

Ex-post Evaluation of EnDev Peru -pico-PV and ICS

Executive summary

From 2009-2019, Energising Development (EnDev) supported various energy access technologies in Peru. These included stand-alone solar home systems, pico-photovoltaic (pico-PV) systems, larger PV systems, solar water heaters, improved cookstoves (ICS) and technologies for productive energy use. The project was implemented by Gesellschaft für Internationale Zusammenarbeit (GIZ).

This 2022 ex-post evaluation focuses on EnDev Peru's impact and sustainability in the pico-PV and ICS markets.

Background

Peru has experienced a remarkable increase in access to energy in recent years. However, access to energy remains low in remote, rural areas like the Andes and the Amazonas. EnDev Peru supported government efforts to increase energy access by promoting ICS and pico-PV, especially in remote areas.

EnDev Peru started with a strong focus on working with government entities and NGOs to support the government's electrification efforts and cookstove programmes. These programmes often had a large subsidy element. From 2015 onwards, EnDev Peru shifted its focus to private sector engagement, supporting technology suppliers with capacity strengthening and results-based financing (RBF) mechanisms.

Supply-side observations

The RBF approach resulted in reduced technology costs. It also decreased logistical and quality barriers by supporting a wider range of products.

In the ICS market, EnDev Peru introduced new types of portable stoves. The stoves were distributed through a commercial market supported by 2 RBF facilities, FIDECOP and FASERT. These facilities helped develop the market for ICS by connecting value chain actors (importers, manufacturers, wholesalers, and retailers) and supporting after-sales services. FASERT and FIDECOP provided local SMEs with access to credits to cover the risks and costs associated with introducing new technologies in the market.

Government tenders for ICS provide economies of scale for ICS producers and retailers. The pico-PV market needs a similar RBF mechanism to stimulate supply to remote areas and reduce prices for end users.

In the pico-PV market, retailers typically serve small, isolated communities. This is also true for the ICS market. However, the ICS market also serves peri-urban areas and benefits from large orders from the government social development fund, FONCODES.

EnDev contracted Edburgh consultants and Danish Energy Management to conduct an independent ex-post evaluation of EnDev Peru. The main evaluation questions were:

- 1) What influence did EnDev's intervention have on sector development?
- 2) To what extent are local institutions ready (and have the capacity) to take over and contribute to developing a sustainable energy market?
- 3) What are the lessons learnt?

Ex-post evaluations are carried out at least 2 years after a project has been phased out. This desk-based evaluation was carried out between November 2021 and March 2022. The evaluation is based on an analysis of 70 relevant reports, studies, NDC documents, and 16 interviews with important stakeholders. The report is based on absolute numbers of sales on country level. On global level, EnDev applies so called monitoring factors for attribution, additionally and sustainability and reports in adjusted numbers of people reached.

EnDev Peru

Project period	2009 - 2019
Budget	EUR 17,257,000

Project results:

- Facilitated sales of ICS for 365,000 households and electricity connections for 141,500 households.
- Introduced new types of portable stoves through 2 RBF facilities.
- Established technical standards for ICS and pico-PV products.

Demand-side observations

Access to microfinance has had a significant effect on demand.

EnDev Peru's more market-driven approach from 2015 facilitated the further development of the new pico-PV and portable ICS markets and stimulated market actors to extend their reach to remote areas. Stove manufacturers, distributors, and pico-PV retailers started serving remote households with a range of smaller, cheaper, but quality-tested portable stoves and pico-PV products.

EnDev Peru helped link suppliers with financial institutes to make microcredit available to clients. EnDev Peru cooperated with different institutes to develop profitable financing models without distorting the growing commercial ICS and pico-PV markets. At least 2 microfinance institutes that EnDev Peru worked with still promote energy access financial products.

Enabling environment observations

High levels of compliance among private sector companies have been reported. Still, standards should be enforced as the market grows to discourage new companies from offering lower-quality products.

As a result of EnDev Peru, commercial pico-PV and portable ICS are an important niche market in energy access alongside government activities to increase energy access.

EnDev Peru has had a major impact on the establishment of technical standards for ICS and pico-PV products, supporting testing centres and universities, and working with ministries on the development and improvement of standards. These standards are enforced in government programmes, such as FONCODES, but not in the private market. Within the period that EnDev Peru was active, 15-20 ICS models were tested and approved. This has now increased to 70 models as stove producers adapt existing models to regional conditions.

The creation of energy access business associations could fulfil the need for market monitoring with public funding support. Such support could be coupled with an RBF mechanism that endorses quality standards.

After EnDev Peru's exit, market monitoring on sales, demand, user satisfaction, maintenance and repair stopped. Research institutes may do some on-demand research on a specific topic, but they do not systematically monitor the market and communicate the lessons learnt to larger audiences. The pico-PV and ICS sectors are loosely organised, and creating industry associations that could monitor the market will require public funding.

Lessons learnt and experiences are well-anchored among national stakeholders due to the multistakeholder platforms in EnDev Peru's strategic approach.

EnDev Peru collaborated closely with various ministries, NGOs, regional agencies and local governments. EnDev Peru helped integrate capacity building on energy access and productive energy use into training courses. The involvement of laboratories and universities resulted in a high degree of institutional knowledge in Peru on small-scale energy access technologies and PUE technologies for small-scale farmers.



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Conclusions

EnDev Peru helped develop and organise niche markets for ICS and pico-PV in Peru, supporting government efforts to increase energy access to remote areas. The RBF approach worked well in the country, and market actors do not depend on the government or NGO-sponsored projects to the extent they did before. The ICS and pico-PV markets grew in terms of supply, demand and enabling environment. EnDev Peru played an instrumental role in this process. The amount of

partner engagement and number of partnerships EnDev Peru facilitated is impressive. The use of multistakeholder platforms proved very effective during the programme and created better conditions for continuation after EnDev Peru's exit. The EnDev programme and other similar initiatives could draw inspiration from EnDev Peru on how to engage with research institutes, NGOs and other development partners in a joint effort with private sector technology providers.