

Energy Efficient Cities Initiative

– Leveraging Local and International Financing for
Energy Efficient Urban Operation and Development

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Energy Sector Management Assistance Program





Energy Sector Management Assistance Program



- Established in 1983.
- A global technical assistance partnership administered by the World Bank and sponsored by official donors.
- Focusing on **energy service** for poverty reduction, **energy security** through supply diversification and energy efficiency, and **energy sustainability** for climate change mitigation and adaptation.
- Leveraging World Bank lending, developing innovative policies and solutions, and disseminating knowledge and best practices.





Financing Energy Efficient Cities:

Large Impacts

By 2030:

- 3/4 of global energy use and GHG emissions will come from cities
- 81% of urban energy demand increases will come from cities in developing countries
- Tripling of urban built-up areas in developing countries (compared with 2000)

Major Constraints

Investment in EE is limited by:

- Priorities on delivering key urban services and access
 - How to mainstream EE in cities?
- Budgets, incentives, technical and institutional capabilities
 - What is causing the blockage?
- Insufficient on-the-ground results
 - Where are the next Curitiba and Rizhao?





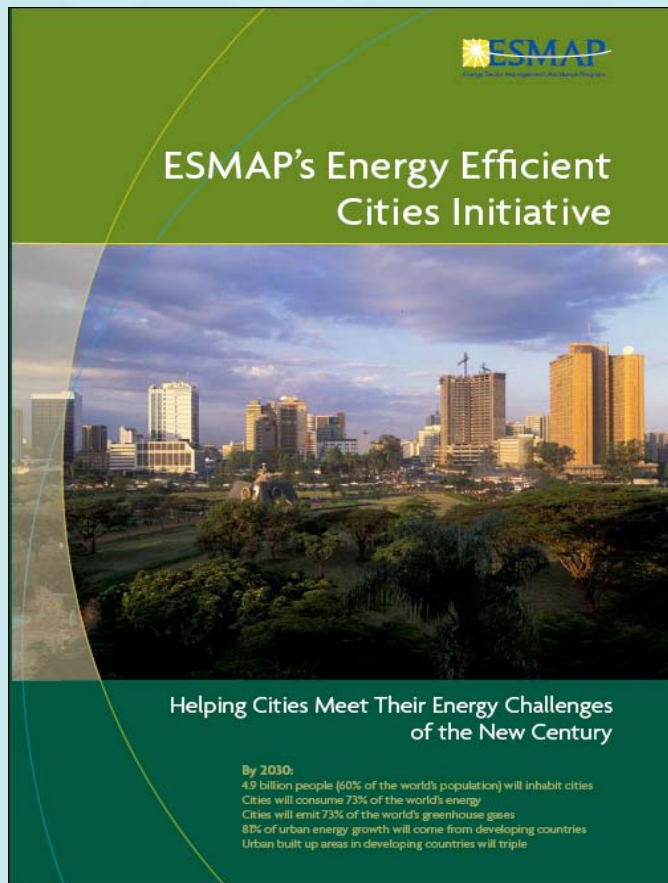
ESMAP Response to Urban Energy Challenges

- **Energy Efficient Cities Initiative**
- **Parallel Activities:**
 - Adoption of Building Energy Efficiency Standard and Associated Carbon Financing Methodology
 - Public Procurement of Energy Efficiency Services
 - Energy Efficiency in Water and Sanitation Utilities





Energy Efficient Cities Initiative



EECI Components

- **Rapid analytical framework (RAF) for EE retrofits in cities and energy planning tools**
- **Small grants program through Cities Alliance**
- **Urban EE good practice awards and database**
- **Development of WB regional urban lending operations**
- **Outreach, knowledge exchange, and dissemination**





Energy Efficiency in Cities: Local Leverage

Sector Category	Subcategory	City Government Leverage
Industry	Manufacture	Indirect, weak
	Construction	Indirect, weak
Transport	Private/commercial motor vehicles	Indirect, weak
	Government motor vehicles	Direct, strong
	Public transit systems	Direct, strong
Municipal Services	Water supply and sanitation	Direct, strong
	Solid waste management	Direct, strong
	Public lighting	Direct, strong
Buildings	Public buildings	Direct, strong
	Commercial buildings (non-public)	Indirect, strong in new constructions
	Residential buildings	Indirect, strong in new constructions





Financing EE Cities: Role of International Assistance

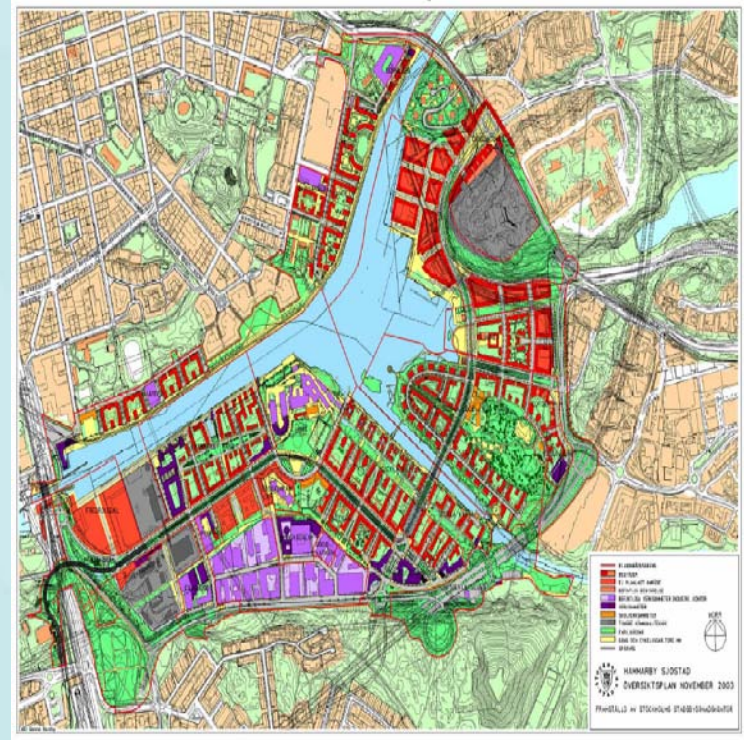
Sector	Short Payback (under 5 yrs)	Medium Payback (5-10 yrs)	Long Payback (over 10 yrs)
Municipal Services	<ul style="list-style-type: none"> • Pump retrofits 	<ul style="list-style-type: none"> • System rehabilitation 	<ul style="list-style-type: none"> • Modern waste management facility
Buildings	<ul style="list-style-type: none"> • Utility DSM programs 	<ul style="list-style-type: none"> • Selected retrofit measures 	<ul style="list-style-type: none"> • Building EE code compliance
Transport	<ul style="list-style-type: none"> • Traffic management 	<ul style="list-style-type: none"> • Mass transit improvements 	<ul style="list-style-type: none"> • Transit oriented urban development
	Local Financing (Gov/Pri/Com)	MDB and Bilateral Financing	
			Climate mitigation funds
	Barrier removal and incentives: GEF and CF		





Leveraging Urban Lending to Support Energy Efficient Cities

- **Eco2 Cities Framework for investing in urban development in East Asia and Pacific Region**
- **Municipal services lending platform in South Asia Region**





Leveraging Carbon Financing for Building Energy Efficiency

Building challenges in developing countries:

- Large technical potential ... much of it in future years
- Lack of standards is the least problem
- Compliance is abysmal in general
- It takes many years (and growth) to develop compliance capacity
- National/local governments have to commit for the long haul





Leveraging Carbon Financing for Building Energy Efficiency

Building blocks for a successful program

- Start with a realistic mandatory building energy standard
- Multi-year substantive engagements with national and local governments and industry to build compliance capacity
- The potential role of carbon finance
 - Focus on adoption of energy-efficient built-in technologies
 - Support rigorous compliance enforcement

ESMAP and WB Carbon Finance are developing

- Operational guidelines (available in September 2009)
- CF methodology for new buildings (draft in November 2009)





Expanding Public Procurement of Energy Efficiency Services

Main Hurdles:

- Preparation of technical information, audit, baseline
- Scope of RFP (defining the project, goods vs. services, etc.)
- Evaluation of dissimilar bids
- Budgeting (savings retention, payment of ESCO)
- Contract and financing terms (duration, payments, M&V)





Expanding Public Procurement of Energy Efficiency Services

Overcoming the Hurdles:

- Numerous solutions that require local adaptation
- The key is designing appropriate business and procurement models. This will require
 - Upfront surveys of potential bidders to determine available services and potential risks and identify training, risk sharing, and financing requirements;
 - Determine host facility procurement restrictions and preferences; and
 - Select/Develop key contract clauses to meet host AND service provider needs and capabilities.
- As experiences gained and processes more widely accepted, develop and disseminate standard documents.

† ESMAP study report available in July 2009





Improving Energy Efficiency of Water & Sanitation Utilities

- **Huge water losses:** 50 billion m³ worldwide, 70% in developing countries, and 70% technical losses.
- **Widespread inefficiency:** 30-40% of energy used in municipal water supply operations globally is wasted due to poorly managed pumping and filtration systems.
- **Key issues:**
 - Lack of senior management knowledge of the energy situation
 - Lack of management know-how
 - Lack of metering
 - Lack of financing for investments in part because of the above





Improving Energy Efficiency of Water & Sanitation Utilities

- Energy Monitoring and Target Setting (Energy M&T), the Brazilian Experience:
 - Large electricity savings achievable: up to 50% reduction
 - Synergies between energy and water: co-benefit in water loss reduction and possibility of micro-hydropower turbines
 - Improved service and increased access
- ESMAP is collaborating with IBNET to
 - Broaden IBNET benchmarking database to include energy efficiency and energy costs indicators
 - Provide grants and technical support to disseminate Energy M&T practice





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