Applications in Financing Energy Efficiency in Buildings

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Promoting Residential EE Through HOME-OWNER ASSOCIATIONS

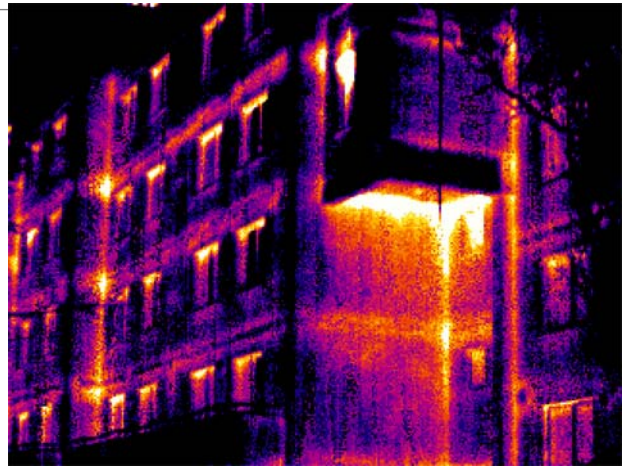
- **Home-Owner Associations** (HOAs or "Condos")
  - Common now that apt ownership transferred to residents
  - High potential for HOAs to improve EE of their buildings

- **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 commerial loans

Success stories

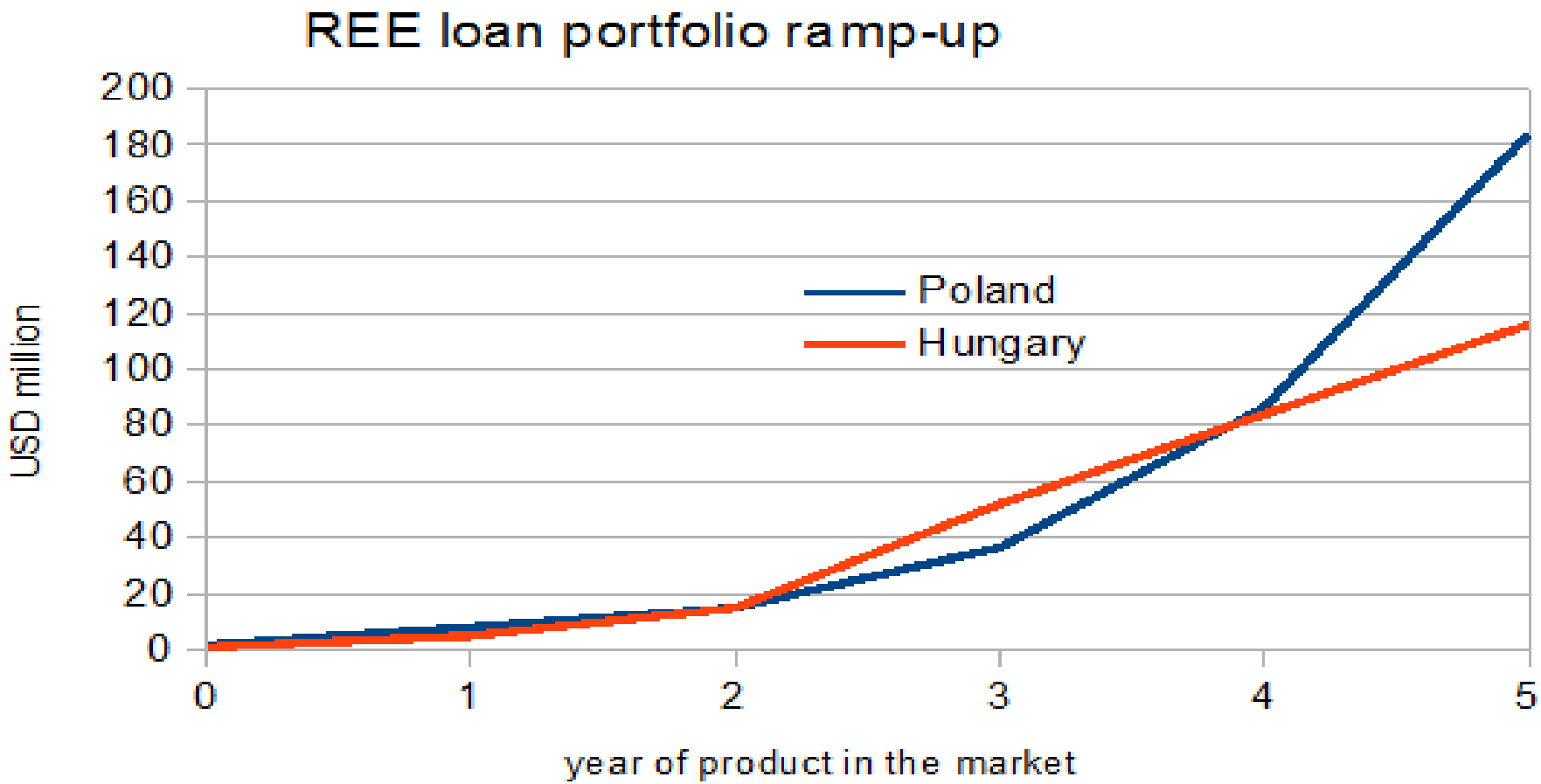
Country	Program	Tool and delivery channel	Yearly Investment	Yearly Savings (GJ and CO2)
Germany	CO2 reduction and building rehabilitation programs	Reduced interest rate loans available through commercial banks	**Euro 1.1b** / yr in loans - average across 9 years Euro 101-193m /yr cost of interest rate subsidies.	**4.4m G J** 300k t CO2
France	Tax credit for energy efficiency materials and renewable energies	Tax credit applied to purchase price of equipment and materials (refunds apply if don't pay income tax)	**Euro 1.9b** in 2007	Estimates not available
Poland	Thermal Modernization Fund	Reduced principal loans	**Euro 355m** in total loans in 2007 Euro 64m in loan subsidies in 2007	**5.5m GJ**
Hungary	Hungary Energy Efficiency Co-financing Program and Hungarian portion of CEEF.	Partial credit guarantees for loans made by commercial banks and ESCOs	**Euro 196m**in investment, using Euro 97m in loans based on Euro 37m in guarantees across program life.	**0.7m GJ** 36k t CO2
Czech Republic	EKO-ENERGIE Program – grants for energy savings and secondary energy sources	Yearly grant process using EU funds allocated by Czech Invest.	**Euro 41m** using Euro 15m in subsidies from OPEI (call 1 2007)	**0.5m GJ** 52k t CO2

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 ԿԱ 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 demanc growth, delay need in new capacity development.

Condominium Lending – AN OPPORTUNITY

- Law on Energy Saving &RES
- Housing and Condominium Laws
- Govt 5-yr Program on Residential Buildings
- EU Associate Membership (pending 2013), EU Laws transposition
- Gas tariff increased by 30%

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

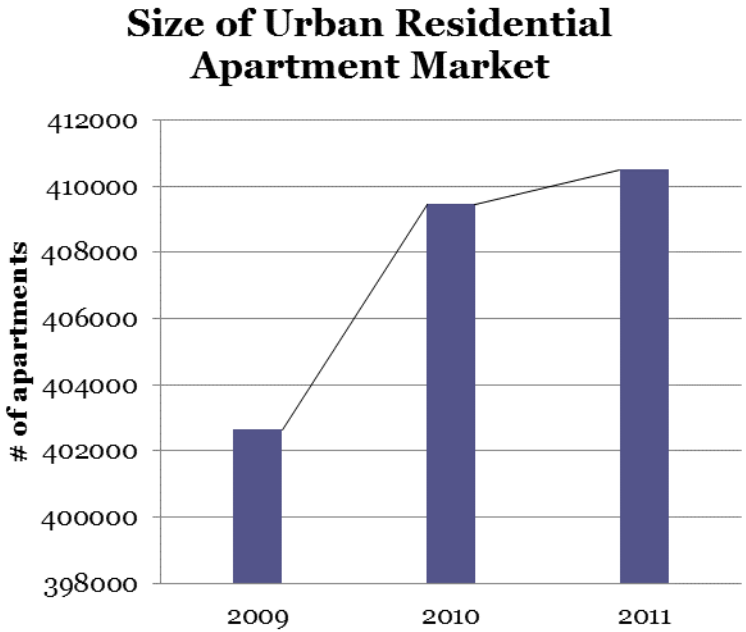
EBRD, KfW and ADF short- and medium-term plans include building loan schemes through commercial banks

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 invest-ments required

Future Market Prospects



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

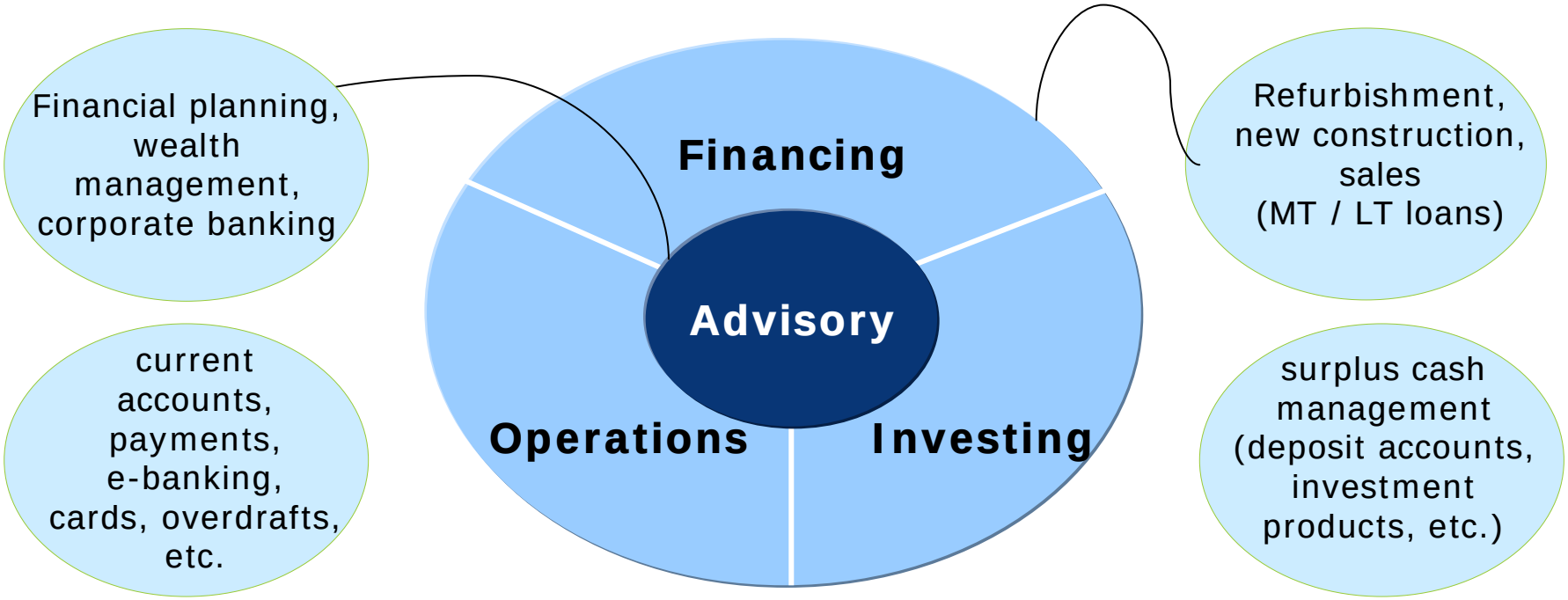
- 64 condominium loans in Gumri, Vanadzor, Yerevan
- 16% municipal subsidy (Vanadzor only)
- 0% defaults
- 0% refusal to pay subsidy

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

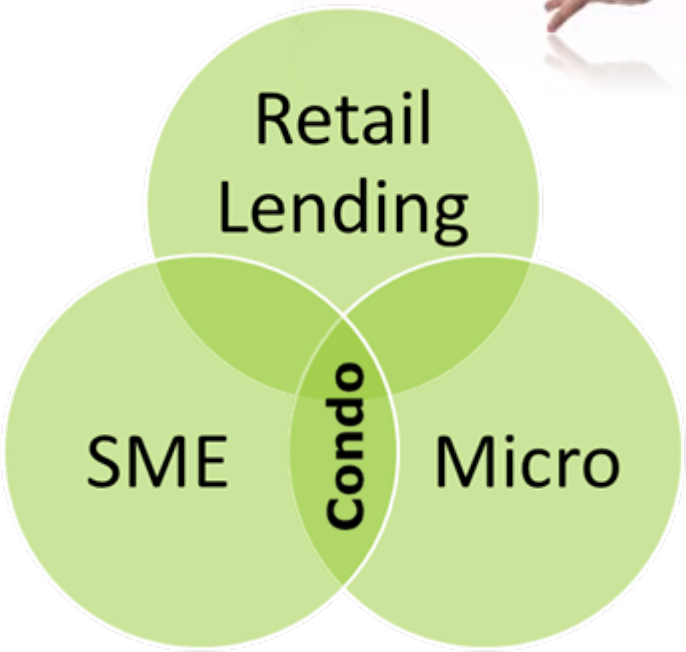
Total multi-apartment housing stock: 18876 buildings

This covers 27,2 million m^2

Number of Apartments: 434,892

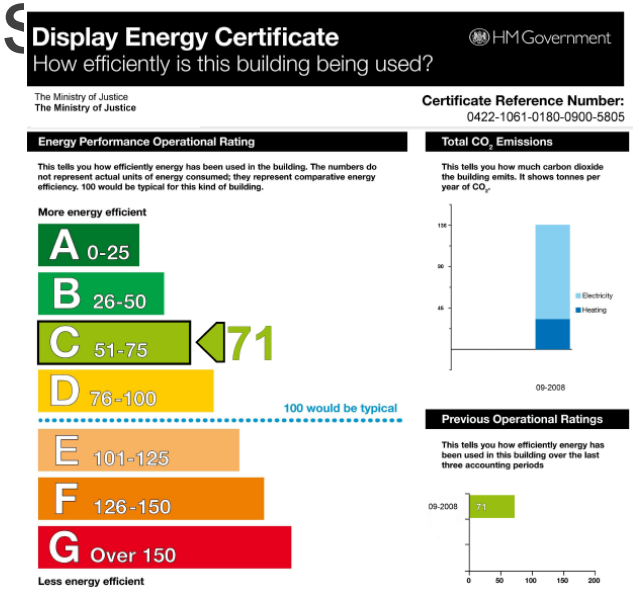
Average service fees: 10-25 AMD/m2, e.g.:

- Yerevan: 15-25 AMD/m2
- Marzes: ~10 AMD/m2

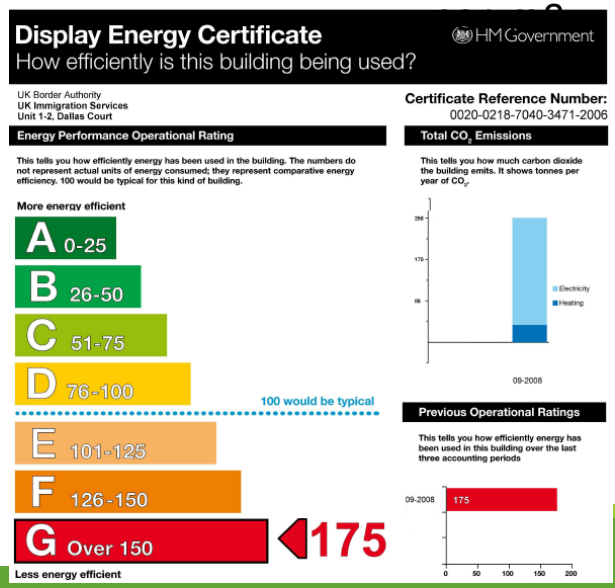


Energy Saving Potential in Multi-Apartment Residential Buildings

- 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



Energy labels of buildings indicate energy consumption



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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