

THE ECONOLER SERIES

## **SUPER ESCO**

An Innovative Approach  
to Unlock  
Energy Efficiency Potential



**ENERGY**  
**EXPERTISE**  
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# Introduction

The Super ESCO concept was developed in the 1990s as a potential solution to address not only the energy performance contracting (EPC) scheme's limitations but also the ESCO community's lack of capacity, willingness or interest to get involved in project financing. In other words, the Super ESCO concept was proposed to enable the EPC scheme to develop to its full potential. Although this concept was put forward in the 1990s, no action was taken to create and operate any Super ESCO until the mid-2010s.

Econoler has been in a favourable position to fully appreciate the value of the Super ESCO concept because it was one of the most important ESCOs in the world in the 1980s and made important contributions in developing this concept through its work as a consulting firm around the world for international clients. We have been one of the world's most active promoters of this concept and have been involved in designing and launching two of the world's most successful Super ESCOs (one in Dubai and the other in India).

This booklet introduces the Super ESCO concept and the main principles to be followed to put this concept into action. It also provides informative and helpful insights gained from the experiences of designing and operating the Dubai, Indian and Moroccan Super ESCOs; the first two Super ESCOs have both become major game-changers in fostering energy efficiency market growth and climate change mitigation efforts in those countries.



# Concept

A Super ESCO is described as an entity set up by government,<sup>1</sup> which functions as an ESCO mainly or exclusively for the public sector (hospitals, schools, municipalities, public buildings, street lighting and other public facilities). Super ESCOs reinforce capacity building and project development in existing private-sector ESCOs and also help in setting up new ESCOs.

As a specialized organization, a Super ESCO must possess all necessary capacities to develop adapted concepts and produce complete documentation (procurement and contract templates, measurement & verification plans, etc.). It must also identify business opportunities in markets based on the current energy rates, available technologies, associated costs, etc. This means Super ESCOs make it easier to find the best opportunities for using EPC in targeted markets and implementing bundled projects to reduce technical risks and facilitate financing.

The government capitalizes the Super ESCO through sufficient funds to carry out public projects under the EPC approach and to leverage commercial financing, which means a Super ESCO is one of the mechanisms used to overcome barriers hindering the large-scale implementation of energy efficiency (EE) projects in the public sector. As such, a Super ESCO can achieve the following:

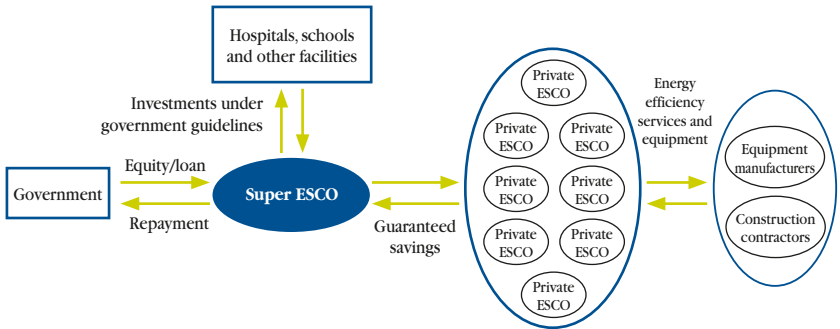
- Help overcome barriers to launching calls for tenders for projects under the EPC approach within the public sector and negotiate agreements for the implementation of EE projects on a sole-source basis using the EPC concept on the client's behalf;

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1. Theoretically, a Super ESCO may also be established by a private organization, by an NGO or as part of a public-private partnership, though there is still to this day no real example of a Super ESCO from the private sector.

- Leverage its technical capacities to launch calls for tenders for projects to be implemented under the EPC approach;
- Support training activities on the market, including for ESCOs;
- Efficiently manage small-scale projects thanks to its expertise and experience in implementing the concept;
- Take on the financial and at times technical risks, in part or in full, and thus eliminate the financial barriers for ESCOs in the private sector.

### Conceptual Model of a Super ESCO



## Public Sector

Super ESCOs are particularly well positioned to circumvent a series of obstacles that most ESCOs must overcome to thrive in the public sector:

- The size and credibility of Super ESCOs as public institutions allow them to foster the growth of a nationwide domestic ESCO sector and provide financing for EE projects.
- Super ESCOs have the unique capacity of targeting the largely untapped EE market within the public sector. Even though EE potential in the public sector is significant, several factors complicate the implementation of energy savings projects, including a lack of business direction

in public agencies, limited incentives to lower energy costs, stringent and complex budgeting and procurement procedures, and limited access to budgetary or commercial project financing. Regardless of the country, many public agencies must face severe budgetary constraints and focus on upfront costs out of necessity. Over time, this trend results in mounting operating cost liabilities, which in turn places added pressure on budgets and fuels a vicious circle. The challenge of overcoming obstacles applies to both developing and developed countries. Consequently, Super ESCOs can be structured in such a way as to meet the EE potential and needs of public agencies.

- In the long term, it is desirable to build the capacities of ESCOs and create a competitive private market for ESCO services. It then becomes relevant for the Super ESCO to retain the services of a private ESCO as a contractor for certain or all aspects of project implementation within the public sector, such as installations, commissioning and performance monitoring, which then reinforces capacity building. The Super ESCO should also ask contractors to guarantee project performance in part or in full.

## Private Sector

A Super ESCO can also play a leading role in developing and implementing projects in the private sector, either as a financier for ESCOs or as an ESCO itself given its credibility and financial capacity. A Super ESCO may also be in a position to arrange financing for private ESCOs only and help them implement projects, thereby building their capacities and credentials. As an example, the Belgian Super ESCO FEDESCO (see below) has helped set up projects on behalf of commercial ESCOs and has even implemented some directly.

It should be noted that a Super ESCO should not only be a credit facility that buys an ESCO's receivables and makes a one-time payment at a discounted present value directly to



the ESCO. The hope is that the Super ESCO finances projects implemented by ESCOs and takes on the commercial risks while leaving the technical risks to the original ESCO. In other words, Super ESCOs in the public-sector initiate and develop projects, sign contracts and maintain a global relationship with public-sector entities for the whole duration of projects.

At a later stage, the Super ESCO can unlock the private sector market by buying contracts from existing ESCOs once performance has been demonstrated, which then lifts the barriers to financing and enables ESCOs to develop further.

### Potential Issues

A potential issue with the Super ESCO concept is the possible conflict of interest between the government Super ESCO, acting as an ESCO for public-sector buildings, and the emerging commercial ESCOs that need public-sector projects to spur their growth and development. This issue can be addressed if the government requires that the Super ESCO hire private ESCOs as implementing agents. The Indian Super ESCO Energy Efficiency Services Limited (EESL) [see below] has triggered the interest of a number of private-sector ESCOs as implementation partners for public-sector EE projects, but ended up implementing many projects (including street lighting projects) by itself. Even if a large number of projects have been implemented under this concept, no sustainable EPC market has been noted in the country.

# Case Studies of Super ESCO Models

This section discusses the valuable experience and insights gained from the design and operation of two of the world's most important Super ESCOs. Econoler played a key role in the development of both Super ESCOs by helping design their business plans and/or providing support in launching their operations. This section also shares information about a new Super ESCO that will soon be established and operated in Morocco with Econoler's support.

The information presented has been collected from publicly available sources. This section also includes Econoler experts' personal insights on how to best develop and implement a Super ESCO. No confidential information received while carrying out assignments for these clients is disclosed in this section.

## **Etihad ESCO, Dubai, the United Arab Emirates**

Etihad ESCO is the official Super ESCO established in 2013 as an initiative by the Dubai Electricity and Water Authority (DEWA) under the leadership of the Dubai Supreme Council of Energy to help foster an EPC market in Dubai so that building owners can improve EE in their buildings. Etihad ESCO started operating in the third quarter of 2013 under the umbrella of the Dubai Supreme Council of Energy.

As a Super ESCO, Etihad ESCO aims to jump-start the creation of a viable EPC market for ESCOs by performing building retrofits, increasing penetration of district cooling, building the capacities of local ESCOs in the private sector and facilitating access to project financing. The Dubai ESCO market is expected to provide new business opportunities for joint ventures, international partnerships, and to engage UAE national entrepreneurs in a diversified supply chain made up of financial institutions, technology providers, equipment

manufacturers and service providers throughout the project development, management and reporting stages.

### *Market Study*

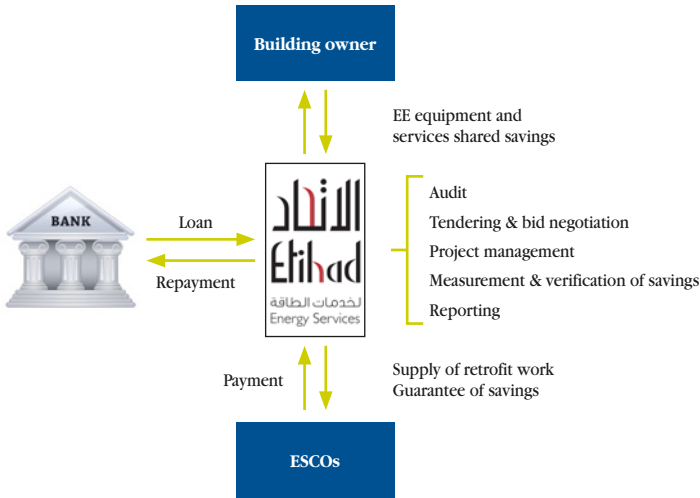
Etihad ESCO owns the Dubai Buildings Retrofit Program as part of the DSM Strategy and has clear goals and objectives. An estimate was made as part of the DSM Strategy study, which revealed that out of the +120,000 buildings in Dubai, 30,000 of them would qualify for an energy retrofit. These 30,000 buildings are of all sorts and sizes. They comprise residential and non-residential buildings as well as government and other privately owned facilities. By 2030, the DSM Strategy estimates that 1.7 GWh of electricity and 5.6 billion of imperial gallons of water can be saved on an annual basis. These savings would result in a carbon dioxide abatement of one million tons each year. These figures have been set as the 2030 targets for Etihad ESCO to achieve, and though they are ambitious, Etihad ESCO believes they can be reached. To ensure that these targets are met, yearly objectives up until 2030 have also been set for Etihad ESCO. Possible savings in Dubai buildings typically vary from 20% to 50% of energy costs, depending on the age of the equipment, the state of the buildings and the ways maintenance is performed. These savings are overall significant and can help balance budgets.

Etihad ESCO has developed an ambitious business plan to reach these targets. The focus is on inefficient buildings and initially those owned by government entities. There are over 40 government entities in Dubai that own and occupy several thousands of buildings.

### *Concept*

The business model that Etihad ESCO is deploying in Dubai is to be the middleman between facility owners, ESCOs and financial institutions in order to act as an effective facilitator to remove market barriers so that energy retrofits are carried out effectively. A visual representation of the business model is provided below.

### Etihad ESCO Business Model



As a Super ESCO, Etihad ESCO does not compete with ESCOs but is, quite on the contrary, asked to organize and establish a market for ESCOs. On this basis, Etihad ESCO takes on the following roles:

1. Prequalifying buildings from owners' portfolios
  - Perform data analysis and benchmarking
  - Conduct site surveys
  - Establish project feasibility
2. Organizing tendering on behalf of owners
  - Manage the tendering process as per applicable regulations and rules
  - Negotiate with ESCOs
  - Select the best bid and award the project
3. Securing financing if it falls outside of the owner's budget
  - Negotiate with financial institutions
  - Support credit risk

4. Following up on project execution with the ESCO
  - Ease relations with owners
  - Verify commissioning
5. Following up during the guarantee phase
  - Verify savings provided by ESCOs
  - Liaise with owners in case of issues
  - Manage contracts

As comprehensive EE projects can be complex to set up, Etihad ESCO handles all activities as a turnkey service to the benefit of all market stakeholders:

- Etihad ESCO encourages ESCOs to participate in calls for tenders that are published regularly on its website. ESCOs need to be accredited through the ESCO Accreditation Scheme of the Dubai Regulatory and Supervisory Bureau (RSB) to participate more easily in projects being launched.
- Etihad ESCO strongly recommends that product or equipment suppliers improve the electricity and water efficiency of existing buildings to promote solutions to ESCOs participating in the calls for tenders so they can include them in their service offerings.
- For banks or financial institutions interested in financing projects tendered to ESCOs, Etihad ESCO provides a secure project pipeline.

### *Development Framework*

While developing the DSM Strategy and the Buildings Retrofit Program, some market barriers were identified as potential issues: (1) preventing ESCOs from flourishing; and (2) preventing building retrofits from happening on a large scale. Trust and confidence among building owners is seen as a key factor to ensure that they are ready to make their buildings available for energy retrofits.

Among other measures, it was decided that Dubai needed a regulatory framework for its ESCO market. The Dubai Regulatory and Supervisory Bureau for Electricity and Water (Dubai RSB) was tasked with developing such a framework. In February 2014, the Dubai ESCO framework was officially released and published. It is made up of four main elements that were developed in 2013 in cooperation with market stakeholders:

- ESCO Accreditation Scheme
- Standard Contracts for Energy Performance Contracting
- Measurement and Verification (M&V) Guidelines
- Dispute Resolution Mechanism

ESCOs with the capacities listed above and willing to participate in the Buildings Retrofit Program must become accredited through the RSB Accreditation Scheme. Details on *A guide to Energy Services Companies (ESCOs) on how to participate in the Dubai Buildings Retrofit Program*, the accreditation scheme, the procedures, and the required documentation can be found on the RSB website (<http://www.rsbdubai.gov.ae>). On April 1, 2014, the first ESCO was accredited through the RSB Accreditation Scheme and many other ESCOs were expected to be accredited in 2014.

To participate in the Buildings Retrofit Program managed by Etihad ESCO, ESCOs first need to ensure they have all the required capacities. Etihad ESCO is looking for companies able to provide comprehensive turnkey projects.

Therefore, these companies need to be able to:

- Audit buildings to detect energy and water-saving opportunities;
- Identify the energy conservation measures (ECMs) that will reduce energy and water usage;

- Design the ECMs, the implementation plans, project plans, M&V plans, and make drawings and energy savings calculations;
- Implement ECMs through a comprehensive work plan;
- Commission the work;
- Develop an M&V plan according to Dubai RSB M&V guidelines and IPMVP guidelines;
- Provide services and maintain the installed ECMs for the whole duration of the energy performance contract;
- Measure savings and submit savings reports on a regular basis during the savings guarantee phase;
- Guarantee savings contractually over the whole duration of the contract and be prepared to provide financial compensation if savings do not materialize as promised.

At this stage, ESCOs should be capable of identifying conservation measures both for electricity and water usage in buildings. As natural drinking water is almost inexistent in the U.A.E. and mostly produced from seawater through an energy-intensive desalinization process, water in the U.A.E. is equivalent to energy—any water savings is considered as important as any electricity savings.

The Dubai ESCO framework released by RSB includes measurement and verification guidelines that are based on the internationally recognized IPMVP (International Performance Measurement and Verification Protocol) that was developed and is maintained by the non-profit Efficiency Valuation Organization (EVO). This organization also provides training and certification services through approved partners. Energy professionals can become CMVPs (Certified Measurement and Verification Professionals) through training and certification if successful. The first CMVP training session was delivered in Dubai in March 2014 and additional training sessions have been organized since then to help ESCOs get their people IPMVP certified.

Etihad ESCO now only works on projects with ESCOs that are accredited through the RSB Accreditation Scheme. It is therefore highly recommended for a company wishing to participate in the program to ensure accreditation through the RSB.

### *Growth and Impact*

As of the end of 2017, the following results were obtained by Etihad ESCO:

**Table 1: Retrofit Savings and Investments**

	2014	2015	2016	2017
Cumulative investment (AED million)	4.5	109	194	452
Annual achieved energy savings (kWh million)	4.4	12.1	86	194
Annual achieved water savings (MIG)	2.2	2.5	246	132

#### **Overall Results**

- 135 projects
- CAD 165 million invested (CAD 1.2 million/project)
- Savings of 194 million kWh (1.4 million kWh/project)

### **Energy Efficiency Services Limited (EESL), India**

EESL was set up in December 2009 under the aegis of the Ministry of Power of India as a joint venture collaboration by the four central public sector undertakings (PSUs), i.e. National Thermal Power Corporation Ltd. (NTPC), Power Grid Corporation of India Ltd. (PGCIL), Power Finance Corporation (PFC), and Rural Electrification Corporation (REC), with an equally divided equity participation of \$41.9 million. EESL has been mandated to work mainly as a Super ESCO with the following objectives:



- Facilitate the preparation and implementation of EE projects for the public, municipal and agricultural sectors, or any other relevant sector;
- Partner with ESCOs and other companies to promote EE;
- Provide financial intermediation services to other ESCOs for project implementation.

### *Concept*

EESL has evolved into a unique position to take advantage of EE opportunities using the EPC approach by providing: (i) expertise, (ii) financial capacity, (iii) capacity to mobilize and develop opportunities in the public sector, and (iv) its public image to enable access to EE opportunities in the private sector. It operates using different business models depending on the sector:

- Standardized offer program for energy-saving equipment;
- Annuity-based business models for street lighting and agricultural DSM projects;
- Deferred capital cost recovery - variant of guaranteed savings model for buildings;
- Special purpose vehicle for large investments;
- Shared savings models for industries;
- EMI-based models for the MSME sector.

In developed EPC markets, many governments facilitate new projects by providing customers with some form of technical and contracting assistance. Project facilitators or consultants help agency staff navigate the process, thereby reducing the time required to implement projects and minimizing the use of agency resources by assembling the right team and providing education and dedicated assistance to reduce agency workload. Project facilitators plan routine conference calls and lead process meetings. They also have the experience to guide agencies on best practices and ensure that agency partnerships with ESCOs are balanced, meaning

both sides are subject to open, transparent and standardized procedures and protocols. EESL has also taken on this role by providing consulting services for EE and project development, as well as for various activities related to the implementation of the Clean Development Mechanism.

As of today, and despite the expectations that EESL would serve as a Super ESCO based on its initial business plan developed by Econoler, EESL still acts mainly as an added-value services company, on the one hand, and as an ESCO on the other. As an ESCO, it has mostly acted as a sole-sourced ESCO in the public sector and implemented projects directly without the support of private-sector ESCOs.

### *Growth and Impact*

As of 2018, EESL helped reduce India's carbon footprint, peak energy demand, and electricity bills through energy efficiency intervention projects with a total value of INR 43 billion in domestic lighting alone.

By achieving an unprecedented 140 times growth in 2 years, EESL revolutionized India's access to energy-efficient LED bulbs and reduced carbon emissions by up to 32 million tons every year. Energy efficiency and conservation (EE&C) efforts across India's energy-intensive industries and other key demand-side economic sectors promise an investment potential of INR 74,000 (over USD 1 billion) through large-scale deployment.

### ***Société d'investissement énergétique (Energy Efficiency Investment Company), Morocco***

The Board of Directors of the *Société d'Investissements Énergétiques* (Energy Efficiency Investment Company, or "SIE" for short in French) held a meeting in October 2018 and decided on the main necessary changes to be made to allow SIE to play an active role in achieving the objectives of the national energy strategy.

Thus, SIE has officially become a state-owned Super ESCO. In other words, it is now a national energy service company tasked with the mission to actually facilitate the implementation of energy performance projects in both the public and private sectors by applying the EPC concept and subcontracting the implementation of various projects to ESCOs.

A new organization will soon be created in 2019 under a new name and it will start playing the role of a Super ESCO according to relevant international standards. This new Super ESCO will be devoted to implementing energy efficiency projects in such sectors as public buildings, public lighting, transport and industry. It will also provide technical assistance to local SMEs and ESCOs to help create a vibrant domestic EE market led by ESCOs.



## About Econoler

Econoler is a world-renowned consulting firm specialized in the design, implementation, evaluation and financing of energy efficiency projects and programs. From its creation in 1981 by Hydro-Quebec as the first Energy Service Company (ESCO) in Canada (the first utility-based ESCO in the world), the firm acquired early on a high level of expertise in the design and implementation of energy efficiency projects under a performance contracting (EPC) approach. Shifting permanently to consultancy work from the mid-1990s, with a strong focus on international activities Econoler also developed its expertise in all other aspects of demand-side energy efficiency as well as in small-scale renewable energy, climate and carbon finance, and energy access projects.

Since becoming a fully-fledged consulting firm 25 years ago Econoler has carried out more than 4,000 assignments around the world in 150 industrialized, emerging, and developing countries, from all regions of the world. Our clients include national and local governments, public utilities, corporate sector as well as the leading UN agencies, multilateral and bilateral development banks and a host of other international organizations, foundations, and NGOs involved in fostering energy efficiency and sustainable energy.

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