Energy efficiency projects at speed and scale

UNECE Training Seminar on High-performance energy efficiency standards in buildings

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The Copenhagen Centre on Energy Efficiency

- International EE Agencies: e.g. UN Environment, IEA, IPEEC, WEC
- SEforAll and the Global EE Accelerator Platform
- Copenhagen Centre on Energy Efficiency
- Regional Partners e.g. UN Regional Commissions, research/NGO community
- National and Subnational Governments
- Private Sector energy efficiency providers
- Development Banks and the Finance Community

• Assisting energy efficiency change in countries and cities
• Accelerating energy efficiency through innovation in delivery models
• Raising the profile of energy efficiency
Global facts on energy efficiency in buildings

Policy frameworks
Projects development
EE financing
Local markets & capacity

13.6% of the USD 1.7 trillion invested across the global energy market
Need for implementation at scale

**Aim**: to provide streamlined, structured and aggregated expertise on technical, financial, legal aspects related to energy efficiency investment project development

- Small scale fragmented projects
- Lack of data and baselines
- Insufficient local project development capacity
- Issues with access to project finance
How we work

1. Cities, towns, villages
2. Standardised data collection & analysis
3. Bundling of projects
4. Financing & Procurement
5. Investment & installation
6. Standardisation

Aggregation
Facilitation
STANDARDISATION

- Helps to streamline process
- Increases transparency
- Mitigates investment risks
- Reduces transaction costs
Standardisation: Example 1

Efficiency Valuation Organisation - EVO

An international non-profit organisation with the mission to develop and promote the use of standardised efficiency protocols and help users to qualify the risks and benefits in efficiency business transactions

Verifying EE investments

Contract environments (ESCOs)
Public programs (utilities)

M&V Protocols

IPMVP, FEMP, ASHRAE
The 2006 California EM&V Protocols

International Performance Measurement and Verification Protocol

• Volume I - *Energy Savings Concepts and Tools*
  - Defines basic M&V terminology (4 “Options”)
  - General procedures to achieve reliable and cost-effective determination of savings
  - Applicable to energy or water efficiency projects in buildings and industrial plants

• Volume II - *Indoor Environmental Quality*

• Volume III - *New Construction and Renewables*  [https://evo-world.org](https://evo-world.org)

SE4ALL EE HUB
Standardisation: Example 2

Investor Confidence Project - ICP

An international framework for reducing owner and investor risk, lowering due diligence costs, increasing certainty of savings achievement and enabling aggregation

ICP standardises the building renovation process

- Project development and documentation
- Understanding of risks and value
- Contracts
- Performance data and reporting

http://www.eeperformance.org/
AGGREGATION

- Creates a larger size investment
- Increases attractiveness to financiers
- Enhances the access to finance
- Increases scale and impact
A structure, which brings together several relatively small-scale energy efficiency projects or activities, to form a single thematic portfolio (i.e. ‘bundle’) above a certain investment threshold, which can be procured, administered and financed under the same structural framework.
1. DATA COLLECTION
2. DATA ANALYSIS
  • Baseline data
  • Energy savings potential
  • Avoided GHG emissions
  • Investment size
  • Energy cost savings
3. BUNDLE DESCRIPTION
EE in Existing Public Buildings

Aggregation of Buildings:

1. Buildings in Municipality A
2. Buildings in Municipality B
3. Buildings in Municipality C
4. Buildings in Municipality D
5. Buildings in Municipality E
6. Buildings in Municipality F
7. Buildings in Municipality G
8. Buildings in Municipality H
9. Buildings in Municipality I
10. Buildings in Municipality J

~ x million inhabitants

Interactive depositary for bundles development

Typical public buildings: schools, & sports centres, hospitals, etc..

On-going work:

- Development of the methodology for the tool is in progress
- Active engagement with local CoM offices
- High potential for replication across typical buildings
- Opportunity for baseline assessment and progress tracking
EE Street Lighting

Aggregation of Municipalities
1. Municipality A
2. Municipality B
3. Municipality C
4. Municipality D
5. Municipality E
6. Municipality F
7. Municipality G
8. Municipality H
9. Municipality I
10. Municipality J

10 X Municipalities

1. Forecast savings & Bundling

2. Project development
3. Financing
4. Public procurement
5. Implementation

On-going work in Argentina:
- Data collection is completed
- Technical assessment for the bundle is completed
- 41 municipalities
- Light fixtures to replace: app.270K
- Total investment: 135 Million USD

On-going work in Georgia:
- Data collection is completed
- Technical assessment for the bundle is under way
- 11 municipalities
- Light fixtures to replace: app.50K
- Total investment: 7.8 Million USD

On-going work in Armenia:
- Data collected is completed
- Technical assessment for the bundle is completed
- 16 municipalities
- Light fixtures to replace: app.13.5K
- Total investment: 2.1 Million USD

On-going work in Argentina:
- Data collection is completed
- Technical assessment for the bundle is completed
- 41 municipalities
- Light fixtures to replace: app.270K
- Total investment: 135 Million USD
- Discussions with MDBs on-going
- Formation of SPV under consideration
How does it work?

Key elements:
- Standardised data collection template to be filled out by cities
- Standardised data analysis methodology
- Standardised results for each city
- Aggregation of the results across different cities to achieve the scale

Key success factors:
- Support from the national government
- Collaboration with a responsible local partner to ensure the connection to cities (like CoM office)
FACILITATION

Engages key stakeholders
Links project ideas to financing
Creates the ground for replication
Raises profile of efforts
Facilitation

Potential projects

Bankable projects

NEED FOR FACILITATION

Funding for development & implementation

Investors
Facilitation model

Facilitation

Stakeholders engagement

National government + Local actors + Financiers

Identification of opportunities

Street lighting
Buildings
Mobility
District Energy
Water Sector

Technical assistance

Data collection
Technical assessment
Project aggregation
Implementation model

Link to project financing
WHO IS THE BORROWER??
COUNTRY XYZ

Governance
Policies
Market conditions

Municipality A
Municipality B
Municipality C
Municipality D

Project entity

Government org, ESCO, SPV, Local bank, etc.

Financier

UNEP DTU PARTNERSHIP
COPENHAGEN CENTRE ON ENERGY EFFICIENCY
SE4ALL EE HUB
Georgia

Municipality A

Municipality B

Municipality C

Municipality D

Ministry of Finance

Municipal Development Fund

• Detailed project design
• Grants or loans to municipalities
• Tendering and contracting
• Procurement
• QA and M&V

Financier

$$$
Take-aways

1. There is a big gap between city-level pipeline of projects and the available funding
2. The solutions include: standardisation, aggregation and facilitation
3. There is a need for the technical assistance to develop standardised bankable projects, aggregate them into larger size portfolios and facilitate the link to financing through appropriate financial structures
4. Need to determine ‘a borrower’ for each country and potentially for each bundle
THANK YOU!

TOOLS
Links to web-based tools that can inform or support your energy efficiency projects.

PUBLICATIONS
Selected energy efficiency publications from various sectors.

RESOURCES
Find information and resources on energy efficiency topics.

FUNDING
Find finance and funding opportunities on for energy efficiency activities.

EXPERTS
Seek experts or register yourself as an expert for energy efficiency projects.

E-LEARNING
Selected electronic learning and educational material that advances energy efficiency.

Knowledge Management System

The Copenhagen Centre’s Knowledge Management System (KMS) engages stakeholders in energy efficiency initiatives through knowledge sharing and outreach. The KMS provides users with access to selected information, reports, publications, and databases on energy efficiency. The KMS is linked to many other energy efficiency initiatives.

http://kms.energyefficiencycentre.org/

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