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ASIA LOW CARBON BUILDINGS TRANSITION PROJECT

Life Cycle Assessment for Transitioning to a Low-Carbon Economy | PROJECT

4.2 ESCO Business Models

November 2024

ASEAN CENTRE FOR ENERGY ACE

EESL

HEAT

Supported by:

Federal Ministry for Economic Affairs and Climate Action

IKI INTERNATIONAL CLIMATE INITIATIVE

on the basis of a decision by the German Bundestag

WHAT WILL YOU LEARN?

01 Concept of Energy Saving Companies (ESCOs)

02 ESCO Market Potential in the Building Sector

03 ESCO Business Models

04 Energy Performance Contract

05 Demand Aggregation and Bulk Procurement

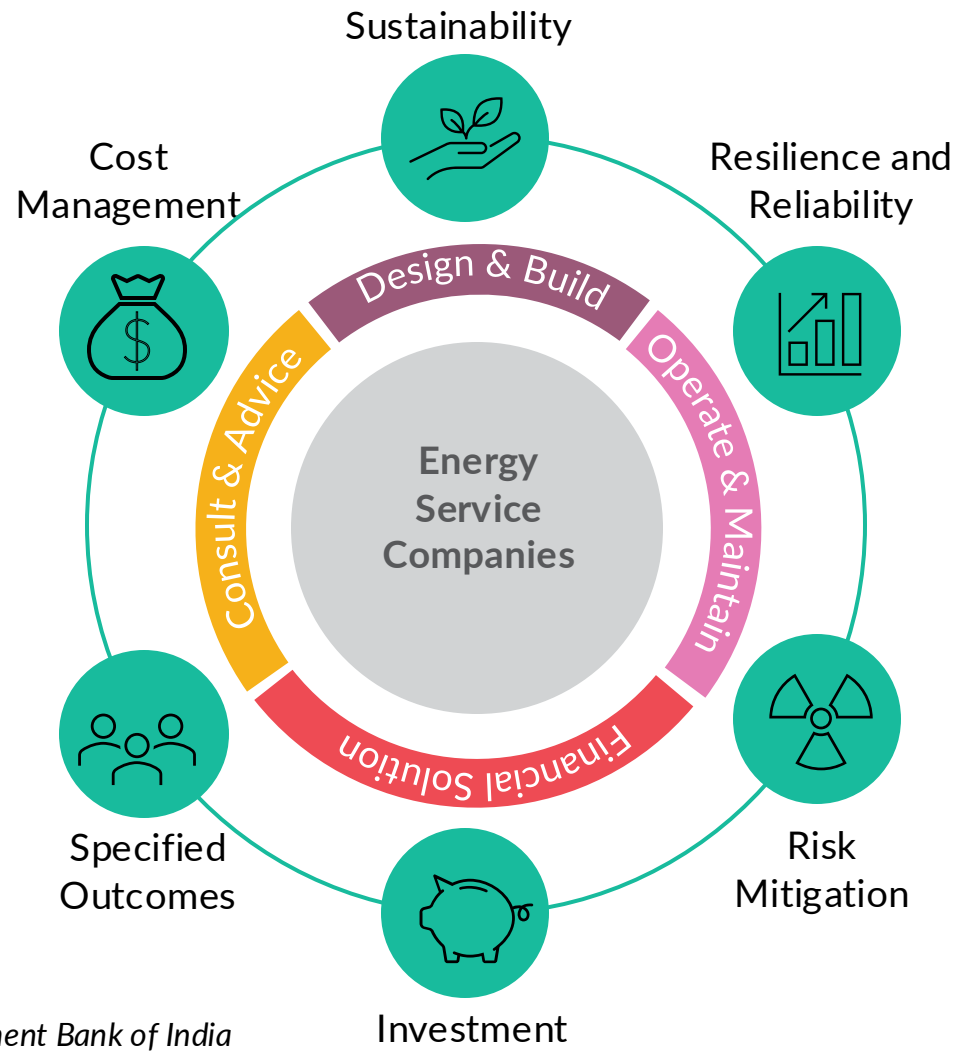
06 Case Studies on ESCO Projects

07 Opportunities, Challenges and Risks

ENERGY SERVICE COMPANIES

ESCOs: The concept and operating principles

- Energy service companies (ESCOs) develop, design, build and arrange financing for projects that save energy, reduce energy costs, and decrease operations and maintenance costs at their customers' facilities
- In general, ESCOs act as project developers for a comprehensive range of energy conservation measures and assume the technical and performance risks associated with a project
- ESCOs are distinguished from other firms that offer energy efficiency improvements in that they use the performance-based contracting methodology. When an ESCO implements a project, the company's compensation is directly linked to the actual energy cost savings
- The substantial energy efficiency retrofits and renewable energy technologies inherent in energy savings performance contract (ESPC) projects typically require a large initial capital investment and may have a relatively long payback period. Debt payments are tied to the energy cost savings guaranteed for the project, so the agency pays for the capital improvements of the ESPC project with the money saved by the project



Source: Small Industries Development Bank of India

MARKET POTENTIAL

For energy efficiency in buildings in Southeast Asia

- The percentage of primary energy used in buildings is estimated to be 37% in Cambodia, 38% in Indonesia, 15% in Thailand and 22% in Vietnam, which is an indicator of the market potential for energy efficiency improvement in buildings
- Like other markets around the world, the ESCO industry is still nascent across ASEAN countries. Many ESCOs suffer from a lack of scale and balance sheet strength, and a lack of contractual confidence for their services, such that many financially viable energy efficiency projects do not get financed
- Vietnam is proposing that the Vietnam Electricity (EVN) be made a Super ESCO
- Cambodia is in the process of discussions for developing a legal and regulatory framework for ESCOs

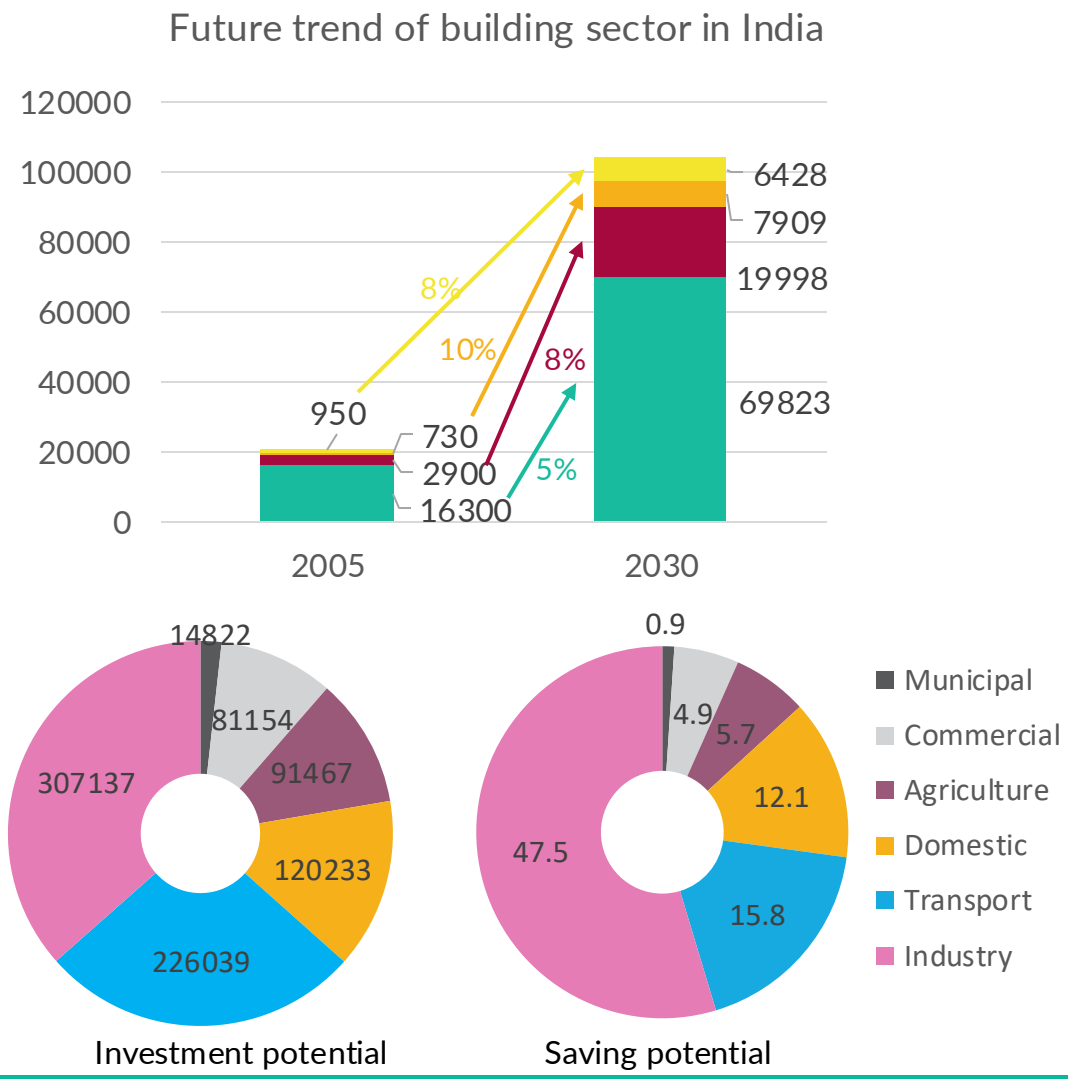
Country	Population '000s (2019)	Total final energy consumption Mtoe (2019)	Energy use per capita toe (2019)	% of primary energy used in buildings
Cambodia	16,250	6.6	0.4	37%
Indonesia	270,626	174.0	0.6	38%
Thailand	69,428	98.9	1.4	15%
Vietnam	95,545	64.1	0.7	22%

Source: Lister et al., 2020

MARKET POTENTIAL

For energy efficiency in buildings in India

- In 2019–2020, the primary energy demand was 810 Mtoe. The estimated energy saving potential is 47.5 Mtoe and 80 billion kWh of electricity
- The EE investment potential is estimated to be USD73 billion by 2031
- The overall constructed area is expected to increase by about 5 times from 21 billion square feet (2005) to approximately 104 billion square feet by 2030 at a CAGR between 5% and 10%
- Building energy consumption accounts for over 30% of electrical energy consumption in the country and is rising annually at 8%
- The ESCO ecosystem in India has received a boost due to the proactive measures of the government. However, it is yet to mature into a preferred option for financing of energy efficiency projects

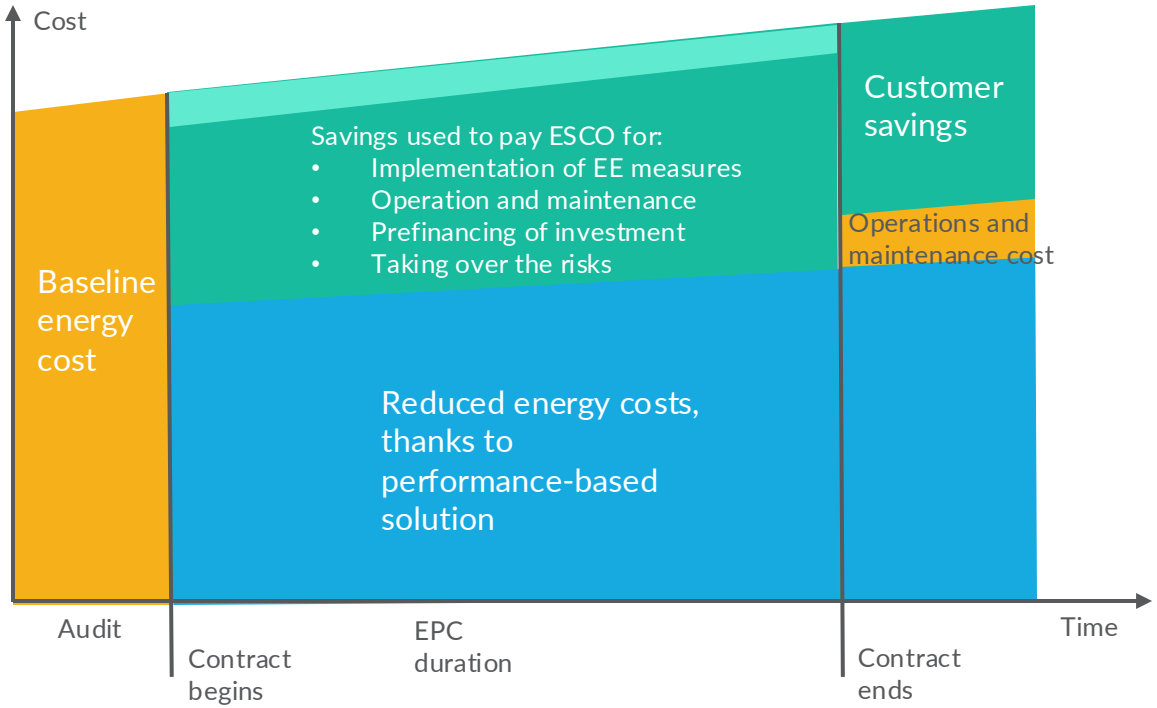


Sources: Garnaik, 2023; Energy Efficiency Services Limited

ESCO CONTRACT

Energy performance contract models

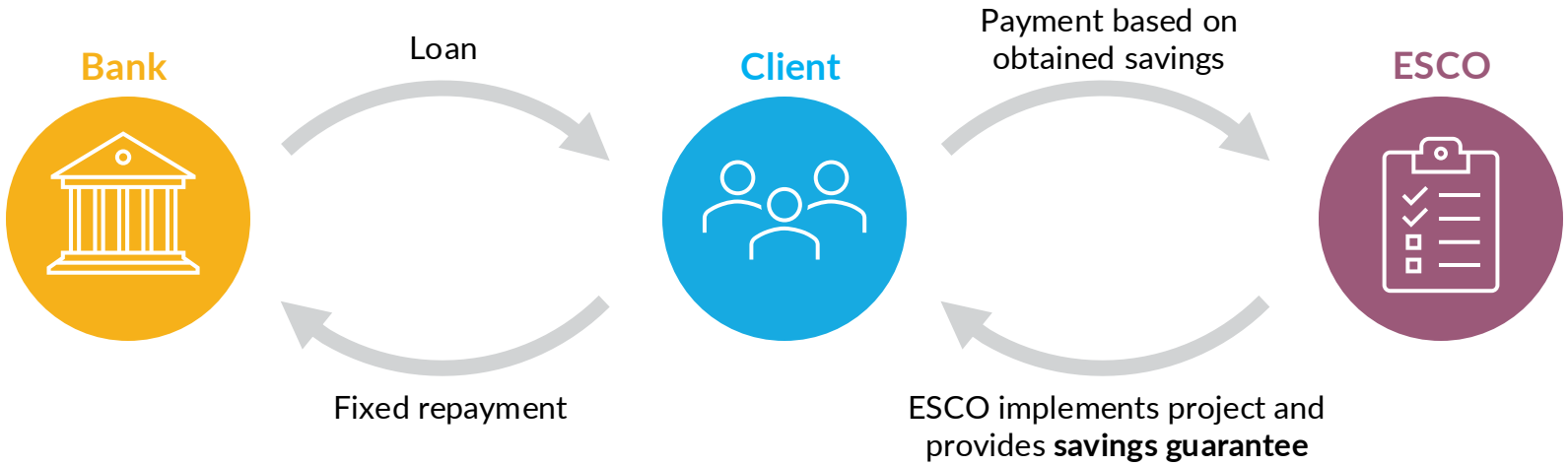
- Most agreements between customers and ESCOs are underpinned by energy performance contracts (EPCs). The EPC commits the ESCO to installing the necessary equipment, provides a performance guarantee and establishes the terms of any upfront or ongoing payments, which are intended to be less than the financial savings realized by the project. The two most common types of EPCs are: (i) guaranteed savings model or (ii) shared savings model
- The EPC provides the customer with a guaranteed level of energy savings and the ESCO with a reliable source of revenue. EPCs typically last from two to 20 years, depending on the measures implemented. Depending on the customer's preference and access to capital, the customer, the ESCO, or a combination of the two can be responsible for securing the finance for the project. A direct loan agreement with a third-party lender is an option for both parties



Source: International Energy Agency

ESCO CONTRACT

Guaranteed savings model

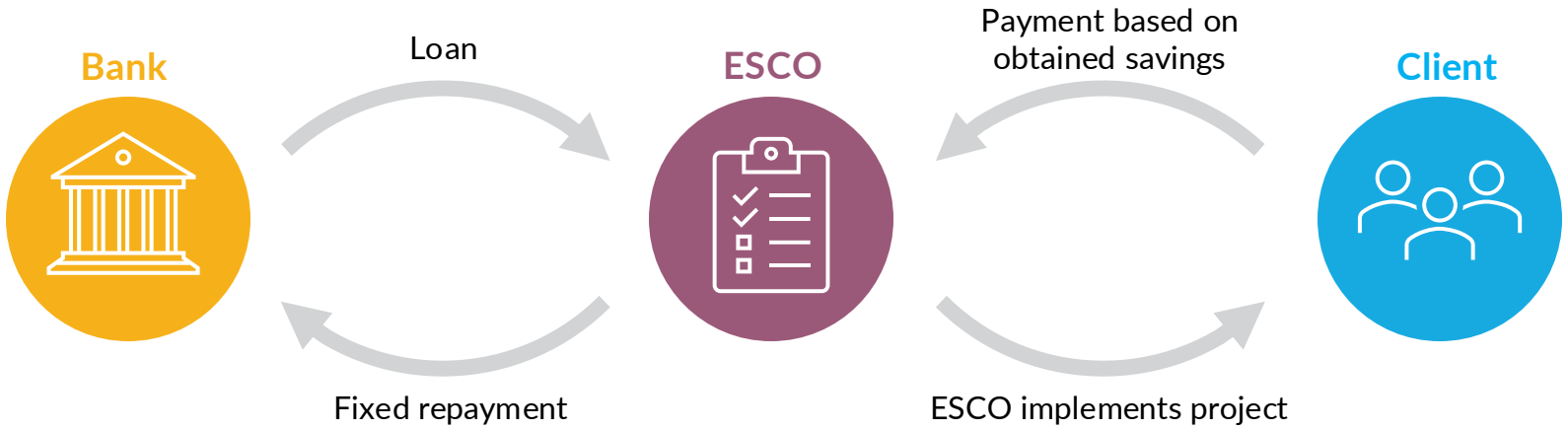


The ESCO takes on the technical risk. The client obtains a bank loan, or uses their own equity, to pay contractually-determined fees to the ESCO and the bank and keeps the difference

Source: International Energy Agency

ESCO CONTRACT

Shared savings model

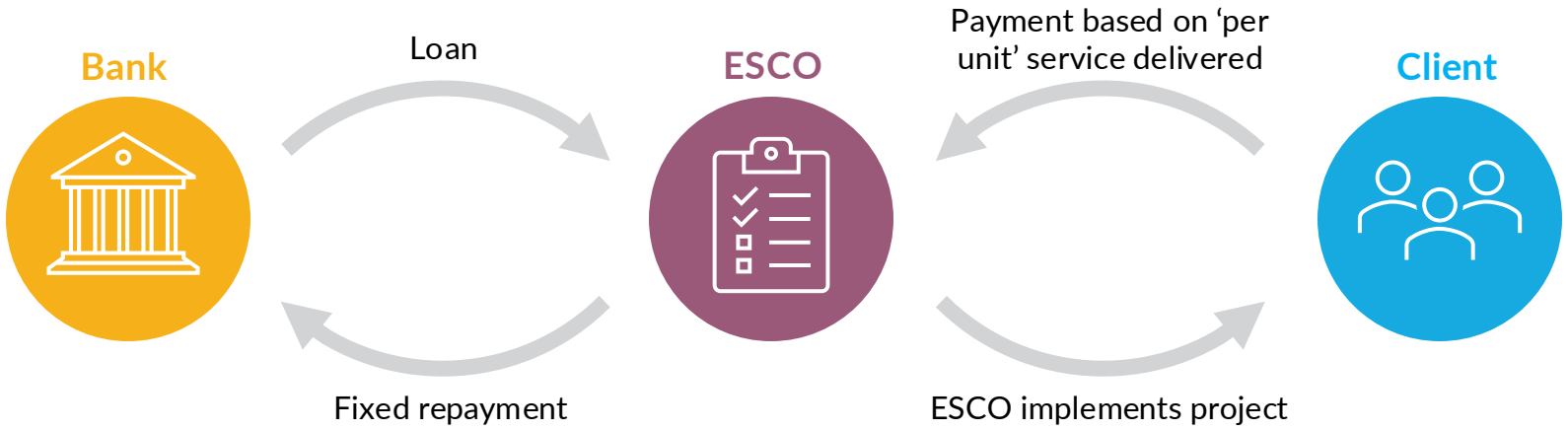


The ESCO can provide financing, as well as project development and implementation costs, with the energy savings shared between the ESCO and the client over the contract period. This model requires the ESCO to have the capacity to borrow and to have projects with revenue streams that will ensure the loans can be repaid

Source: International Energy Agency

ESCO CONTRACT

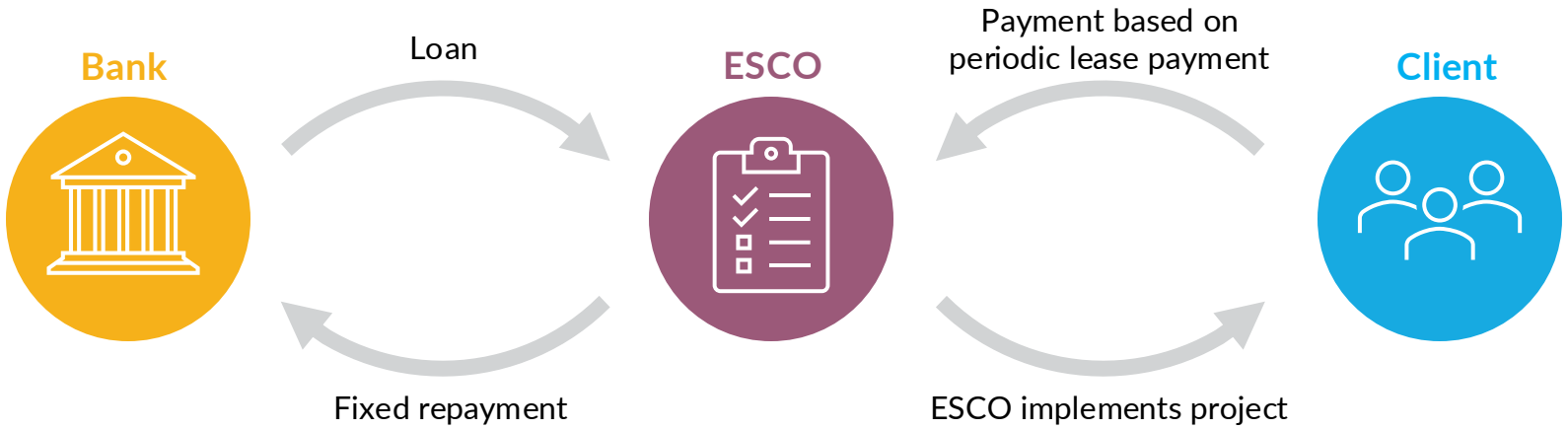
Energy supply contracting or service model



The ESCO can provide financing, as well as project development and implementation costs, with the ESCO receiving payment for 'per unit' service delivered to the client over the contract period. This model requires the ESCO to have the capacity to borrow and to have projects with revenue streams that will ensure the loans can be repaid

ESCO CONTRACT

Leasing and purchase model



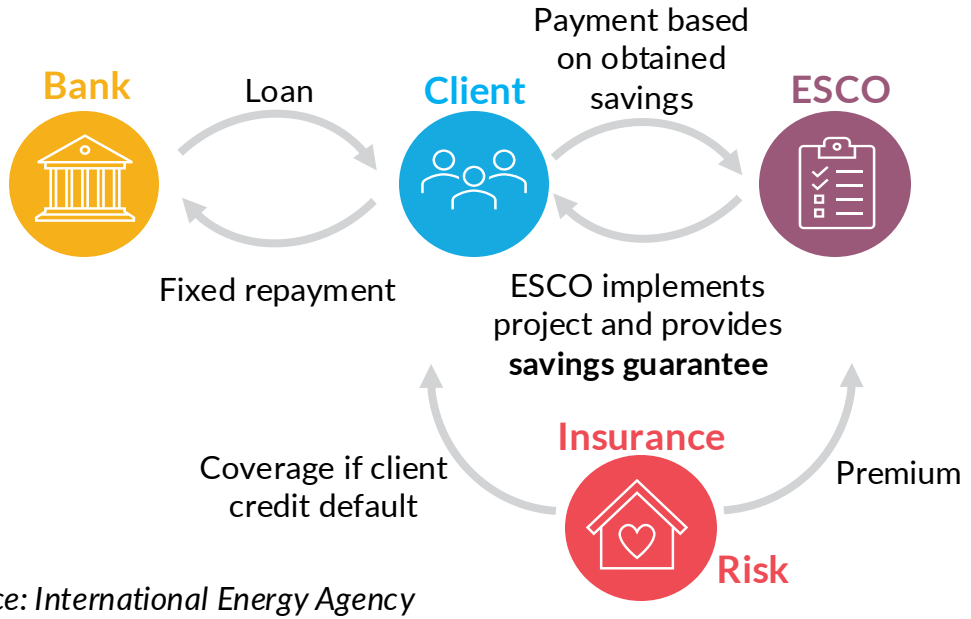
The ESCO can provide financing, as well as project development and implementation costs, with the ESCO leasing the equipment to the client and receiving periodic lease payment from the client over the contract period. At the end of contract period, the client buys the equipment

Source: Wijaya et al., 2021

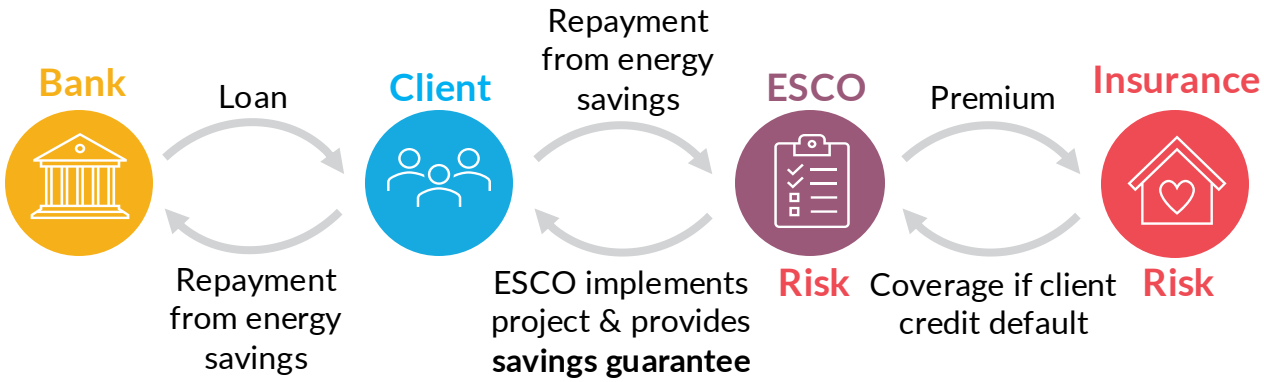
ESCO CONTRACT

Energy savings insurance and credit risk guarantee

Uncertainty associated with the performance of efficiency measures inhibits third-party energy efficiency financing globally. In response, energy savings insurance has emerged as a solution offered by a small number of financial institutions, private companies and insurance companies, to reduce the risk of an energy efficiency project



Source: International Energy Agency



Typically, there are two types of insurance packages offered by insurers – technical and credit:

- In the technical package, the insurance provider covers the ESCO or technology provider in the event that promised energy savings are not achieved, assuming the technical risk associated with efficiency projects
- In the credit package, the insurance provider assumes the credit risk of a project, thereby ensuring that repayments owing to the ESCO can continue to be made, in the case of customer credit default

ESCO REPAYMENT MODELS

Popular models

- **Upfront payment model**: This is the common 'sales model' where 100% payment is received by the ESCO from the end-user after supply of the technology. This model works if the ESCO offered price is less than the retail market price for the same technology (due to bulk procurement by the ESCO)
- **On-bill financing (OBF) model**: The consumer pays the ESCO through equated monthly instalments (EMIs), thus, reducing the upfront payment burden for the end-user. The EMIs are usually collected by electricity utility (distribution) companies through their monthly electricity bills on behalf of the ESCO through an agreement between the ESCO and the utility. The OBF model may require necessary approvals from country's regulatory authorities. The OBF is attractive when the EMI is less than the energy cost saving
- **Pay-as-you-save (PAYS) model**: The entire upfront investment of the project cost is borne by the ESCO. The project investment cost is recovered from the end-user in suitable instalments through a deemed energy saving approach. To ensure the repayment by the end-user, an ESCROW account is maintained, or alternatively a bank guarantee is taken
- **Engineering, procurement and commissioning (EPC) model**: The ESCO takes the responsibility of project design, procurement and commissioning of the project and gets 80%–90% of the project cost (technology cost and project management fees) after commissioning; and the balance is paid during the warranty period
- **Service model**: The ESCO charges a 'per unit' price of the delivered service (like electricity, steam, chilled water, electric vehicle, smart meter etc.). To ensure regular periodic repayment, the end-user is required to open an ESCROW account to be replenished by the client

M&V PROTOCOL

Quantification of energy cost savings

- The quantification of energy saving is important for success of the ESCO model. In the shared savings model, any disagreements between the client and ESCO on the quantum of savings will lead to failure of the model
- A measurement and verification (M&V) protocol is imperative for success of the ESCO model and should be part of the energy savings performance contract (ESPC)
- The M&V protocol should be simple and transparent, avoiding complex empirical calculations and assumptions
- Quantification based on measurements by site instrumentation is encouraged, although it may increase the initial cost of the project
- Any subjective corrections in the quantified energy savings and cost values should be by mutual agreement and be a part of the ESPC
- An independent verifier is encouraged to quantify the saving as per the M&V protocol

DEEMED SAVING APPROACH

Avoids the need for an M&V protocol

- A deemed saving approach, in which a fixed savings is agreed upon, irrespective of the utilization of the equipment, is a simple method, which can be adopted for standard, reliable technologies like energy efficient appliances
- In this approach, the quantum of energy savings is agreed upon based on previous test results following procedures recommended by equipment standards or star rating schemes for equipment, and assumed realistic operating hours
- The deemed saving approach is useful for mass promotion of energy efficient products as the end-user knows the fixed periodic payouts that must be made to the ESCO
- The deemed saving approach is also useful for the ESCO to explore demand aggregation and mass procurement of energy efficient products to reduce the cost of technology to the end-user

REDUCING COST OF TECHNOLGY

Demand aggregation and bulk procurement

- Affordability of proven and reliable technologies is key to generating market demand for energy efficient products
- Demand aggregation and bulk procurement have proven to reduce the cost of standard energy efficient technologies and enable speedy market transformation. They also have the potential to create a huge supply chain of the products and provide job opportunities
- The following are some of the attributes of successful demand aggregation and bulk procurement programs:
  - **Government ownership**: Governments can announce consumer-centric schemes for mass promotion of energy efficient products through public outreach programs with time-bound milestones and targets
  - **Promotion of standard technologies**: Standard and reliable technologies that can be promoted without the need for monitoring and verification, such as LED lamps, BLDC fans and air conditioners, are suitable
  - **Bulk procurement**: Public energy utilities or government-sponsored Super ESCOs are preferable for implementing the program through ESCO or non-ESCO models. Multiple suppliers are desirable to maintain price competitiveness and reliability of supplies. A fair assessment of the market demand is important to avoid being overburdened with unsold inventory

ESCO PROJECT IN HOTELS

Case example: Heat pumps for hot and chilled water

- In a reputed luxury hotel chain in India, water chillers operating at 7°C were being used for room cooling, and diesel-fired boilers were being used for generating hot water at 55°C for bathing, laundry and kitchen use
- The installation of eight heat pumps of differing capacities in four hotels on an ESCO basis led to the decommissioning of diesel-fired boilers and simultaneous reduction in load on the water chillers used for air conditioning
- The total annual energy cost savings were USD192,000 per year
- The total investment for the heat pumps were USD311,000
- The economics of heat pumps will vary at different locations, depending on the relative price of fuels and electricity

Heat pumps

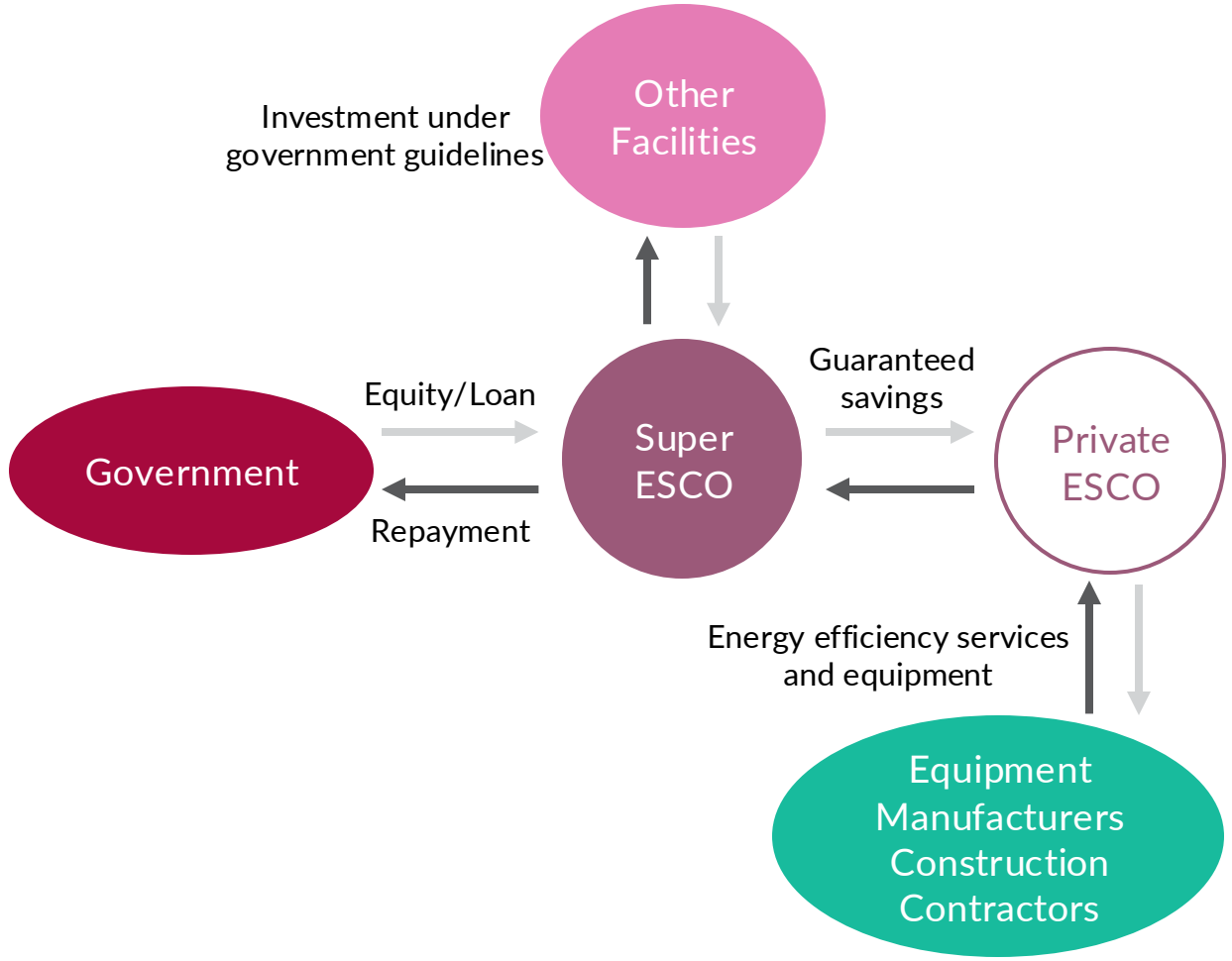
Associated storage tanks for hot and chilled water

Source: SEE-Tech Solutions, Nagpur, India

SUPER ESCOs

Government-sponsored entities

- Super ESCOs are governmental entities created to serve the public sector, develop the capacity of private ESCOs and facilitate project financing
- Super ESCOs are useful because existing programs designed to engage clients with ESCOs, such as energy audits programs, rebates, direct install programs, demand side management bidding or standard offer approach, rarely provide the full amount of funding required to cover implementation costs such as engineering, procurement and installation costs
- Clients may have the means to finance energy efficiency projects, but experience has shown that energy efficiency projects are not an imperative investment priority for many businesses. Easing access to external financing increases EE project implementation rate



Sources: International Energy Agency; Lütken et al., 2024

SUPER ESCOs

Initiatives around the globe

The US Federal Energy Management Program (FEMP)

Initiated in the 1990s, it is one of the earliest examples of a public institutional model close to the Super ESCO concept. The FEMP promotes energy efficiency and the use of renewable energy resources at federal sites

India's Energy Efficiency Services Limited (EESL)

EESL, led by the Ministry of Power, Government of India, was established in 2009 to implement large-scale energy efficiency programs in India under the National Mission on Enhanced Energy Efficiency (NMEEE) through innovative business models. EESL has completed building energy efficiency projects in 10,344 buildings, including railway stations. EESL has so far saved over 50 billion kWh of electricity in India. EESL also has a presence in Bangladesh, Malaysia, Myanmar, Thailand and Vietnam

Saudi Arabia's National Energy Services Company (NESCO)

Saudi Arabia's Public Investment Fund created the National Energy Services Company (NESCO), also known as Tarshid, in October 2017, with an initial capitalization of over USD500 million to increase the energy efficiency of government and public buildings, public streetlighting, etc.

Croatia's HEP ESCO

The World Bank supported the creation of the HEP ESCO within Hrvatska Elektroprivreda d.d. (HEP is the national power utility). The objective is to develop, finance and implement energy efficiency projects on a commercial, for-profit basis, using local businesses as key delivery agents. A niche market has been established in Croatia for financing energy efficiency projects in public buildings of local authorities (administration buildings, schools, etc.), hospitals and universities, and streetlighting

SUPER ESCOs

Initiatives around the globe (continued)

Belgium's FEDESCO:
FEDESCO is a 100% subsidiary of the Federal Participation and Investment Corporation, founded in 2005, to facilitate and finance energy efficiency projects in federal government buildings throughout Belgium. With a capital investment of EUR6.5 million and an additional EUR10 million in state guarantees, FEDESCO implements projects exclusively with the Federal Building Agency and enters into EPC contracts with public facilities without competition, using either internal funds or financing from commercial banks (with a state guarantee)

United Arab Emirates' Etihad ESCO:
Etihad ESCO was established in 2013 by the Dubai Electricity and Water Authority as a Super ESCO to make Dubai's built environment a leading example of energy efficiency for the region and the world. Etihad ESCO aims to develop energy efficiency projects targeting more than 30,000 buildings in Dubai with a goal of 1.7 TWh in energy savings by 2030. Etihad ESCO is fostering a viable ESPC market for ESCOs by executing building retrofits, increasing the penetration of district cooling, building the capacity of local ESCOs and facilitating access to project finance

Super ESCO of India

EESL's Success Story

ENERGY EFFICIENCY MARKET IN INDIA

Unlocking national potential for energy efficiency (UNNATEE)

Primary Energy Demand

810 million toe (2019-20)

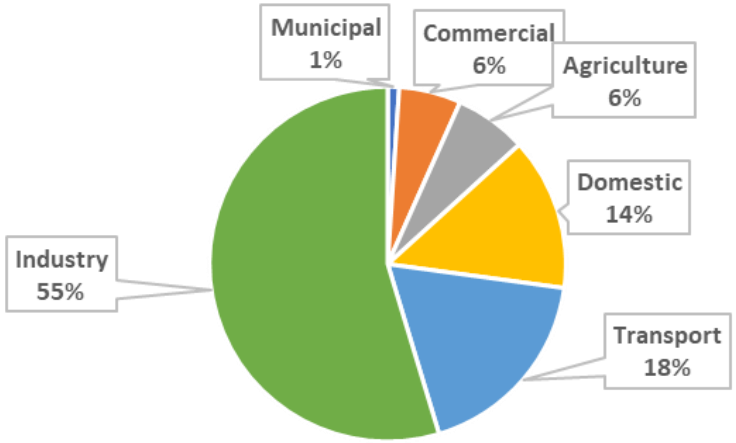
Energy Saving Potential

47.5 million toe and **89** billion units of electricity by 2031

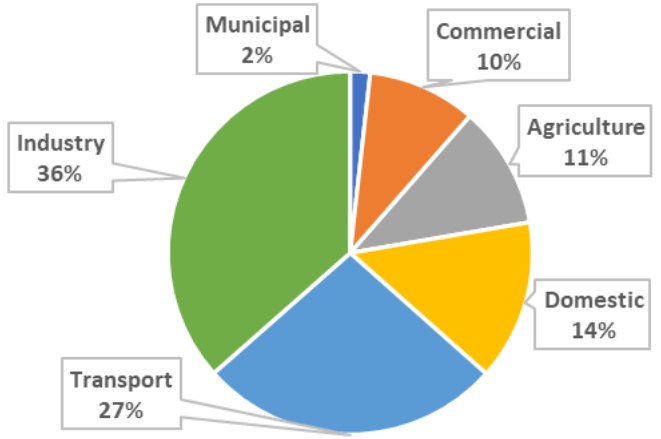
EE Investment Potential

73 billion USD by 2031

Saving Potential

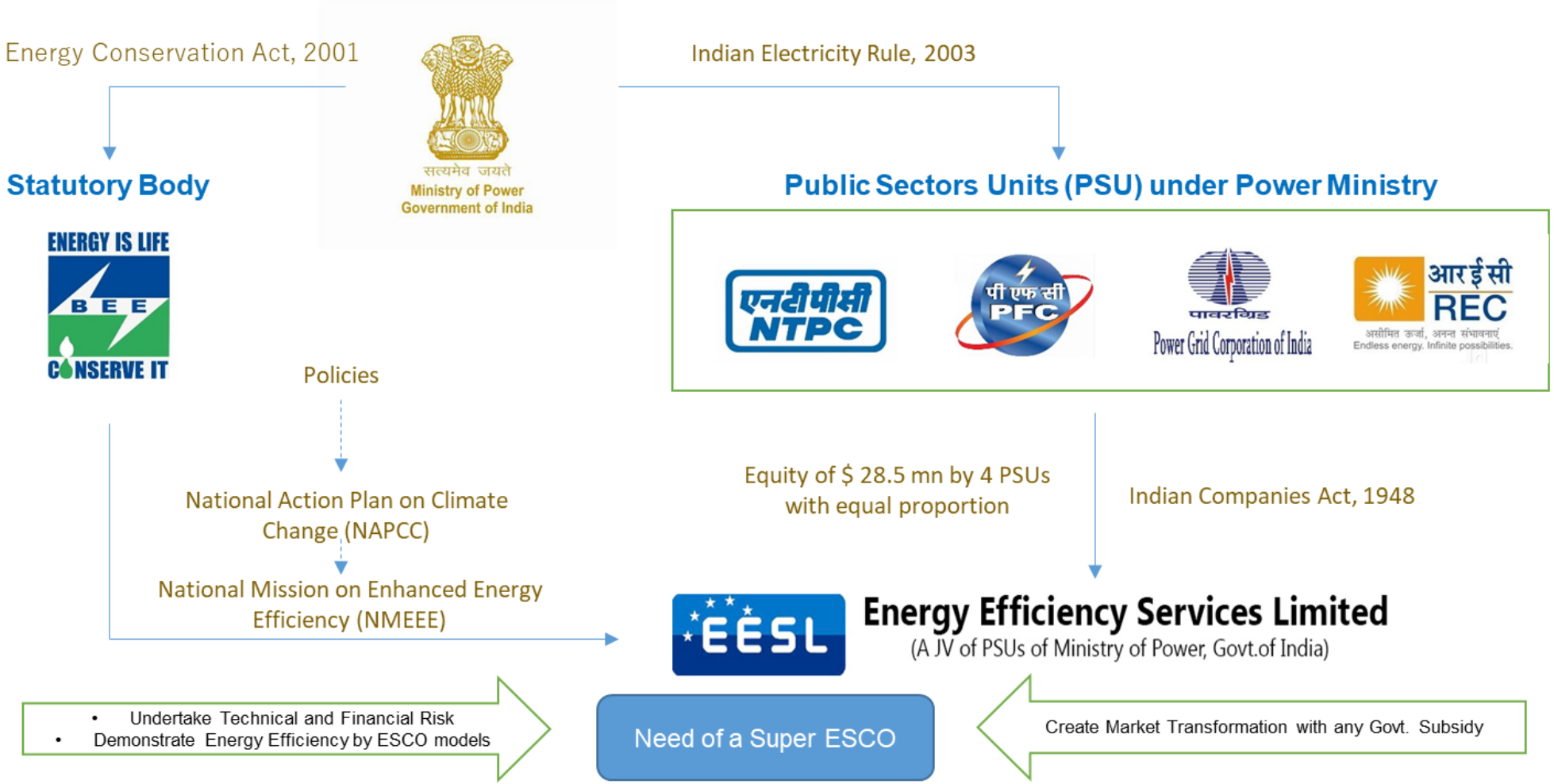


Investment Potential



INCEPTION OF EESL

Year 2009



INDIA'S SUPER ESCO

EESL's achievements (as of April 2023)

Founded in 2009, under the National Mission on Enhanced Efficiency (NMEEE)

India's Super ESCO

Estimated monetary savings of over

USD 2,800 million

Joint venture of 4 public sector enterprises and the Ministry of Power, Government of India

Estimated energy savings from EESL's interventions

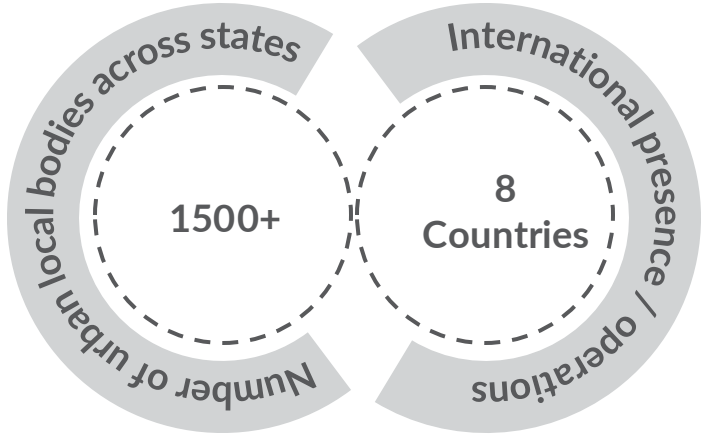
54 billion kWh

per year with avoided peak demand of 10,740 MW

Estimated carbon footprint reduction

44 million ton

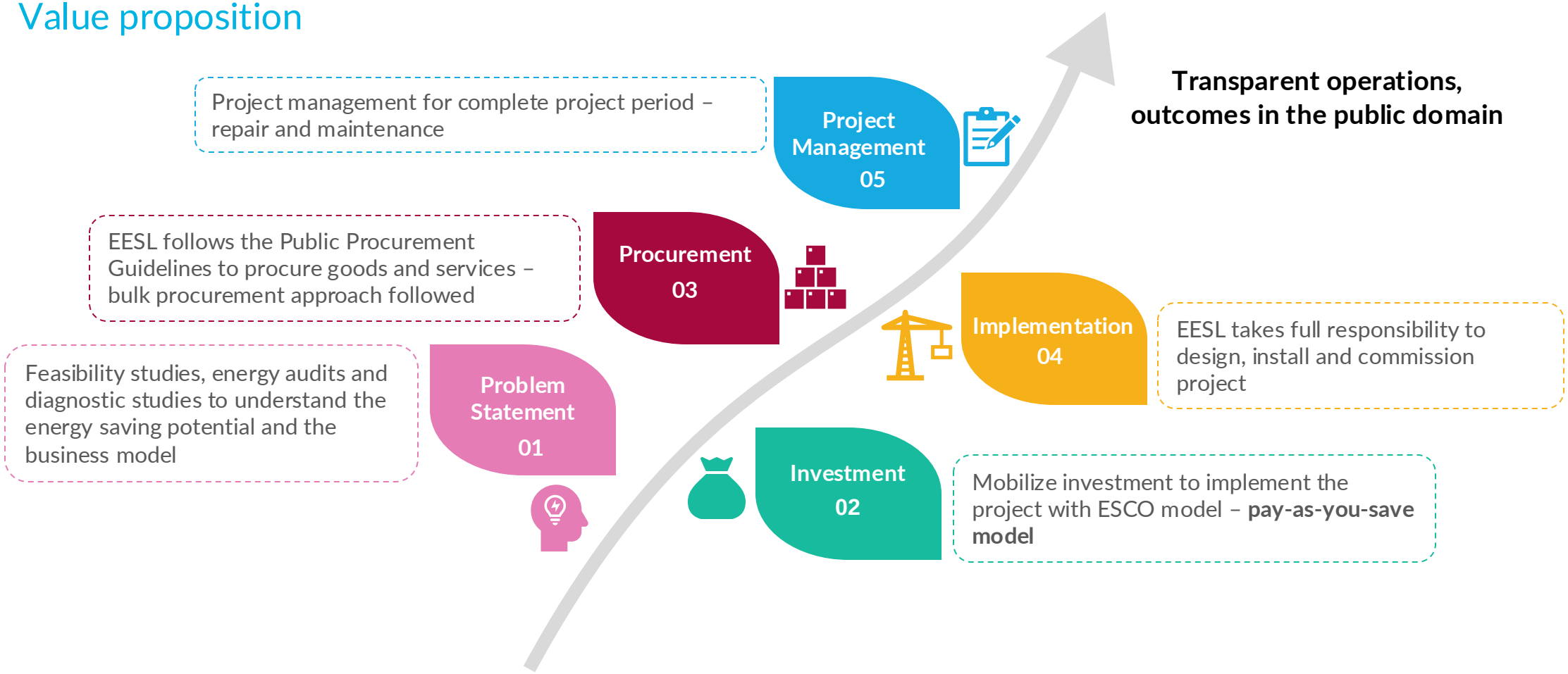
of CO_2 per year



Source: Garnaik, 2023

EESL, INDIA

Value proposition

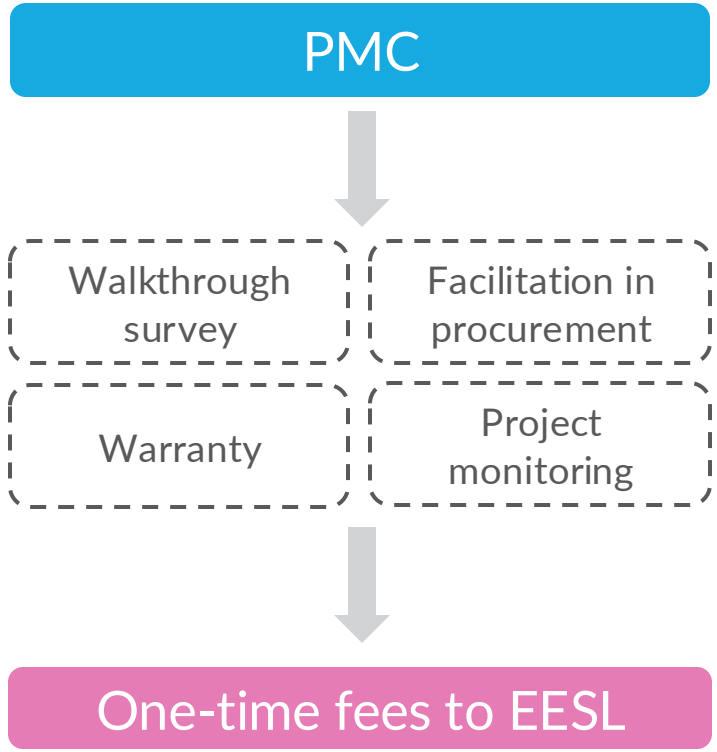


Source: Garnaik, 2023

EESL'S BUSINESS MODELS

Model 1: Project management cost (PMC) model, investment by client

- Clients express interest to purchase a particular energy saving equipment
- EESL aggregates the demand from many clients and negotiates a discounted price from reputed vendors
- EESL facilitates procurement and deployment of the equipment
- Clients pay 100% upfront cost with additional 10%–12% as EESL's PMC cost
- Warranty period is typically 3 to 5 years
- Typically, this model is used for demand aggregation, procurement and deployment of LED lights, fans, electric motors and unitary air conditioners

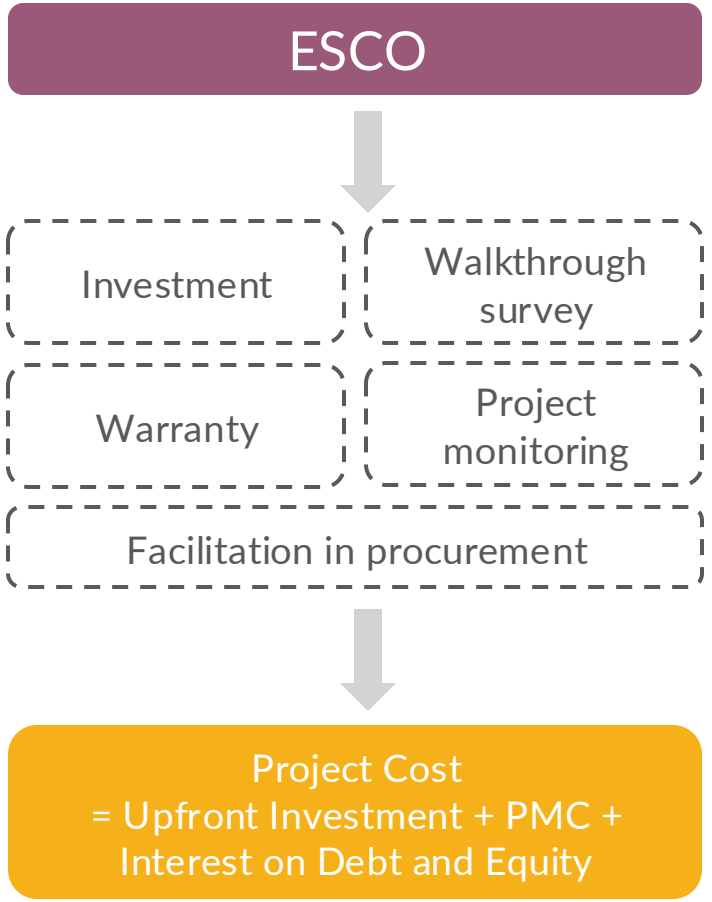


Source: Garnaik, 2023

EESL'S BUSINESS MODELS

Model 2: Investment by EESL

- Clients express interest to purchase a particular energy saving equipment
- EESL aggregates the demand from many clients and negotiates a discounted price from reputed vendors
- EESL facilitates procurement and deployment of the equipment
- Clients pay 100% upfront cost with additional 10%–12% as EESL's PMC cost, and interest on debt and equity
- Warranty period is typically 3 to 5 years
- Typically, this model is used for demand aggregation, procurement and deployment of LED lights, fans, electric motors and unitary air conditioners

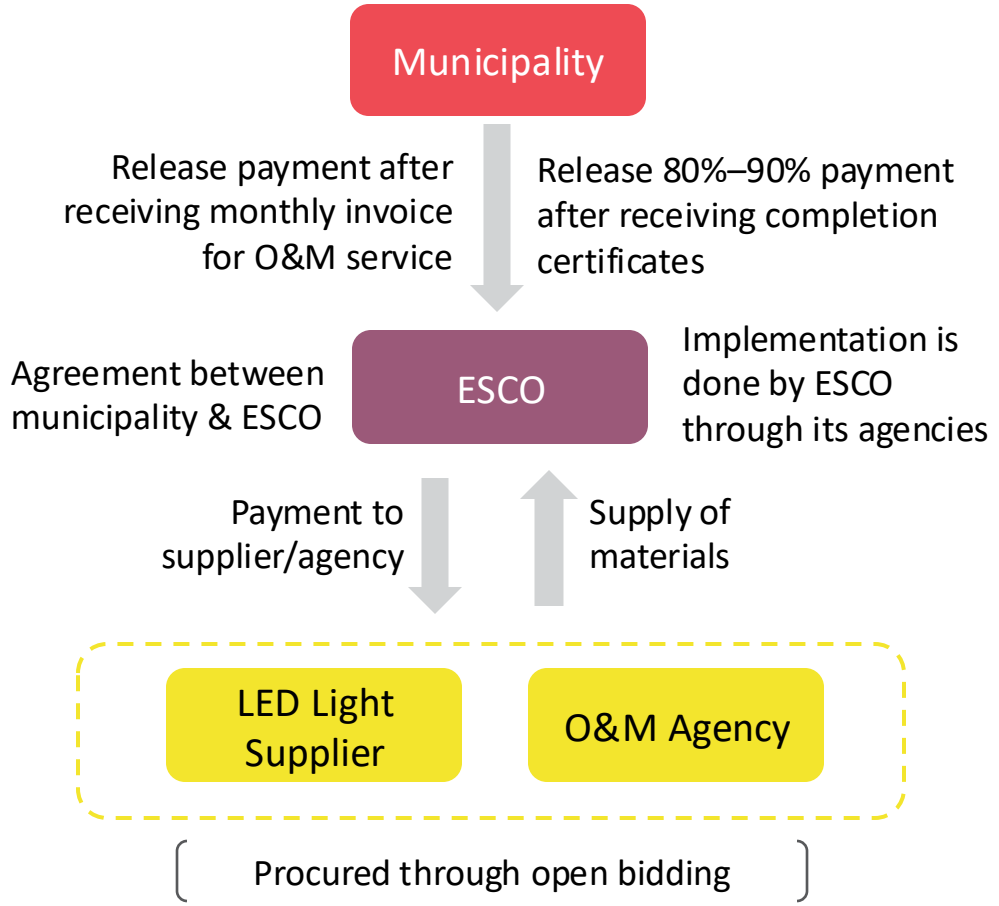


Source: Garnaik, 2023

EESL'S BUSINESS MODELS

Model 3: CapEx and OpEx model for streetlighting in urban local bodies (ULB)

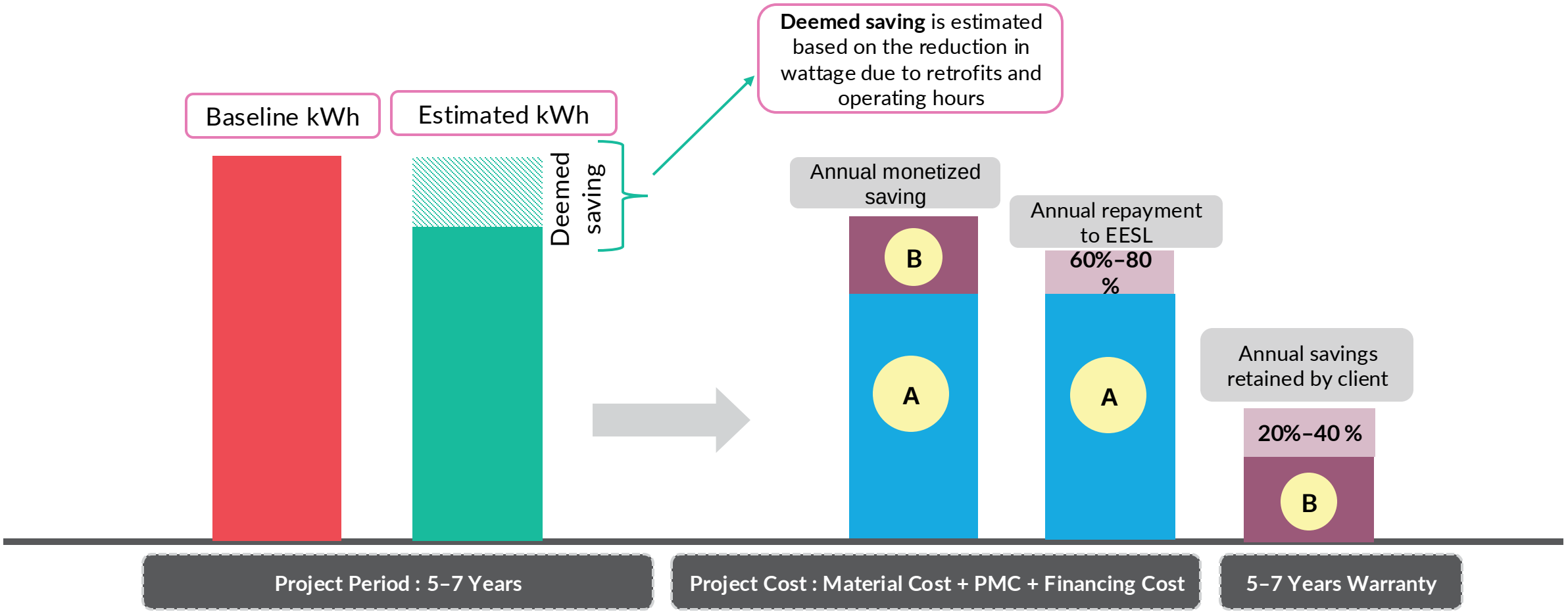
- Supply of materials (LED, CCMS and IDC) , installation and maintenance by EESL
- EESL enters into an agreement with ULB
- **Payment terms:**
  - 100% of light cost and IDC after price discovery and issuance of LoA to suppliers
  - 1% of materials cost as PMC
  - AMC as 1% of the material cost and 10% increment per year up to project period
  - AMC to be paid on monthly basis
  - Payment period is 45 days from invoicing
  - Provision of ESCROW account
- Warranty period is 7 years
- Supply and installation period is 6 months
- ULB financials only security of payments



Source: Garnaik, 2023

EESL'S BUSINESS MODELS

Model 4: Shared, deemed saving model



Source: Garnaik, 2023

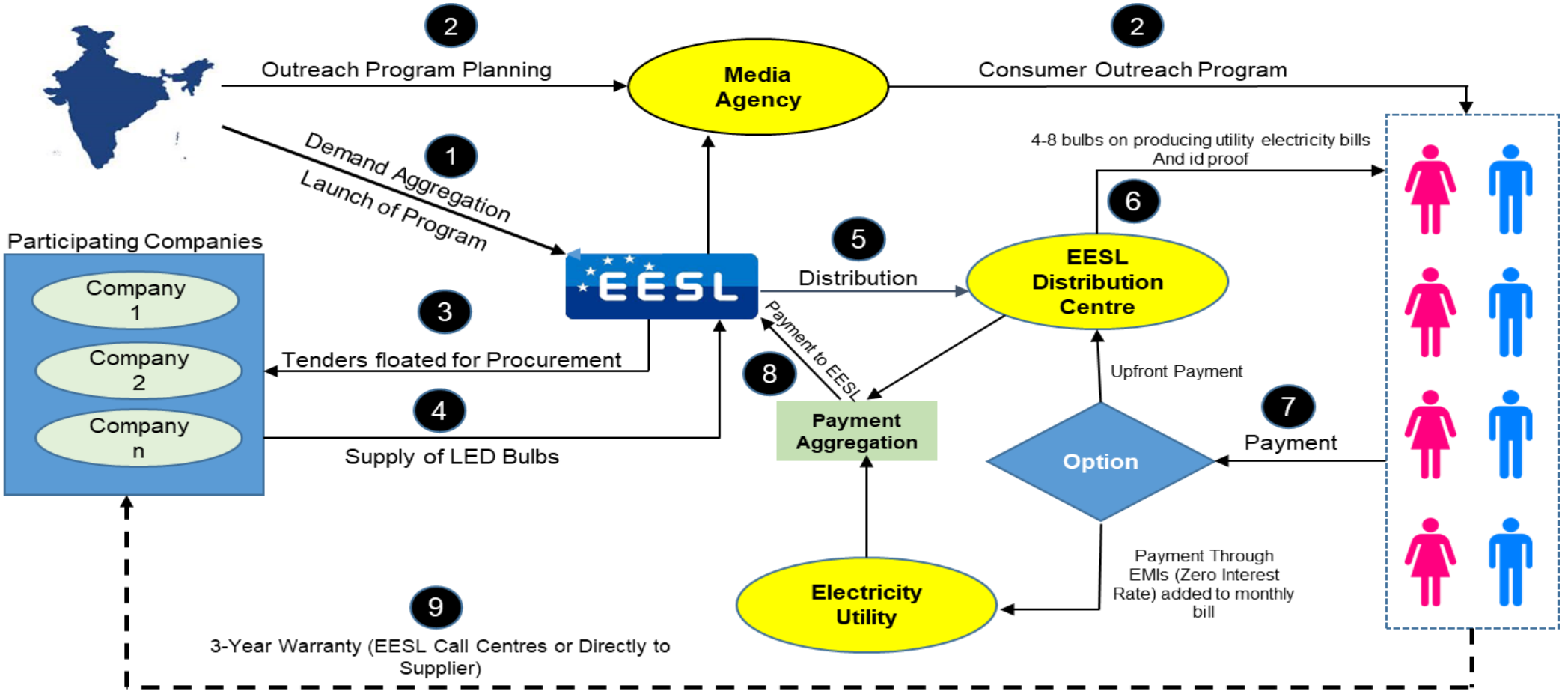
UJALA

India's Domestic Efficient Lighting Program

Source: Garnaik, 2023

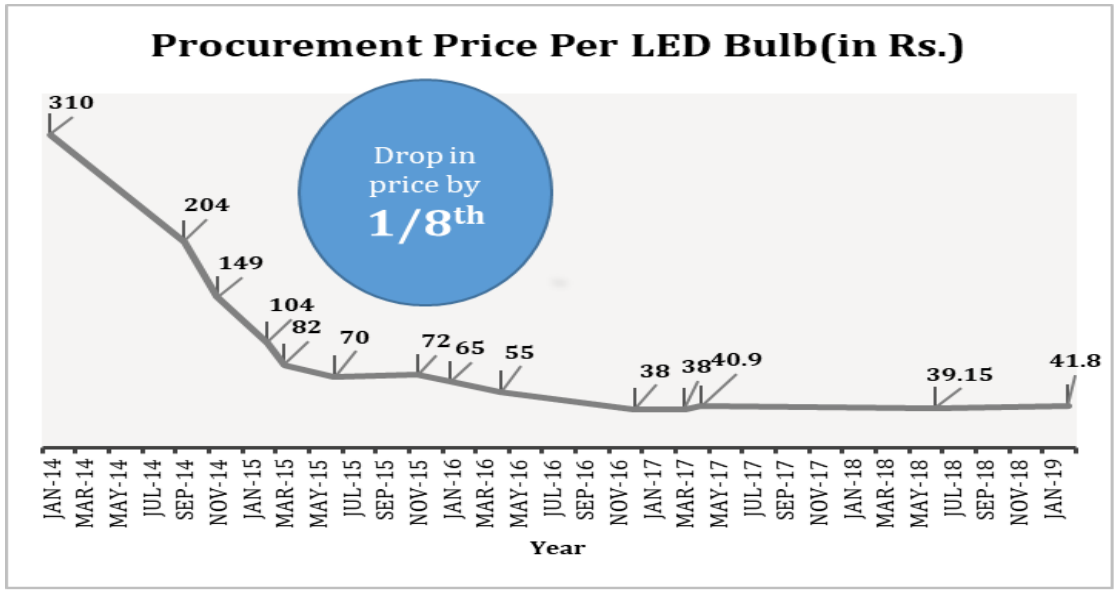
UJALA

Operating model of India's Domestic Efficient Lighting Program

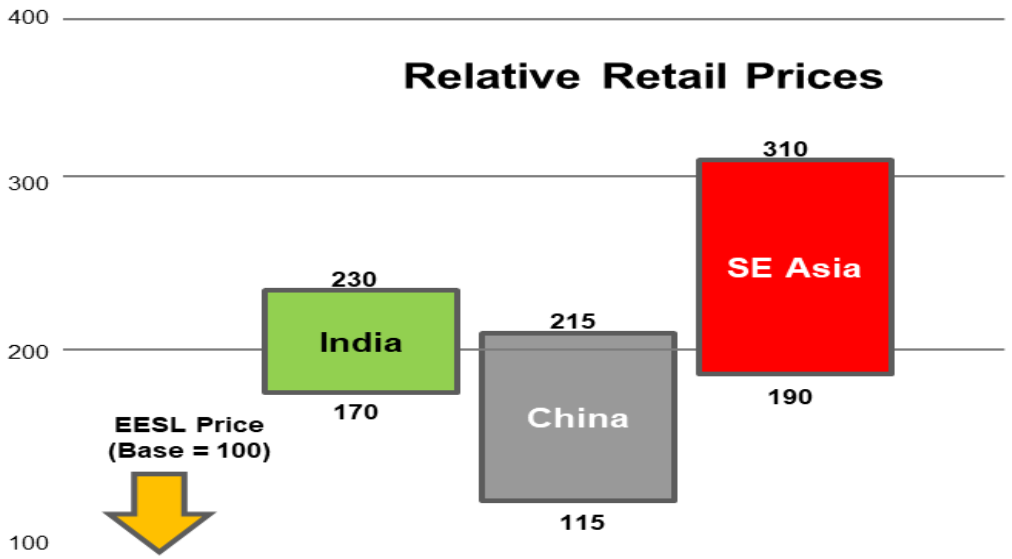


UJALA

Huge cost reduction with the same product quality!!!



- Investment done : $ **300** mn



EESL's price is much lower than the Retail Price in SE Asian Region

BULK PROCUREMENT OF LED LAMPS

Aggregation of demand and deployment by deemed saving approach

50-70 %

Energy Saving

Energy Saving is calculated on "Deemed Saving" approach by considering baseline wattage and hours of operation.

20-25%

Price Reduction

EESL adopts open public bidding process for Bulk Procurement

10-14%

Project Management Cost

EESL Project Management Cost depends upon the Project size, extent of involvement

More than 4 Million Lights have been deployed in Industries and Buildings by EESL worth 85 million USD

EESL provides various ranges of LED lights from 9 Watts to 190 Watts with 3-5 years warranty period. Typical supply period is one month to three months. Deployments of LED lights have been done in **10400 Buildings, 100 PSUs/Industries, 800 Railway Stations, 64 Airports** and **1200 Bank ATMs** across the country.

DEEMED SAVING APPROACH

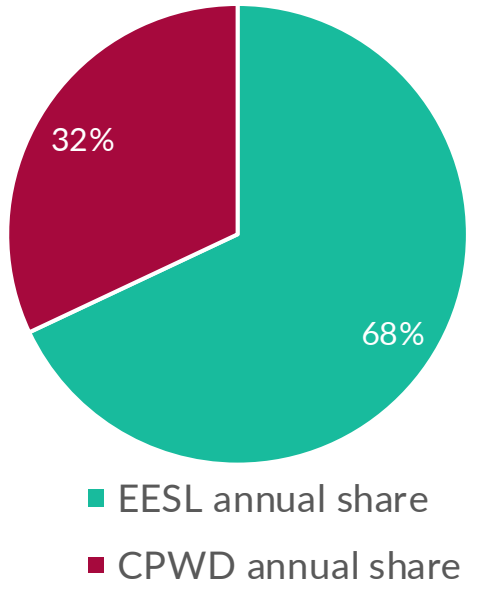
Promising energy saving products for bulk procurement

Technology	Application	Baseline	New Technology	Estimated Deemed Saving
LED Light	Domestic	100 W	9 W	91 W
	Streetlight	250 W	120 W	130 W
		400 W	190 W	210 W
		150 W	70 W	80 W
		70 W	35 W	35 W
BLDC Ceiling Fan	Buildings	80 W	30 W	50 W
Energy Efficient Air Conditioners	Buildings	1,800 W	1,050 W	750 W

EESL'S BUILDING PROJECT

Case example: ESCO model at CGO Complex, New Delhi, India

Particulars	Unit	Value
Estimated energy savings	kVAh	2,139,636
Fixed tariff	INR per kVAh	10
Estimated annual cost savings	INR per year	21,396,357
Investment	INR	48,475,430
EESL PMC fee	INR	4,483,977
Estimated capital cost	INR	52,959,408
Contract period	Years	5
Annual payout to EESL	INR	14,632,670
EESL Share	%	68
EESL quarterly repayment	INR	3,658,168
Number of quarterly repayments		20



Source: Energy Efficiency Services Limited

SUPER EFFICIENT AC PROGRAM

Case example: EESL's intervention for sustainable cooling

EESL ENERGY EFFICIENCY SERVICES LIMITED
A JV of PSUs under the Ministry of Power

ISEER 5.4
40% more efficient than 3-Star ACs

INR 39990
Price equivalent to 4-Star ACs

Cool: How EESL is meeting India's cooling needs in a sustainable manner

20-25%
Energy Saving

100000+ ACs
Deployed

gef ADB ASIAN DEVELOPMENT BANK UN environment

3-7 days
Delivery time in Tire-1 and Tire-2 cities

- About **30%** reduction in price in comparison to retail price
- Consumers could save about **INR2,000 and INR3,000 per year** compared to 5-star AC and 3-star AC, respectively
- **Hassle-free** service with complaint redressal support during program life, with **buyback option**
- Unlike conventional ACs, there is **no derating** of the cooling capacity even at high ambient temperatures, as high as 43°C
- Supports **India Cooling Action Plan** and **NITI Aayog @75** vision on energy savings and CO_2 emissions reduction
- Opportunity to scale up and create **manufacturing base** for more efficient products
- Optimizes investment on power infrastructure and synergizes with the ongoing demand side management program

STREETLIGHT NATIONAL PROGRAM

Case example: EESL's projects with urban local bodies (ULBs) for streetlighting

- Installation of **12.1 million** streetlights in over 1,600 ULBs in 20 states and 13,000 *gram panchayats* (village councils) in 3 states has transformed illumination in over **300,000 km** of roads in India with LED lights
- **7.8 billion units** of electricity saving and **1,355 MW** of peak demand reduction
- Energy cost saved by ULBs is about **USD750 million**
- Uptime of streetlights increased to **more than 95%**
- Reduction in price from **USD2.5/Watt to USD0.6/Watt** in six years due to bulk procurement of LED lamps
- **Eight-fold increment** in industrial production of LED lamps (that is from about 5,000 per day to 40,000 per day)
- Increase of sales of streetlights from less than 0.10 million lamps per month to more than **1 million lamps per month** in six years
- Improved **safety** on roads due to better illumination
- Significa stem

EESL created professional partnerships with ULBs and states

IMPACT OF BULK PROCUREMENT

Case example: ESCO market transformation in India (2016–2021)

Program	Outcome (by 2021)	Energy Saving Model	Approach	Business Model	Impact	
					Investment (million USD)	Technology Pricing (from base)
UJALA	360 million	Deemed Saving	Bulk Procurement	Upfront Payment	300	12%
Super Efficient AC	100,000	Star Rating / Deemed Saving	Bulk Procurement	Upfront Payment	72	75%
National Motor Replacement Program	12,000	Deemed Saving	Bulk Procurement	Upfront / EMI	6	80%
Streetlight National Program	12 million	Deemed Saving	Bulk Procurement	Annualized Payment	640	65%
MSME Program	24 Technologies	Measured Saving	Bulk Procurement	Upfront / EMI	8	75%–85%

EESL's INITIATIVES

Electricity savings achieved

360 million
LED Bulbs
UJALA

7.2 million
LED Tube Lights
UJALA

2.3 million
EE Fans
UJALA

10.4 million
LED Street Lights
Street Light National Program

10400+
Buildings
Building EE Program

74700
EE Agri-Pumps
Ag-DSM Program

1 million
Smart Meters
Smart Meter National Program

Energy Efficiency Business has resulted Electricity saving of over 45 billion kWh per annum

GGGI's INTERVENTIONS IN SE ASIA

Thailand: To reduce barriers to energy efficiency investment in SMEs

GGGI launched a project jointly with the Provincial Electricity Authority (PEA) called the Thai Auto Parts Supply Chain Development through Energy Efficiency (TAPEE) Program, targeting Thai auto-parts SMEs

The major activities are:

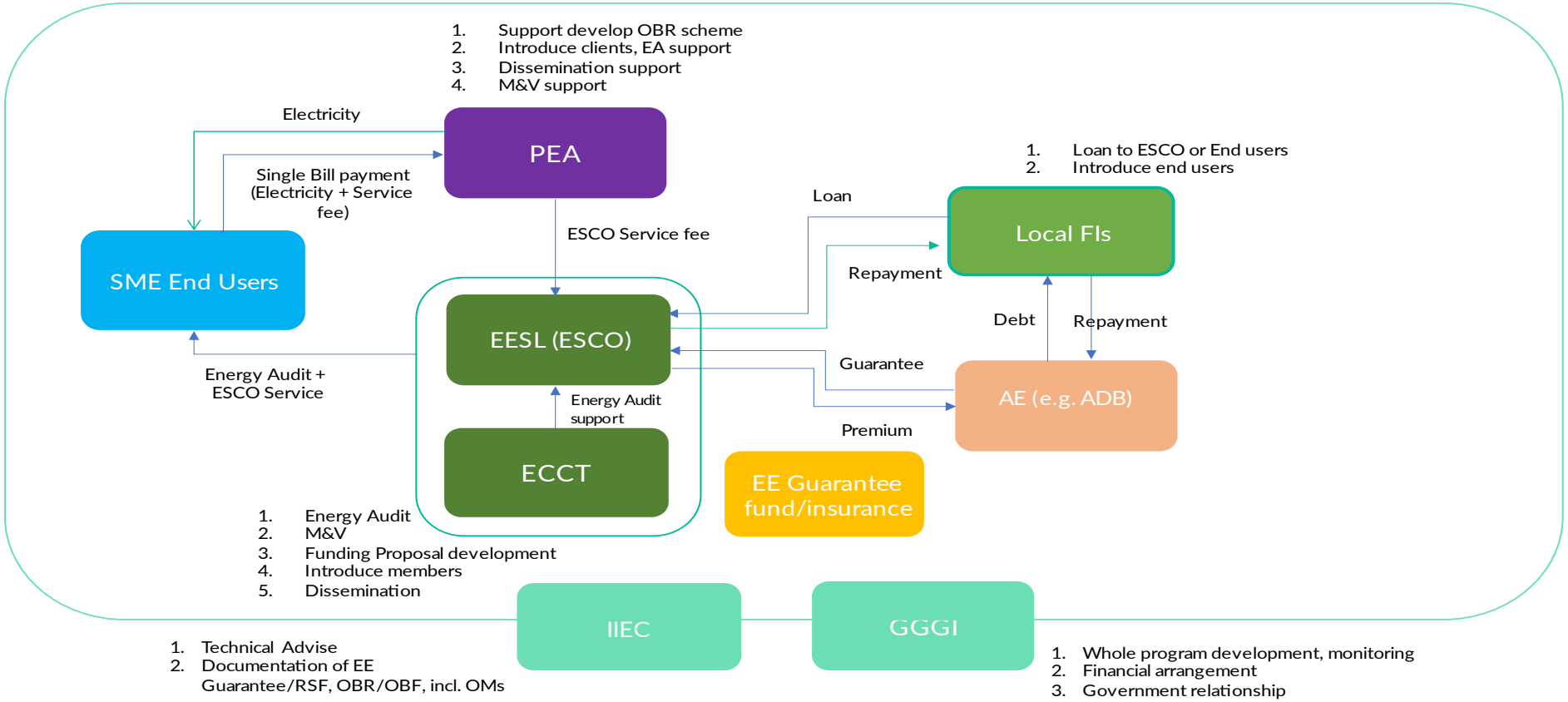
- Identification of 20 mid-to-large units and 200 small units for baseline data collection and energy audit
- Energy audit of selected SME units for identification of energy saving opportunities
- Collaboration with EESL, industry association, the Office of Natural Resources and Environmental Policy and Planning (ONEP) and PEA for energy audit work and demand assessment activities
- Identification of EE technologies with highest energy saving and replication potential – hence good investment opportunity
- Development of EE proposal with projected cost savings from EE upgrades
- Suggest mechanism for operationalizing on-bill financing (OBF) model to be adopted by PEA
- Development of guidelines, and support PEA in monitoring report of electricity bills, conducting M&V of projects and quantifying energy savings
- Mobilize ESCOs (domestic and international) to invest in EE projects of Thai auto-parts SMEs

Source: Kumar et al., 2017

GGGI's INTERVENTIONS IN SE ASIA

Thailand: To reduce barriers to energy efficiency investment in SMEs (continued)

Suggested Business model for TAPEE program



Source: Kumar et al., 2017

GGGI's INTERVENTIONS IN SE ASIA

Thailand: To reduce barriers to energy efficiency investment in SMEs (continued)

Outcomes

- Energy audit in 220 SMEs conducted
- Five standard technologies identified as replicable technologies with simple payback period of 1–3 years: IE3 motor, LED light, air compressor, energy efficient AC and VFD
- Draft OBF mechanism proposed to PEA
- Investment opportunities of over USD2 million identified
- EESL, the public ESCO of India committed to invest USD2 million in Thailand. EESL subsequently sensitized the local ESCO Association
- The program was announced by PEA on May 23, 2019 in a joint ceremony with GGGI, EESL and ECCT

Announcement of TAPEE Program in Bangkok, Thailand

Source: Kumar et al., 2017

ESCO BUSINESS

Challenges and risks

- **Energy efficiency not a priority:** Limited energy efficiency policy, lack of adequate enforcement at the state and municipal levels, absence of good governing practices, such as the provision of energy-related data in the public domain and support for the operation of ESCOs in different states, limit the widespread adoption of the ESCO model
- **Technological risks associated with energy conservation measures:** Technological risks associated with newer technologies like low-grade heat recovery is usually high when compared to mature and simple technologies such as LED lighting and pumps and motors – management buy-in becomes difficult in such cases
- **Challenges in baselining and M&V:** The main barrier in baselining is the lack of sufficient data. It is also very time consuming and means an upfront cost for ESCOs. Often, ESCOs do not budget sufficiently for long-term operations of the facility. M&V is heavily tied to baselining. An inadequate metering infrastructure is a significant challenge in the ESCO ecosystem and deserves urgent attention
- **Managerial attitudes toward ESCO operations:** Although funds are usually allocated for energy conservation projects in large industries, decisions pertaining to investments in energy efficiency are usually made at multiple thresholds – engineering, finance and others. Obtaining the buy-in from the engineering department is difficult at times, and the finance department may not fully understand energy conservation measures from a technical viewpoint. The poor flow of information leads to long delays in approvals. ESCO contracts are usually very detailed (to circumvent any disputes in M&V, sharing savings) – this also hinders contract approvals

Source: Kumar et al., 2017

ESCO BUSINESS

Challenges and risks (continued)

- **Preference for very short payback periods:** Pricing disincentives for energy efficiency investments, energy subsidies and price distortions impede the ESCO industry. If input energy costs are already quite low, end-users are not particularly motivated to install energy conservation measures that could reduce their energy bills through energy efficiency. The most preferred payback period is 1–3 years. This severely restricts the penetration of projects with longer paybacks
- **Ambiguous definition of ESCOs and lack of legal framework:** ESCOs do not have a standard definition. The ecosystem suffers from ambiguity in roles and capabilities of market actors. The lack of legal framework for the ESCO business adds to the risk in financial transactions and ownership of assets
- **A disconnect between ESCOs and end-users' preferred business model:** ESCOs have not experimented much with new ESCO models for project implementation. Shared savings is the most widely used ESCO model in the market today. ESCOs finance projects on their own balance sheets to mitigate financial risks, hindering the implementation of many projects
- **Lack of trust in the ESCO ecosystem:** There is a general feeling of mistrust among end-users and financiers who prefer to remain within the confines of small projects with conservative and safe returns instead of scaling up projects. They also prefer working with established ESCOs with proven track records, which often makes it difficult for new and deserving ESCOs to build their portfolios
- **Difficulty in availing financing:** ESCOs continue to be constrained by financial reasons. While large vendor ESCOs are better placed to finance shared savings projects, small ESCOs, with weak assets and collateral support, struggle to secure financing – bankers are uninterested in small-size projects and sometimes skeptical about ESCOs' non-standardized solutions. Bankers are reluctant to transition from traditional asset-based financing to future cash-flow-based financing, which is an important feature of international ESCO businesses. Financial schemes such as the partial risk guarantee fund (PRGF) are not being used to their fullest potential because of poor awareness of EE financing and heavy transaction costs

Source: Kumar et al., 2017 (with minor adaptation on the legal framework)

Thank you!

For more information, visit us at https://ALCBT.GGGI.ORG or scan the QR code below

IKI Independent Complaint Mechanism

Any person who believes they may be harmed by an IKI project or who wish to report corruption or the misuse of funds, can lodge a complaint to the IKI Independent Complaint Mechanism at IKI-complaints@z-u-g.org. The IKI complaint mechanism has a panel of independent experts who will investigate the complaint. In the course of the investigation, we will consult with the complainant so as to avoid unnecessary risks for the complainant. More information can be found at https://www.international-climate-initiative.com/en/about-iki/values-responsibility/independent-complaint-mechanism/.

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