

Transforming the ESCO market in Thailand: lessons learned from Asia

The Government of Thailand aims to accelerate investments in energy efficiency. These investments will improve overall productivity, reduce costs for end users, and relieve pressure on the growing energy sector. Support for Energy Service Companies (ESCOs) features prominently in the government's Energy Efficiency Development Plan (2012), and ESCO activity has slowly picked up in recent years. However, to meet the government's ambitions on energy efficiency, more investment is needed, and promoting the market for ESCOs is one way to mobilise investment. This report looks at lessons Thailand could learn from experiences of initiating ESCO markets in China, India, and Indonesia.

1. Energy Efficiency planning in Thailand

Security of energy supply and climate change awareness are the two main drivers behind the government strategies on energy efficiency (EE), renewable energy, and power sector development. The Energy Conservation Promotion (ENCON) Act, established in 1992, is the basis for Thai energy efficiency policy and the Energy Efficiency Development Plan 2011-2030 (EEDP) sets out a 20-year plan including a national policy framework and guidelines for energy conservation. The EEDP aims to reduce energy intensity by 25% in 2030, compared to 2005 levels (reduction in final energy consumption of 20%) and more recently, the Energy Efficiency Action Plan (EEAP) updated Thailand's ambitions to reduce final energy consumption by 24% (38,200 ktoe) in 2030 and 28% (57,400 ktoe) by 2036. Promoting the ESCO market is one of the key strategies emphasized by the Government of Thailand in order to achieve these ambitious targets (EEDP, 2011).

The Thai economy runs mainly on fossil fuels, which make up over 80% of final energy consumption. Access to electricity is almost 100% and the grid reliability is high with only occasional brown outs. Domestic production supplies around 75% of oil and gas, but national reserves are limited therefore fossil fuel imports are expected to increase making the economy vulnerable to price fluctuations. Politically this is an especially important issue, since over the past decades the economy has suffered from the external shocks of the global and regional economic crises. In addition, the population is acutely aware of the impacts of climate change, including disruptive droughts and floods. Alongside economic growth projections of over 4%, the power sector is expected to double in size in the next 15 years. Figure 1 shows the historical data and forecast final energy consumption in Thailand by sector.

Given this national context of climate change and energy security, there is broad consensus that in order to move towards a 'sufficiency economy', a transition to a sustainable, low-carbon energy system is needed.



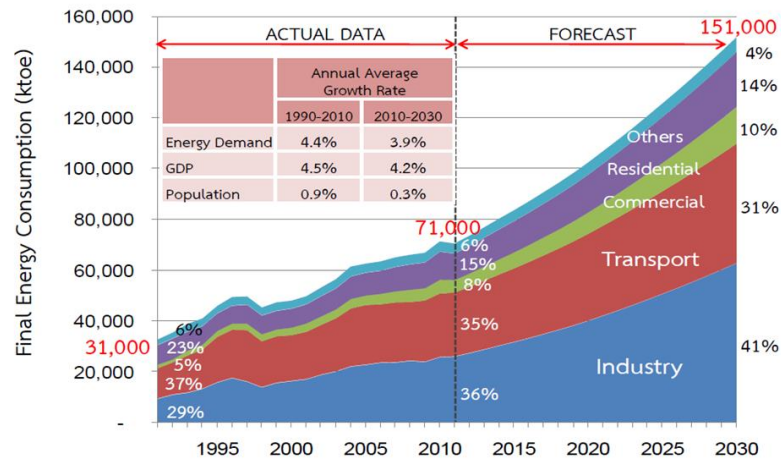


Figure 1: Actual and forecast energy consumption levels in Thailand by sector from 1990 to 2030 (Source: EPPO, EEDP).

2. The definition of an ESCO and the status of the Thai ESCO market

The definition of an ESCO varies depending on the country or region it operates. De Boer (2011) defines ESCOs as “companies providing energy services to final energy users, including, but not necessarily, the supply and installation of energy-efficient equipment, building refurbishment, maintenance and operation, facility management and the supply of energy (including heat), accepting some degree of financial risk in doing so”. One can also make a clear distinction between ESCOs and Energy Service Provider Companies (ESPCs); in that ESPCs are remunerated with a fixed fee for the services they provide whereas ESCOs are remunerated based on their energy or cost savings performance.

The Thai ESCO market was initiated in 1999 with a Global Environment Facility (GEF) pilot project that provided energy audits to four industrial facilities. The Thai ESCO Association was established in 2008 and carries out tasks including setting up an accreditation process for the registration of qualified ESCOs and in general stimulating ESCO activities in the country. Currently, there are between 35 and 40 ESCOs active in Thailand (Wuppertal, 2014).

In Thailand, ESCOs mainly provide fee-for-service contracts in which they are paid a known fee by the customer for providing services such as energy auditing, proposing energy efficiency measures and implementing these measures. Energy Performance Contracting (EPC, see Box 1 for further explanation) is not widely used in Thailand, but there are some examples including the refurbishment of the Grand China Princess Hotel in Bangkok implemented under a shared savings contract from 2008-2014.

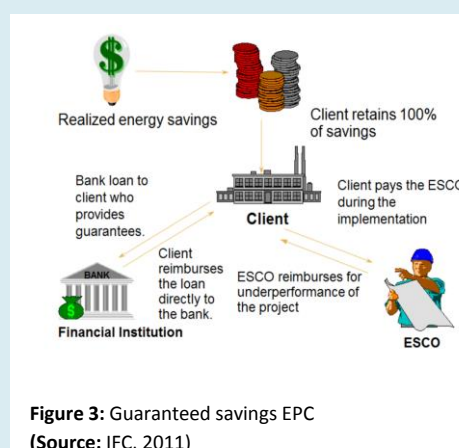
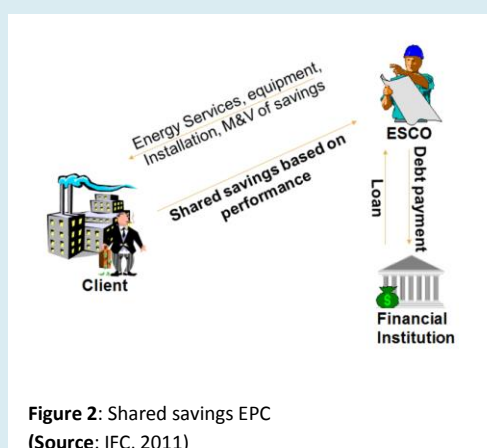
An ESCO market exists in Thailand, but most ESCOs are small scale with and currently don’t have the capability to scale up investments to a level that can help meet the ambitious government objectives on energy efficiency. Thailand needs to transform to a more effective ESCO market in which EPCs are commonly used. Many energy efficiency investments are economically viable, but the uptake of projects is limited due to financial, technical and market barriers. Many of these barriers have been faced by the governments of other countries and Thailand can learn from the experiences in these



countries in order to successfully stimulate the growth of their own ESCO market. Section 3 investigates possible lessons from the 3 case studies of China, India and Indonesia.

Box 1: Energy Performance Contracting

An Energy Performance Contract (EPC) is a contract in which the ESCO is paid based on the realisation of energy or costs savings and transfers certain risks away from the customer. There are two common forms of EPC: *Shared Savings* and *Guaranteed Savings*. Under a Shared Savings contract the ESCO guarantees a certain level of cost savings from the energy efficiency project, which is then divided between the ESCO and the customer according to an agreed percentage. One key characteristic of a shared savings contract is that the ESCO arranges the financing for the project (with a third-party finance institution if necessary). Under a guaranteed savings contract the ESCO guarantees a certain level of *energy savings*, as oppose to cost savings, and the customer arranges the financing. Figures 2 and 3 show the relationship between the parties involved in these 2 types of EPCs.



3. International ESCO markets: case studies

Various developed and developing countries have demonstrated success in addressing barriers to EE growth and scaling up EE investment by adopting ESCO energy performance contracting. In the United States more than 500 programs have generated energy savings of over 8,500 Gigawatt hours leading to US\$11.7 billion cost savings. In Canada ESCO projects in buildings have saved over US\$40 million and reduced energy intensity by 20%. Projects involving EPCs in the EU have led to cost savings of between EUR 35 and 40 million (World Bank, 2014).

Developed countries often have characteristics that are more conducive to overcoming barriers to EE growth and stimulating the ESCO market such as stable regulatory frameworks and a mature banking sector with healthy competition (IFC, 2011). Countries with developed ESCO markets, such as the United States and Germany, are characterized by the higher awareness of banks in EE projects and investments and established relationships between ESCOs and companies. Thailand can of course learn from



activities in these countries, but the purpose of this paper is to provide lessons from developing countries in the same geographical region as Thailand that have more similarities in terms of barriers and risks perceived by the various stakeholders in the EE industry.

3.1. China

ESCO market history and current status

The ESCO market in China has grown to be one of the largest in the world. The market was initiated in 1994-95 by the government with financial and technical support from the World Bank, the GEF, and other international institutions. Three pilot ESCOs were given access to a dedicated line of credit to stimulate the use of EPCs and the government (with financial assistance from the World Bank) then injected further investment into the ESCO market to attempt to overcome two major obstacles its growth: i) a lack of technical capacity and understanding among ESCOs and customers about EPCs, and ii) a lack of access to capital (Sun, Zhu, and Taylor, 2011). As Table 2 shows, since 2005 the market has demonstrated strong growth both in the number of ESCOs in operation, and in EPC investment levels.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Employees (thousand)	16	21	35	65	113	175	378	435	508	560
EPC Investment (USD billion)	0.16	0.24	0.9	1.71	2.86	4.36	6.54	8.96	12.16	15.59
Energy saving (million tons coal equivalent per annum)	0.9			12.4	17.6	10.7	16.5	18.3	25.6	30
CO2 reduction (million tons per annum)	2.2			29.2	41.6	26.6	41.25	45.7	64	74.9
Number of Energy Management Company Association (EMCA) members	89	212	308	385	450	560				

Table 2: ESCO market growth in China 2005-2014 (Source: China Energy Management Contract Network and EMCA).

The number of ESCOs has grown to over 5,000 in 2014 (EMCA, 2015). Many of these are small companies with registered capital of less than CNY 5 million (USD 0.8 million). There are about 20 large ESCOs with registered capital greater than CNY 100 million (USD 16 million).

Energy Performance Contracting

The credit lines extended to the three pilot ESCOs by the World Bank provided important financial support to the ESCO market and enabled EPCs to flourish. Total investments in EPCs reached approximately USD 15.6 billion in 2014 (EMCA, 2015).

An EMCA survey from 2007 to 2009 found that the number of projects that involved an EPC was evenly split between industrial projects and buildings. However, the investment requirements for industrial projects are often greater than in the building sector therefore industrial projects accounted for 74% of total EPC investment. Figure 4 shows the share between the two sectors.



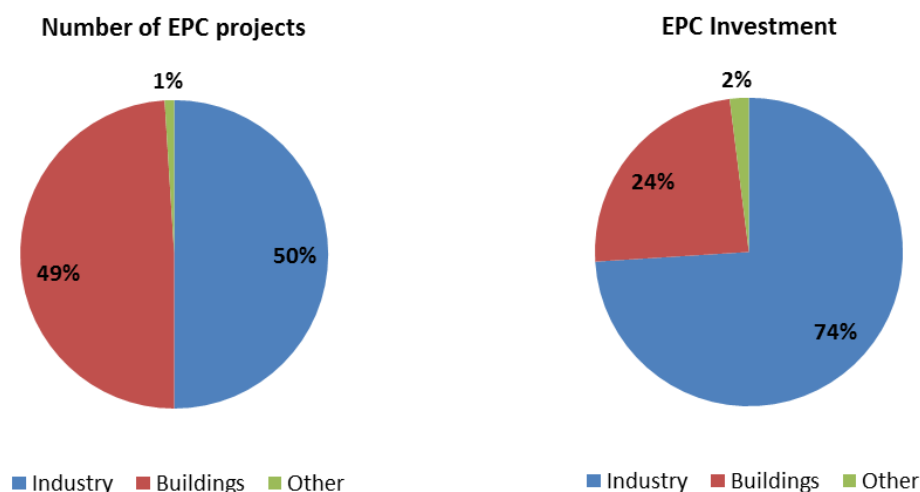


Figure 4: Share of EPC projects and investment by sector in China (Source: Sun et al., 2011).

According to EMCA, 61% of the EPC projects were undertaken using shared savings contracts, while 36% were carried out using guaranteed savings contracts. Shared savings contracts were more common in the building sector accounting for 53% of total projects, as oppose to 69% in the industry sector. Over the period 2007 to 2009, the share of total EPC investment allocated to guaranteed savings contracts progressively decreased in favour of investment in shared savings contracts in China.

Government Support

Energy Performance Contracting is a focus for the Chinese central government in its 12th Five Year Plan. Prior to the implementation of the Plan, the government ramped up its support for ESCOs with several fiscal and tax incentive policies plus some standardization requirements for EPCs.

- China's State Council issued the document "Notice on Accelerating Energy Performance Contracting to Promote the Development of the Energy Service Industry in China" (State Council of China, 2010).
- New financial incentives policy for ESCOs carrying out projects under shared savings contracts. To receive the incentives, ESCOs are required to first officially register with China's National Standardization Management Committee (NDRC) and to have equipment and statistical systems in place to measure achieved energy savings. In August 2010, the NDRC released a national standard on Energy Performance Contracting that became effective on 1st January 2011, setting the technical requirements for EPC projects and including a template for energy performance contracts.
- In 2010, the Ministry of Finance (MoF) and General Tax Bureau released a set of new tax policies for ESCOs. The policies include exemption from turnover and value added taxes for ESCO contracts, income tax exemption for ESCOs for the first three years of an EPC project. Among other criteria, projects must be carried out under shared savings contracts with ESCOs providing at least 70% of the project finance.



It was estimated that about CNY 2 billion (USD 317 million) had been awarded to EPC projects by the end of 2010. In October 2010, 462 ESCOs had qualified to apply for the incentives. By mid-2012, 2,354 companies had been registered as qualified ESCOs by NDRC.

In 2006 the China Utility-Based Energy Efficiency Finance (CHUEE) Program was created in response to a request to the IFC from the Chinese government to design and implement a new private-sector based energy efficiency and/or renewable energy finance initiative. This program included a risk sharing facility which provided bank guarantees for loans made to climate-friendly energy projects, and technical assistance to market actors such as ESCOs, utilities and equipment vendors to help implement projects.

The CHUEE program's participating banks have provided loans worth over US\$790 million by the end of the year 2013, financing 226 energy efficiency and renewable energy projects. These investments are estimated to lead to reductions of over 19 million tons of carbon dioxide emissions each year¹. Despite these figures, CHUEE is considered to have had limited success. When the CHUEE program started, energy efficiency financing had been booming in China. Without the CHUEE program, it is possible that the banks could have expanded their energy efficiency loan portfolios anyway, which has raised the issue of whether the program has contributed any additionality to energy efficiency activities in China.

Key lessons from China

Consistent government policy and dedicated financial support for ESCOs is critical. The Government of China provided consistent policy signals to the private sector that they are committed to promoting energy efficiency and developing the ESCO market. This improved the market conditions for investments in energy efficiency and for the CHUEE program and international support to be introduced.

Carefully selecting the right private sector partners with suitable business strategies is crucial. The CHUEE program worked mainly with two commercial banks: Industrial Bank and the Bank of Beijing. Industrial Bank targeted its existing customers and expanded its EE loan portfolio at twice the rate of its competitors. This was helped by the CHUEE program's support in establishing a dedicated department for energy efficiency lending, the preparation of developing guidelines and procedures for EE loans, and capacity building on EE project financing. The strategy of the Bank of Beijing was different in that it tried to target new types of clients and consequently the bank struggled to expand its EE loan portfolio. The CHUEE program failed to introduce a variety of commercial banks to the program.

An exit strategy is necessary. It is important that private sector partners can sustain energy efficiency investments after the program is completed. The CHUEE program provided technical reviews of EE projects for Industrial Bank which was one of the main reasons the bank was able to grow its EE loan portfolio so rapidly. However, once the program stopped the bank lacked the necessary capacity to perform these reviews themselves. It's critical that during programs such as these private sector partners do not rely too heavily on external technical assistance and that sufficient capacity is built within these partner institutions in order to maintain investments once the program ends.

¹ Source:

http://www.ifc.org/wps/wcm/connect/regprojects_ext_content/ifc_external_corporate_site/home_chuee/about+us/about



3.2. India

ESCO market history and current status

India has small but developing ESCO market mainly in the industrial and buildings sectors. The market was initiated in the early 1990's with support from the U.S. Agency for International Development (USAID) which included finance for training sessions given by energy experts from the U.S. and for feasibility studies. The Bureau of Energy Efficiency (BEE) under the Ministry of Power accredits ESCOs by undertaking an assessment of company's knowledge and financial capabilities to provide ESCO services. 137 ESCOs are currently accredited with the BEE. The growth in the number of ESCOs active in India from 1990 to 2014 is shown in Figure 5.

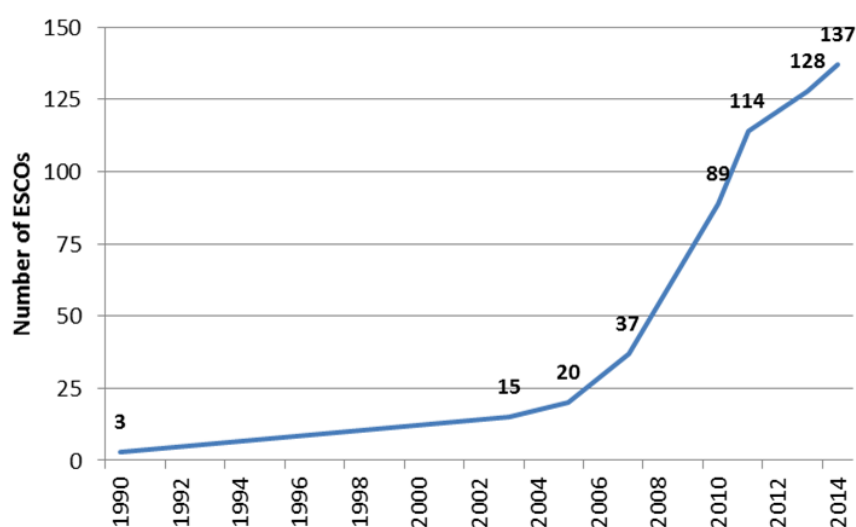


Figure 5: Growth in the number of ESCOs in India from 1990 to 2014 (Source: adapted from BEE).

Energy Performance Contracting

The size of the market for EPCs has been estimated at USD 3 billion². Larger industrial companies work with the guaranteed savings model because the company itself can finance large-scale energy efficiency projects. Many ESCOs in India are small-scale with insufficient capital to be able to finance large scale projects. Therefore the shared savings model (in which the ESCO arranges the financing) is used in smaller projects.

Government Support

Different ministries, with the support of BEE, have been active in promoting energy efficiency. Selected government agencies such as HAREDA (Haryana Renewable Energy Development Agency) and PEDDA (Punjab Energy Development Agency) have been incentivizing energy efficiency measures by encouraging **walk through energy audits**. BEE has also provided grants to finance these audits.

² This is the most recent estimate available is from 2005 by the Asian Development Bank (ADB).



There are **standard formats of contracts** for the implementation of energy efficiency measures which are prepared under the guidance of BEE. Operation and maintenance (O&M) standards, and energy and cost savings standards are defined by BEE. These standards form a part of the EPC between the ESCO and the customer.

BEE and Energy Efficiency Services Limited (EESL- set up by the Ministry of Power as the main implementation body of the National Mission for Enhanced Energy Efficiency (NMEEE)) are working towards preparation of **monitoring and verification protocols** and preparing grounds for training of **Certified Energy Auditors** for becoming third party monitoring and verification services. This will facilitate both customers and ESCOs in taking risks involved in EPC.

The Government of India provides a number of financial instruments to support energy efficiency:

- **Concessional loans:** Project developers that implement projects through an ESCO are eligible for loans at lower interest rates from the Indian Renewable Energy Agency (IREDA)³ of up to 70 percent of the project costs or energy efficient equipment.
- **Credit lines for commercial banks:** IREDA extends a line of credit to eligible financial intermediaries to lend and/or lease energy-saving equipment.
- **Tax benefits:** energy efficiency projects are eligible for up to 100 percent tax deduction for the recovery of depreciated property in the first year of the project on specified equipment and are exempt from import and excise taxes.
- **Partial Risk Sharing Facility (PRSF):** The World Bank has initiated a PRSF aimed at ESCOs using EPCs for large scale private sector industries in India.

Backed by support from the Clean Technology Fund (CTF) and the GEF, the PRSF will be set up within the Small Industries Development Bank of India (SIDBI) to provide partial guarantees to Private Financial Institutions (PFIs) that are lending to energy efficiency projects which include EPCs.

Some **important features of the PRSF** are:

- The Guarantee will not exceed Rs 300 lakhs (USD 500,000) per project or 50 percent of loan amount.
- Covers the first loss subject to maximum of 10 percent of the total guaranteed amount.
- Covers the remaining default on a pari-passu⁴ basis.
- Maximum term of the guarantee is 5 years from the date of issue.

³ IREDA, a Public Limited Company of the Government of India, receives financial and technical support from the German development bank (KfW), French development bank (AFD), Nordic Investment Bank (NIB), European Investment Bank (EIB), Japan International Cooperation Agency (JICA), World Bank, Asian Development Bank (ADB), and other international financial institutions, agencies and investors. Thereby it is extending financing services for energy efficiency projects along with renewable power so that developers and ESCOs have access to a number of financial programs.

⁴ This means that any losses on the remaining 90% of the guaranteed amount will be shared equally between the guarantor (from the PRSF) and the lender (the bank).



The PRSF will contain capital of USD 35 million which is funded from a CTF contribution of USD 25 million and a GEF contribution of USD 10 million. There is a Technical Assistance and capacity building component funded by the GEF of USD 8 million, with USD 6 million implemented by SIDBI and USD 2 million implemented by EESL.

Key lessons from India

Building credibility and trust in ESCOs is imperative. The various programs in India involving certification and auditing of ESCOs, and standardisation of EPCs have helped to improve the relationship between the customer and ESCO. These programs have reduced uncertainty for the customer in the ESCO business and promoted the use of EPCs in India.

Strong, pro-active implementing agencies are necessary. Institutions such as BEE and SIDBI can dedicate all of their resources to the promotion of investment in EE activities. This can instill confidence in investors that there is an institutional framework in place that can ensure a stable and functional ESCO industry which is attractive for investment.

3.3. Indonesia

ESCO market history and current status

The ESCO market in Indonesia is nascent with very few lessons for Thailand as yet. The Indonesian ESCO Association, Apkenindo, currently has around 20 members. These members are a mix of Indonesian and well-established international companies. Many of these members are Small- and Medium-sized Enterprises (SMEs) that either supply equipment or offer technical auditing services, but have yet to undertake shared savings or guaranteed savings contracts with their clients. The energy savings potential in Indonesia across a wide range of sectors (transport, commercial, agriculture and mining, etc.) is estimated to be in the range of 10-35%. For specific projects the saving potential can be much higher (Synergy Efficiency Solutions (SES), 2015).

Energy Performance Contracting

The experience with ESCOs and EPCs in Indonesia has been rather limited until now. The barriers include a lack of experienced ESCOs and a lack of incentives for large electricity consumers to implement energy efficiency measures. The latter is due to the fact that energy is sold at a low regulated price and the difference between the generation costs and end-user prices is paid by the Government of Indonesia.

Furthermore, National law No.32 of 2004 prevents the use of tax receipts from local governments to be directly paid to the private sector. Tax receipts must be kept within the city budget. This creates uncertainty for ESCOs working with government entities about whether the services can effectively be paid for (GIZ, 2013).

A small number of initiatives are currently underway. Shared savings contracts for street lighting have been signed between local governments and at least one Indonesian private company (GIZ, 2013). The Ministry of Energy and Mineral Resources (ESDM) is involved as regulator. Contracts have been signed with the cities of Magetan, Kendal, Pati and Tulunga (Java). Investments per project are in the range of USD 2 – 4 million, and are financed from the balance sheet of private companies. Investments are earned back from the savings achieved on the clients' (i.e. cities) energy bill. Contract duration is around



7 years. Perusahaan Listrik Negara (PLN), the state owned utility company, also plays an important role, especially in measuring and billing.

Government Support

The Indonesian government has introduced a wide range of energy conservation programs which are aimed at overcoming the barriers related to policy, regulation and capacity that prevent the growth of ESCO market.

The ESDM Partnership Program on Energy Conservation, supported by grants from USAID and technical assistance from KfW and the Danish development cooperation (DANIDA), provides free energy audits for buildings and industries which commit to reducing their energy consumption via energy efficiency measures. Between 2003 and 2013 energy audits were undertaken for 974 industries and buildings and in 2014 alone 120 buildings and 180 industries were audited. Alongside the Partnership Program standards have been developed for energy managers and auditors to ensure that the quality of audits will achieve a minimum quality level. Furthermore, standards and labelling programs for energy efficiency equipment have been or are currently being implemented. For example Minimum Energy Performance Standards (MEPS) for Air Conditioners, Refrigerators, Rice Cookers, and Electric Motors are being implemented in 2014 and 2015.

The United Nations Industrial Development Organization (UNIDO) supported program on Promoting System Optimization and Energy Management Standard (ISO 50001) in the Industrial sector attempts to develop capacity of the energy efficiency management system in industrial companies and integrate it into companies' management systems. Four specific sub-sectors are targeted: textile and garments, food and beverages, paper, and chemicals. A series of trainings have been conducted for experts between 2012 and 2013, and 11 pilot companies have received assistance from these national experts, 5 of which have been given the certification of ISO 50001.

There is limited financial support from the Government of Indonesia to stimulate the ESCO market. Indonesia's Ministry of Finance has announced a revolving fund for financing energy efficiency projects, but the fund did not receive any funds due to a sudden lack of available capital. The Indonesian state-owned Investment Fund Pusat Investasi Pemerintah (PIP), which is now being integrated into the state-owned infrastructure development company (PT-SMI), has funds available for energy efficiency projects and ESCOs, but no finance has been disbursed yet.

Lessons from Indonesia

Government financial commitment towards growing the energy efficiency and ESCO markets is critical. The Government of Indonesia has shown commitment in promoting energy conservation by developing policies and programs, but has not provided any financial support as yet. Policy development often needs to be supported by strong financial incentives to stimulate the market for energy efficiency and ESCOs.



4. Discussion & lessons learned

It has proven to be very difficult to launch and develop ESCO markets in many countries. IFC has highlighted the difficulties in replicating and scaling-up the success that has been achieved in China and countries such as The Netherlands have struggled to grow the market despite the willingness of government to support it with the implementation of various financial and technical support programs. Nonetheless ESCOs are an important means to achieve the EE potential that exists in Thailand and there are several lessons that can be learned from the various countries' efforts outlined in the 3 case studies. These lessons are discussed in this section.

Combine consistent government policy with dedicated international financial assistance

In both China and India, the central governments made clear policy decisions to establish an ESCO industry and to implement these policies with financial support from multilateral institutions. The consistent policy frameworks combined with dedicated international financial assistance were crucial factors in the successful establishment of the respective ESCO markets in these countries. Assistance from multilateral institutions also brought international experience and expertise which helped strengthen the technical capacity of ESCOs.

An ESCO industry already exists in Thailand meaning that the current situation is not the same as that in China and India in the mid-1990's and early 2000's. In Thailand, the priority is to build on the existing ESCO industry rather than to establish the industry from the beginning. Nevertheless, the important role of clear, consistent government policy and the use of international finance in enabling the expansion of the ESCO market are lessons that are applicable to the current situation in Thailand. Financial support that is specifically targeted towards scaling-up the use of EPCs (Shared Savings in particular) is necessary to develop the ESCO market in Thailand. Designing instruments to address the barrier of a lack of access to capital for ESCOs, such as concessional lending and credit guarantees, is particularly relevant for Thailand.

Ensure there is a clear exit-strategy for government

Governments need to be consistent and predictable about their exit-strategy. In order to encourage the private sector to takeover and further develop the industry independently, there needs to be a clear strategy and process put in place by the government (and international donor institutions) and this needs to be signaled to the private sector early. There are signs that the Chinese government is seeking to reduce financial support to the ESCO industry. In 2010, a central government policy document stated that the government would encourage banks and other financial institutions to create new credit products, open up and expand the scope of guarantee products, and simplify application and approval procedures to meet the special needs of ESCO financing. The Government of Thailand will need to ensure that the private sector is sufficiently incentivized and has the necessary capacity to sustain EE investments once government support is phased out.

Build credibility and trust

Standard formats for EPCs in India have helped build trust between the ESCO and customer. This standardization provides the customer with more certainty that the terms of the contract are fair and that the ESCO is capable of achieving the level of energy or cost savings that has been agreed upon. One



role of a facilitator⁵ in Thailand could be to ensure EPCs that are made between ESCOs and customers meet these standard requirements.

The government of India has mandated third party audits of operations of ESCOs to ensure that there is transparency in the ESCOs activities and that the benefits of efficiency are being fairly distributed among stakeholders. The Government of India is making third party audits mandatory through BEE certified auditors. This approach could be taken in Thailand to build the credibility of ESCOs and help them to gain the trust of customers and financiers.

Assign/establish strong, pro-active implementing agencies

In India the government assigned the responsibility of promoting EE activities to BEE. Placing one institution in charge of promoting EE signals to relevant stakeholders that there is a clear institutional structure in place which dedicates its resources to developing a stable and functional ESCO industry. Also, SIDBI was given the role of Project Execution Agency (PEA) and mandated to facilitate the implementation of the PRSF acting on behalf of the Government of India. It is important to have such pro-active implementing institutions that are dedicated to transforming the market.

If a guarantee facility for EE is established in Thailand, such as the PRSF in India, then the Thai Credit Guarantee Corporation (TCG) could take on a similar role to SIDBI in India. The TCG has a proven track record in establishing guarantee products for SMEs and would be an ideal candidate to act as the implementing agency. In establishing the institutional framework for such a guarantee, the Government of Thailand can learn from the set-up of the PRSF in India (see Annex 1).

Ensure the effective design of EE financial incentives

The Government of Thailand has expressed interest in establishing some form of guarantee mechanism in order to stimulate increased levels of bank lending to ESCOs. International funds can often be a catalyst for more novel forms of financial incentives that have not been traditionally offered by national governments. This occurred in both the China CHUEE and India PRSF cases which provide lessons for Thailand in the establishment of such a guarantee mechanism including the following:

- Strong technical support and capacity building needs to be combined with financial incentive models. In Thailand programs should provide comprehensive support and not only financial mechanisms in isolation. Technical support and capacity building is required for each of the three key ESCO market actors: ESCOs, customers, and commercial banks.
- Selecting the right commercial banks with suitable business strategies that can provide a sustainable flow of customers is crucial to ensure that the guarantee is taken up. In Thailand there are a number of banks (e.g. Kasikorn, Bangkok Bank) that have already launched some form of energy efficiency financing loan product. Programs should work together with these banks to encourage the uptake of a guarantee, rather than banks that are targeting new types of clients in order to build their EE loan portfolios.

⁵ A facilitator approach is being considered in Thailand. For further explanation on the facilitation approach see section 3 of GIZ (2013)



- Flexibility in the design of the guarantee to be able to incorporate subsequent changes. This requires a consultative approach to designing the guarantee involving a wide variety of stakeholders.

International donor financing is one funding source that could be accessed by Thailand to provide support for stimulating the ESCO market. One way of accessing such financing is through the development of a Nationally Appropriate Mitigation Action (NAMA) in the area of energy efficiency and ESCOs. ECN is currently supporting the Thai government and working with local stakeholders to develop a NAMA proposal on this topic. The objective is to submit this proposal to international funding sources to attract finance for the implementation of the NAMA.



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Acronyms and abbreviations

BEE	Bureau of Energy Efficiency (India)
CHUEE	China Utility-Based Energy Efficiency Finance (Program)
CTF	Clean Technology Fund
DANIDA	Danish development cooperation
EE	Energy Efficiency
EEAP	Energy Efficiency Action Plan
EEDP	Energy Efficiency Development Plan
EESL	Energy Efficiency Services Limited (India)
EMCA	Energy Management Company Association (China)
EPC	Energy Performance Contract
EPPO	Energy Policy and Planning Office (Thailand)
ESCO	Energy Service Company
ESDM	Ministry of Energy and Mineral Resources (Indonesia)
ESPCs	Energy Service Provider Companies
EU	European Union
GEF	Global Environment Facility
GIZ	German Society for International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit)
HAREDA	Haryana Renewable Energy Development Agency (India)
IFC	International Finance Corporation
IREDA	Indian Renewable Energy Agency
KfW	KfW Development Bank
Ktoe	kilotons of oil equivalent
MEPS	Minimum Energy Performance Standards
MoF	Ministry of Finance
NAMA	Nationally Appropriate Mitigation Action
NDRC	National Standardization Management Committee (China)
NMEEE	National Mission for Enhanced Energy Efficiency (India)
PAKLIM	Policy Advice for Environment and Climate Change (GIZ)
PEA	Project Execution Agency
PEDA	Punjab Energy Development Agency (India)
PFI	Private Financial Institution



PIP	Pusat Investasi Pemerintah (Indonesia state-owned Investment Fund)
PLN	Perusahaan Listrik Negara (Indonesia state-owned utility company)
PRSF	Partial Risk Sharing Facility
SES	Synergy Efficiency Solutions
SIDBI	Small Industries Development Bank of India
SME	Small- and Medium-sized Enterprise
TCG	Thai Credit Guarantee Corporation
UNIDO	United Nations Industrial Development Organization
USAID	U.S. Agency for International Development



Annex 1: Institutional structure of the PRSF in India

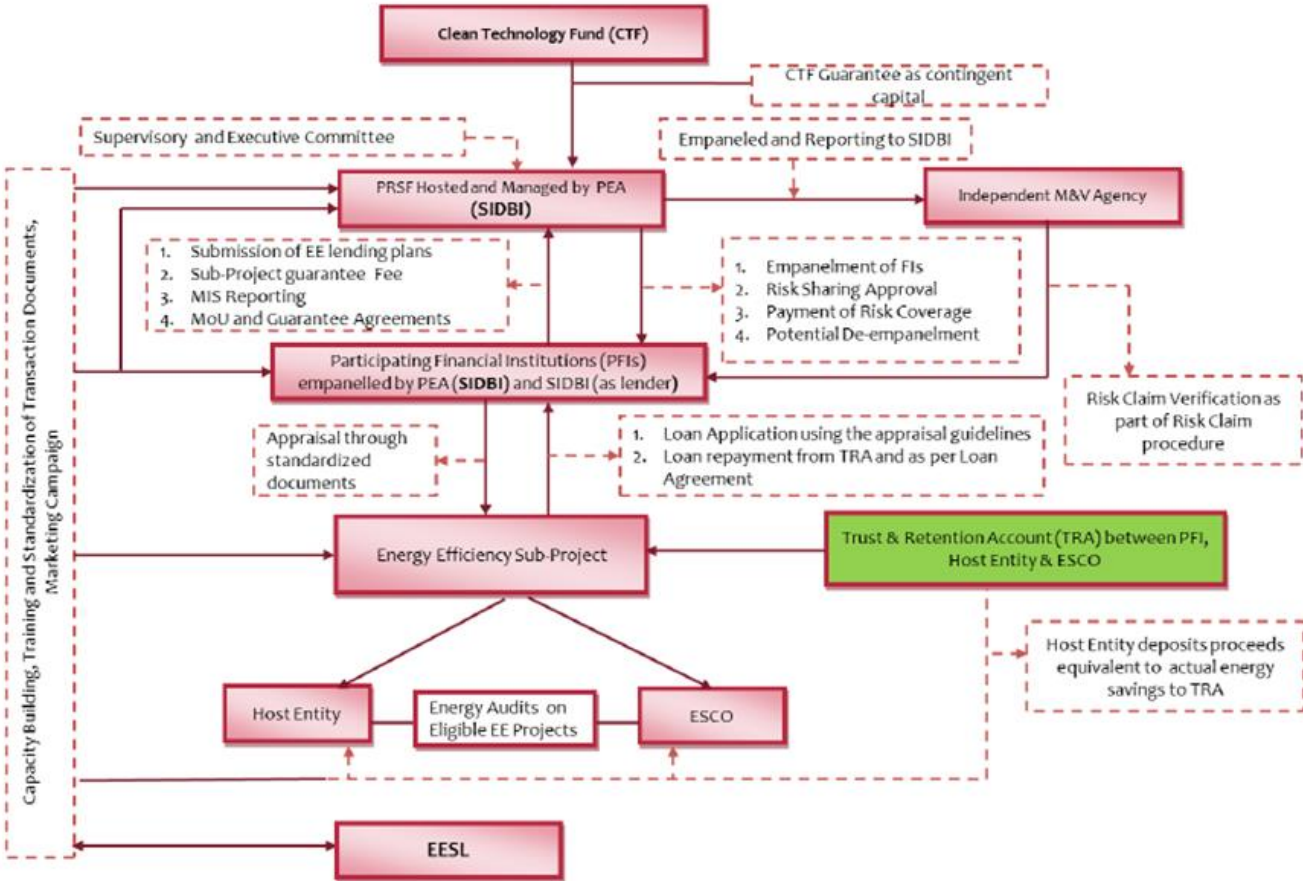


Figure 6: Institutional set-up and roles for the PRSF Guarantee Facility in India (Source: World Bank).

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