# Financing urban energy efficiency

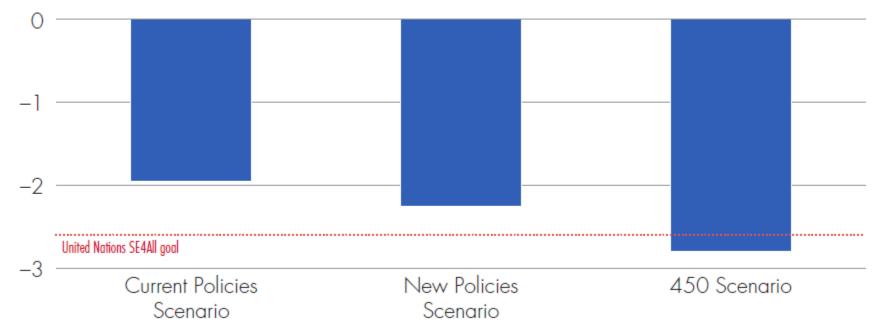
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## Annual Energy Intensity Improvements (between 2010-2030)

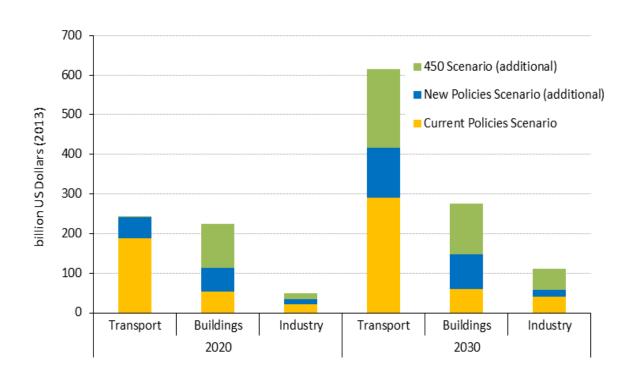
Annual improvement in energy intensity (%)







### **Annual Energy Efficiency Investments**



Current Policies Scenario - cumulative additional investment of \$4.8 trillion are needed from 2014-2030 (or \$280 billion per year, on average).

Investment in EE is anticipated to increase more than fourfold from today to 2030 in the central scenario, but needs to increase a further 60% in 2030 to stay within a two degrees trajectory.





### **Investment Gap**

Table 1. Annual global investment—actual and required (\$ billion)

Annual investment	Universal access to modern energy services	Universal access to modern energy services	Doubling the global rate of improvement in energy efficiency	Doubling the share of renewable energy in the global mix <sup>a</sup>				
Source	Electrification	Cooking	Energy efficiency	Renewable energy	Total			
Actual for 2012 <sup>b</sup>	9	0.1	130	258	397			
Required to 2030°	45	4.4	560	442–650	1,051–1259			
Gap	36	4.3	430	184–392	654–862			





### Who will fill this gap?

#### Roles and capacity of public and private finance

- No shortage of investment capital
- Limited public/climate funds
- Private capital is key

#### **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 EE Programs

#### **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

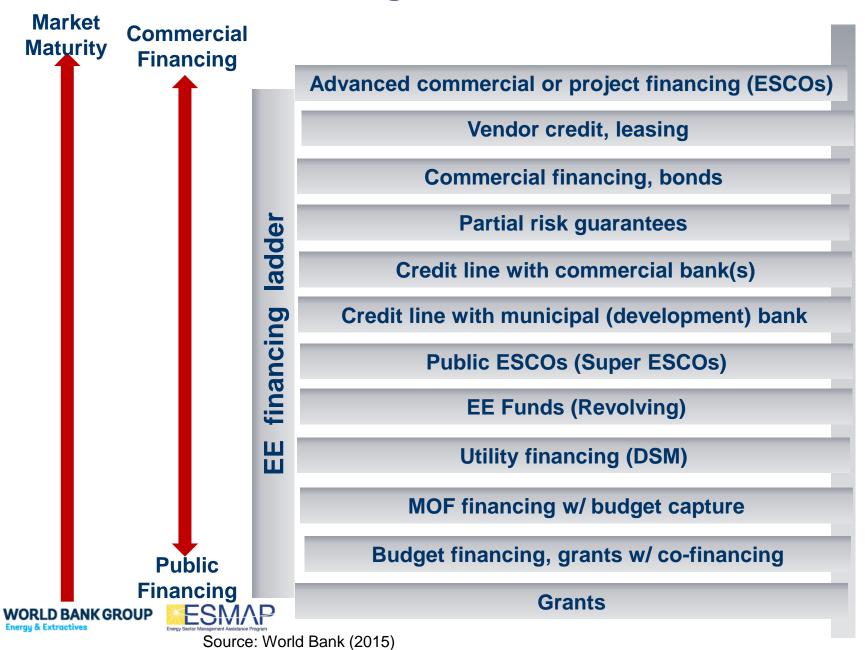
#### **Finance**

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





### **EE Financing Mechanisms**



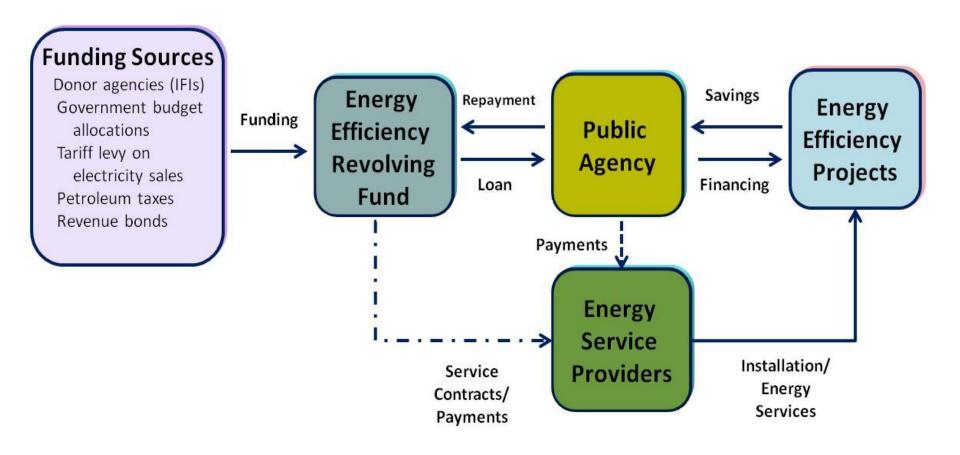
### **Factors Determining Choice of Mechanism**

- Country/city context
- End-use sector
- Maturity of financial markets
- Legislative/regulatory framework





### **Typical Structure of EE Fund**







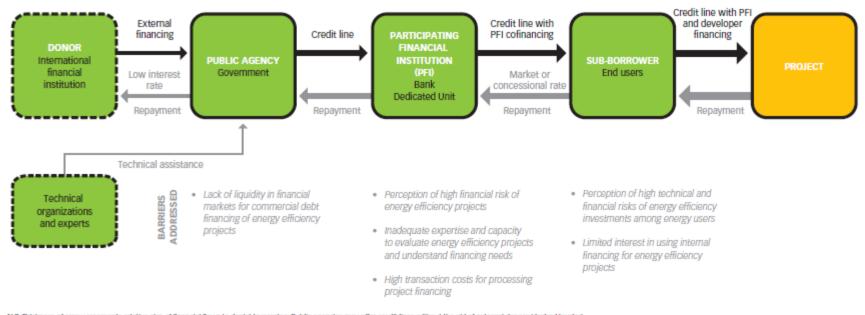
### **EE Funds - Examples**

- Bulgaria Energy Efficiency Fund
- Romania Energy Efficiency Fund
- Armenia Renewable Energy and Energy Efficiency Fund
- Thailand Energy Conservation Fund (ENCON)
- Korea Korea Energy Management Fund
- India State Energy Conservation Funds
- Sri Lanka Sustainable Energy Fund
- China National incentive fund based on coal savings
- South Africa Central Energy Fund





### Typical Structure of Dedicated EE Credit Line



N.B. Thickness of arrow represents relative size of financial flows to depict leveraging. Public agencies may offer credit lines without the aid of external donors (dashed border).

- Create interest on the part of commercial banks in financing EE projects
- Enhance technical capacity of banks to scale up EE lending
- Leverage parallel financing from the participating banks for EE financing
- Strengthen the participating bank's capacity in identifying and managing project risks
- Assist banks in exploring business opportunities in other low carbon lending businesses.

Source: Sarkar et al (2014), Designing Credit Lines for Energy Efficiency, World Bank.





### **EE Credit Line - World Bank Examples**

Country	Launch year	Close year	Number of PFIs	Is the line specific to energy efficiency?	Target sector	World Bank financing (US\$ millions)	Cofinancing <sup>a</sup> (US\$ millions)	Cofinancing (percentage World Bank financing)	Total financing (US\$ millions)	Disbursement rate (percent)
China	2008	2013	2	Υ	Large and medium industry	200	200	100	400	89
China	2010	2014	1	Υ	Large and medium industry	100	500	500	600	20
China	2012	2016	1	Υ	Industry, buildings, SMEs and ESCOs	100	200	200	300	0
China	2011	2016	3	Υ	Industrial	133	134	101	267	11
China	2012	2018	2	Υ	Buildings	100	100	100	200	0
Tunisia	2009	2014	2	Υ	Industrial	40	80	200	120	18
Turkey	2009	2014	2	N	Industrial	600	550	92	1150	100
Turkey	2012	2016	2	N	Industrial	500	150	30	650	44
Ukraine	2011	2016	1	Υ	Industrial, commercial and municipal	200	n/a	n/a	n/a	32
Uzbekistan	2010	2016	2	Υ	Industrial	24	4.8	20	28.8	49
Turkey	2013	2018	3	N	Energy-intensive SME subsectors	201	50.25	25	251.25	7
Uzbekistan	2013	2016	3	Υ	Industrial	99	43	43	142	14

Source: Limaye 2013.

Note: PFI = participating financial institution; SME = small and medium-size enterprise; ESCO = energy service company

a. Excludes financing from end users.

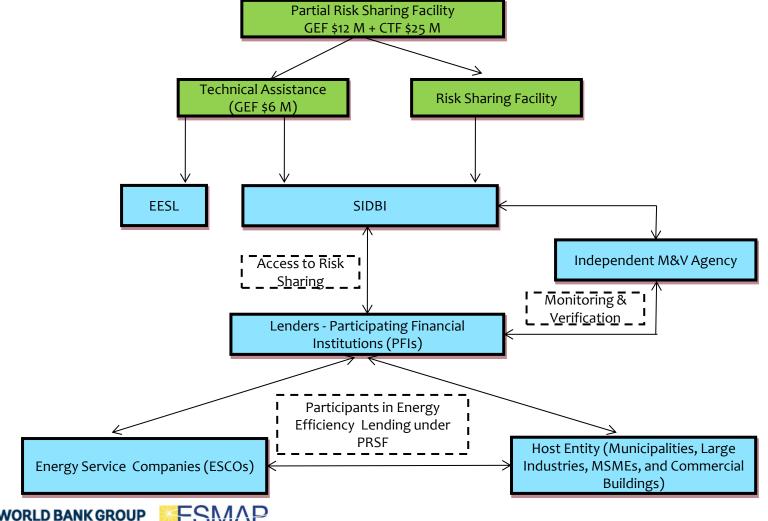
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### India PRSF for Energy Efficiency

(World Bank, approved 2015)



### **THANK YOU**

