High-performance energy efficiency standards in buildings in UNECE Region.

Topic 6. Brief overview of issues related to financing of buildings

Dodonov Andrey, engineer/certified energy manager AEE
The main sources of building financing:

- State or municipal financing programs for EE modernization/capital repair of building
- Accumulation of own financing sources (in case of residential multi family buildings)
- Energy Service/Performance contract
- Loans
Brief overview of issues related to financing of buildings

Loans
Loans

Loans for EE modernization

- Energy assessment of building
- Analysis and selection of financing source
- Determination of subcontractors
- Financing phase, Approval and getting a loan
- Implementation phase of EE modernization

Typical steps of energy efficient modernization
Loans in Residential Sector

Loans in residential sector (Homeowners Association case)

- BANK
- HOMEOWNERS ASSOCIATION (HOA)
- SPECIAL ACCOUNT
- CONSTRUCTION SUBCONTRACTORS
- OWNERS

Payment

Implementation of EE modernization/capital repair
The main bank requirements for the loan:

- Decision of raising a loan must be taken at the common meeting of owners.
- The result of the meeting – a protocol, which includes the following information:
  - Record of common decision to raise a loan
  - List of planned works
  - Bill of quantities of prospective works
  - Terms and date of prospective works
  - Detailed information about subcontractors
  - Information about bank, terms and amount of the loan
Usually borrower must collect a package of necessary documents and submit it to the bank:

- This package includes:
  - Application form from the bank
  - A protocol of the owners meeting
  - Financial document confirming the collection of payments by owners
  - Documents confirming lack of debt to energy supply companies
  - Documents confirming the authority of person acting on behalf of HOA

- The borrower must calculate the monthly payment for each owner:
  
  \[
  \text{Monthly payment} = \text{Total loan} \times \frac{\text{Total area of apartment}}{\text{Total area of all apartments}}
  \]
Loans in Residential Sector

Objects of collateral:

• Common premises in possession of HOA/ or authorized person acting on behalf of HOA
• Established reserve fund – must be established by the common decision of owners
• Savings as a result of implementation of EE modernization
• Income from business activities carried by HOA – must be approved by the common decision of owners
• Accumulation of mandatory monthly payments as per regional capital repair program
Risks and the main barriers

- Difficult mobilization of owners of apartments with a decision to take a loan
- The lack of collateral of HOA/Condominium
- Low awareness among inhabitants regarding ongoing work on energy-efficient modernization or capital repair
- Weak development of EE lending
- To reduce the bank's risks - very high requirements for the condominium. It is difficult to comply with all eligibility criteria
- Usually low amount of loans issued by the bank
- Inability to provide a low rate of interest
Loans in Residential Sector

Example of financing scheme for buildings of International Financial Institutions (IFI)

European Bank for reconstruction and Development

Local bank partners

Lending

- Home owners
- HOA
- Housing managing company

Technical support

- SEFF
  (Sustainable Energy Financing Facility)

Technical support

Technical support
Example of technical support (RuSEFF)

I. Initial workshop with HOA
II. Energy assessment on site (Visual and instrumental inspection of the building)
III. Conceptual design development
IV. Presentation of results to HOA

I. Energy assessment on site
- Data collection and analysis of building’s energy consumption
- Analysis of existing condition of the building
- Analysis of existing design documentation
- Analysis and study of complaints from inhabitants
- Determination of the list of EE measures

II. Conceptual design development
- Development of practical recommendations for EE modernization (conceptual design)

III. Presentation of results to HOA

DESISION TO TAKE A LOAN by HOA
Brief overview of issues related to financing of buildings

Loans with Micro Financing Institutions
Loans in Residential Sector

Asian Credit Fund

- Microfinance organization
- 5 regions in Kazakhstan, 21 offices spread out the country, 4 branches
- USAID support – guarantee 1mln $, technical assistance for REEL development by ICF

Residential Energy Efficient Loan (REEL)

REEL loans are designed to provide homeowners in rural areas with the funds necessary for energy-efficient renovation and construction works.
Loans in Residential Sector

The REEL loans can be used for the following purposes:

- Repair and reconstruction of residential/commercial buildings:
  - Replacement of windows, doors, roofing and flooring
  - Insulation of window and door openings, roofing, attics, basements, flooring, and external and internal walls
- Installation and replacement of heating systems:
  - Replacement of radiators
  - Installation of energy efficient boilers
  - Access to gas pipelines and heating
- Installation of renewable energy sources
## Loans in Residential Sector

<table>
<thead>
<tr>
<th>Lending criteria</th>
<th>Documentation required</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loan amount—maximum KZT 1,000,000</td>
<td>Personal Identification</td>
<td>Zero collateral required</td>
</tr>
<tr>
<td>Loan term—maximum 36 months</td>
<td>Proof of Address</td>
<td>Flexible repayment</td>
</tr>
<tr>
<td>Annual effective and nominal interest rate from 40%</td>
<td>Construction authorization documents</td>
<td>Fast loan request review</td>
</tr>
<tr>
<td></td>
<td>Real estate ownership documents</td>
<td>Free repair and construction works advice</td>
</tr>
<tr>
<td></td>
<td>Marriage certificate (if applicable)</td>
<td>Long-term financial partnership</td>
</tr>
<tr>
<td></td>
<td>Business registration documents</td>
<td></td>
</tr>
</tbody>
</table>
Loans in Residential Sector

Free repair and construction works advice
Brief overview of issues related to financing of buildings

Energy Service Company /Performance Contract
Energy Service Company

Well known advantages of ESCO (Energy Service Companies)

- ESCOs guarantee energy savings and/or the provision of the same level of energy service at a lower cost by implementing an energy efficiency project.
- The remuneration of ESCOs is directly tied to the energy savings achieved.
- ESCOs typically finance, or assist in arranging financing, for the installation of an energy project.
- ESCOs retain an ongoing operational role in measuring and verifying the savings over the financing terms.
- Off-budget financing – „No“ capital investment.
- More professional planning, maintenance energy saving measures.
- Savings and quality guarantee.
- Outsourcing installation and operation risks.
Main barriers to energy efficiency investments

Main barriers

1. Lack of awareness of EE investments and technology

2. Lack of capacity in EE project development

3. Perceived risks and lack of understanding among financial institutions.
# Main barriers to energy efficiency investments

## Lack of information
- Technical know-how
- Economic know-how
- Effects on operation procedures
- Know-how of grants and consultancy possibilities
- Adequate potential for energy savings
- Measurement of savings
- Legal background and legal framework
- Skills of staff on contracting
- Procurement process

## Lack of motivation
- Lack of interest for energy savings
- Investor-user problem
- Staff cuts
- Lack of proven experience along all process
- Decision makers do not fully understand contract due to very complex agreements
Main barriers to energy efficiency investments

Market distortion

• Bad market conditions for ESCOs
• Lack of finance possibilities
• Lack of competition
• Lack of funding
• Lack of well educated and trained staff
• Limited creditworthiness of ESCOs
• Limited resources to fund project development
• High project development and transaction costs for bankable projects

Financial barriers

• Limited financial means
• Relatively long pay back times possible
• Trend of energy prices
• Availability of financing
• Availability of guarantees
Main barriers to energy efficiency investments

- Cherry picking - buildings with high investment needs may stay untouched
- Only short term investment by ESCO, long term is up to public financing (e.g. replace of window or new insulation of walls is not)
- Windfall profits (e.g. legal requirements)
- Legal responsibilities (e.g. in apartment buildings)
- Consumer protection
- Limited influence in users behavior (energy savings will increase profit of ESCO)
- Lack of ESCO wide standards
Building owner’s annual costs

Baseline – actual costs

Total costs (old):
- Fuel
- Electricity
- Maintenance Reinvestment
- Personell costs
- Miscellaneous

End of contract

Costs after renovation

Financial benefits for the facility owner

Contracting rate for ESCO:
- Refinancing
- Service and maintenance
- Risk assumption
- Comfort and value enhancement

Consumption costs (new):

Accounting monitoring through:
- Price adjustment (reference price baseline)
- Outside temperature adjustment (number of heating degree days)
- Usage adjustment

Investment

Time

Investment life cycle
Energy Service Company

Loan

BANK

ESCO

Monthly payment

Implementation of EE modernization

BUILDING

Payment based on savings

SUBCONTRACTORS, VENDORS

Payment

Works, equipment, service
Energy Service Company

ESCO

BUILDING

Implementation of EE modernization

Payment based on savings

Payment

SUBCONTRACTORS, VENDORS

Works, equipment, service
Energy Service Company

**BANK**

- Loan, including ESCO margin
- Monthly payment

**ESCO**

- Implementation of EE modernization
- Payment

**BUILDING**

- Works, equipment, service

**SUBCONTRACTORS, VENDORS**

- Works, equipment, service
Energy Service Company

BANK

Loan, including ESCO margin

ESCO

Monthly payment

BUILDING

Implementation of EE modernization

SUBCONTRACTORS, VENDORS

Payment

Works, equipment, service
Typical procedures for contracting

- Defining the rights and obligations
- Specifying penalties
- Methods of payment
- Building a pool of buildings
- Risk sharing, risk management
- Guarantees und obligations
- Target setting according to proven methodology
- Potential analysis based on independent audit
- Selecting suitable facilities
- Calculating the energy cost baseline based on proven data
- Calculating the amount saved by metering system
- Determination of contract period
Brief overview of issues related to financing of buildings

Funding mechanisms using guarantees
Brief overview of issues related to financing of buildings

State or municipal financing program for EE modernization/capital repair of building

Federal authority
Regional state authority
Municipality
Court
GUARANTEE AGENCY
BANK
Condominium
Inspection Authority

- Administrative or control measures
- Payment for EE modernization/capital repair
- Budget financing
- Loan
- Financing of capital repair
- Financing of EE modernization/capital repair

Guarantee

Apply for garanty

financing of subsidies of capital repair

subsiding the support of capital repair

subsiding of the low income family

Mandatory payments into accumulative fund
Funding mechanisms using guarantees

Guarantee of loans for capital repairs (Estonia)

STATE

Guarantee Agency KredEX

Providing guarantee for the MFB

BANK

HOA

Implementation of EE modernization

Fees for guarantee

1,2 – 1,7%
Funding mechanisms using guarantees

Attraction of financial resources on external market for loans for the renovation of housing (Estonia)

European Fund for regional development → Estonia

Guarantee Agency KredEX 46.7 mln. EURO

Development Bank of the European Council → Loan

Guarantee

Credit lines with low rate of interest

SWEDBANK → Preferential loans for renovation of 20 years 3.8 - 4.1%

SEB
Funding mechanisms using guarantees

Subsidies for the renovation of apartment buildings (Estonia)

• Complex reconstruction of the house includes works recommended by energy audit
• The amount of benefits depends on the result achieved

<table>
<thead>
<tr>
<th>The level of subsidies</th>
<th>Savings</th>
<th>EE Class achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>up to 30%</td>
<td>E( less than 250 KW*h/m²)</td>
</tr>
<tr>
<td>25</td>
<td>up to 40%</td>
<td>D ( less than 200 KW*h/m²)</td>
</tr>
<tr>
<td>35</td>
<td>up to 50%</td>
<td>C ( less than 150 KW*h/m²)</td>
</tr>
</tbody>
</table>