IMPROVING RESIDENTIAL ENERGY EFFICIENCY IN TRANSITION COUNTRIES

Ira Birnbaum
USAID Europe & Eurasia Bureau

Removing Barriers to Residential Energy Efficiency in Central and Eastern Europe
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ORGANIZATION OF PRESENTATION

- Background
- Establish Framework for Residential Improvements
- Social Safety Net
- CEE Case Studies
- Financing Sources
- Decentralized Heat
- USAID Regional Studies

BACKGROUND

- Residential and Heating sectors are priorities of USAID focus in E&E
  - Social importance
  - Little investment
  - Recent attention, cooperation from WB, EBRD
- Financial difficulties and large capital requirements vs. political and social concerns
  - Tariffs, billing, collections
  - Large number of small investments
  - Creditworthiness of borrowers
- Significant differences by countries
  - DH saturation and fuel sources
  - Viability of centralized heating
  - Availability of gas, other alternatives
  - Homeowner association existence, strength, effectiveness

ESTABLISH FRAMEWORK FOR RESIDENTIAL IMPROVEMENTS

- Consumption based billing (cost-recovery tariffs, meters/HCAs)
  - Examples: Bulgaria, Romania
- Establish and empower housing associations
  - Allow them to be DH customer or operate building-level boilers
  - Allow them to borrow for energy efficiency
    - Government assume risks?
  - Capacity building required
- Encourage privatization of housing maintenance companies
  - Encourage them to do metering and energy efficiency
- Raise awareness through public information campaigns
- Enable ESCO performance payments and post-contract savings.

SOCIAL SAFETY NET

- Protect low income households from tariff increases
  - *Targeted* subsidies, lifeline tariffs
  - Energy efficiency
  - Design to reduce subsidies

CEE CASE STUDIES

- Poland DH -- 4 cities (WB)
  - Increased operating efficiency; DH staff reduced 25-30%
  - Physical efficiency: 22% energy savings in DH operation
  - End-use savings: 18 reduction in energy to heat floor area
  - Tariff decrease: real heat tariffs dropped >50%
  - Consumer subsidies: once 78% of bills, were eliminated
  - Consumers given control of heating levels
    - Gives them ability to control heating costs, balance comfort
    - Provides incentives to conserve

CEE CASE STUDIES (cont'd)

- Lithuania: EE loan (WB) w/30% GoL grant to HAs, schools
  - Savings 24% with improved comfort
  - Reduced customers requiring heat subsidies by 25%
  - Reduced subsidy payments by >40%
- Sofia: Installation of HCAs, TRVs
  - Government policy, private installation
  - Savings 13-20%
  - Low income equipment costs paid by government
- Gabrovo, Bulgaria (GEF) EE Package
  - Savings 27%
- Moldova: Metering
  - Payment rates 70-80% (vs. 20% w/o meters)
  - Bill savings >50%
- Lviv, Ukraine: Metering
  - Reduced heat subsidies 23%
  - Further savings from weatherization

ENERGY SAVING OPPORTUNITIES (USAID projects)

- Heating systems/ fuel substitution
- Heat cost allocators/ thermostatic radiator valves/ radiator reflective shields
- Weatherization
  - Insulation: ceiling, outside walls, basement
  - Caulk/ weatherstrip: windows, doors
- Window replacement: general not justified on basis of energy savings

ENVIRONMENTAL CONSIDERATIONS

- Comparison of relative carbon reductions
  - From analysis by ASE/PNNL of dozens of supply and end-use investments
  - Result: End-use investments have larger carbon reductions per $ invested.
    - End-use: $21 per ton CO2
    - Supply: $35 per ton CO2
  - Depends on many factors
    - Fuels used
    - Opportunities for substitution
    - CHP prospects, prices

FINANCING SOURCES: Lending

- World Bank
  - Lithuania, Romania, Armenia, Serbia (?)
- EBRD
  - Bulgaria, Armenia
- Commercial banks
  - Concern over borrower creditworthiness
  - Potential to incorporate energy efficiency into home improvement loans; energy efficiency mortgages
  - Poland: BISE Bank EE loans to CAs if they keep their building improvement fund with BISE

FINANCING SOURCES: Innovative Approaches

- ESCOs, in conjunction with installation of HCAs and TRVs

DECENTRALIZED HEAT AREAS OF ASSISTANCE: IMPROVED INSTITUTIONS

- Review/propose laws, amendments, regulations
- TA/training for private heat providers, CA/HOAs, NGOs
  - Commercial and business operations
  - Contracts, billing/collections, customer relations
  - Transparency
- Standards/norms/certification for boilers and heaters, including environmental and safety considerations
- Public outreach/education
  - Typical heat costs from various fuels
  - Need for reforms and tariff/payment discipline

DECENTRALIZED HEAT AREAS OF ASSISTANCE: HEAT DELIVERY

- Municipal energy master plans
  - Centralized vs. de-centralized heat
  - Fuel source alternatives (e.g., gas, wood, electricity)
  - Energy efficiency
- Pilot projects
  - Private heat providers
  - CAs/HOAs
- Financing mechanisms
  - IFIs
  - Commercial lenders (e.g., w/DCA)
  - Government
- Perform project-specific technical and financial analyses

DECENTRALIZED HEATING RULE OF THUMB

- Relative efficiency of decentralized solutions
  - Small network (several buildings)
  - Building-level boiler
  - Individual apartment heater (single room)
    - Less desirable for comfort, safety
    - Shorter equipment life, may have higher life-cycle cost
- CA/HOA effectiveness
  - Depends on leadership and apartment owners' level of participation
  - More effective with single-building or a few buildings in CA/HOA
  - Some CAs/HOAs are formed to provide heat services

ONGOING REGIONAL STUDIES

- Urban Heating
  - Purpose: provide key reference document to inform donor/lending strategies
  - Examine policy strategies, laws/regulations, institutional restructuring and reform
  - Focus on creating enabling environment for private investment and commercial viability, and address social and economic needs.
  - Examine how institutional and policy frameworks influence heating end-use
  - Implications for donor programs
  - Recommendations for donors, investors, others

ONGOING REGIONAL STUDIES (cont'd)

- Energy Efficiency and Urban Residential Utility Affordability
  - Purpose: provide empirical evidence that energy efficiency is a cost-effective method of providing an energy social safety net to help vulnerable households meet utility costs.
  - Recognizes need to respond to social consequences of energy sector reforms.
  - Intent: build energy efficiency into social safety net programs/funding.
  - Requires documenting residential energy efficiency and comparing life-cycle costs to traditional energy social safety net approaches.

ONGOING REGIONAL STUDIES (cont'd)

- Studies being carried out by Alliance to Save Energy
- Significant input from Experts Advisory Group
- Status: studies underway, to be completed first half of 2006.

Contact Information

Ira Birnbaum
Energy Efficiency/GCC/Clean Energy Coordinator
USAID Europe & Eurasia Bureau
Washington, DC
ibirnbaum@usaid.gov
Phone: 202-712-1459
Fax: 202-216-3389