Applications in Financing Energy Efficiency in Buildings

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YEREVAN, ARMENIA
Promoting Residential EE Through HOME-OWNER ASSOCIATIONS

- **Home-Owner Associations** (HOAs or “Condos”)
  - Common now that apt ownership transferred to residents
  - High potential for HOAs to improve EE of their buildings

- **Slovakia Example**
  - **National laws** on management of every multi-family building:
    - A manager responsible for operation and rehab as decided by owners.
    - Homeowners make monthly payments that generate a Maintenance Fund.
    - HOAs officially registered → owners make loans and legal decisions
  - A **national association** that distributes educational materials on EE and organizes trainings for HOAs.
Typical EE Measures in Multi-Family Buildings in the Region

- **Building Envelope**
  - windows & entrance doors *weather-stripped or replaced*
  - thermal insulation *(e.g., polystyrene boards on outside walls; attic and underground spaces)*
  - reduced thermal bridges between balconies & façade

- **Building Systems and DH Substations**
  - improved interior heat distribution systems *(e.g., pipe insulation)*
  - waste heat recovery from air ventilation;
  - DH substation retrofits
Residential EE Retrofits: Sofia, Bulgaria

- **Retrofits:**
  - new roof
  - some windows and doors replaced
  - insulation of entire building envelope
  - weather-stripping
  - piping networks for heating and water (hot & cold) replaced as needed

- **Savings in Heating:** 60%

- **Financing:**
  - Subsidized loan to HOA
  - Each owner makes monthly payments
Residential EE Retrofits: Czech Rep.

- **Rumburk**
  - New windows
  - 7 cm polystyrene boards on outside walls
  - 5 cm polystyrene in underground space
  - 15 cm polystyrene in new roof
  - brush strips on doors

- **Brno-Novy Liskovec**
  - New windows and doors
  - 15 cm polystyrene on walls
  - reduced thermal bridges between balconies & façade
  - waste heat recovery from air ventilation
  - improved interior water & heat distribution systems

- **Savings:** both ~50% (heating)
- **Financing:** subsidized loans & grants from gov’t
Residential EE Retrofits: Gabrovo, Bulgaria

- **Building:**
  - Panel construction, 1986
  - 108 flats

- **Retrofits**
  - TRVs
  - Radiator reflector screens
  - Windows weather-stripped
  - New entrance doors
  - CFLs
  - Low flow shower fixtures
  - Substation retrofits

- **Savings:** 30%

- **Financing:**
  - Demo funded by UNDP
Residential EE Retrofits: 5 Bldgs in Slovakia

- **Retrofits:** comprehensive rehabilitation
- **Savings:**
  - 41% in heating
  - 28% in hot water
  - 34% in cold water
- **Financing:** mostly low-interest gov’t loans, + some grants and commercial loans
<table>
<thead>
<tr>
<th>Country</th>
<th>Program</th>
<th>Tool and delivery channel</th>
<th>Yearly Investment</th>
<th>Yearly Savings (GJ and CO2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>CO2 reduction and building rehabilitation programs</td>
<td>Reduced interest rate loans available through commercial banks</td>
<td><strong>Euro 1.1b</strong> / yr in loans - average across 9 years</td>
<td>4.4m GJ</td>
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<td>Euro 101-193m /yr cost of interest rate subsidies.</td>
<td>300k t CO2</td>
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<td>France</td>
<td>Tax credit for energy efficiency materials and renewable energies</td>
<td>Tax credit applied to purchase price of equipment and materials (refunds apply if don’t pay income tax)</td>
<td><strong>Euro 1.9b</strong> in 2007</td>
<td>Estimates not available</td>
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<tr>
<td>Poland</td>
<td>Thermal Modernization Fund</td>
<td>Reduced principal loans</td>
<td><strong>Euro 355m</strong> in total loans in 2007</td>
<td>5.5m GJ</td>
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<td>Euro 64m in loan subsidies in 2007</td>
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<tr>
<td>Hungary</td>
<td>Hungary Energy Efficiency Co-financing Program and Hungarian portion of CEEF.</td>
<td>Partial credit guarantees for loans made by commercial banks and ESCOs</td>
<td><strong>Euro 196m</strong> investment, using Euro 97m in loans based on Euro 37m in guarantees across program life.</td>
<td>0.7m GJ</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>EKO-ENERGIE Program – grants for energy savings and secondary energy sources</td>
<td>Yearly grant process using EU funds allocated by Czech Invest.</td>
<td><strong>Euro 41m</strong> using Euro 15m in subsidies from OPEI (call 1 2007)</td>
<td>0.5m GJ</td>
</tr>
</tbody>
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Source: Greenmax Capital Advisors
EE lending – European Experience

Lending at the building level starts slowly but experience shows that it grows exponentially when the regulatory framework and support is in place.

- Commercial financing for the modernization of apartment buildings is carried out in all European countries, the USA and Canada.
- Default is extremely rare (close to non-existent)
Condominiums – lesson learned from Southeast Europe

- very stable through the crisis
- stabilizing bank’s profitability
- effective if processed in line with lean methodology
- very often self-financed portfolio
- Cross-sales potential for universal or retail bank with large network
- easy from risk perspective
- no credit losses if done properly
- no big investments needed

**BUT**

- market is relatively small and specialized so you have to be the first and the best
- it is relation based business and word of mouth marketing
Energy linkage to Armenia’s economy

- 25-40% of product costs is associated with energy use, and growing
- Energy tariffs among the lowest in the region, low tariffs contribute to irrational energy choices
- Growing energy tariffs will threaten the competitiveness of individual producers and economy at large, as well as become a major affordability barrier for the low-income HHs
- Gradual replacement of energy generation capacity will lead to substantial tariff increase in the next 20-70 years
- Energy Efficiency will allow to control demand growth, delay need in new capacity development.
Condominium Lending – AN OPPORTUNITY

Ararat, Byblos, Anelik, Ameria, ACBA, Ineco banks, and NMC offer various energy efficiency loans

EBRD, KfW and ADF short- and medium-term plans include building loan schemes through commercial banks

Green for Growth Fund expanding its operations, current regional borrowing for households 40%

IFIs look for banks with experience in residential lending

- Most Buildings 30-60 years old
- 94% in bad/satisfactory condition
- 60% need investments in entrances and staircases
- 75% need roof repairs
- Capital investments required
Future Market Prospects

Size of Urban Residential Apartment Market

- New Residential Building Commissioning (1000m²)
- Available Residential Building Space (1000m²)

Year:
- 2012
- 2013
- 2014
- 2015
- 2016
- 2017
- 2018
- 2019
- 2020
Opportunities or Risks?

Success stories tell:

Habitat for Humanity of Armenia in partnership with INECO Bank Vanadzor
- 4 condominium loans
- 25-60% municipal subsidy
- 0% defaults
- 0% refusal to pay subsidy

Alliance to Save Energy interest-free micro lending revolving fund for condominiums
- 64 condominium loans in Gumri, Vanadzor, Yerevan
- 16% municipal subsidy (Vanadzor only)
- 0% defaults
- 0% refusal to pay subsidy

Average loan size: 0.4-3 M AMD
Why is Energy Efficiency Important for Banks?

In a competitive banking market, each bank struggles to win more clients. Energy efficiency offers:
- Diversification of Portfolio and access to new credit market
- Extra services for additional clients through cross sales
- Opportunities for accessing soft IFI resource (on-lending)
- Green profile

Condominium perspective: Reduce households utility bills, improve comfort through the performance of building systems or save money using energy efficient devices, while minimizing environmental impact and energy consumption
Customers: Condominiums / Home-Owners Associations

Over 90% of housing privatized and organized in condominiums

Total multi-apartment housing stock: 18,876 buildings

This covers 27.2 million m²

Number of Apartments: 434,892

Average service fees: 10-25 AMD/m², e.g.:

- Yerevan: 15-25 AMD/m²
- Marzes: ~10 AMD/m²
Energy Saving Potential in Multi-Apartment Residential Buildings

- 40% of Armenia’s energy consumption is in buildings
- Winter heating consumes 50%+ of household budget
- Average residential building has 30-50% energy saving potential.
- Average European buildings consume 120-160kWh/m2.year
- Armenian buildings consume over 300-350kWh/m2.year
- Small-scale investments in entrances, staircases windows, roofs, basements can increase indoor air temperature by 1-2°C, gas consumption by 15-20%
- Require collective investments – by condominiums
- The single untapped credit market in Armenia
- Condominiums can have short term deposits
- Banks need that understand their problems and needs
Potential Loan Product

• Target group: large condominiums (lower risk)
• Loan Limit: Based on service fees – creditworthiness linked to documented factual cash-in per building
• Average loan size: 900,000 – 4,000,000 AMD
• Expected demand for loans per year: 300
• Loan tenor: 24-36 months
• Security: 75%+ households providing guarantee letters
• Optional: scoring, current account at lending bank
  ▫ Helps monitor cash flow, mitigates lending risk
• Gradual evolution to comprehensive thermo-modernization loans with mortgage financing based on credit history

Save Energy

Save Money
Future prospects

1. Comprehensive thermo-modernization loans:
   - avg. 110,000 EUR per building through mortgage financing (collaterized)
2. Securities / credit guarantees
3. Mandatory bank account history with the lending bank for 6 months
4. Power of attorney to the account given to the bank
Food for thought

- If Armenia fully realizes its potential for energy saving, the available energy supply will increase by 50-70% (hence import can be reduced)

- The economic benefit of energy saving is equivalent to 5% of GDP, or about 80% of budget deficit

- 1m$^3$ of imported natural gas costs about twice more than investing in conservation of 1m$^3$ of natural gas

- Building 1kW new capacity costs 5 times more than the cost of 1kW energy saved

- Roughly 40% of Armenia’s energy saving potential is in the buildings sector

- Saving energy in building design phase is a low-cost/no cost opportunity with over 50% saving potential
Broader Perspective

• Build on Banking Sector Capacity
• Utilized guarantee funds as a loan security tool
• Redirect local government budgets for condominium support for loan leveraging
  • Integrate co-financing into the local sustainable energy agendas
• Raise IFI/donor support for project development
• Integrate residential building refurbishment and comprehensive thermal modernization into nationally appropriate mitigation actions
• Adequately prioritize building energy efficiency based on cost-optimality among competing energy sector priorities
• Open the market for near-zero, zero-, green-, negative and other energy – friendly buildings
• Keep the need for thermo-modernization and efficient and green building sector on the green economy and sustainable development agenda!
Thank you!

Questions?

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