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10 Big Ideas for Making Energy Efficiency Bankable in India

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10 Big Ideas for Making Energy Efficiency Bankable in India

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- State Bank of India (SBI)
- Ministry of New and Renewable Energy (MNRE)
- Bureau of Energy Efficiency (BEE)
- Tetra Tech India
- Philips Lighting India

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TABLE OF CONTENTS

10 BIG IDEAS FOR MAKING ENERGY EFFICIENCY BANKABLE IN INDIA

ABOUT THIS REPORT

In a continent that is starved for energy and infrastructure, it is an enigma that India's markets for energy efficiency have yet to take off. We spent several months researching and debating this issue with stakeholders in India and around the world.

The case for energy efficiency is most certainly well documented. We came across over 75 reports and papers from academics, non-governmental organizations and public entities documenting that India accounts for 5 per cent of the global demand for energy, imports over 70 per cent of the fossil fuels needed for its generation and, moreover, that the demand for energy is rising by 60 per cent across 2003–2016.

We also find that the legal and institutional landscape on energy efficiency is established:

- The Energy Conservation Act (ECA) of 2001 established the Bureau of Energy Efficiency (BEE) to provide the national policy framework and direction for energy-efficiency initiatives, including advisory services.
- The Indian Renewable Energy Development Agency (IREDA) is mandated to work with commercial banks and subsidize energy audits performed on the premises of potential customers seeking to carry out energy-efficiency improvements.
- The 2008 National Action Plan on Climate Change (NAPCC) sets specific performance requirements on lowering energy use in large energy-consuming industries; establishes the Performance, Achieve and trade (PAt) scheme—the trading of energy-savings certificates; reduces taxes on energy-efficient appliances; and provides financing for demand-side energy-saving efforts in municipal buildings and agricultural pumps.

We studied the laudable plans for the Partial Risk Guarantee Fund (PRGF), which is to be designed as a risk-sharing mechanism that will provide commercial banks with partial coverage of risk exposure against loans made for energy-efficiency projects. We agree that such a fund is critical to mitigate the financiers' risk perceptions associated with the lending for new technologies and new business models associated with energy-efficiency projects.

We also examined the distribution company (discom) dilemma. We understand that in 2012 combined outstanding debt for discoms was reported to be INR2 lakh crore (Balasubramanian, 2013). While the cost of supplying electricity increased by 7.4 per cent per year between 1998–1999 and 2009–2010, the average tariff only increased at an annual rate of 7.1 per cent. Hence, discoms face severe financial strain as the average tariff per unit of electricity has consistently been much lower than the average cost of supply per unit (Balasubramanian, 2013).

The crux of the problem, however, is that that politicians, policy-makers and financiers have yet to realize that energy efficiency is inexpensive and easily scalable when compared to the development of large-scale power plants. The Indian focus is very much on increasing energy generation rather than avoiding the use of energy in the first place. India needs to value each kilowatt hour (kWh) of energy saved on par with each unit of energy generated. And as such, the first policy choice in the path towards energy security and energy for all must be encouraging industry and consumers to use energy more efficiently. Moreover, decision-makers must realize that if energy is saved where it is easiest—across low-tariff and highly subsidized consumer segments—discoms are able to offer the saved kilowatts (or negawatts[1]) to higher tariff paying consumers.

In short, India's energy deficit cannot be accomplished without due focus on energy efficiency; to that end, in this document, we present 10 big ideas to make this sector bankable. All of these ideas are practical and implementable in the immediate term. They do not require large executing budgets, but they do require technical expertise, political will and persistent follow up. These ideas are also multi-disciplinary—they cut across and provide solutions to prohibitive perceptions of risk in investing and financing energy efficiency, the lack of reliable base lines and poor policy incidence.

[1] "Negawatts" measure energy saved rather than energy generated.

Up for grabs are no small amounts. The McKinsey Global Institute estimates that at the beginning of 2014, India had only tapped into 5 per cent of its potential energy savings capacity, and the resulting savings are US$14.8 billion.[2] By improving energy efficiency in buildings alone—including standard energy-efficiency measures in new construction and retrofits in existing ones—the estimated savings are around 2,988 megawatts (MW) of generating capacity, savings worth $42 billion per annum. The costs of these energy-efficiency improvements will range from $5 to 10 billion, with payback periods of five to 10 years. When compared to costs of building new power plants or operate existing ones, the case for saving energy is even more evident (personal communication, McKinsey Global Institute, June 2014).

HOW IISD PLANS TO IMPLEMENT THESE 10 IDEAS

IISD aspires to work with stakeholders in India to validate the debate on energy efficiency and lead the development of the tools and initiatives that make up some of these big ideas. For one, we would seek to engage with the United States Agency for International Development (USAID), the German Federal Enterprise for International Cooperation (GIZ), the Swiss Agency for Development Cooperation (SECO), the World Bank and the Bureau for Energy Efficiency, and Energy Efficiency Service Limited to finalize the development of monitoring and verification protocol. Moreover, we aspire to be involved in, and even lead, the development of an India-specific financial protocol to enable banks to regard energy efficiency as a bankable opportunity.

In the immediate term, our goal is to make the energy-efficiency industry in India bankable. For this, we may need to establish a multistakeholder platform to generate a well-informed debate, but also to develop the all-important baselines and protocols that are needed to kick start bankable industry and to design the necessary incentives to reward first movers. Such a platform would need to sync in with the Bureau of Energy Efficiency and Energy Efficiency Services Limited, but be sufficiently independent so as to move the agenda without being hampered by bureaucratic red tape. To this end, we seek to work with influential actors such as the Confederation of Indian Industry and the India School of Business.

Our ultimate goals are to be instrumental in initiating a tradable market for energy savings—in other words, a market for "negawatts." Such a market would allow units of energy saved to be valued and traded at prices that are on par with those for megawatts of energy generated. For only then can we provide for real price discovery on energy efficiency and enable markets to price "negawatts" at a value that encompasses the fact that they are quicker, easier and cheaper to realize in the first place.

[2] All dollar amounts appear in U.S. currency unless otherwise indicated.

BIG IDEA 1: DESIGN AND IMPLEMENT FISCAL AND FINANCIAL INCENTIVES TO ESTABLISH BASELINES ON ENERGY EFFICIENCY

An investment-grade audit is a detailed account of energy use and an associated analysis of costs and savings related to an energy-efficiency project. Emerging best practice suggests that these audits also include a financing strategy that is calculated based on both the capital expenditure and future costs savings related to the energy-efficiency project in question.

In all energy efficiency projects, a detailed account of energy use both before and after the installment of energy-efficiency measures is critical to assess potential energy and costs savings that the project aims to realize. These baselines are important, as it is on these estimates that the future costs and savings can be calculated. Moreover, these baselines are also used to estimate the bankability of the project. If these baselines are not accurate, the projected cash flows will be erroneous and the project will incur financial losses during its operation.

Establishing standard baselines are hence a critical first step to kick starting a market for energy efficiency. They form the basis for reliable and comparable investment-grade audits that investors and banks need to evaluate the bankability of energy-efficiency projects.

The first steps to establishing baselines on energy efficiency in India have been initiated by Energy Efficiency Services Limited (EESL).[3] These baselines are being established based on demonstration projects. To date, demonstration projects have been carried out in lighting and electrical water pumps (used in the agriculture sector). These projects involved comparisons between LED and compact florescent lighting appliances, in a real time context, over one year of operation. Similarly, energy-efficient models of electrical water pumps were monitored over one year to record annual patterns of energy use. In both cases, externalities such as breakdowns and extreme weather conditions were isolated. These demonstration projects were funded by the Government of India and international donors. EESL plans to continue these demonstration projects and establish more robust baselines on energy use across different sectors, different technologies and in different geographic/climatic conditions in the years to come.

The conundrum is that these demonstration projects will take many years to realize. In the meantime, energy-efficiency markets in India are at a standstill for there are no reliable baselines and standards on energy use and energy savings. Investment-grade audits cannot therefore be completed and, as a result, investors have no reliable data on which to assess financial feasibility.

To kick start a market for energy efficiency, energy users, energy service companies, regulators and investors all need access to reliable baselines across a variety of sectors, geographies and technologies. These market actors can then use the same baselines and standards to conduct investment-grade audits, assess bankability and reduce transaction costs on tenders and projects.

In India, however, given that these baselines are yet to be developed, the markets for energy efficiency are stalled. At the present time, requests for proposals for energy efficiency require that energy service companies (ESCOs) establish project-specific baselines through real-time demonstration projects to assess the current status of energy consumption and the potential energy savings associated with new energy-efficient technologies. These demonstration efforts are expensive and no ESCO is able to absorb the associated upfront costs every time they respond for a request for proposals.

The Government of India must step in to address this market failure. IISD proposes several solutions:

- Make the upfront costs related to realizing project-specific demonstration projects and the establishment of project-specific baselines tax deductible.

[3] EESL is a joint venture of NTPC Limited, PFC, REC and POWERGRID to facilitate implementation of energy-efficiency projects. EESL functions as an energy service company, as well as a consultancy on energy efficiency and the Clean Development Mechanisms of the UN Framework Convention on Climate Change.

BIG IDEA 1

- Provide targeted grants for establishing baselines for energy-efficiency projects in the public sector. The resulting data could be made publicly available and help establish reliable standards for further projects. Given that incentives must be timely, temporary and targeted, the grant program must be open to all BEE-accredited ESCOs for 3–5 years.

BEST PRACTICE EXAMPLE: STATE OF KARNATAKA

In 1999, the State of Karnataka implemented a similar financial incentive to scale up ISO 14001 certification across companies operating in its jurisdiction. ISO 14001 was regarded as an indicator of sustainable competitiveness. As such, the state government provided companies with a one-time grant to cover the costs of the preliminary environmental audit that was needed to gain ISO 14001 certification.

BIG IDEA 2

BIG IDEA 2: INCREASE MARKET CONFIDENCE BY DEVELOPING AN "INDIA-ADJUSTED" ENERGY-EFFICIENCY MONITORING AND VERIFICATION PROTOCOL

A formal and standardized energy-efficiency monitoring and verification (M&V) protocol is a pre-requisite to increase certainty and comparability across energy-efficiency projects in India. The value proposition of such a protocol is that it will provide a standardized methodology to calculate and monetize the volume and value of the real-time energy savings being achieved through energy-efficiency projects. Energy savings cannot be directly measured, since they represent the absence of energy use. Instead, savings are determined by comparing measured use before and after the implementation of an energy-saving upgrade and making appropriate adjustments for changes in other external conditions.

A formal M&V protocol will enable all market actors to lower transaction costs, as they will all be able to use the same standardized template to determine energy savings, if related revenues are in line with those forecasted and if particular types of projects, sectors and technologies are more profitable than others. As such, the protocol will help simplify negotiations on energy-efficiency projects in the medium term. The protocol will also bring the Indian energy market international credibility, for their energy-efficiency protocol will become internationally comparable with those in other emerging countries. But most importantly, the protocol will provide for the standardized documentation of energy-efficiency transactions. The energy-efficiency savings are the basis for performance-based financial payments and/or guarantees in performance contracts. The M&V protocol will form the basis on which performance can be documented in a comparable and verifiable manner, and therefore be subjected to an independent audit. In time, the M&V protocol will also help financiers build benchmarks that will further increase investor confidence and enhance the financing of energy-efficiency projects more broadly.

The multiplier benefits of an M&V protocol are also noteworthy, as they will help Indian policy-makers achieve wider goals on energy security and low-carbon development. The historical data that will be built through the protocol will lead to the design of more sustainable and resilient facilities and infrastructure, provide for the better management of energy loads and increase the credibility of energy efficiency as a cost-effective operations strategy.

The good news is that the international blueprint for the development of such a protocol is already in place. The Efficiency Valuation Organization's International Performance Measurement and Verification Protocol serves as a valuable starting point and the task that remains is to adapt this framework to apply to the Indian energy market. The BEE and EESL have been working with international donors to develop such a custom-made "India-adjusted' protocol, but progress has been slow and sporadic. The Government of India would be well served to prioritize this project. It would require high-level political oversight and a dedicated multistakeholder process to ensure timely and relevant delivery. Based on international standards, IISD will work with BEE and EESL to develop this India-adjusted M&V protocol

BIG IDEA 2

BEST PRACTICE EXAMPLE: THE ENERGY EFFICIENCY MONITORING AND VERIFICATION PROTOCOL FOR ESCO MARKET GROWTH

The first International Performance Measurement and Verification Protocol (IPMVP) as we know it was introduced in 1997 in the United States. It was implemented as openly accepted standards for saving measurements, and ESCOs, institutional investors and licensed financial institutions started to use it.

The benefits offered by the IPMVP are, among others:

- Simplifying negotiations for Energy Performance Contracts by providing a more transparent overview of the project to all parties involved.
- Standardizing savings reports across different industries and countries. Generating more confidence, international credibility and lower transaction costs.
- Greater access to external financing for projects provided by an international recognition of guaranteed energy savings.
- Facilitating environmental objectives for national and regional governments.

In India, the lack of financing that ESCOs confront when developing energy-efficiency projects has been identified as a major barrier. By implementing IPMVP, the Indian energy services market may increase the number of projects using third-party funding and generate the confidence needed among market players in order to achieve future increased levels of activity.

Please refer to the annex for more information on the Energy Efficiency Monitoring and Verification Protocol and ESCO market growth.

BIG IDEA 3: OVERCOME BARRIERS TO FINANCE ENERGY-EFFICIENCY PROJECTS THROUGH THE CREATION OF AN INDIA-ADJUSTED ENERGY-EFFICIENCY FINANCING PROTOCOL

A financing protocol will provide market actors with a standardized approach to managing the performance risks and benefits associated with efficiency business transactions. It will help banks and investors understand:

- How energy-efficiency projects can generate reliable cost savings by reducing energy use
- How such savings equate to new cash flows and increased credit capacity for energy users to repay energy-efficiency project loans and investments.

IISD's consultations with investors and financing institutions in India showed that they lacked the guidance and expertise to feel comfortable lending money on a cash-flow basis to energy-efficiency projects. This lack of confidence is manifested by the fact that there is no financing for energy-efficiency projects in India—not for the lack of funds, but rather because Indian financiers have no confidence in the bankability of the energy-efficiency sector. The scarcity of commercial loans to energy-efficiency projects in the Indian market is due to:

- Low awareness, lack of information and/or trust and skepticism on the side of the banking industry.
- Limited understanding of energy-efficiency opportunities, including Energy Performance Contracts (EPCs) for financiers.
- Small project size and high transaction costs for financiers.
- High perceived technical and business risks.
- Lack of standardized methods and processes for the energy-efficiency gains.
- Legal and regulatory frameworks not compatible with energy-efficiency investments, for instance non-supportive procurement rules.
- Limited understanding of M&V protocols for assuring performance guarantees.
- Administrative hurdles, such as complicated procedures and high transaction costs (each loan has to be custom made as no standardized format exist).

In order to overcome all the above-mentioned hurdles, IISD proposes to develop an Indian-adjusted financing protocol for energy-efficiency projects. The value proposition of this protocol for all is provided in the table below.

BIG IDEA 3

TABLE 1: RELEVANCE AND CONTENT OF A FINANCING PROTOCOL FOR ENERGY-EFFICIENCY PROJECTS

KEY ACTOR	RELEVANCE OF ACTOR	RATIONALE FOR PROTOCOL USE
Private financiers	Commercial banks, energy-efficiency funds and institutional investors and other financiers have to be enabled to appreciate the business case for energy-efficiency projects.	The protocol's tools allow financiers to evaluate projects: The net present value is based on cash flow generated through saved energy, technical and business risks of projects, and implementers' capacities. The protocol will provide certainty in M&V, reduce transaction costs through standardized loan applications and agreements, and standards on studying energy conservation measures.
ESCOs/clients	ESCOs/project clients need to be enabled to make successful applications for loans for their projects to private financiers, and build a track record to facilitate future loan applications.	The tools provide standardized loan application formats reducing transaction costs, and other tools that allow actors to assess the loan applications' likelihood of success from the financiers' perspective.
Government agencies and state-owned enterprises	Public energy-efficiency agencies that structure EPCs need a better appreciation for the energy-efficiency market.	The protocol will enable public procurers to design more robust calls for tender for energy-efficiency projects (incl. EPCs) due to higher-quality feasibility studies and a more systematic assessment of capabilities of bidders—sharing guidance that financiers will be using in their evaluations—leading to a higher likelihood of financing for tendered energy-efficiency projects.

Overall, the financing protocol provides different tools based on best practices and reduces the skepticism of market participants. It represents a toolkit for financiers, those that apply for loans and the project structuring entities.

The financing protocol will include the following elements:

1. Engineering feasibility study
2. Capability checklist of implementation teams
3. Cost-estimation protocol
4. Standard energy-efficiency loan application
5. Model agreements (based on existing Efficiency Valuation Organization [EVO] international financing protocols)
6. Financial analysis spreadsheet
7. Risk-management checklist (based on existing EVO International Energy Efficiency Financing Protocol)
8. M&V protocol (based on the EVO Energy Efficiency Monitoring and Verification Protocol)

Financiers usually use their traditional "asset-based" corporate lending models to assess energy-efficiency projects. Accordingly, they lend up to 70 to 80 per cent of the value of assets financed or collateral provided. In the case of energy service providers, however, there is often little or no collateral value in the energy-efficiency equipment once it is installed in a facility. Instead, the value is the cash flow generated from the equipment by way of energy savings after installation. The value of a financing protocol is therefore to show financiers the financial feasibility of energy-efficiency projects and provide them with a standardized method to evaluate future revenues.

IISD has been approached by the BEE to help them develop such a financing protocol and a complimentary financial spreadsheet. As a starting point, IISD proposes to use the International Energy Efficiency Financing Protocol developed by the EVO and customize it to India's context. IISD is seeking funding to initiate this project in the immediate term.

BIG IDEA 3

BEST PRACTICE EXAMPLE: HOW MEXICO ESTABLISHED AN IEEFP FOR BETTER FINANCING IN ITS DOMESTIC ENERGY-EFFICIENCY MARKET

The International Energy Efficiency Financing Protocol (IEEFP) was born in 2004 from a meeting sponsored by the UN Foundation's Energy Future Coalition and held between energy-efficiency and finance experts. Participants concluded that a significant barrier for ESCOs to obtain financing from local financial institutions was the lack of expertise that these institutions possessed with respect to provide loans based on future energy-efficiency cash flows.

The project implementation time was eight months and consisted of five phases described as following:

- Identify IEEFP
- Secure funding for project implementation
- Research and design IEEFP
- Design protocol program
- Launch the protocol

Using these example countries, India might start developing their own IEEFP to provide an alternative source of funding for energy-efficiency projects. Since the economic structure of India is somewhat similar to that in Mexico, taking into account their emerging economies condition, the energy-efficiency market barriers presented in the Asian country remain similar and proper solutions could be replicated to further develop the ESCO market.

Please refer to the annex for detailed information on how Mexico established an IEEFP for better financing in the energy-efficiency market.

BIG IDEA 4

BIG IDEA 4: DESIGN AND PROVIDE CREDIT GUARANTEES FOR FIRST MOVERS

As markets for energy efficiency gather speed, development banks can play a crucial role in providing credit guarantees to first movers—especially to the banks who will be willing to take on the risks of early investment in energy efficiency. Such guarantees are particularly important given that the bankability of an ESC needs to be based on future energy services and associated cash flows rather than on the value of the asset or collateral in question.

In June 2010 the Government of India announced its intent to establish a Partial Risk Guarantee Fund (PRGF) to provide commercial banks with partial coverage of risk exposure against loans issued for energy-efficiency projects. The guarantees plan to cover a maximum of 50 per cent of the loan amount or INR300 lakhs—whichever would be the lesser value. However, this fund is yet to be developed, structured and deployed, and it is unlikely to happen in the immediate term.

IISD therefore proposes that Indian policy-makers look for alternative solutions that are easier to implement in the near future. The most viable option may be the Credit Guarantee Fund Scheme for Micro and Small Enterprises (CGMSE) that provides collateral-free credit to the micro and small enterprises. The fund is backed by the Ministry of Micro, Small and Medium Enterprises and Small Industries Development Bank of India and administered by the Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE). But if ESCOs are to be covered under this fund, energy efficiency must first be established as a formal economic sector, and listed as such under the Federation of Indian Chamber of Commerce and Industry (FICCI).

IISD proposes to work with stakeholders in India to explore this and other solutions to improve the availability to credit guarantees for energy efficiency. We also propose to explore how infrastructure development funds and viability gap funds can be tweaked to provide guarantees for lending to energy-efficiency ventures.

BEST PRACTICE EXAMPLE: ENERGY-EFFICIENCY POLICY IN BRAZIL

Brazil is a successful example of how government policies can foster the development of an energy-efficiency market by creating mechanisms to channel resources into new energy-efficient projects. In 1998 the National Electricity Regulator stated that energy distribution companies were required to invest 0.5 per cent of their annual revenues into energy-efficiency projects under the regulator oversight.

The program served as an opportunity for many emerging ESCOs in the country to thrive and soon achieved a substantial impact in the Brazilian energy-efficiency market. Today, the energy-efficiency program remains the largest source of financing for energy-efficient ventures with more than R$1.8 billion invested since its implementation.

Many authors have documented the model's success as a way to generate added sources to ESCOs market and, in the case of India, the framework could serve the national government as a way to generate higher resources from public and private companies by conveying the current 2 per cent corporate social responsibility clause requirements into energy-efficiency projects.

Please refer to the annex for more information on the energy-efficiency policy in Brazil.

BIG IDEA 5

BIG IDEA 5: INCREASE PRIVATE CAPITAL FOR ENERGY EFFICIENCY BY EXPANDING THE CORPORATE SOCIAL RESPONSIBILITY "2 PER CENT PROVISION" CLAUSE TO THIS SEGMENT

ESCOs can find a unique opportunity under the new corporate social responsibility (CSR) rule applicable as of April 1, 2014. India is the only country that has made legislation on CSR spending (Business Standard, 2014). The Indian Companies Act 2013 has been revised and has a clause popularly called the "CSR 2 per cent provision." This provision applies to companies that have a net worth of INR5 billion or more (US$83 million) or a turnover of INR10 billion or more (US$160 million). The act requires that companies spend 2 per cent of their average profits made from the last three financial years on "CSR activities." The company must set up a CSR board, which oversees this spending, and the board must answer if there has been no spending (Ghullani, 2013).

The act misses the opportunity to promote strategic CSR and instead focuses on corporate philanthropy. The current narrative of the Companies Act views it as a philanthropic exercise focusing on activities aimed at local communities. But since the Companies Act loosely defines CSR activities, among other things it also includes "environmental sustainability" (Ghullani, 2013). Companies can be smart about investing this profit in energy-efficiency projects.

This 2 per cent provision can be the source of funds that ESCOs seek for projects. In an interview, the director of the Power Finance Corporation confirmed this, saying that ESCOs can seek these funds when applying for projects. Companies, in turn, can benefit by giving this fund as grants for projects where they have an active interest. This "giving" is a win-win since it brings value back to the company, adding to the bottom line through energy savings, and fulfils the criteria of the CSR clause. By smartly giving to energy efficiency, companies can contribute to energy savings and enhance the energy-efficient market.

Currently, non-information technology (IT) companies like steel and cement spend more than 2 per cent of their profits on CSR activities and IT companies spend only 0.3–1.5 per cent (Urs, 2014). Rough estimates point out that the new CSR clause will be applicable to at least 800 companies, creating a fund pool in the range of $1.95 billion to $2.44 billion exclusively for spending on CSR activities (Business Standard, 2014). Since this idea is new, a pilot project bringing together the necessary stakeholders and the government's buy-in can demonstrate that the new 2 per cent clause is indeed a source of funds for ESCOs and a ray of hope for the energy-efficiency market.

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BIG IDEA 6

BIG IDEA 6: INCLUDE ENERGY EFFICENCY AS A PRIORITY SECTOR FOR LENDING BY THE RESERVE BANK OF INDIA

Access to finances through lending for ESCOs can be made easier if the Reserve Bank of India (RBI) recognizes energy efficiency as a priority sector for lending. But how does one declare lending to energy efficiency a priority sector for the RBI?

Several sectors are currently enumerated as priority sectors by the RBI for priority lending from Indian banks. The RBI draws this list of priority sectors from the Five-Year Plans prepared by the Planning Commission of India. Priority sector lending (PSL) sets percentage targets for lending ensuring a higher credit flow to such sectors (Limaye, D'Addario, Patankar, & Kumar, 2012).

In 2011 the Government of India set up the Nair Committee to re-examine the classification of priority sector lending (PSL). This committee submitted its findings in 2012, stating that energy-efficiency can vastly benefit if it is designated as a priority sector. The RBI responded that it receives requests for PSL from several different sectors like IT, education, etc. However, the RBI is held back from designating energy efficiency as a PSL since, by definition, PSL is for those sectors that lack a formal banking channel and have the maximum capacity to affect poverty alleviation and employment (Limaye, D'Addario, Patankar, & Kumar, 2012, p. 16). The committee recommended that Institute for Industrial Productivity make a petition to the RBI to consider energy efficiency for PSL.

To further strengthen this movement, the energy-efficiency association needs to work with top bank managers. Bank management would be key in influencing the RBI. The banks note the concern of the energy-efficiency sector: one of the comments to the Nair Committee report noted that solar water heaters were designated PSL, and asking the same status for energy efficiency "would not be unreasonable" (Limaye, D'Addario, Patankar, & Kumar, 2012, p. 21). Another route is to use the government's own document, the *National Mission for Enhanced Energy Efficiency* (which lists energy efficiency as a national priority), and ask the ministry itself to lobby with the RBI (USAID, 2013, p. 77).

However, the above recommendations are more long term. In the short term, since the RBI is reluctant to add priority sectors, an easier task would be to pursue a "prudential lending norm" for energy efficiency to showcase the importance of lending for energy-efficiency projects.

BIG IDEA 7: SOLVE THE FISCAL CHALLENGES AND ASSOCIATED REVENUE DILEMMAS

The prevailing tax treatment for ESCOs remains prohibitive to the expansion and profitability of the service company business model. ESCOs are liable for corporate income tax, which is calculated on performance-based revenues that will occur in the future. In other words, the corporate income tax of ESCOs is based on the revenues derived from energy savings that will be realized by ESCO's customers in the months and years to come. However, ESCOs are required to pay income tax, and some ESCOs have also been required to pay income tax on delivery/installation of the energy-efficiency equipment, rather than after remuneration based on the actual energy savings have been realized. This makes it difficult for ESCOs to maintain sustainable levels of cash flow.

This problem is compounded, as ESCOs are also required to pay 12.5 per cent value-added tax (VAT) on the energy-efficiency equipment being provided to their customer. The case in point is that the equipment is not sold to the customer, and hence VAT is not recovered. Instead, the cost of the equipment is treated as accounts receivable and recorded as an asset on the balance sheet of ESCOs. This poses additional challenges on profitability and cash flow.

Policy-makers need to radically rethink the tax treatment for ESCOs in the immediate term. Solutions include capital allowances and accelerated depreciation on energy-efficiency equipment being installed at customers' facilities, as well as a lower VAT on the same. In addition, ESCOs can be exempt from VAT on the transfer of energy-efficiency equipment to the customer at the end of a project or when retrofits are due. At this point, these assets also need to be allowed to be fully depreciated on corporate income tax returns.

BEST PRACTICE EXAMPLE: TAX TREATMENTS FOR ESCOS AROUND THE GLOBE

In the Netherlands, the Accelerated Depreciation of Environmental Investments Measure (VAMIL) provides accelerated depreciation and deductions on qualifying energy-efficient assets. Depreciation of up to 75 per cent of the investment costs is available and the maximum investment cost is €25 million. An additional deduction of 41.5 per cent of investment costs in energy-efficient and renewable-energy equipment is also permitted. KPMG reports that these incentives prompted Dutch companies to invest €1.5 billion in energy efficiency in 2011. Companies are also eligible for a deduction of up to 36 per cent of investments in energy-efficient equipment under the environmental investment allowance "Milieu-investeringsaftrek" (MIA). The investment costs have to be below €25 million (per qualifying asset) and retained for at least five years. The VAMIL and the MIA cannot be applied simultaneously to the same assets.

Singapore provides a 100 per cent capital allowance for approved energy-saving equipment and technology. An additional investment allowance provides further allowances of up to 100 per cent on costs of approved energy-efficient plants and machinery.

In China, companies can apply for a tax deduction of 10 per cent of the amount invested of energy-efficiency equipment, and if the deduction is not utilized, it can be carried forward for five years. There are also waivers on custom duties and VAT for certain imported energy-efficient equipment. Further, certified ESCOs that are contracted to eligible energy performance contracting projects are allowed a corporate tax exemption in the first three years and an effective rate of 12.5 per cent over the following three years. Moreover, ESCOs can claim exemption from VAT on the transfer of assets to clients at the end of a project and assets can be transferred as if fully depreciated for corporate income tax purposes.

Source: KPMG (2013)

BIG IDEA 8: STRENGTHEN AND IMPLEMENT PROVISIONS IN LEGAL AND POLICY INSTRUMENTS

Given the Government of India's emphasis on improving the infrastructure investment climate, it is critical to use this momentum to upgrade existing provisions on energy efficiency in key legal instruments.

For example, the pending Public Procurement Bill, 2013, allows procuring authorities to establish evaluation criteria that include price as well as the "the cost of operating, maintaining and repairing goods or works." In addition, tenders may be awarded based on the "the characteristics of the subject matter of procurement, such as the functional characteristics of goods or works or the environmental characteristics of the subject matter" (Ministry of Finance, 2012).

Markets for energy efficiency and overall industrial competitiveness would stand to gain if these provisions were mandatory. Even as the public procurement of goods and services, including works, must be based on value for money, value for money must not be about achieving the lowest initial price. Rather, it must be defined as the optimum combination of whole-life costs and quality. In this vein, the Indian public purse would have even more to gain if the bill were to articulate that the baseline principle of procurement should be to ensure value for money across the life cycle of the product or service under procurement. This would then pave the way for regulations on performance targets, energy saving thresholds, carbon footprints and more.

Further provisions are made in the 12th Five-Year Plan (2013–2017). The plan states that the National Mission for Enhanced Energy Efficiency is mandated to facilitate the market for ESCOs. Section 14.04 on Energy Efficiency in Industries states that the "Promotion of performance contracting business model—enabling up gradation of existing buildings, streetlights, municipal pumping and so on through Energy Service Companies which invest in the up gradation and are paid through sharing of the resultant savings in the energy bill." However, on reviewing the chapter on energy, it is again evident that the focus remains very much on energy generation and, as such, completely overlooks that energy efficiency is cheaper, quicker and easier to implement.

The authors of the present report also make similar observations in the *Final Report of the Expert Group on Low Carbon Strategies for Inclusive Growth*, published by the Planning Commission in April 2014. In section 10 on Industrial Energy, the report makes only passing references to the market for energy efficiency and the role of ESCOs. The report suggests that "Energy Service Companies could be used to provide for the upgrading of energy efficiency" and that the "BEE may suitably strengthen its list of empanelled Energy Service Companies that can provide these services, and Energy Efficiency Services Limited (a company set up by BEE) may take the lead as a market creator" (India Planning Commission, 2014). The experts that authored this report would have done well to prioritize the development of markets for energy efficiency as the first starting point as, without it, low-carbon strategies cannot take off.

BIG IDEA 9: RETHINK AND REDESIGN SUBSIDIES FOR ENERGY

Energy subsidies work against the case for energy efficiency. They lead consumers to value energy less, thereby providing less of an incentive to invest in efficiency. India has historically subsidized energy, and particularly electricity prices, to protect the interests of the poor. Subsidies make energy accessible for consumers, particularly making grid electricity accessible for poor consumers. For these consumers, subsidized electricity suddenly also becomes an affordable alternate to other fuels like kerosene, which is mostly used by rural households for lighting.

The government provides subsidies on electricity by making the tariffs cheaper. For example, the government of the capital city of Delhi subsidizes electricity for the urban poor consuming up to 400 units a month (Verma, 2014). Further, the government is increasing access to cheap electricity for more poor households through government schemes like the Rajiv Gandhi Gramin Vidyutikaran Yojana, which is speeding up grid electricity connectivity to large parts of rural India.

Electricity subsidies severely affect the health of the discoms, the distribution companies that have to buy electricity at cost from power generation companies, but have to retail it to consumers at a subsidized cost. The cost of supplying electricity increased at an average rate of 7.4 per cent annually between 1998–1999 and 2009–2010. Simultaneously, the average tariff also increased at an average annual rate of 7.1 per cent; however, between 2007–2008 and 2011–2012, the gap between the average cost and the average tariff per unit of electricity was between 20 and 30 per cent of costs, as shown in the table below. These losses were compounded by those linked to transmission and distribution. The commercial losses for discoms in India increased from INR166 billion (US$2.8 billion) in 2007–2008 to INR378 billion (US$6.5 billion) in 2011–2012 (Balasubramanian, 2013).

TABLE 2: OVERVIEW OF DEVELOPMENT OF ELECTRICITY COSTS AND TARIFFS (PRICES IN INR)

YEAR	UNIT COST	AVERAGE TARIFF PER UNIT	DIFFERENCE BETWEEN COST AND TARIFF	DIFFERENCE AS A PERCENTAGE OF UNIT COST
2007–08	4.04	3.06	0.98	24%
2008–09	4.6	3.26	1.34	29%
2009–10	4.76	3.33	1.43	30%
2010–11	4.84	3.57	1.27	26%
2011–12	4.87	3.8	1.07	22%

Source: Indian Planning Commission (2011)

Electricity available inexpensively to consumers creates hurdles for the energy-efficiency market. Unless the current set of subsidy policies are reformed, consumers will not see an economic value in aiming for energy efficiency and the energy-efficiency market will not grow. In 2012–13, the total expenditure on fossil fuel subsidy was INR1,638 billion (US$27.7 billion) (Ministry of Finance, 2014). This expenditure can be rerouted to energy efficiency as investment.

Discoms need to further understand the costs saved from energy-efficiency projects. Investing in demand-side management (DSM) leads to energy saving for the discoms. Energy-efficient lighting practices can help manage peak demand, a DSM concept. Managing the load curve and ensuring it does not peak leads to energy savings and eventually cost savings for the discoms. Therefore, discoms must seize the opportunity by investing in energy-efficiency projects for DSM.

BIG IDEA 10

BIG IDEA 10: ESTABLISH AN INDIAN ASSOCIATION FOR ESCOS

There is a strong case for a unilateral voice to establish and deepen the case for energy efficiency. An India National Association of Energy Service Companies would be invaluable in advocating for giving energy efficiency a central role in a comprehensive national energy agenda. It could also demonstrate the financial, economic and environmental benefits of widespread energy efficiency.

A key function of such an association would be to compile and disseminate aggregate data on energy efficiency, including an India-specific M&V protocol and an India-specific financing protocol. These tools could be complemented by a project database that links in with those housed at the BEE and EESL. In addition, this association would need to reach out to end users and directly promote the value of energy efficiency to both public and private customers in all market segments.

Borrowing from current practice in the United States, the U.S. National Association of Energy Service Companies also developed ethical guidelines for ESCOs and has created an industry ombudsman to provide a transparent protocol for the review of ethical issues that may arise. A similar service will be particularly valuable in India.

There may be the option to position the Indian Council for Promotion of Energy Efficiency Business to take on the role of an effective industry lobbyist. In this case, capacities, revenue streams and leadership may need complete overhauls.

BEST PRACTICE EXAMPLE: THE IMPLEMENTATION OF A NATIONAL ASSOCIATION OF ESCOS TO BOOST THE DEVELOPMENT OF AN ENERGY-EFFICIENT MARKET IN JAPAN

In 1999, as part of an overall program developed by the Japanese government to develop the ESCOs market, the Japan Association of Energy Service Companies (JAESCO) was created. Today JAESCO is most important private supporter of the energy-efficiency market in Japan. Among others, the main activities developed by the organization today include:

- Research (new markets and niches within the ESCO industry)
- Strategy planning and policy proposals
- Seminars for members
- Idea exchange sessions
- Exhibiting at ENEX
- JAESCO conferences – information sharing
- Newsletters
- Annual surveys and data gathering
- Training programs
- Developing standard procedures and templates for the ESCO

The role of JAESCO during the early stages of the ESCO market development in Japan was of huge importance, given its support as a key leader in terms of market transparency and procedure standardization.

Please refer to the annex for more information on the energy-efficiency policy in Japan.

NEXT STEPS

In this report, we have discussed 10 big ideas that will enable policy-makers, the energy and power sector, and energy-efficiency proponents to work together to kick start a market for energy efficiency in India. These ideas are summarized in Table 3.

TABLE 3: 10 BIG IDEAS TO KICK START A MARKET FOR ENERGY EFFICIENCY IN INDIA

THE BARRIER	THE SOLUTION
Lack of established baselines on energy efficiency	Put in place fiscal and financial incentives to establish these baselines
Lack of confidence in the market	Develop an India-adjusted energy-efficiency M&V protocol
Lack of commercial financing for energy-efficiency projects	Develop energy-efficiency financing protocol relevant to the Indian context and build capacities on its use
No market movement	Make credit guarantees available for first movers
Lack of triggers to scale up the demand for energy efficiency	Include energy efficiency as one of the broad categories for priority sector lending as stipulated by the RBI
Lack of private capital	Expand the CSR 2 per cent provision clause to this segment
Challenges in meeting fiscal obligations given the specificities of ESCOs' business models	Rethink the tax treatment for ESCOs in the immediate term
Low demand for energy efficiency across both public and private energy consumers	Strengthen and implement provisions on green and sustainable public procurement
Energy subsidies mask the real costs and externalities of energy generation	Rethink and redesign electricity subsidies
The energy-efficiency sector lacks legitimacy and representation	Establish an Indian Association for Energy Services Companies

IISD seeks to establish a dedicated work program to implement these ideas in the coming years. We are convinced that these ideas, when translated into actions, will provide the foundations for a tradable market for energy efficiency in India. Such a market will go beyond existing initiatives such as the Performance, Achieve and trade (PAt), and they will provide the much-needed technical and financial baselines to price, in real terms, the true cost of generating electricity. This will make the business case for saving energy, for it will allow markets to discover the real costs of generating energy and thus monetized energy savings. Investors and banks will then have the necessary certainty to fund energy-efficiency projects and make this sector bankable.

Ultimately, IISD aspires to work towards creating market infrastructure for Indian discoms to trade negawatts, a concept first introduced in 1989 by environment and energy guru Amory Lovins. The fundamental principle of negawatt markets is "demand response," a system of technologies that allows utilities and customers to enter into a contract that saves electricity when power loads and prices are high. The rationale is that each unit of saved electricity or un-generated electricity—that is, each negawatt—can lead to a range of positive externalities: lower carbon emissions, lower fuel consumption, better air quality, lower capital locked into utilized peaking equipment and much more. And given that energy efficiency is cheaper than energy generation, it makes sense to reduce production in less efficient power plants and lower, or even defer, the construction of new power plants.

Such a goal is not completely utopian. In 1982 California introduced disincentives to prevent utilities from pegging profits to utility usage. Regulators, energy experts and utilities collaborated to calculate and establish revenue rates at which utilities would be able to make a profit, and established a separate target for electricity production. Any revenue over the target amount was returned to customers, while anything below would be added on to the following year's bills. This meant that greater efficiency could actually return greater profit.

NEXT STEPS

Further, in 2007 California launched a second program called "decoupling plus," which made investments in energy efficiency more profitable for utilities than investing in new electricity generation. Fees to finance energy-saving measures are added to each consumer bill, and utilities are mandated to spend these sums to meet energy-efficiency targets that were set by the California Public Utilities Commission. The commission then calculates the savings from these investments and compares them with the cost of new power plants. If a utility achieves between 85 per cent and 100 per cent of the target, it is allowed to keep 9 per cent of these savings. If it exceeds the commission's target, it gets 12 per cent—which is more that the returns from building new power plants. If it achieves between 65 per cent and 85 per cent, it does not earn any return at all, and below 65 per cent, it pays a fine for every kilowatt hour by which it has fallen short. McKinsey Global Institute reports that California's private utilities now spend about $1 billion every year on energy efficiency and the state meets half of its projected energy demand through more energy savings (Frankel & Humayan, 2013).

A similar initiative is underway in Japan—the "Negawatt Plan" sees the participation of Kansai Electric Power (KEPCO), Chubu Electric Power, Hokuriku Electric Power and Chugoku Electric Power (Murakami, 2014). This initiative is based on valuing energy saved by utilities during peak hours on par with the prices charges during those hours. Negawatts hence become a lucrative option for utilities.

For discoms in India, the negawatt concept is even more attractive, given that energy-efficiency technologies can be cheaply deployed across the lower income segments, as 80 per cent of electricity demand is linked to lighting and agricultural water pumps (personal communication, Mahua Acharya, CEO, C-Quest Capital, May 2014). These negawatts can then be sold to higher-income, higher-demand and higher electricity tariff-paying segments. Such a program will help ease the strain on the balance sheets of the cash-strapped discoms and, moreover, is implementable despite the transmission, distribution and consumer-interface challenges these entities face today.

The bottom line is that energy efficiency is cheaper than energy generation. In two recent reports by the Lawrence Berkeley National Laboratory and the American Council for an Energy-Efficient Economy, based on data from 31 states in the United States, the average cost of saved energy was valued at between 2 and 2.8 cents per kilowatt hour, while the generation of power from coal-fired power plants or wind turbines was estimated at two to three times that amount (Uhlenhuth, 2014).

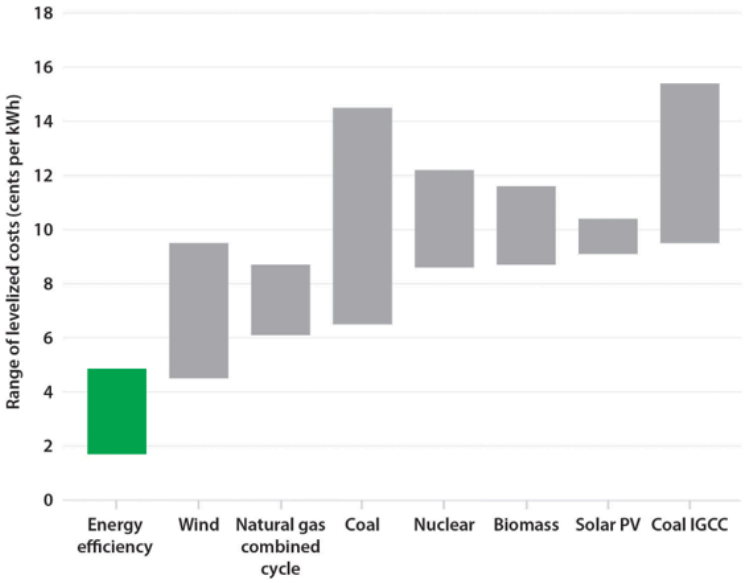

FIGURE 1: COSTS OF ENERGY EFFICIENCY IN COMPARISON TO THE COSTS OF ENERGY GENERATION IN THE UNITED STATES, 2014.

Source: Molina (2014).

With this report, IISD seeks to engage with stakeholders in India and outside to begin action. We invite your feedback and interest in collaboration. The project team contacts are provided on the front cover of this report.

REFERENCE LIST

ABESCO. (n.d.) QualiEsco Accreditation Program. Retrieved from http://www.abesco.com.br/qualiesco/

Agência Nacional de Energia Elétrica (ANEEL). (1998, July). Resolution 242. Retrieved from http://www.grupocanalenergia.com.br/abiape/lnklegis.asp?countn=LEGISLACAO_Download_ABIAPE&lnkRemoto=http://www.zonaeletrica.com.br/legislacao/resolucoes/res_aneel/1998/RES24071998_242.pdf

Agência Nacional de Energia Elétrica (ANEEL). (2005, November). Resolution 176. Retrieved from http://www.aneel.gov.br/cedoc/ren2005176.pdf

Balasubramanian, S. (2013, November/December). The discom dilemma in India, *Energetica India*. Retrieved from https://www.google.ca/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CB4QFjAA&url=http%3A%2F%2Fwww.energetica-india.net%2Fdownload.php%3Fseccion%3Darticles%26archivo%3DuAgQC5NhY2is4YLi2TPaetruHcP5VK5ELZVNTjvraSZTrk2i4G9XzoH.pdf&ei=DBjlU4efDuut8gGTk4DgCA&usg=AFQjCNGw85YWb7RnepmkzuACAh6QcwODuw&sig2=wdC2SYLkxIWnn_Wk5lYm9Q&bvm=bv.72676100,d.b2U

Barcon, S. (2011). *Concepto: Que es eficiencia energetica.* Power Point Presentation. Asociación Mexicana de Empresas ESCO.

Business Standard. (2014, April 3). India now only country with legislated CSR. Retrieved from http://www.business-standard.com/article/companies/india-now-only-country-with-legislated-csr-114040300862_1.html

Canada Office of Energy Efficiency. (2008). *Improving energy performance in Canada: Report to parliament under the Energy Efficiency Act for the fiscal year 2007–2008*. Retrieved from http://oee.nrcan.gc.ca/Publications/statistics/parliament07-08/pdf/parliament07-08.pdf

De Martino Januzzi, G., Rodrigues da Silva, A. L., de Melo, C. A., Paccola, J. A., Gomes, R. D. M. (2008) *Refrigerator replacement programs in Brazil.* Brazil: University of Campinas and International Energy Initiative. Retrieved from http://www.sinerconsult.com.br/livros/Draft_Paper_0391.pdf

De Martino Januzzi, G., Saidel, M. A., Haddad, J., Poole, A. D., Johnson, T. M. (2008). *Brazil's Energy Efficiency Program for Electricity Utilities: Evaluation of the program and recommendations for revising current regulations.* World Bank. Retrieved from: http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2012/06/21/000426104_20120621093819/Rendered/PDF/699140v10ESW0P010June016020080final.pdf

Frankel, H. & Humayan, T. (2013). Giving U.S. energy efficiency a jolt. McKinsey Global Institute. Retrieved from http://www.mckinsey.com/insights/energy_resources_materials/giving_us_energy_efficiency_a_jolt

Ghuliani, C. (2013, November 22). India Companies Act 2013: Five key points about India's 'CSR mandate.' Retrieved from http://www.bsr.org/en/our-insights/blog-view/india-companies-act-2013-five-key-points-about-indias-csr-mandate

Hansen, S., Langlois, P., & Bertoldi, P. (2009). *ESCOs around the world: Lessons learned in 49 countries*. Lilburn, GA: The Fairmont Press, Inc.

Hopper, N., Goldman, C. A., Gilligan, D., Singer, T. E., & Birr, D. (2007). *A survey of the U.S ESCO industry: Market growth and development from 2000 to 2006.* Lawrence Berkeley National Laboratory.

Iimi, A. (2013, June). *Multidimensional auctions for public energy efficiency projects: Evidence from the Japanese ESCO Market.* Washington, D.C.: World Bank Africa.

REFERENCE LIST

Indian Planning Commission. (2011). *Annual report (2011-12): The working of state power utilities and electricity departments.* Retrieved from http://planningcommission.nic.in/reports/genrep/arep_seb11_12.pdf

Indian Planning Commission (2014, April). *Final report of the Expert Group on Low Carbon Strategies for Inclusive Growth.* Retrieved from http://planningcommission.nic.in/reports/genrep/rep_carbon2005.pdf

International Performance Measurement & Verification Protocol Committee. (2002). *International Performance Measurement & Verification Protocol: Concepts and options for determining energy and water savings.* Retrieved from http://www.nrel.gov/docs/fy02osti/31505.pdf

Japan Association of Energy Service Companies (JAESCO). (n.d.). Member companies section. Retrieved from http://www.jaesco.or.jp/english/

JICA Study Team. (2009). *Energy savings business in Japan.* Power Point Presentation. Nippon Koei Co, Ltd.

KPMG. (2013, April 25). KPMG Green Tax Index: Energy efficiency. Retrieved from http://www.kpmg.com/global/en/issuesandinsights/articlespublications/green-tax/pages/energy-efficiency.aspx

Limaye, D., D'Addario, R., Patrick, J., Patankar, M., & Kumar, B. A. (2012). *Financing industrial energy efficiency in India: Lessons learned and directions for the future.* Institute for Industrial Productivity. Delhi: SRC Global Inc.

McKinsey Global Institute. (2012). Promoting energy efficiency in the developing world. Retrieved from http://www.mckinsey.com/insights/economic_studies/promoting_energy_efficiency_in_the_developing_world

Ministry of Finance. (2012). The India Public Procurement Bill, 2012, Clause 21. Government of India. Retrieved from http://finmin.nic.in/the_ministry/dept_expenditure/ppcell/index.asp

Ministry of Finance. (2014). Union budget. Government of India. Retrieved from http://indiabudget.nic.in/

Molina, M. (2014, March 25). *The best value for America's energy dollar: A national review of the cost of utility energy efficiency programs.* Research report U1402. American Council for an Energy-Efficient Economy.

Murakami, N. (2012, July). *Expectations for energy trading.* Global Energy Policy Research. Retrieved from http://www.gepr.org/en/contents/20120702-01/

Murakoshi, C., Hidetoshi, N, & Masuda, T. (2003). *Detailed analysis of the ESCO market in Japan: Based on JAESCO Survey.* Jyukankyo Research Institute. Retrieved from http://aceee.org/files/proceedings/2004/data/papers/SS04_Panel5_Paper17.pdf

Natural Resources Canada. (2013, April). Federal Buildings Initiative. Retrieved from http://www.nrcan.gc.ca/energy/efficiency/communities-infrastructure/buildings/federal/4481

Navigant Research. (2013). The U.S energy service company market. Retrieved from http://www.navigantresearch.com/research/the-u-s-energy-service-company-market

Satchwell, A., Goldman, C. A., Larsen, P. H., Gilligan, D., & Singer, T. E. (2010). *A survey of the U.S ESCO industry: Market growth and development from 2008 to 2011.* Berkeley National Laboratory. Retrieved from http://emp.lbl.gov/sites/all/files/REPORT%20lbnl-3479e.pdf

REFERENCE LIST

Starosta, J. (2012, June). *Brazil: Energy efficiency market aspects*. ABESCO. Retrieved from http://ftp.eeq.com.ec/upload/empresas-publicas-eficientes/Eficiencia%20Energ%E9tica%20-%20D%EDa%202/Jose%20Starosta.pdf

Stuart, E., Larsen, P. H., Goldman, C. A., & Gilligan, D. (2013). *Current size and remaining market potential of the U.S Energy Service Company Industry*. Lawrence Berkeley National Laboratory. Retrieved from http://emp.lbl.gov/sites/all/files/lbnl-6300e_0.pdf

Thumann, A. & Woodroof, E. (2006). *Handbook of financing energy projects*. Lilburn, GA: The Fairmont Press, Inc.

Uhlenhuth., K. (2014, April). Efficiency still the cheapest energy resource, *MidWest Energy News* Retrieved from http://www.midwestenergynews.com/author/kuhlenhuth/

United States Agency for International Development. (2013). F*inancing energy efficiency in India: A review of current status and recommendations for innovative mechanisms.* Delhi: USAID.

Urs, A. (2014, May14). Steel, rail, cement firms better at CSR than tech companies: IIMB report. *Business Line.* Retrieved from http://www.thehindubusinessline.com/companies/steel-retail-cement-firms-better-at-csr-than-tech-companies-iimb-report/article6008453.ece

Verma, R. (2014, January 1). CM Arvund Kejriwal keeps another promise, cuts powers bills 50 % by raising subsidy. *Times of India*. Retrieved from http://timesofindia.indiatimes.com/city/delhi/CM-Arvind-Kejriwal-keeps-another-promise-cuts-power-bills-50-by-raising-subsidy/articleshow/28203217.cms

Vine, E., Murakoshi, C., & Nakagami, H. (1997, November). International ESCO business opportunities and challenges: A Japanese case study. *Energy,* 23(6): 439–447.

ANNEX

BIG IDEAS FOR KICK STARTING ENERGY-EFFICIENCY MARKETS IN BRAZIL, CANADA, MEXICO, JAPAN, THE UNITED STATES AND FRANCE.

1. Big Ideas for Energy-Efficiency Market Stimulation from Brazil

Market Overview

In the mid-1990s, first steps were taken to develop an energy-efficiency market in Brazil through a series of roundtables and documents intended to spread out the energy-efficiency concept. However, these efforts were not successful and government participation in building an energy-efficiency market was needed but non-existent until 2001, when the country underwent an acute energy crisis. The crisis prompted the Brazilian government to start playing an active role in the energy-efficiency market with the introduction of policies that would incentivize lower energy consumption.

The set of rules included the issuance of Law 2.148[4] by the National Electricity Agency, which required companies to cut their electricity use by 25 per cent and residents to save as much as 20 per cent of their monthly usage in order to cope with energy production shortages.

Several other programs have also been launched at the national level. Brazil has also seen growth in the number of energy-efficiency companies and projects. The latest market data provided by ABESCO shows that in 2011 more than 75 companies were affiliated to the Brazilian Association of Energy Conservation Companies (ABESCO, n.d.) and the sector had an estimated annual value ranging from B$350 million to B$500 million.

Nevertheless, regardless of the evident increase in energy-efficiency companies, the sector still presents huge challenges that need to be resolved in order to guarantee long-term sustainable development. In fact, in a recent survey developed by ABESCO, the vast majority of energy service companies (ESCOs) listed lack of access to low-cost financing as the biggest barrier to increasing the volume of projects.

Other measures implemented by the Brazilian government to trigger the energy-efficiency market include the following two major examples.

Idea 1: An accreditation scheme for energy service providers

Launched in 2011 by ABESCO, QualiEsco is a certification program aiming to explore, highlight and quantify the specialties of ESCOs as a way to provide confidence across different players and to increase the quality standards in the energy-efficiency market. To date, according to ABESCO (n.d.), 21 out of the 76 companies registered have completed the process and received the QualiEsco certification recognizing them as high-quality service providers.

To receive the certification, companies undergo a documentary analysis evaluating their experience in a particular type of service. The evaluation criteria take into account the following aspects:

- Registration of the performance achieved in aspects like energy efficiency, audit, assessment and management in projects executed
- Technical capacity of staff to carry out work
- Post-implementation report of completed projects

[4] This provisory measure (issued in May 22, 2001) also created the National Agency for Energy Consumption Reduction.

ABESCO also introduced a model defining the steps a company must take in order to develop an energy-efficiency project. The procedure includes:

- Facilities Energetic auditing to identify cost saving opportunities
- Facilities Energetic diagnosis to measure savings, costs and estimated project time
- Signing of the development contract
- Signing of financing contract (in case of third party financing)
- Executive project design
- Implementation
- Measurement and energy-saving admittance
- Payback period to ESCO

Idea 2: Mandatory investments in energy-efficiency companies by energy utilities

In 1998 the National Electricity Regulator (Agência Nacional de Energia Elétrica [ANEEL]), issuing Resolution 242, stated that energy distribution companies were required to invest 0.5 per cent of their annual revenues into energy-efficiency projects under the regulator oversight (ANEEL, 1998). The measure was later re-stated by issuing Law 9991 in 2001. Under the new regulation, the supervisory body established that activities should be aimed at increasing energy efficiency in low-income zones and should not only include implementation, but also the research and development of lower-consumption schemes.

The program served as an opportunity to many emerging ESCOs to thrive and greatly supported the growth of the Brazilian energy-efficiency market. In fact, according to academic reports, energy-efficiency projects in 2006 were valued at R$190 million (De Martino Januzzi, Rodrigues da Silva et al., 2008); later, in 2009, the number increased to R$300 million. Today, the Energy Efficiency Program remains as the largest source of financing for energy-efficient ventures with more than R$1.8 billion invested since its implementation. (De Martino Januzzi, Saidel, Haddad, Poole, & Johnson, 2008).

A key characteristic of the program is that it has not been static over time, having been subject to many restructurings in order to adapt it to the changing conditions of the utilities market and the economy. At its inception, energy distribution companies were required to invest 1 per cent of their Net Operating Income (NOI); later, in 2004, Law 10.848 lowered the required percentage to 0.5 per cent of NOI. Conditions were smoothed out in 2006 with the issuance of Resolution 176, charging utilities between 0.25 per cent and 0.5 per cent according to their total sale market in gigawatt hours per year and requiring that a minimum of 50 per cent of the total investment in energy-efficiency projects go to projects for low-income consumers (ANEEL, 2005).

Some analysts were concerned about the ability of the program to increase overall levels of energy efficiency and the lack of proper methodologies to assess consumption savings. However, the Brazilian program constitutes a perfect example of how government policies can generate new sources of financing for energy-efficiency projects, attaining a desired level of investment directly linked to public companies' profits.

2. Major Lessons on Market Associations from Japan

Market Overview

Japan has been a leader in Asia with a strong and well-developed energy-efficiency industry supported by a set of activities implemented in 1996. Feasibility studies, measurement and verification (M&V) programs and the creation of the Japan Association of Energy Companies (JAESCO) in 1999 have been the cornerstones for market development. In fact, since its inception, JAESCO implemented advertising campaigns highlighting trends in energy savings and instructed ESCO stakeholders in energy-efficiency business opportunities, benefits and risks.

ANNEX

The ESCO market in Japan has been traditionally dominated by big players, usually big sector corporations that own ESCOs as subsidiaries. Nevertheless, there is a lot of potential for further development of small and medium-size ESCOs. Data provided by Lawrence Berkeley shows that the number of energy-efficiency companies has steadily increased since 1997, proving that large corporations do not have a monopoly on the energy-efficiency market (Vine, Murakoshi, & Nakagami, 1997). In fact, in 2003 a total of 60 ESCOs were registered to the association (Murakoshi, Hidetoshi, & Masuda, 2003) and as of June 2014, that number increased to 87 affiliates (JAESCO, n.d.).

According to data issued by the World Bank, in 2012 it was possible to distinguish among four types of ESCO firms in Japan: engineering firms, lease companies (often subsidiaries of large banks), manufacturers of energy-related systems and energy supply companies (Iimi, 2013). The same report also revealed the average size of the energy-efficiency projects and their targeted energy costs savings to be around US$2.4 million and US$314.000, respectively (Iimi, 2013).

In terms of energy savings technologies, the preferred one for Japanese ESCOs is lighting with 4.479 kilowatts (kW); followed by air conditioning, hot water boiler and cogeneration systems, with 1.109 kW, 335 kW and 515 kW in average installed capacity per year respectively (Iimi, 2013).

TABLE A1: MAJOR ENERGY SAVINGS TECHNOLOGIES ADOPTED IN JAPANESE ESCO PROJECTS IN 2012.

ADOPTED TECHNOLOGY	SHARE OF ESCO CONTRACTS USING THIS TECHNOLOGY (%)	AV. INSTALLED CAPACITY IF ADOPTED (KW)
Lighting	79	4.479
Air conditioning	84	1.109
Hot water boiler	31	335
Cogeneration system	27	515

Source: Iimi (2013)

Idea 1: Central government's financial support to ESCO projects

In Japan, the central government is actively involved in providing financial support for energy-efficiency retrofit projects. The Japanese government has made significant efforts to maintain the subsidy as a way to increase credibility and recognition of the energy-efficiency industry. As of today, the amount covered goes from 33 per cent of the total project cost in the case of local authority facilities to 50 per cent of total costs covered for private sector facilities.

The currently implemented subsidy schemes for energy-efficiency retrofits are listed below (project range in US$ millions and percentage subsidized in parentheses):

1. Project to introduce equipment with lower energy consumption ($0 to $125.5 – 33 per cent)
2. Project to install and promote highly energy-efficient systems in residential buildings ($0 to $19.1 – 33 per cent)
3. Local authorities energy-saving diffusion-and-promotion projects ($0 to $32.7 million – 50 per cent)
4. Energy management systems for building ($0 to $32.7 – 50 per cent)
5. Local authorities energy-saving planning ($0 to $4.5 million – 100 per cent)

It is worth mentioning that programs 1, 2 and 3 coincide in their aim for increasing high-efficiency equipment use, but Program 2 seeks higher energy savings rates.

ANNEX

Results beyond incentivizing participation in the energy-efficiency market have also been achieved with financial support. For example, as a consequence of public funding offsetting a greater proportion of project costs, credit requirements have been reduced (lower collaterals, return, future cash flows, better interest rates, etc.) enabling access to better and increased private financing for ESCOs.

Idea 2: Implementation of a national association of ESCOs to support the development of an energy-efficiency market in Japan

In 1999 JAESCO was created as part of an overall program developed by the Japanese government to expand the ESCO market. The initial responsibility of this private organization was to undertake educational and promotional activities to raise awareness among different stakeholders of the need to better integrate energy efficiency into operations. However, additional activities were assigned in subsequent years, including research into new markets and backing the development of ESCO markets in other Asian countries.

Today the array of activities performed by JAESCO is much wider and the entity is considered by far as the most important supporter of the energy-efficiency market in Japan. Among others, its main duties include:

- Research (new markets and niches within the ESCO industry)
- Strategy planning and policy proposals
- Seminars for members
- Idea exchange sessions
- JAESCO conferences – information sharing
- Newsletters
- Annual surveys and data gathering
- Training programs
- Developing standard procedures and templates for the ESCO business

According to a study conducted in 2009 by Nippon Koei, one of the most important engineering consultants in Japan, the creation of JAESCO had a significant impact on the ESCO industry and is highly correlated with the steep increase of energy-efficiency investments between 1999 and 2003. The following chart, provided by Nippon Koei, illustrates the relationship:

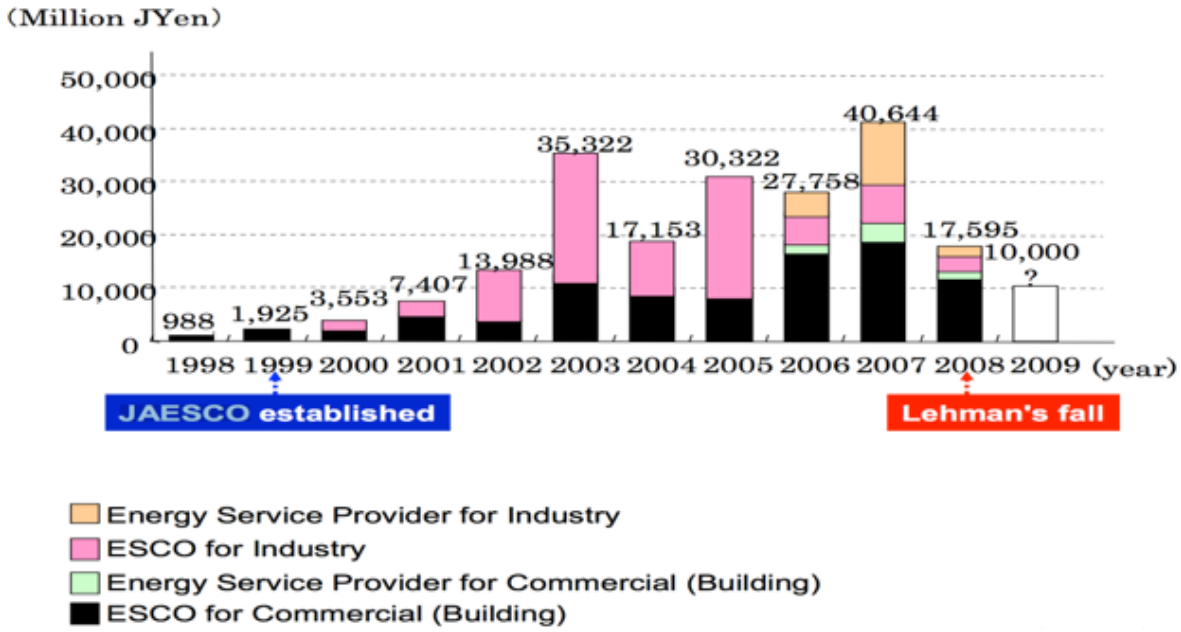

FIGURE A1: ESCO MARKET IN JAPAN (1998–2008)

Source: IICA Study Team (2009)

3. Foremost Examples of Government Support for First Movers in the Canadian Energy-Efficiency Market

Market Overview

In Canada, the energy-efficiency concept gained traction in the 1970s as a response to rising oil prices and international political turmoil. Although the federal government support was indeed an important source of support in growing the energy-efficiency market, early work done by provinces like Quebec and Ontario also had profound impacts. These two provinces formed publicly funded ESCOs and public-private partnerships to increase financing for energy-efficiency projects. In fact, these ESCOs carried out the vast majority of the first energy-efficiency projects in the country.

On the federal government side, energy-efficiency development was based on three milestones: (i) the Federal Building Initiative (FBI); (ii) the Better Buildings Partnership (BBP) and (iii) the introduction of the Canadian Association of Energy Service Companies (CAESCO). The key characteristics of the FBI and BBP programs will be discussed later in this case study.

By 2009 there were 11 big players in the ESCO industry and many other small organizations providing services at a provincial level. In terms of market size, performance-based projects accounted for CAD$450 million in the same year, with a similar trend occurring across different sectors (industrial, commercial and public), who were also developing energy-efficiency projects (Hansen, Langlois, & Bertoldi, 2009).

According to the Canadian Office of Energy Efficiency (2008), the commercial sector presents a huge opportunity for the ESCO industry to expand the energy-efficiency market because it is responsible for 14 per cent of all secondary energy[5] produced in Canada. The number is high compared to other economic sectors such as agriculture, which accounts for 2.2 per cent of total secondary energy

[5] Energy produced from primary energy sources using energy conversion processes. Primary sources are fossil fuels, solar energy, wind energy, geothermal energy, etc.

consumption. Within the commercial sector, the biggest challenges are identified in buildings used for office and public administration, health care assistance and educational purposes.

Idea 1: The FBI as a government incentive for first movers

Designed in 1991 and fully implemented in 1993, the FBI was introduced by the Canadian Office of Energy Efficiency with the aim to facilitate retrofit projects in more than 50,000 federal buildings. The program also made important regulatory changes looking to generate a friendly environment for Energy Performance Contracts (EPC) contracts.

FBI tasked federal institutions with implementing energy, water consumption and greenhouse gas emissions reduction initiatives using third-party knowledge. Three widely recognized market barriers were removed to foster ESCO market spreading: (i) inadequate cost budgeting in projects, (ii) the inexistence of appropriate M&V procedures to guarantee savings and (iii) the lack of skilled human labour for retrofit projects (Hansen et al., 2009).

As a result of the executed actions, an important number of ESCOs were created and were able to access to public contracts. The federal government also issued regulations aiming to set up clearer contractual terms and proper returns.

Natural Resources Canada (2013) describes the following benefits from FBI for ESCOs:

- Public-private contracting allowed ESCOs to access increased financing from private institutions, thus lowering capital needs.
- Federal government assisted in customizing contracts for every project.
- ESCOs were included and consulted in new public policy design.
- Government provided training programs and workshops to support technical staff from ESCOs.

One of the best features of FBI is its approach to project financing to attract private funding and alleviate government budget constraints. Since the FBI does not have significant resources, it cannot offer financing to ESCOs. However, it actively offers support by creating a trust that serves as a guarantee for licensed financial institutions and facilitates private lending. The structure works with the government acting as a trustor, setting up a fund with publicly held private property covering all losses for the lender in case of default. To paraphrase, the trust scheme guarantees the project's financial performance for financial institutions, increasing their confidence and inducing better terms for loans.

Idea 2: Better Buildings Partnership Loan Recourse Fund to reduce risks related to energy-efficiency projects

The Better Buildings Partnership Loan Recourse Fund (BBPLRF) was created to incentivize ESCOs to undertake public projects. The fund targets buildings owned by small and medium-size companies (SMEs) across different sectors (industrial, commercial, institutional, etc.). Banks consider these types of projects as the riskiest ones because of the inherent risks SMEs face in their early years.

The fund addresses this problem by providing on-bill financing and regularly collecting proceeds from a pool of securitized loans. The term "on-bill financing" refers to the capacity of issuing low-risk debt backed by loans, with the certainty of collecting the project's revenues as part of the bill that energy end-customers pay on a monthly basis. In the potential case of a customer's default, the fund will regularize cash flows by covering the existing losses. Therefore, the objective of the BBPLRF is to provide affordable financing to facilities owners with low-interest rates and without needing to provide considerable capital in advance.

FBI and BBPLRF policies facilitated the implementation of more than 80 retrofit projects, attracted more than CAD$312 million in private investments and generated more than CAD$43 million in energy savings. On average, every project savings ranged from 15 to 20 per cent and greenhouse gas emissions were cut by 235 tonnes (Natural Resources Canada, 2013).

4. Energy Efficiency Monitoring and Verification Protocol to Assist the ESCO Market in the United States

Market Overview

The United States is one of the most mature markets for ESCOs in the world and also the earliest developed, with first activities dating before 1985. In fact, Scallop Thermal, a late-1970s subsidiary of Royal Dutch Shell, created one of the first recognized ESCO models in the world. It was inspired by the "chauffage" concept used years before in France and offered customers a 10 per cent reduction in their bills by allowing the ESCO to effectively manage storage in the customers' facilities (Thumann & Woodroof, 2006).

The public sector, as in the case of Canada, has been of crucial importance for the market in the United States, with the implementation of actions to stimulate the demand side. A good reference is the Integrated Resource Plan (IRP) implemented in the early 1990s, requiring public dependencies to propose energy savings goals and implement measures aimed at meeting them. In this situation, ESCOs were the preferred organizations to provide kilowatt hour savings and projects across different industries were developed.

The 2000s were a reinforcing epoch for the industry, with the implementation of measures such as the International Performance Measurement and Verification Protocol (IPMVP) and the standardization of document verification processes. A subsequent outcome of these schemes was the ease with which ESCOs could obtain loans from private banks, leading to the implementation of larger energy conservation projects.

From 2008 onwards, a number of issues around the energy-efficiency industry were becoming more apparent. According to Lawrence Berkeley National Laboratory, the energy-efficiency projects managed to maintain a 7 per cent per year growth rate between 2008 and 2010, regardless of lower demand for projects, policy ineffectiveness and concerns over the impact of energy savings on the customer's financial position. In subsequent years, the market recovered, peaking in 2011 at USD$5.6 million and shrinking to USD$4.8 million in 2012 (Satchwell et al., 2010).

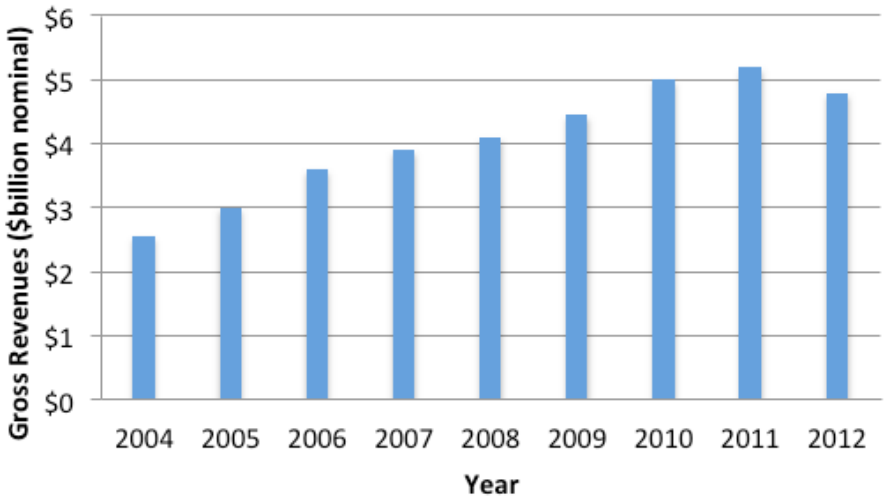

FIGURE A2: EVOLUTION OF ESCOS MARKET IN THE U.S. (2004–2012)

Source: Author data collection from Hopper et al. (2007); Satchwell et al. (2010); Navigant Research (2013)

According to data provided by the National Association of Energy Services Companies (NAESCO), to date there are 41 members accredited as ESCOs. A vast majority of these specialize in energy-efficiency projects as their greatest income source, accounting for 74.5 per cent of their total profits. Other important revenue generators are onsite generation technologies (renewable and engine/

turbine) and Operations and Maintenance (O&M), accounting for 5.7 per cent and 4.8 per cent of total turnover respectively (Stuart et al., 2013).

Many factors will influence performance of the energy-efficiency market in the upcoming years. Successful growth will depend in how ESCOs open up to new markets, generate greater penetration in existing ones and generate additional revenue from non-energy services. In spite of these conditions, a report released by Navigant Research in 2013 indicates that there is a promising outlook for the sector and annual revenues are expected double from US$4.9 billion in 2013 to US$8.3 billion in 2020.

Idea: M&V protocol to guarantee energy savings in energy-efficiency projects

The M&V protocol is a guide developed for ESCOs, energy end users, financial institutions and, in general, any stakeholder related to the energy-efficiency market. Its purpose is to provide generally accepted practices in measurement, verification and reporting of savings reached in any energy-efficiency project. The objective of this methodology is to provide a guaranteed energy savings in the project, allowing all parties involved to receive the required cash flows to repay the initial investments.

Although the United States has laid the theoretical underpinning of measurement programs for energy-efficiency projects since the 1980s, the first M&V protocol, as we know it, was issued in 1995 as the North American Measurement and Verification program. After further changes, the latest guidance for M&V was released in 1997 as the first International Performance and Verification Protocol (IPMVP, 2002).

Among others, the main benefits offered by the IPMVP are:

- It simplifies negotiations for EPCs by providing a more transparent overview of the project to all parties involved.
- It standardizes savings reports across different industries and countries, generating more confidence, international credibility and lower transaction costs.
- It allows greater access to external financing for projects provided by an international recognition of guaranteed energy savings.
- It facilitates the accomplishment of environmental objectives at both the federal and state levels.

Several modifications have been applied to the initial version of IPMVP and the latest guideline came into effect in 2009. Since its inception, IPMVP has been actively embraced in the energy-efficiency market, making it a de-facto requirement necessary for all projects. Some of the identified benefits of its implementation include third-party funding expansion and trust generation among market players in order to achieve increased levels of activity.

5. International Finance Protocols for Increased ESCOs Financing from Mexico

Market Overview

In the last few years, the Mexican government has tried to encourage the creation of new ESCOs. One these initiatives was the creation of a partnership program between the U.S. National Renewable Energy Laboratory and the National Commission of Energy Conservation in 2008, with the main purpose of promoting energy efficiency and serving as a technical authority in energy-efficiency matters.

Following similar ideals, the Mexican Association of ESCOs (AMESCO) appeared with 10 members in 2011, with the following (non-exhaustive) goals: to spread and promote the concept of energy efficiency (specifically the ESCO model), to serve as a certifying organization for ESCOs, to support negotiations with licensed financial institutions (LFIs) in order to access capital for new energy-efficiency projects, and to share better practices with other national and international associations involved in activities related to energy efficiency.

ANNEX

AMESCO has achieved concrete results in terms of the number of projects and ESCOs in the country. Currently, AMESCO recognizes 25 companies aiming to cover an estimated potential energy savings of 116 billion kWh, representing 10 per cent of the country's annual consumption as of 2006. Converted into monetary terms, the reduction may represent savings of US$1.2 billion, translating into a potential ESCO market of at least US$121 million per annum (Barcon, 2011).

AMESCO also spotted some areas still presenting huge needs for energy efficiency:

- Efficiency in compression, including air conditioning equipment, commercial and industrial refrigeration tools, and air and gas compressors
- Lighting efficiency
- Efficiency in boilers for steam generation and water
- Energy consumption monitoring
- Cogeneration
- Efficiency in electric engines and variable-frequency drives
- Energy quality, power factor adjustment and harmonic distortions reductions

Idea: How Mexico established an International Energy Efficiency Financing Protocol (IEEFP) to generate trust in financial institutions

The need to create a financing protocol to help ESCOs attain more financing was identified in 2004 as a result of a meeting sponsored by the UN Energy Future Coalition. In the debate, energy-efficiency and finance experts concluded that a significant barrier stopping ESCOs from obtaining LFI financing was the lack of expertise that LFIs possessed in providing loans based on a future cash flow basis.

With the above-mentioned in mind, the IEEFP was born, with the main objective of creating a bridge between energy-efficiency companies and financing institutions by training local banks on the special details and benefits of funding energy-savings projects. The protocol aimed to address the traditional asset-backed approach banks used to provide loans and the inability to recognize future cash flows as capital for future amortizing.

In September 2005 the Efficiency Valuation Organization (EVO) chose Thailand and Mexico as the first countries that would initially develop the IEEFP program. Results from the pilots were expected to outline approaches and methods that, with few modifications, may become suitable frameworks to develop private financing in the Asia-Pacific Economic Cooperation and any other country around the world.

The project implementation time was eight months and consisted of five phases, including: (i) identifying a governmental project coordinator; (ii) sponsors and funds search; (iii) researching the financial market in order to identify the needs of the parties involved; (iv) developing workshops with banks and ESCO representatives; and (iv) training seminars to achieve LFIs and ESCO agreements.

Although there are no measures for the achieved results of IEEFP in Mexico, an assessment report carried out by Energy Valuation Organization (EVO) gave the following suggestions for project financing (Hansen, Langlois, & Bertoldi, 2009):

- ESCOs should not provide collateral requirements in excess of the project cash flows and installed equipment.
- The minimum amortization time should be seven years plus the construction period.
- Local currency must be used for repayment.
- Costs must be coherent with current market interest rates.
- The project must provide explicit measure and verify savings.

ANNEX

The document also highlighted other long-term goals for the market, including:

- A substantial increase in energy-efficiency project financing in Mexico.
- The inclusion of LFI financing in the energy-efficiency market may change the perception that the energy-efficiency market is high risk and may encourage new stakeholder participation.
- LFI financing will increase interest from national and international project developers (new ESCOs), as well as additional international financial institutions.
- Important reductions in transaction costs will be achievable owing to less time-consuming processes. Subsequently, new developers will be attracted to the market and the protocol will be replicated throughout different sectors, regions and market players.

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