green-labelled and climate bonds issued by clients. In late 2016 the EBRD backed a €288 million bond issued by Rönesans Holding to finance a state-of-the-art PPP hospital in Elazig, Turkey, making it the country’s first greenfield infrastructure project bond. To enhance credit for the corporate client, the Bank pledged to provide €89 million as interim liquidity to mitigate the risks associated with construction and operation.

Drawing on these experiences, the EBRD is actively supporting green capital market development in its countries of operations by offering corporate clients valuable assistance, knowledge and guidance to turn their normal bonds into green and/or climate bonds. The Bank is also working with the Climate Bond Initiative, participating in technical working groups, including one specifically for buildings, and discussing standards and requirements for green-labelled bonds in different sectors.

TARGETING GREEN BUILDING AGGREGATORS WITH STRUCTURED FINANCE PRODUCTS

The EBRD endorses a wide range of structured finance products through non-financial aggregators to unlock the considerable potential of energy efficiency in the fragmented building sector. In 2016, the Bank extended a loan of up to €50 million to the Lithuanian Public Investment Development Agency to finance demand-side energy efficiency investments in residential apartment buildings. This project aims to reduce energy waste and CO₂ emissions by about 40 per cent.

Other important aggregators for financing energy efficiency investments in the building sector include private energy service companies (ESCOs). The EBRD recruits private ESCOs to design, fund, maintain and operate energy efficiency improvements for public beneficiaries. These investments are repaid from the resulting savings, often through a performance-based contract. Since savings are realised over a long period, the ESCO can on-sell expected receivables (a stream of future energy savings) and refinance itself for future investments.

The EBRD also seeks to promote demand-side energy efficiency financing through utilities. Launched in 2015 and expected to run until 2018, the DESIREE GAS project aims to support the transition from carbon-intensive electricity to natural gas in Bulgarian households. With the goal of achieving energy savings of 142,000 MWh per year, this project provides funding, grants and technical assistance to support gas installations, high-efficiency gas water heaters and space heating in single-family and multi-family homes. Furthermore, the project is expected to achieve additional yearly energy savings of 70,000 MWh by switching from coal, biomass and oil to natural gas, resulting in higher combustion efficiency.

CASE STUDY
LATVIAN BALTIC ENERGY EFFICIENCY FACILITY

The Latvian Baltic Energy Efficiency Facility (LABEEF) is a fund supported by the EBRD that was established to purchase receivables (a stream of future revenues) from completed and certified ESCO projects. This model allows resident associations and managers of public buildings to engage with ESCOs to carry out energy efficiency upgrades, for which ESCOs can access financing. The fund’s approach enables sustainable financing for energy efficiency projects without relying on grant funding, and does not place a financial burden on homeowners and/or occupants. It is worth noting that 70 per cent of Latvians reside in Soviet-era buildings with heat losses of over 50 per cent. Under LABEEF’s model, residents do not have to make extra payments for refurbishment and insulation works, as these costs are covered from the reduction in their energy bills. In most cases, these energy efficiency upgrades are combined with structural repairs designed to extend the life of buildings, hence improving their value.