



Energy-Efficient Refrigeration Systems in Mexico

Small and medium-sized supermarkets and restaurants using refrigeration and many other electrical appliances exist in all parts of the world. Just as common is the problem of inefficient appliances causing high energy bills. However, micro-credits for purchasing efficient electrical appliances are increasingly becoming available worldwide. The German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), through its International Climate Initiative (IKI), supports the Mexican project *Eco-Crédito Empresarial* (Eco-credits for enterprises) which was established by the Mexican Ministry of Energy (SENER) to facilitate access to such micro-credits.

The goal of the project is to improve the energy efficiency of small and medium-sized enterprises (SMEs) by helping the company owners to finance the replacement of old energy-intensive appliances with new energy-efficient technologies and to scrap the old appliances appropriately. The low-interest micro-credits are repaid by the savings in energy costs. Thus, businesses not only use efficient electrical appliances, but they also enjoy financial benefits from the very beginning. Overhead costs decrease

while profitability and economic competitiveness increase. Moreover, the measures constitute an important contribution to the reduction of greenhouse gases (GHG) and to Mexico's sustainable development.

Between the launch of the project in June 2012 and August 2015, 11,321 SMEs were supported; the credit volume amounted to approximately EUR 24 million. Among the target groups *Eco-Crédito Empresarial* was met with great interest. While in 2014 10,687 electrical appliance units were exchanged, from January through August 2015 22,693 exchanged units were reported. Overall, 55.49GWh power were saved per year and the financial savings amounted to approx. EUR 7.89 million. The reduction of greenhouse gas emissions is estimated at 27,000 tonnes CO₂ per year.

BMUB supports *Eco-Crédito Empresarial* within the German Mexican NAMA Programme, implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). It assists the development of Mexico's first Nationally Appropriate Mitigation Actions (NAMAs) in the key sectors building and renovation of residential buildings, freight traffic as well as energy efficiency in



SMEs. In order to transform the energy efficiency project into a NAMA, the development of important components such as a MRV (measurement, reporting and verification) system or pilot facilities for the validation of cost estimates are supported. In 2014, pilot measurements of power and energy savings were successfully conducted within the technology-oriented NAMA for SMEs. Here, the focus lies on technologies in the areas of refrigeration, engines, air conditioning and lighting. The generated information feeds into the development of a robust MRV system which is integrated into the software of Mexico's Trust Fund for Electric Energy Savings (FIDE). Moreover, the project assists the trust fund in adjusting the software to be able to determine energy savings. The technology-oriented climate protection measure is now registered as the first NAMA in the SME sector in the Mexican NAMA registry. As a second step, the NAMA is planned to be registered in the UNFCCC NAMA registry as one of the first SME-NAMAs worldwide.

At the same time, the German state-owned bank Kreditanstalt für Wiederaufbau (KfW) – with funds from the German Federal Ministry of Economic Cooperation and Development (BMZ) – finances the environmental credit line for SMEs of the Mexican Development Bank (NAFIN). NAFIN then passes the credit line for the billing of the credit positions to the trust fund (FIDE) and administers the secondary guarantee fund. The project is supervised

by the Mexican Ministry of Energy (SENER), which provides funds for the secondary guarantee fund together with the Ministry of Economics (SE). The Federal Electricity Commission (CFE) coordinates the loan repayments by means of the energy bills. Regular meetings take place for cross-sectoral coordination.

Even though the mechanisms of this project seem complicated at first, they work well in practice. This is not least due to the excellent cooperation between all stakeholders, including the energy suppliers. The concept of the project can be applied to other countries as well.

Maria Fernández Calédron is the owner of the restaurant El Pirata, located in the small town of Tulancingo de Bravo around 100 km north-east of the capital. She has already profited from *Eco-Crédito Empresarial*: “Thanks to the project, I was able to replace my inefficient appliances with new ones, which I otherwise would have never been able to afford.” A refrigerator and two freezers were replaced by energy-efficient appliances in her small restaurant. Even though the new refrigerators have 2.76% more capacity, energy usage decreased from 50 to 7KWH. Consequently, the monthly energy costs almost 45% lower than before which translates into monthly savings of approx. EUR 123. Doña Maria repays the loan of EUR 3,000 over a period of 3 years in monthly rates of EUR 87. Thus, she finances the new appliances solely with the savings in energy use. The amounts are directly deducted from the energy bill.

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