



WORLD BANK

Saving Public Expenditures through Energy Efficiency

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Outline

- I. World Bank EE Portfolio in Europe and Central Asia (ECA)**
- II. Barriers to EE in the Public Sector**
- III. Emerging Good Practices**
- IV. Lessons Learned and Remaining Challenges**
- V. The Way Forward**

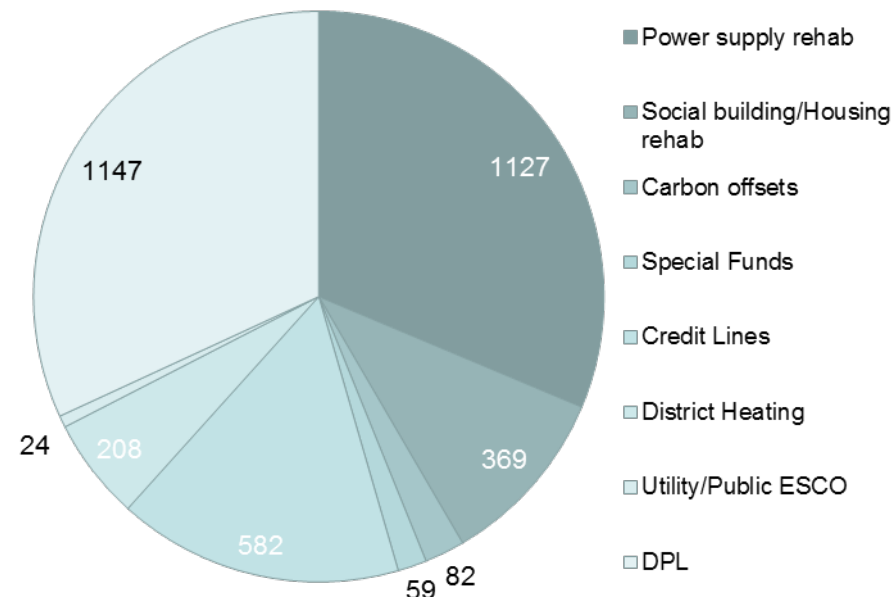


I. World Bank EE Portfolio in ECA

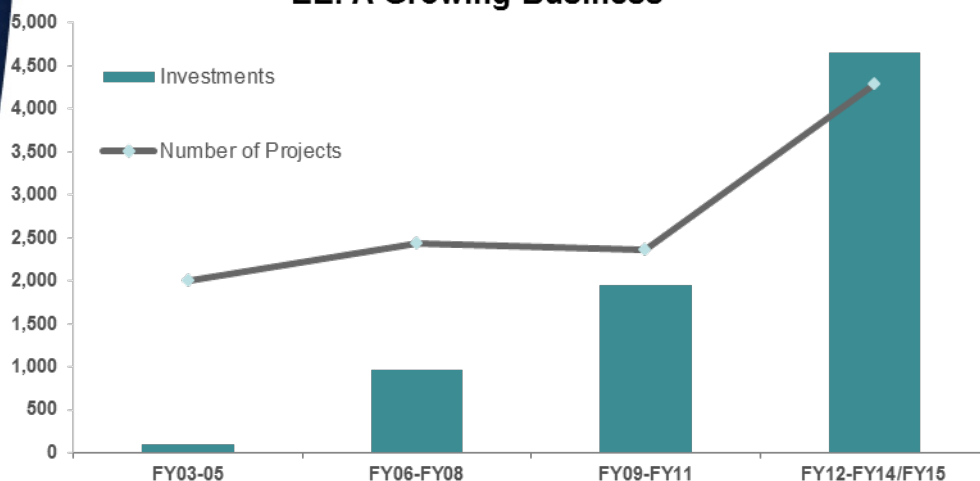
Approved/Closed ECA EE Projects
(FY03-13)

Total number of Projects in 20 countries	56
CIS	5
EU Accession Countries	14
SEE	9
Turkey	7
Other countries	21
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Aggregate investment (US\$ million)	3,598
IBRD	3,270
IDA	167
GEF	50
CTF	10
Carbon finance	77
Other	24
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# of Demand Side projects	22
# of Supply Side projects	25
Both/Other	8

ECA EE Product Lines
Investment, \$Million (FY03-FY12)



EE: A Growing Business



Actual/Projected energy savings from portfolio equivalent to:

- **300 billion kWh** per year
- Taking almost **15 million cars** off the road
- The total **power generated in India in 1990**
- **35 times the daily production** of the world's largest oil field

II. Barriers to EE in the Public Sector

Policy / Regulatory

- Energy pricing and collections
- Public procurement and budgeting policies
- Limitations on public financing and borrowing capacity
- Ad hoc planning
- Import duties on EE equipment
- Unclear or under-developed EE institutional framework
- Lack of appliance standards and building EE codes, lack of testing, poor enforcement
- Limited and poor data

Equipment/ Service Provider

- High project development costs
- Perceived risk of late/non-payment of public sector
- Limited demand for EE goods/services
- Diffuse/diverse markets
- New contractual mechanisms (e.g., ESCOs)
- Limited technical, business, risk mgmt. skills
- Limited access to financing/equity

End User

- Lack of awareness
- High upfront and project development costs
- Ability/willingness to pay incremental cost
- Low EE benefits relative to other costs and priorities
- Perceived risks of new technologies/ systems
- Concept of EE is “virtual” – cannot see
- Mixed/lack of incentives
- Behavioral biases
- Lack of credible data
- No discretionary budgets for special projects/upgrades and limited ability to borrow

Financiers

- New technologies and contractual mechanisms
- Small sizes/widely dispersed → high transaction costs
- High perceived risks, incl. public credit risks – not traditional asset-based financing
- Other higher return, lower risk projects
- Over-collateralization, restrictions on public assets as collaterals
- Behavioral biases



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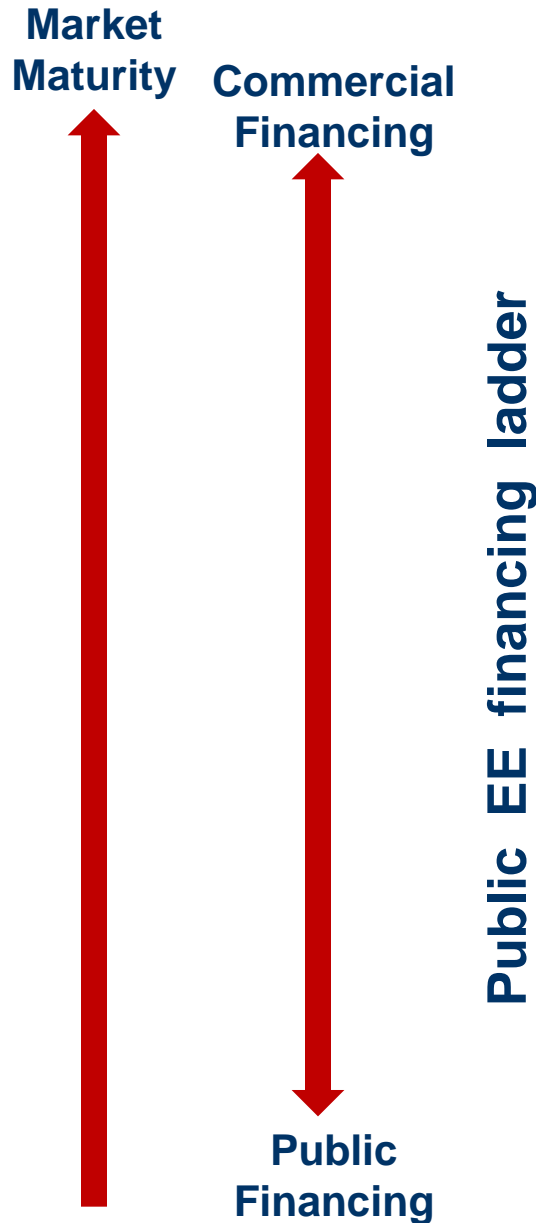
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III. Emerging Good Practices



Select the Most Promising ESCO Models

High
service/risk

— *Full service ESCOs* design, implement, verify and get paid from actual energy saved (aka “Shared Savings”)

— *Energy supply contracting*, take over equipment O&M and sell output at fixed unit price (aka “Chauffage”, “Outsourcing”, “Contract Energy Management”)

— *ESCOs w/third party financing* design/implement project, and guarantee minimum level of savings (aka “Guaranteed Savings”)

— *ESCOs w/variable term contract* act as full service ESCO, but contract term varies based on actual savings (e.g., “First Out Contract”)

— *ESCOs w/1-year contract* design/implement project, receives 60-70% of payment upon successful commissioning and the rest within 6-12 months

— *Supplier credit*, equipment vendor designs, implements and commissions project and is paid lump-sum or over time based on estimated savings

— *Equipment leasing*, similar to supplier credit except payments are generally fixed (based on estimated energy savings)

— *Consultants w/performance-based payments* assist client to design/implement project and receives payments based on project performance (i.e., fixed payment w/penalties or bonuses)

Low
service/risk

— *Consultants w/fixed payments* help the client design and implement the project, offers advice and receives a fixed lump-sum fee

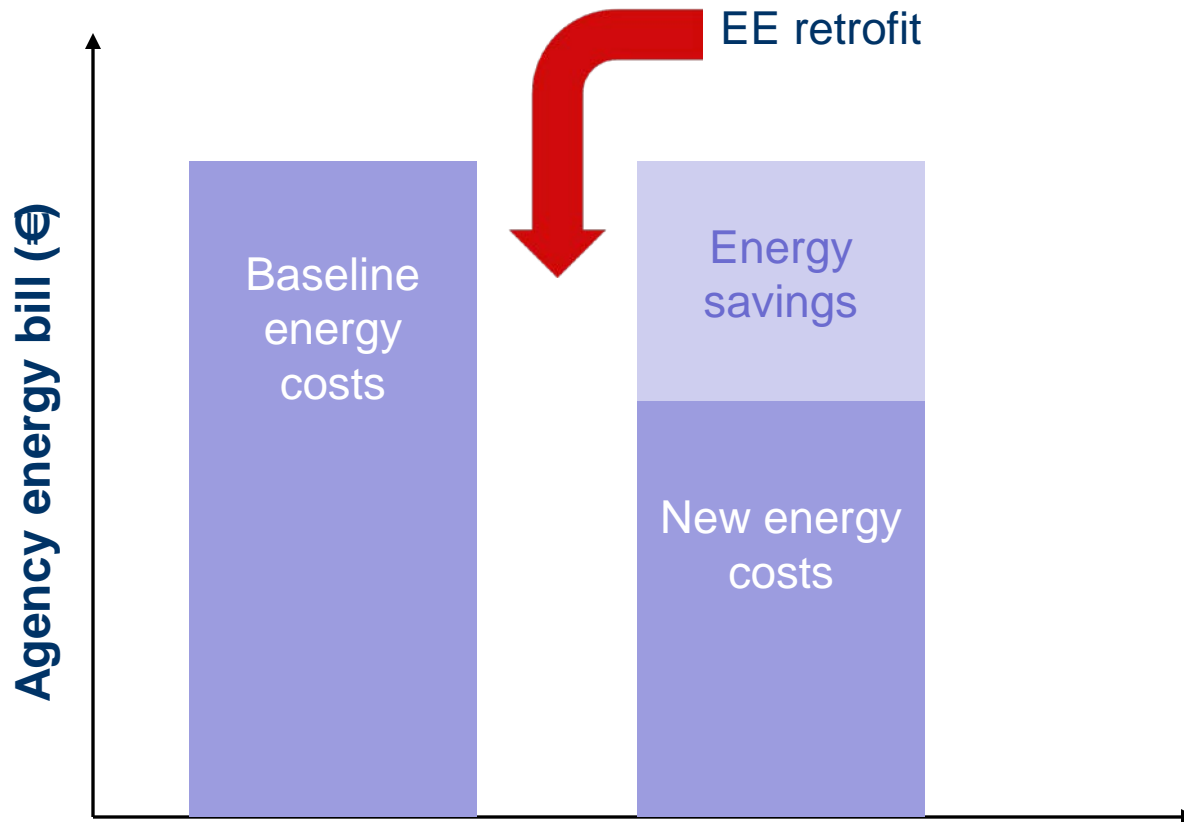
Source: World Bank 2010

Adjust Public Sector Regulations

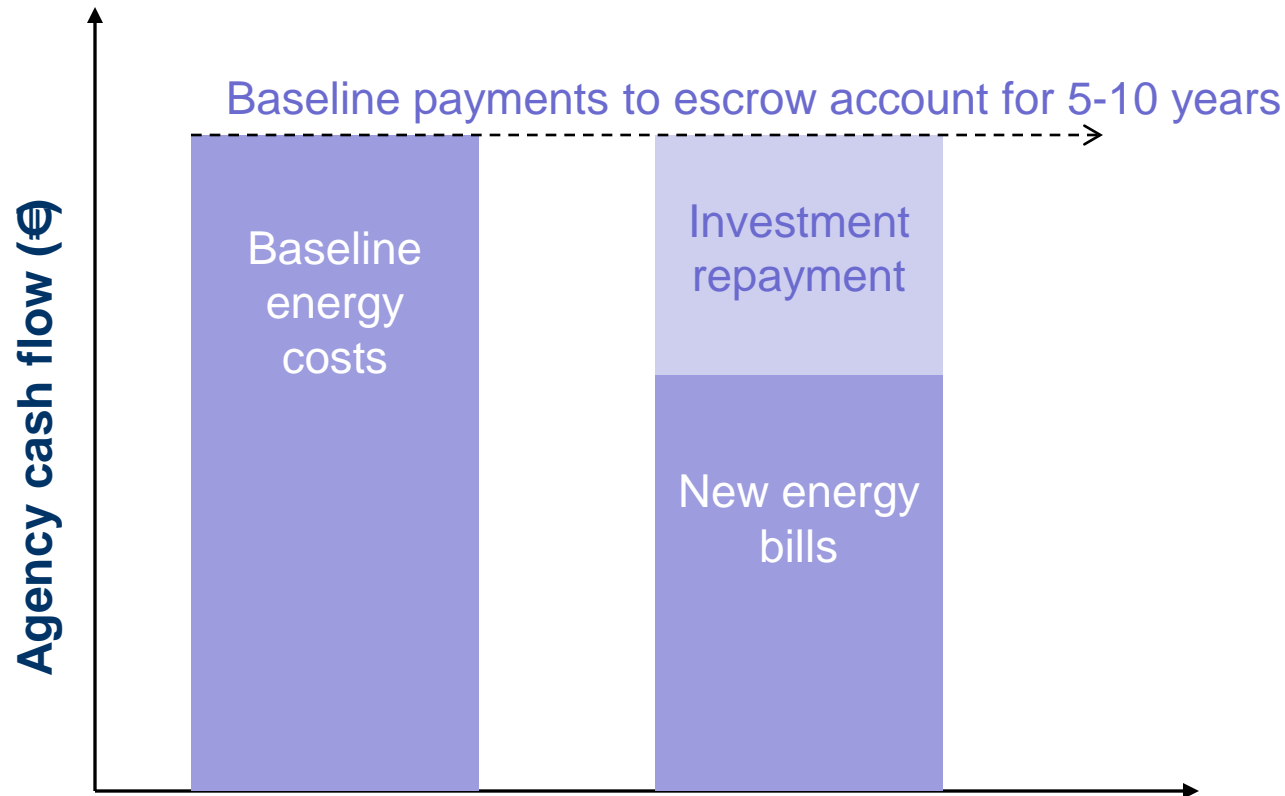
- ✓ Revise regulations to allow suitable EE financing schemes to be implemented (e.g., EE funds, utility financing, public ESCO)
- ✓ Implement multi-year budgeting (e.g., medium-term expenditure framework, MTEF)
- ✓ Permit agencies to retain energy cost savings for duration of EE loan/ESCO contract periods
- ✓ Confirm ESCO payment obligations are excluded from public debt
- ✓ Assess viable ESCO and EE financing models for local markets
- ✓ Encourage/Require public agencies to purchase EE equipment



Energy Service Agreements – a new way?



ESAs continued...



Baseline payments need to be adjusted for:

- Changes in energy prices
- Changes in operations and comfort levels
- Severe weather impacting energy use

ESAs continued...

Other aspects

- ❑ Using PPP structure (e.g., public/super ESCO, EE Fund), procurement may not be required
- ❑ Public ESCOs, EE revolving funds, utilities, MOFs, etc. can use ESAs and bundle projects
- ❑ Contract duration can be flexible until the investment is fully repaid
- ❑ ESAs generally do not count against municipal debt limits
- ❑ Technical analyses, procurement, monitoring can be centralized
- ❑ Performance risks can be offloaded to contractors under simplified EPCs

But clients need...

- ❑ Energy bill payment discipline, with recourse for nonpayment
- ❑ Metering and consumption-based billing
- ❑ Retention of energy savings in order to make baseline payments
- ❑ Sufficient baseline data, comfort levels
- ❑ Staff qualified to understand and negotiate ESAs



IV. Lessons Learned and Remaining Challenges

Lessons

- **EE is resource-intensive** and requires a long-term focus
- **Sector reforms** have been crucial to create enabling environment and proper incentives for EE
- **EE governance** is critical to ensure strong policy/legal frameworks are in place and implementation is effective (e.g., time-based targets with clear accountability)
- Development of efficient **delivery mechanisms** (e.g., credit lines, ESCOs, utility programs, labeling schemes) are more important than technology
- **Financing** is available, but not always **accessible and affordable**
- Access to **credible data and information**, incentives, linking to other co-benefits (i.e., improved comfort) are also needed

Challenges

- **Cost reflective pricing** and **universal metering** reforms remain slow
- EE investment needs are massive requiring increased **focus on leverage**
- Emerging EE agencies are **politically weak** and under-resourced
- Credit lines for industrial and commercial sectors need to **act as market catalysts**
- Need for more robust, scalable and **sustainable models for EE** in public and municipal buildings
- Region has underdeveloped energy service/ESCO markets, **weak legal and regulatory frameworks**, mixed track record
- **EE cuts across all sectors**, requiring cooperation with urban, water, transport, agriculture, health, education sectors



VI. The Way Forward

❑ Need broad policy and legal framework

- Show **high level government commitment** to EE
- **Institutional set-up** with clear roles, responsibilities, accountability
- Create **enabling environment/incentive framework/regulations** to help drive EE

❑ Changes in public procedures to facilitate EE improvements

- Allow public institutions to **retain energy cost savings** resulting from EE
- **Ease financing restrictions** for cost savings investments
- Develop **public procurement guidelines** to facilitate ESCO contracting, life cycle cost purchasing, use of multiyear contracts, EE preferences

❑ Foster broad range of financing options

- Develop options for **increasing borrowing capacity** of public institutions (e.g., loan securitization, cash flow-based financing, budget capture mechanisms)
- Support **innovative and flexible financing options**, e.g. equipment leasing, multiyear ESAs, “pay from savings” schemes

❑ Promote scalable and sustainable models for public EE

- Develop **variety of models** and products to serve different market segments
- Formulate strategy to **evolve to more commercial, sophisticated mechanisms** over time



Framework for Successful Energy Efficiency Programs

Policy and Regulations

- Overarching EE legal framework (EE Law)
- Cost-reflective energy pricing
- Codes/standard w/ enforcement mechanisms
- EE incentive schemes w/ funding sources
- EE targets by sector
- Public budgeting/procurement encourages EE

Institutions

- Dedicated entity with EE mandate
- Clear institutional roles/accountability
- Inter-ministerial coordinating body
- Assignment of roles for monitoring and compliance enforcement
- Authority to formulate, implement, evaluate and report on programs
- Tracking on progress for EE targets

Information

- Database on energy consumption
- Industrial and building stock
- Information center/case study database
- Database of service providers, EE technologies, equipment providers
- Broad, sustained public awareness
- Appliance labeling

Successful Energy Efficiency Programs

Finance

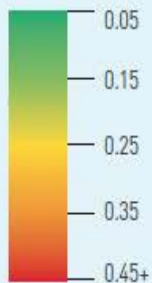
- Commercial bank lending (credit lines, guarantees)
- Cashflow-based EE financing
- Commercial ESCO financing
- Public sector EE financing
- Residential home/appliance credit
- Equipment leasing

Technical Capacity

- Energy auditor/manager training and certification programs
- Private sector training programs (banks, ESCOs/EE service providers, end users)
- EE project templates (audits, M&V plans, EPC bidding documents, contracts)
- Energy management systems developed



ENERGY INTENSITY OF EUROPE AND CENTRAL ASIA



Energy use (kgce) per \$1 GDP, 2008
Source: IEA and World Bank PPP Data

Thank you!

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