How commercial banks can offer financial products to SMEs for investing in energy efficiency

SIMONE ANZBOECK and INEZ COUZINET

Energy consumption can account for up to 50 per cent of the total business costs for small and medium-sized enterprises (SMEs). Investments targeting energy savings provide a quick way for a small business to gain a cost advantage. Well-designed energy efficiency projects often show positive cash flows relatively quickly and allow for the projects themselves to pay back investments (and loans). Globally, there is a significant untapped potential to reduce energy costs. Demand-side market failures relate to lack of information. Supply-side market failures relate to limited access to finance for energy efficiency investments. Sustainable energy finance facilities (SEFFs) address this financing gap and provide access to technical advice for SMEs and banks. The success of SEFFs has demonstrated that commercial banks can bridge the sustainable energy financing gap by: 1) understanding the opportunity to improve their clients' cost structures using the right communication approach; 2) leveraging existing information from their own loan portfolio combined with publicly available information on the energy performance of technologies; 3) ensuring dedicated staff have project finance skills and that contracts are suitably tailored; 4) gaining access to energy expertise; and 5) having access to a list of high energy performance technologies.

Keywords: energy efficiency, sustainable energy financing, energy finance, energy efficiency financing, SME, SME finance, high energy performance equipment

THIS ARTICLE EXAMINES THE ROLE that commercial banks can play in supporting the uptake of energy efficiency investment. After introducing the important role that small and medium-sized enterprises (SMEs) play in the global reduction of energy consumption, we examine the market failures that limit investments in energy efficiency. We present lessons learned through the management of sustainable energy efficiency financing facilities (SEFFs) that assist SMEs and commercial banks in overcoming these market failures. The findings presented in the article are mainly based on studies and projects that DAI has conducted in Latin America and Eastern Europe.

Energy efficiency and SMEs

Energy consumption can account for up to 50 per cent of the total business costs for an SME (Npower, 2013). Rising energy costs can lead to higher production and

Simone Anzboeck (simone_anzboeck@dai.com) and Inez Couzinet (inez_couzinet@dai.com) work for DAI, an international development consulting firm in London. They both have experience designing and managing sustainable energy financing and SME financing projects.

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distribution costs for these businesses. As 95 per cent of enterprises across the world are SMEs – accounting for approximately 60 per cent of private sector employment (Ayyagari et al., 2011) – addressing the issue of energy consumption can improve long-term profitability and business competitiveness, while also supporting policy goals related to low-carbon growth.

In general, a business can achieve energy savings in three broad ways: 1) reductions in the use of energy services; 2) savings due to fuel and technology upgrading; and 3) savings due to energy efficiency improvements. Investments targeting energy savings provide a quick way for a small business to gain a cost advantage. Typical investment examples for SMEs in this area include, inter alia, modernized technology equipment and machinery, improved systems for water and heating, better insulation of a building's shell, lighting, and energy management systems. Well-designed energy efficiency projects often show positive cash flows relatively quickly and allow for the projects themselves to pay back investments (and loans) over a reasonable period of time, often within three to five years.

Opportunities for investing in energy efficiency improvements cover a wide variety of sectors, industries, and technologies. For illustrative purposes, Table 1 provides an overview of illustrative sectors, technologies, and estimated savings and payback period, which was presented in a market study of sustainable energy finance in Mexico (Bourns et al., 2012).

Globally, there is significant untapped potential to reduce energy costs. The International Energy Agency (IEA) estimates that simply by implementing efficiency measures the need for primary energy could be reduced by an additional 900 Mtoe (million tonnes of oil equivalent) until 2020. This would be the equivalent of 7 per cent of 2010 global energy consumption or, in financial terms, $458 bn in consumer energy expenditure (IEA, 2013a). The bulk of energy savings are estimated to occur in end-use sectors (i.e. transport, buildings, industry and agriculture), with a much smaller share achieved in the energy supply and transformation sector (IEA, 2013b). While it is difficult to estimate the total global market for investments in energy efficiency due to methodological challenges, the IEA estimated a range of $147–300 bn in 2011 (IEA, 2013a).

Policy development around the world has also recognized the considerations for competitiveness and environmental concerns, and new energy efficiency policies are being adopted, including the EU Energy Efficiency Directive. The focus of these policies is on building and equipment standards, information programmes, energy audits, energy management systems, and financial incentives, particularly for small and medium-size enterprises.

Demand-side market failures on the uptake of energy efficiency investments

Depending on the type and size of a potential energy efficiency investment, the SME might require financing in the range of €70,000 to €500,000; potential energy cost savings can be as high as 50 per cent (DAI, 2014). Many SMEs struggle to identify practical measures that can unlock their energy efficiency potential.

Table 1 Examples of opportunities for implementing energy efficient technologies and systems in Mexico (by sector)

Sector	*Consumption per sector (peta Joules)**	*Most relevant technologies*	*Estimated savings: electric power billing (%)*	*Estimated simple payback period (SPP)*
Services (e.g. hotels)	47.05	Electric substations Power factor Irrigation systems Refrigeration Air conditioning Lighting systems	5–30	24–36 months
Commerce (e.g. shopping centres)		Electric substations Irrigation systems Refrigeration Air conditioning Lighting systems	5–20	24–48 months
Industry	776.33	Electric substations Power factor Electric engines Compressed air systems Irrigation systems Cooling Air conditioning Lighting systems Electric resistances Electric power generation and cogeneration Demand control	10–50	24–60 months
Utility (e.g. public lighting)	27.80	Public lighting Irrigation systems Lighting systems Air conditioning	5–15	24–48 months

Source: Bourns et al. (2012)

Information failure is one of the main causes of under-investment by SMEs in energy efficiency products and services. They often have limited awareness of the energy performance of different technologies and equipment and a limited understanding of the costs and benefits of energy efficiency investments. Energy efficiency is only one of many attributes of a product or service (others being value for money, brand, aesthetics or product functionality). As such, it can be difficult to obtain accurate and sufficient information which can help SMEs make investment decisions (IEA, 2011).

In addition, energy controlling or energy management systems, which can help provide information on how to reduce costs, are not widely used.

In order to unlock this potential, SMEs require qualified technical information and advice – at a reasonable price or free of charge – about the financial benefits and availability of different energy efficiency technologies.

Supply-side market failures to facilitate energy efficiency investments in SMEs

While the majority of SMEs consider energy management important for their businesses, energy efficiency improvements can be costly and involve large outlays. Often a growing SME will only replace existing equipment when it requires repair and will not have the liquidity to make a large investment even though it may produce favourable returns in the long run. Well-tailored financial products can address this issue; however, SMEs have limited access to finance for energy efficiency initiatives (EUROCHAMBRES, 2010).

While the potential market is significant, commercial banks offer a limited supply of financial products for SMEs. This is due to: 1) perceptions of high risk; 2) lack of information regarding the trustworthiness of technologies, equipment, and service providers; 3) lack of access to specialized technical and engineering skills to appraise loan applications and projects; 4) restrictions relating to the collateral and bank provisions; 5) lack of experience in translating future energy savings into cash flows for project finance; and 6) limited strategic interest within financial institutions.

Over the last decade, donor-supported Sustainable Energy Efficiency Facilities (SEFFs) (see Box 1) have emerged as models to address the financing gap. Besides serving as a credit line, SEFFs are designed to help banks understand the market opportunity in energy efficiency finance and how the associated risks can be measured and managed. The European Bank for Reconstruction and Development (EBRD) has provided over €2 bn (EBRD, 2014) and the International Finance Corporation (IFC) €3.8 bn in sustainable energy financing through credit lines.

The EBRD has, for example, recently concluded operations of a ten-year Bulgaria Energy Efficiency and Renewable Energy Credit Line (BEERECL), managed by DAI. Under BEERECL more than €150 m in loans were provided to private businesses for nearly 300 projects, which involved about €230 m investment costs. The internal

Box 1: Sustainable energy finance facilities

Through sustainable energy finance facilities (SEFFs), credit lines are provided to local financial intermediaries at market rates, who then on-lend these funds to private sector clients (households, SMEs, and industrial companies). The most attractive element of a SEFF for the local bank is the availability of free technical assistance services, such as market analysis, product development advice, marketing, feasibility studies, energy savings calculations, project preparation assistance, audits, engineering support, and capacity building. These services help to reduce the risk to the local banks, making them more willing to lend and also improve the overall effectiveness of the investment. SEFFs also raise the market awareness for this type of financing.

In many cases, SEFFs also offer grants (subsidies, incentives) that reduce the amount that must be borrowed, by around 10–15 per cent. In other cases, guarantee schemes are available to local banks to cover losses and thus reduce their risk, helping to lower interest rates.

rate of return (IRR) across all projects was 29 per cent, on average, ranging from 14 per cent up to 79 per cent on individual loans. These loans have led to savings of 1 terawatt hour per year and carbon emission reductions of 710,000 tonnes per annum. Such savings are equal to the combined household electricity consumption of 890,000 people in Bulgaria. The estimated carbon emission reductions are equivalent to taking 390,000 cars off the road (DAI, 2014).

Lessons learned: opportunities for commercial banks to bridge the sustainable energy financing gap

Although there are market failures with regard to sustainable energy financing, there is huge market potential, as evidenced by the results achieved through SEFFs. Based on lessons DAI has learned through the management of several SEFFs, we present below possible solutions to help bridge the financing gap.

Develop a targeted communication strategy for energy efficiency loans

SMEs need access to information about sustainable energy management and how certain investments can improve profitability. We have already iterated the market failure in the uptake of energy efficiency investments due to the information issues above. DAI's experience implementing SEFFs has confirmed this, but also found that the decision on whether to go ahead with an investment involves more than just knowing what technology is available. Business owners considering investments are concerned with the profitability of any such investment and the impact on the company's bottom line.

Commercial banks can play a key role in actively communicating the commercial benefits of energy efficiency and ultimately stimulating demand for lending. Banks are able to sell simple financial products – such as car or home loans – by using 'pull' marketing techniques that attract (pull) in leads and sales and reduce the effort required in actively approaching new leads. Energy efficiency loans, on the other hand, require 'push' marketing efforts (Ziolkowski, 2013, presentations as part of the Southern and Eastern Mediterranean SEFF facility, EBRD): banks need to provide their SME clients with more targeted and detailed information. By working with case studies and examples they can provide SMEs with knowledge and information about potential savings from energy. Success stories of other companies taking up loans for investing in sustainable energy support the SME's decision process considering a similar project or technology. Box 2 presents several success stories in the manufacturing industry.

Leverage existing data and information to make loan decisions

Banks have the possibility of leveraging information from their own loan portfolio. Although sustainable energy loans need a more individualized approach, banks can achieve efficiency gains by mining their portfolio of existing SME clients. Portfolio mining allows financial institutions to identify and serve market segments with

Box 2 Case study: energy efficiency loans in the manufacturing industry

Mine Master Ltd is an SME, which produces and supplies underground mining equipment for underground drilling. The company conducted its activities in industrial buildings dating back to the 1960s and 1970s with poor thermal insulation, which resulted in excessive energy costs. It was spending approximately €100,000 on oil and propane for heating. Through the Poland Sustainable Energy Finance Facility (PolSEFF), Mine Master received technical assistance – an energy audit and technical assessment by engineers – which helped the company produce a feasible business case resulting in two sustainable energy investments funding thermal insulation. The first investment resulted in energy savings of 3,156 GJ/year and energy cost reductions of €80,536/year giving a payback period of 4.5 years. The second investment resulted in further energy savings of 5,312GJ/year and energy cost reductions of €40,707/year giving a payback period of 11 years. Thanks to the energy efficiency modernization this SME is now saving approximately €120,000 annually. Due to the resulting lower energy consumption, Mine Master is able to produce at a lower cost and sell its equipment at competitive prices not only in Poland and Europe but also in other world markets.

IHB Electric JSC (former Elprom ZEM) is the largest manufacturer of rotating electric machines in Bulgaria. The company took a BEERECL loan of €47,920 to replace five ageing machines with one new induction copper welding machine. The new equipment improved the company's operations and competitiveness and the work environment. The energy costs for welding operations fell by 73 per cent annually while water, labour, and material costs were also reduced. Annual carbon emissions were 81 tonnes lower.

Delta Textile Ltd produces socks for popular global brands. The company received a €840,000 energy efficiency BEERECL loan. The project replaced 49 knitting and 12 sewing machines with 34 new state-of-the-art knitting machines. Besides increasing revenues through higher quality socks, reduced waste, and lower operation and maintenance costs, the energy costs per unit of production were cut by 36 per cent and carbon emissions were reduced by 380 tonnes per year.

which they are already comfortable, therefore facilitating an increased scalability and reproducibility of energy efficiency loans. It also allows banks to manage exposure to known niches and customers, thereby reducing unknown variables when launching a new type of financial instrument.

Indeed, successful financing of energy efficiency projects can reinforce a bank's review of the '5 Cs' (character, capacity, creditworthiness, capital, and collateral) since improved efficiency can effectively bolster creditworthiness, and the equipment itself can serve as collateral (or be structured as a lease). Using this approach, banks will be in a stronger position to create a project pipeline in response to specific financial products.

In addition, banks could benchmark relevant data from other publicly available information sources in order to identify concrete opportunities beyond their current client bases.

Have dedicated staff with project finance skills and tailored contracts

Bank staff need to have the right skills to assess potential energy efficiency loan applications. Once banks have attracted a new or existing client for a sustainable energy loan, they need to ensure that they are not overlooking the potential savings

resulting from reduced energy expenses when analysing the project. They need the ability to assess future cash flows and savings through energy efficiency in order to determine an SME's repayment capacity. If financial institutions support their analyses with the expected concrete and effective benefits of a project, in addition to the standard corporate balance sheet requirement, they will be able to review and approve a greater volume of projects. Banks could then also create dedicated units with trained staff for energy efficiency operations and prepare guidelines/procedures for energy efficiency lending.

In addition, banks need to ensure that loan agreements related to sustainable energy are suitably tailored in order to reflect the basis of investment decisions. The use of standard contracts could hinder project development and unnecessarily extend the timeframe for loan analysis.

Have access to technical/engineering skills and information

SMEs require access to qualified, free technical advice to ensure they have a good understanding of options available to reduce energy costs and can choose the optimal energy efficiency solution for their business. As mentioned in Box 2, DAI's team of engineers worked with the Polish SME Mine Master by conducting an energy audit and designing a thermal modernization project for the company. The DAI team also recommended the optimal insulation materials and their thicknesses.

Financial institutions also require access to energy expertise to effectively assess energy efficiency projects, which are often highly varied in nature, size, and scope. They need access to knowledge and information about high energy performance technologies, providers, and success stories in order to develop relevant criteria for financing the sector. Most financial institutions lack this specialized knowledge in-house, and are – in most cases – not prepared to engage such specialists on a full-time basis.

While SEFFs subsidize the provision of technical assistance to SMEs and banks, such engineering services need to be available in the market at affordable costs for market participants in the long term. Business advisory organizations, technology providers, and engineers need to work together to ensure that SMEs and commercial banks have access to information which will help facilitate the uptake of sustainable energy finance. Given the potential reduction of carbon emissions, government agencies should also leverage available public resources to stimulate sustainable energy financing.

Develop tools which help generate bankable energy efficiency initiatives and fast-track the loan decision process

Tools can assist in stimulating the uptake of energy efficiency loans and fast-tracking the loan decision process. One such tool is an online database of equipment and technologies with identified minimum energy consumption characteristics or similar indicators that demonstrate the energy efficiency and cost-savings performance of products and services. The equipment and technologies are all available on the

market, but they are assessed by qualified engineers against their energy saving potential. Such databases can include a wide variety of high energy performance technologies depending on the specific country context. Examples include thermal insulation materials, windows, space heating, ventilation or air-conditioning, lighting, automation systems, and many other products.

In principle, such a database can provide benefits for addressing market constraints on both the demand and supply side:

- SMEs can find and compare tested and pre-qualified options for small-scale investments, view the energy savings of each technology, and select the most competitive and suitable option for their business.
- There is no requirement for extensive engineering resources, such as audits; information on indicative associated savings is available.
- Financial institutions do not need specialist internal project finance skills and capabilities owing to the small size of the investment and the fact that the technology is pre-qualified and tested.
- For suppliers of high energy performance products and services the inclusion on such a database can provide a competitive advantage and an opportunity to reach a large number of clients quickly.

DAI has seen first-hand how an innovative design of such a database can achieve substantial results. On the Polish SEFF, over 1,500 individual loans with an average loan size of €75,000 were processed – reaching a total financing volume of €113 m. The design of an interactive, open-source website with a highly user friendly interface, and containing more than 7,500 pieces of eligible equipment from 900 registered suppliers, facilitated this success (see Box 3).

With the right design and set up, such a database can serve as a demand-driven, low-maintenance tool to support the uptake of energy efficiency financing in the long term.

Box 3 Success factors of the Polish database for prequalified technologies

The following factors contributed to the tool's success in Poland. The same principles can serve as a pre-condition for long-term success.

- *Transparency and open access*. The database was set up as an open access search engine, in which anyone can search for equipment and view the calculated energy savings of each type (see Figure 1). This provides the opportunity to compare technologies and select the most suitable option. SMEs can directly generate the qualifying certificate for every type of equipment via the website and provide this to their bank for financing.
- *Easy, online registration*. The Polish database was set up to allow for suppliers and service providers to 'register' their high energy performance products and services directly online and receive an automatic notification of whether their product was accepted on the database. The website conducts automated calculations that are verified by an engineer. Additionally, designers and SMEs can also request the addition of new sustainable energy equipment to the database.
- *Visibility*. The open access of the database created visibility for the supplier and an additional promotion channel for their products. It created a competitive advantage for these suppliers that were registered, and soon other suppliers followed.

Figure 1 Polish SEFF device search engine (screenshot)

While the SEFF technical assistance support will eventually end, this database in Poland provides a window of opportunity for ensuring long-term sustainability of financing in the energy efficiency sector, as it works in a similar manner to a labelling scheme. Commonly, a label is granted based on independent assessment of the product and its compliance with strict environmental criteria, putting it among the best in its class. A database that lists qualified energy efficiency technologies could be transformed into a voluntary energy efficiency labelling scheme that signals to company owners which small-scale investments are available that improve the business's bottom line. International financial institutions could engage with governments to identify how the tool could be maintained after donor support has ended. Although such a tool only applies to small energy efficiency investments, it can play a key role in raising awareness and providing opportunities for reducing energy consumption in businesses and, ultimately, support a country's targets on CO_2 emission reductions.

Conclusion

SEFFs have demonstrated that commercial banks can play a key role in providing financing to SMEs for energy efficiency investments. Savings made by SMEs flow directly to the bottom line and enhance their competitiveness, business growth, and their attractiveness as bank clients. Commercial banks that provide energy efficiency finance to SMEs are not exposed to major market risks and factors since the risks relating to an energy efficiency loan are dependent on the ongoing viability of the SME client itself.

DAI's experience has shown that commercial banks that have the appetite or strategic interest to address the energy efficiency financing gap can do so by:

1) leveraging existing data; 2) developing communication strategies that pull in SME clients; 3) developing tools and databases that can generate bankable initiatives; 4) accessing engineering expertise and information; and 5) creating dedicated project finance teams which can measure and manage project-specific risk.

References

Ayyagari, M., Demirgüç-Kunt, A. and Maksimovic, V. (2011) *Small vs. Young Firms Across The World: Contribution to Employment, Job Creation, and Growth*, Policy Research Working Paper 5631, Washington, DC: World Bank Development Research Group.

Bourns, N., Olmedo, M. and Fertziger, I. (2012) 'Market study of sustainable energy finance in Mexico', *Final Report Prepared for the Sustainable Energy Finance Program IFC October 2012*, London: DAI.

DAI (2014) Internal project report and data from SEFF projects in Poland and Bulgaria, June 2014.

EUROCHAMBRES (2010) *Energy Efficiency in SMEs: Success Factors and Obstacles* [online], Brussels: EUROCHAMBRES <www.eurochambres.eu/content/default.asp?PageID=1&DocID=2852> [accessed 5 March 2014].

European Bank for Reconstruction and Development (2014) 'Sustainable energy financing facilities' [website] <www.ebrd.com/pages/sector/energyefficiency/sei/financing.shtml> [accessed 5 March 2014].

International Energy Agency (IEA) (2011) *Energy Efficiency Policy and Carbon Pricing*, Information Paper, Energy Efficiency Series, Paris: IEA.

IEA (2013a) *Energy Efficiency Market Report 2013*, Paris: IEA.

IEA (2013b) *World Energy Outlook 2013*, Paris: IEA.

Npower (2013) *Business Energy Index 2013* [pdf], <www.npower.com/idc/groups/wcms_content/@wcms/@busi/documents/digitalassets/nbei9.pdf> [accessed 24 July 2014].