CLIMATE CHANGE MITIGATION POLICY AND ACTION IN EASTERN EUROPE

PRESENTATION STRUCTURE

- THE EBRD IN SUMMARY
- CARBON EMISSIONS IN EASTERN EUROPE: OVERVIEW
- EBRD CLIMATE ACTION
- INNOVATIVE CLIMATE FINANCE INSTRUMENTS: SUSTAINABLE ENERGY FINANCING FACILITIES (SEFF)
- INTERNATIONAL CLIMATE FINANCE STATUS AND OUTLOOK
Where we operate

As of January 2011

01 Croatia
02 Czech Republic*
03 Estonia
04 Hungary
05 Latvia
06 Lithuania
07 Poland
08 Slovak Republic
09 Slovenia
10 Albania
11 Bosnia and Herzegovina
12 Bulgaria
13 FYR Macedonia
14 Romania
15 Montenegro
16 Serbia
17 Armenia
18 Azerbaijan
19 Belarus
20 Georgia
21 Moldova
22 Ukraine
23 Russia
24 Kazakhstani
25 Kyrgyz Republic
26 Mongolia
27 Tajikistan
28 Turkmenistan
29 Uzbekistan
30 Turkey

*as of the end of 2007, the EBRD no longer makes investments in the Czech Republic.
THE EBRD IN SUMMARY

EBRD ACTIVITY

Multilateral Development Bank established in 1991 and owned by 61 countries and 2 international organisations.

20 years of EBRD activity

- EBRD cumulative investment: $86 billion
- Total project value: $250 billion
- Total number of projects: 3,164

2010 EBRD activity

- EBRD 2010 investment: $12.6 billion
- Total project value: $55 billion
- Number of projects: 386
- Largest investment: $350 million
- Smallest direct investment: $70,000
CARBON EMISSIONS IN EASTERN EUROPE
HIGH CARBON INTENSITY

Carbon intensity of GDP in 2008

Kg CO₂ per US$ of GDP

Source: IEA, EBRD calculations.
Note: GDP in PPP exchange rates and 2000 prices.
CARBON EMISSIONS IN EASTERN EUROPE
ECONOMIC GROWTH AND CO₂ EMISSIONS

Index (1990=100)

GDP (PPP)

CO₂ emissions (energy related)
CARBON EMISSIONS IN EASTERN EUROPE
CARBON INTENSITY REDUCTION

Carbon intensity of GDP

Index 1990=100

Source: IEA, EBRD calculations.
Note: The carbon intensity of GDP (in tCO₂ per thousand US$ GDP in constant 2000 prices at PPP exchange rates) in 1990 is the reference scenario (100).
Decomposition of CO$_2$ emission changes in the EBRD region

<table>
<thead>
<tr>
<th>Year Period</th>
<th>Causes of Percentage Change in CO$_2$ Emissions</th>
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<tbody>
<tr>
<td>1990-1996</td>
<td>Carbon intensity of GDP, GDP per capita, Population, CO$_2$ emissions</td>
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<tr>
<td>1996-2002</td>
<td>Carbon intensity of GDP, GDP per capita, Population, CO$_2$ emissions</td>
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<tr>
<td>2002-2008</td>
<td>Carbon intensity of GDP, GDP per capita, Population, CO$_2$ emissions</td>
</tr>
<tr>
<td>1990-2008</td>
<td>Carbon intensity of GDP, GDP per capita, Population, CO$_2$ emissions</td>
</tr>
</tbody>
</table>

Source: IEA, EBRD calculations.
Decomposition of carbon intensity changes 1990–2008

Percentage change due to

- World
- US
- China
- EU-15
- EBRD

Carbon intensity of energy
Energy intensity of GDP region

Source: IEA, EBRD calculations.
CARBON EMISSIONS IN EASTERN EUROPE
ENERGY / CARBON PERFORMANCE DRIVERS

Firm level

- Private and foreign-owned firms more efficient than state-owned
- Large firms better than small
- Energy pricing – a key driver of energy intensity of firms

Country level

- Market oriented reforms and energy sector reform in particular
- EU accession process
- Kyoto commitments (smaller effect)
EBRD CLIMATE ACTION
ENERGY EFFICIENCY: CLIMATE ACTION IN TRANSITION ECONOMIES

- High energy intensity of transition economies provides high potential for climate change mitigation action through energy efficiency.
- This converges with shift of energy efficiency to top of climate change mitigation action agenda as it is realised that this area has largest potential to deliver carbon reduction at scale over short to medium term.
- Transition economies offer range of opportunities for climate change mitigation action in the:
  - Industrial sector given remaining importance of large energy intensive industries;
  - Power sector given ageing generation, transmission and distribution networks;
  - Renewable energy sector given very low development of new renewable energy sources; and
  - Municipal infrastructure sector particularly in district heating, urban public transport and water networks.
EBRD CLIMATE ACTION
SUSTAINABLE ENERGY INITIATIVE (SEI)

The SEI is the EBRD’s strategy to address climate change mitigation and adaptation in its region of operations focusing on energy efficiency and renewable energy across all its sectors and countries of operations.

SEI Phase 1 was launched in May 2006 with the initial objective to:

- scale up EBRD sustainable energy investments to €1.5 billion over 2006-2008
- strengthen the EBRD capacity to scale up delivery and “mainstream” climate and energy efficiency across the Bank’s operation
- expand the market for sustainable energy technologies in the region
EBRD CLIMATE ACTION
SEI PHASE 1 ACTIVITY AREAS

- Industrial energy efficiency in large industries in energy intensive sectors
- Energy efficiency for small energy users such as SME’s and residential users
- Cleaner power energy supply including fuel switch and generation, transmission and distribution efficiency improvement
- Renewable energy including hydro, wind and biomass
- Municipal infrastructure energy efficiency including district heating, public transport and water network
- Carbon market development
EBRD CLIMATE ACTION
SEI PHASE 2 ACTIVITY AREAS

Driven by demand and evolving global priorities SEI Phase 2 includes:

- Further scale-up of investment in SEI Phase 1 activity areas
- Development of new activity areas:
  - Building EE: dedicated financing schemes to pursue the vast opportunities in this field (buildings use 40% of final energy consumption in the region)
  - Biomass: developing programmes aimed at creating markets for biomass suppliers and for penetration of biomass technologies
  - Climate change adaptation
  - Climate change mitigation investments in natural resources sector (gas flaring)
  - Transport EE: development of urban public transport network, opportunities across integrated transport infrastructures (eg. railway operators); traffic management system
Technical assistance to overcome barriers: market analysis, energy audits, training, awareness raising; grant co-financing to provide appropriate incentives and address affordability constraints.

Working with governments to support development of strong institutional and regulatory frameworks that incentivise sustainable energy.

Projects with numerous clients, public and private, with a range of financing instruments.
SEI Phase 2 objectives:

- SEI EBRD financing: €3 to 5 billion (total project value of €9 to 15 billion)
- Carbon emissions reduction: 25 to 35 million tCO$_2$e/annum
- Technical assistance funding mobilisation target: €100 million
- Investment grant funding mobilisation target: €250 million

SEI Phase 2 results as of Q1 2011:

- SEI financing €3.9 billion reaching middle of target Phase 2 range. Total project value reached €21 billion above upper end of target range.
- Number of operations: 203 projects to date in Phase 2 (compared to 166 for Phase 1 as a whole)
- Carbon reduction impact of SEI projects to date expected at 18.6 million tCO$_2$/annum
- Funding mobilisation in Phase 2: €102 million for technical assistance
  - €212 million in investment grants
EBRD CLIMATE ACTION
SEI CUMULATIVE RESULTS 2006- Q1 2011

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<tbody>
<tr>
<td></td>
<td>SIGNED (€ MILLION)</td>
<td>N. OF PROJECTS</td>
<td>SIGNED (€ MILLION)</td>
</tr>
<tr>
<td>SEI 1 INDUSTRIAL ENERGY EFFICIENCY</td>
<td>679</td>
<td>56</td>
<td>848</td>
</tr>
<tr>
<td>SEI 2 SUSTAINABLE ENERGY CREDIT LINES</td>
<td>362</td>
<td>31</td>
<td>681</td>
</tr>
<tr>
<td>SEI 3 CLEANER ENERGY PRODUCTION</td>
<td>1010</td>
<td>19</td>
<td>1443</td>
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<tr>
<td>SEI 4 RENEWABLE ENERGY</td>
<td>227</td>
<td>14</td>
<td>487</td>
</tr>
<tr>
<td>SEI 5 MUNICIPAL INFRASTRUCTURE ENERGY EFFICIENCY</td>
<td>388</td>
<td>46</td>
<td>475</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2665</td>
<td>166</td>
<td>3933</td>
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EBRD CLIMATE ACTION
SEI INVESTMENT TREND 2006-2010

- SEI investment
- SEI % Share of total EBRD investment
EBRD CLIMATE ACTION
SEI REGIONAL COMPOSITION 2006-2010

SEI ACTIVITIES COVER 29 COUNTRIES OF OPERATIONS

- Eastern Europe and Caucasus: 28%
- Russia: 31%
- South-Eastern Europe: 15%
- Central Europe and Baltics: 11%
- Western Balkans: 7%
- Central Asia: 6%
- Regional: 2%

Countries:
- Albania
- Armenia
- Azerbaijan
- Belarus
- Bosnia and Herzegovina
- Bulgaria
- Croatia
- Czech Republic
- Estonia
- FyR Macedonia
- Georgia
- Hungary
- Kazakhstan
- Kyrgyz Republic
- Latvia
- Lithuania
- Moldova
- Mongolia
- Montenegro
- Poland
- Romania
- Russia
- Serbia
- Slovak Republic
- Tajikistan
- Turkey
- Turkmenistan
- Ukraine
- Uzbekistan
INNOVATIVE CLIMATE FINANCE INSTRUMENTS
SUSTAINABLE ENERGY FINANCING FACILITIES

Project Team

EU-funded contract

Credit lines

Market Development

Sub-loans

Technical support (project assessment)

Participating FIs

Grant incentives

SME customers

Technical support (project verification)

Monitoring Team

EBRD

EU-funded contract
INNOVATIVE CLIMATE FINANCE INSTRUMENTS
SEFF ACTIVITY AREAS

- SME INDUSTRIAL ENERGY EFFICIENCY
- SMALL SCALE RENEWABLE ENERGY
  - WIND
  - HYDRO
  - BIOMASS
  - SOLAR
- RESIDENTIAL ENERGY EFFICIENCY
### INNOVATIVE CLIMATE FINANCE INSTRUMENTS
**BENEFITS FOR BUSINESSES**

<table>
<thead>
<tr>
<th>Benefit</th>
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<tbody>
<tr>
<td>BETTER QUALITY</td>
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<tr>
<td>INCREASED CAPACITY</td>
</tr>
<tr>
<td>HIGHER PROFITABILITY</td>
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<tr>
<td>ENVIRONMENTAL BENEFITS</td>
</tr>
<tr>
<td>IMPROVED COMFORT LEVELS</td>
</tr>
<tr>
<td>SECURITY OF ENERGY SUPPLY</td>
</tr>
<tr>
<td>ENHANCED COMPETITIVENESS</td>
</tr>
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Sustainable energy investments make business sense

**EBRD criteria**

- IRR > 10%

In reality, EBRD SEFF projects average

- IRR = 20 – 25%
INNOVATIVE CLIMATE FINANCE INSTRUMENTS
SEFF IMPLEMENTATION

- US$ 2.1 billion of EBRD financing has been approved for Sustainable Energy Credit Lines
- 60 EBRD loan agreements with 46 banks
- Over 30,000 sub-projects approved to date
- Average size of sub-projects:
  - US$2 million for larger companies
  - US$1 million smaller companies
- US$700 million disbursed to end-borrowers
- Annual carbon reduction impact of sub-projects estimated at 2.2 million tons
INNOVATIVE CLIMATE FINANCE INSTRUMENTS
SEFF EXAMPLE 1: BAKERIES

- More efficient oven and heat recovery reduces energy consumption and increases production capacity
- An investment of €500,000 saves €100,000 per year
- Saves 300,000 m³ gas
- Over 25% IRR; payback in 7 years
INNOVATIVE CLIMATE FINANCE INSTRUMENTS
EXAMPLE 2: GREENHOUSES

- Reduced energy use by optimising heating, irrigation and humidity systems
- Investment of €500,000 results in annual savings of €300,000.
- Saves 860,000 m³ gas, 200 MWh electricity and 11% water per year
- 60% IRR; payback 2 years
INNOVATIVE CLIMATE FINANCE INSTRUMENTS
EXAMPLE 3: PAPER PRODUCTION

- Modernisation of lighting and compressed air systems and heat recovery on exhaust air
- An investment of € 500,000 saves over € 325,000 per year
- IRR > 50%
Nano-filtration technology eliminates heat requirement.

An investment of €750,000 saves over €1 million per year.

Saved 7.6 million m³ gas and 290 MWh electricity per year.

155% IRR; payback is less than one year!
Eliminated natural gas consumption for heating by switching to straw as fuel

An investment of €900,000 resulted in annual savings of at least €300,000.

Decreased natural gas consumption by 1 million m³ per year

40-50% IRR; payback 3 years
NOW OPERATIONAL IN 16 COUNTRIES

- Bulgaria
- Ukraine
- Bulgaria
- Romania
- Russia
- Hungary
- Moldova
- Poland
- Bulgaria
- Georgia
- Kazakhstan
- Slovak Republic
- Turkey
- Western Balkans
- Armenia
INNOVATIVE CLIMATE FINANCE INSTRUMENTS
SEFF SCALING UP

- Extensive outreach and origination activities of the EBRD SEFF Implementation Teams across countries

- Scaling-up opportunities include:
  - Sector focus (technology specific)
  - Technology focus (e.g. biomass boilers)
  - Vendor finance schemes
  - Lease finance
  - Risk-management products
FOR MORE INFORMATION

SEE www.ebrdseff.com
Financing has moved up as a key element of the climate negotiations with the Copenhagen Accord stating that:

“Scaled up, new and additional, predictable and adequate funding as well as improved access shall be provided to developing countries.”

The Copenhagen Accord further states that:

“The collective commitment by developed countries is to provide new and additional resources... approaching US$ 30 billion for the period 2010-2012 with balanced allocation between adaptation and mitigation.

In the context of meaningful mitigation actions and transparency on implementation, developed countries commit to a goal of mobilizing jointly US$ 100 billion a year by 2020 to address the needs of developing countries.”

The amount to 2012 is commonly referred to as Fast Start.
COP 16 at Cancun formalised the Copenhagen Accord:

- New financial mechanism
- Green Climate Fund announced
- Formulation work to start through Transitional Committee
- Target to deliver US$100 billion per year by 2020
- Progress in formulation to be reported to COP 17 in South Africa
- Fast-start commitments for US$30 billion for 2010-2012
INTERNATIONAL CLIMATE FINANCE OUTLOOK

Post-Copenhagen and post-Cancun context may include:

- a gradual implementation of a fragmented carbon market;
- a relatively weak and volatile carbon price in the short term;
- need to develop ‘early’ or ‘fast’ start measures to compensate for and to ensure that climate change mitigation investment sufficiently scaled-up to achieve inflection of global carbon emissions within the next 10 to 15 years;
- as climate financing framework likely to be designed gradually, important to ensure that initial steps and instruments allow to develop as broad and effective a set of climate programmes and projects as possible.