

Developing and Financing Energy Efficiency Projects and Ventures in Emerging Markets



Prepared by the
International Institute for Energy Conservation

In cooperation with the
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Developing and Financing Energy Efficiency Projects and Ventures in Emerging Markets
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IIEC is a non-profit, non-governmental organization founded in 1984 to promote the adoption of energy-efficient technologies and practices in developing countries. IIEC maintains offices in Washington DC, London, Bangkok, Manila, Beijing, Mumbai and Johannesburg.

The Export Council for Energy Efficiency (ECEE) was formed in 1994 to promote the global use of energy efficiency products and services, in partnership with US companies and state officials, by increasing the awareness of their economic and environmental benefits. ECEE is a non-profit consortium of five of the nation's leading advocates of energy efficiency: the Alliance to Save Energy; the International Institute for Energy Conservation, the National Association of Energy Service Companies, the National Association of State Energy Officials, and the Solar Energy Research and Education Foundation.

The Committee on Energy Efficiency Commerce and Trade is a federal interagency committee established in 1993 to coordinate the US Government's activities related to energy efficiency exports. COEECT's member agencies are the Departments of Energy, Commerce, Defense, Interior, State and Treasury, the Agency for International Development, the Environmental Protection Agency, the US Export-Import Bank, the General Services Administration, Office of the US Trade Representative, the Overseas Private Investment Corporation, Small Business Administration, Trade and Development Agency, and the US Information Agency.

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Preface

In 1993, IIEC published *Seizing the Moment: Global Opportunities for the US Energy Efficiency Industry* as an invitation to the energy efficiency industry to realize its international market potential and the value of energy efficiency as an alternative energy resource. The report was also an explicit call for government and development agencies to recognize the critical economic and environmental role the energy efficiency industry could play in developing countries. In the years since the release of *Seizing the Moment*, energy efficiency has assumed a higher level of priority in the policies and funding practices of key agencies of the US Government, the European Union, international aid organizations, and multilateral institutions including the World Bank, the International Finance Corporation (IFC), and the regional development banks.

While progress has been made, we have only scratched the surface of the potential for existing, readily available high-efficiency technologies to help meet the energy needs of developing countries at reasonable cost. The 1990s have seen unprecedented investment in new power supplies and industrial expansion in developing countries at the same time as the international community struggles to come to terms with the threat of global climate change. The dilemma lies in limiting emissions of carbon dioxide, methane and other greenhouse gases without sacrificing economic growth. Improving energy efficiency is one of the best ways to act against global warming because it provides net economic benefits, while reducing pollution.

International financial and development institutions are coming to accept energy efficiency as a critical factor for sustainable development. The Global Environment Facility (GEF), jointly administered by the World Bank and the United Nations Development and Environment Programs, has made available millions of dollars to support energy efficiency in developing countries. The European Bank for Reconstruction and Development (EBRD) has established an Energy Efficiency Unit to finance energy-saving retrofits in Central and Eastern Europe. The IFC has capitalized the Renewable Energy and Energy Efficiency Fund to finance private sector sustainable energy projects throughout the developing world. Even large commercial banks are beginning to make financing available for certain energy efficiency investments. IIEC estimates that development and environment-related financial sources currently make available at least US\$500 million per year to finance energy efficiency projects in emerging markets. These funds hold the potential to leverage billions of dollars in private investment.

The problem is no longer strictly a lack of money or attention. The challenge now is to create a pipeline of “bankable” energy efficiency projects to exploit these new sources of project finance. Each specialized funding source has been established for the purpose of financing energy efficiency projects; to succeed, they must find good projects. If good projects are not forthcoming, the sources will cease to exist. The energy efficiency industry therefore faces a critical opportunity to develop high-quality projects to tap the available sources of financing. This introductory guide is designed to help energy efficiency companies identify and assess opportunities in emerging markets, develop bankable projects and ventures, and improve their chances of attracting financing for projects that save energy, money and pollution.

Definitions

This document is designed for the **energy efficiency industry**, which comprises a wide variety of different types and sizes of companies. The industry includes companies that manufacture, distribute or market the following products and services related to energy efficiency:

High-Efficiency Products

- Motors, Pumps, Drives, Compressors
- Insulation and Building Materials
- Heating, Ventilation, Air Conditioning
- Lighting Equipment
- Office Equipment
- Cogeneration/Combined Heat and Power
- District Heating Systems
- Windows
- Household Appliances
- Sensors and Control Systems
- Distribution Transformers
- Control and Metering Equipment
- Industrial Process Equipment
- High-Efficiency Transport Technologies

Energy Efficiency Services

- Demand-Side Management Consulting
- Building and System Design Software
- Energy Performance Contracting
- Process Improvement Engineering

An **energy efficiency project** is an initiative undertaken to improve the efficiency of energy use in a commercial, industrial, institutional or residential facility. The incremental costs of high-efficiency equipment and related engineering services are recovered from savings on the energy bill. Examples of energy efficiency projects include replacing standard equipment with high-efficiency equipment, applying energy-efficient design principles in a new facility or renovation, and improving operations and maintenance to better manage and track energy use.

In an **ESCO project**, an energy services company (ESCO) pays for the costs of the energy efficiency project and is repaid from the energy savings. The total amount paid to the ESCO is based on the performance of the project and represents a percentage of the actual energy cost savings generated by the project. This type of project is also known as an energy performance contract (EPC). An ESCO can provide a package of energy efficiency services to the customer, including project finance, engineering, project management, equipment maintenance, monitoring and guaranteed energy savings. ESCO projects can be structured in a variety of ways. Two common variations are *vendor financing*, in which the equipment vendor provides the capital for the project, and *equipment leasing*, in which a third party maintains ownership of the equipment but provides capital for the project and is paid through a leasing contract.

An **energy efficiency venture** is a business that produces, markets, distributes and/or sells products or services that improve energy efficiency. This guide focuses on energy efficiency companies that wish to manufacture, license or distribute an energy-efficient product or offer engineering or energy consulting services in emerging markets.

Introduction

One of the predominant challenges of the next century will be to enable more of the world's population to attain a higher standard of living while avoiding disastrous natural resource depletion and other environmental damage. Energy is at the nexus of this challenge. All the economic development the world's countries have achieved so far still leaves some two billion people living on less than the equivalent of US\$2 per day.¹

A difficult path to economic growth still lies ahead for most countries, growth that depends on industry, transport and commerce. The expansion of energy supplies and electric capacity needed to run these industries carries high monetary and environmental costs. Energy efficiency is one of the keys to meeting this challenge. Energy saved by making equipment and systems more efficient represents an alternative energy resource that is often less costly than new energy supply, infrastructure and new power plants.

Today, a variety of factors signal the need and the market opportunity for energy efficiency improvement in developing and transitional countries. While significant barriers to market entry remain, more financial and institutional resources are available to address these barriers and uncover profitable energy efficiency markets and projects.

EMERGING MARKET TRENDS

Market conditions and opportunities vary widely across countries, but several trends currently are evident in many of the largest developing economies, which tend to increase the demand for energy efficiency:

- **Subsidy Removal.** Many developing countries have in recent years begun to decrease or remove energy subsidies. This makes the true cost of energy more apparent to end users and increases the incentives for efficiency.
- **Privatization.** Many countries are privatizing formerly state-owned energy utilities and major industries. This typically increases pressure on companies to improve efficiency in all aspects of operation, including energy use.
- **International Competition.** Increased global trade and competition forces companies to minimize input costs. As wages and the costs of local inputs rise with economic development, energy costs become relatively more important, providing further incentive for efficiency.
- **Constrained Power Supply.** The demand for electricity is growing faster than the expansion of electricity supply, creating incentives and demand for energy-efficient equipment and processes. In fact, many developing countries experience regular electricity shortfalls that threaten industrial expansion and economic growth.

¹ World Bank. 1997.

- **Environmental Concerns.** Developing countries are under increasing pressure to clean up local pollution from industry and the power sector, and to limit growth in emissions of greenhouse gases that contribute to climate change.

MARKET BARRIERS

Even with compelling incentives, the developing country markets for energy efficiency remain largely untapped. Persistent barriers inhibit many cost-effective energy efficiency projects in emerging markets. While each country and market is different, several barriers are common:

- Energy efficiency projects compete for **scarce capital** with more traditional investments such as power plants and industrial expansion.
- Energy efficiency projects are perceived to be **more risky** than supply side projects because they are often non-asset based investments, i.e., collateral is difficult to obtain.
- Many energy efficiency projects and ventures are **too small** to attract the attention of large multilateral financial institutions, a key investor in the energy sector in these countries.
- The **legal and regulatory frameworks** in many developing and transitional countries are not compatible with energy efficiency investments, particularly performance contracting.
- Few in-country financial institutions have **experience financing energy efficiency** projects or ventures.

ENCOURAGING SIGNS

In spite of these general barriers, energy efficiency is making in-roads into some specific markets and sub-sectors. Limited power supply and the price of energy relative to household income often dictate the use of higher-efficiency equipment wherever possible in developing and transitional countries. If efficient equipment is available and the savings potential is communicated effectively, emerging market consumers will buy. The global market for energy efficiency has been conservatively estimated at US\$80 billion per year.²

Opportunity also emerges because market penetration of energy-using products in general remains low. For virtually every type of energy-using equipment, from light bulbs to industrial motors to air conditioners, developing countries are still at the beginning of the market saturation curve. This represents an opportunity for energy efficiency companies to enter these markets offering higher value-added, energy-efficient technologies. Just as developing country consumers have jumped directly to cellular phones in the absence of more traditional telecommunications infrastructure, unique conditions in developing markets sometimes create demand for high-efficiency equipment earlier in the economic growth cycle than experience in developed countries would imply.

²Hagler Bailly, Strategies for Financing Energy Efficiency, US Agency for International Development, Washington, DC , 1996.

Facing rapid growth in energy demand and limited resources to supply ever more energy, governments of some of the fastest-growing developing countries have begun to take energy efficiency seriously. For example:

- **China** is pursuing energy conservation aggressively. While China's energy use continues to grow rapidly, the government's commitment to energy efficiency improvement has reaped impressive results. Without this commitment, China's energy consumption in 1995 would have been twice as high.³ Instead, the economy experienced a dramatic decrease in energy intensity (amount of energy consumed to produce each unit of economic growth) while maintaining close to ten percent annual growth in gross domestic product.
- **South Africa's** national utility, Eskom, is planning to achieve a peak demand reduction of some 2,500 MW from end-use energy efficiency improvements in the commercial, industrial and residential sectors by 2015.
- **Thailand** projects peak demand reduction of more than 700 MW during the first five years of the national demand-side management program administered by the Electricity Generating Authority of Thailand.
- **The Philippines** Energy Regulatory Board directed all utilities to prepare and submit DSM plans by the end of 1997, identifying motors, lighting and air-conditioning as high priority areas for efficiency improvement.
- **Brazil's** government and utilities sponsor a range of effective energy efficiency programs targeted to reduce electricity consumption for lighting, motors, air conditioning and industrial processes.
- **Mexico** is promoting energy efficiency in the commercial, industrial and residential sectors through the National Commission for Energy Savings (CONAE) and the Fund for Electricity Efficiency (FIDE), run by the Federal Electricity Commission (CFE).
- **India** has established demand-side management programs in the states of Orissa and Maharashtra, and the city of Ahmedabad.
- **Central and Eastern European** countries are in the process of overhauling their old, polluting industries, district heating systems and building stock following the end of central planning.

MORE FINANCING AVAILABLE FOR ENERGY EFFICIENCY

IIEC estimates that at least US\$500 million in financing is available per year specifically for energy efficiency projects in developing countries. Sources include specialized public and multilateral funds in the form of development grants, loans and equity investments. These specialized funds are expected to leverage much larger investments from private commercial banks and other private sector investors.

³ Levine, Mark D. and Jonathan E. Sinton. "Energy Conservation Programs in China." Proceedings of the 31st Intersociety Energy Conversion Engineering Conference. Washington DC. August 1996.

SEIZING THE OPPORTUNITY

Now that more financial and institutional resources are available to support energy efficiency in emerging markets, the international energy efficiency industry is at a critical juncture. By developing sound energy efficiency projects that channel these resources into profitable investments, the energy efficiency industry stands to benefit from sustained financing levels in the future. Alternatively, the absence of high-quality energy efficiency projects will indicate to financial institutions that their money is better spent elsewhere. Companies that seize the opportunity to access the new development funding and project finance sources will be the architects of key emerging markets for energy efficiency.

Success in emerging markets means overcoming significant challenges. It requires careful planning, serious investment of time and resources, and simultaneously, aggressiveness and openness to other ways of doing business. For some companies, the costs may be too great. But the emerging markets also offer growth potential that is unimaginable in the technology-saturated developed economies. Companies that approach these markets in a realistic, savvy and persistent manner often find that their efforts are more than well rewarded.

This guide is designed to help energy efficiency companies to identify and assess promising market opportunities, find the local partners that are critical for success, package projects to make them attractive to lenders and investors, and find sources of financing for energy efficiency projects and ventures in emerging markets.

Identifying and Assessing Market Opportunities

Myriad sources of information on potential international markets are available to energy efficiency companies. Most companies learn of new market opportunities through existing customers, industry and trade associations, and professional and personal affiliations. US and foreign government agencies and energy efficiency organizations are also good sources, particularly for background information on economic and energy sector trends, and new policies affecting energy efficiency in various countries.

Because of the relatively greater risks associated with emerging markets, it is essential to perform a careful analysis to determine the extent of the market opportunity and the best approach to entering the market. This requires time and investment, but will pay off in a better understanding of the market and fewer and less costly mistakes later on.

Example

Identifying Market Opportunity: Fedders Joint Venture in China

Fedders is the largest manufacturer of room air conditioners in the United States. Recognizing the limited growth potential of the saturated US market, Fedders began in 1993 to research international markets, focusing on Asia. The company initially considered China, India and Indonesia, the three most populous countries in the region. By setting up limited production and a small headquarters in Asia, Fedders began to learn first-hand about the various markets. They were ultimately convinced that China held the greatest long-term promise, noting that over four million a/c units were sold in China in 1994, up from 500,000 in 1990, and market penetration in even the major cities was estimated at only about 12 percent. Fedders hired Mandarin-speaking staff and began searching for a Chinese partner. By mid-1995, Fedders had successfully established a joint venture manufacturing business in China. The new company, called Fedders Xinle, supplies the skyrocketing Chinese market for keeping cool. Fedders also found that Chinese consumers demand a more energy-efficient appliance than home-owners in the US, along with multiple features including remote control. Fedders successfully adapted its product to meet the demands of the Chinese marketplace, in anticipation of years of growth.

Source: "Keeping Cool in China." *The Economist*. April 6, 1996. Pages 73-74.

Ideally, three basic elements will be present in emerging markets selected as potential sites for energy efficiency projects or ventures:⁴

1. **A favorable business climate.** A country with low inflation and low interest rates offers the best environment for initiating a project or venture. However, while the business climate in many developing countries may not be ideal, it may still be possible to develop and finance economically viable projects or ventures if other conditions are right.
2. **Good project or venture economics.** The cost-effectiveness of the product or service to the customer is a key determinant of the likelihood of success. Simple payback is calculated by dividing Capital Costs by Annual Savings or Revenues (to the customer). In general, shorter paybacks have a greater likelihood of success. Private project financing in developing nations

⁴Business Focus Series, *Strategies for Financing Energy Efficiency*, US Agency for International Development, Washington, DC, July 1995.

is generally available for projects and ventures having a simple payback period of less than two years, and one year in countries with high interest rates and high inflation⁵.

3. **Favorable policy and regulatory environment.** Government and utility programs can spur local markets for energy efficiency products and services. Many governments are adopting policies that encourage or require increased energy efficiency because it can reduce environmental damage, alleviate power shortages, and increase global competitiveness and productivity. Political will and high-level commitment to energy efficiency is often critical to removal of market barriers such as high tariffs on imported efficient technologies, or subsidy structures that make investment in energy efficiency less attractive.

OVERALL BUSINESS CLIMATE

The business climate of a country determines whether projects within that country can attract financing at reasonable interest rates. The following market characteristics should be examined to assess the overall business climate of potential markets:

- The economic growth rate, in terms of gross domestic product. This can be sector specific. For example, in mid-1997 the industrial sector of Mexico was growing at over seven percent compared to the previous year while the rest of the economy was growing at only three percent.
- Overall market size for specific energy efficiency products and services.
- Political stability.
- Government policies toward foreign investment.
- Inflation, interest and exchange rates.
- Trade volumes.
- Inward investment.
- Taxes, tariffs, red-tape and other disincentives.

ENERGY MARKET CONDITIONS

Energy market conditions have a significant impact on the viability of energy efficiency ventures. Fuel availability and prices are critical factors affecting the profitability of energy efficiency projects. The following information should be obtained for any country under consideration:

- Energy prices, their trend and stability, including projected energy supply and demand. For example, in most Central and Eastern European countries electricity prices are rising as subsidies drop.

⁵ Hagler Bailly Consulting, Inc. "Strategies for Financing Energy Efficiency," Draft document, June 1996, Chapter 2, page 17.

- Energy policies, legislation and regulations such as energy efficiency standards, labeling practices and building codes. Thailand, the Philippines and South Korea all have energy labeling programs for certain appliances.
- The existence of utility restructuring activities and demand-side management programs. For example, the DSM program of the Electricity Generating Authority of Thailand (EGAT) offers incentives for industries to purchase energy-efficient motors.
- Specific energy efficiency initiatives such as tax incentives. The government of India allows companies to depreciate energy efficiency and renewable energy technologies by 100 percent in the first year.
- Environmental regulations, such as limits on emissions of energy-related air pollutants including nitrous oxides, methane, sulfur dioxide and carbon dioxide.

AVAILABILITY OF FINANCING

The sources, availability and terms of financing should be examined. This information provides a good indication of the perceived risk of each country. Specific factors to consider include:

- The presence of special funds or dedicated lines of credit for energy efficiency, such as the Energy Conservation Fund in Thailand and the Hungary Energy Efficiency Co-Financing Program run by the International Finance Corporation.
- The existence of venture capital funds for the target country. Many regional venture capital funds such as the Emerging Eastern European Fund loan specifically to countries within the region that are perceived to have the lowest risk.
- In-country financing terms and rates.
- The ability of national banks to provide project finance loans.

MARKETS FOR SPECIFIC ENERGY EFFICIENCY PRODUCTS

The general market information listed above is relatively easy to obtain. Market data for specific energy efficiency technologies, such as high-efficiency motors, industrial equipment or energy performance contracting, is more difficult to get. Import and local production statistics may be incomplete, costly or impossible to obtain. The best sources of necessary data may be private manufacturers, for whom it is proprietary information. For information on specific product markets, in-country contacts and partners will be critical. The organizations listed below can help energy efficiency companies begin to track down this type of market intelligence. If the basic economic, energy and financial conditions appear to be favorable, the next step is to identify potential partners of several different types, as described in the next section.

RESOURCE ORGANIZATIONS FOR MARKET INFORMATION

The following organizations are available to help energy efficiency companies identify and assess emerging markets, as well as assisting with the identification of potential partners, customers and financing sources.

Organization	Contacts
<p>The International Institute for Energy Conservation (IIEC) assists energy efficiency companies to identify and develop market opportunities in developing and transitional economies. IIEC provides information on promising markets and in-country partners, access to government and other assistance and support to identify financing.</p>	<p>Ms. Kelly Gordon Director of Programs tel (202) 842-3388 ext. 508 fax (202) 842-1565 kgordon@iiec.org http://www.iiec.org</p>
<p>The Export Council for Energy Efficiency (ECEE) is a non-profit organization established to assist the US energy efficiency industry to export their technologies globally. ECEE provides information on market conditions, government programs and in-country partner organizations.</p>	<p>Ms. Laura Gubisch Executive Director tel (202) 371-2779 fax (202) 842-1565 laura@ecee.org http://www.ecee.org</p>
<p>The Alliance to Save Energy is a coalition of business, government, environmental and consumer organizations promoting energy efficiency worldwide to benefit the economy and the environment.</p>	<p>Mr. Joe Loper Trade and Investment Program Tel: (202) 898-1302 Fax: (202) 331-9588 www.ase.org</p>
<p>The National Association of Energy Service Companies (NAESCO), a trade association representing ESCOs, provides market information and facilitates market development for ESCOs through international conferences and communications.</p>	<p>Ms. Terry Singer Director Tel: (202) 822-0950 Fax: (202) 822-0955 www.naesco.org</p>
<p>The National Association of State Energy Officials (NASEO) represents 46 state energy offices in the US. NASEO coordinates international partnerships between individual state energy offices and foreign government counterparts for the purposes of technology transfer and trade promotion.</p>	<p>Mr. William Walker Tel: (703) 299-8800 Fax: (703) 299-6208 www.naseo.org</p>
<p>The National Association of State Development Agencies (NASDA) represents the state government agencies in the US which promote international trade. NASDA administers several programs which provide grants supporting international market development and technology demonstrations for sustainable energy technologies.</p>	<p>Ms. Julie Pike Tel:(202) 898-1302 Fax:(202) 898-1312 www.nasda.com</p>
<p>The U.S. Commercial Service has a list of programs in host countries to help companies find in-country partners. The Department of Commerce also has an Eastern Europe Business Information Center (EEBIC) that operates the Eastern Europe Looks for Partners program.</p>	<p>Fax hotline (202) 482-5745</p>

Finding Local Partners

Successful market development hinges on good relationships. Many different types of partnerships and relationships are necessary to create a successful business operation, particularly when entering a new overseas market. Customers, business partners, financiers and government contacts are all important, and relationships with one type of organization will likely lead to others. In smaller markets, local businesspeople are typically involved in several different businesses and professional organizations, creating broad-based networks. In entering a new market, it is critical to get to know a range of different potential partners and to develop relationships grounded in mutual trust and respect.

For example, host country government agencies are interested in promoting energy efficiency to reduce power shortages and increase economic growth. Trade and industry associations can be an excellent source of information and contact with potential partners and customers. Utilities that are implementing demand-side management programs can be sources of financing for customers to purchase your product or service. These organizations can offer useful information and contacts, assistance in the form of pre-investment grants, and in-country logistical support. Partnerships with several of these organizations can help overcome many of the hurdles to entering new markets.

Example

Developing Local Partnerships: IIEC's Thai Partners Project

Contracted by the US-Thai Development Partnership to help develop the market for energy efficiency products and services in Thailand, IIEC initiated a project to match US and Thai companies interested in forming business partnerships. IIEC first assessed the market for energy efficient equipment and services in Thailand and distributed the market information to US companies to generate interest and confidence in the Thai market. Second, IIEC surveyed Thai companies and gathered specific information on those expressing interest in partnerships with US firms. Third, IIEC facilitated introductions between US and Thai companies with compatible business capabilities and objectives. Finally, IIEC assisted both US and Thai companies by initiating dialogue and arranging meetings to discuss potential areas for partnership. As a result of this project, eleven partnerships between Thai and US companies have been established to date.

Source: IIEC.

BUSINESS PARTNERS

An in-country business partner is often essential to enter a given market. Business partnerships can help overcome some barriers to market entry such as high import tariffs and foreign ownership laws. In addition, an in-country partner can provide access to contracts reserved for local companies, such as government tenders. Several different types of business partnerships are possible. For example:⁶

⁶ Dun and Bradstreet. "How to Plan for Global Growth." June 11, 1997.

- **Indirect export** involves using a local export cooperative or export management company to sell your product. This type of company is typically focused on one particular country or region, and can therefore offer significant local expertise and contacts. Indirect export is the least expensive way to enter a foreign market, usually operating on a commission basis.
- **Direct export** involves creating dedicated export sales positions within your business or employing traveling export sales representatives. Another alternative is to hire local distributors or agents to provide local, direct representation.
- **Licensing** means establishing an agreement with a "licensee" who pays fees or royalties to your business. The licensee purchases the right to market and produce your product in foreign markets, including access to trademarks, patents and manufacturing processes. Licensees can be limited to a particular region or country if desired. Licensing is a relatively low-cost way to expand into international markets.
- **Joint ventures** involve partnership with local investors, local governments or even local competitors to gain market entry. In some regions or countries, the laws prevent full or partial foreign ownership. In other places, foreign partnership is essential for cultural and ultimately business success.

Example

Developing Markets Through Local Distribution: Wattstopper

Wattstopper, based in Texas, manufactures occupancy sensors and light controls. Interested in expanding their presence internationally, the company began to pursue business in new countries. Their strategy was to establish distributors in different countries to introduce Wattstopper products into the local market. Wattstopper looks for established companies in the engineering and architecture industries who are capable of providing local technical assistance for Wattstopper products. Several sources have proved useful in identifying potential partners.

For example, Wattstopper worked with IIEC to identify a local distributor in Thailand. IIEC introduced them to Sure Energy, a Thai engineering company. Wattstopper established a distribution relationship Sure Energy and is successfully selling sensors and controls in Thailand. Wattstopper also uses several publications of the US Department of Commerce, including *Market Insights* and *Country Commercial Guides* available through the National Trade Databank. Wattstopper increased its sales 400 percent over three years, and currently sells its products in more than 15 countries.

Source: Wattstopper. October 1997.

Finally, small and medium-sized businesses may be able to enter emerging markets more easily by seeking contracts with large corporations from developed nations that have established in-country operations. These large corporations typically have good access to credit and lower risk. Small companies may face far fewer hurdles by doing business with large corporations rather than partnering directly with local companies.

FINANCIAL PARTNERS

Financial partners are often critical to any new venture and can range from long-term equity investors to venture capital and special purpose lenders. Partners that invest in a venture can also help identify other sources of either debt or equity financing. In addition, they can help structure the finance design to make it attractive to other investors and to appropriately allocate risks among project or venture participants. Examples of financial partners include specialized energy efficiency funds, equity investors and the energy efficiency windows of the multilateral development banks.

Local investors and financiers are best identified and accessed through your local business partners. Specialized sources of international financing for energy efficiency are addressed in the “Identifying Sources of Financing” section of this guide.

Drafting a Financing Proposal

In the course of attracting investors and partners, a financing proposal is the primary vehicle for communicating the opportunities and profitability of your project or venture. The purpose of the financing proposal is to describe the potential of the proposed venture in terms of the fundamentals of the business and its risks and returns to owners and investors. The completed financing proposal and its projected financial statements will provide a baseline against which the actual performance of the venture can be measured. A good financing proposal takes considerable time and effort to compile, but it is essential for attracting financing.

In addition to providing pro forma financial statements, profitability calculations and cash flow projections, the financing proposal should anticipate and address financier's risk and return criteria. In general, assume the potential investor knows little about the technology, customer, market, service, risk and potential growth and profit of the business for which you seek their investment. The cautious investor will assume the worst when clear answers are not provided. It is in the developer's interest to address all potential questions and to disclose the full range of risks associated with the investment. Information on how the risks will be managed is also essential. It is particularly important to anticipate and address these questions and concerns for energy efficiency projects, which typically represent a new area of investment for financiers. In general, the financing proposal is a tool for selling the commitment, experience and capability of the project developers and partners, as well as the viability of the project itself.

While private financial institutions and investors are generally looking to answer questions of risk and return in a financing proposal, specialized financial or development institutions may have additional priorities. The closer you can tailor your proposal to their requirements and format, the easier it will be for them to evaluate it. For example, the European Bank for Reconstruction and Development (EBRD) considers the following additional criteria when evaluating investments: energy savings and environmental improvements, export promotion, import substitution, job creation, productivity improvements, technology transfer and management development. Environmentally interested financing sources will take environmental and climate change benefits into consideration and sometimes provide additional resources to finance projects meeting those specific criteria. The financial organization may be willing to assist you in identifying these additional areas of concern and priority. (Further details on criteria for specific sources are provided in the next section.)

Many books and electronic resources are available which provide sample formats for financing proposals.⁷ The following section highlights the most important elements that should be addressed in any financing proposal.

⁷ For example see "Guide to Energy Efficiency Bankable Proposals" by the European Commission, Directorate General for Energy - DGXVII, THERMIE and SYNERGY Programmes, and EBRD. April 1997. This guide focuses on energy efficiency projects in Central and Eastern Europe and provides an extensive business plan form addressing the specific requirements of the EBRD.

INTRODUCTION TO COMPANY AND PARTNERS

Provide information on your company and the length of time you have been in business or have worked in this field, annual sales for at least three years, financial capitalization, number of employees and production capacity. Provide all contact information.

MANAGEMENT TEAM AND STRUCTURE

List all management team members and their areas of expertise, and describe how the management of the project or venture will be structured. Clearly state the specific areas of responsibility and provide background information on each person's experience and credentials.

TECHNOLOGY OR SERVICE

Many energy-efficient technologies are new to investors. You will have to substantiate the reliability of the technology, and clearly explain its function and benefits. Keep this section clear, to the point, and understandable to non-engineers. Provide documentation of the effectiveness and safety of your technology, such as Underwriters Laboratory certification and the results of any pilot tests or demonstration projects, particularly under developing country power conditions.

MARKET DESCRIPTION

Provide evidence of the market for your product in the target country, including the basis for projected demand and sales. Identify policies or market conditions driving demand for your technology or service, as well as factors that could adversely affect the market.

PROJECT OR VENTURE STRUCTURE

Describe clearly how the project or venture will function. A diagram may be helpful to illustrate the flow of products/services and payments among the supplier, customer, financial institutions and any intermediaries. The soundness of the project or venture depends on the soundness of each transaction involved.

RISK ASSESSMENT

Many financial institutions perceive energy efficiency projects to be riskier than other types of projects, often due to a lack of understanding of the business. Therefore, a thorough assessment and discussion of the risks is even more critical for an energy efficiency project than for others such as traditional power supply projects (e.g., coal or oil-fired power plants) where the risks are generally better understood. An energy efficiency financing proposal that includes a comprehensive risk assessment has a higher likelihood of attracting appropriate financing.

A financial advisor can help you to clarify, mitigate and allocate risks among stakeholders. This process can be undertaken during the development of the business plan or in the advanced stages of a proposal's evaluation by potential financiers. For energy efficiency projects in emerging

markets, it is important to address risks related to political stability, local currency, customer credit, technology performance, project completion, and regulations and permitting.

FINANCIAL CALCULATIONS

The financing proposal must also calculate the value and the potential performance of the proposed venture. Investors expect to see number estimates in a business proposal, including a clear description of all the assumptions behind the projected financial results. Generating savings through energy efficiency improvements looks fundamentally different from the revenue generation that financiers are used to evaluating. You will need to define a revenue stream, net income and cash flow from the energy savings produced by the product or service. Above all, you need to demonstrate how the energy savings will generate cash flow to repay your financing or generate the required return to investors.

In assessing the potential profitability of your energy efficiency initiative, you will need to calculate some basic financial information and present both historical and five-year projected results. This financial information should be based on conservative estimates of revenues, costs, production, energy savings, and other elements of a cost/ benefit analysis. The estimates should clearly show how the project will be able to generate sufficient cash flow to fund operations and repay debts. It is also useful to provide two scenarios if possible, such as best and worst case projections for the project's performance. You should make sure that the project works even in the worst case example. Financiers will expect a set of pro forma or projected income statements and balance sheets, particularly if you are seeking debt financing. A sensitivity analysis will demonstrate the range of conditions under which your venture will be profitable, and will demonstrate the extent to which the projections are dependent on uncontrollable conditions or factors.

Net Present Value (NPV) and Internal Rate of Return (IRR)

The net present value (NPV) and internal rate of return (IRR) calculations are key indicators of the potential profitability of your project or venture. NPV amortizes all of the expected expenses and revenues of the initiative over a certain period of time. It provides a single value for the project in terms of today's dollars, factoring in investment costs, future expenses and future revenues. The calculation methodology is available in all guides to developing a business plan. The IRR is the interest rate that will make the NPV of the project equal to zero. IRR is a widely used convention to assess the rate of return that the investor will receive on his or her investment. It provides a means of comparing the performance of competing investments. It does not include any valuation of risk to the investor. A separate risk assessment will still be needed.

Identifying Sources of Financing

Sources of financing for energy efficiency projects in emerging markets range from commercial banks to specialized energy efficiency funds to socially responsible investors. Financing through commercial banks remains difficult in many cases because energy efficiency investments often do not meet the standard investment criteria, such as collateral requirements. However, a growing number of specialized financing sources for energy efficiency are now available, as detailed in this section.

Each financing source has its own set of priorities and criteria used to select projects for investment. However, all of the sources described here have one thing in common: they want to invest in projects that will generate enough energy savings cash flow to repay their investment. To obtain financing, you must convince investors that your project will be able to repay its financing and earn a market rate of return.

This section describes some of the key sources currently available to finance energy efficiency projects in emerging markets. While other sources exist, the institutions and programs listed here have departments that are *actively seeking* to finance energy efficiency or otherwise environmentally-beneficial projects in emerging markets. These sources are:

Private, Independent Sources

- Energy House Consortium, which includes E&Co., Environmental Enterprises Assistance Fund (EEAF), Energy Holding Company and the International Fund for Renewable Energy and Energy Efficiency (IFREE)
- Global Environment Fund Group

Multilateral Sources

- International Finance Corporation
- World Bank
- Global Environment Facility
- European Bank for Reconstruction and Development

US Government Sources

- United States Export-Import Bank

The financing source descriptions below provide contact information on how to receive more information, how to structure projects to best match the criteria of each source, and what restrictions or special conditions may apply for each financial entity. This list is not exhaustive and specific criteria are subject to change.

ENERGY HOUSE CONSORTIUM

The Energy House Consortium is a group of organizations and investment funds involved in financing different stages of energy efficiency and renewable energy projects in emerging markets. Currently, the Consortium is comprised of three institutions, each of which provides different kinds of financing for private sector business development and implementation. The Environmental Enterprises Assistance Fund (EEAF), E&Co. and the Energy Capital Holding Company (ECHCO) are described in detail below.

Environmental Enterprises Assistance Fund (EEAF)	
BACKGROUND	EEAF is an environmental investment fund that is formed as a not-for-profit organization. It provides loans and equity capital to energy efficiency and renewable energy business initiatives and a variety of other environmental ventures in developing countries.
TERMS & CONDITIONS	Various, depending on transaction.
TYPE OF FUNDS	Debt or equity
MIN/ MAX INVESTMENT	US\$100,000 to 300,000. For projects in Central America, investments can be up to US\$750,000.
HOW TO APPLY	Send a proposal to EEAF outlining the project and a detailed feasibility study, including financial statements.
GEOGRAPHIC FOCUS	Developing countries.
EXAMPLES OF PAST PROJECTS FUNDED	<ul style="list-style-type: none"> • A US\$35,000 working capital loan was provided to supplier of PV systems for rural homes in the Dominican Republic. • A US\$150,000 working capital loan was provided to an assembler and seller of solar home systems in Indonesia. • US\$170,000 provided to a small hydro (2.7 MW) developer in Costa Rica.
SPECIAL CONSIDERATIONS	<ul style="list-style-type: none"> • Does not invest in publicly traded companies. • Prefers to invest in later stage of projects, but will do some early stage or start up investing.
CONTACT	Ms. Helen Chaikowsky Senior Vice President 1901 North Moore Street, #1004 Arlington, VA 22209 tel: (703) 522-5928 fax: (703) 522-6450 www.eeaf.org

E & Co.	
BACKGROUND	E&Co is a non-profit energy investment company that offers four basic services to energy entrepreneurs: small loans; technical assistance by funding professional engineering, financial and business planning services; intermediary services by assisting to identify financial resources (grants, loans, equity); and direct investment in high risk energy enterprises and projects.
TERMS & CONDITIONS	Investment term is usually for less than 5 years.
TYPE OF FUNDS	Debt or equity
MIN/ MAX INVESTMENT	US\$50,000- US\$200,000
HOW TO APPLY	Contact E&Co for proposal guidelines.
GEOGRAPHIC FOCUS	Developing countries
EXAMPLES OF PAST PROJECTS FUNDED	<ul style="list-style-type: none"> • US\$125,000 was provided to a U.S. company and Mexican partner company to demonstrate the economic attractiveness of biphasic turbine technology in a geothermal field in Northern Mexico. • Through 2 separate investments, E& Co provided US\$300,00 to a US company to support a demonstration of, and later expansion of, a leasing strategy to provide photovoltaic energy services to residences in Dominican Republic. • US\$50,000 in equity investment was provided to a solar energy services company that markets small-scale solar PV systems in southern India for working capital it needed to expand its operations and personnel.
SPECIAL CONSIDERATIONS	<ul style="list-style-type: none"> • Projects must offer social and environmental benefits while being competitive with conventional commercial alternatives; • Projects must have the potential to be economically self-sufficient and earn a market rate of return of 10 percent or more to attract private investment in the next stages of development; • E&Co. will invest in efficiency or renewable projects in developing countries, but will not invest in U.S. companies.
CONTACT	Mr. Greg Meyer E& Co/ Energy House 383 Franklin Street Bloomfield, NJ 07003 Tel: 973-680-9100 Fax: 973-680-8066 E-mail: eco@energyhouse.com www.energyhouse.com

Energy Capital Holding Company	
BACKGROUND	Energy Capital Holding Company acts as an integrated energy merchant bank and development services company. It focuses on medium size (10MW to 100MW) environmentally sound energy projects in Latin America and the Caribbean.
TERMS & CONDITIONS	Standardized terms for lending.
TYPE OF FUNDS	Debt and equity
MIN/ MAX INVESTMENT	Minimum investment is approximately US\$20 million.
HOW TO APPLY	Contact Energy Capital Holding Company
GEOGRAPHIC FOCUS	Latin America and the Caribbean
SPECIAL CONSIDERATIONS	ECHCO will provide a wide range of services from feasibility, design and construction to management and insurance.
CONTACT	Dr. Ronald Muller 1655 Fort Meyer Drive Arlington, VA 22209 tel: (703) 527-0990 fax: (703) 527-0996

The Global Environment Fund Group	
BACKGROUND	A private, US-based investment group whose investment strategy emphasizes private equity investments in environmental infrastructure and services in emerging markets. Investment funds include the <i>Global Environment Fund, L.P.</i> , a diversified global fund which invests in publicly traded securities of companies; the <i>Global Environment Emerging Markets Fund, L.P.</i> , which makes equity investments in environment-oriented companies, projects and privatizations in emerging markets, including clean energy; and the <i>Global Environment Finance Partners, L.P.</i> , which invests in small, private, growth-oriented companies.
TYPE OF FUNDS	Debt or equity
MIN/ MAX INVESTMENT	US\$500,000 – US\$18 million
HOW TO APPLY	Submit a completed financing proposal with relevant financial data.
GEOGRAPHIC FOCUS	Worldwide
SPECIAL CONSIDERATIONS	Special considerations for each fund; contact Global Environment Fund Group
CONTACT	Global Environment Fund 1225 Eye Street NW Suite 900 Washington, D.C. 20005 tel: (202) 789-4500 fax: (202) 789-4508 www.geffunds.com

INTERNATIONAL FINANCE CORPORATION (IFC)

IFC is the largest multilateral source of financing for private enterprises in developing countries. Generally, the IFC finances projects larger than US\$10 million, and will fund up to 25 percent of total project cost. However, the IFC is currently seeking to increase its investments in energy efficiency projects and ventures, and has a senior management mandate to finance creditworthy, commercial energy efficiency projects of US\$5 million or greater. The IFC is utilizing grant funding from the Global Environment Facility to leverage energy efficiency project financing.

The Global Environment Facility (GEF)

The GEF was founded in 1992 to provide funding for the incremental costs of projects that benefit the global environment. Three implementing agencies receive and distribute GEF funding: the United Nations Development Program, the United Nations Environment Program and the World Bank Group. GEF allocates three types of funding to the implementing agencies: the Small Grants Program, which is administered by the UNDP and provides grants of up to US\$50,000 directly to non-governmental organizations; medium-size grants of up to US\$1.0 million; and large scale grants of up to US\$30 million. Medium and large grants are administered by the World Bank and IFC.

Individual companies cannot access grant funding directly from the GEF. However, GEF funding leverages the loan and credit facilities of the three IFC programs described below, as well as covering the “soft” costs of advertising, marketing, public education, short-term consumer subsidies and guarantees that play a critical role in developing markets for energy efficiency. Following are descriptions of three new IFC programs which utilize GEF funding.

Small and Medium-Scale Enterprise Program	
BACKGROUND	In 1996, the IFC and the GEF established a program to provide concessional loans to financial intermediaries that in turn finance small and medium enterprises. The financial intermediaries include EEAF, E&CO, Winrock International, Caresbac, and the World Wildlife Fund. These organizations on-lend to private companies.
TERMS & CONDITIONS	Lending rate to companies is 10-12%
TYPE OF FUNDS	Debt and equity
MIN/ MAX INVESTMENT	Each project must be less than US\$250,000.
HOW TO APPLY	Contact the financial intermediaries listed previously, such as EEAF.
GEOGRAPHIC FOCUS	All developing member countries of the World Bank Group.
PROJECTS APPROVED TO DATE	<ul style="list-style-type: none"> ▪ Two off-grid PV projects (solar home systems) ▪ CFL replacement project
SPECIAL CONSIDERATIONS	IFC seeks applications from financial intermediaries with a pipeline of SME projects under US \$250,000 each.
CONTACT	www.ifc.org

IFC/GEF Hungary Energy Efficiency Co-Financing Program	
BACKGROUND	The IFC established a US\$5 million partial guarantee facility funded by the GEF to support energy efficiency projects in Hungary through local financing and leasing institutions. The program provides partial first loss guarantees on loans to energy efficiency projects and essentially provides collateral for projects that might not otherwise be eligible for financing.
TERMS & CONDITIONS	A Hungarian financial institution, which also owns a leasing company, disburses the funds under an agreement with the IFC. The guarantee covers up to 50% of the lease principal on a first-loss basis. Eligible energy efficiency projects will be reviewed (in terms of financial credit and EE features) by the Hungarian bank/leasing company and recommended for inclusion in the Guarantee Agreement and its terms and conditions.
TYPE OF FUNDS	Loan guarantees
MIN/ MAX INVESTMENT	Maximum guarantee liability is currently US\$500,000.
HOW TO APPLY	Companies interested in financing for EE projects in Hungary should contact the IFC for the names of participating financial institutions.
GEOGRAPHIC FOCUS	Hungary
EXAMPLES OF PAST PROJECTS FUNDED	Recent projects under consideration include two performance contracts involving lease components and three industrial sector energy efficiency projects.
SPECIAL CONSIDERATIONS	Financing institutions are required to comply with IFC environmental requirements and conduct review of projects in the program. At the same time, borrowers must also provide evidence of their project's compliance with applicable Hungarian environmental laws.
CONTACT	HEECP Project Manager International Finance Corporation Budapest, Hungary tel (36-1) 302-9593 fax (36-1) 302-9597

IFC Renewable Energy and Energy Efficiency Fund (REEF)	
BACKGROUND	The IFC is capitalizing the REEF, a US\$200 million global investment fund to finance renewable energy and energy efficiency projects and ventures in developing countries.
TERMS & CONDITIONS	For projects < 50 MW
TYPE OF FUNDS	Debt and equity
MIN/ MAX INVESTMENT	US\$1 to US\$5 million.
HOW TO APPLY	Contact IFC.
GEOGRAPHIC FOCUS	All developing member countries of the World Bank Group.
EXAMPLES OF PAST PROJECTS FUNDED	N/A
CONTACT	International Finance Corporation 2121 Pennsylvania Ave., NW Washington, D.C. 20433 www.ifc.org

The programs listed above are not the only sources of financing from the IFC. However, these programs have been established specifically to help overcome the financing barriers faced by many energy efficiency projects.

THE EUROPEAN BANK FOR RECONSTRUCTION AND DEVELOPMENT (EBRD)

The EBRD was created in 1990 to rebuild the transitional economies of Central and Eastern Europe and the former Soviet Union. Although it is a multilateral institution, it is unique in that half of its investments are in the private sector. Generally, EBRD will provide up to one-third of the financing for a project, and requires a 30-40 percent equity commitment from project sponsors. EBRD's minimum loan size is US\$10 million for projects with a minimum project size of US\$20 million. In 1994, the EBRD established an Energy Efficiency Unit (EEU) to identify and develop energy efficiency projects in Central and Eastern Europe and the former Soviet Union.

EBRD Energy Efficiency Unit	
BACKGROUND	The EEU seeks to promote energy efficiency products and services and to increase the availability of financing for small and medium-size energy efficiency projects. The EBRD is establishing credit lines with commercial banks in Central and Eastern Europe for energy efficiency lending to make investments easier and to provide financing for smaller projects. In addition, the EEU has established multi-project financing facilities with two ESCOs for projects in Eastern Europe. These facilities are designed to provide financing for multiple smaller projects that can be aggregated to make them attractive for commercial banking financing.
TERMS & CONDITIONS	Market rates
TYPE OF FUNDS	Debt and equity
MIN/ MAX INVESTMENT	Minimum investment size per financing facility is around US\$10 million.
HOW TO APPLY	Contact EBRD.
GEOGRAPHIC FOCUS	Central and Eastern European countries; former Soviet Union
EXAMPLES OF PAST PROJECTS FUNDED	EBRD signed three Multi-Project Facilities (MPFs) to support ESCO development strategies. The MPFs are with the following companies: 1) Compagnie Generale de Chauffe (CGC) of France, 2) Landis & Gyr of Switzerland, and 3) Honeywell Incorporated of the US. Two sub-projects were signed with the CGC Prometheus in Hungary and CGC Termotech in the Slovak Republic.
CONTACT	Energy Efficiency Unit European Bank for Reconstruction and Development One Exchange Square London ECA 2EH, United Kingdom www.ebrd.org

UNITED STATES EXPORT-IMPORT BANK

U.S. Export-Import Bank is an independent export credit agency of the U.S. Government that helps to finance the sale of American goods and services to foreign buyers as a means to create U.S. jobs. The Export-Import Bank's financing programs provide: 1) working capital guarantees for U.S. exporters; 2) insurance coverage to protect U.S. exporter from political and commercial risks; 3) direct loans for foreign buyers of U.S. products; 4) credit guarantees to ensure repayment; and 5) selective grants. The Medium-Term Export Insurance Policy, one of the most accessed programs of the US Export-Import Bank, is described below.

Medium-Term Export Insurance Policy	
BACKGROUND	Provides medium-term credit insurance and loan guarantees to U.S. commercial banks financing the purchase of U.S. exports by foreign customers. Ex-Im Bank guarantees provide unconditional repayment protection for loans made by U.S. banks by covering 100% of principal and interest against political and commercial risk. This policy allows exporters to offer credit terms and financing for its foreign customers.
TERMS & CONDITIONS	Provides 100% commercial coverage. Medium-term program involves a 3 to 10 year term on loans. Interest rate is LIBOR plus 0.10% to 0.25%. Enhanced terms are offered through the Environmental Exports Program (see below).
TYPE OF FUNDS	Credit insurance, loan guarantees.
MIN/ MAX INVESTMENT	US\$75,000 minimum for minimum term financing (1 year).
HOW TO APPLY	Contact Ex-Im Bank.
GEOGRAPHIC FOCUS	Worldwide
EXAMPLES OF PAST PROJECTS FUNDED	<ul style="list-style-type: none"> US company used insurance to finance the purchase of a wind turbine purchased by a Mexican company.
SPECIAL CONSIDERATIONS	<p>When applying for Ex-Im financing, a company should have already determined that:</p> <ul style="list-style-type: none"> It is facing competition supported by foreign export credit agencies; and Financing from the private sector is unavailable or that the amount or terms offered is not sufficient to win the export sale.
CONTACT	International Business Development Export-Import Bank of the United States www.exim.gov

The Ex-Im Bank has recently developed an Environmental Exports Program that specifically supports the export of environmental technologies, including renewable and alternative energy equipment. In addition to the Medium Term Insurance Policy, exporters of environmental projects are eligible for the following enhanced provisions:

- Local cost coverage equal to 15% of the U.S. contract price.
- Capitalization of interest during construction.
- Maximum allowable repayment terms permissible under OECD guides and the Ex-Im Bank's CLS.

The Ex-Im Bank also offers a short-term Environmental Export Insurance Policy, which provides insurance coverage for small business environmental exporters, enabling them to offer credit terms to its foreign customers for up to 180 days. This includes a 95% commercial coverage and 100% political coverage with no deductible, a minimum annual premium of US\$500 and a "hold harmless" provision.

Developing a Financing Structure

Developing a financing structure consists of designing a credit-worthy project and selecting the types, amounts and likely sources of financing. Choosing financing is more than just allocating risks and selecting between debt (taking on a loan) and equity (selling ownership stakes). There are other mechanisms and structures as well. For example, leasing or vendor financing are viable financing options for many energy efficiency projects and ventures. Similarly, letters of credit or bank guarantees can be arranged to facilitate financing. Funders will sometimes work with you to develop an effective financing design if presented with a creditworthy project that clearly demonstrates how the financing will be repaid.

ESCO projects, manufacturing and licensing ventures, existing organizations and start-ups can all be financed with debt or equity. For a creditworthy company with significant assets and cash flow, designing a financing structure is a matter of choosing the lowest cost debt or equity options that meet the financing needs of the project. However, the use of both debt and equity entails trade-offs, and riskier ventures in new industries or in developing markets may have more restrictions on the type of financing available. A start-up company, for example, will have significantly less flexibility in selecting between debt and equity financing and will typically face a higher risk-adjusted cost of capital.

DEBT

Debt options include corporate or project loans under recourse or limited recourse structures, leasing arrangements, and full or limited guarantees. Many funders specify minimum cash flow generation projections, debt coverage, leverage and other financial ratios for projects to qualify for loans. Stronger credit support can sometimes be structured into a transaction by obtaining additional collateral, cash flow, or parent company or third party guarantees for a loan. Debt financing can include options whereby loans convert to some amount of equity ownership if the project is successful, to increase the lender's rate of return.

Recourse Debt

Financing with recourse is sometimes structured as corporate or balance sheet financing, whereby the debt holder is obligated to the primary sponsor of the project, and the loan must be reported on a company's balance sheet as a liability. In essence, the company stands behind the project or venture and the related debt, and financiers have recourse to the company's assets in the event of default. Recourse financing usually has a lower cost than project finance or limited-recourse debt because of its generally lower credit risk. In addition, warranties, guarantees and insurance can provide various forms of recourse to add to the creditworthiness of a transaction. Most energy efficiency (and other project finance type) projects require some degree of recourse to a creditworthy entity.

Limited Recourse Debt or Project Finance

Limited recourse financing is sometimes known as project finance. Under these transaction structures the project is financed largely based on its own merits, and payments are made by the project's cash flows. Financiers have recourse primarily to the project's cash flow and assets or additional collateral. Compared to recourse financing, structuring financing with limited-recourse is a time-intensive process. It involves a full clarification, mitigation, and allocation of all risks that could have a negative impact on the cash flows from the project or venture. The financing structure allocates risks among the parties in a transaction through contracts and financing agreements. Under these contracts different parties accept varying amounts of responsibility to repay the debt in the event that a project fails and the loan is not repaid. The debt issuer has different degrees of recourse to other parties to enforce the project's payment obligations if a financing contract is broken.

ESCO financing structures are sometimes funded with project finance types of limited recourse debt, although usually additional collateral and credit support is required. Most project financing in developing countries is limited-recourse financing. Private lenders, for example, will often require performance guarantees, assignment of energy savings and performance contracts from project sponsors for these kinds of projects.

Secured Debt

Secured financing refers to when additional assets are pledged to the bank or financier as loan collateral. The assets can be cash, physical equipment or property, or sometimes a bank letter of credit. In the event of a default on the promise to repay the project debt when due, the bank has the right to seize and sell these assets and utilize the proceeds to repay the loan. Collateral liquidation is an expensive and time consuming process and the financier rarely collects close to the full collateral value, even on cash, after legal and other fees. Thus, collateral is never a substitute for a well conceived project with solid cash flows. Guarantees and other types of credit support can provide other assurance or security for debt repayment but are not collateral *per se*.

Leasing

Leasing can be used to finance the sale of energy efficiency equipment and services. It is commonly used in vendor financing and ESCO projects and as part of utility programs. Lease financing can also be applied to energy efficiency manufacturing ventures. Leasing works best with simple equipment and large quantities of sales or installations. Large numbers of similar transactions facilitate a statistical approach to managing end-user credit risk. Lease financing is possible only in countries having fairly well developed capital markets and amenable laws (as a rule-of-thumb, select countries that have more than ten private leasing companies).⁸ The World

⁸ Business Focus Series, *Strategies for Financing Energy Efficiency*, US Agency for International Development, Washington, DC, July 1995.

Leasing Yearbook 1995 lists countries with the most lease financing, many of which are developing nations.⁹

Example

Lease Financing: Asia Electronics Limited

Asia Electronics Limited (AEL) of India manufactures capacitors to improve power factor and voltage profile. In a lease arrangement with the Maharashtra State Electricity Board (MSEB), AEL leased and maintained approximately 300,000 capacitors for power looms in Bhivandi, a suburb of Bombay dominated by textile companies. MSEB has experienced 7-10 percent annual growth in energy requirements over the past 20 years. At the same time, they were suffering from transmission and distribution losses of 15 percent (1992). To decrease losses and improve power going to the looms in the textile companies, MSEB sought to install capacitors on the looms, an action the end users were reluctant to take. MSEB decided to lease the capacitors from AEL, which required less initial investment than purchasing the units. AEL retained ownership of the capacitors (receiving the benefits of depreciation), installed the capacitors at the power looms, provided maintenance and offered a performance guarantee against faulty capacitors. MSEB paid AEL RS .5/ unit per month for the first three years and RS .2/ unit per month for next two years.

MSEB mandated that consumers maintain a higher power factor, which was easily done by installing an AEL capacitor. Consumers were charged RS .5 per month for 5 years, giving MSEB a profit of RS .3 per unit after the first three years of installation. Some results of installing capacitors via this arrangement included:

- Power factor increased from 0.6-0.7 to 0.9.
- Distribution losses dropped to 3-4 percent.
- End users benefited from higher quality and more reliable power for their looms, resulting in an increase in product quantity and quality.
- MSEB's monthly revenue increased from RS .30 million to RS .85 million.
- MSEB also profited from earning interest by collecting rent from consumers monthly, while paying AEL only quarterly.
- AEL's net revenue increased significantly.

Source: Hagler Bailly, "Strategies for Financing Energy Efficiency". p. 5-4,5

Guarantees

Guarantees can be provided by parent companies or third parties, and are essentially promises to pay a project's debt under certain conditions. Guarantees can be used to partially mitigate financial, performance (technological and operating) and political risk. These instruments can provide additional credit support for a basically sound transaction, thereby facilitating conventional financing at market rates. Guarantees can be made on part of a loan, debt service or to assure an investor's return on equity. Most commercial banks will issue or accept guarantees, which can be collateralized to provide additional credit support. Note, however, that guarantees are not usually considered to be collateral. The World Bank/MIGA, Ex-Im Bank and OPIC all offer various guarantee programs for political risk.

⁹ In descending order, these countries include Korea, Brazil, Indonesia, Mexico, South Africa, Colombia, China, Turkey, Taiwan, Venezuela, Chile, Malaysia, Czech Republic, Hungary, Thailand, India, Pakistan, Morocco, Bangladesh, Philippines, Peru, Slovenia, and Poland.

EQUITY

Equity financing involves the ownership of a company or project, and can take a variety of forms. Equity can come from the project sponsor, or in the form of a private placement or preferred or common stock. Equity usually provides longer term financing for a higher expected rate of return than debt. Usually a minimum of between 20 percent and 30 percent equity in a project is required to obtain debt financing, depending on the company or customer's credit-worthiness. For larger projects in developing countries, according to the World Bank, the sponsor's equity stake is usually around 30 percent. Funders providing equity may provide more stable financing but also require significant control of the initiative.

SPECIALIZED FINANCING

All types of projects and ventures are financed through the basic financing mechanisms described above. However, export financing, vendor financing and ESCO financing structures warrant some additional consideration.

Export Financing

Many types of energy efficiency equipment and services are not currently available in developing countries. US vendors and buyers can take advantage of export credits and guarantees supplied by the Export Credit Agencies of the US Government, including the US Export-Import Bank, the Overseas Private Investment Corporation (OPIC) and the US Trade and Development Agency (US TDA), to sell or purchase imported equipment.

Sources of trade finance for large, capital-intensive items include commercial bank export finance divisions and export credit agencies. For multiple sales of lower-priced items, companies should contact commercial banks with trade divisions, equipment distributors and agents. Export financing may be available at better terms than other types of debt for overseas projects due to the collateral value of the equipment being financed.

Vendor Financing

Vendor financing occurs when a financier provides a vendor with capital to enable them to offer "point of sale" financing for their equipment. Vendor financing works well with high-volume sales of small products to customers in the residential and small commercial/industrial sectors. It is similar to leasing in that vendor financing lends itself to a statistical or portfolio risk management approach to end-user credit risk. Indeed, leasing is the most common form of vendor financing.

Under a vendor finance scheme there are two types of agreements: one between the vendor and the financier; and the other between the vendor and the customer. The vendor/financier agreement defines the terms that can be offered to the customer such as rates, length of term and necessary documentation.¹⁰ A simplified and streamlined credit analysis process reduces transaction costs.

¹⁰ Business Focus Series, *Strategies for Financing Energy Efficiency*, US Agency for International Development, Washington, DC, July 1995.

The vendor/customer agreement defines the repayment terms for the loan. For energy-efficient equipment, these agreements can be structured such that the customer payments are lower than the value of the energy savings associated with the new equipment.

ESCO Financing

Awareness of ESCO financing, in which debt is repaid by energy savings, is growing in developing countries. Several international initiatives, such as US AID's Energy Management Consulting and Training program in India, have fostered interest in the ESCO model for energy efficiency project development. ESCO projects are being developed in India, Thailand, Mexico, Brazil and Central and Eastern Europe. However, it is still difficult to secure financing at terms attractive to ESCOs since issues such as project size, collateral and financing terms often arise.

If the energy end-user is sufficiently creditworthy, then guaranteed savings contracts can be used to repay financing, whereby the payments made to the ESCO are based on the measured energy savings. A customer signs a guaranteed savings contract with an ESCO and a loan contract with a financier. Under this arrangement, the ESCO finances the project installation and the customer provides recourse to the financing source (on a balance sheet basis). The customer in turn has recourse to the ESCO through performance guarantees. In some cases, the ESCO or the ESCO's owners may be required to guarantee the payments to the lenders.

If limited recourse financing to the end-user is sought, shared savings or paid-from-savings contracts are used, with limited liability for the energy end-user. A shared savings contract is between the customer and ESCO. The ESCO finances the project installation, but the payments made are a percentage of the actual savings, usually at a set price for energy. End-user creditworthiness is often an issue in developing countries, in which case the end-user cannot be relied upon to repay the financing. Financiers are developing different transaction structures to address this issue, such as accruing savings into additional collateral or arranging for guarantees or additional equity in a deal and making the savings payments directly to the financing entity without going through the end-user.

Utilities can also contract with ESCOs to deliver energy savings under their DSM programs. In this case, the ESCO undertakes projects at end-user facilities with financing from the utility. The ESCO is paid under a guaranteed savings arrangement.

Leasing can also be used to finance ESCO projects. End-users are given recourse to the ESCO through extended warranties. Lease payments are contingent on the proper functioning of the equipment. Under this arrangement, payment amounts are set when the lease is executed. This is slightly different than shared savings or other types of performance contracts in that the payments are fixed and agreed upon in advance.



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