

# Special session: financing for EE in buildings

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Buildings energy efficiency sessions in partnership with:





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## Energy Efficiency Training Week: Buildings programme

- 1. Where to start: Energy use in buildings
- 2. Where to start: Energy efficiency potential in buildings Special session: GlobalABC Regional Roadmaps
- 3. Toolkit: Energy efficient building design technologies
- 4. Toolkit: Energy efficient building system technologies Special session: Green Building in Africa – *Elizabeth Chege, KGBS* 
  - Special session: The GlobalABC Africa Roadmap for buildings and construction
- 5. What are the steps? Determining the current status of policies
- 6. Toolkit: Energy efficiency policies and target setting with guest speaker: Hlompho Vivian, GBC SA
- 7. What are the steps? Implementing codes and standards

8. What are the steps? Building operations and procurement with guest speaker: Christelle Van Vuuren, Carbon Trust

Special session: The multiple benefits of energy efficiency

9. Did it work? Evaluation and energy efficiency indicators

#### Special session: Financing energy efficiency in buildings

10. Buildings quiz

Enabling investment through:

- 1. Investment-grade policy
- 2. Funding, finance and fiscal instruments
- 3. Procurement
- 4. Project standardisation
- 5. Energy markets

## 1. Investment-grade energy efficiency policy

- Investment-grade energy efficiency policy
  - Focused goal
  - Focus on specific set of barriers
  - Focused group of stakeholders
  - Specific types of measures
    - including those not traditionally associated with energy efficiency
  - Specific criteria
    - for evaluating appropriateness of measures
    - for evaluating success of measures
- Bridging the gap between investors and policy makers

# 1. Enabling investment through policy

An effective investment model supports financing of energy efficiency retrofits in residential (particularly multi-family buildings) consists of three main elements.

- Government: supporting the banks to deliver funding
- Bank: delivering loans
- Homeowner: spending funds



#### What can we build on? Investment example in Poland

Programme for improving energy efficiency in multi-family buildings in Poland

State Thermo- modernization Fund	<ul> <li>Provides financial support in the form of a reduction to principal amount of a loan taken by a homeowners association to finance energy efficiency (EE) building retrofits (up to 20% of loan amount)</li> </ul>	Delivered: <b>\$479 million</b> in support
Commercial banks	<ul> <li>Offer loans (on a commercial basis) to homeowners associations to finance EE building retrofits</li> </ul>	Delivered: <b>\$2.6 billion</b> in commercial loans
Homeowners of multi- family buildings	<ul> <li>Mandatory condition for receiving financial support from the State fund – achieving a reduction in actual energy consumption in a building by 25% or more</li> </ul>	Invested: \$3.4 billion in efficiency improvements Achieved: \$250 million per year in energy savings
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Main success factors for improving energy efficiency in multi-family buildings in Poland:

- **Government:** willing to provide financial support
- Banks: willing to provide loans for energy efficiency retrofits
- Homeowners: willing to implement energy efficiency retrofits
- **Awareness:** increasing knowledge among homeowners about economic benefits of energy efficiency retrofits



Delivered: \$2.6 billion in commercial loans

Invested: \$3.4 billion in efficiency improvements

Achieved:



# 2. Enabling investment through funding, finance and fiscal instruments

- **Funding** Direct financial support for an energy efficient product or measure, most often from government budgets. Includes grants and subsidies.
- **Finance** Funds made available through financial instruments, such as loans or bonds, or through other contractual instruments, like energy performance contracts.
- **Fiscal incentives** Indirect financial support to incentivise more energy efficient behaviour and choices, such as tax incentives or energy tariffs.

#### Where might this funding come from?

- Government budgets: jobs, health, education, environment, energy
- Emissions trading
- Energy subsidy reform

# 3. Enabling investment through procurement

- Procurement is the act of purchasing products or services.
- Procurement policies can be set up for businesses or government organisations.
- Types of procurement:
  - **Public procurement**: policies that require public organisations to purchase products or services that meet a specific standard
  - **Bulk procurement**: policies that enable significant quantities of products or services to be purchased by organisations for either the organisation or clients
  - **Energy savings performance contracting**: agreement on delivering energy efficiency services for a range of projects

# Procurement

Public procurement

Bulk procurement



# The basics of procurement policies

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#### Procurement: development and implementation steps

#### Get commitment

Leadership agrees to the goals of energy efficient and sustainable procurement

#### Adopt a voluntary EE procurement policy

To test the procurement approach and to identify barriers

#### Conduct analyses of a limited set of products

To build credibility of the procurement approach

#### Develop procurement programme infrastructure

To reduce compliance costs and address barriers

#### Foster strategic partnerships with other jurisdictions/organisations

To achieve better pricing and improve program effectiveness

#### Track and monitor procurement activities

To understand the benefit and gain support for procurement

#### Make EE procurement mandatory

Develop enforcement mechanisms and make EE procurement standard practice

#### Update procurement specifications to higher efficiency

Introduce new products and higher efficiency products as the market evolves

Source: adapted from World Bank - https://openknowledge.worldbank.org/bitstream/handle/10986/17485/735070ESM0P12700EEProducts0TR003012.pdf?sequence=1&isAllowed=

## Energy efficient and sustainable public procurement

- What? The government purchasing efficient and sustainable products and services
- Why? Because governments spend more money and can influence the market for products and services
- **How?** Define minimum efficiency requirements in the procurement specifications and enable purchases based on cost effectiveness and lifecycle cost benefit analysis (and not based on first cost as used in some traditional procurement rules)
- **Result?** Efficient and sustainable product and service prices will go down, further improving the cost effectiveness of energy efficiency

# Energy efficient and sustainable procurement

- Purchasing products and services that meet certain energy efficiency criteria
- Approaches include:
  - Energy efficiency label / certificate
  - Technical specifications
  - Lifecycle assessment
  - Qualifying product list



From left to right: US ENERGY STAR, EU Energy label, China EE Label, India Bureau of EE Label, Korean EE Label, Mexico Sello FIDE, Thailand EGAT EE Label, Brazil Selo Procel

Source: ESMAP Driving Energy Efficiency Markets through Municipal Procurement http://documents.worldbank.org/curated/en/532071468326412153/pdf/893870ESMAP0P10curement0KS170140web.pdf



### Energy efficient and sustainable bulk procurement

- What? The purchase of efficient and sustainable products and services in large quantities for one organisation or a programme that sells or delivers those products or services to many people or organisations.
- Why? Because when products and services are purchased at large scale, it is possible to get a large quantity of "group discount" that will lower the cost
- How? Create a legal agreement directly with the product or service provider to enable the purchase of large quantities of products and services over time that will enable improved pricing on the purchase and lower costs for the product or service provider due to increased staff or production utilisation
- **Result?** Efficient and sustainable product and service prices will go down, further improving the cost effectiveness of energy efficiency

- EESL's UJALA programme:
  - the world's largest lighting replacement programme, which aims to replace 770 million old lamps with efficient LED lamps without government subsidies
- Thanks to bulk purchase:
  - UJALA LED bulbs cost only 50 INR
  - LED retail prices reduced from 800 INR in 2012 to 200 INR in 2016 and less today
  - Leading to one of the fastest LED price reductions in the world
  - Helped improve acceptance and availability of LEDs in India



## Bulk procurement of services: Energy Savings Performance Contract

- Energy service company (ESCO) often deliver on ESPCs:
  - Can provide financing for energy efficiency
  - Can provide energy efficiency services
  - Typically tasked with delivering/guaranteeing energy savings
- Range of buildings services:



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#### 4. Enabling investment through project standardisation



# 4. Enabling investment through project standardisation

What does a standardised approach look like?



efficiency project

being funded

## 4. Enabling investment through project standardisation

#### EDGE: A SOFTWARE, A STANDARD, AND A GREEN BUILDING CERTIFICATION SYSTEM



#### The ESCO market in South Africa



https://www.iea.org/topics/energyefficiency/escos/

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• Energy efficiency can provide real value to the power system



Figure 1. Load Duration and the Effect of Energy Efficiency. In this example, the system needs an additional 10% capacity for only ~50 hours a year.

• Wholesale energy markets



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- Retail energy markets
  - **Time of Use Pricing** which break the day up into two or more pricing periods to reflect on-peak and off-peak hours. Sometimes referred to as "block rates."
  - **Critical Peak Pricing** where the utility notifies the customer in advance (a day in advance or a few hours in advance) that a critical peak period, with much higher prices than usual, is coming. This warning allows customers to cut back their electricity consumption
  - **Peak Time Rebates** where customers are also warned in advance of a critical peak period, but instead of high prices, they get a rebate if they cut back on their energy consumption
  - **Variable Peak Pricing** where the day is split into different pricing periods (like for TOU pricing), but for the higher-priced peak periods, the price will vary depending on the wholesale price and utility to more closely mimic market (and system) conditions.
  - **Real-time pricing** hourly changes in retail prices, following market conditions.

#### What's the Cool Customer Program All About?



If you have central air conditioning and are looking for ways to save energy this summer, you may be eligible to join over 100,000 PSE&G customers who are already saving with PSE&G's Cool Customer Program.

This voluntary, energy-smart program helps you manage your home energy use all year round, so you save energy **AND** money without sacrificing comfort.

#### As a participant in PSE&G's Cool Customer Program\*, you receive:



#### **OPTION 2: Cycling switch**



Instead of a new thermostat and \$50 bill credit, a **cycling switch** installed on your central air conditioner compressor outside your home, with a \$4.00 credit on your electric bill for each summer month you participate, June-September, **plus \$1.00** per cycling event, year after year.

\* You must be a PSE&G electric customer and participate in the program for a minimum of two years.

#### Energy Efficiency Obligations

- A binding obligation to deliver a certain level of end-use energy savings, over a certain period of time
- Placed on energy companies (suppliers, distributors) or energy efficiency utilities or agencies
- Paid for by energy consumers through energy bills

- The Ekurhuleni Metropolitan Municipality has a stepped tariff system.
- NERSA the National Energy Regulator allowed the municipality to raise its tariffs and allocate it to a separate account for EE refurbishment. The regulator authorised the levy on condition that an external audit is carried out to prove that the money was only spent on the functions specified. A second fund was also developed to focus on energy efficiency specifically.
- There is thus a form of cross subsidy happening rich households use more electricity, the revenue collected from wealthier areas is greater than from poor households (as there is an increase in tariffs after a certain threshold electricity consumption). A small percentage of the overall revenue is ring fenced, and thus a proportion of wealthier household income sustains energy-efficiency practices, such as solar water heater roll out, in poorer areas.

#### Case Study: Ekurhuleni Metropolitan Municipality Project

- **Tariff system-** The more electricity is used, the more is paid per kWh. A high penalty of R1.50 per unit is applied for residential users consuming over 2500 kWh per month. Surcharges were also introduced for commercial and industrial consumers
- Internet metering system Consumers and officials are able to check their live consumption data, which is updated every 30mins
- Energy saving retrofitting of public buildings- Currently 5 civic centre complexes and 20 depots have been retrofitted, with roll-out planned for 200 other municipal buildings
- Energy saving technologies for new buildings- The Chief Albert Luthuli Housing project is a mixedincome development, featuring both bonded and government-subsidised houses
- **Solar water heaters for mid and high income residents-** The Ekurhuleni Metropolitan Municipality (EMM) has recently signed an agreement with the Central Energy Fund (CEF), allowing the latter to run a solar water heater (SWH) rollout programme in the Metro aimed at mid- to high-income residents.

# **Buildings** quiz

# **Buildings quiz!**

- Access the Roadmap questionnaire via the App check your notifications
- Or through this QR code:



#### https://tinyurl.com/y4dgvtcs

# Wrap up



#### Key challenges and opportunities

- Lack of policies, unclear responsibilities, utilities' "revenue loss", lack of inter-ministry cooperation, lack of resources
- Cost of retrofits, cost of technologies, lack of capacity, lack of R&D
- Communication to stakeholders, inclusivity, awareness and capacity building, adaptation of solutions to different building types and contexts, behaviour.

#### Creating a pathway towards low energy buildings

- GlobalABC Regional Roadmaps
- Regional collaboration
- National Roadmaps and strategies to 2050

#### • Support and resources

- IEA publication database
- Global Exchange on Buildings and Construction (IEA and GlobalABC)
- EETW alumni network

