

Exit Evaluation of EnDev Cambodia - biodigesters

Executive summary

From 2013 – 2019, Energising Development (EnDev) promoted small-scale biodigesters in Cambodia to increase market-driven energy access in rural areas. The project was implemented by SNV.

Background

Before EnDev Cambodia's interventions, the Cambodian Ministry of Agriculture, Forestry and Fishery (MAFF) had already established the National Biogas Programme (NBP) with assistance from SNV. The MAFF has promoted biogas in Cambodia since 2006. EnDev built upon the NBP. EnDev Cambodia's strategy was to transform the NBP from an end-user subsidy to a supply-side subsidy by introducing Results-Based Financing (RBF). This was a relevant strategy, as the NBP had not reached a large part of the target group. However, EnDev's approach was not in line with the Cambodian policy at the time. The policy in place prioritised direct support to farmers (end users) rather than biodigester companies (suppliers). EnDev, therefore, decided to start its own 3-year RBF programme, which worked alongside the NBP. EnDev supported the installation of around 5,893 biodigesters during the project period. Of these, 5,227 were installed through the NBP programme and 666 through the RBF programme.

Supply-side observations

Cambodian supply-side actors are completely dependent on subsidies from the NBP. Few local biogas companies operate outside of their province. EnDev Cambodia helped catalyse 2 important innovations in the Cambodian biodigester market. These were the introduction of composite biodigesters, now a part of the NBP, and pay-as-you-go financing.

At the time of this study, very few organisations are active in Cambodia's domestic biodigester sector besides the NBP and the private company ATEC. The number of biodigesters sold is relatively low compared to the estimated demand. The NBP subsidised local companies, specifically Biodigester Construction Agents (BCAs) and local masons. These now promote brick-dome biodigesters and rarely extend services beyond their province. After deciding to work alongside the NBP, EnDev generally worked in isolation from Cambodian actors. Despite efforts to include national companies in the project, only the Australian-based company ATEC received RBF support from EnDev to install composite biodigesters. ATEC is the only company currently providing domestic biodigesters on a national scale. Both ATEC and the BCAs provide after-sales services. Composite biodigesters have now been included in the NBP. It is likely that EnDev indirectly facilitated this development.

Collaboration with micro-finance institutions (MFIs) was a part of the NBP's financing strategy, and some reports indicate a very high repayment rate on these loans. With capacity building provided through EnDev, ATEC introduced a pay-as-you-go financing model (PAYGO), where the

EnDev contracted Edburgh consultants and Danish Energy Management to conduct an independent exit evaluation of EnDev Cambodia. 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 studies 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 20 relevant reports, studies and NDC documents, and 17 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 Cambodia	
Project period	2013 - 2019
Budget	EUR 3,150,000

Project results:	
•	Facilitated the construction and installation of 5,893 biodigesters.
•	Supported the introduction of a pay-as-you-go financing model.
•	Introduced composite biodigester models.

end user repays the investment over time. The model works well, and ATEC built on EnDev's business development support. This made it possible to leverage additional funds and expand into other countries such as Bangladesh.

Demand-side observations

The estimated demand for biogas in Cambodia is high, and the domestic-scale biogas installed with support from NBP and EnDev are good quality and function well. Still, changes in the agricultural sector are leading to the increased relevance of commercial-scale biogas.

The demand for domestic biogas in Cambodia mostly comes from cattle and pig farmers. Biogas (BDs) require day-to-day management and sufficient animal waste. Demand has decreased due to developments in the Cambodian agricultural sector, especially pig farming. Today, the sector has fewer small-scale farms suitable for the domestic BDs promoted under EnDev. Also, the number of large-scale farms that need large-scale commercial BDs is growing. The installed BDs function well; this study estimates that most are still operational. For BDs not in use, NBP end-user surveys report that changes in the agricultural sector are the leading cause (fewer animals and not enough waste), not technical issues.

End users acknowledge the efficiency and portability of the ATEC biogas. Composite biogas placed on the ground, rather than constructed below the surface, are more flood resistant and in higher demand in the Mekong Delta and other flood-prone regions.

Enabling environment observations

EnDev Cambodia's impact on the biogas sector is visible in the market-related approaches promoted in MAFF's new biogas policy. EnDev Cambodia's experiences and knowledge sharing could have been better prioritised.

Currently, the domestic biogas sector is far from market-driven and still relies heavily on subsidies. To date, around 30,000 BDs have been installed in Cambodia. This is a small share of the estimated technical market potential of 1 million biogas. The limited number of market actors and the demand for biogas suggest Cambodia's biogas sector is not ready to function without government or other financial support. Carbon financing could support the sector financially, as it does the NBP, but it is not sufficient.

In 2021, MAFF adopted a new and ambitious biogas policy. This policy focuses on government action but views private companies and market actors as important partners. Like EnDev's approach, the policy includes a supply-side subsidy as a long-term objective. With this new policy, MAFF has adopted a more market-friendly approach for the NBP. The approach now involves domestic and larger-scale biogas, including composite BDs.

Only a few organisations working in the Cambodian biogas sector know about EnDev's interventions. Knowledge products have been developed, but they are not accessible. This makes it difficult for new development partners entering Cambodia to build on EnDev's experiences.

Conclusions

Cambodia's biogas sector is not ready to function without government support. Still, MAFF's 2021 biogas policy shows that the sector is slowly moving in a more market-driven direction. SNV and EnDev have been important partners in the development of Cambodia's biogas sector. They have introduced important market elements such as the NBP's carbon financing and gold standard monitoring practices, composite biogas models, and PAYGO financing schemes.

