

CASE STUDY

Making Energy Efficiency Profitable



A scaled-up financing program implemented across major industries in Indonesia could generate energy savings equivalent to a 2,500-megawatt power plant. Photo: ADB.

Innovative lending practices can convert energy efficiency into high rates of return for companies.

Overview

Global energy efficiency could account for more than 40% of total cumulative emissions reductions by 2030 and thereby limit global temperature increase to 2 degrees Celsius. However, the lack of national project-based financing represents one of the primary global barriers to energy efficiency implementation.

In Indonesia, the growing economy is constrained by a lack of new energy supply because of subsidized energy rates.

The Asian Development Bank (ADB) partnered with Indonesia Eximbank to pioneer an attractive energy efficiency financing program for export-oriented industrial companies.¹

The financing program enabled Indonesia Eximbank to offer loans to industrial companies to implement energy efficiency projects repaid from reductions in their energy costs and to prepare supporting

investment-grade energy audits and loan applications.

The industrial sector represents 42% of total energy use and supports large-scale employment in the country. It is estimated that a scaled-up financing program implemented across major industries in the country could generate energy savings equivalent to a 2,500-megawatt power plant.

¹ In support of ISO 50001 – the energy efficiency standard introduced in 2011 by the International Organization Standard.

Project snapshot

Dates	<ul style="list-style-type: none">• 1 March 2011: Loan Approval• 1 March 2015: Project Completion Date
Cost	<ul style="list-style-type: none">• \$30 million : Loan Amount (part of a non-sovereign \$200 million loan, of which \$100 million was co-financed by Bank of Nova Scotia, Bank of Tokyo Mitsubishi, Wells Fargo, and Australia New Zealand Bank)
Institutions and Stakeholders	<p>Financing</p> <ul style="list-style-type: none">• Asian Development Bank <p>Executing agency</p> <ul style="list-style-type: none">• Indonesia Eximbank <p>Others</p> <ul style="list-style-type: none">• Indonesia Eximbank: Borrower

Challenges

Energy efficiency is globally accepted as the cleanest and most cost-effective source of energy. In addition to reducing energy consumption and costs, energy efficiency conserves the environment by reducing greenhouse gas emissions, enabling countries to comply with national regulatory requirements and international commitments. The replacement of inefficient energy equipment and systems with improved, off-the-shelf technologies (i.e., boilers, motors, lighting) can reduce energy and emissions for the same operating level.

The most attractive features of energy efficiency are its self-funding capability to pay for new technologies from reduced operating expenses and to reduce emissions without government subsidy, which is often required to fund high feed-in-tariffs for renewable energy.

While opportunities are significant, long-standing barriers continue to plague energy efficiency implementation in most countries around the world. The main barriers are:

- low priority for facility owners,
- small and complex transactions with diverse technologies and facilities,
- lack of commercially attractive financing,
- lack of project development and sales skill, and
- in many developing markets: low subsidized energy rates, limited energy efficiency awareness, and insufficient technical resources and capabilities.

While the potential for commercial financing is very significant and represents close to a \$4 billion market for commercial banks and the industry sector, mainstreaming energy efficiency in Indonesia has been a slow process. This is due in large part to subsidized energy rates that have not only imposed a public burden on the government's budget, but also deterred energy efficiency implementation through a lack of commercial interest. This has resulted in low market awareness and technical capacity.

There is a clear need for the implementation of energy efficiency in Indonesia where primary energy consumption has increased on average by 5% per year from 2004 to 2014. This increase in demand is due to economic growth and low rates from longstanding fuel subsidies (recently eliminated). The national utility has been unable to supply the increased demand for electricity resulting in brownouts and production losses at industrial plants. This energy increase also contributed to Indonesia becoming a net oil importer in 2004. According to EBTKE (Indonesia's Energy Conservation Directorate), 90% of the country's primary energy comes from fossil fuels: oil (37%), coal (34%), and natural gas (19%).

Solutions

In response to the Indonesian government's request in 2011, ADB agreed to develop a technical assistance package with Indonesia Export Import Bank (Eximbank), the country's official export credit agency, to increase awareness, build capacity, and demonstrate the viability of energy efficiency financing to commercial banks. The assistance is part of a nonsovereign loan of up to \$200 million.

Eximbank agreed to use \$30 million to fund loans to export/import companies under the pioneering Energy Efficiency Project Finance Program. This was the first commercial loan provided by an international financial institution to Indonesia with the objective of developing energy efficiency financing on a commercial basis.

The program was developed to facilitate the provision of savings-based financing of energy efficiency projects by Eximbank for the benefit of Indonesia's labor-intensive importers and exporters. Its purpose was to demonstrate the benefits of energy efficiency financing to local banks and the industrial sector, and thereby create a commercially attractive loan product to help overcome domestic energy constraints. The program supported the development and implementation of energy efficiency projects that reduce fossil fuel consumption and support the government in achieving its energy and greenhouse gas reduction targets.

The Energy Efficiency Project Finance Program was mainstreamed into Eximbank's operations and comprised the following:

1. **Energy Efficiency (EE) Project Loan** – This product was developed and implemented to finance energy efficiency on a project and paid-from-savings basis versus Eximbank's traditional corporate, asset-based approach.

Key features:

- A positive cash flow (after debt service) to facility owners yielding a 40%-60% internal rate of return.
- Acceptance of the energy efficiency project's savings as the primary basis for loan approval
- No impact on facility owner's existing core credit capacity. EE Project Loans added to their current lending limit. No additional collateral was required beyond the project's assets.
- Limited project performance risk. Savings and capital costs were developed by energy efficiency experts and supported by best-practice Investment Grade Audits (initially underwritten by ADB's technical assistance funds and to be subsequently funded by Eximbank and added to the EE Project Loan amount). Measurement and verification methods were developed with globally recognized protocols to enhance the achievement and sustainability of estimated savings.

2. **Energy Savings Insurance (ESI)** – This product was designed for future use by Eximbank and other banks in Indonesia to guarantee that the estimated savings (and future cashflow) of a financed energy efficiency project will be realized by facility owners (borrowers). This guarantee of future cashflow supports repayment of energy efficiency project loans to banks and creates additional credit capacity to the facility owners. The ESI does not cover credit risk, which relates to the financial capacity and willingness of the borrower to repay the loan. It covers a project's performance risk, which is related to any issue that could reduce savings below the debt service levels (principal and interest) to be paid to a bank on an energy efficiency project loan. ESI has two objectives: to increase the confidence of facility owners to secure loans for an energy efficiency project and to reduce risk for local banks and encourage them to accept the project's new cashflow as the primary basis for the loan repayment.

3. **Energy Efficiency Capacity Building** - Workshops and training programs were developed and delivered to Eximbank staff and management. Participants received hands-on training on:
 - how to evaluate risks and qualify an energy efficiency project for savings-based financing,
 - how to structure energy efficiency project loans, and
 - how to market the new energy efficiency lending product.

4. **Capacity Building** - To enhance the required institutional and behavioral changes within the bank, separate mentoring sessions were conducted within each Eximbank department (credit, risk management, legal, human resource, and treasury). To ensure the program's sustainability, the capacity building program was organized by Eximbank's human resource department, as part of its ongoing employee training program, and a certificate was given to those who finished the

training.

Results

Savings-based project loans

Eximbank funded the first loan to PT Tiga Pilar Sejahtera Food (AISA), a publicly listed company in Indonesia. The \$2.3 million project adopted six energy efficiency technologies that included efficient lighting, new insulation, and temperature control equipment. Eximbank provided a \$1.9 million (80%) savings-based loan that will save AISA around \$672,000 per year.

In addition, a pipeline of projects worth \$30 million was developed by ADB's energy efficiency experts, for the period 2013-2015. This included 20 project concepts that were presented to industrial companies, which resulted in five investment grade audits being prepared and energy efficiency projects being funded by Eximbank under the EE Project Loan product.

Product manual

To launch the EE Project Loan product, ADB's energy efficiency experts developed a product manual, which was approved by Eximbank's board. The manual contains the processes for loan officers to follow in order to comply with the new lending structure and due diligence procedures required for loan approval.

EE Project Loan application template

An EE Project Loan application form was developed by ADB's energy efficiency experts, which was tailored to Eximbank's requirements. The form, an Excel spreadsheet, supports the pre-screening of projects and gathers the information required for local banks to assess whether a project meets the bank's eligibility criteria. It also enables a national bank to develop historical benchmark data to support an increasingly rapid assessment of future energy efficiency projects.

The loan application form acted as a primary learning tool for both the loan officers and borrowers by highlighting which eligibility criteria for energy efficiency financing are needed or may be lacking.

Attractive project loans

Energy efficiency financing is a large untapped market in Indonesia with no commercially viable financing scheme in place prior to the integrated financing and technical assistance support provided by ADB. By using Eximbank's energy efficiency loan product, industrial facility owners can access attractive financing designed to provide them with the following benefits:

- high returns (40%-60% internal rate of return) with no reduction in their existing core credit capacity,
- no additional collateral required beyond the project's assets being financed,
- reduced project performance risk from best-practice investment grade audits and savings

Measurement & Verification protocols, and

- measured and verified energy and greenhouse gas emission reductions to demonstrate compliance with national regulations.

For the banking sector and for the government, the benefits include:

- increasing the number of energy efficiency projects to be financed and implemented,
- improved confidence in providing energy efficiency project loans that can be paid from savings, and
- measured and verified energy and greenhouse gas emission reductions.

Lessons

Mainstreaming energy efficiency project loans within a bank requires a sustained commitment from senior management to overcome the following challenges.

- **Small transactions.** Energy efficiency project loan sizes are significantly lower than regular corporate loans. Most loan officers did not want to pursue (or learn about) them.
- **Not “business as usual”.** The project-based lending structure needed to be attractive to facility owners and does not provide sufficient collateral or comply with traditional lending practices.
- **Limited knowledge and capacity.** Limited knowledge leads to low confidence in future energy efficiency cash flows and limited interest in acquiring energy efficiency project evaluation and loan skills.
- **Few bankable projects.** In many cases, this was caused by insufficient and/or improperly prepared loan applications and investment grade audits.

Sustained assistance is needed to develop bank knowledge and confidence in a new project-based financing approach.

ADB provided a generous 3-year, multi-donor technical assistance grant to Eximbank that ended up being very tight due to the unforeseen time required to get a product manual approved and educate key staff in each of the major bank departments before lending to energy efficiency projects could begin.

The development team had “transaction closing” experience and in-country presence.

The success of the assistance program was attributed to the following:

- project development team’s extensive transaction experience in developing and closing the financing on energy efficiency projects across emerging, transitional, and advanced markets;
- the national team’s expertise in regulatory, finance, and market conditions; and
- the in-country location of the international team for over 50% of their billable time which enabled progressive capacity building activities to be conducted, project development, and investment grade audit activities.

Create a dedicated energy efficiency financing team.

For it to become a sustainable lending product, a dedicated in-house energy efficiency finance team needs to be available that can serve as a one-stop shop for processing project loans within the bank. Eximbank's Small and Medium Sized Enterprise (SME) Department agreed to process all project loans and when applicable, share lending quota credit with loan officers on loans closed with their customers. This is an interim approach that other commercial banks may use until a dedicated team is formed and trained.

Provide incentives to promote energy efficiency financing.

To promote EE Project Loans as a "mainstream" lending product, specific quotas (percentage of loan portfolio) should be established and perhaps an additional bonus provided to loan officers.

It may be necessary to change some bank policies.

The unique aspects of EE Project Loan processing differ from mainstream working capital, and corporate loan evaluations will likely require amending a bank's internal lending policies and procedures.

Recommendations

To implement energy efficiency on a large scale, attractive project and savings-based financing must to be made available to facility owners and project developers on a sustainable basis. Medium-term (3 to 5 years) technical assistance from a development bank can be instrumental in developing such a sustainable financing program for a commercial bank and its borrowers in developing markets. For such a program to be successful, it should incorporate the following features:

1. A commitment from senior management to mainstream the new project lending approach by championing changes to traditional practices. These include:
 - a. Developing a loan product with the concomitant product manual that applies a savings-based project versus a corporate loan structure;
 - b. Providing key performance indicators and incentives to loan officers to motivate them to pursue and close energy efficiency project loans, and
 - c. Commitment to provide long-term resources to develop the market.
2. A dedicated and well-trained internal energy efficiency finance team available to all staff within the bank that can develop and evaluate energy efficiency project loans
3. A capacity building program made available to all energy efficiency stakeholders
4. An energy savings insurance product for facility owners and local banks

Implementing a country-wide energy efficiency financing program involving more than one bank will require setting up a nonbank financial institution to develop the market for local banks, facility owners, regulators, government officials and other major stakeholders. It will fill market gaps and not compete with or displace private sector services.

The nonbank financial institution may be organized as a nongovernmental organization or a public-private partnership with commercial-like capabilities and operations that would provide the following:

- development and funding of demonstration projects;
- due diligence and development assistance to energy efficiency projects developed by other stakeholders, on a cost-recovery basis, and
- energy savings insurance coverage that guarantees savings to banks and facility owners based on what the Inter-American Development Bank is doing in Latin America .

It will be staffed with experienced and well-trained energy efficiency project sales, technical, and finance professionals recruited from international and local markets at competitive rates. The concentration of sales, technical, and financial expertise allows for the scaling up to a robust portfolio of projects that can be bundled and subsequently either sold to institutional investors and/or re-financed with green bonds in the public market. This creates headroom for the institution to expand its market presence.

Funding may be in the form of technical assistance from development banks and project equity from private investors, national commercial banks, and possibly an insurance company.

Resources

ADB. 2011. *Report and Recommendation of the President to the Board of*

Directors: Nonsovereign Loan to Indonesia Eximbank. Manila.

EBTKE (Indonesia's Energy Conservation Directorate). ESCO presentation to Focus Group Discussion in Bogor, Indonesia.

F. Zed. 2015. *Presentation of Indonesia's Director for Energy Conservation (Ministry of Energy and Mineral Resources)* at the Global Workshop to Accelerate Energy Efficiency in Copenhagen. 9-12 November.

Global Innovation Lab for Climate Finance. 2017. *Energy Savings Insurance Scales Across Latin America and Beyond*. Press release. 2 March.

International Energy Agency. 2016. *Energy Efficiency Market Report 2016*. Paris: OECD / IEA.

T. Dreessen. 2012. EEP Finance Program of Indonesia Eximbank. Presentation to the 2012 Clean Energy Forum at the Asian Development Bank in Manila. 6 June.

T. Sipahutar. 2014. *Eximbank Starts Energy Financing Program*. *Jakarta Post*. 25 January.

Support to Indonesia Eximbank: Building Capacity for Energy Efficiency



Thomas K. Dreessen

Chairman and CEO, EPS Capital Corp.

Thomas Dreessen is a global energy efficiency project finance and energy service company (ESCO) expert with over 35 years of experience in developing, financing and implementing savings-based energy efficiency projects in more than 25 countries.



Madeleine Varkay

Former ADB Principal Private Sector Development Specialist

Madeleine Varkay develops financial projects across emerging markets and transition economies. She has over 25 years' experience in Asia, Latin America, and North Africa. In her capacity as a member of the APEC finance sub-working groups, she works with regulators and institutional investors on new financial products.

Last updated: June 2017