RELIABLE ENERGY LANDSCAPE PROJECT

MFK/MCC KOSOVO THRESHOLD PROGRAM

Energy Efficiency Coordination Group, Energy Community Secretariat, Vienna, March 2018
MFK/MCC KOSOVO THRESHOLD PROGRAM OVERVIEW

context | structure | reliability of electricity | tariffs & energy intensity | EE policy
Kosovo is a young country, setting policy from scratch.
- Most policy changes have been focused on EU accession process
- Continued improvements in indicators like Freedom House, Doing Business, Transparency International

Kosovo’s economic and social priorities
- Create jobs that can address bulging youth unemployment
- Bring women into the labor force
- Continue on the path towards EU integration

Targeted binding constraints for Threshold Program
- Unreliable Supply of Electricity
- Reality and Perception of Rule of Law
Objectives of MCC

- Established in 2004 with focus on reducing poverty through economic growth
- Independent government agency overseen by Board of Directors, including four private members and chaired by Secretary of State
- Small agency with a focus on evidence-based decision making and locally-led solutions
- Only Low Income and Lower-Middle Income countries are eligible for MCC funding
- Performance and good governance is key
- Focus on private sector led growth and investment
MCC’s Kosovo Threshold Program

• On September 12 2017, US Government (MCC) and Kosovo Government signed a $49 million Threshold Agreement

• Programs:
  • Reliable Energy Landscape Project
  • Transparent and Accountable Governance Program

• Reliable Energy Landscape Project
  • The objective of the Reliable Energy Landscape Project is to reduce the current gap between energy demand and supply, by lowering energy use through piloting household investments in energy efficiency, switching to cost-effective non-electricity sources of heating, and reducing barriers to independent power producer (“IPP”) entrants to the market.

• The proposed Activities under this RELP Project include:
  • Activity 1.1: Pilot Incentives for Household Investment in Energy Efficiency (“PIE Activity”).
    • Ensuring Equal Economic Opportunities in the Energy Sector Sub-Activity.
  • Activity 1.2: District Heating Metering.
  • Activity 1.3: IPP Project Finance Facilitation.
Pilot Incentives for Household Investment in Energy Efficiency
District Heating Metering
IPP Project Finance Facilitation
Public Access to Judicial Information
Environmental Data Collection
Kosovo Open Data Challenge

Reliable Energy Landscape Project

Transparent and Accountable Governance Project

MCC Kosovo Threshold Program
Program Development Process

Eligibility / Board Selection

Kosovo Threshold Program
- Reported costs incurred by firms due to unreliable electricity are high
- Energy expenses and losses range from ~25% (as a % of turnover) for micro enterprises to ~3.6% for large firms
- Demand currently outstrips supply and will only get worse
- Can't directly import power
- Kosovo has agreed to decommission their oldest (and dirtiest) power plant
Tariffs are comparable to region, even favorable, but total cost of energy is high
- Difficult for poor households to afford initial capital investments
- Unreliability of supply is a large cost for businesses
Demand exceeds supply, leading to increased costs due to imports, especially in winter
- The majority of energy demand is from households (60 – 70%)
Energy Intensity of Selected Countries and Regions
TPES/GDP (toe/000 2005 USD)

Source: IEA 2015
ENERGY EFFICIENCY POLICY

- Adopted EU standards and regulations
- Established the Kosovo Energy Efficiency Agency
- Government and municipalities have adopted or are in the process of developing Energy Efficiency Action Plans
- With tariffs almost definitely increasing, real concern (government, utility and households) that more people will not be able to pay for energy
- Increased commercial losses for utility
- Increased subsidies from government to utility
- Increased deforestation and health concerns as people switch away from electricity
- Government would like to address energy efficiency concerns, but needs more information on cost-effective ways to do so
ENERGY EFFICIENCY POLICY

ENERGY EFFICIENCY & DISTRICT HEATING ACTIVITIES

early due diligence | market analysis | project delivery | proposed design
- Consumption-Production Gap (-10%)
- Steady Household (2%) and Commercial (6%) Growth
- Kosovo Industry Electricity Demand Volatile, But Expected to Grow
- Net Installed Generation Fairly Flat
- Unreliability in Generation and Distribution Existing
- Imports Available But Expensive and Not Secure
- Load Shedding Existing (21 GWh)
- Very few alternatives to electric heating
- District heating efficient at source but inefficient at point of consumption
- Need to address incentives for change, education and sustainability
  (more than just infrastructure)
Existing EE investments have been focused on for public infrastructure and, to lesser extent, SMEs and bankable individuals. This activity looks to learn what works for low income households. Will target learning to what will achieve government efficiency targets most cost-effectively:

- Products, form and level of incentives, delivery mechanism, proper auditing, information ad marketing campaign
TARGETING HOUSEHOLDS

- Roof insulation:
  - Yes: 33%
  - No: 64%
  - Don't know: 3%

- Double windows:
  - Yes: 46%
  - No: 53%
  - Don't know: 1%

- Insulation of walls:
  - Yes: 26%
  - No: 70%
  - Don't know: 4%
• District Heating is one alternative to electricity, but currently inefficient
  • Mandate for consumption-based billing, which is best practice to enhance efficiency
  • But sense prevails that will not be cost-effective to do so
  • ➔ This will have implications for the extent of possible system expansion

• Pilot methods to meter district heating in residential buildings
  • Household level metering vs. building level metering
  • Financing methods
  • Education and awareness campaign
• Combine pilot program with capacity building and planning
  • Support regulator with design of consumption-based tariffs for district heating
  • Support district heating company to transition from spatial billing to consumption-based billing
ALIGNING SUPPLY AND DEMAND
**Energy Efficiency Activity Outputs**
- Strengthen demand for EE products
- Strengthened market for energy products and services
- Better informed consumers
- Government has path to reducing electricity consumption

**District Heating Activity Outputs**
- Consumption-based tariffs designed
- Increased capacity of utility for consumption based billing
- Better informed consumers
- Decreased DH consumption and bills at HH level

**Long Term Goals**
- Reduced consumption (preserving comfort)
- Cost savings for households and businesses
- Reduced gap between supply and demand of electricity
Reduced Electricity Consumption

Businesses Investing in EE → Households Investing in EE

Households Investing in EE → Households Shifting to DH

Households Shifting to DH → Reduced Electricity Consumption

Supply of Electricity

Demand for Electricity
ENSURING BENEFITS FOR WOMEN & MINORITIES
• Women are the primary household managers of energy, but their needs or input may not be accounted for in sectoral policies or programs.

• The energy sector is male-dominated (5.7% of KEDS employees are female).

• Women’s businesses that do exist tend to be smaller, which report much higher costs of unreliable electricity.

• MCC program will support women and minorities’ equal opportunity to benefit from this project, as employees, entrepreneurs, and energy users.

Female enterprises are 10% of all Kosovo enterprises vs. 37% globally.
Energy Efficiency & District Heating Activities

early due diligence | **market analysis** | project delivery | proposed design
• Consumption-Production Gap

• Options for Increased Domestic Electricity Production

• Unreliable Generation and Distribution of Electricity

• Expensive and Insecure Electricity Imports

• Few Alternatives to Electric Heating

• Employment for Women and Socially Excluded Groups in the Energy Sector is Low

Need to construct new plants and decommission Kosovo A

Full utilization of Tx and improvements in Dx will be slow to come

Coal supplies are not secure

Building boom and increased diaspora investments
• Consumption-Production Gap

• Options for Increased Domestic Electricity Production

• Unreliable Generation and Distribution of Electricity

• Expensive and Insecure Electricity Imports

• Few Alternatives to Electric Heating

• Employment for Women and Socially Excluded Groups in the Energy Sector is Low

Expanding existing capacity will be difficult

Financing and cost issues exist with REs

Inter-connection issues exist with large scale RE deployment

Kosovo e Re not for the short term
Continued and unpredictable outages, though less frequent

Infrastructure problems on LV network

Poor availability of generators

SMEs challenged by reliability issues and backup systems not wholly affordable

• Consumption-Production Gap
• Options for Increased Domestic Electricity Production

• Unreliable Generation and Distribution of Electricity

• Expensive and Insecure Electricity Imports
• Few Alternatives to Electric Heating
• Employment for Women and Socially Excluded Groups in the Energy Sector is Low

• Consumption-Production Gap
• Options for Increased Domestic Electricity Production

• Unreliable Generation and Distribution of Electricity
• Consumption-Production Gap
• Options for Increased Domestic Electricity Production
• Unreliable Generation and Distribution of Electricity

• Expensive and Insecure Electricity Imports

• Few Alternatives to Electric Heating
• Employment for Women and Socially Excluded Groups in the Energy Sector is Low

Exacerbated by previously stated problems
Exacerbated by low reservoir levels
Pricing pressures from growing regional demand
Political issues continue with Serbia
DH improvements lead to increased reliance, though less than 5% of Kosovo can access DH

Issues with using wood and coal for heating

Cost of wood rapidly increasing

• Consumption-Production Gap
• Options for Increased Domestic Electricity Production
• Unreliable Generation and Distribution of Electricity
• Expensive and Insecure Electricity Imports

• Few Alternatives to Electric Heating

• Employment for Women and Socially Excluded Groups in the Energy Sector is Low
Few women vs. men work in technical professions, though many women-owned businesses eager to hire other women, there is an extensive informal, home based network of businesswomen. Training in small scale energy services could benefit socially excluded groups.

- Consumption-Production Gap
- Options for Increased Domestic Electricity Production
- Unreliable Generation and Distribution of Electricity
- Expensive and Insecure Electricity Imports
- Few Alternatives to Electric Heating

- Employment for Women and Socially Excluded Groups in the Energy Sector is Low
ASSESSING FEASIBILITY
ENERGY EFFICIENCY

- Technical (Interventions)
- Social & Behavioral Change
- Targeting
- Legal & Regulatory Issues

Insulation
Window Replacements
Weather Sealing
Appliance Replacements
Thermostatic Control Valves
"we’re used to opening our windows to control the temperature"

"inefficient radiators can be used for drying clothes"

"I don’t have enough money to make an energy efficiency investment"

"I’m not sure I would trust KESCO to provide me with energy efficiency services"

"we’re used to heating one room only and don’t want to pay more for the whole house"

• Technical (Interventions)
• Social & Behavioral Change
• Targeting
• Legal & Regulatory Issues
### ASSESSING FEASIBILITY
**ENERGY EFFICIENCY**

<table>
<thead>
<tr>
<th>Building Type</th>
<th>Heat Source</th>
<th>Institutional Support</th>
<th>End User Income Level</th>
<th>Equal Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Households</td>
<td>DH Connected</td>
<td>Size of Municipalities</td>
<td>Capacity to Invest</td>
<td>Ability to include various social groups</td>
</tr>
<tr>
<td>MFABs</td>
<td>DH Planned</td>
<td>Capacity of Municipalities</td>
<td>Ability to Qualify for Loan</td>
<td>Ability to use micro enterprises</td>
</tr>
<tr>
<td></td>
<td>Electric Heat Only</td>
<td></td>
<td>Productive Use</td>
<td></td>
</tr>
</tbody>
</table>

- Technical (Interventions)
- Social & Behavioral Change
- Targeting
- Legal & Regulatory Issues
Energy Efficiency Building Codes

Law on Condominiums and HOAs

ASSESSING FEASIBILITY
ENERGY EFFICIENCY

• Technical (Interventions)
• Social & Behavioral Change
• Targeting
• Legal & Regulatory Issues
ASSESSING FEASIBILITY
DISTRICT HEATING

- Justification for sanctioning for non-payment at apartment level
- Equitability of billing through allocation of energy costs
- Manage social welfare customers appropriately

- Improved targeting of leakages by analyzing heat balance
- Improved heat billing and associated dispute resolution
- Marketing of energy services at the apartment level

• Project Drivers
  • Heat Metering Baseline and Termokos Master Planning
  • DH metering Implications in the Residential Sector

Energy Efficiency
Synergy with thermostatic control valves
ASSESSING FEASIBILITY
DISTRICT HEATING

- Project Drivers
- Heat Metering Baseline and Termokos Master Planning
- DH metering Implications in the Residential Sector
Approach to implementation of metering technology will vary by:

- Metering by substation type
- Ability to use heat allocators

ASSESSING FEASIBILITY
DISTRICT HEATING

- Project Drivers
- Heat Metering Baseline and Termokos Master Planning
- DH metering Implications in the Residential Sector
• Follow Up Conversations to Discuss Partnerships and Integration
• Further Engagement with Government of Kosovo
• Finalization of Design
• Preparation for Implementation