Viewpoint

Views on Turkey’s impending ESCO market: Is it promising?

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1. Introduction

The Energy Efficiency Law (EEL) of Turkey was developed as a result of Turkey’s tasks of complying with the EU directives. The law, expected to achieve 25–30% savings in total energy consumption, came into force on May 2, 2007 through the law number 5627. The English translation can be found at EIE (General Directorate of Electrical Power Resources Survey and Development Administration) web site (www.eie.gov.tr). The law exploits the efficient use of energy and covers administrative structuring, energy auditing, financial instruments and incentives, awareness raising and the establishment of an Energy Service Company (ESCO) market for energy efficiency (EE) services.

As stated in International Energy Agency’s (IEA) 2005 review of Turkey, Turkey’s energy policy had been highly supply-oriented, with emphasis placed on ensuring additional supply to meet the growing demand, while EE had been a lower priority. Legislative framework has been upgraded to be compatible with that of the EU countries since 2001. Lately, new legal frameworks, such as the Electricity Market Law, Natural Gas Market Law, Petroleum Market Law, and EEL have been upgraded to be compatible with that of the EU countries since 2001. The law and upcoming regulations will offer opportunities for the impending Energy Service Company (ESCO) market in Turkey. In this work, we briefly review the ESCO literature and its financing mechanisms in the world, and present our views with regard to the funding and related risks that are likely to be associated with the forthcoming Turkish ESCO market. These views are backed up with Turkish credit and banking market performance and the lessons learned from implementation of some EU-related projects involving the banking sector and small-and-medium-sized firms. We conclude that in order to create a promising competitive ESCO market, Turkey’s policy must be to sustain its average 5% growth rate achieved lately for the coming decade, finish the structural reforms which will invite necessary capital inflows to ensure an economic stability and financing.

2. ESCO facts and financing in the world

There has been a great interest in EE improvement since the first oil price shock in the early 1970s, and recently interest has heightened further because of the global warming effects of high energy use. ESCOs have a strong transition impact as a private sector instrument to deliver energy savings. The ESCO concept has been established first in North America at the beginning of 1980s. At that time, energy end-users have just went through the first energy crises and they were looking for important operation cost reductions. Many major energy customers were developing a new way to manage and monitor their energy consumption. This led to the establishment of ESCOs to replace energy auditors and consultant firms. ESCOs operate under an Energy Performance Contracting (EPC) arrangement, implement a project to deliver EE, or a renewable energy

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**Abstract**

Turkey’s Energy Efficiency Law (EEL) came into force in May 2007. The EEL will transform energy policies implemented in the government and private sectors. The law and upcoming regulations will offer opportunities for the impending Energy Service Company (ESCO) market in Turkey. In this work, we briefly review the ESCO literature and its financing mechanisms in the world, and present our views with regard to the funding and related risks that are likely to be associated with the forthcoming Turkish ESCO market. These views are backed up with Turkish credit and banking market performance and the lessons learned from implementation of some EU-related projects involving the banking sector and small-and-medium-sized firms. We conclude that in order to create a promising competitive ESCO market, Turkey’s policy must be to sustain its average 5% growth rate achieved lately for the coming decade, finish the structural reforms which will invite necessary capital inflows to ensure an economic stability and financing.
project, and use the income from the cost savings, or the renewable
energy produced, to repay the costs of the project.

Journal literature on the ESCO market is scarce but extremely
informative. Vine et al. (1998) present financial and cultural barriers
and give guidance for the development of an ESCO industry in Japan,
along with recommendations for joint ventures between US ESCOs and
Japanese companies. Vine et al. (1999) overview the evolution of the
US ESCO industry and focus on the relationship between utilities and
Super ESCOs. Goldman et al. (2005) analyze the US ESCO industry
market trends based on a survey of national and regional ESCO firms
to assess market activity over the last decade. They conclude that both
financial and non-financial support may jump start a viable private-
sector ESCO industry targeting large institutional and commercial/
industrial customers. Their observation for US ESCOs is that
performance contracting overcomes market barriers for EE invest-
ments among large, institutional, public sector customers. Vine (2005)
presents the results of a survey on ESCO activity in 38 countries outside
of the US, and discusses possible actions that countries can take to
promote their ESCO industry. Survey showed that the total amount of
ESCO activity outside the US in 2001 was around $590 million;
approximately one-half to one-third of the ESCO revenues in the US
for 2001. Vine states that ESCO industry associations, financing,
measurement and verification protocols, and information and educa-
tion programs are some of the key mechanisms distinguishing the
countries studied. It was concluded that countries that put emphasis on
the removal of subsidies, privatization of energy industry, and power
sector would be among the leaders in developing the ESCO industry.
Bertoldi et al. (2006) review and analyze the development, current
status, and ranks of ESCO industries in the EU and the New Accession
Countries, and draw attention to major differences in the development
of the ESCO markets among the various European countries due to
different levels of support offered by energy authorities, local market
structures and rules, and variation in the definitions, roles and activities
of ESCOs. The authors propose a long-term strategy to foster the
development of ESCOs in Europe via the combination of legislative
measures, proposed Energy Service Directive, and the implementation
of the Kyoto Protocol and its flexible emissions trading, clean
development mechanism, and joint implementation mechanisms. It is
also argued that EE projects offer a cost-effective approach to reducing
green house gas emissions, and the emerging carbon markets will create
new opportunities for project financing and the further diffusion of
ESCO business. Bannai et al. (2007), using financial derivatives and
actual data from existing plants, show how the concepts and tools of
financial engineering can be used to hedge the risks due to volatility of
fuel and electricity costs to increase the stability of the profit associated
with ESCO business. The authors conclude that stabilization of profit
is valuable for users, as well as for ESCO operators. Onaygil and Meylani
(2007) give an overview of the ESCOs and provide policy suggestions
for the forthcoming Turkish ESCO market.

It is noteworthy that in the US 82% of the ESCO projects are
related to lighting and only 2% are related to industrial process
improvements (Goldman et al., 2005), whereas the highest percentage
of ESCO activity is in the industrial sector for many countries (e.g.,
Bulgaria, Egypt, Kenya, Philippines, Thailand, and Ukraine targeted at
least 70% of their activity in this sector) (Vine, 2005). An explanation is
that in countries with matured industrial sector such as US and UK,
the industrial processes are already energy efficient by design, and such
countries have already completed the retrofit-design phase of industrial
processes towards EE by utilizing heat- and/or power-integration
concepts (Furman and Sahinidis, 2002).

ESCO projects are self-financing as the investment cost is repaid
from energy savings and offer an off-balance sheet financing solution to
clients who may face debt constraints. The projects can offer turn-key solutions to lower the implementation
risks and segregate credit risk from technical and performance risk. For
this reason, ESCOs are fundamentally different from consulting

engineers specializing in identifying potential efficiency improvements,
who are typically paid a fee for their advice and undertake no risk that
their recommendations will yield results. The interest and co-operation
of financial institutions and banks is essential for ESCO development.
Government and donor agencies can stimulate the market for
affordable financial options through various means such as soft loans or
grants, support demonstration projects for information dissemination,
information and education programs for financiers, evolving
appropriate financial guarantee mechanism against loans.

The financing options available for EPC projects are bank
financing, direct customer financing, public financing (bonds), ESCO,
or third-party financing. Bank financing of ESCOs, instead of clients, is
a well-accepted model that allows the entry of private capital into the
sector and offers instant modernization projects. The financing
mechanism of the ESCOs is generally classified as the “guaranteed
savings” (GS) and “shared savings” (SS) as depicted in Figs. 1 and 2,
respectively (Bertoldi and Rezessy, 2005; Bertoldi et al., 2006).

In the GS mechanism, the ESCO guarantees a certain level of
energy savings—sufficient to cover clients' annual debt obligation
(Goldman, 2003)—and protect the client from any performance risk,
and the clients are financed directly by banks or by a financing agency.
The client repays the loan and the credit risk stays with the lender. In other words, the client carries investment
repayment risk. In countries with established banking structure, project
financing, technical expertise, and stable economy, the GS mechanism
functions properly. Success stories are available for the UK, Austria,
and Hungary (Bertoldi et al., 2006).

In the SS mechanism, the ESCO carries both the performance
and credit risk. The ESCO repays the loan and the credit risk stays with the
ESCO, the client assumes no financial risk; however, the market
becomes less competitive in the long run. In countries with developing
ESCO markets, the SS mechanism is more suitable since it does not
require clients to assume investment repayment risk. The client assumes
no financial obligation other than to pay a percentage of the actual
savings to the ESCO over a specified period of time. This obligation is
not considered debt and does not appear on the customer’s balance
sheet. The portion of savings paid to the ESCO is always higher for SS
than the GS projects; reflecting the ESCO’s significantly greater risk
and expense for borrowing money. The project is funded by either
government or large organization because the customers are reluctant
to sign long-term contracts. In such markets, there are too few ESCOs most of them small-sized. Example stories
are available from India, China, and Brazil; funded by World Bank (WB)
(Vine, 2005; Bertoldi et al., 2006).

Fig. 1. Guaranteed savings (GS) mechanism of ESCO-market financing.
3. Facts on the forthcoming Turkish ESCO market

Turkey’s energy demand has been growing with a rate of 6% for decades, and this demand is expected to persist as a result of rapid urbanization and industrialization. The distribution of energy consumption is as follows: industry 36%, heating 35%, transportation 20%, and other areas 9%. The leading energy consumers of the industrial sectors are the iron and steel sector, chemicals and petrochemicals, and textile and leather industries. The energy use of the transport sector has grown significantly in the last decade and is expected to grow further. Primary energy demand has been projected to reach 220 million toe in 2020; a 150% increase compared to the current level. The limited availability and production capacity of domestic energy sources cause import dependency primarily on oil and gas. At present, about 30% of the total energy demand is met by domestic resources. In 2006, about 74% of the energy demand of Turkey has been satisfied by imports, with a cost of $28 billion.

The place of ESCOs in the organizational structure of the EEL of Turkey is depicted in Fig. 3. The main responsible organizations for EE policies and activities are the Ministry of Energy and Natural Resources (MENR), EIE, and the National Energy Conservation Centre (NECC). The MENR is responsible for formulation of policies and supervision of their implementation within the context of national energy policies, while EIE/NECC is responsible for implementation and coordination of the EE programs. EIE/NECC is carrying out training, energy auditing, drafting of legislation, and public awareness promotion activities for enhancing EE in all end-use sectors. EIE/NECC has been conducting EE projects (concentrated on the industrial sector) in Turkey in cooperation with international organizations such as WB, EU, and JICA since 1995 with the adoption of the regulation regarding the precautions to increase the efficiency of energy consumption by industrial establishments. The Energy Conservation Coordination Board, composition given in Fig. 3, under the auspices of EIE/NECC is responsible for motivating public awareness (MVV, 2004). EIE shares its authorization in energy-manager training and certification with the universities and the chambers of engineers (electrical and mechanical). EIE and these institutions will be responsible from the training of ESCOs and will provide laboratory support for the programs that will be offered by ESCOs for the training of energy managers in the industrial sector and buildings. With the adoption of EEL, only the certified companies will be considered as an ESCO and the ESCOs are authorized for EE auditing, and training and consulting activities in the industrial and buildings sectors. Sections of the Turkey’s EEL referring ESCOs can be obtained from http://web.boun.edu.tr/akman/papers/EP-TRESCO-SupportingMaterial.pdf.

Currently there are no certified ESCOs in Turkey. However, EE regulations particularly for the industrial sector are already being practiced since 1995. There are several private Turkish energy companies that do EE and related business with diverse sectors such as pharmaceuticals, chemicals, automotive, agriculture, paint, food and beverages, airport, hospitals, buildings. Among them some are involved

in co-/tri-/micro-generation, automation, power quality and reliability, equipment efficiency, demand management, and lighting projects. These energy companies are acquainted with outsourcё financing, energy accounting, energy-price risk management, energy auditing, budgeting, training and consulting for energy managers, energy monitoring and reporting, and EE financing tools. The financing of the above contracts is practiced under three different schemes. The first scheme is end-user financing and the other two are similar in principle to GS and SS mechanism as described for ESCOs.

Our private conversations with such energy companies revealed that these companies are actually eager to be certified as an ESCO and are waiting for the regulations to be completed by the state. They are willing to form joint ventures with established foreign ESCOs. They conceive to finance EE projects with the help of EU and WB funds in the short run and with Turkish banks’ credits in the medium to long run. The EEL and the current draft of the related regulations do not express a financing mechanism for ESCO business.

4. Views on the forthcoming Turkish ESCO market financing and risks

ESCOs must have strong assets to take on huge liabilities of clients that have long-term projects and the financiers should have a strong balance sheet. This is extremely a big risk that points to a considerably significant size-based balance sheet to finance projects. Therefore, ESCOs should be committed to risk management, as well. ESCO activities should be managed with risk-reducing methods like hedging instruments and venture capital. We know that companies in Turkey do not use risk management tools. They have problems of coping with the generally accepted accounting and financial standards that especially lead to poor management of assets and liabilities. At the same time, ESCOs should anticipate macroeconomic factors of the country, foreseeing the risks. Economic stability is another critical factor for the future of an impending ESCO market where Turkey’s uncertain economic performance beyond sustainability affects the expectations.

After the enactment of the EEL, Turkey’s hot issue is to establish an ESCO Market. The next is to expect a considerable interest of a market, candidate ESCOs in Turkey will not be ready for GS financing mechanism just like small- and medium-sized companies in Turkey not ready for the BASEL-II implementations.

Under a stable economy, Turkish energy policy should establish appropriate incentives for EE and development of ESCO market. Incentives like reduction on import duties, enabling foreign partnerships probably by joint venturing, risk-sharing with another forinting institution, proposing a third-party financing network, providing a healthy relation within private sector and finance sector, encouraging the emergence of small- and medium-sized firms. Beyond the difficulties of bureaucracy, there is lack of information and knowledge. Government should increase information about EE projects, financing opportunities, and services offered by ESCOs and complete the awaiting regulations. Successful model of Hungary and problematic model of India should be influential for enacting policy in Turkey. Not adopted to BASEL-II, Turkish banks may resist financing such ESCO projects because of the risky nature of this business and economical uncertainties. Between 2002 and 2007, private-sector external-debt stock increased to $150 billion, where the share of banks and financial institutions has increased to $51 billion, which is about 13% of the Turkish GNP. This points to a sound indecision or hesitation for the private sector to become involved in the ESCO market. Therefore an immediate reform of both financial and institutional restructuring should be implemented.

The bottom line is that in order to create a promising competitive ESCO market, Turkish policy must be able to sustain 5% average growth rate for the coming decade and finish the structural reforms which will invite necessary capital inflows to ensure an economic stability and financing. EU and other countries’ experiences are vital to guide Turkey to speed-up the completion process for the awaiting regulations and foster the establishment of the Turkish ESCO market.

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References


