Financing Energy Efficiency in Public Buildings: 
*Update of World Bank Program in the Western Balkans*

17th EE Coordination Group meeting 
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Experiences with EE in Western Balkans

• Recently implemented and planned World Bank projects in W. Balkans total ~US$250 million for EE in public buildings
  o Energy savings typically 35-50% per building, payback ~6-8 years
  o Substantial co-benefits (improved comfort, urban renewal, public awareness, student education)
  o End user willingness to co-finance

• Lessons learned:
  o Limited replication of donor pilots, grants without sustainable funding mechanisms
  o Government project management units orphaned after projects, loss of technical/capacity
  o High energy cost savings means that projects can repay upfront investment along with audit/designs and program admin costs, but some underheating remains
  o Structural stability and seismic safety also need to be considered
  o Difficult to scale-up; 20-30 buildings/year average
  o Need to develop sustainable financing and institutional mechanisms
## World Bank EE Financing in the W. Balkans

<table>
<thead>
<tr>
<th>Country</th>
<th>Project Name</th>
<th>Approval Date</th>
<th>Closing Date</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albania</td>
<td>TBD</td>
<td></td>
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<tr>
<td>Macedonia</td>
<td>Sustainable Energy&lt;br&gt;Energy Efficiency Fund for Public Buildings</td>
<td>Dec 19, ‘06&lt;br&gt;Dec 13, ‘18</td>
<td>March 30, ‘13&lt;br&gt;March 31, ‘23</td>
<td>US$5.5m (GEF)&lt;br&gt;US$20m (IBRD)</td>
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<tr>
<td>Montenegro</td>
<td>Energy Efficiency&lt;br&gt;Energy Efficiency (AF)&lt;br&gt;Second Energy Efficiency</td>
<td>Dec 9, ‘08&lt;br&gt;Dec 23, ’13&lt;br&gt;June 4, ‘18</td>
<td>Dec 20, ’14&lt;br&gt;March 30, ’18&lt;br&gt;Dec 31, ’23</td>
<td>US$8.8m (IBRD)&lt;br&gt;US$6.8m (IBRD)&lt;br&gt;US$7.4m (IBRD)</td>
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<tr>
<td>Serbia</td>
<td>Energy Efficiency&lt;br&gt;Energy Efficiency (AF)&lt;br&gt;Enhancing Infrastructure Efficiency &amp; Sustainability (P4R)</td>
<td>March 16, ‘04&lt;br&gt;June 20, ‘07&lt;br&gt;Nov 3, ’17</td>
<td>Oct 31, ‘11&lt;br&gt;April 30, ‘13&lt;br&gt;Dec 31, ’21</td>
<td>US$21m (IDA)&lt;br&gt;US$27.3m (IDA, IBRD)&lt;br&gt;US$48m (IBRD)</td>
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<tr>
<td>Bosnia &amp; Herzegovina</td>
<td>Energy Efficiency&lt;br&gt;Energy Efficiency (AF)&lt;br&gt;End August (tbc), ’18</td>
<td>March 13, ‘14&lt;br&gt;Dec 31, ’19&lt;br&gt;March 30, ’24</td>
<td>US$32m (IDA)&lt;br&gt;US$32m (IBRD)</td>
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**Total**                                                                 |                     |                    |                    | US$252 million      |

Notes: AF – additional financing; figures in italics are future dates or tentative figures.
# Barriers to EE in the Public Sector

<table>
<thead>
<tr>
<th>Policy / Regulatory</th>
<th>Equipment/ Service Provider</th>
<th>End User</th>
<th>Financiers</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Energy pricing and collections</td>
<td>• High project development costs</td>
<td>• Lack of credible data</td>
<td>• New technologies and contractual mechanisms</td>
</tr>
<tr>
<td>• Public procurement and budgeting policies</td>
<td>• Perceived risk of late/non-payment of public sector</td>
<td>• Lack of awareness of EE opportunities</td>
<td>• Small sizes/widely dispersed → high transaction costs</td>
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<tr>
<td>• Limitations on public financing, borrowing capacity</td>
<td>• Limited demand for EE goods/services</td>
<td>• High upfront and project development costs</td>
<td>• High perceived risks, incl. public credit risks – not traditional asset-based financing</td>
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<tr>
<td>• Limited and poor data</td>
<td>• Diffuse/diverse markets</td>
<td>• No discretionary budgets for special projects/ upgrades and limited ability to borrow</td>
<td>• Other higher return, lower risk projects</td>
</tr>
<tr>
<td>• Import duties on EE equipment</td>
<td>• Limited experience with new contract mechanisms (e.g., ESCOs)</td>
<td>• Poor structural condition of public buildings/facilities</td>
<td>• Over-collateralization and restrictions on public assets as collaterals</td>
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<tr>
<td>• Unclear or under-developed EE institutional framework</td>
<td>• Limited technical, business, risk mgmt. skills</td>
<td>• Ability/willingness to pay</td>
<td>• Behavioral biases</td>
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<tr>
<td>• Lack of appliance standards and building EE codes, lack of testing, poor enforcement</td>
<td>• Limited access to financing/equity</td>
<td>• Perceived risks of new technologies/ systems</td>
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<td></td>
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<td>• Mixed/lack of incentives</td>
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<td></td>
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<td>• Inability to collateralize public assets</td>
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Public Sector EE Financing Ladder

Market Maturity

Commercial Financing

Public EE financing ladder

Advanced commercial or project financing (ESCOs)
- Vendor credit, leasing
- Commercial financing, bonds
- Partial risk guarantees
- Credit line with commercial bank(s)
- Credit line with municipal (development) bank
- Public ESCOs
- EE revolving funds
- Utility (on-bill) financing
- Budget financing w/ budget capture
- Budget allocation, grants w/ co-financing
- Grants
Budget Financing w/ Capital Recovery: Basics

• Funds provided by MOF to public agencies – may include on-lending of IFI/donor funds

• Project management by project implementation unit (PIU) located in MOF or other suitable government agency

• Products/Services:
  • Loans to creditworthy agencies (collateral, own contribution)
  • Budgetary provision to other agencies
  • Support for project preparation, implementation and monitoring could be provided by PIU

• “Repayment” from energy savings (through future budget reduction)
Case Study: Macedonia MSIP

- Funding provided to MOF by World Bank in 2010
- On-lending by MOF to creditworthy municipalities and public sector entities for municipal services projects (including energy efficiency)
- Implemented by a PIU within MOF
- Eligible projects must be revenue-generating or cost-reducing
- Borrowers pay back the loans from the revenues or cost savings of the implemented EE projects
- Some municipalities lack capacity to do project design and procurement - PIU can provide some support with TA funds
- Repayments are secured through a “budget capture” scheme – if payments are not made in a timely manner, MOF has the option to reduce budgetary outlays in future years
Energy Efficiency Revolving Fund
EE Revolving Fund: Basics

• New or existing independent financial entity
• Management by Fund Manager (company or organization), overseen by Board of Directors made of public and private orgs
• Capitalized from IFI/donor/gov’t funds initially
• Full service: Financing plus project preparation, implementation and monitoring services
• Two windows:
  • Loans to creditworthy public agencies able to borrow, collateral/own contribution required (Model 1)
  • Energy service agreements to other entities (non-creditworthy, without own budget, unable to borrow) (Model 2)
• Payback from energy savings
• Repayment risk with Fund Manager
• Revolving nature of Fund
• Pricing of services depends on funding sources, condition of client
Case Study: Armenia R2E2 Fund

- Renewable Resources and Energy Efficiency (R2E2) Fund established in 2005, started revolving mechanism in 2012 for public EE projects using ESAs
- Fund set up as a publicly owned, independent, not-for-profit entity with a Board of government and non-government members
- To date, the R2E2 Fund has signed 73 ESAs totaling US$12 million
  - Average project size is about US$150,000 (one US$1.2 million project with a university)
  - All ESAs are being repaid on time (or early)
  - All projects are subcontracted to local construction firms under simplified performance contracts; to date, all have met or exceeded savings estimates
  - Many new technologies have been introduced, since procurement is based on highest NPV rather than lowest cost
- Some key lessons/remaining issues include:
  - High % of application rejection (55/307 applications accepted) creates higher admin costs than expected
  - Need to develop robust project pipeline to meet investment target
  - Increased bundling in procurement to lower transaction costs
Super ESCO
Super ESCO: Basics

• Independent government-owned corporation that has dual responsibilities:
  1. Implement projects in the public sector using ESPC approach
  2. Build the capacity of private sector energy service providers/ESCOs by engaging them as subcontractors
• Capitalized by MOF with assistance from IFIs, donors
• Governance structure (Board of Directors) - includes public and private sector representatives
• Provides 100% financing for EE projects in public agencies with loan repayments from project cost savings
• Offers range of financing products to serve the needs of different public sector entities
• Develops partnerships with banks/FIs, equipment suppliers, leasing companies, etc.
• Provides training and capacity building to private ESCOs; TA may be provided by donor agencies
Case Study: India EESL

- EESL established by Government of India in 2008 to implement EE projects in municipalities on a turnkey, performance-based service model
- EESL also conducts many bulk purchase programs to bring down prices for end users (from lighting and fans to street lights and electric vehicles)
- To date, EESL has substantially transformed the lighting market and is now turning its attention to air conditioning, buildings and other
  - Installed 4.3 million LED street lightings, distributed 284 million LED bulbs, 1.5 million fans and 4.7 million LED tube lamps to households
  - Signed 2k agreements with public buildings
  - All projects are subcontracted to local construction firms
  - All contracts are based on deemed savings
  - Some utility partnerships to allow on-bill repayment for residential consumers
  - Some concerns raised by local ESCOs over monopolistic tendencies of EESL
Status of EE Financing in the Balkans

- There are now several active EE Revolving Funds in the region: Armenia (R2E2 Fund), Bulgaria (EERSF), Croatia (EPEEF), Moldova (FEE), Slovenia (ECO Fund), Romania (FREE)

- **Albania**: EE Law (approved Nov ‘15) called for the creation of an EE Fund, 3rd NEEAP (approved Jan ‘18) also indicated EEF, Options Paper being prepared

- **Bosnia & Herzegovina**: Additional financing expected to include revolving financing mechanisms on basis of achieved energy cost savings with partial recover of investment costs; strengthening capacity and involvement of existing Environmental Protection Funds

- **Kosovo**: Draft EE Law, includes EEF with ESAs, now being finalized by GOK (approval expected June ‘18); World Bank and EC to capitalize Fund with ~€15m

- **FYR Macedonia**: Government approved EEF creation under its development bank (MBDP), but has been delayed due to proposed restructuring of MBDP; World Bank and EC had proposed to capitalize Fund with ~€25 million

- **Montenegro**: World Bank agreed with Government to establish a revolving financing model under new project using a budget capture scheme for all EE investments

- **Serbia**: Government now undertaking legal review of EEF creation with EU-IPA funds, preparing medium-term public building renovation program, expect to establish EEF in 2019

- EE Funds are now being considered in several countries in the region, including Belarus, Kazakhstan, Ukraine, Turkey
Thank you!