





8. Financing

John Dulac Bangkok, 3 April 2019



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Trainer(s): John Dulac

Scenario: There are ambitious targets but seemingly little funding available to realise energy efficiency projects.

Question: What are the financing options that you can take?

Training Overview



20 mins



1. Investment grade energy efficiency policy

- Why is it important?
- Introduction to a banker
- Why is it important?

2. Financing Approaches

Public Procurement

- Energy efficiency and sustainable procurement
- **Energy Efficient Purchasing**
- **ESCOs**

4. Case Studies

Public Procurement Trends and Digitalisation

70 mins



1. Investment grade energy efficiency policy

What is it?
Introduction to a banker
Why is it important?

Investment Grade Policy: What is it?



- What is energy efficiency policy?
 - A set of strategies, legislation, regulations, measures, programmes that together stimulate energy efficiency improvement
- What is investment-grade energy efficiency policy?

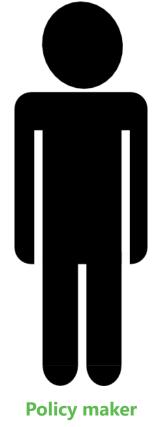
A set of strategies, legislation, regulations, measures and programmes that together that stimulate energy efficiency improvement



Investment grade policy: Introduction to a banker







Long term

Public good

Social cost benefit analysis

Political

Casio

Economic impact Political impact Time horizon

Motivation

Evaluation criteria

Relationship to risk

Type of watch

Big concerns

Short term

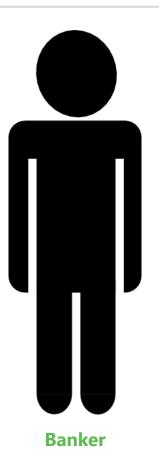
Revenue target

Internal rate of return (IRR)

Legal

Rolex

Risk, bankability, creditworthiness,



Investment grade policy: Why is it important?





It provides environmental certainty in EE project investment that gives investors greater confidence:

- Focused goal
- Focus on specific set of barriers
- Focused group of stakeholders
- Specific criteria
- Specific types of measures

IGEEP

Setting **standards**

Applying market-based **incentives**

Designing tailored **financing mechanisms**



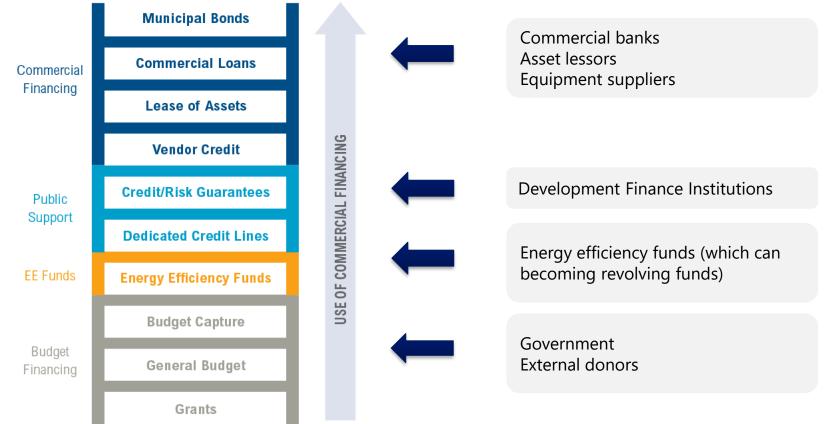
2. Financing Approaches

Financing approaches





The Financing Ladder

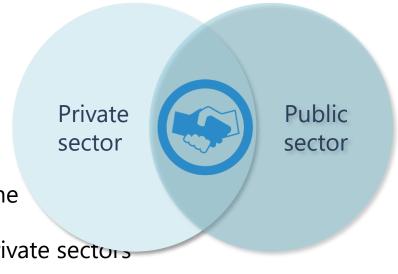


Financing approaches



PPPs for increased investment in municipalities

- PPPs make projects affordable
- Injection of private capital
- More efficiency in procurement
- Faster project delivery in a defined timeframe
- Better risk allocation between public and private sectors
- Reduced costs to the public sector for energy efficiency





3. Public Procurement

Energy efficiency and sustainable procurement Energy Efficient Purchasing ESCOs

Energy efficient and sustainable 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 into procurement specifications and enable purchases based on cost effectiveness and cost benefit analysis (and not first cost)
- Result? Efficient and sustainable product and service prices will go down, further improving the cost effectiveness of energy efficiency

Procurement: Energy Efficient Purchasing (EEP)





 Purchasing energy-using products that meet certain energy-efficient criteria

- Approaches and tools for EEPs:
 - EE Labelling
 - Technical Specification Catalogue
 - LLC, Best Value Award
 - EE Product Preference
 - 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

TECHNICAL SPECIFICATIONS FOR ENERGY EFFICIENT TUBELIGHTS Energy Efficient Tubelight Retrofit Assembl with electronic ballast, G-5 Cap and confi the existing assembly of FTL of 36W and 4 and also the Mandatory Technical Specifical T-5 Lamp. 28W. Colour temperature 60 Average Life 15000 hrs. should be satisfying a) Lumen Maintenance after 2000 hrs. of oper less than 95% of declared value.

Unmen Maintenance after 70% of rated life Guarranteed Technical Particulars for 28W T-5 EETL with EB as a Composite 90% of declared value. Lumen Maintenance after 90% of rated life than 85% of declared value. Lamp Type 1. The Ballasts shall satisfy at rated volta-Power (watts) satisfactorily in the input voltage range of Colour Temperature DAKSHIN HARYANA BIJLI VITRAN NIGAM LIMITED requirements as noted below-Rated Lumens of T-5 TYPE TEST :E 1 Energy Efficient Electronic Bellests shall be su Lamp for use on 230V, 50 Hz, single -phase Power Factor requirements and to IS:13021 with power cons Harmonics (THD) declared by the manufacturer. The Ballast sha shall work satisfactorily in the input voltage rang Open Circuit Voltage SPECIFICATION NO. S-130/DD-177 (Version-ID) 2. The Ballast when used along with the lamp of a Open Circuit Voltage (requirement of type tests: Suppliers shall so Lamp Current Crest Fa Certificate to the DHBVN at the time of inspe nentioned hereunder, from approved laborator Light Intensity from 180 Light Output Regulation a) The total nower consumption by the Electronic exceed 31W when measured by true RMS pow Radiated Emission Conducted Emission b) The lumen output of standard fluorescent tubul electronic ballast at rated input voltage should Input Voltage Range for TECHNICAL SPECIFICATION FOR ENERGY when operated with electromagnetic ballast. c) Electro magnetic interference caused by the Endurance Test EFFICIENT TUBELIGHTS prescribed in EN:55015/IS:6842/1997 for radial Shut Down in case of it Preheat Startup Performance Guarante Make of T-5 Lamp & fix Lumens Maintenance Issue Month : June. 2007

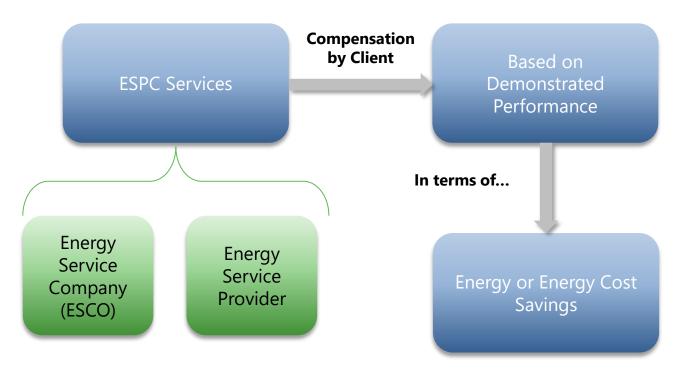
Source: ESMAP Driving Energy Efficiency Markets through Municipal Procurement IEA 2019. All rights reserved.

Energy Savings Performance Contract (ESPC)





• A financing mechanism to implement EE projects and deliver energy savings

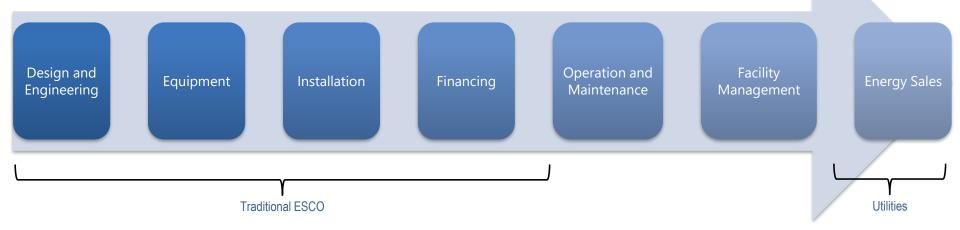


Energy Savings Performance Contract (ESPC)





- A financing mechanism to implement EE projects and deliver energy savings
- Energy service companies (ESCOs) often deliver on ESPCs:
 - Can **provide financing** for energy efficiency
 - Can **provide services** for energy efficiency
 - Typically tasked with **delivering/guaranteeing energy savings**





4. Case Studies

Case Study: Thailand ESCO Revolving Fund



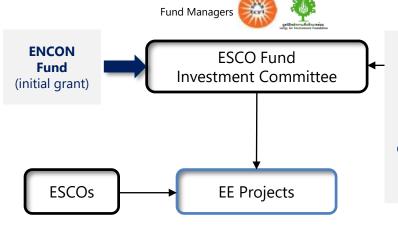


THAILAND ESCO FUND

Established: 2008 Objectives:

- Stimulate private financing for energy efficiency and renewable energy projects
- Support private investments through **ESCOs**
- Promote \$40+ million in investment
- Accrue \$8 million in energy savings

HOW IT WORKS:



FINANCING INSTRUMENTS

Equity Investment Venture Capital **Equipment Leasing Technical Assistance** Carbon Credit Market Credit Guarantee Facility

Implementation Results:

- Projects supported: 39
- Total investment: \$ 160 million
- Energy savings: \$ 18 million/year
- Energy savings: 21 ktoe/year

(No. of ESCOs: 45)

Financing Approach

Revolving Fund

Case Study: Malaysia Green Technology Financing Scheme







Established: 2010

Objectives: Promote investments by providing easier

access to financing and at a lower

financing costs

Partners:











HOW IT WORKS:

Green certificate









28 banks & financing institutions

Guarantee Corporation CGC (Administer quarantee & rebate)

60% guarantee; 2% rebate

Implementation Results:

Total projects supported: **272**

EE projects supported: 15

Total investment: \$ 28 million

Expected impact:*

Green investment: \$ 1.36 billion

Jobs created: 4,645

Emission reduction: 3.16 mtCO2eq/yr

Financing Approach

Guarantees

IEA 2019. All rights reserved. * From total 272 projects

Case Study: Emfuleni Water Leak Management Project





EMFULENI WATER LEAK MANAGEMENT PROJECT

Implemented: 2005

Objectives: Reduce water leakage secure energy

savings through an ESPC

Partners:

HOW IT WORKS:









Client

EMFULENI



ESCO implements project

PPP Build-Own-Operate-Transfer Shared Savings Performance Contract

Implementation Results:

- Water savings: **7-8 million m³/yr**
 - (30% of former supply saved)
- Energy savings: \$ 3.8 million/yr
- Energy savings: 14,250 MWh/yr
- GHG emission reduction: 12,000 tonnes/yr
- Payback period of initial investment:
 - <3 months

Financing Approach

Performance Contracting

How Energy Efficient Purchasing addresses barriers



Enact EE procurement policies/programs...

To overcome restrictive policies and procedures

Create tools that can facilitate EEP efforts; provide training and dissemination plans...

To overcome poor or no access to information about EE opportunities

Develop incentives strategies

To counteract behavioural inertia

Ensure robustness of certification process through independent inspections; monitor compliance

To enable successful realisation of energy efficiency post-implementation

How ESPCs can address the barriers





Develop credible and reputable ESCOs

Develop a local financing market (e.g. **ESCO** funds)

To overcome limited interest from financial institutions

Develop certification/insurance for ESCO projects

Create government initiatives (EE targets; training; promotion and awareness)

To overcome uncertain government support

Bundling of small projects for SMEs

To overcome high transaction costs

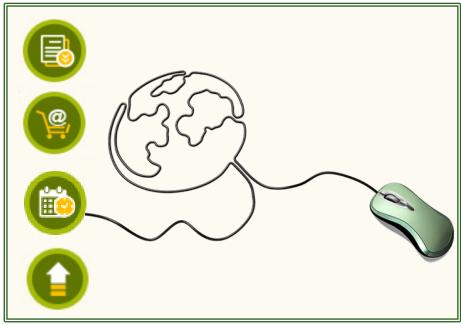


5. Public Procurement Trends and Digitalisation

Trends in Public Procurement







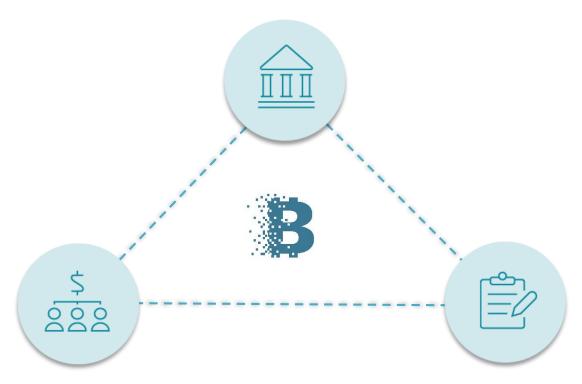
Harmonisation of public procurement policies

E-procurement

Digitalisation for Energy Efficiency Financing



- Blockchain and smart contracts for ESPCs
 - Automating transactions and repayments









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