

Source: 451 Derece Production.

## IMPROVING ENERGY EFFICIENCY FOR SMALL AND MEDIUM ENTERPRISES IN TURKEY

An ESMAP-funded analytical tool helped local banks in Turkey evaluate projects' potential energy savings in order to facilitate more than 300 loans through a \$201 million World Bank credit line to small and medium enterprises (SMEs) to purchase modern equipment, improve industrial processes, and upgrade production lines.

### BRIDGING THE GAP BETWEEN SMEs AND ENERGY EFFICIENCY LENDING

Improving energy efficiency in Turkey is crucial for reducing expensive energy imports and meeting climate change targets. Small and medium enterprises (SMEs) play a very important role in the Turkish economy in generating income and employment: SMEs are estimated to account for 99 percent of all enterprises and 78 percent of employment. Improving energy efficiency for small businesses can help reduce their energy-related expenses, allowing them to grow and become more competitive. New equipment and processes can also help expand and accelerate production, improve product quality, reduce defective products, and lower maintenance costs.

However, investments in energy efficiency do not happen on their own due to several challenges, including: SMEs and banks are unaware about opportunities and don't have the staff and technical skills to identify and implement investments in energy efficiency; SMEs struggle to get loans or other forms of financing for energy efficiency upgrades; and these types of investments are often relatively small, and some effort is required to identify and assess them—making them less attractive for banks to finance.

#### KEY ACHIEVEMENTS

- 300+ loans provided through a \$201 million World Bank credit line, resulting in \$262 million total investments (including \$61 SME equity and co-financing from the three Turkish public banks)



- 274 of these loans extended to SMEs for about \$144 million to purchase new and modern equipment, improve industrial processes, and upgrade production lines
- 10 million MWh estimated energy saved by the project
- 400,000 tons of CO<sub>2</sub> equivalents/year reduction in greenhouse gas emissions, equivalent to taking 1.5 million cars off the road

(See infographic here: <https://www.worldbank.org/en/news/infographic/2019/11/26/turkey-energy-efficiency-in-small-and-medium-size-enterprises>)



Source: 451 Derece Productions.

## TURKEY SMALL AND MEDIUM ENTERPRISES ENERGY EFFICIENCY PROJECT

To help overcome these challenges and scale up commercial bank financing for energy efficiency investments in SMEs, the World Bank financed the [Turkey Small and Medium Enterprises Energy Efficiency Project](#). It was the first World Bank loan globally that specifically targeted energy efficiency projects for SMEs.

Implemented between December 2013 and September 2019, the project provided financing through three Turkish public banks (Halkbank, Vakif Bank, and Ziraat Bank) to SMEs across Turkey for energy efficiency upgrades and helped develop and implement different business models for these investments, such as equipment leasing, vendor financing, and performance-based, or energy service company (ESCO) contracts.

To scale up commercial bank lending for energy efficiency investments in SMEs, the three Turkish public banks needed a way to determine if projects seeking funding would save energy and be able to repay the loans with the cost savings generated from the investment.

## CREATING A TOOL TO DETERMINE ENERGY EFFICIENCY IN SMALLER PROJECTS

Because the projects seeking funding were relatively small at a cost of several hundred thousand dollars each, it was not necessary, or too costly, to conduct full feasibility studies or energy audits. SME lending is about a high volume of smaller loans requiring the process to be simple and for transaction costs to be as low as possible. However, the Turkish banks were concerned that without such technical assessments they would not be comfortable determining if the projects actually saved energy and if they would meet the minimum criteria established with the World Bank. Another solution had to be found for the banks to move forward with financing.

To help overcome these challenges, ESMAP provided funding to develop an analytical tool to help the banks determine the energy savings of potential SME investments by allowing the banks to compare data from the baseline equipment (i.e., lighting, boilers/kilns, chillers, motors, and other industrial equipment and machinery) with the replacement equipment. The tool would calculate the energy savings, estimated cost savings, reductions in CO<sub>2</sub> emissions, simple payback period, and net present value.

Such a tool was easy to use, quick—which was critical for the SME market, and provided the information necessary for the banks to confirm that the projects were eligible for the World Bank credit line, which required a minimum level of 20 percent energy savings. The tool also had tables to convert units of energy, default values for older equipment, prices for different energy sources, and other features requested by the banks.

The tool played a critically important role early on to help sensitize the banks and their risk profiles to ensure the projects seeking funding would deliver on their energy efficiency targets. Without such a tool, there was a very real possibility that the project would not have been able to go forward, or would have to rely on energy audits, which could have really limited demand.

## ISSUING THE LOANS CONFIDENTLY AND GAINING NEW SKILLS FOR ENERGY EFFICIENCY LENDING

Once it was determined that projects met the energy efficiency criteria, the project provided financing to SMEs through the three banks. They each received \$67 million through the World Bank loan and issued a total of 300 loans to Turkish SMEs for about \$201 million. Total investments under the project, including SME equity and co-financing from the three banks, were more than \$262 million.

About \$3.6 million was also provided as a grant from the Global Environment Facility (GEF) to provide additional technical assistance to the banks and Ministry of Energy and Natural Resources to support SME energy efficiency.

Through the project, the participating Turkish public banks developed awareness and skills required for energy efficiency lending. They improved their capacity to develop and market financial products for energy efficiency financing, appraise energy efficiency investments, monitor the project portfolio, and verify energy savings. The banks also developed relationships with vendors of energy equipment and energy service companies—which make the investments, guarantee the level of energy savings, and are paid from the resulting energy cost savings. These relationships will be sustained beyond the project, and the banks have expressed interest in continuing to finance investments in energy efficiency.

## MEETING ENERGY EFFICIENCY AND REACHING CLIMATE CHANGE GOALS

The project financed upgrades to more energy efficient equipment and machinery across all industry sectors in Turkey, with the largest shares of financing going to the textile and clothing industry, metallurgical industry, and chemical industry.



Source: Video—Energy Efficiency Helps Reduce Turkey's Energy Imports and Meet Climate Change Targets (<https://www.worldbank.org/en/news/video/2019/11/26/energy-efficiency-helps-reduce-turkeys-energy-imports-and-to-meet-climate-change-targets>).

These investments saved approximately 10 million MWh of energy, and greenhouse gas emissions have been reduced by about 400,000 tons of CO<sub>2</sub> per year—equivalent to taking 1.5 million cars off the road.

The project allowed SMEs to increase their profitability and productivity, access financing more easily, and make long-term payments with favorable interest rates.



Source: 451 Derece Productions.



Source: 451 Derece Productions.

For instance, the Çizgisian textile company used a loan through the SME energy efficiency project to purchase new generation printing press machines, which allowed them to produce products with near-zero errors. This minimized waste, which is one of the biggest problems in the textile industry. Taner Turgu, the owner of the company, said they “have also created employment and produce 40 percent more with the same amount of energy.”

Other SMEs that were part of the project not only improved their energy efficiency but also reported many other benefits through the financed energy

efficiency upgrades, such as reduced operating costs (including cost of electricity and cost of maintenance), improved quality of their produced goods, and increased output.

## REPLICATING THE TOOL IN OTHER COUNTRIES

Although this tool was created for use by the Turkish banks, it could be customized for use in other countries with World Bank industrial investment programs as a way to screen potential energy efficiency investments to determine their eligibility.

As the Bank currently has or recently completed industrial financing projects in many countries—including China, India, Tunisia, Turkey, Ukraine, Uzbekistan and Vietnam—there is a strong potential for replicating the tool. Please contact us at [esmap@worldbank.org](mailto:esmap@worldbank.org) if you would like more information.

**“Without the tool, I believe we wouldn’t have had the operation. It had become such a sticking point for the banks to determine ‘if an SME replaces a boiler, how much energy would they save?’ Applying the tool significantly overcame their concerns without introducing new requirements and transaction costs by helping them estimate the energy savings, project cost savings and cash flows, rates of return and other key indicators.”**

**—Jas Singh, Lead Energy Specialist, Energy & Extractives Global Practice, Europe and Central Asia Region, World Bank**

### ESMAP MISSION

**The Energy Sector Management Assistance Program (ESMAP) is a global knowledge and technical assistance program administered by The World Bank.** It provides analytical and advisory services to low- and middle-income countries to increase their know-how and institutional capacity to achieve environmentally sustainable energy solutions for poverty reduction and economic growth. ESMAP is funded by Australia, Austria, Canada, ClimateWorks Foundation, Denmark, the European Commission, Finland, France, Germany, Iceland, Italy, Japan, Lithuania, Luxembourg, the Netherlands, Norway, the Rockefeller Foundation, Sweden, Switzerland, the United Kingdom, and the World Bank.