

Executive Summary | August 2021

Exit Evaluation of Energising Development's Mini-grid Component in Indonesia 2009-2019

A relevant contribution to achieving universal energy access and increased use of renewable energy

Country Facts		
Population	270.6 million	
Human Development Index	107 ↑ Total (0.78)	
UN Classification	LMIC	
Access Clean Cooking	80 % (official statistic)	
Access Electricity	99 % (official statistic)	
Project Facts		
Project period	2009 - 2019	
Budget	EUR 12,760,000	
Core funding incl. RBF	EUR 12,760,000	
Earmarked	EUR 0.0	
Average Annual Turnover	EUR 1,160,000	
Implementing Organisation	GIZ	
Lead Political Partner	Ministry of Energy and Mineral Resources	
Project Results		
	Targets	Achieved
HH Access Electricity	228,000	295,607
HH Access Cooking	---	-
SI Access	1,650	3,832
PU Access	2,350	2,959

Overview of the EnDev intervention

The multi-donor partnership, Energising Development (EnDev), has been active in Indonesia since 2005 with the focus on two components: i) Electrification through mini-grid installation utilising micro hydro and solar power technologies, and ii)

EnDev has contracted Edinburgh consultants and Danish Energy Management to conduct an independent exit evaluation of the Indonesia mini-grid component (EnDev-ID). The key evaluation questions are: 1) What has been the influence of EnDev's intervention 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 learned?

The short-term desk-based evaluation has been conducted from March – August 2021. Documentary analysis and stakeholder interviews have been applied to provide an overview of the current state of play of the mini-grid sector in Indonesia after the phasing-out in 2019 of the EnDev mini-grid component.

Biogas for domestic use. **This study focuses solely on the electrification component**, and particularly on the development of a sustainable energy market.

EnDev's intervention focussed on assisting 1034 mini-grids that had been funded by the government in the period between 2006 – 2017. EnDev supported the mini-grids with measures such as:

- Technical assistance and policy advise
- Capacity building through training, mentoring and workshops
- Encouraging entrepreneurial skills for rural business owners and mini-grid managers
- Promoting a sustainable monitoring approach and respective methods

All the supported mini-grids are community-managed.

EnDev Indonesia (EnDev-ID) is implemented by GIZ (German International Cooperation Agency); the electrification component has been implemented in partnership with the Indonesian Government especially with the Directorate of New and Renewable Energy and Energy Efficiency under the Ministry of Energy and Mineral Resources that was

established in 2010. In addition, EnDev-ID has collaborated with provincial governments, local communities, universities, companies, and NGOs.

The Indonesian mini-grid sector is currently stagnant

The EnDev program has been a relevant supplement to the existing mini-grid promotion in Indonesia until 2018, when the Ministry of Energy implemented a new strategy. Currently, there are fewer initiatives for renewable energy (RE) mini-grids from the government, though this interest might come back as RE mini-grids are relevant in relation to Indonesian renewable energy plans and electrification targets.

There are currently several internationally funded programs for promoting renewable energy, however, few of these promote mini-grids and focus mostly on on-grid RE. Private investment in RE mini-grids will require changes in the policy framework.

It has not been possible for this evaluation to identify current, updated data on the performance of RE mini-grids in Indonesia. It is well-known that many have stopped functioning, but the extent of this is uncertain.

EnDev's intervention has had a positive impact

Based on the positive feedback from the people interviewed, there are indications that the RE mini-grids implemented through EnDev perform better than other mini-grids, and that EnDev has had a positive effect on increasing energy access. Successful engagement of local communities and improved engagement in the sector of central and provincial governments have been key factors.

EnDev has also had a positive effect at ministry level: Contributions from EnDev have been significant and have improved national monitoring of RE mini-grids as well as improving technical standards and public procurement processes.

EnDev can be attributed to an improved uptake of productive uses of energy where it has had activities, due to capacity building of local enterprises, mini-grid managers and of the technical operation of the mini-grids. The main use of electricity is still for lighting.

Women seem to have been successfully integrated in economic activities related to the RE mini-grids, but not in the technical operation of them.

The basis for improved sustainability of the mini-grid sector is present

In terms of sustainability, the vast majority of RE mini-grids in Indonesia cannot cover long-term O&M costs themselves and access to spare parts is a challenge in remote locations. Like rural electrification by grid, electrification by mini-grids depends on public support.

6 out of 34 provincial governments are assisting the mini-grids, some of which might have been engaged through EnDev's multistakeholder approach that was tested in pilot sites.

In general, the resources and capacity of central and provincial governments seem to be there to continue developing the sector, though firm political commitment is required. Better coordinated government action involving relevant ministries and provincial level stakeholders is also needed for continued development of the sector, which is recognised by these stakeholders.

Support to RE mini-grids becomes relevant when connected to a broader development agenda. Given the advantages of RE mini-grids compared to other off-grid solutions, political commitment might increase in the future. A recent initiative (the Patriot Energi program) might be an indication that this is taking place. There is also ongoing work on increased private sector involvement. When this happens, the experiences and lessons learned from EnDev on how to improve the sustainability of RE mini-grids will increase in importance. Approaches similar to the ones promoted in EnDev are currently used in international programs and by the beneficiaries of EnDev's intervention. The previous staff of EnDev is also applying lessons from EnDev in internationally funded mini-grid programs and in the private sector.

Currently, complete and updated data does not exist on the functioning of the vast number of RE mini-grids in Indonesia: Knowing how well these perform could fundamentally change the general perception of RE mini-grids in Indonesia and specifically the role they could play for rural electrification in the future.

EnDev-ID knowledge products are accessible online

Energylopedia.org is a repository for practitioners in the mini-grid sector. Several knowledge products from EnDev-ID can be found there (www.energylopedia.info) and on the Indonesian Directorate for New and Renewable Energy's website (<https://ebtke.esdm.go.id/e-library>).

Lessons learned from EnDev Indonesia

The most important lessons learned from EnDev are the following:

- The multistakeholder approach led by a coordinating ministry is a good approach to a rural energy planning that can encompass the interests of many stakeholders.
- Productive use of energy must be included in the early planning of the mini-grid to ensure sufficient generation capacity and technical and managerial capacity.
- The private sector must play a larger role in the mini-grid sector than just installing the RE mini-grids, if the sector is to become sustainable.
- Long term service agreements are necessary to ensure sustainable operation.
- Careful site selection is important. This includes evaluating the engagement in the community and at the level of the provincial government.
- Hand over from central government to provincial government should be planned early: The owners identified and the RE mini-grids integrated in the rural energy planning.
- There is currently a huge need for real data from RE mini-grids and documentation of how they are functioning. Real data has made a big difference for local and ministerial decision makers in the past.
- On the local level, peer-to-peer learning has proved very effective for engaging the community.

Recommendations for EnDev global

While the EnDev mini-grid component has phased-out in Indonesia, EnDev continues to engage in the mini-grid sector in several countries. Based on the findings and conclusion from EnDev-ID, this

evaluation proposes the following recommendations for EnDev mini-grid components in other countries:

1: Improve the methodology for monitoring the impact of capacity-building activities

EnDev is blessed by an excellent and standardised tool for outcome-monitoring using the OCS sheet. But to the knowledge of this evaluation, EnDev does not have a similar well-developed tool for monitoring the impact of the training and workshops that constitute a large part of EnDev activities globally. Improving the impact-monitoring of training could become a valuable approach to documenting the impact of EnDev.

2: Improve the vocabulary for policy impacts and transformative changes

Energy access programs like EnDev make good use of the specialised vocabulary, like the Multi-Tier framework, that is widely used in program design, monitoring and evaluation. Experiences from EnDev-ID and other EnDev interventions could be used to develop a similar specialised vocabulary for policy impact and transformative changes.

A more precise definition of the different types of policy impacts and transformative changes that EnDev can contribute to, would make it easier to target energy access programs towards realising such impacts.

3. Optimising person-carried impacts in program design and planning

One of the most evident impacts of the EnDev mini-grid program is the sign that experiences and approaches are continued in other programs through the personal experience of individuals directly involved in EnDev who are now involved in other initiatives in the mini-grid sector.

It seems very likely that the findings are not specific to Indonesia's mini-grid sector but is general for all sectors and all countries. A relevant way to strengthen such a transition would be to include the involvement of the professional community (e.g., civil servants, company employees, consultants, program staff members, universities, NGOs etc.) in the program design.

Lessons learned from successful engagement in EnDev programs could provide inspiration for operationalising this aspect in the results logics of future interventions.