Investing in Climate Resilience in Emerging Economies: EBRD’s Action on Climate Change

Marta Modelewska
Principal Manager, Climate Change Adaptation

Brussels, 27-28 September 2016
Climate Change in emerging economies: The financing challenge

- The International Energy Agency estimated **US$ 8-13 trillion** are needed for energy efficiency investments in transport, industry and buildings between 2014-2035.
- The IPCC 5th Assessment Report estimated **US$ 6.4 trillion** are needed in 2010-2029 for energy efficiency investments across sectors for a pathway consistent with a +2°C increase.
- MDBs delivered **US$ 103 billion** of climate finance in 2011-2014.
Mainstreaming green financing: EBRD strategies

- Since 2006 the EBRD has adopted cross-sectorial strategies **to mainstream** across the Bank’s operations, and **to increase** the share of Bank business represented by measures which enhance the **efficient use of energy and resources (water, materials)** and **contribute to the mitigation of, and adaptation to, climate change**.
- The latest strategy, the Green Economy Transition (GET) aims to further scale up the Bank’s green business, and to include new areas of activity, such as environmental protection and technology transfer.

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<tr>
<td>Energy Efficiency banking team</td>
<td>Sustainable Energy Initiative</td>
<td>Sustainable Resources Initiative</td>
<td>Green Economy Transition</td>
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<tr>
<td>- Energy efficiency</td>
<td>- Renewable energy</td>
<td>- Water efficiency</td>
<td>- Environmental protection</td>
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<td>- Renewable energy</td>
<td>- Material efficiency</td>
<td>- Adaptation to climate change</td>
<td>- Technology transfer</td>
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EBRD Climate Adaptation Portfolio: Adaptation finance by geography

€790 million adaptation finance invested between 2011 and 2015 (in 123 projects, over €2.7 bn ABI)

Central Europe and Baltics
Adaptation finance €44 m

Russia
Adaptation finance €32 m

Central Asia
Adaptation finance €132 m

Eastern Europe and Caucasus
Adaptation finance €44 m

South-Eastern Europe
Adaptation finance €279 m

Turkey
Adaptation finance €101 m

SEMED
Adaptation finance €155 m

Cross-regional assignments
Adaptation finance €4 m
EBRD Climate Adaptation Portfolio

Central Asia
Central Europe and Baltic States
Eastern Europe and the Caucasus
Russia
South-eastern Europe
Southern and Eastern Mediterranean
Turkey
Regional
Total

Adaptation portfolio by region (mln EUR)

Turkey 53 mln
Central Asia 54 mln
SE-E 7 mln
SEMED 96 mln

Adaptation portfolio by sector (mln EUR)

Municipal infrastructure
Manufacturing
Property & Tourism
Natural Resources
Power & Energy
Financial Institutions
Transport
Agribusiness
Total

GCF as potential source of funding for projects in the region
The Fund promises to be a source for many of the EBRD’s CoO (not all, e.g. Turkey)

Kyrgyz Republic becomes eligible for PPCR funding
EBRD involved in scoping mission, several CoOs (SEMED) become eligible for private sector funding
EBRD GREEN ECONOMY TRANSITION

TOOLS FOR MAINSTREAMING GREEN FINANCE

PROJECT HIGHLIGHTS
Mainstreaming green financing: EBRD business model

Targeted activities:
- Energy and resource audits to identify green investments
- Integrated technical, financial and marketing teams to support client banks in developing sustainable energy lending
- Assessments of risks related to climate vulnerabilities
- Transition gaps and market scoping studies

Tailored financing instruments
- Direct financing
- Indirect-financing via local banks (SEFFs)
- Investment grant support for climate technology transfer
- Blended concessional finance so as to overcome affordability and risk perceptions

Working with governments
- To address sustainability and environmental market failures
- To strengthen the institutional and regulatory context and create optimum conditions for green investments to take place

September 2016
Mainstreaming green financing: Business development tools

**CLIMATE VULNERABILITY ASSESSMENTS**
Supporting businesses and utilities which are most exposed to future climate change impacts to identify risks and integrate adaptation measures in investment programmes.

**RESOURCE EFFICIENCY AUDITS**
Offering audits to the Bank’s clients who have resource efficiency potential, to identify and prioritise resource efficiency investments based on the financial return from input cost savings.

**SUSTAINABLE ENERGY FINANCING FACILITIES**
Extending credit lines to partner banks for on-lending to local projects, together with dedicated technical assistance teams who help identify and assess green investment opportunities, train up banks’ staff and develop marketing activities.

**TECHNOLOGY TRANSFER SUPPORT**
Identifying clients with potential to invest in higher resource efficiency technologies in early transition markets and supporting them with partial investment grants that help overcome first-mover risks and affordability barriers.

**BLENDING OF CLIMATE FUNDS**
Sourcing and structuring dedicated resources from international providers of climate finance for blended financing operations for terms appropriately matching the risk and duration profiles of green projects.

**POLICY DIALOGUE**
Working with governments and authorities to environmental market failures, strengthen the institutional and regulatory context and create optimum conditions for green investments to take place.

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EUFIWACC Guidance on integrating climate resilience into project development and implementation

European Financing Institutions

- Agence Française de Développement
- Council of Europe Development Bank
- European Bank for Reconstruction & Development
- European Commission – Directorate-General for Climate Action
- European Investment Bank
- KfW Development Bank
- Nordic Investment Bank

Expert agencies

- Climate Service Center Germany (GERICS)
- Joint Assistance to Support Projects in European Regions (JASPERS)

Consultancies

EBRD GREEN ECONOMY TRANSITION

TOOLS FOR MAINSTREAMING GREEN FINANCE

PROJECT HIGHLIGHTS
CLIENT AND PROJECT
Support to the Tajik state-owned power utility for financing the rehabilitation of two units at the Qairokkum hydro power plant. The output of the plant supplies electricity to 500,000 people.
This will increase capacity of the plant from 126MW to 142MW and strengthen the plant’s resilience against the projected impacts of climate change.

TECHNICAL ASSISTANCE
Resources of US$ 4.7 million from the EBRD Special Shareholder Fund, the Government of Austria and the UK, support the technical evaluation of the project and capacity building to integrate climate resilience considerations in plant operations.

ADAPTATION COMPONENT
• Rehabilitation of hydro power plant to make its operation more climate-resilient
• Design of the upgrade to include climate resilience considerations by modelling future hydrology under a range of climate change scenarios
• Turbine upgrade and spillway capacities adjusted to optimise power generation and safety across the range of projected hydrological conditions.

FINANCIAL STRUCTURE
EBRD loan
PPCR* funds, of which
Loan
Grant
US$50 million
US$21 million
US$10 million
US$11 million

*The Climate Investment Funds (CIF) Pilot Programme for Climate Resilience (PPCR)

**Step 1: Data assembly and trend analysis**

- Meteorological data from Tajik Hydromet and Kyrgyz Hydromet
- Records on natural disasters (floods, landslides) from the Tajik National Committee for Emergencies
- Data and model outputs from IPCC sources
- **Sector Study**: Funded by USD 300K grant from PPCR

![Graph showing annual maximum discharge (m³/s) for Aqjar and Darband from 1949 to 2009](chart.png)

Step 2: Modelling Qairokkum’s capacity to generate electricity under different climate change scenarios

- Measured/simulated inflows 1957 to 2074
- Modelled energy generation 2015 - 2050
Step 3: Technical options for the rehabilitation of Qairokkum hydropower plant

**Scenario 1**

Scenario 1 envisaged a replacement of all turbines. Whilst the new turbines would have the same flow rate – 177 m³ per second – their efficiency would be much higher. The plant’s generation capacity after the rehabilitation would be 174 MW.

**Scenario 2**

Scenario 2 envisaged a replacement of all turbines and the installation of an additional turbine with a generation capacity of 40 MW. This would increase the generation capacity of the rehabilitated power plant to 214 MW.

**Scenario 3**

Scenario 3 envisaged a replacement of four turbines in the same way as proposed in scenario 1. The remaining two turbines would run as long as they could be maintained in operational condition. Thereafter, electricity generation would continue with four turbines - a scenario thought suitable for climate scenarios under which the water flow into Qairokkum’s reservoir would decrease over time.
Case study: ports in Morocco

PIANC Working Group 178 on Climate Change Adaptation for Ports and Navigation Infrastructure

Moroccan port authorities will be supported to benefit from emerging PIANC guidance
Case study: industrial water use in Turkey

- New Water Law in Turkey (2016) will introduce **cost reflective** water tariffs
- EBRD **shadow water price methodology** helps understand full costs associated with water use
- In this example, applying the shadow price would increase annual water use costs by **EUR 1.5 million**
- Significant implications for capital investment appraisal of **water reuse & recycling technologies**

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<th>Turkey, Marmara</th>
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<tr>
<td>Type</td>
<td>Industrial</td>
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<tr>
<td>Project</td>
<td>Water &amp; energy efficiency investments for a tissue paper mill</td>
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<tr>
<td>Main source</td>
<td>Energy and Water Efficiency Audit</td>
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<tr>
<td>Tariff (2013) EUR/m³</td>
<td>0.69 (not including wastewater; no charge for 20% of water pumped from wells)</td>
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<td>Shadow price EUR/m³</td>
<td><strong>2.60</strong></td>
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Thank you for your attention

MARTA MODELEWSKA
Principal, Climate Change Adaptation
Energy Efficiency and Climate Change Team

ModelewM@ebrd.com

EBRD, One Exchange Square
London, EC2A 2JN
United Kingdom
www.ebrd.com