

# Exit Evaluation of EnDev Vietnam - biodigesters

## Executive summary

From 2013 – 2020, Energising Development (EnDev) promoted small-scale biodigesters in Vietnam to increase energy access and clean cooking in rural areas. The project was implemented by SNV.

### Background

EnDev Vietnam aimed to transform the national biodigester sector into a private-sector-driven market. The interventions were a continuation of past efforts to support the Vietnamese government's Biogas Programme (BP). In 2003, the BP was set up with support from SNV with funding from the Netherlands Ministry of Foreign Affairs. The Department for Livestock Production (DLP) under Vietnam's Ministry of Agriculture and Rural Development (MARD) implemented this programme. EnDev has supported the programme since 2013. In 2016, EnDev introduced results-based financing (RBF) to change the approach from an end-user subsidy to a supply-side subsidy.

### Supply-side observations

**The introduction of composite digester models under the national biogas programme and the promotion of a more market-driven biogas sector has worked well in Vietnam. In some cases, biodigester companies increased their turnover after EnDev support was phased out.**

EnDev Vietnam's main impact was on market actors active in the sector, for example, the biogas masons and composite digester installers. This was a direct result of EnDev Vietnam's efforts to stimulate market development. The training and business support EnDev Vietnam provided to these market actors significantly impacted their ability to expand the market. A relatively dynamic community of universities and research institutes, small innovative companies and industry associations<sup>1</sup> operates alongside main market actors to develop new biodigester models and provide inputs to the sector. During the RBF phase, composite digester models were introduced in the BP. These models now account for the largest share of new installations in Vietnam. There is currently no financial support for biodigesters from the Vietnamese government or international partners. Still, local biogas companies, many of which benefitted from EnDev Vietnam's support, remain active in a market driven completely by domestic demand.

EnDev contracted Edburgh consultants and Danish Energy Management to conduct an independent exit evaluation of EnDev Vietnam. 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?

Exit evaluations are carried out during or shortly after a project has been phased out. This desk-based evaluation was carried out between August 2021 and January 2022. The evaluation is based on an analysis of 18 relevant reports, studies and NDC documents, and 24 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 Vietnam	
<b>Project period</b>	2013 - 2020
<b>Budget</b>	EUR 4,432,000

- Project results:**
- Facilitated the construction of 53,973 domestic biodigesters.
  - Successfully registered the emission reduction with Gold Standard.

*"EnDev initiated a market shift by nurturing biogas enterprises and promoting the competitiveness of quality and costs."*

Government official

<sup>1</sup> For example, the association of biogas enterprises and the Vietnamese gardening association.

### Demand-side observations

**Demand for biodigesters depends on various dynamic external factors in addition to the need for cooking energy and fertiliser. Regulations on wastewater have strongly supported the biodigester market. There is significant potential to increase benefits for customers by raising awareness of the value of the fertiliser biodigesters produce.**

Biodigesters have become a well-known technology in Vietnam. Stricter enforcement of environmental regulations on wastewater has become the main driver for biodigester demand, besides the demand for biofertiliser and energy for cooking. According to a biogas end-user survey, very few households with a biodigester still empty livestock manure directly into the environment. This shows how biodigesters can limit the amount of waste contaminating the environment. While using bio-slurry as organic fertiliser can significantly benefit households, only 40% of households report using it. In general, biodigesters perform well, and end-users have reported high satisfaction levels. Customers who have stopped using their biodigester did so mainly because they had insufficient livestock waste for the digester. The main causes for this were external factors such as swine flu and fluctuations in pork prices.

### Enabling environment observations

**Creating a memorandum of understanding with national stakeholders before EnDev's country phase-out would have helped manage expectations regarding post-project continuation and continuing carbon revenue in the country.**

EnDev Vietnam's phase-out in 2020 was an important turning point for Vietnam's biogas sector. It meant that, for the first time since 2003, the BP was no longer supported by an international partner. In order to finance a continuation of the BP's market-based approach, carbon financing was a key element in EnDev Vietnam's exit strategy. The BP is accredited to receive carbon financing until 2031. However, it has not spent all of its carbon revenue and is currently inactive as its legal mandate requires support from international official development assistance. DLP is currently searching for a new donor to continue activities within the BP.

**Ensuring that provincial government actors are involved will create conditions for the biodigester market to thrive.** In Vietnam, the central government and provincial authorities have a very active role in all sectors and markets. A market-driven biogas sector approach shifts the role of the government from actively facilitating orders between farmers and biogas enterprises to overseeing progress in the sector and compliance with regulations. Despite positive results from the RBF approach, there are not enough advocates pushing for its continuation at the national and provincial levels.

Composite models were introduced in the BP during EnDev Vietnam's support and now represent a large share of new installations. EnDev worked on developing quality standards for composite models inspired by Chinese standards. However, these standards were not adopted into Vietnamese legislation. **This can pose a risk to the future of these product types and, therefore, the sustainability of the sector.**

### Conclusions

**EnDev has demonstrated that a market-driven approach for biodigesters has considerable potential in Vietnam.** As one of the key international partnerships of the Vietnamese government's Biogas Programme, EnDev Vietnam has considerably influenced the development of the country's biogas sector. Without EnDev's long-term support and SNV's bilateral support, the Vietnamese biogas sector would not be where it is today. Whilst the last (RBF) phase of the Biogas Programme did not result in as many new biodigester installations as before, it may have been the most significant contribution to the sector's market transformation.



# Ex-post Evaluation of EnDev Vietnam - biodigesters

## Executive summary

From 2013 – 2020, Energising Development (EnDev) promoted small-scale biodigesters in Vietnam to increase energy access and clean cooking in rural areas. The project was carried out by SNV.

This 2023 ex-post evaluation aims to understand the status of the small-scale biodigester market in Vietnam since EnDev's exit in 2020 and the developments since the 2022 exit evaluation. The Energy Access Market Development (EAMD) tool is used for this analysis.

## Background

EnDev Vietnam aimed to transform the national biodigester sector into a private-sector-driven market. The interventions were a continuation of past efforts to support the Vietnamese government's Biogas Programme (BP). In 2003, the BP was set up with support from SNV with funding from the Netherlands Ministry of Foreign Affairs. The Department for Livestock Production (DLP) under Vietnam's Ministry of Agriculture and Rural Development (MARD) implemented this programme. EnDev has been supporting the programme since 2013. In 2016, EnDev introduced results-based financing (RBF) to change the approach from an end-user subsidy to a supply-side subsidy. This resulted in a transfer of responsibilities, such as marketing, end-user training, and after-sales services, to market actors.

## Supply-side observations

**Domestic biodigester suppliers in Vietnam are able to satisfy current customer demand. However, the market is declining due to a decrease in demand.**

Commercial companies, small enterprises, brick masons and installers supply Vietnam's small-scale domestic biodigester market. Businesses offer a selection of products, predominantly composite-type biodigesters. They do not receive any financial support and are able to operate on small profit margins. However, satisfaction amongst businesses has declined due to changing market conditions. The number of biodigester businesses has slightly decreased over the past few years due to a fall in demand for domestic biodigesters. This decrease is due to a decline in the small-scale livestock sector, which is the main customer group for domestic biodigesters. While some businesses focus exclusively on biodigesters, others have diversified their products and services to ensure financial sustainability. Some businesses, mostly larger ones or those located in the south, are investing in new technologies to cater to emerging farming industries, such as fruit tree farms and aquaculture.

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

- 1) What is the current status of the market (demand, supply, and enabling environment)?
- 2) Which developments have taken place in the market between EnDev's exit in 2020 and now?
- 3) How can we explain these developments?

Ex-post evaluations are carried out at least 2 years after a project has been phased out. This desk-based analysis was carried out between August and November 2023. The evaluation is based on an analysis of 7 relevant reports and studies, and interviews with 16 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 Vietnam

Project period	2013 - 2020
Budget	EUR 4,432,000

### Project results:

- Facilitated the construction of 53,973 domestic biodigesters.
- Successfully registered the emission reduction with Gold Standard.

### Demand-side observations

**Livestock production has become a high-risk activity for small-scale farmers. Therefore, Vietnam's livestock sector is moving more and more production to larger commercial farms. Household demand for biodigesters is reaching saturation.**

The main drivers of demand remain compliance with environmental protection regulations on waste treatment, energy for cooking and heating, and, to a lesser extent, fertiliser. Most customers are willing and able to pay for biodigesters without support. However, there has been a steady decrease in demand as households lose their main source of feedstock, namely livestock farming waste. This is due to a poor recovery from an outbreak of African swine fever and a strong decline in meat prices. In addition to a decrease in demand, there has been a decrease in the use of biodigesters.

### Enabling environment observations

**There has been little market support or public support for the biodigester sector. The sector lacks specific national targets or plans, enforcement of quality standards for composite biodigester models and financial support. More and more often, support from development partners focuses on medium-sized biodigesters for commercial farms.**

The Vietnamese government's main channel for supporting the biodigester sector, the Biogas Programme, is not active. There is currently no financial support from the government or development partners for domestic biodigesters. Support from development partners has moved away from domestic biodigesters to the emerging market for medium and large-sized biodigesters for commercial farms. When the EnDev exit evaluation was carried out, there were indications that international partners were exploring options for partnerships with the Vietnamese government for a fourth phase of the BP. Potential partnerships were based on the carbon financing that BP was accredited to receive until 2031. At the time of this post-project evaluation, it is unclear how this carbon revenue is being used. Also, the fourth phase of the BP is on hold.

### Conclusions

EnDev successfully contributed to a self-sustaining domestic biodigester market in Vietnam. It did so by stimulating the supply side of the market through a results-based financing (RBF) facility. After EnDev was phased out, the exit evaluation found that the market had become self-sustaining without end-user subsidies and financial incentives, such as RBF for suppliers. Some of the main challenges in the market were linked to the enabling environment, such as clear targets and plans for the sector. These challenges remain unaddressed, partly due to the phase-out of the Biogas Programme. However, they are not responsible for the decline in the market, which is linked to a decrease in the demand for domestic biodigesters.



There is still enough demand for biodigester companies to do business in the domestic biodigester market. Also, new sources of demand continue to grow, potentially from small-scale fruit tree and aquaculture producers. The focus in the biodigester sector is shifting to medium to large-scale livestock farms. However, it remains important to consider the small-scale biodigester market in any wider sector strategy. There is also an opportunity for the Vietnamese energy sector to learn from the lessons and experiences of developing a market for household biodigesters. Applying these lessons will contribute to a sustainable market for commercial-scale biodigesters.