



**ECONOLER**

## **Energy Efficiency barriers and mitigation strategies**

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# BARRIER FACING THE EE EFFICIENCY & ESCO MARKET

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Many usually interrelated barriers hinder the growth of the EE/ESCO market.

The most common barriers include:

- › Policy, regulatory and administrative barriers
- › Client-related barriers
- › ESCO-related barriers

Mitigation strategies at different levels are needed

# POLICY, REGULATORY & ADMINISTRATIVE BARRIERS

Barriers	Mitigation Strategies
Government leadership/vision on EE	<ul style="list-style-type: none"> <li>• <u>Assigned responsibility and targets</u> for EE</li> <li>• <u>EE policies/ ESCO model</u></li> <li>• <u>Directive energy audits</u></li> <li>• <u>Demonstration/Pilot projects</u></li> </ul>
Lack of incentive for retrofit/ EPCs Heavily Subsidized energy prices†	<ul style="list-style-type: none"> <li>• Privatization of the energy sector</li> <li>• <u>Gradual phase-out</u> of subsidies</li> </ul>
<u>High transaction costs</u> relative to profit (Contract preparation, procurement process)	<ul style="list-style-type: none"> <li>• Model contract for different EPC/retrofit models</li> <li>• Bundling of buildings/similar projects</li> </ul>
Missing data Absence of baseline info	<ul style="list-style-type: none"> <li>• Systematic <u>collection of consumption data</u></li> <li>• Robust <u>benchmarking system</u></li> <li>• Mandatory <u>energy audits</u></li> </ul>
Insufficient levels of information and <u>awareness</u> about the <u>potential benefits</u> and opportunity loss	<ul style="list-style-type: none"> <li>• Awareness campaigns/ capacity building</li> <li>• <u>Pilot projects, case studies &amp; best practices</u></li> </ul>
Discrepancy between EE goals and utilities corporate/financial objectives	<ul style="list-style-type: none"> <li>• National authority/regulator overseeing the utilities' objectives + alignment</li> <li>• Legislative framework incentivising/obliging utilities to invest in EE</li> </ul>
VAT on EE Services and Equipment	<ul style="list-style-type: none"> <li>• Waive VAT on EE products and services</li> <li>• Balance by taxing inefficient or luxury products</li> </ul>

# CLIENT RELATED BARRIERS

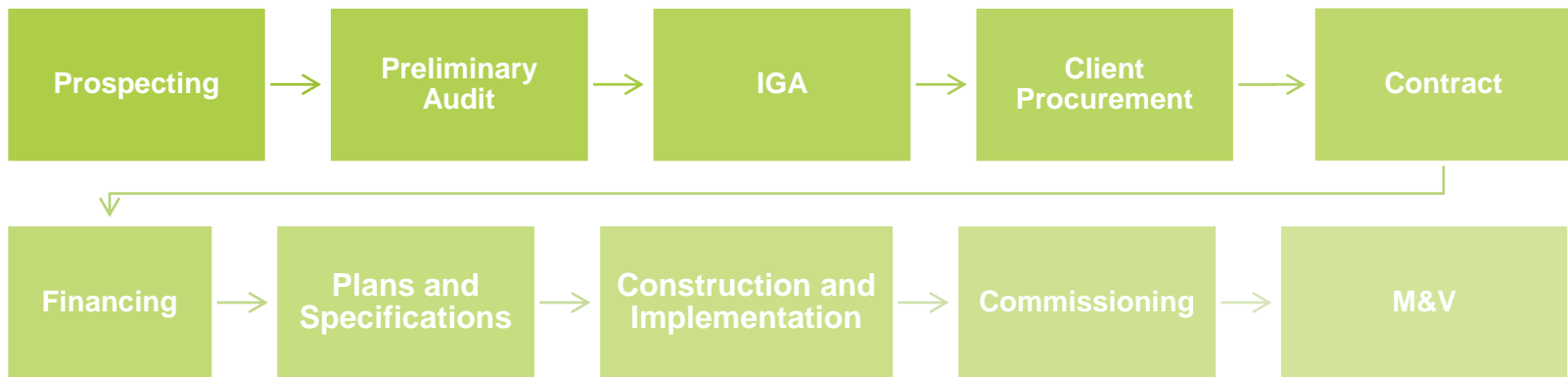
Barriers	Mitigation Strategies
Low share of energy expenditure in total spending	<ul style="list-style-type: none"> <li>Assigned EE targets &amp; obligation</li> </ul>
Short paybacks required by customers	<ul style="list-style-type: none"> <li>Subsidies, <u>incentives</u>, soft loans for EE projects</li> <li><u>Awareness</u> of long-term vision/benefits</li> <li>Energy efficiency and <u>savings mandates</u></li> </ul>
Internal Budget Competition/Priorities	
Unfavourable <u>procurement rules</u>	<ul style="list-style-type: none"> <li>Change the procurement process for the use of EE/ESCO models</li> <li>Selection based on NPV Vs lowest price</li> </ul>
Knowledge of EPC Process & ability to manage ESCOs	<ul style="list-style-type: none"> <li>Introduce an EPC facilitation program/accreditation</li> </ul>
Inadequate energy service levels <ul style="list-style-type: none"> <li>Comfort Standard not met</li> <li>Baseline info</li> </ul>	<ul style="list-style-type: none"> <li>Combination of EPCs with other renovation/upgrade efforts</li> <li>Adoption of baseline calculation best practices</li> </ul>
Accounting Rules – Shared-savings Model Guaranteed-savings Model	<ul style="list-style-type: none"> <li>Finance department to maintain the same energy budget for the duration of the shared-savings contract (to make payment to ESCO)</li> <li>Change the accounting rules to allow receiving payments for energy savings shortfalls or paying ESCOs for excess saving</li> </ul>

# ESCO RELATED BARRIERS

Barriers	Mitigation Strategies
Credibility/Lack of confidence and trust	<ul style="list-style-type: none"> <li>• Accreditation system for ESCOs</li> <li>• Standardized contract procedures by providing model contracts</li> <li>• M&amp;V protocol</li> <li>• Raise awareness among clients</li> </ul>
Technical	<ul style="list-style-type: none"> <li>• Investing in EE experts</li> <li>• Develop a contracting power</li> <li>• Capacity buildings</li> <li>• ESCO certification program</li> </ul>
Financial: Lack of access to financing - Banks not willing to lend for EPCs	<ul style="list-style-type: none"> <li>• Government EE funds for ESCOs projects</li> <li>• Government EE Guarantee scheme</li> <li>• Preferential loan schemes &amp; Incentives <u>for end-users</u> to encourage investing in EE</li> </ul>
Commercial: ESCOs not interested in small projects	<ul style="list-style-type: none"> <li>• Direct-install programs for small projects</li> <li>• Pooling of buildings up upscale projects</li> <li>• Combination of EPCs with other renovation/upgrade efforts</li> </ul>
Tendering /Contractual & legal issues	<ul style="list-style-type: none"> <li>• Adaptive procurement process</li> <li>• Suitable contracts &amp; best practices</li> </ul>

# ONGOING CHALLENGES FACING ESCOS IN THE REGION

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- › Technology challenges
- › Development challenges
- › Management challenges
- › Market challenges
- › Financial challenges

# ONGOING CHALLENGES FACING ESCOS IN THE MARKET

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## Technology Challenges

- › Proven/unproven technology and related risks.
- › Optimistic promises by EE technology vendors
- › Some technologies produced different results in different retrofit applications.

## Project Development Challenges

- › The ESCO project Development Cycle is long: between 6-12 months.
- › Canceled Projects/Failed RFPs after significant effort investment in cost and effort. amount of time was invested and much case.

## Market Challenges

- › New Market: ESCOs may not be able to generate the financial benefits desired. (Local ESCOs, International ESCOs, FM Companies, HVAC suppliers, lighting suppliers, contractors).

# ONGOING CHALLENGES FACING ESCOS IN THE MARKET

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## Management Challenges

- Construction challenges (construction delays, seasonal savings)
- Sub-contractor challenges
- Equipment challenges (change in operating conditions & warranty issues)
- Energy savings and M&V challenges
- Employee challenges

ESCOs need to improve their project management skills, project operation and risk control capabilities because an ESCO's overall operation can be impacted by one bad project.

## Financial Challenges

- › Energy savings bonds
- › Financial weakness & shortage in working capital.
- › Shared-savings Challenge (Account receivables) – Changes of Conditions
  - Facility Operating condition/baseline
  - Changes in management in charge
  - Change in facility ownership



# BEST PRACTICES

Best practice	Description	International example
<b>ESCO accreditation scheme</b>	Assess and accredit all companies wishing to operate as ESCO to enhance service quality, create trust, and channel support	<ul style="list-style-type: none"> <li>• Singapore: System of full and provisional accreditation based on requirements on experience (9 level III audits, 3 projects in last 3 years), staff (1+ EE expert full-time), and equipment (calibrated measuring equipment)</li> <li>• China: Business, financial and technical requirements for ESCOs</li> <li>• Dubai – Abu Dhabi – Sharjah</li> </ul>
<b>Mandatory requirements (EE Targets, audits)</b>	Force public owners to take action via general directives, reduction targets, mandatory audits or concrete measures	<ul style="list-style-type: none"> <li>• Quebec, Canada: Target of 12% reduction within 5 years</li> <li>• Switzerland: Mandatory implementation of cost-effective measures</li> <li>• Tunisia: Mandatory energy audit</li> <li>• Dubai: Mandatory energy audit for government</li> </ul>
<b>Adapted procurement rules</b>	Remove barriers to public financing (e.g., external financing not allowed) and procurement (e.g., competition only on prices)	<ul style="list-style-type: none"> <li>• Canada: ESCOs can provide external financing (shared-savings contract)</li> <li>• Quebec, Canada: Institutions can enter guaranteed-saving contracts</li> <li>• Morocco, South America: “Light” EPC model (audit and engineering prior to tender, decision based on price for minimum amount of savings)</li> <li>• Dubai Etihad ESCO</li> </ul>
<b>Training / promotion of independent M&amp;V specialists</b>	Train and certify independent M&V specialists and hold a reference list of specialists to be hired by ESCOs and clients	<ul style="list-style-type: none"> <li>• UK: Energy Efficiency Verification Specialists (EEVS) provide performance analysis and verification services for any sustainability project</li> <li>• Uruguay: Incentive is doubled for projects using IPMVP as M&amp;V reference</li> <li>• Brasil: IPMVP is reference for the program run by utilities and using CMVP certified personnel adds points to a projects</li> </ul>

# BEST PRACTICES

Best practice	Description	International example
<b>ESCO facilitators</b>	Accredit private technical firms to act as client representatives in procuring EE retrofits and EPCs. In charge of <b>project initiation, consultations / procurement support, and project monitoring</b>	<ul style="list-style-type: none"> <li>• Canada – FBI Federal Building Initiative</li> <li>• South Africa: Development of ESCO market facilitated by the South African National Energy Development Institute (SANEDI) in cooperation with GIZ</li> <li>• South Korea: Market facilitated on financial level by KEMCO (factoring system to reduce debt burden, extended scope of financial assistance to ESCOs, lower interest rate for ESCO loans, subsidies for ESCO projects)</li> </ul>
<b>ESCO professional certification scheme</b>	Develop comprehensive training and certification program to train, evaluate and certify ESCOs resources	<ul style="list-style-type: none"> <li>• Thailand: Development and delivery of comprehensive ESCO training program for certification of local ESCOs resources by GIZ and the Thai ESCO Association (Econoler is implementer)</li> </ul>
<b>Independent arbitration mechanism</b>	Set up and support dedicated arbitration mechanism <b>to address EPC-related disputes</b>	<ul style="list-style-type: none"> <li>• Indonesia: Arbitration law used in construction and energy</li> <li>• USA: Commercial arbitration used in most industries and governed by Federal Arbitration Act (FAA) and state legislation</li> </ul>

# NATIONAL PROGRAM OPTIONS FOR DRIVING EE PROGRAMS

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Several models have been implemented in the past for delivering national retrofit programs:

- › **Facilitator model**  
External entities provide technical assistance to building owners to develop and implement EE projects.
- › **Delegated management**  
One government entity can accept EE delegation agreement from other ministries to implement EE projects.
- › **Super ESCO model (or Program Manager)**  
a public entity signs a contractual agreement with public building owners to implement EE projects.
- › **Free market for ESCOs with financial support**  
No specific program, except for facilitating ESCOs' access to the governmental sector.

# CONTRACTUAL OPTIONS FOR EE RETROFIT PROGRAM

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## 1. Comprehensive EPC Model

- This is the most widely used EPC model in the world.

## 2. Simplified EPC Model

- This model is popular in emerging economies (e.g., South America, and the MENA region) as a way to streamline the execution of EPC contracts and reduce the transaction cost.
  - Project design by a consultant/ ESCOs bidding for the lowest price
  - Reduced M&V: Often limited to one year of measurement then fixed savings for the future.

## 3. PPP

- Used for implementing projects where the asset to be improved can be clearly identified, such as for a street-lighting network.

## 4. Traditional

- Used in an EE project when there is no guarantee or financing from an external company.

## 5. Direct-Install

- Used to streamline the implementation of simple EE measures in smaller facilities

## 6. Building Management Services

- In this implementation contract type, the building owner signs a long-term agreement with a service provider for the operation and maintenance of its facility. An EE project is implemented at the same time and is paid back from the normal utility budget.

# ECONOLER

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**Econoler** is an International Consulting Firm Specialized in the design, implementation, and evaluation and financing of energy efficiency and renewable energy projects.

## FIELDS OF ACTIVITIES

- EPC (Frameworks, models, Facilitation)
- Building retrofit programs
- Energy Efficiency & DSM Programs Design, Implementation & evaluation
- Policies, institutional, & frameworks
- EE financing mechanism & Fund Management
- Capacity Building Services

## CLIENTS & PROJECTS

- IFIs/ (ADB, AfDB, DB, EBRD, IFC, WB)
- Bilateral organizations (KfW, USAID, GIZ)
- Regulators, Ministries, government agencies, utilities, private sector funds and Private companies
- 3500 + Assignment in over 140 countries

## Training centers

CIET (Canada)  
[www.ciet.com](http://www.ciet.com)

IIET(International)  
[www.iiet.com](http://www.iiet.com)

IFS2E (France)  
[www.ifs2e.com](http://www.ifs2e.com)



# ECONOLER'S ESCO/EPC EXPERIENCE

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- World leader in the use of **Energy Performance Contracting (EPC)** to facilitate the implementation of energy-efficiency projects (**37 years** of experience, introducing the ESCO concept in over **45+ countries**)
- Established in **1981 as the first ESCO in the world**, transitioned to **EE consulting in the 90s**
- Unique expertise in setting up **regulatory frameworks, government retrofit programs, specialized procurement processes and financing mechanisms, setting up ESCOs Super ESCOs**
- Developed a wide range of **ESCO industry standardized ESCO tools**, including energy audit templates, risk analysis and calculation tools and software, economic and financial analysis tools, energy saving measures database, bankable reports templates, etc.
- Designing financial mechanism and **managing EE funds**
- Preparation of the **World ESCO Outlook every 2 years** presenting an international review of the ESCO market worldwide
- Major Contributor to **EVO Efficiency Valuation Organization (IPMVP & IEEFP)**
- **capacity building** and customized ESCOs operations documentation/manuals- Only international organization to offer a **10-day certification program to ESCO operators.**



# Thank You

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