Energising Development
Progress Report 2020

endev

Energising change

Partnership between

The German Federal Ministry for Economic Cooperation and Development

The Netherlands Ministry of Foreign Affairs

The Norwegian Agency for Development Cooperation

The Swedish International Development Cooperation Agency

The Swiss Agency for Development and Cooperation

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Collaborative Labeling and Appliance Standard Program (CLASP)

Humanistisch Instituut voor Ontwikkelingssamenwerking (HIVOS)

Nordic International Support Foundation (NIS)

Practical Action (PA)

Netherlands Development Organisation (SNV)

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EnDev at a glance

Around 4 billion people have no access to electricity or modern cooking technologies. This has a dramatic impact on quality of life, environment, health, education and income opportunities. EnDev's involvement focuses on providing access to modern, renewable energy. This is a pivotal factor in strengthening socio-economic development and combatting climate change.

EnDev's drive is to improve the lives of the most vulnerable people, ensuring no one is left behind. Economic opportunities and green jobs are created by building markets for modern, renewable energy. EnDev contributes to reducing greenhouse gas emissions to protect our planet's climate. Its approach is to empower structural, selfsustaining change; kickstarting market and sector development that evolves further without support by EnDev.

EnDev's work is about people. Results are monitored and reported rigorously. EnDev's achievements on helping people, schools, health centres, and companies gain access to electricity or improved cooking technologies can be found in this report. This report also presents EnDev's impacts on gender, job creation, and reduced carbon emissions.

EnDev is a strategic partnership. Dedicated donors, partners and individuals work together to support social development and economic growth by providing access to modern, renewable energy in more than 20 countries around the globe. The driving force behind EnDev is the partnership of Germany, the Netherlands, Norway, Sweden, Switzerland, and the United Kingdom; donors who are committed to accelerating energy access and socio-economic development.

Key achievements

23.8 million
People with access to modern energy

6.2 million
Household members with access to electricity

17.6 million
Household members with improved access to modern cooking solutions

73,550
Micro, small and medium-sized enterprises with access to modern form of energy for productive use

2.39 million
tonnes of CO_2 saved per year

28,500
Social infrastructures with access to modern form of energy: among them 18,350 schools and 2,080 health

1. Executive summary

EnDev aims to achieve sustainable access to modern energy for 26.6 million people by 2025 with a currently allocated total budget of EUR 409.6 million. By the end of 2020, EnDev facilitated sustainable access to modern energy services and technologies in total for 23.8 million people, 28,500 social infrastructures, and 73,550 micro, small and medium-sized enterprises. In 2020, 0.9 million people, 1,100 social infrastructures and 19,700 micro, small and medium-sized enterprises were reached additionally. 29,992 people are employed either in the related supply chains or directly in the enterprises that were provided with energy access. EnDev interventions saved 2.39 million tonnes of CO_2 emissions in 2020.

Key trends

Regionally, the focus continues to be sub-Saharan Africa. 67% of the funds were committed to sub-Sahara Africa, 64% of the global results can be attributed to this region. 72% of the target achievement on household level comes from access to thermal energy (cooking), while households with access to electrical energy contribute 28% to the overall target achievement. The 0.9 million people reached in 2020 correspond to an overall increase of 4%. Target achievement in 2020 was lower than in previous years due to the negative impacts the COVID-19 pandemic.

From 28,500 social infrastructures reached, 1,100 received access in 2020 which is an overall increase of 4%. In total, 2,080 health centers and rural clinics were provided with access to modern energy, a majority of 1,500 are in sub-Saharan Africa.

Until end of 2020, a total of 73,550 micro, small and medium-sized enterprises was reached. The share of access to electricity is at 46% while access to clean cooking stands at 54%. In 2020, the results' gain for micro, small and medium-sized enterprises was a clear increase in comparison to average growth previous years. In 2020, 19,680 micro, small and medium-sized enterprises received new access which is an overall increase of 37%. This was a result of dedicated efforts based on the planning for 2020, and realized in spite of COVID-19 limitations. With 54% the majority of enterprises have gained access to thermal energy. In total, 29,992 people are employed in jobs that can be attributed to EnDev. Most of these positions are part time.

Financial situation

EnDev is looking back at a successful year in 2020 in terms of securing additional funds. In 2020, EnDev secured earmarked funds of EUR 28.0 million. This includes contributions by BMZ (EUR 10.0 million), by the EU-Delegations in Mozambique and Rwanda (EUR 5.0 million each) as well as by the IKEA Foundation (EUR 8.0 million). All contributions are earmarked funding for corona response activities (BMZ), specific countries (EU-Delegations) or particular thematic and regional approaches (IKEA Foundation). These new contributions (EUR 28.0 million) represent 8% of EnDev 2 global budget until 2019. EnDev's total available budget sums up to EUR 421.74 million, thereof EUR 316,84 million non-earmarked funds and EUR 104,90 million earmarked funds – meaning that about a quarter of EnDev's funds are earmarked.

EnDev's Consultative Group held two virtual meetings in 2020. The virtual 22nd EnDev Consultative Group meeting took place in June 2020 and was chaired by the Netherlands (DGIS). The virtual 23rd EnDev Consultative Group meeting took place in November 2020 and was chaired by UK (UKAid/FCDO).

Portfolio development

2020 was marked by three major developments in EnDev's portfolio. Firstly, implementation of EnDev country projects increased their operational pace at the beginning of 2020 based on the planning as defined in the programming cycle in 2019. However, the momentum slowed down due to the COVID-19 pandemic. Secondly, EnDev's Results-based Financing (RBF) Facility came to its planned end in 2020. Based on the excellent results, RBF is now mainstreamed in EnDev country projects underlining the success of the RBF facility. Thirdly, a comprehensive global portfolio review was conducted in 2020 to check EnDev country projects with regard to their performance, strategic alignment, and future potential – maintaining the portfolio which was consolidated in 2018/2019 (see Figure 1-1). Based on the results of the portfolio review, EnDev country projects were requested to initiate the (re-)programming for their new indicative project durations – either until end 2023 or until end 2024.

Challenges

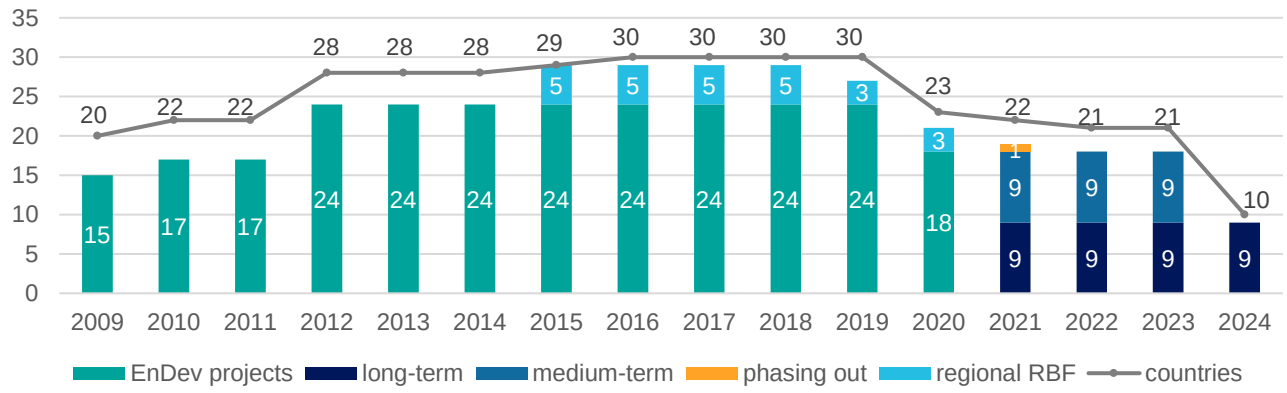
In 2020, progress towards SDG7 was lower than foreseen and related SDGs was at risk due to the effect of the COVID-19 pandemic. Energy businesses around the globe feared for their economic survival and a large number of jobs were at risk. Smaller local energy companies were more severely affected such as distributors, particularly serving remote rural areas. EnDev quickly responded to the pandemic and tackle its social and economic implications – both in terms of re-directing operational capacities under challenging implementation conditions as well as in terms of introducing innovative modalities and fast-tracking support. Response activities were based on the findings of EnDev's Energy Access Market Survey as well as on the results of the Energy Access Industry Barometer which EnDev spearheaded on behalf of a broad alliance of key sector stakeholders. Implementation was heavily affected by COVID-19 and resulted in lower target achievement as compared to 2019. The negative effect of the COVID-19 pandemic on sales results was stronger on access to electrical energy than on cooking technologies. The pandemic is expected to continue to have a strong influence on market development and hence will also continue to negatively affect EnDev's future target achievement. Developments will be closely monitored to allow for necessary adjustments.

Partnerships and innovation

Against the backdrop of the global pandemic, the need for stronger international cooperation became even more evident to leverage the comparative advantages of different partners to maintain progress and impact in the field of energy access. In 2020, EnDev was able to internationally engage more actively in the energy access community, strengthen the cooperation with existing partners, and reach out to new actors in the field. EnDev also laid the basis to its renewed learning agenda to share more broadly its lessons learnt to contribute to building further capacities for SDG7 progress.

Figure 1-1

Number of EnDev countries and projects (indicative planning from 2022 onwards)

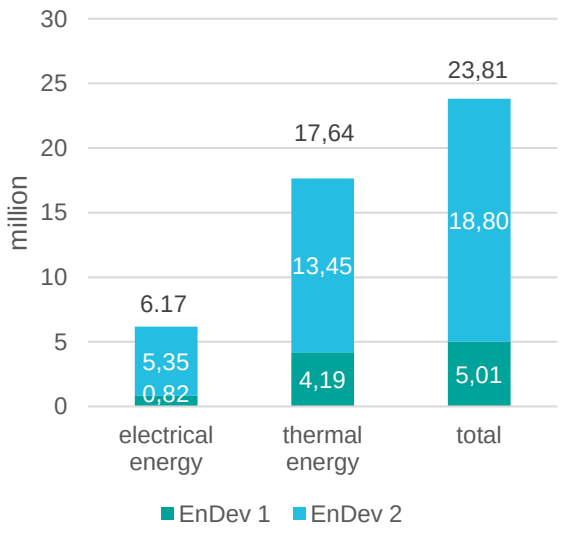


2. Outcomes and impacts

2.1 Dashboard

Since 2005, EnDev facilitated sustainable access to modern energy services and technologies for about 23.81 million people. 5.01 million people were reached already during EnDev 1. EnDev 2 facilitated sustainable access to modern energy services and technologies for about 18.80 million people. During EnDev 2 access to electrical energy is now available for a total of 5.35 million people (28%) and 13.45 million people (72%) have access to improved and more modern forms of thermal energy (Figure 2-1 and Figure 2-2).

Figure 2-1
Number of people reached – EnDev 1+2



Regionally, the focus continues to be sub-Saharan Africa with 66% in 2019 respectively 67% in 2020 of committed EnDev 2 funds (Figure 2-3). The share of least developed countries (LDC) supported by EnDev is 63% (Figure 2-4). 57% of expenditures can be allocated to electrical energy and 43% to thermal energy (Figure 2-5).

Figure 2-2
People reached by technology

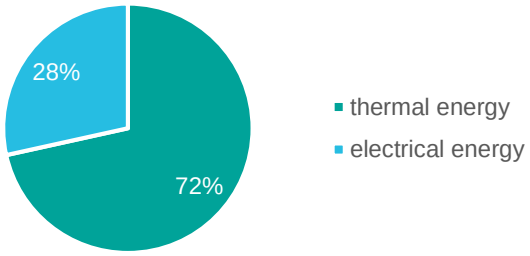


Figure 2-3
Funding by region

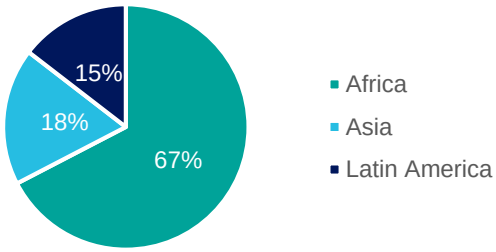


Figure 2-4
Funding by country classification

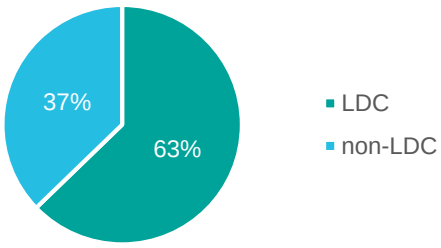


Figure 2-5
Expenditures by technology

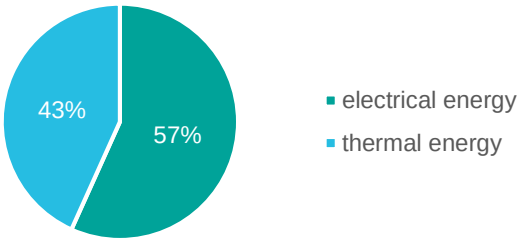
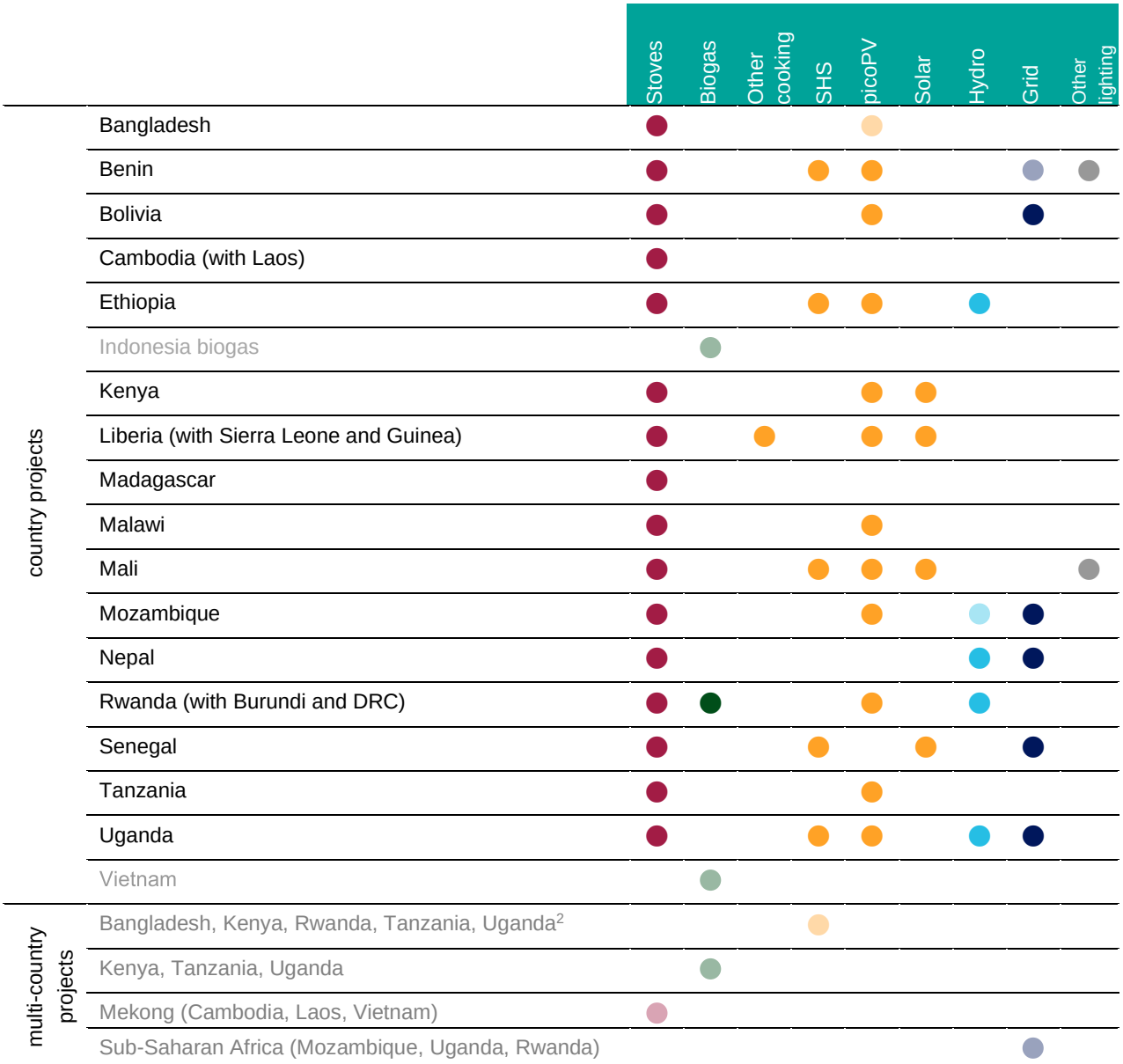


Table 2-1

Countries[1] and technologies in 2020



[1] Countries that phase out in 2020 and 2021 are shown in lighter colour

[2] focus is on off-grid appliances

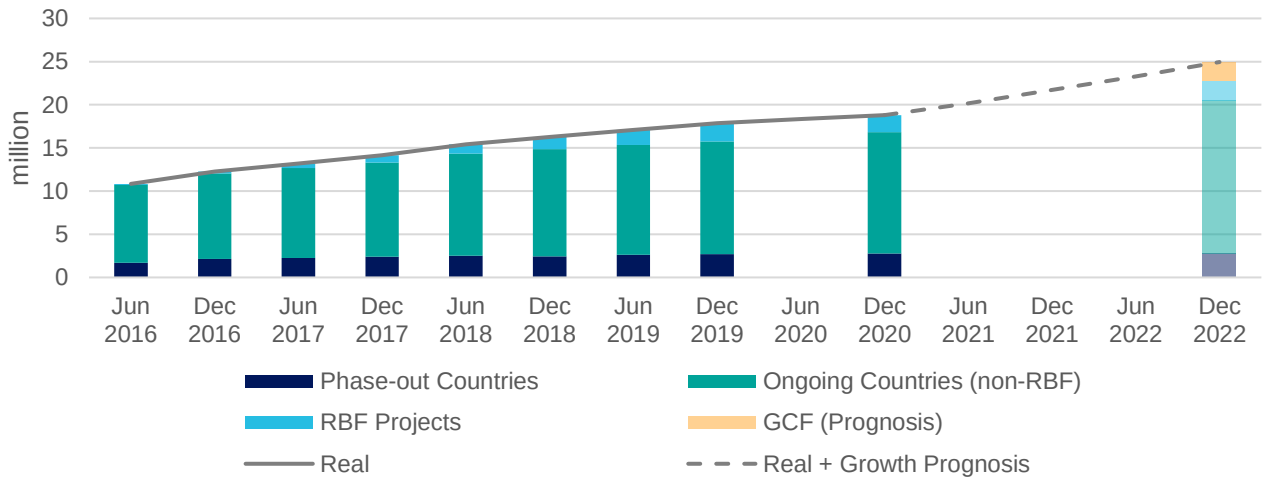
2.2 Energising Lives: Social development

By December 2020, EnDev 2 reached 18.80 million people. In 2020 the number of people that received new access is 0.92 million which is lower than the annual growth in 2019 which was 1.61 million. One of the reasons was the impact on markets worldwide by the COVID-19 pandemic (see chapter 3). Figure 2-6 shows the development of the target achievement during the last five years and draws an outlook until 2022. This is based on the planning provided by the projects for the *Annual Planning 2019 Update*. In May 2021, the *Annual Planning 2021 Update* will be presented with updated planning figures. For the future, an increase can be observed aiming to reach 25.0 million people in 2022. This figure includes projections for the country projects in Kenya and Senegal in the context of the separately commissioned project *Promotion of climate-friendly Cooking: Kenya and Senegal* with substantial co-financing by the Green Climate Fund (GCF). Contractual effectiveness of this project was achieved in February 2020, the operational start of implementation is foreseen in 2021.

The analysis shows that target achievement in 2020 was lower than in previous years. This can be clearly related to the impacts the COVID-19 pandemic had on demand and supply side of energy access technologies. Chapter 3 provides a deeper analysis of these effects. The start of the GCF-co-financed project *Promotion of climate-friendly cooking: Kenya and Senegal* was delayed in 2020 due to the pandemic as well as changes in the implementation structure that needed to be solved. With the delayed start, also the expected target achievement will be behind schedule. The outlook until 2022 shows an expected increase by additional 6.2 million people. 4.0 million are projected to be reached by EnDev core projects, and 2.2 million will be the result of the GCF-co-financed project. On average, this represents an expected growth of more than 3 million people per year. This will be a significant trend change compared to the last three years before the COVID-19-pandemic (2017-2019). During these three years the average growth was at 1.8 million people annually.

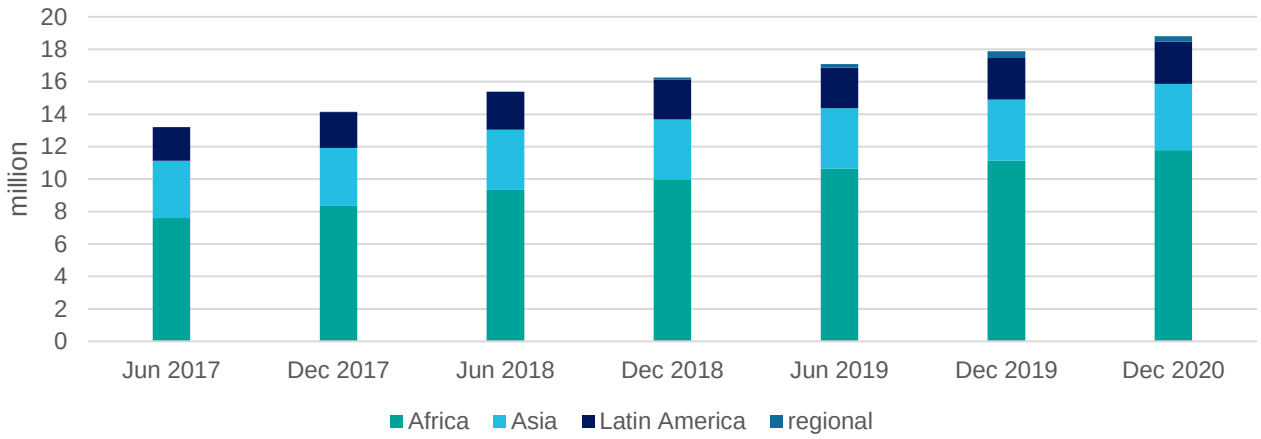
Looking only at the non-GCF prognosis it can be observed that the growth in the coming two years is projected to be in the range of 4 million people. In terms of scale, this is slightly higher than the growth during pre-COVID-19 (in 2018-2019) at 3.7 million. It needs to be considered that this projected growth is based on a considerably lower budget of an estimated 60% in comparison to 2018-2019. This indicates that EnDev's new global strategic ambition to break away from the linear relationship between inputs and results resonates at country level.

Figure 2-6
Results and prognosis for number of people reached – EnDev 2



Market development was mostly affected by COVID-19 in Africa and Latin America. EnDev has increased its focus on sub-Saharan Africa during the past years. During 2018 and 2019, results in Africa increased on average by annually 16% while results in Latin America increased by 8% annually respectively by 3% in Asia. In 2020, these growth rates look different. In Asia, results increased by 9% while the results in Africa increased by only 6% and in Latin America by 1%.

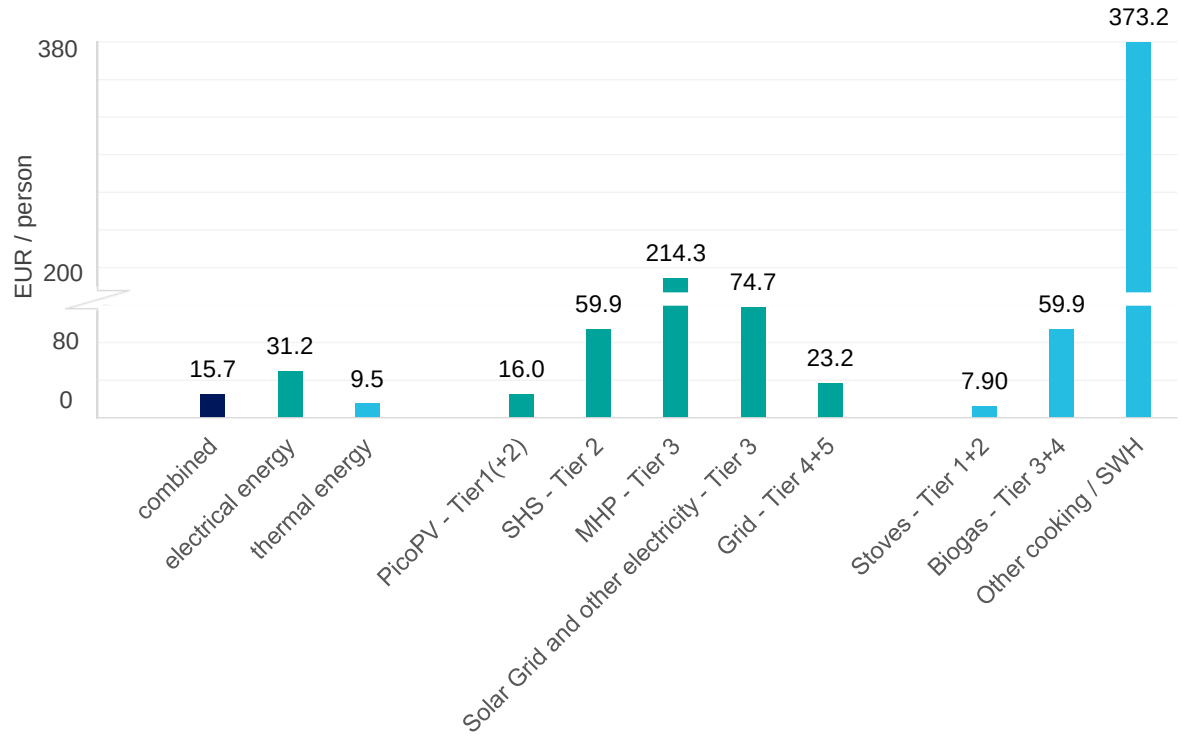
Figure 2-7
Regional distribution for number of people reached – EnDev 2



The largest share of the annual target achievement on household level comes from access to modern cooking solutions (2020: 72%; 2019: 71%;) while households with access to electricity contribute 28% (2019: 29%) to the overall target achievement (Figure 2-2). This shift towards a higher share of people reached with cooking energy derives from the different growth in both market segments. In 2020, 800,000 additional people were reached with cooking energy technologies and additional 120,000 people gained access to electricity. 43% (2019: 44%) of the country budgets are used for activities to promote modern cooking, 57% (2019: 56%) to promote access to electricity (Figure 2-5).

The cost efficiency to reach one person was influenced by two complementary effects in 2020: on the one hand the lower-than-usual annual target achievement and on the other hand expenditures above average. Both effects result in a higher value for cost efficiency. While by the end of 2019, the average cost efficiency was at EUR 14.7 per person this figure went up to EUR 15.7 per person in 2020 (Figure 2-8). This change can be observed for nearly all technologies. For electrification the cost efficiency was at EUR 31.2 per person in 2020 (2019: EUR 28.2 per person). Also, the cost efficiency for cooking energy went up slightly (2019: EUR 9.1 per person; 2020: EUR 9.5 per person).

Figure 2-8
Cost efficiency – EnDev 2



Access to electricity

According to the multi-tier framework (MTF) for electricity access, EnDev's target achievement in electrification can be attributed as follows:

Table 2-2
Outcomes according to the MTF for electrification – EnDev 2

Tier	Typical system	Number of people	%
5	grid	857,968	16%
4	limited grid	607,648	11%
3	mini-grid	249,091	5%
2	solar home system	1,719,079	32%
1	picoPV	1,914,968	36%
	total	5,348,754	

Access to clean cooking

Based on EnDev's methodology for measuring access to clean cooking and corresponding to the main dimensions of the multi-tier framework (MTF) (for instance affordability, user behavior, convenience, safety, etc.), EnDev's target achievement in clean cooking can be attributed as follows:

Table 2-3
Outcomes according to EnDev methodology – EnDev 2

Tier	Service level	Number of people	%
5	Access to needed quantity of energy source: ≥ very good Health protection: ≥ very high; Convenience: ≥ very high	0	0%
4	Access to needed quantity of energy source: ≥ good Health protection: ≥ high; Convenience: ≥ high	254,712	1.9%
3	Access to needed quantity of energy source: ≥ fair Health protection: ≥ fair; Convenience: ≥ fair	74,353	0.6%
2	Access to needed quantity of energy source: ≥ limited Health protection: ≥ sufficient, Convenience: ≥ sufficient	7,015,151	52.2%
1	Access to needed quantity of energy source: ≥ deficient Health protection: ≥ low; Convenience: ≥ low	6,087,566	45.3%
0	Access to needed quantity of energy source: ≥ highly deficient Health protection: ≥ very low; Convenience: ≥ very low	18,075	0.1%
	total	13,449,858	

Indoor air quality

In most cases women are responsible for cooking and thus benefit most from improved cookstoves that emit fewer pollutants. Considering the above figure on the number of people with access to tier 2 cooking solutions and assuming that $^1/_5$ of the average household are women and $^2/_5$ are young children, it can be concluded that around 1.47 million women and 2.94 million young children benefit from lower exposure to hazardous pollutants like particulate matter and carbon monoxide.

During 2020, additional 1,096 social infrastructures (SI) (schools, health institutes, community centers, and public spaces) received access to modern energy services. For EnDev 2, this results in a total of 20,985 SI. The annual target achievement in 2020 is almost similar to the achievement in 2019 (1,035 SI). For the next two years it is expected that per year 1,300 SI will be reached, thus showing a clear growth path.

Regionally, the largest contribution to SI target achievement is Latin America with 55% (in total 11,458 SI (Figure 2-10). Africa contributes 30% (in total 6,400 SI), Asia the remaining 15% (in total 3,127 SI). The share of electrified SI has reached 44% within EnDev 2 which is an increase by 4% as compared to the result in 2019. This growth stems from 1,008 electrified SI in 2020 (92%), while only 88 SI (8%) did get access to thermal energy in 2020. In electrifying SI, Africa has reached 3,643 which is the biggest share in the portfolio (Latin America 3,298 SI, Asia 2,184 SI).

Figure 2-9

Results and prognosis for social infrastructure – EnDev 2

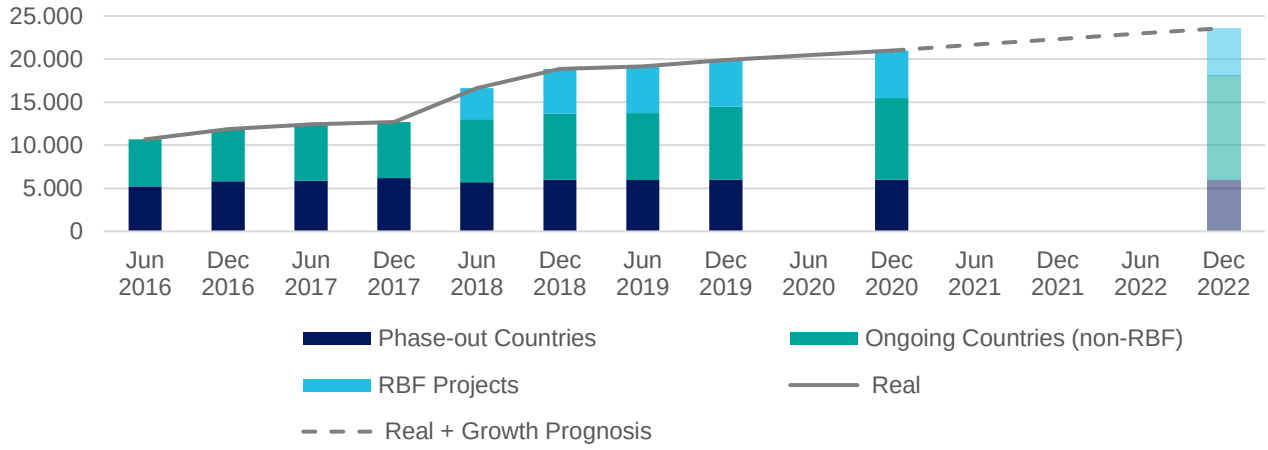


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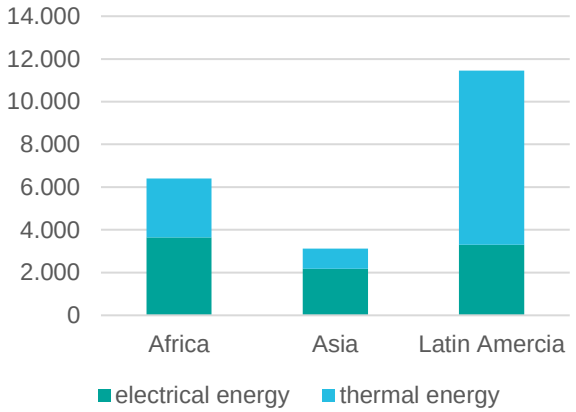
Figure 2-10

Social infrastructure by technology and region



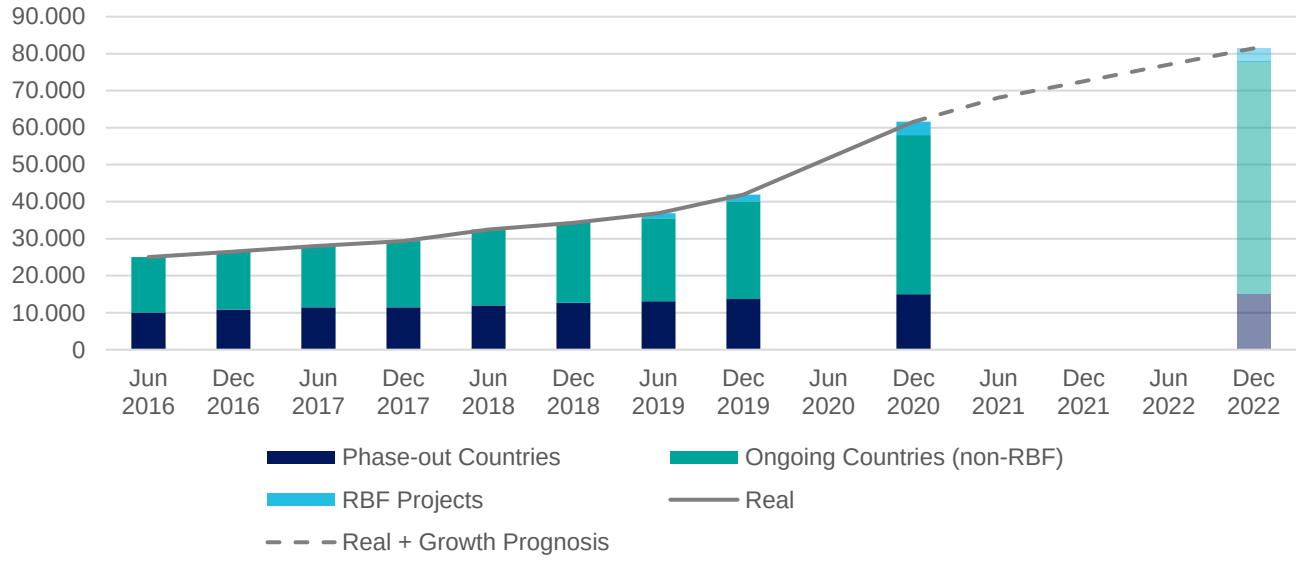
Within EnDev 2, in total 1,728 health institutions were provided with access to modern energy. This represents 8.2% of the 20,985, SI that have been supplied. Including results from EnDev 1, in total 2,080 health institutions were reached. The analysis shows that a majority of 1,500 of the health institutions are in Africa. This corresponds to 72% of all health institutions.

2.3 Energising Opportunities: Economic development

Since 2005, EnDev has provided access to modern energy for 73,600 micro, small and medium-sized enterprises (MSME). During EnDev 2, the number of MSME that received access is 61,600, while the overall share of access to thermal and access to clean cooking stands nearly at parity. In 2020, an additional 19,688 MSME received new access, which is an increase of 37% compared to the overall result from 2005 until 2019. This was a result of dedicated efforts based on the planning for 2020 and realized in spite of COVID-19 limitations. The dynamic growth in this field with rates of 7%,12%, 16% and 37% over the last four years can be seen in Figure 2-11. The growth in 2020 is higher in thermal energy with Bangladesh (with additional 11,566 MSME[3]) and Vietnam (with additional 1,245 MSME) being the main countries contributing nearly $^{2}/_{3}$ of the overall target achievement in 2020. Here, productive use cases are mainly found in restaurants and gastronomy. In electrical energy, the main countries contributing to the growth of nearly $^{1}/_{3}$ of the overall target achievement in 2020 are Bolivia (with additional 4,194 MSME) and Kenya (with additional 2,155 MSME). Here, productive use cases comprise agriculture and agricultural value chains, shops, cold storage, restaurants, or small commercial service providers such as hair salons. It is expected that this trajectory will continue in the coming years. This indicates that EnDev's global strategic orientation to put a stronger focus on productive use of energy resonates at country level.

Figure 2-11

Results and prognosis for micro, small and medium-sized enterprises



Regionally, most MSME have been reached in Asia with 42%, followed by Latin America with 37% and Africa with 18% respectively.

Figure 2-13 shows that the share of access to thermal energy and electrical energy for MSME is equally distributed in Africa, whereas there is a focus on thermal energy in Asia and electrical energy in Latin America. The analysis of the technology mix in the ongoing projects indicates that the future portfolio will have slightly more additional results in the field of electrification of MSME. Zooming in, Figure 2-14 shows that according to the current programming projects with a medium-term perspective will contribute the largest share to MSME target achievement in the category "electricity access tier 3-5". This mainly relates to commercial and industrial appliances, agricultural value chains (cooling, water

[3] see Bangladesh impact story at www.endev.info

pumping, solar powered irrigation, agro-processing, etc.), or more professionally operating manufacturing facilities. The 2nd largest share can also be attributed to countries with a medium-term perspective, here in the category “cooking access tier 1-2”. This mainly relates to gastronomic services such as restaurants or food stalls.

Figure 2-12
MSME by region – EnDev 2

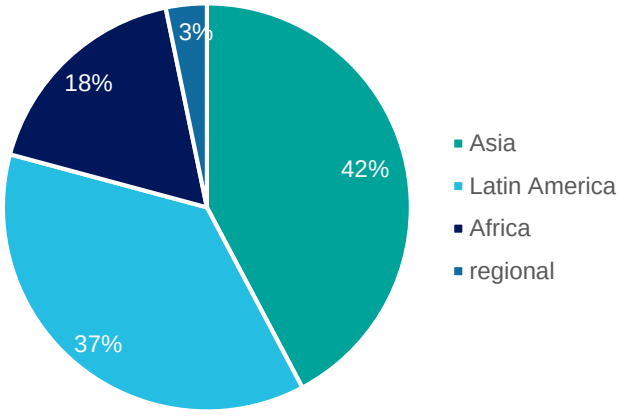


Figure 2-13
MSMEs by region and technology – EnDev 2

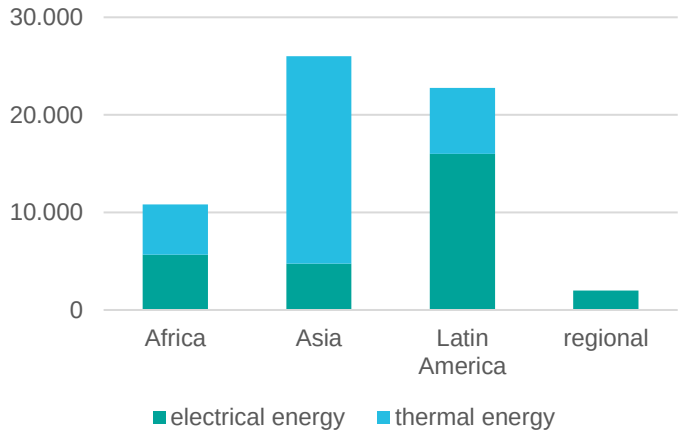
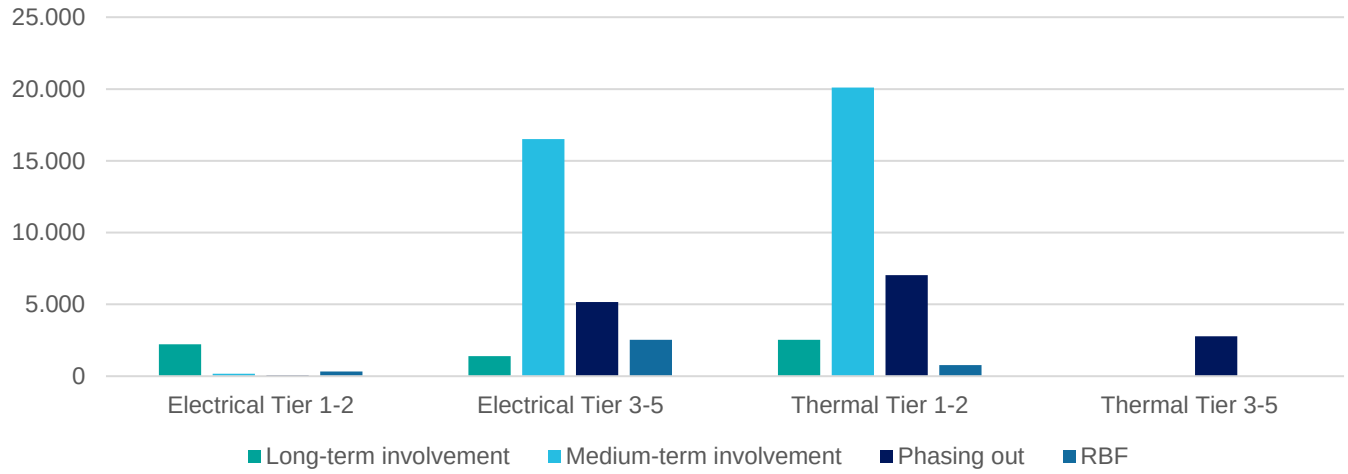


Figure 2-14
MSME tier distribution – EnDev 2



Reporting on job effects has been adapted to align better to state-of-the-art methodology to monitor employment effects. This methodology is also being applied in EnDev’s new logframe which will become effective in 2021. EnDev continues to capture data at different points along the supply chain of energy technologies to analyse and model employment effects. EnDev considers effects in enterprises that are related to production and to sales of energy products and services as direct effects. Employment effects in the operation of mini-grids are considered as direct results, too. Additionally, EnDev models indirect employment effects that occur in enterprises which use energy technologies for productive uses.

In the considered sectors most employment effects are affecting work availability at different intensity, in general most of them are part-time jobs. EnDev extended its methodology to report on these jobs. Detailed data on people with employment for 2020 is presented in Table 2-4. With the shift to people with employment, Table 2-4 presents a different unit as in previous reports and should not be compared to former reporting cycles directly. To allow for better

comparison between 2020 and 2019, overall results would need to be unified as follows: In 2020, EnDev interventions resulted in 29,992 people with employment (corresponding to 14,996 FTE) while in 2019 EnDev interventions resulted in 23,572 people with employment (corresponding to 11,786 FTE). This shows the positive development with more than 6,400 additional people with employment in 2020, while the biggest part of this growth (61%) results from employment in MSME with access to energy.

In the production of cooking energy technologies 8,759 people were employed, while 1,776 people worked in the respective sales and distribution chains. For solar systems the number of people being employed along the distribution chain was 1,653.

During the operational phase of mini-grids 5,496 people work in operation and maintenance, administrative and managerial tasks and security services exist. Temporary jobs that exist during the construction are not considered. Within enterprises that received access to energy it is estimated that as an indirect result of EnDev 12,318 part-time jobs exist. In total, 29,992 people are employed in partner countries that can be attributed to EnDev.

Table 2-4
Employment effects – people with employment

	Direct			Indirect
	Production	Distribution/sales	Operations	SME application of technologies
cooking energy	8,759	1,766		
solar lights		1,653		12,318
mini-grid			5,496	
Total		**29,992**		

2.4 Energising Climate: Combating climate change

Annual savings of CO_2 emissions show a continued growth. In 2020, 2.39 million t CO_2 were saved that can be attributed to EnDev. The overall CO_2 savings of EnDev accumulate to 17.0 million t by the end of 2020.

A breakdown of CO_2 savings per region and technology is presented in Figure 2-16. 96% of the CO_2 emission savings are achieved through cooking technologies which are mainly implemented in Africa. Regionally, a total of 85% of the CO_2 emissions saved in 2020 can be attributed to Africa (81% via thermal energy and 4% via electrical energy). In Asia and Latin America, CO_2 savings via thermal energy amount to 9% and 5% respectively. CO_2 savings via electrical energy in Asia and Latin America together are far below 1% and are thus insignificant in EnDev's portfolio.

Ongoing projects achieved annual emissions reduction of 2.20 million tonnes CO_2 which are 92% of the total annual CO_2 savings (Figure 2-16). Based on this significant contribution by the main portfolio it is expected that the annual CO_2 savings will continue to further increase in upcoming years.

Figure 2-16
CO_2 savings – EnDev 1+2

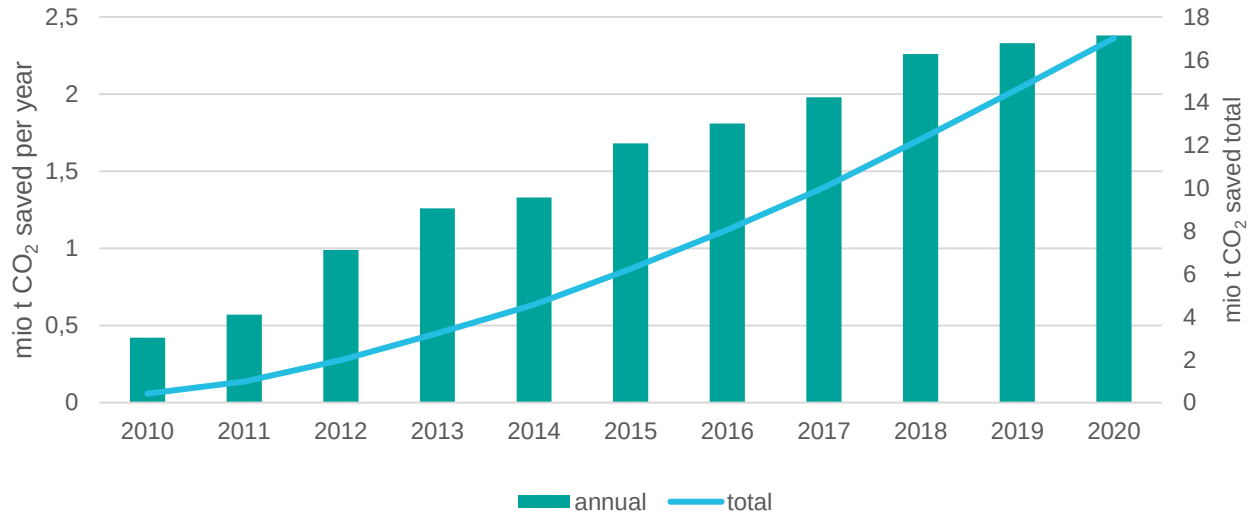
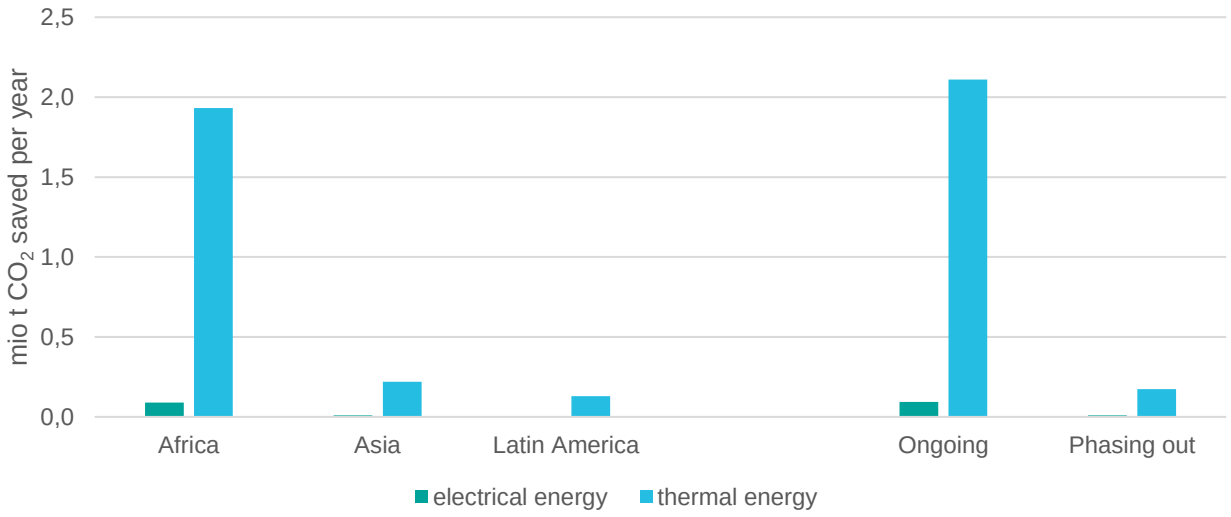


Figure 2-17
Annual CO_2 savings by technology, region and project type



Solar radios raise awareness for COVID-19 in Malawi

In Malawi, the COVID-19 pandemic revealed the nexus of energy poverty and low access to information. When the lockdown was officially proclaimed and people were forced to stay at home to curb the spread of the virus, use of unsustainable sources of energy such as kerosene lamps or dry-cell battery torches increased - posing additional health risks. Furthermore, the majority of the population in rural areas had little to no information on COVID-19 and how to avoid infections.

In response, in May 2020, EnDev, through support from the Embassy of Iceland in Lilongwe donated solar radios to the Mangochi District Council to foster a broader public awareness on COVID-19, in combination with sensitizing listeners for reducing the use of unsustainable energy sources. The solar radios were pre-loaded with memory-cards containing information on COVID-19 and as well as on other diseases such as HIV/AIDS and tuberculosis. Solar radios were distributed to about 100 village health committees in the rural areas of Makanjira and Lulanga, reaching about 150,000 people. The two areas were considered hotspots of the pandemic in the district. The initiative empowers different community structures in Mangochi in terms of awareness through energy-smart solutions.

Peter Pindani, a volunteer member of a health comitee shared, *“People are appreciating the messages and become more open for discussions on the pandemic. More knowledge on the disease helps us all to act more responsibly. In the end, this saves lives. That is what everybody needs to understand”.*

3. Extra topic: COVID-19 response

In 2020, progress towards SDG7 and related SDGs was at risk due to the effect of the COVID-19 pandemic. Energy businesses around the globe feared for their economic survival and a large number of jobs were at risk. Smaller local energy companies were more severely affected such as distributors, particularly serving remote rural areas. EnDev quickly responded to the pandemic and tackle its social and economic implications – both in terms of re-directing operational capacities under challenging implementation conditions as well as in terms of introducing innovative modalities such as *COVID PAY* and *COVID ASSIST*.

The effects of the pandemic were heavily felt in the energy sectors all around the world. After the first wave of the pandemic hit and countries worldwide went into lockdown, energy companies were severely affected by interrupted international and regional supply chains as well as by restrictions in serving their local markets. While many of those companies that managed to survive this crisis and were struggling to economically get their feet back on the ground, the second COVID-19 wave in the second half of 2020 again led to partial lockdowns in many countries. Even though the lockdowns during the second wave were limited to ensure that economic operations would continue as broadly as possible, local energy companies were increasingly under financial distress.

In April 2020, EnDev conducted a rapid *Energy Access Market Survey* in order to assess if and how companies in the energy market were affected by the global pandemic. The key finding of the survey was that a large part of companies was severely affected with companies foreseeing staff lay-off in the short- and medium-term and a lack of financial capacities to survive in the long-term.

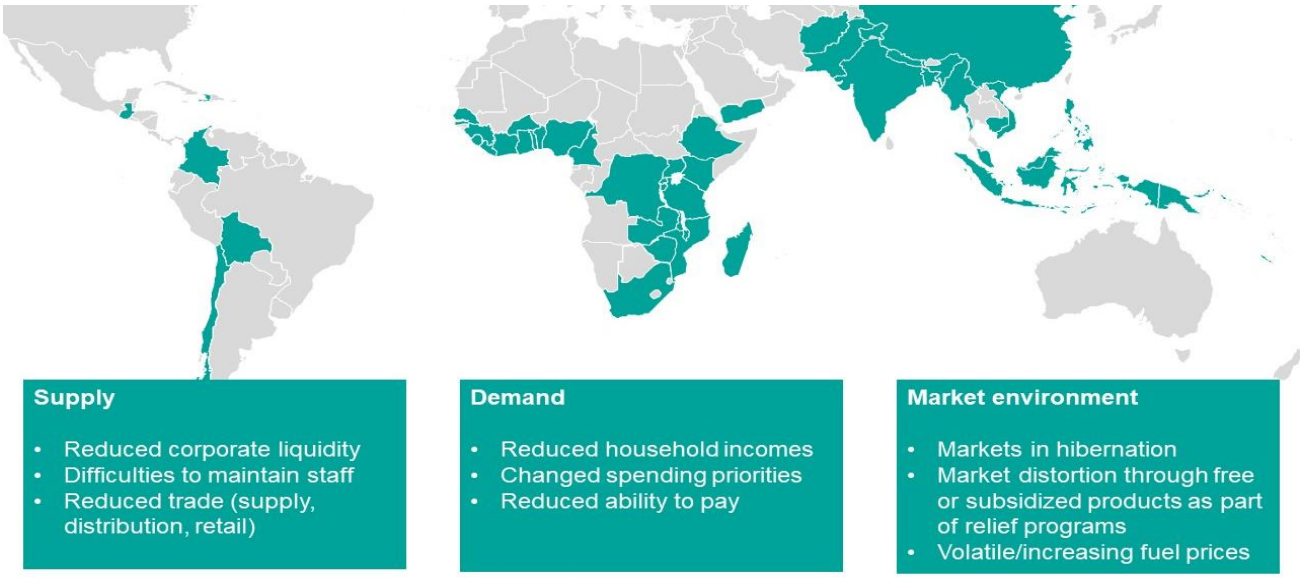
With a view to better understand the rapidly evolving economic situation in partner countries, EnDev spearheaded a broad alliance of sector stakeholders[4] to conduct the most inclusive and global survey of the off-grid energy industry to date – the *Energy Access Industry Barometer*. The results represent feedback of more than 600 companies from over 40 countries which provide energy access through mini-grids, clean cooking solutions, household solar products, and appliances. The *Energy Access Industry Barometer's* main conclusions in July 2020 were:

- The energy access sector was in crisis and the progress towards SDG7 and related SDGs was at severe risk. Responses showed that the situation seemed to have a strong impact, particularly in East Africa.
- Many businesses feared for their survival and a large number of jobs were at risk. Especially smaller companies and distributors had been severely affected. This led to endangered livelihoods, as the economic and social crisis coincided.
- The survey showed that access to finance was a key bottleneck. The need for short-term grant relief as well as long-term equity and concessional loans was evident. These financial instruments were however scarcely available.

Overall, the message from survey participants, i.e. the affected energy companies, was clear: They needed timely, comprehensive and flexible support.

[4] The alliance included Africa Minigrid Developers Association (AMDA), Alliance for Rural Electrification (ARE), Ashden, Clean Cooking Alliance (CCA), Efficiency for Access Coalition Secretariat, Energy Sector Management Assistance Programme (ESMAP/WB), Energising Development (EnDev), Global Distributors Collective (GDC), Global association for the off-grid solar energy industry (GOGLA) and Sustainable Energy for All (SEforALL).

Figure 3-1
Countries in which companies participated in the Energy Access Industry Barometer



EnDev's COVID-19 response

EnDev aims to provide support to the companies in the energy access markets which are affected by the crisis, and to share lessons learned about new instruments and the emerging response mechanisms. With its implementation perspective, EnDev has actively contributed to the discussion in various global fora: the *Energy Access COVID-19 Relief Summit*, the *COVID-19 and the Energy Access Sector: Impacts and Opportunities*, the *Powering Healthcare Roundtable* and the *Health and Energy Platform of Action (HEPA)*.

Utilizing this global network with its focus on ideation and against the backdrop of the negative effects on local energy markets which EnDev has been building for the past 15 years, EnDev rapidly executed a number of targeted COVID-19 related interventions in its portfolio with the aim of cushioning the negative implications of the pandemic. EnDev was able to re-direct interventions withing existing country budgets in Bangladesh, Benin, Bolivia, Cambodia, Kenya, Liberia, Indonesia as well as Malawi; while additional budget was allocated for fast-tracking COVID-19 response implemented in Ethiopia, Mozambique, Senegal, Tanzania, and Uganda.

Besides implementing measures to alleviate the negative impacts of COVID-19 on the energy access markets in the various countries, EnDev country projects were able to adjust swiftly to the so-called new normal in terms of field work and daily operations. The below tables provide an overview of the efforts and instruments applied.

Table 3-1
Indicative scope and projected targets (2020-2021) for the fast-track countries

Country	Focus	Number of		People to be reached
		companies	systems	
Ethiopia	ICS, solar PV	90	111,120	480,600
Mozambique	ICS, solar PV	11	25,000	130,000
Senegal	ICS, solar PV	204	36,146	140,000
Tanzania	Solar PV	10	70,000	210,000
Uganda	ICS, solar PV	25	12,700	48,500
		340	**254,966**	**1,009,100**

Table 3-2
EnDev relief instruments inventory

	Instrument	Focus	Approach	Country
Demand Side	**COVID-PAY**	*Short-term*	RBF approach targeting companies working with a PAYGO business model or mini-grid providers to ensure continuous access to electricity of beneficiaries and de-risking increased share of default payments.	Mozambique, Senegal, Uganda
	COVID-VOUCH	*Short-term*	Through a partnership with microfinance institutions (MFIs), vouchers for certain energy products can be distributed to eligible households. With these *coupons,* households can then buy products from suppliers (ICS, solar PV). The suppliers in turn can cash the coupon at one of the MFIs for the full price.	Ethiopia
	COVID-AWARE	*Long-term*	Raising awareness about healthier, cleaner, safer and more economical improved cookstoves and cooking practices as well as benefits of quality solar PV products can help to stimulate demand. Communication channels are TV documentaries, radio features, messages as well as newspaper adverts and billboards.	Senegal, Uganda
Supply Side	**COVID-ASSIST**	*Short-term*	Direct support by means of purchasing hardware (e.g. to ensure stocks are replenished) and grants ensure that energy businesses can stay in the market and/or re-boot.	Ethiopia, Senegal
	COVID-PLUS	*Long-term*	With a focused RBF instrument, existing companies in the ICS and solar PV sector can focus on new energy access for vulnerable population groups.	Mozambique, Tanzania, Uganda
Enabling Environment	**COVID-BUILD**	*Long-term*	In order to ensure a long-term prospect and strong voice of the off-grid sector in the countries to counter the pandemic, a number of local associations and other local structures have been strengthened.	Ethiopia, Senegal, Tanzania, Uganda
	COVID-HEALTH	*Long-term*	Being at the forefront of battle against the pandemic, the support for health centers and clinics is a crucial relief measure. Various activities around electrification such as procurement, installation, services ensure that vital operational functions such as light, cooling for vaccines, and sanitary installations (water) can be provided.	Ethiopia, Senegal, Uganda

Five fast-track countries: Ethiopia, Mozambique, Senegal, Tanzania, and Uganda both received additional funding as well as re-allocated resources within their country budgets. EnDev's fast-track COVID-19 response is internationally one of the largest technical assistance energy access response options to the pandemic.

EnDev country projects also provided small-scale but effective support with a range of activities that helped immediate shortcomings, as can be seen from below table:

Table 3-3
EnDev rapid response activities

Country	Main activities
Bolivia	Support to solar handwashing facilities in health centres and clinics, facilitation of energy access for remote education for children during school shutdown (solar radios), special support for productive use of energy.
Indonesia	Support for construction of biodigesters stimulating efforts for the biogas sector, feasibility study to assess up-scaling potentials of the domestic biogas market during and post-COVID-19, online trainings and workshops to increase technical capacities.
Bangladesh	Support to source raw materials for companies to re-start operations. Livelihood support to COVID-19 affected low-income communities was provided. E-boats for transporting health staff and patients, and for distribution of sanitary and hygiene articles were supported as well.
Cambodia	RBF approach to include a broader product range such as e-cooking, behavioural change activities for clean cooking and demand creation via social media.
Kenya	Provision of protective equipment (e.g. facemasks) and relevant hygiene equipment/materials to local energy companies and targeted grant support.
Benin	RBF approach to focus on economically weak areas, pro-poor subsidy scheme, targeted grant support for companies to source raw materials for re-starting operations, awareness-raising activities including TV and radio campaigns, provision of marketing gadgets and hand-washing devices.
Malawi	Dissemination of COVID-19 information and other messages (including education, nutrition, health etc.) through solar radios, support to solar PV and ICS companies to become COVID-PAY eligible, support to institutional ICS in up health centers, preparation of a pilot for tailored insurance products against default rates.
Liberia, Guinea, Sierra Leone	Support in the electrification of healthcare centers and rural clinics.

The immediate response measures and interventions to pave the way to build back better have proven to provide much needed support for a crucial sector. Moving from immediate assistance to longer-term activities strengthening the sector's resilience will dominate the agenda in the years to come. EnDev will further work towards fine-tuning its instruments. EnDev will also embark on a global learning agenda to ensure that best practices and innovative solutions are shared and replicated.

Mozambique: COVID-PAY ensures access to energy continues

The COVID-19 pandemic has negatively impacted modern energy services in Mozambique. Many customers who buy their electricity from solar PAYGo companies have reduced income due to the pandemic. They are forced to prioritise buying other essentials such as food and medicine. This means that more people are being disconnected due to defaulting on their monthly electricity payments, which forces them back into traditional use of energy such as candles and kerosene lamps. Defaulting customers also affect PAYGo companies which have reduced cash flow, leading to problems in paying staff, making customer visits, or maintaining normal operations.

PAYGo companies are provided with extra funding by EnDev which they transfer directly into a reduction of customers' energy bills. Companies facing high default rates in customer payments have been invited to design promotions - to suit their business models.
All PAYGo companies working in Mozambique have applied to COVID-PAY: three-quarters of them did so successfully, and these companies cover more than 90% of the country's solar energy PAYGo market. Each of them works with a different promotion model, for example: "pay 1 month, get 2 for free". EnDev provides financial support per customer per month for a maximum period of six months. So far almost 125,000 customers – and through them, their families – have been able to maintain their access to energy.

PAYGo companies using this scheme benefit from sustained payment collection, less defaulting and disconnected customers, and liquidity to cover pandemic-affected months. Customers benefit too, from continued access to energy, and reduced bills reflective of their reduced incomes. This enables customers to spend their energy bill savings on other essentials.

4. Partnerships

Against the backdrop of the global pandemic, the need for stronger international cooperation became evident to leverage the comparative advantages of different partners to maintain progress and impact in the field of energy access. In 2020, EnDev was able to engage more actively in international policy debates, strengthen the cooperation with existing partners, and reach out to new actors in the field.

Continued collaboration with global key players

With the World Bank, EnDev is in a continued exchange on clean cooking and rural electrification and, most recently, also with regard to policy approaches.

In Rwanda for example, EnDev has been collaborating with the World Bank since 2018 on solar related activities. EnDev consulted closely with the World Bank during the design of the pro-poor RBF programme which became the pilot for a World Bank funded USD 30 million national RBF scheme. Throughout the preparation of the national RBF scheme, EnDev has provided input based on its own experience with the pro-poor RBF. The World Bank and local implementing partners are also benefiting from capacity building, which was conducted as part of the pro-poor RBF and the eligibility tool which was developed by EnDev. In the future, new opportunities for collaboration may arise as EnDev and World Bank start to engage in the biomass sector. Potential synergies may exist with regard to capacity building for improved cookstove manufacturers and the national testing lab as well as research and development.

In Ethiopia, EnDev is coordinating very closely with the World Bank's USD 500 million project *Access to Distributed Electricity and Lighting in Ethiopia* (ADELE). The project is expected to benefit at least 5 million people, particularly the most vulnerable and poorest people across the country. The collaboration with EnDev Ethiopia runs along four main lines:

- Minigrids supported by EnDev will become an integrated part of the larger roll-out of ADELE to achieve the national electrification targets. Policy and regulatory aspects of cooperative-led minigrids will be coordinated by EnDev.
- In the field of solar PV electrification for social institutions, ADELE will build on EnDev's vast experience in this sector. EnDev is currently mapping all solar PV institutions to be able to determine which regions needs to be focused on by the World Bank funds but also by the additional government resources.
- On productive use of energy, EnDev is leading the working group within the development partner group in Ethiopia. In this context, ADELE has been designing its thematic interventions as per input and past experiences from EnDev
- On financial systems development, EnDev and World Bank are working closely together to support the government in developing various instruments to leverage private sector electrification investments in the country. This includes, but is not limited to, PAYGO, leasing, etc. EnDev has recently carried out two deep dive studies in the Ethiopian financial sector that are used as an entry point for further scoping.

In all the above four areas, EnDev Ethiopia has been regularly consulted by the World Bank in the design of its interventions, taking into account synergies and complementarities.

EnDev has teamed up with the *Energy Sector Management Assistance Program*

(ESMAP) and *GET.invest* to develop a PAYGO toolkit which provides policy recommendations to be used in different country contexts, for instance in Ethiopia. Here, EnDev has been able to convene the relevant national actors in the context of a long-term policy trajectory for PAYGO regulation.

In 2020, EnDev was peer reviewing the *State of Access to Modern Energy Cooking Services Report* by ESMAP which compiles the results of the MTF global survey. In this context, EnDev also participated in the ESMAP webinar series “What factors are critical to achieve a large-scale transition toward sustained use of modern cooking energy?”.

EnDev has also been liaising closely with the Clean Cooking Alliance (CCA), in 2020 particularly in the context of the development of the new clean cooking sector strategy. EnDev was involved since the strategic partner consultation meeting in Nairobi 2019 and throughout 2020. On one side, EnDev was represented in the advisory group during the development of the scope of work, selection of consultant, the review of Phase 1 results of the assignment (evaluation of the current state of the sector). On the other side, EnDev was involved in the stakeholder consultations as well as in the review of the respective outputs (ecosystem map, sector insights and systematic challenges). Also as a result of EnDev’s contributions to the discussions, the sector strategy is evolving into a broad and comprehensive one where – for the first time – encompassing both the cleanest solutions and solutions that are affordable to the masses.

Also in 2020, CCA together with GET.invest hosted the *Clean Cooking Investment Series*, a two-day event that covered topics ranging from investment readiness and asset financing to RBF and consumer demand. EnDev participated in this event, and organized invitation of 35 private sector partners (stove producers and distributers from EnDev countries). These were selected as companies with growth ambition and potentials. An evaluation of this event will follow in 2021. This trajectory will also be continued in 2021, starting with a segmentation/categorization of private sector partners, with a *Clean Cooking Finance Masterclass*, which EnDev will organize together with GET.invest in May 2021 and the preparations for the planned Clean Cooking Forum in late 2021 which will also include specific sessions on investments.

Co-led by WHO, UNDP, UNDESA and the World Bank, the *Health and Energy Platform of Action* (HEPA) aims at strengthening the political and technical cooperation between the health and energy sectors, to accelerate the transition to clean energy (initial focus on clean cooking and health care facilities) and to support the achievement of the Agenda 2030 and the Paris Agreement. EnDev was requested to join the two HEPA thematic groups on clean cooking and electrification of health care facilities in order to disseminate its vast knowledge and practical experience in these areas.

Building new partnerships for innovative approaches

The IKEA Foundation has joined EnDev as a new co-financing partner with focus on promoting productive use of energy in the agricultural sector in East Africa. EnDev will continue to deliver on priority aspects of its new strategy, i.e. building local businesses, creating markets for technologies increasing the scope of productive use of energy, and thus contributing to economic development in rural areas. The engagement of the IKEA Foundation with a strong focus on entrepreneurial aspects as well as innovative elements provides a welcome opportunity to endeavour new approaches and – with its integrated learning agenda – contribute to broader learning and potential replication with a view to progressing towards SDG7.

In line with the call to engage more intensively in sector development, EnDev has embarked on a new collaboration in Uganda and Ethiopia with a view to improving financing off-grid renewable energy. In Uganda, EnDev has convened a national multi-stakeholder platform for policy makers, regulators, banks, and energy businesses to discuss a closer cooperation between credit reference bureaus and

PAYGO companies, to ensure, that the existing Credit Reference System (CRS) ecosystem in Uganda is also suitable and accessible for solar companies. The objective of the intervention is to link solar companies with the local financial sector by integrating PAYGO companies into the CRS.

Furthermore, EnDev has performed a needs assessment in Uganda to assess the business development support (BDS) needs of six local PAYGO companies. The results of the assessment now forms the basis for the development of an individual BDS training concept for solar companies and the implementation of trainings, aiming at building more sustainable businesses and grow their markets.

In Ethiopia, EnDev has performed two in depth studies in the local financial markets as well as the solar market. With the study on the PAYGo sector, EnDev seeks to explore the status and potential of the sector as well as identify opportunities for intervention to help build the local solar market. A second study, was commissioned by EnDev with the view of obtaining deeper insights into the financial sector in Ethiopia with a special focus on the solar market. The objective is to identify key barriers to the development of a functioning financial sector which can catalyse access to energy in Ethiopia.

Strengthening EnDev's profile in contexts of refugees and forced displacement

Since February 2020, EnDev is implementing the Smart Communities Coalition Innovation Fund (SCCIF) with funding from USAID and in partnership with Mastercard Foundation. SCCIF aims at testing and scaling innovative private sector-led renewable energy solutions for refugee and host communities.

In December 2020, the fund concluded it first call for proposals targeting Kenya and Uganda. From more than 70 proposals, four pilot projects were selected to implement productive use of energy solutions in displacement settings – this includes an e-mobility approach for goods and passengers (Kakuma/Kalobeyei in Kenya), an agricultural business in poultry farming (Kiryandongo in Uganda), off-grid workspaces with low-scale industrial processing (Arua and Lamwo in Uganda) as well as a service provider for energy, water, and connectivity (Isingiro in Uganda). The pilots aim to further explore market-based approaches in displacement settings and how they could be scaled up. SCCIF builds on previous EnDev work in this field, also in the context of the exchange with the Dutch Coalition for Humanitarian Innovation (DCHI). Implementing the SCCIF also aims to strengthen EnDev's ties with UN agencies, humanitarian actors, development partners, and the private sector to more broadly push business-driven approaches for energy access in displacement settings.

Promoting gender-inclusive innovation

In 2020, EnDev, Hivos/ENERGIA and World Bank's programme *Modern Energy Cooking Services* (MECS) launched the *Gender and Energy Innovation Facility* (GEIF). GEIF aims to promote new, gender-inclusive ideas to accelerate access to energy and overcome gender barriers. In 2020, GEIF supported organizations in Kenya, Nepal, and Tanzania. In a first round, innovative gender-inclusive concepts for the energy sector were developed in virtual innovation bootcamps. The most promising ideas are being implemented and tested in 2021.

Contributing to a broader capacity base for SDG7 through EnDev's learning and innovation agenda

As one of the largest on-the-ground technical assistance programs for energy access in the sector, EnDev strives to further develop and structure its learning and innovation agenda whose results are to be shared with the wider energy access community, and are intended to contribute to a higher pace and impact of EnDev as well as other programs and initiatives.

Through the learning and innovation agenda, EnDev strives to support implementers in the documentation, analysis, and sharing of findings and experience from the implementation of energy access activities. With this agenda, EnDev responds to the call of more actively contributing to strengthening the capacities of not only the broader set of

EnDev implementing partners, but also of practitioners and public actors of the energy access arena.

In 2020, EnDev's learning & innovation agenda focussed on four main themes in so-called communities of practice (CoP):

- Productive use of energy
- Humanitarian energy
- Rural electrification
- Clean cooking and behavioural change

Throughout 2020, these CoPs engaged in detailed discussions and exchanged a variety of lessons learnt and good practices. Methodological questions focussed on implementation in different countries within diverse contextual settings and how to best design and roll out respective interventions.

Based on the extensive exchange, the CoPs elaborated four knowledge products that comprised the essence of the year-long learning and innovation cycle. Key findings and structured knowledge were made available to EnDev country teams during the programming cycle to ensure that learnings were injected into the strategic programming process.

The EnDev Learning & Innovation Agenda on Humanitarian Energy led by Practical Action has shaped a knowledge product on clean energy for micro-enterprises in displacement settings. Based on case-studies, the document has attracted much attention from the World Bank, UN partners as well as leading energy and humanitarian NGOs. As a consequence, EnDev was invited to present the findings in dedicated webinars to the World Bank and during the Humanitarian Networks and Partnerships Week. The exercise has shaped the EnDev toolkit on how to support market-based approaches in displacement settings and has expanded EnDev's network in the field of energy for income generation in displacement settings with humanitarian partners. Finally, the collaboration with the DCHI has broadened the partners base of EnDev in view of strengthening the EnDev humanitarian energy activities in the coming years.
The final results of the four CoPs are being shared both among EnDev implementers and – as originally also intended – more broadly with the wider SDG7 community. Publications can be downloaded on the EnDev website.

Following a survey amongst participating implementers and the positive response obtained, it was decided to continue the learning and innovation agenda also in 2021, but with a slightly streamlined thematic focus on productive use of energy as well as humanitarian energy.

EnDev supported the work with financial and knowledge contributions. Especially EnDev's solid experience from the hundreds of mini-grids in Indonesia (one out of six case study countries) could be put to good use here. The "State of the Global Mini-grids Market Report 2020" aims to raise awareness about mini-grids, mobilizing investments in the mini-grid sector and serving as a benchmark to measure progress in the sector for decision-makers. It provides the latest updates on the global mini-grids market and highlights key trends in the industry that, together, can stand as the definitive source of information for stakeholders. The study thus offers direct added value for the project's objective - creating sustainable energy access - through (1) the inclusion of the mini-grids realised by the project itself in the analysis phase of the study and (2) the specific consideration of the study results in the future methodological approach of the project.

Strengthening the nexus of climate and energy access

With the project *Promotion of climate-friendly cooking: Kenya and Senegal* with substantial funding from the Green Climate Fund (GCF) EnDev significantly expands its footprint in the climate-energy nexus. The project became effective in 2020 and implementation in Kenya and Senegal was initiated. Due to COVID-19 the main focus in 2020 was to lay the extensive preparatory and contractual groundwork, in order to kick off operations in 2021.

Shared solutions for renewable energy in Nepal

Jalapa is home to Sanad Rai, 45, and his family of four. Most people here live from farming, cattle and poultry production. Up to 2012, they used kerosene and firewood for light and cooking. To get kerosene, they had to walk six hours to the nearest city and pay around 100 Nepalese Rupees, the equivalent of 0.80 euros, for a litre which lasted only for a week. "*It was very difficult, especially for the women and children, because they spent many hours in the dark and smoky homes, which was not good for their health*", says Sanad. He couldn't bear this any longer: together with other community members, Sanad decided to switch to clean energy. They approached the *Alternative Energy Promotion Centre* (AEPC) with a request to install a micro-hydro plant in the nearby river *Lumju Khola 1* to generate electricity which was set up by EnDev. They also applied for a loan through the *Micro Hydro Debt Fund – a* revolving fund that is used by rural communities that are unable to finance the construction of a hydro plant themselves. Using these revolving funds, more than 31,000 people, 75 social institutions and 190 enterprises have gained access to electricity in Nepal between 2010 and mid-2019. Additionally, the community received technical and financial support from AEPC and EnDev, for example through construction supervision, documentation and trainings for plant operators and user committees.

In Jalapa, the *Lumju Khola Micro Hydro Plant* started operating in 2012 and now provides energy to 2,500 inhabitants and social institutions, such as schools, in the wider area. Local people use electricity for light and cooking, to go online and watch television, learning about issues that matter to them. Sanad explains: "*We have now improved our water pumps, and agricultural processing and storage facilities. I use less firewood and spend a lot less money than I used to when buying kerosene. And we no longer have to live in smoky homes and are healthier.*" Now Sanad pays around 105 Nepalese Rupees per month, the equivalent of 0.84 euros, for the electricity service; saving 295 Nepalese Rupees (2.4 euros) a month.

5. Safeguards and gender

A key element of EnDev's new strategy which was adopted in February 2020 is the ambition to increase the program's emphasis on leaving-no-one-behind, inclusiveness for poor and vulnerable population groups, with a specific focus on women and refugees. A tailor-made holistic safeguards and gender approach for the whole portfolio was developed and applied to further increase the program's commitment to and ambition level for implementing safeguards and especially gender-sensitive programming on country level. On impact level a special emphasis is put on gender and specifically women's economic empowerment.

EnDev's safeguards and gender approach

In line with GIZ's mandatory requirements, EnDev had to pass the internal process and clearance on safeguards and gender. The two-step process includes:

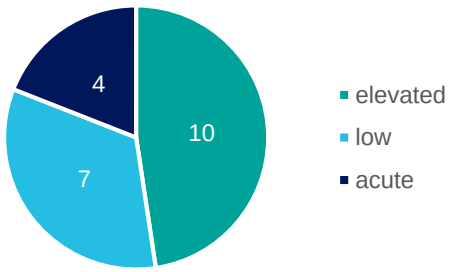
- A safeguards assessment on global level concerning environment and climate as well as a pre-assessment on global level regarding conflict and context sensitivity, human rights, and gender equality.
- An in-depth assessment for conflict and context sensitivity, human rights, and gender equality on country level. In addition, and depending on the technologies promoted (e.g. hydro power) and respective risks identified in step 1, an in-depth environmental assessment is required.

The safeguards and gender approach helps to identify potential risks and to plan accordingly to avoid or mitigate unintended negative impacts of interventions. Relevant findings are reflectedin the ongoing programming cycle of the EnDev portfolio, which will be concluded in the first quarter of 2021 and presented to the CG in EnDev's *Programming Report 2021 Update*.

EnDev's ambition level on conflict and context sensitivity

In line with the safeguards and gender approach and based on the escalation potential country matrix which is valid for EnDev and updated annually by the German Institute of Global and Area Studies (GIGA) on behalf of the German government represented by the Federal Ministry for Economic Cooperation and Development (BMZ), EnDev embedded into the programming process in-depth integrated peace and conflict analysis for all its 21 target countries regardless of their escalation potential categorization. With this, EnDev ensures a holistic picture of the context-sensitivity of its intervention strategies during the programming phase towards adapting its interventions to the different country contexts.

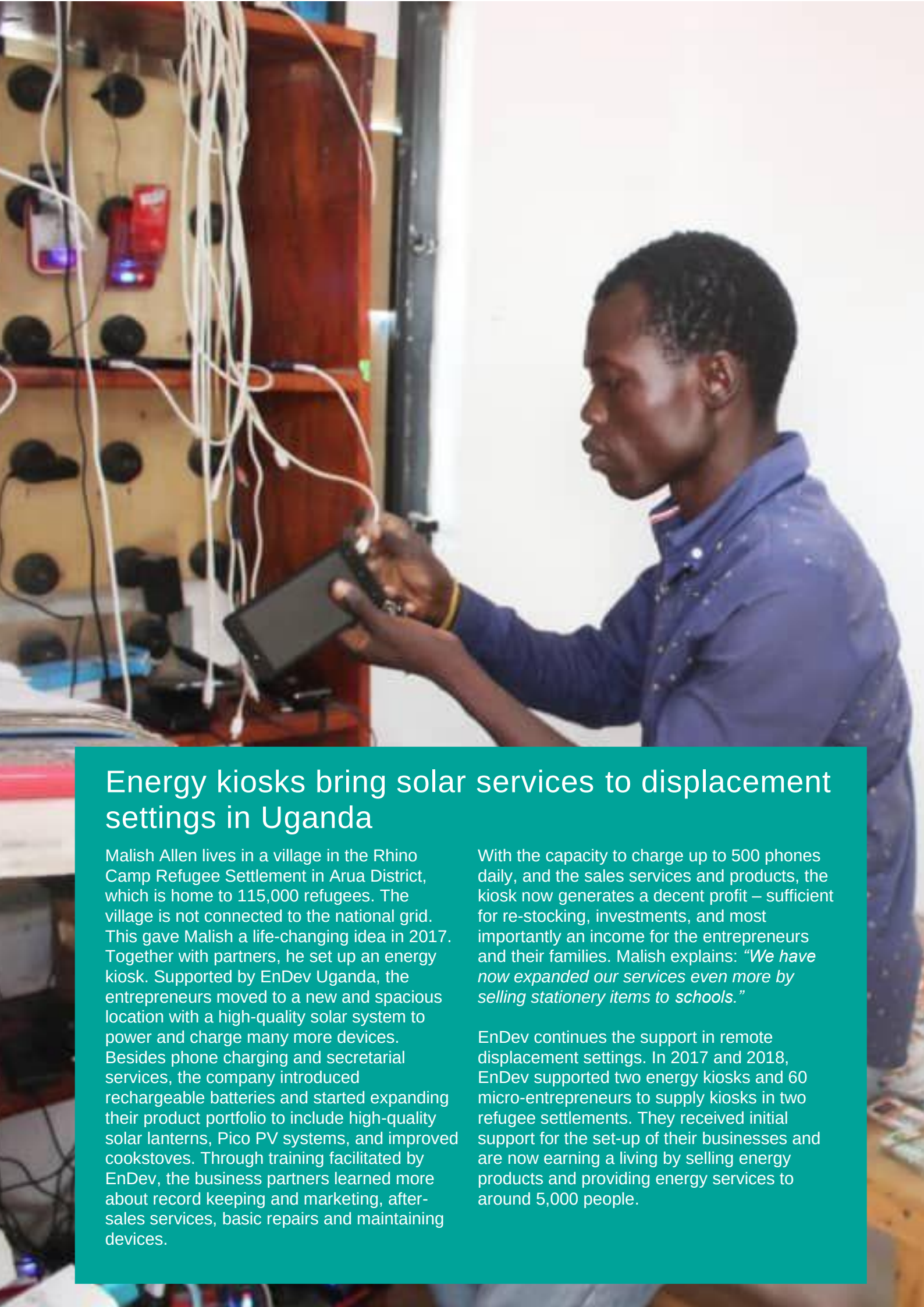
Figure 4-1
Number of EnDev country projects according to conflict escalation potential



EnDev's ambition level on gender
In line with the *EnDev Strategy 2019-2025,* EnDev's ambition goes beyond GIZ's mandatory requirements for gender equality. Embedded in the programming process initiated in 2020, gender and gender-sensitive planning on country level is a special focus. While every proposal of an EnDev country project has a dedicated section on its respective gender approach, proposals are also reviewed by external experts forming the so-called *Independent Technical Advisory Committee* (ITAC). This group includes experts with a strong profile on gender and energy, providing their assessment, findings, and recommendations throughout the proposal development process. In comparison to EnDev's programming cycle in 2019, the programming cycle in 2020/21 now allows for a more process-oriented approach where the ITAC's gender experts take an advisory role instead of solely focusing on providing recommendations. This more methodological support allows a stronger response to gender equality directly embedded in EnDev country project approaches, particularly focusing on ambition level and consistency of the presented gender activities and targets.

To ensure that the gender-sensitive approaches developed in the programming are translated into concrete and successful interventions on the ground as well as to facilitate cross-project learning, EnDev has established a strategic partnership with Energia, an international network of gender and energy experts hosted by HIVOS. In the context of this partnership Energia will:

- develop gender guidelines providing hands-on, implementation-oriented information for energy access activities addressing key questions around setting and defining the ambition level; process cycle of identifying, planning and implementing gender actions along value chains in the energy sector; and defining a common terminology.
- Provide advice on the operationalization of the revised EnDev logframe in line with the network's mandate to advocate for and provide technical support to mainstream gender approaches in energy policies and programs.
- Enable up to four country projects working on energy access to become role models and good practices by providing tailor-made advice on how to translate gender-sensitive planning into concrete gender action.



Energy kiosks bring solar services to displacement settings in Uganda

Malish Allen lives in a village in the Rhino Camp Refugee Settlement in Arua District, which is home to 115,000 refugees. The village is not connected to the national grid. This gave Malish a life-changing idea in 2017. Together with partners, he set up an energy kiosk. Supported by EnDev Uganda, the entrepreneurs moved to a new and spacious location with a high-quality solar system to power and charge many more devices. Besides phone charging and secretarial services, the company introduced rechargeable batteries and started expanding their product portfolio to include high-quality solar lanterns, Pico PV systems, and improved cookstoves. Through training facilitated by EnDev, the business partners learned more about record keeping and marketing, after-sales services, basic repairs and maintaining devices.

With the capacity to charge up to 500 phones daily, and the sales services and products, the kiosk now generates a decent profit – sufficient for re-stocking, investments, and most importantly an income for the entrepreneurs and their families. Malish explains: *“We have now expanded our services even more by selling stationery items to schools.”*

EnDev continues the support in remote displacement settings. In 2017 and 2018, EnDev supported two energy kiosks and 60 micro-entrepreneurs to supply kiosks in two refugee settlements. They received initial support for the set-up of their businesses and are now earning a living by selling energy products and providing energy services to around 5,000 people.

6. Report and accounts

In 2020, EnDev secured additional funds of EUR 28.0 million. This includes contributions from BMZ, EU-Delegations in Mozambique and Rwanda as well as the from the IKEA Foundation. With the IKEA Foundation, EnDev has been able to secure the first non-governmental contribution from a private foundation.

EnDev is looking back at a successful year in 2020 in terms of securing additional funds. In 2020, EnDev secured earmarked funds of EUR 28.0 million. This includes contributions by BMZ (EUR 10.0 million), by the EU-Delegations in Mozambique and Rwanda (EUR 5.0 million each) as well as by the IKEA Foundation (EUR 8.0 million). All contributions are earmarked funding for corona response activities (BMZ), specific countries (EU-Delegations) or particular thematic and regional approaches (IKEA Foundation). These new contributions (EUR 28.0 million) represent 8% of EnDev 2 global budget until 2019.

EnDev's total budget sums up to EUR 421.74 million of which EUR 409.56 million have been allocated. Expenditures in 2020 reached EUR 44.06 million which constitutes a substantial increase of 33% compared to an annual average of the three previous years of EUR 33.14 million (2017-2019). Total expenditures in 2020 reached EUR 345.36 million with EUR 64.20 million of planned expenditures. As per the end of 2020, a remaining balance of EUR 12.18 million is still unallocated.

In addition, the project *Promotion of climate-friendly Cooking: Kenya and Senegal* with a total additional budget of EUR 30.37 million became effective in 2020, thereof EUR 12.8 million as BMZ commission and EUR 17.57 million as GCF co-financing (tranche 1). The tentative total budget of this project will amount to EUR 51.16 million (tranche 1 and 2). The project's budget is not included in EnDev's global budget figures.

Table 6-1
Global budget and funding of projects – EnDev 2 (in EUR)

Allocation of EnDev 2 Total Budget	
Allocated to country projects based on EnDev 2 Annual Planning 2021	370,803,014
Allocated to programme management level	38,755,000
Total budget	409,558,014
Total available funds	421,742,753
Remaining funds according to Annual Planning 2021	**12,184,739**

6.1 Funds

Table 6-2
Funds by donor – EnDev 2 (in EUR)

Donors	2018	2019	2020
Consultative Group			
BMZ	91,387,000	94,870,000	104,870,220
DEZA	13,530,000	13,530,000	13,530,000
DFAT	15,844,000	15,858,077	15,858,077
DGIS	100,629,138	100,629,138	131,879,138
FCDO RBF	50,216,000	50,216,000	50,216,000
Norad (MFA)	32,833,000	52,455,404	52,455,404
SIDA	12,774,794	12,774,794	12,774,794
Additional donors			
EU	13,210,000	13,020,014	23,020,014
FCDO Bangladesh	3,260,000	3,260,000	2,049,360
ICEIDA		715,000	715,000
IKEA Foundation			8,000,000
Irish Aid	3,944,943	3,944,943	3,944,943
KOFIH	908,000	908,000	908,000
RVO	1,900,000	1,900,000	1,531,773
USAID	2,046,000	2,952,000	2,952,000
Total	**342,965,875**	**367,033,370**	**424,704,723**

As of end 2020, BMZ had commissioned an amount of EUR 375,822,950. The figures in this table additionally include contractually fixed but not yet via BMZ commissioned further contributions (DGIS: EUR 31.25 million, EU: EUR 10.0 million, IKEA Foundation: EUR 8.0 million) as well as exchange rate / settlement corrections (RVO: EUR -368,227). The available funds for EnDev after these corrections for exchange rates are EUR 421,742,753. Figure 6-1 shows shares of funds by donor, including earmarked funds.

Figure 6-1

Funds by donor (in million EUR, in % of total funds)

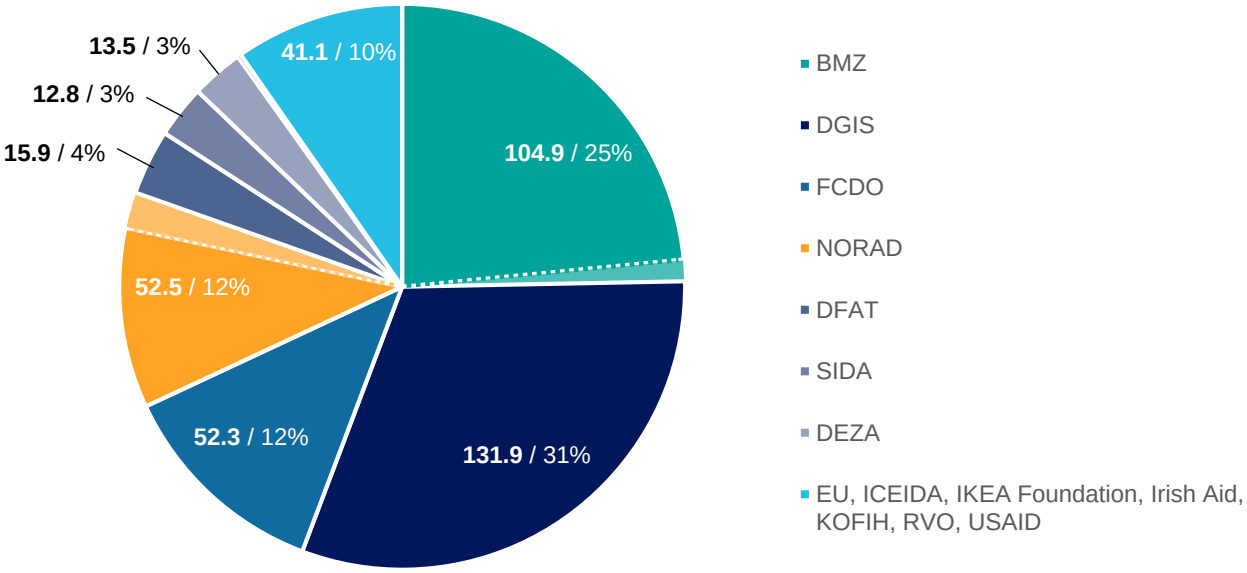


Table 6-3
Funds according to BMZ commissioning, available funds, expenditures (in EUR)

Donors	EnDev 2 funds according BMZ commission [a)]	Available EnDev 2 funds [b)]	Expenditures
Consultative Group			
BMZ	104,870,220	104,870,220	98,773,247
DEZA	13,530,000	13,979,188	11,390,848
DFAT	15,858,077	15,858,077	15,858,077
DGIS	131,879,138	131,879,138	100,944,122
FCDO RBF	50,216,000	46,928,726	43,145,974
Norad (MFA)	52,455,404	52,250,277	43,644,259
SIDA	12,774,794	12,774,794	12,869,085 [c)]
Total Consultative Group funds	**381,583,633**	**378,540,420**	**326,625,612**
Additional donors			
EU	23,020,014	23,020,014	9,438,332
FCDO Bangladesh	2,049,360	2,049,360	2,090,849 [c)]
ICEIDA	715,000	715,000	108,258
IKEA Foundation	8,000,000	8,000,000	0
Irish Aid	3,944,943	3,944,943	4,007,475 [c)]
KOFIH	908,000	908,000	708,952
RVO	1,531,773	1,531,773	1,541,173 [c)]
USAID	2,952,000	3,033,243	835,654
Total additional funds	**43,121,090**	**43,202,333**	**18,730,693**
EnDev 2 programme	**424,704,723**	**421,742,753**	**345,356,305**

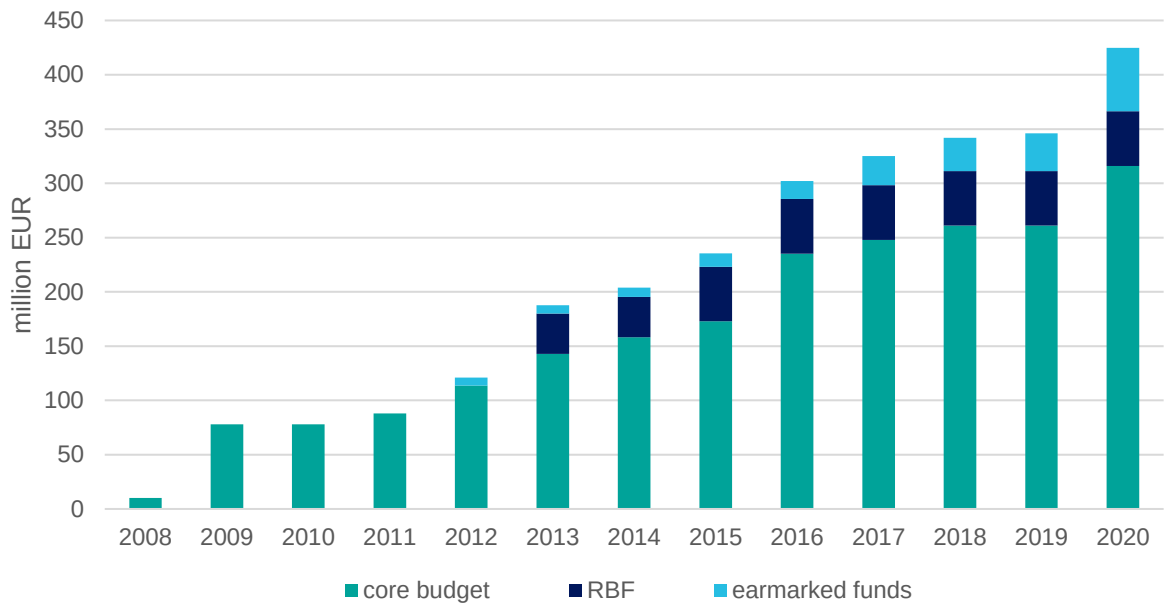
a) BMZ commission including new contributions and corrections to be contracted (DGIS, EU, IKEA Foundation and RVO)

b) Including additional contributions not yet commissioned by BMZ (DGIS, EU, IKEA) and corrections after end of co-financing (RVO).

c) Expenditures to be corrected at the end of the project. Exceeded of budgets will be levelled and charged to commissioning party.

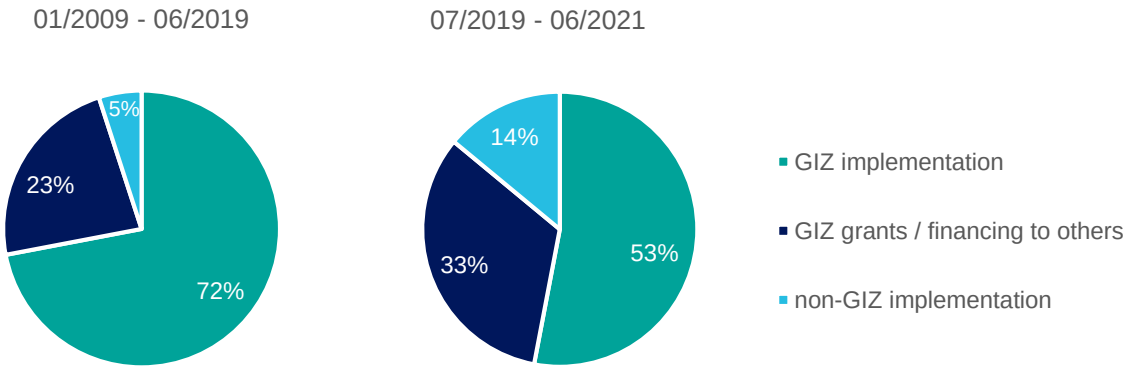
The difference between available funds (EUR 421.7 million) and expenditures (EUR 345.4 million) is EUR 76.4 million of which EUR 64.2 million are needed for the planned expenditures and EUR 12.2 million are not yet allocated.

Figure 6-2
Funds by type



During the last years earmarked funds from bilateral co-financing (e.g. ICEIDA, Irish Aid, KOFIH, RVO, USAID, EU, IKEA Foundation) became a significant part of the EnDev budget. Even donors of core funding increasingly earmark parts of their contributions (BMZ, DEZA, Norad). In 2020, 74% of funds did not show an earmarking while 26% of funds were earmarked (12% RBF, 14% bilateral co-financings and soft earmarking for technologies and/or countries).

Figure 6-3
Funds by implementer



Until mid-2019, major parts of the available EnDev funds were implemented by GIZ directly. A significant share of funds was forwarded via financing and local subsidies to partners (national and international NGOs) which took responsibility for specific parts of the implementation such as RBF or certain technologies. Only $^{1}/_{20}$ of the funds was contracted to partners which were in charge for an EnDev country project completely without GIZ being involved directly in operations. Their contracts (grant

agreements) are managed centrally as these funds are channelled via GIZ. Looking ahead, this share could increase to $^{1}/_{7}$ while funds that are forwarded to partners within projects implemented by GIZ could increase to almost $^{1}/_{3}$ of the planned budgets. Available and contractually fixed funds until end of 2020 sum up to a total of EUR 421,742,753. These funds can be divided into two main categories, programme management and funding on global level for countries (EUR 331,611,695) and earmarked funds incl. the RBF Facility (EUR 90,131,059). Securing committed but not yet commissioned funds will make EUR 12.18 million of not yet allocated funds available that will become part of the funding in the period until end of 2022.

6.2 Expenditures

Table 6-4
Expenditures by donor (in EUR)

	2009-2017	2018	2019	2020	**Total** [a]
BMZ	56,841,287	9,957,155	7,949,601	24,025,204	**98,773,247**
DEZA	7,699,000	1,832,826	1,090,105	768,917	**11,390,848**
DFAT	15,862,794	-2,979	-1,739	0	**15,858,077**
DGIS	85,354,652	5,313,423	10,247,196	28,851	**100,944,122**
FCDO RBF	20,922,990	5,505,801	7,681,316	9,035,868	**43,145,974**
Norad (MFA)	27,749,545	4,047,629	2,454,512	9,392,573	**43,644,259**
SIDA	8,658,056	3,144,727	1,066,303		**12,869,085**
EU	8,606,434	-1,356,765	2,320,046	-131,384	**9,438,332**
FCDO Bangladesh	434,008	1,710,788	-54,012	66	**2,090,849**
ICEIDA			3,716	104,542	**108,258**
IKEA Foundation					**0**
Irish Aid	3,348,761	150,441	342,610	165,663	**4,007,475**
KOFIH	163,393	345,556	188,265	11,738	**708,952**
RVO	613,652	708,762	134,331	84,428	**1,541,173**
USAID		24,641	234,151	576,863	**835,654**
Total [a]	236,254,572	31,382,003	33,656,402	44,063,328	**345,356,305**

a) 2009-2020: Differences possible because of rounding.

Table 6-5

Funding and expenditures by type or country (in EUR)

EnDev	Funding	Expenditures
EnDev 2 programme total available funds	**421,742,753**	**345,356,305**
Total funding according AP 2021	**409,558,014**	
Remaining available funds	**12,184,739**	
Programme management and cross-cutting activities, other	**Funding**	**Expenditures**
Total	**38,755,000**	**30,275,263**
Programme mgmt., incl. FCDO/DFAT prep. and Myanmar	31,783,000	26,257,961
Cofinancings EnDev-HQ [b)]	4,322,000	2,089,516
Refugee Activities	1,400,000	1,338,363
Innovation Fund	1,250,000	187,414
Other (correction bookings required)		402,009
Country activities	**Funding**	**Expenditures**
Total	**303,516,000**	**251,728,705**
Bangladesh	26,350,000	25,568,190
Benin	20,374,000	16,955,020
Bolivia	18,084,000	16,997,933
Burundi (from 01/2021)	250,000	0
Cambodia (with Laos) [c)]	4,813,000	3,247,529
DRC	900,000	202,617
Ethiopia	40,837,000	30,717,091
Indonesia biogas + solar / hydropower	16,231,000	15,983,222
Kenya	26,730,000	24,279,012
Liberia (with Sierra Leone and Guinea)	8,220,000	7,526,313
Madagascar	1,414,000	1,206,875
Malawi	9,041,000	5,883,959
Mali	10,682,000	7,996,854
Mozambique	30,134,000	21,422,846
Nepal	10,354,000	7,839,142
Rwanda (incl. Burundi until 12/2020)	24,786,000	22.722.085
Senegal	23,798,000	18,699,241
Tanzania	14,575,000	10,596,723
Uganda	15,943,000	13,884,054
Completed activities	**Funding**	**Expenditures**
Total	**67,287,014**	**63,352,337**
Burkina Faso	6,970,000	7,013,855
Cambodia 1	3,150,000	2,982,046
Central America (Guatemala, Honduras, Nicaragua)	17,640,000	17,754,441
Ghana	3,845,000	3,679,278
Mongolia	495,000	495,046
Peru	17,257,000	17,162,324
Vietnam	4,432,000	4,204,188
RBF 3: Mozambique, Rwanda, Uganda	3,283,000	940,440
RBF 3: Bangladesh, Kenya, Rwanda, Tanzania, Uganda	6,580,000	5,746,364
RBF 3: Kenya, Tanzania, Uganda	1,835,000	1,574,340
ProCEAO (EU West Africa: Burkina Faso, Benin, Senegal)	1,800,014	1,800,014

a) Available funds incl. new contributions by DGIS, EU and IKEA Foundation. Currently (31.12.20) commissioned by BMZ: EUR 375,822,950, new contributions 2020 and corrections not yet commissioned: EUR 48,881,773, total to be commissioned by BMZ: EUR 424,704,723

b) Harmonised Support to Clean Cooking Sectors (RVO), SIINC (DEZA), RBFF + SCCIF (USAID)

c) incl. former RBF3 Mekong

Annexes

A. Country overview

Table A-1

Ongoing country and regional projects

Country	Lead political partner	Project duration		Funding (in EUR 1,000)	Planned outcomes on HH level in persons[1]
		start	end		
Bangladesh	Bangladesh Ministry of Power, Energy and Mineral Resources	06/09	**12/21**	**26,350**	3,433,500
Benin	Ministère de l'Energie	10/09	**12/21**	**20,374**	1,065,000
Bolivia	Vice-Ministry of Electricity and Alternative Energy (VMEEA) of the Ministry of Energy	10/09	**12/21**	**18,084**	591,000
Burundi[2]	suspended; focus on local private sector		**12/21**	**250**	48,000[3]
Cambodia (with Laos)	Cambodia: Ministry of Mines and Energy (MME) Laos: Ministry of Science and Technology (MoST)	03/15	**12/21**	**4,813**	103,000
DRC[4]	suspended; focus on local private sector	12/19	**12/21**	**900**	93,000[3]
Ethiopia	Ministry of Water, Irrigation and Electricity (MoWIE)	01/10	**12/21**	**40,837**	2,420,000

[1] Indicative target forecasts are not adjusted to the extended project duration as this will be done in the upcoming programming cycle. Furthermore, indicative target forecasts are not in all cases synchronized to the initial end of the phase previously set to be in 06/2021. Indicative targets might span a time horizon until end of 2022 depending on the categorization as medium-/long-term involvement countries. In these cases, indicative targets are not broken down to mid-term targets, meaning that for countries with a time horizon beyond the duration of the initial phase end, target achievement might appear off while in fact this is not the case. This misleading discrepancy between the actual status and the target value vis-à-vis the remaining duration of the commissioned phase will become obsolete with the extension of the current phase.

[2] Burundi: Budget for 2021 only. With *Annual Planning 2021 Update* funds spent 09/2010-12/2020 will be shown in Burundi and deducted from the budget of former regional project Rwanda (with Burundi and DRC).

[3] Burundi, DRC and Rwanda were part of a multi-country approach via Rwanda jointly contributing to the indicative target of 753,000 people reached. The indicative target presented in this document shows a breakdown of target per country as of the Annual Planning 2019 Update. The indicative target will be adopted in the course of the upcoming programming cycle.

[4] DRC: funds budgeted for DRC since 12/2019 (implementation by AVSI foundation).

Country	Lead political partner	Project duration		Funding (in EUR 1,000)	Planned outcomes on HH level in persons[1]
		start	end		
Kenya	Ministry of Energy	04/09	**12/21**	**26,730**	4,895,000
Liberia (with Guinea and Sierra Leone)	Liberia: Ministry of Mines and Energy; Sierra Leone: Ministry of Energy	05/12	**12/21**	**8,220**	85,700
Madagascar	Secrétaire Général de la Région Atsimo Andrefana	12/12	**12/21**	**1,414**	145,000
Malawi	Ministry of Natural Resources, Energy and Mining / Ministry of Gender, Children, Disability and Social Welfare (for RBF)	12/12	**12/21**	**9,041**	1,513,000
Mali	Ministry of Water and Energy	04/09	**12/21**	**10,682**	168,800
Mozambique	Ministry of Mineral Resources and Energy	10/09	**12/21**	**30,134**	tbd[2]
Nepal	Ministry of Energy, Water Resources and Irrigation	05/09	**12/21**	**10,354**	505,000
Rwanda[3]	Rwanda Energy Group (REG) – Energy Development Company Limited (EDCL) / Ministry of Infrastructure	10/09	**12/21**	**24,786**	612,000[3]
Senegal	Ministry of Petroleum and Energy	04/09	**12/21**	**23,798**	1,800,000
Tanzania	Ministry of Energy	12/12	**12/21**	**14,575**	1,485,000
Uganda	Ministry of Energy and Mineral Development (MEMD)	04/09	**12/21**	**15,943**	915,000

[1] Indicative target forecasts are not adjusted to the extended project duration as this will be done in the upcoming programming cycle. Furthermore, indicative target forecasts are not in all cases synchronized to the initial end of the phase previously set to be in 06/2021. Indicative targets might span a time horizon until end of 2022 depending on the categorization as medium-/long-term involvement countries. In these cases, indicative targets are not broken down to mid-term targets, meaning that for countries with a time horizon beyond the duration of the initial phase end, target achievement might appear off while in fact this is not the case. This misleading discrepancy between the actual status and the target value vis-à-vis the remaining duration of the commissioned phase will become obsolete with the extension of the current phase.

[2] After the cyclone Idai hit Mozambique, the project's approach and geographic scope were adjusted to the new situation. The project's adapted approach will be reflected in the upcoming programming cycle, including adjusted targets.

[3] Rwanda: including funds for Burundi until 12/2020 which will be calculated and deducted in *Annual Planning 2021 Update*. Funds for DRC which is implemented by AVSI are deducted already from the budget of the former regional project Rwanda (with Burundi and DRC) which leads to a reduction of the total budget at this point although Rwanda is proposed to receive an upscaling of 625,000 EUR for the period of 07-12/2021.

Table A-2
Ending and finalized projects

Country		Lead political partner	Project duration		Funding (in EUR 1,000)	Planned outcomes on HH level in persons
			start	end		
Burkina Faso		Ministry of Environment, Green Economy and Climate Change	10/09	09/19	6,970	585,600
Cambodia		Ministry of Mines and Energy	12/12	11/19	3,150[1]	14,850
Central America		Nicaragua: Ministerio de Energia y Minas (MEM) Honduras: Instituto de Conservación Forestal (ICF)	09/09	11/19	17,640	342,300
Ghana		Ministry of Energy (MOEn)	01/10	09/19	3,845	Focus on PU
Indonesia		Ministry of Energy and Mineral Resources (MEMR)	05/09	09/19	12,800	85,350
Indonesia biogas		Ministry of Energy and Mineral Resources (MEMR)	12/12	03/21	3,431	51,000
Peru		Ministry of Energy and Mines (MINEM)	06/09	06/19	17,257	1,625,200
Vietnam		Ministry of Agriculture and Rural Development (MARD)	07/13	12/20	4,432	107,700
RBF Bangladesh, Kenya, (Rwanda), Tanzania, Uganda		BD: Ministry of Power, Energy and Mineral Resources (MoPEMR); KE: Ministry of Energy and Petroleum; Renewable Energy Directorate; TZ: President's Office of Regional and Local Government (PO-RALG); UG: Ministry of Energy and Mineral Development (MEMD)	03/15	09/20	6,230	305,00
RBF Mozambique, Rwanda, Uganda,[2]		UG: Ministry of Energy and Mineral Development (MEMD) MZ: Ministry of Mineral Resources and Energy; RW: Ministry of Finance and Economic Planning (MINECOFIN)	03/15	02/20	3,283	165,000
RBF Kenya, Tanzania, Uganda[3]		KE: Ministry of Energy and Petroleum; Renewable Energy Directorate; TZ: President's Office of Regional and Local Government (PO-RALG); UG: Ministry of Energy and Mineral Development (MEMD)	03/15	03/20	1,835	24,500

[1] Transitional funding also to cover continuation of stove components in Cambodia and prospectively in Laos.
[2] Regional RBF Sub-Saharan Africa: In December 2019, FCDO approved the extension of the project until February 2020. The extension will be officially announced in the Annual Planning 2020 Update
[3] Regional RBF Kenya, Tanzania, Uganda: In December 2019, FCDO approved the extension of the project until March 2020. The extension will be officially announced in the Annual Planning 2020 Update

Table A-3

Management and thematic activities

Country / Region		Project duration		Funding (in EUR 1,000)
		start	end	
Head office	Programme mgmt., incl. DFAT prep. and Myanmar	01/09	12/21	29,776
Head office	Conceptual developing and piloting (DEZA, USAID)	08/18	12/21	2,422[4]
RBF preparation		08/12	12/20	956
RBF evaluation		08/12	12/20	1,051
Cooking Sector support		05/16	03/19	1,900
Innovation Fund	Bangladesh, Madagascar, Mali, Mozambique	11/18	06/21	1,250
Refugees	Kenya - stoves, picoPV	11/17	09/19	650
	Somalia - grid, solar street light	06/17	02/19	350
	Uganda (Norad) - stoves, picoPV	10/18	12/19	100
	Uganda (RVO) - stoves, picoPV	11/17	12/19	300

[4] Including: 880,000 EUR / 1,000,000 CHF (SDC for SIINC), 636,000 EUR / 750,000 USD (USAID for RBF Facility), and 906,000 EUR / 1,000,000 USD (USAID for SCCIF).

B. Overview of results

Table B-1 and Table B-2 provide an overview of the main quantitative results presented in this report and the results achieved at the end of 2019. The tables allow an easy attribution of results to the respective project phases.

Table B-1
Overview of results

		EnDev 2		EnDev 1+2	
		2020	2019	2020	2019
People with access [mio]	People with access	18.80	17.88	23.81	22.89
	People with access to thermal energy	13.45	12.65	17.64	16.8
	People with access to electrical energy	5.35	5.23	6.17	6.1
	People with new access in 2019	0.92	1.61		
	Women with reduced exposure to IAP	1.47	1.4		
	Children with reduced exposure to IAP	2.94	2.8		
Social institutions	SI with access	20.985	19,890	28,500	27,390
	Schools	13,979	13,686	18,350	18,059
	Health centres	1,728	1,648	2,080	2,000
	Additional SI in 2019	1,096	1,035		
SME	SME with access	61,600	41,900	73,600	53,860
	Additional SME in 2019	19,688	7,615		
EUR/person	Cost efficiency thermal energy	9.5	9.1		
	Cost efficiency electrical energy	31.2	28.2		
	Cost efficiency combined	15.7	14.7		

Table B-2
Climate and employment results

		only 2020	only 2019
Employment Effects[16]	People with jobs in cooking energy technologies production	8,759	6,488
	People with jobs in cooking energy technology distribution	1,766	1,494
	People with jobs in solar system distribution	1,653	1,714
	People with jobs in mini-grid operation	5,496	5,496
	People with jobs in SME	12,318	8,380
	Total people with jobs	29,996	23,536
	Total FTE	14,998	11,758
Climate [in mio t]	Annual t CO_2 savings all technologies (EnDev 1+2)	2.39	2.33
	t CO_2 saved total (EnDev 1+2)	17.0	14.6
	Annual t CO_2 savings ongoing projects	2.20	2.17

[16] Employment effects are reported as „people with employment". Until 2019 full-time-equivalents were used. For details please see chapter 2.3.

C. Monitoring and verification

EnDev is an outcome-oriented programme and therefore places a strong emphasis on quantifying results. This is achieved by EnDev's transparent annual monitoring following a strict monitoring methodology.

EnDev's reporting is conservative and has a higher chance to underestimate than to overestimate outcomes. From experience, EnDev has learnt that raw data does not correctly represent the entire picture. For instance, not all access created will be sustainable or there might be cases where beneficiaries already had access to modern energy services (i.e., household buys stove but already possesses efficient baseline technology). Therefore, EnDev applies adjustment factors, collectively referred to attribution, additionality and sustainability to raw outcome data before figures are reported. The three factors are determined by various sub-factors.

The outcomes of individual EnDev country projects are defined as the number of people or social institutions or small and medium-sized enterprises that gained sustainable access to modern energy services. Both electricity and thermal energy contribute to the objective of energy access. Should households, social institutions or small and medium-sized enterprises be supported in both electricity and thermal energy they are nevertheless only counted once in the overall outcome figure.

Statistical data is used to determine household size from which the number of beneficiaries reached is derived. Household sizes vary between countries or even within a country. A specific household size is associated with each EnDev country project or even within regions/districts in which the project is operating. A household size of five persons is used as default value if no national statistics or EnDev-conducted studies are available.

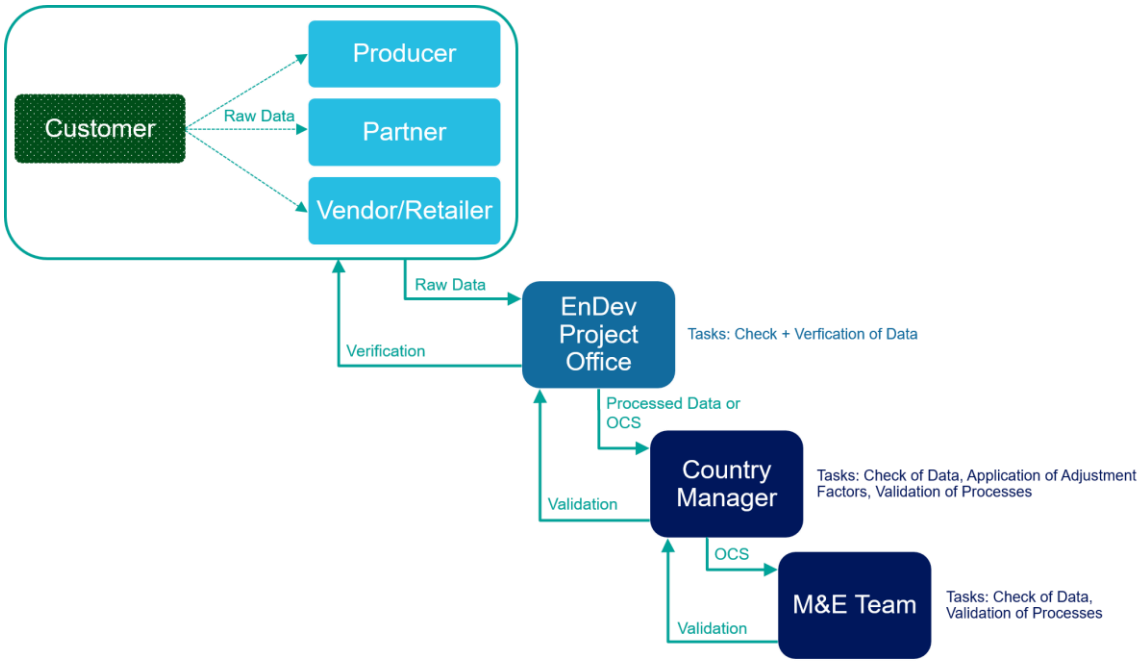
Figure C-1 describes EnDev's monitoring cycle and how high-quality data is ensured through validation and verification measures.

Raw data is collected on beneficiary level. If possible, monitoring is embedded in local partner structures. Depending on the type of partner, data may be collected in different ways: for example, as lists of electricity customers, sales reports, or lists of beneficiaries provided by NGOs or local governments. Data is collected either through implementing partners, by consultants, or by EnDev staff.

After raw data is collected, verification, the comparison of submitted data with the reality on the ground is conducted. EnDev country teams conduct a consistency and plausibility check before submitting the data to global level. Here, it is validated by country backstoppers who, in turn, pass the data on to EnDev's global monitoring team where two rounds of validation are conducted. Verification and validation play a key role, as it:

- increases reliability and traceability of data
- increases transparency
- puts a strong focus on delivering high quality data in the first place

Figure C-1
Process for monitoring, verification, and validation

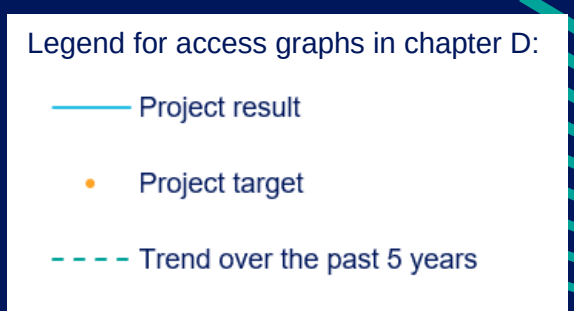


Based on the assessment of country-specific verification procedures regarding independency, sample sizing, and traceability in 2019, it was decided to develop a verification guideline to allow for consistent documentation of verification procedures throughout EnDev's portfolio. The development of this verification guideline was started in 2020, the finalization was delayed due to COVID-19 and is now planned for 2021 with the respective roll-out to follow thereafter. The guideline will include good practices for further guidance of EnDev country projects. In the future, verification procedures need to be documented in a standard format. In addition, EnDev country projects need to document their verification results also in a standardized format which needs to be submitted annually to EnDev's global monitoring team, providing an additional level of validation.

D. Country project status

D.1 Ongoing projects

- Bangladesh
- Benin
- Bolivia
- Ethiopia
- Kenya
- Liberia (with Guinea and Sierra Leone)
- Madagascar
- Malawi
- Mali
- Cambodia (with Laos)
- Mozambique
- Nepal
- Rwanda (with activities in Burundi and DRC)
- Senegal
- Tanzania
- Uganda

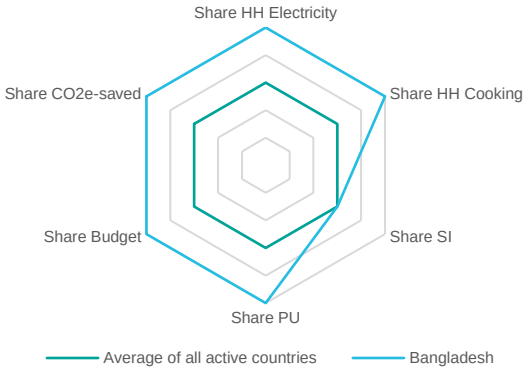


Bangladesh

Country facts	
Population	161.4 million
Human Development Index	135 ↑ / Total (0.62)
UN Classification	LDC
Access clean cooking	60 % (urban) 9 % (rural)
Access electricity	97 % (urban) 78 % (urban)

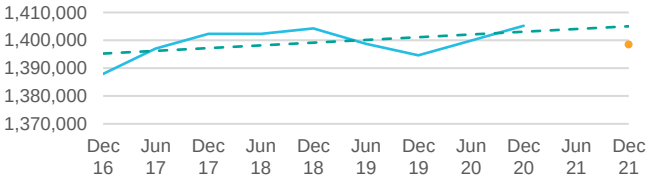
Project facts	
Project period	06.2009 - 12.2021
Budget	EUR 26,350,000
Core funding incl. RBF	EUR 26,350,000
Earmarked	-
Average annual turnover	EUR 1,507,369
Implementing Organisation	GIZ
Lead political partner	Bangladesh Ministry of Power, Energy and Mineral Resources

Relevance

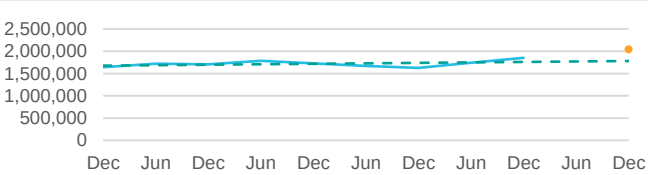


Country facts		
	Targets	Achieved
HH Access Electricity	1,398,500	1,405,220
HH Access Cooking	2,035,000	1,851,120
SI Access	960	942
PU Access	10,800	18,501

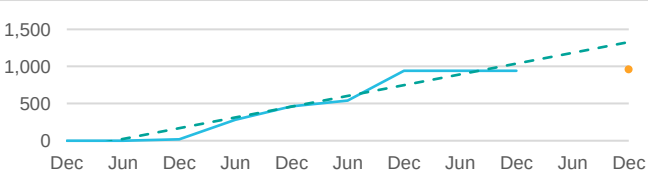
HH Access Electricity



HH Access Cooking



SI Access



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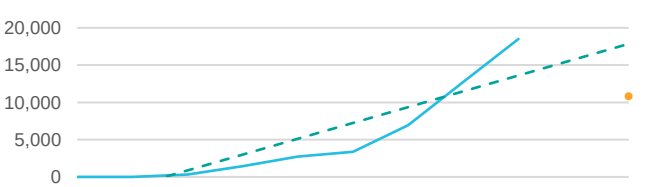


Bangladesh
Success factor in the ICS business: after-sales services to build trust with customers

© Bangladesh Bondhu Foundation

Background information

EnDev Bangladesh supports the provision of efficient and clean cooking through improved cookstoves (ICS) for all target groups (HH, MSME, SI). EnDev has continued supporting the Sustainable and Renewable Energy Development Authority (SREDA), the Government's nodal agency for modern and clean energy promotion. The project has also worked with partners to develop the technology and market for ICS and clean cooking fuels. In addition, EnDev Bangladesh has continued working on incorporating e-mobility aspects into swarm grid operations in collaboration with Innovation Fund winner SOLshare ME.
In 2020, the impacts of the COVID-19 pandemic severely affected all implementation activities at ground level.

Project progress during monitoring period

Dissemination of the local ICS 'Bondhu Chula' (BC) was continued by Bangladesh Bondhu Foundation (BBF) in 2020. With EnDev's and the support of a Korean carbon programme, BBF installed a total of more than 700,000 domestic and more than 6,000 commercial ICS within the monitoring period. 50% of these ICS were installed in the first 3 to 4 months of the year before the pandemic hit the country. EnDev supported BBF in the areas of capacity and business development, commercial stoves, and the 'BC doctor' programme.
EnDev implementation partners Practical Action (PA) and SNV continued capacity development of local partners for production and marketing of briquettes from waste materials, with a focus on the exploitation of processed faecal sludge. A market assessment on the use of faecal sludge for cooking fuel was conducted by SNV and shared with sector stakeholders.
EnDev continued support to SREDA for drafting the National Action Plan for Clean Cooking 2020. EnDev also provided ICS to cyclone victims as emergency support. In addition, EnDev supported an action research on hybrid on-grid/off-grid e-cooking solutions through United International University in a collaboration project with UK Aid's Modern Energy Cooking Services (MECS) programme. EnDev also started dedicated smaller COVID-19 response measures.

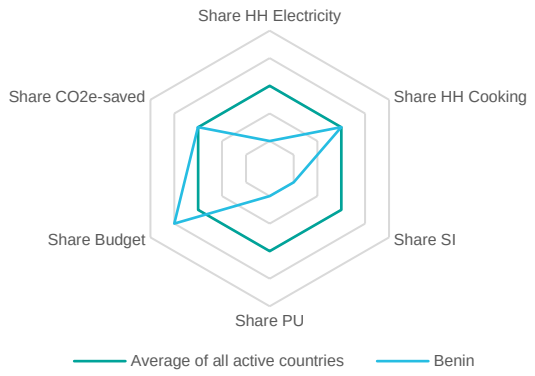
Manirul Islam – entrepreneur with staying power
Manirul Islam (51) comes from poor background. He never had a chance to receive formal education, and had to struggle from a very young age to earn a living for himself and the large family he grew up in. Working as a fisherman as well as a mason never paid off for him; the father of two kids instead suffered heavy losses and could not pay back his loans.
In 2011 he met the owner of the NGO Diganta, Mowlana Abdul Hannan, that produced Bondhu Chula (BC) cookstoves and got the opportunity to work as a partner. When he started, he could only install 5 to 6 ICS a month - people were quite reluctant. Explaining the benefits alone didn't help. He then changed his approach to after-sales services and customer management. In case of any complaint, he inspected that BC and took necessary steps to fix it, regardless of which partner had installed it. As a result, he got many more orders. As his business was flourishing, he decided to expand. For making stoves, chimneys and installing the BCs, he employed nearly 50 workers. In 2019, he was able to install about 700 ICS every month while sometimes he even had orders for 1000. At that time, he made net profit of more than 1.5 lakh taka (~1,500 EUR) and started constructing his own house.
Currently under COVID-19, sales decreased dramatically. Although it is increasing slowly again, due to capital shortage he is still unable to take his business to the previous level.
In the future, when his business has recovered, he wants to expand in other districts. As he has struggled throughout his life, he understands the distress of vulnerable families and wants to extend them his helping hands.

Benin

Country facts	
Population	11.5 million
Human Development Index	163 ↑ | Total (0.52)
UN Classification	LDC
Access clean cooking	8.0 % (urban) < 5 % (rural)
Access electricity	67 % (urban) 18 % (rural)

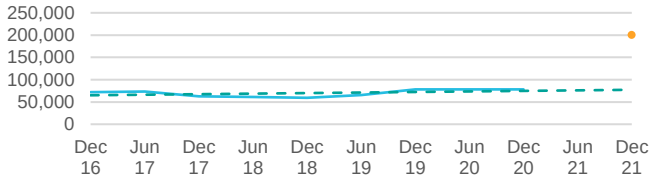
Project facts	
Project period	10.2009 - 12.2021
Budget	EUR 20,374,000
Core funding incl. RBF	EUR 20,374,000
Earmarked	-
Average annual turnover	EUR 1,863,315
Implementing Organisation	GIZ
Lead political partner	Ministère de l'Energie

Relevance

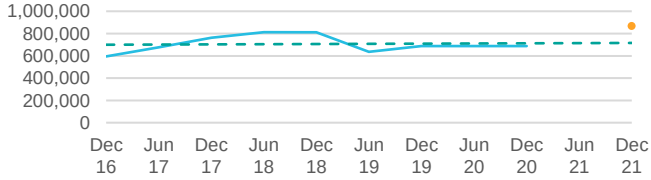


Country facts		
	Targets	Achieved
HH Access Electricity	200,000	78,148
HH Access Cooking	865,000	688,832
SI Access	225	194
PU Access	10,800	149

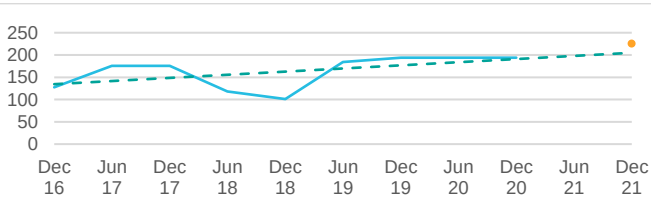
HH Access Electricity



HH Access Cooking



SI Access



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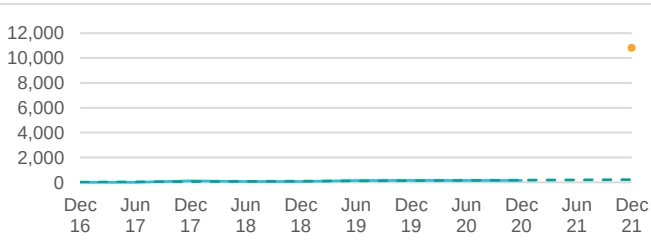


Benin

With the sales of improved stoves, I have increased my income by four.

Background information

Since 2014, EnDev Benin has supported the development of the solar market through result-based financing (RBF) incentives and the strengthening of capacities of market actors. Supported technologies include solar lamps, small and larger customised solar home systems, solar water pumps, and streetlights. In the period 2019-2021, solar activities focused on the household solar market with RBF incentives and technical assistance. Focus on solar for productive uses will increase again in the coming phase. EnDev Benin also supports cooperatives that produce and distribute improved cookstoves (ICS), mainly for household use. Focus on stoves for productive uses and social institutions will also increase in the coming phase.

Project progress during monitoring period

Solar Energy Component In 2020, EnDev Benin supported 13 solar companies to reach 72.605 people. Remote areas are currently not yet covered by solar companies. To correct this, EnDev Benin initiated a pilot RBF that supports companies to reach these customers at the 'last mile'. Companies receive RBF incentive bonuses for sales in any of the 363 rural/remote localities which will not be electrified by a national grid. The project worked with the government to consolidate tax exemptions for solar products and to explore the use of quality certificates accessible to local companies.

Cooking Energy Component - In 2020, the cooperatives EnDev supports sold 96.279 stoves and provide improved energy access to 148.013 people. Compared to the previous year, this is a significant decrease in sales, mainly as a consequence of the negative impacts of the COVID-19 crisis. A subsidy was provided to the national ICS association to develop its organisational capacities. Under a learning by doing approach, the association learns how to manage its own projects, how to acquire large stove production contracts, and how to represent its member and defend their interests. A grant was given to one of the twelve departmental structures as a pilot strategy to support the consolidation of the ICS market. Activities concentrate on capacity development for stove producers, creation of new selling points, and use of biomass residues as alternative fuel. Moreover, a new RBF initiative was launched to promote the involvement of private companies in the sector. With this RBF support, companies in the ICS sector are supported to expand the distribution network and to commercialise higher-tier stove (e.g. e-cookers).

COVID-19 response - Since July, and for one year, special promotion campaigns, which include dissemination of good health practices, are being implemented as COVID-19 response measures. The focus is vulnerable rural population. Activities are carried out in cooperation with the Rural Electrification and Energy Efficiency Agency (ABERME).

Solar pumping for efficient vegetable production

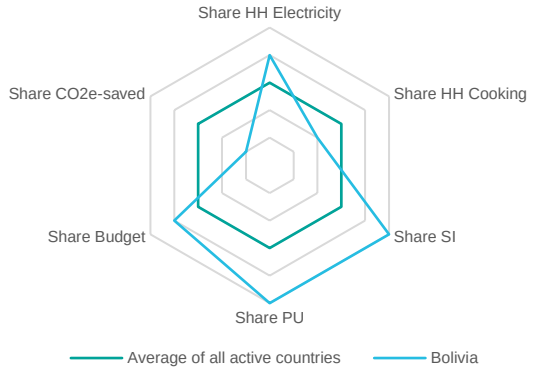
Amoussouvi Rodolphe is the manager of a farm that produces different vegetables alongside the beach in Cotonou since 2004. "Watering the garden three times per day with a watering can was really hard", he says. In September 2020, a solar powered pumping system was installed in the garden to make it easy to irrigate the garden. This project was financially supported by the RBF deployed by EnDev Benin. Now, water supply in the garden is easy and reliable. "Since then, my work has become easier, is done in a short time and revenues have, of course, increased when you compare it with the situation before the installation", he cheerfully describes.

Bolivia

Country facts	
Population	11.4 million
Human Development Index	114 ↑ | Total (0.71)
UN Classification	Developing Economy
Access clean cooking	> 95 % (urban) 53 % (rural)
Access electricity	100 % (urban) 86 % (rural)

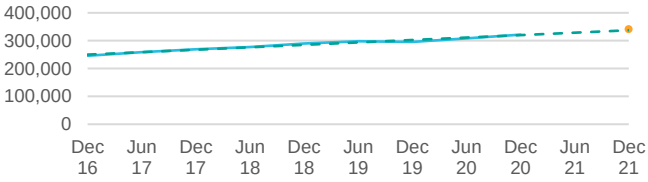
Project facts	
Project period	10.2009 - 12.2021
Budget	EUR 18,084,000
Core funding incl. RBF	EUR 18,084,000
Earmarked	-
Average annual turnover	EUR 901,494
Implementing Organisation	GIZ
Lead political partner	Vice-Ministry of Electricity and Alternative Energy (VMEEA) of the Ministry of Energy

Relevance

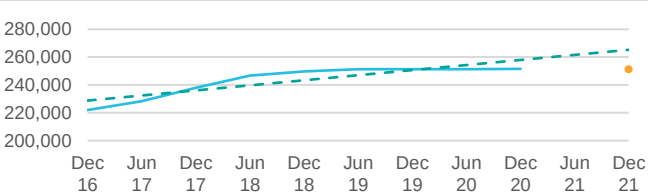


Country facts		
	Targets	Achieved
HH Access Electricity	340,000	321,785
HH Access Cooking	251,000	251,565
SI Access	2,400	2,440
PU Access	11,500	12,995

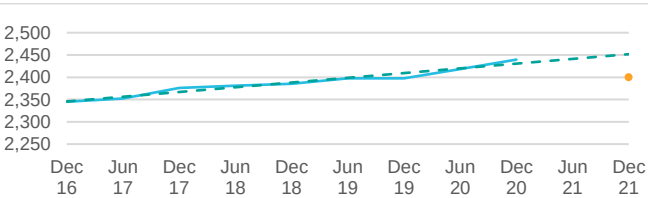
HH Access Electricity



HH Access Cooking



SI Access



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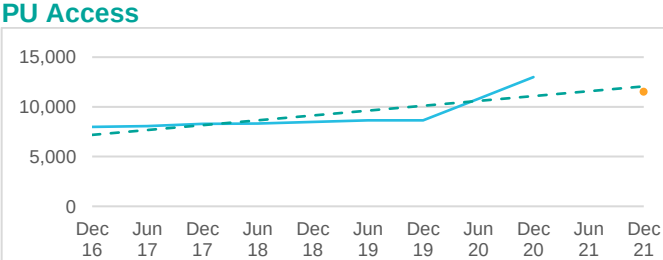


Bolivia:
Before, we used to grind 11 Kg a day. It was very tiring. Now with the machine, the same amount only takes us 4 minutes.


Chiquitanian women entrepreneurs with the cusi grinder
Copyright: CIFEMA SAM

Background information
EnDev Bolivia works on three main technical components: (1) higher tier electrification: increasing the number of households and social infrastructures connected to the electricity grid by reducing connection costs, (2) solar market development: assistance for creating and strengthening rural markets for photovoltaic technologies, promoting high quality certified products, and supporting product diversification and (3) Productive Use of Energy (PUE), by strengthening rural productive organizations on production, yields, efficiency and income generation, through promoting access to energy and technologies for productive uses.

Project progress during monitoring period
Political uncertainty after failed elections in October 2019 and the effects of the COVID-19 pandemic since March 2020 resulted in a double crisis. Despite these difficulties, recovery was possible in the second half of 2020, thanks to significant efforts made by partners to make up for lost time. Although picoPV and SHS markets stagnated significantly, electric cooperatives resumed activities and MSME's continued demanding PUE technologies. This was also possible because COVID-19 reached rural areas later and with less intensity. Since the project teams had to work from home, a series of virtual seminars were conducted. The topics focussed on: (a) Educational messages on PUE and gender were transmitted by community radio stations to reach government officials, NGOs, and rural producers; and (b) A knowledge exchange on smart metering including international experts and a variety of actors from the electricity sector proved to be very successful due to high participation and a subsequent demand increase for smart metering equipment.

The Fund for Sustainable Access to Renewable Energies ("FASERTe") implemented by the Inter-American Institute for Cooperation on Agriculture ("IICA") and funded by EnDev works towards developing a sustainable market for renewable energy. FASERTe initiated its second round of funding with four companies, focused on strengthening their technical and commercial areas in a market struck by the pandemic.

Cooperation with Practical Action in the field of productive use of energy had a positive start in 2020. During 2020, this cooperation supported at least 225 MSME's with productive technology and market access in value chains such as cacao, coffee, honey, meat and bakery. More than 1,500 additional rural MSME's will be supported in the first quarter of 2021. New strategies and methodologies were also implemented, this allowed productive use technologies, such as a cusi grinder to be better adapted to specific users, needs and contexts (see box below).

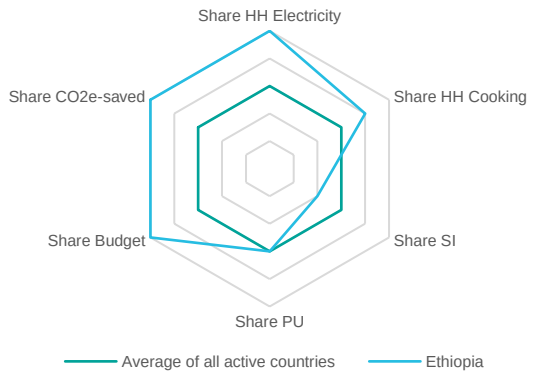
Women involved in technology design for female producers
In the Chiquitano Forest, 34 women from the Monteverde Native Community Land engage in economic opportunities by using cusi palm (Attalea speciosa) for obtaining organic extra-virgin oil for beauty and personal care products. However, manual grinding of the palm fruits is a very time consuming and physically challenging process. EnDev, the Bolivian company CIFEMA SAM (originally a research center at the public university, now specialized in R+D and implementation of productive technologies related to agriculture and agroforestry) and the NGO APCOB facilitated participatory processes to co-design a cusi grinder. The women themselves ideated concepts, tested prototypes and made recommendations for adjustments. All of the constructive and ergonomic details of the grinder were adjusted based on the local context, uses and customs. The technology increases output by more than 1,000% and reduces production costs by at least 15%. It eliminates fatigue and women can spend more time on other tasks. The grinder runs with an 8-panel photovoltaic system allowing 24-hour autonomous operations. The prototype achieved full social adoption and is currently being replicated.

Ethiopia

Country facts	
Population	112 million
Human Development Index	173 ↑ / Total (0.47)
UN Classification	LDC / LLDC
Access clean cooking	24 % (urban) <5 % (rural)
Access electricity	92 % (urban) 33 % (rural)

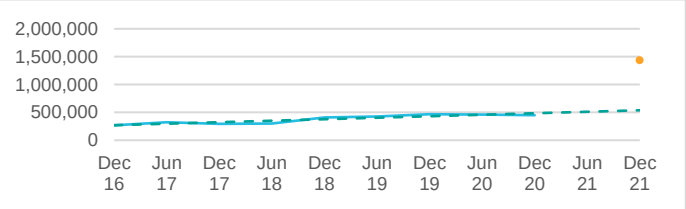
Project facts	
Project period	01.2010 - 12.2021
Budget	EUR 40,837,000
Core funding incl. RBF	EUR 23,514,000
Earmarked	EUR 17,323,000
Average annual turnover	EUR 3,581,135
Implementing Organisation	GIZ, SNV
Lead political partner	Ministry of Water, Irrigation and Energy (MoWIE)

Relevance

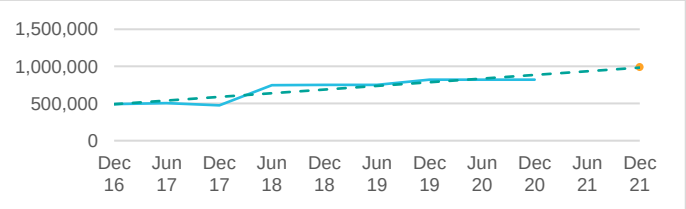


Country facts		
	Targets	Achieved
HH Access Electricity	1,430,000	449,181
HH Access Cooking	990,000	821,472
SI Access	1,750	770
PU Access	6,850	2,525

HH Access Electricity



HH Access Cooking



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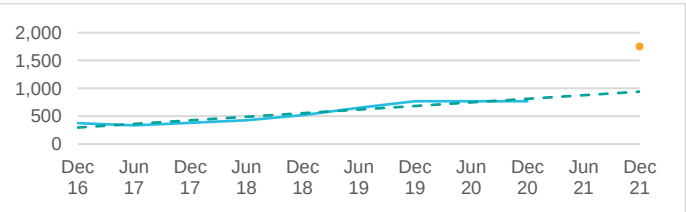

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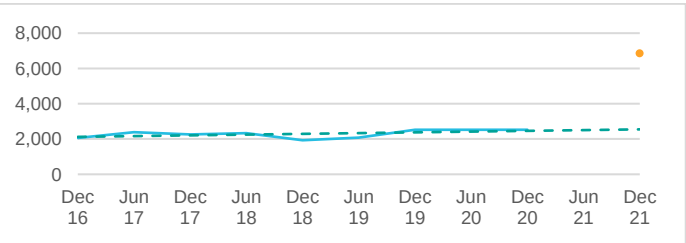


Ethiopia:
Strategies will be refined to be more gender-responsive


© GIZ Ethiopia

Background information

EnDev Ethiopia, forging strategic partnerships, supports the private sector and the government to create sustainable energy access for households, institutions and small businesses. EnDev Ethiopia with additional co-financing from the EU, Irish Aid, KOFIH, aims to establish self-sustaining markets for modern energy supply based on improved and modern cooking solutions, solar PV solutions and mini-grid electrification.

" Access to finance is the key to expediting energised development."

Project progress during monitoring period

Support to RE and ICS industry associations: EnDev Ethiopia supported leadership and management trainings to solar and ICS associations leaders to improve their organizational capacity in Amhara, Oromia, SNNPR and Tigray. A warranty receipt system was piloted in cooperation with the ICS associations to promote quality and traceability of stoves based on a previous successful trial with few selected enterprises in Oromia.

COVID-19 relief support: C-19 relief measures have been designed with SNV and the Development Bank of Ethiopia (DBE) to roll out relief support packages, such as material support and consumer rebate vouchers for affected solar and ICS partner SMEs and to strengthen their industry associations. A grant contract was signed with DBE for a COVID-19 relief development assistance fund for the solar and ICS SMEs, and for targeted consumer price subsidy scheme. The design and site selection for the installation of 24 Solar PV systems for health posts have been concluded and the procurement process has been initiated.

Support to displacement settings: EnDev Ethiopia signed a Letter of Understanding (LoU) with UNHCR to establish commercial briquetting plants for cooperatives in two refugee camps in Gambella to serve refugees and host communities with clean and sustainable cooking fuel.

Roadmap for cooperative mini-grids: Building upon EnDev's lessons learnt from previously implemented cooperative Micro Hydro Power (MHP) mini-grids, a roadmap development study to initiate roll-out of cooperative managed mini-grids was finalized. Discussions with government and development partners on open issues are taking place.

Lifecycle management for lead-acid batteries: The EnDev supported road map for sound management of lead-acid batteries, is being implemented via the development of technical standards, directives, guidelines, and licensing schemes, in partnership with the Environment, Forest and Climate Change Commission (EFCCC), the EU, World Bank and the Development Bank of Ethiopia.

Financial System Development & Pay-As-You-Go (PAYGO) Studies

EnDev commissioned the Financial System Development (FSD) & PAYGO deep dive studies. The FSD study aims to obtain a better insight into the financial sector in Ethiopia and the linkages between the financial sector and the energy access market. The study revealed the barriers in the energy financing such as access to forex and the related heavy regulation around and gave valuable insights for EnDev (such as promoting using forex remittances to finance energy solutions, supporting the establishment of a credit reference bureau etc.) to improve its support for the market establishment of modern energy supply in rural areas.

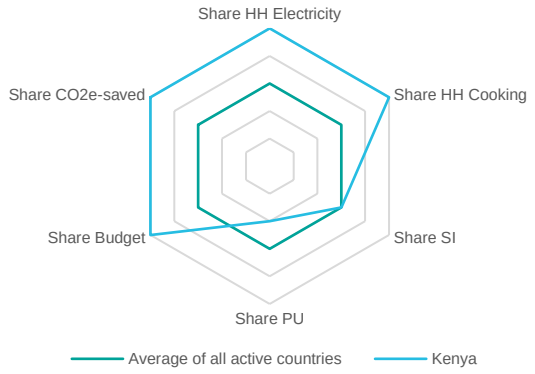
The PAYGO scoping study aims to assess the enabling environment for PAYGO systems in Ethiopia. The study explored the different dimensions of the sector, regulatory framework, stakeholders and provided valuable recommendations such as promoting telcom-driven, fintech-platformed, mobile lifestyle system – inclusive of mobile payment system and promoting a forex guarantee fund.

Kenya

Country facts	
Population	51.4 million
Human Development Index	147 ↓ | Total (0.58)
UN Classification	Developing economy
Access clean cooking	24.0 % (urban), <5 % (rural)
Access electricity	84 % (urban) 72 % (rural)

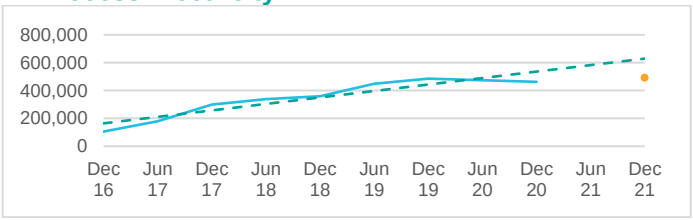
Project facts	
Project period	04.2009 - 12.2021
Budget	EUR 26,730,000
Core funding incl. RBF	EUR 26,730,000
Earmarked	EUR 0.0
Average annual turnover	EUR 3,256,983
Implementing Organisation	GIZ, SNV, Practical Action (PA), Energy for Impact (E4I)
Lead political partner	Ministry of Energy

Relevance

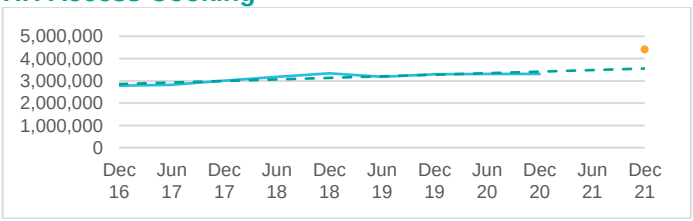


Country facts		
	Targets	Achieved
HH Access Electricity	490,000	461,920
HH Access Cooking	4,405,000	3,312,214
SI Access	3,000	1,413
PU Access	7,750	2,605

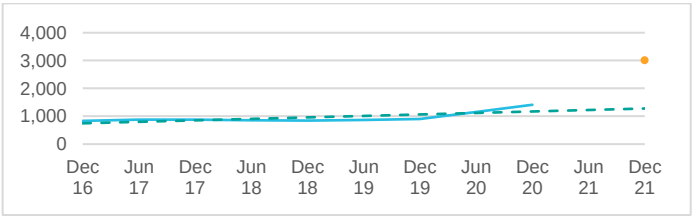
HH Access Electricity



HH Access Cooking



SI Access



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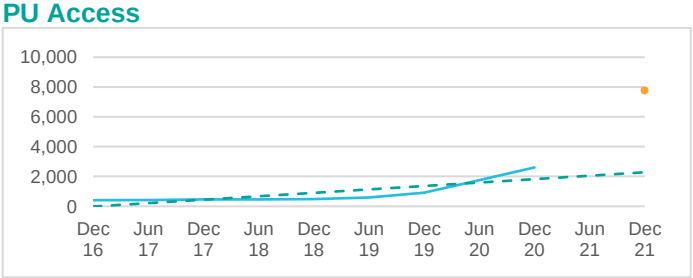


Kenya:
The Ministry of Energy (MoE) launched the Bioenergy Strategy (2020-2027) committed to access to modern bioenergy services.

Professional Kenyan ICS production center © EnDev Kenya

Background Information

EnDev Kenya, implemented by GIZ, SNV, PA and E4I, continued to promote access to modern energy solutions via private sector entrepreneurs, focusing on improved cookstoves (ICS), picoPV and solar home systems (SHS). Special attention was on promotion of solar for productive use (S4PU), small SHS, access to energy for vulnerable groups and clean cooking fuels. While the solar hybrid mini grids RBF project financed by UKaid was closed in March 2020 (preceding pico PV and stoves RBF projects which closed in September and December 2019), three projects started under the umbrella of EnDev Kenya in the course of 2020. The “Promotion of Climate-Friendly Cooking: Kenya and Senegal” (EnDev/GCF) project co-financed by the Green Climate Fund (GCF), the German Federal Ministry for Economic Cooperation and Development (BMZ), Kenya’s Ministry of Energy, and Senegal’s Ministry of Petroleum and Energy and Ministry of the Environment and Sustainable Development which aims at scaling ICS production, sales and adoption with a performance-based professionalization approach, the ‘Social Impact Incentives’ (SIINC) project financed by Swiss Development Cooperation (SDC) providing RBF incentives for enterprises achieving social impacts, and the USAID funded Smart Communities Coalition Innovation Fund (SCCIF) which aims at bringing private sector-led solutions to displaced populations and crisis-affected host communities. These projects are implemented in complementarity with EnDev Kenya core and leads to a shift in focus towards energy for PU, ICS for SIs and MSMEs, access for vulnerable groups and exploring clean cooking solutions.

Project Progress during Monitoring Period (Jan – Dec 2020)

2020 was an unprecedent year due to the global COVID-19 pandemic. With government restrictions like lock-down and curfew, project activities and business operations were disrupted and slowed down, while almost bringing the economy to standstill. Some of the restrictions (e.g. lock-down) were lifted in the last quarter of 2020 to relieve the economy.

Despite the challenges, supported enterprises continued with their businesses with reduced supply as well as demand for their products and services. Under the stove component, local stove enterprises sold about 30% less than pre-COVID-19. The industrial stove companies participating in the EnDev RBF did not face the same drastic decrease, they sold 13.7% less under EnDev than pre-COVID-19. The stove sales for productive use and social institutions stagnated mainly due to the closure of social institutions and many businesses during the pandemic.

The S4PU component was primarily driven by last mile entrepreneurs with more demand for plug and play SHS for MSMEs, mainly for basic electricity services. Promotion of solar powered pumps also emerged. Promoting access to energy in refugee settings through a market-based approach has gained traction and facilitated private sector enterprises to set up and grow outlets resulting in a sales growth between 2019 and 2020.

At policy level, EnDev supported MoE in the development and launch of the Bioenergy Strategy (2020-2027). The Strategy outlines the pathway towards 100% access to modern bioenergy services by 2030, including clean cooking targets by 2028.

Inspirational peer learning tour for stove producers
Early 2020, EnDev Kenya organised a study tour to Central Region for some ICS producers from Western/Lake Victoria region who predominantly operate as social groups with limited entrepreneurship acumen. The main objective of the tour was to inspire a paradigm shift for these producers towards more entrepreneurship by engaging and learning from their peers in Central Kenya who are more entrepreneurial. A total of 5 stove producers who participated in this study tour were inspired and have since established their own individual stove production enterprises which are growing.

RBF Kenya mini-grids

RBF Market Creation for Private sector operated Mini grids – Kenya

In total, four private sector companies participated in the RBF project with the aim to construct a total of 14 mini-grids in Turkana and Marsabit County to provide electricity access to 7,000 people. The project came to an end in March 2020.

Three companies have successfully delivered on the RBF incentive contract terms: 1,842 connections have been verified by an independent verification agent, and incentives amounting to EUR 1,284,136 have been disbursed.
One company did not manage to complete the construction work of three mini-grids within the project period, due to lack of access to finance. Remaining work would entail completion of the generation systems, construction of distribution network and customer connections & metering. Political partners were informed in time about the uncompleted mini-grids, and EnDev Kenya was in close contact with the fund manager and the project developer to mitigate reputational risk.

An evaluation was performed in 2020 by Particip. Main findings reflect e.g. on the moderate private sector response, , the swift and positive consumer response with 1844 customers, the low cost-effectiveness as well as the limitations in viability of the market segment. The report will be published on the EnDev website.

Project facts	
Project period	06.2014 - 03.2020
Approved budget	EUR 2,075,000
Implementing Organisation	GIZ
Lead political partner	Ministry of Energy

RBF Learning points

The evaluation provided a number of learnings:

- The RBF project would have been impossible without complementing TA interventions by GIZ.
- The local fund managing financial institution needed more technical support from GIZ than anticipated
- Incentive contract design and process management required a lot of sector and economic expertise as well as community engagement. Incentivizing sustainable operation of the mini grids is still challenging.
- Project developers need scale, the targeted market was still too nascent, small and isolated.
- RBF projects should consider unintended impacts, which might cause challenges. E.g. in this case, two of the mini-grids had unexpected high growth of demand and thus could not sustain the load. The project developer was not able to secure additional financing/subsidies to upscale the system timely while maintaining the approved end user tariffs.

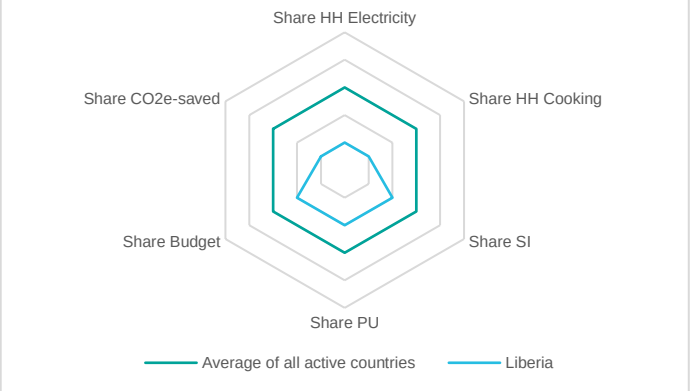
RBF Key Performance Indicator (KPI)	Target	Achieved
Number of beneficiaries	7,000	7,545
Number of social institutions	-	73
Number of SMEs	-	260
EUR per beneficiary	296.43	255
CO2e avoided	1,835	1,978
EUR per t CO2e avoided	1,130.80	973
Private sector leverage ratio	0,3	0.5
Jobs created	60	20
Jobs created thereof women	12	1
Enterprises created/upgraded	5	3
Number of technologies deployed	14	11

Liberia, Sierra Leone, Guinea

Country facts	
Population	GIN: 12.4 million LBR: 4.8 million SLE: 7.6 million
Human Development Index	GIN: 174 ↑ | Total (0.47) LBR: 176 ↑ | Total (0.47) SLE: 181 → | Total (0.44)
UN Classification	GIN: LDC LBR: LDC SLE: LDC
Access clean cooking	GIN: < 5 % LBR: < 5 % SLE: < 5 %
Access electricity	GIN: 44 % LBR: 26 % SLE: 26 %

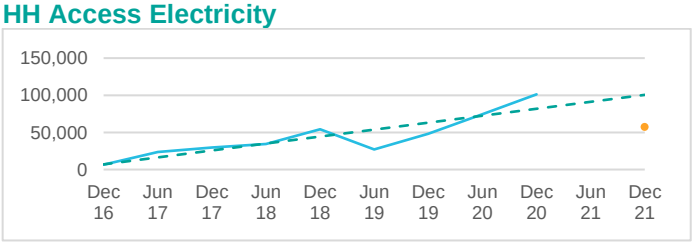
Project facts	
Project period	05.2012 - 12.2021
Budget	EUR 8,220,000
Core funding incl. RBF	EUR 8,220,000
Earmarked	-
Average annual turnover	EUR 1,216,227
Implementing Organisation	GIZ
Lead political partner	Liberia: Ministry of Mines and Energy; Sierra Leone: Ministry of Energy

Relevance

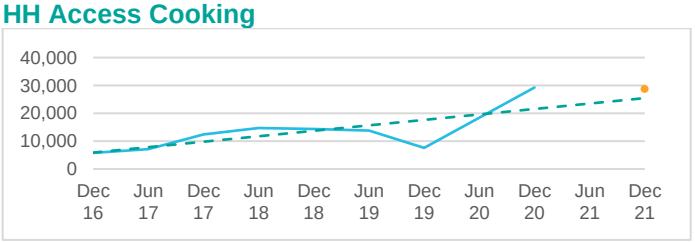


Country facts		
	Targets	Achieved
HH Access Electricity	57,000	101,205
HH Access Cooking	28,700	29,241
SI Access	935	619
PU Access	1,520	1,678

HH Access Electricity



HH Access Cooking



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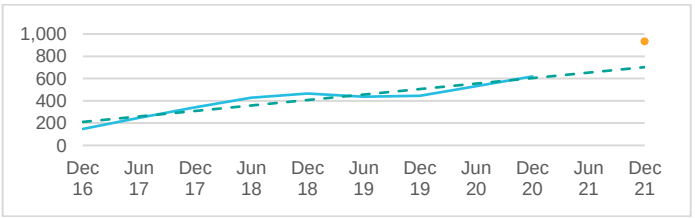

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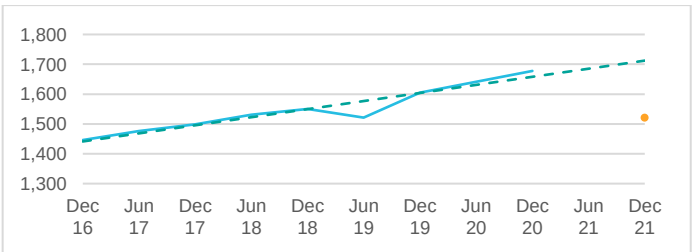


Liberia, Sierra Leone, Guinea

There must be light so we are able to see everything that is happening and everything we encounter.

© GIZ Liberia

Background information

EnDev supports the development of preferably private sector driven markets for stoves and solar technologies (mainly picoPV, SHS, mini-grids, solar dryers and improved cookstoves) as well as the improvement of social services of health facilities and schools through access to modern energy in Liberia, Sierra Leone and Guinea. For social institutions, the project has developed a sustainability and maintenance approach including a solar repair hotline and smartphone App. EnDev strengthens technical, administrative and management expertise of key stakeholders in the sector through information and advisory services, training, demonstration, and networking. By promoting sharing of data and information and a better coordination of activities of the different national and international projects, EnDev fosters synergies in the renewables sector. EnDev pays specific attention to strengthen female solar professionals and their networking. Activities are embedded in a wider and regional context and work towards gender transformative outcomes and environmental justice.

"EnDev develops, uses and shares *ICT4Renewables* tools (data collection app, mapping tool, web portals, e-learning app, social media) for effective coordination, transparency, accountability and learning in the Renewable energy sectors"

Project progress during monitoring period

EnDev has progressed with setting up an e-learning platform starting with a focus on solar technology, app and courses, and piloted a blended learning approach with TVET students for three countries. The other ICT4Renewables tools (app, social media, marketplace, maps) were refined.

EnDev supported the private sector in strengthening their three solar and ICS associations and ensured that e.g. the Agricultural Competitiveness Enhancement Fund (ACEF) which provides funding to nine renewable energy companies was granted from Swedish sources. Actual support is up to 800.000 USD each to support companies' production, capacity and marketing outreach.

In Liberia and Sierra Leone, EnDev has conducted intensive training of mini-grid operators, technicians and companies on design, installation, operation, use and preventive maintenance of standard and advanced systems.

EnDev completed studies about effects and alternatives of charcoal production and encroachment into the Freetown Peninsula. Gas is not to a promising option but rather improved stoves and sustainable charcoal production, since charcoal use is the lion's share of cooking cost, not the stove. EnDev tries to organize a broader political approach here with relevant stakeholders.

Light for Ebola patients in Guinea

On 14 January 2020, Guinean health authorities officially declared an Ebola outbreak in the rural commune of Gouecké (N'Zérékoré Prefecture), following the confirmation of three cases by the national laboratory. This outbreak is the first to be reported in the country since the end of the first Ebola epidemic in Guinea in 2013.

The Ministry of Health, through the Regional Health Directorate (DRS) of N'Zérékoré decided to make the Epidemiological Treatment Centre (CT-Epi) of Gouecké functional to be used for providing medical care to Ebola patients. EnDev collaborated with other technical partners to to improve the quality of the services offered at CT-Epi.

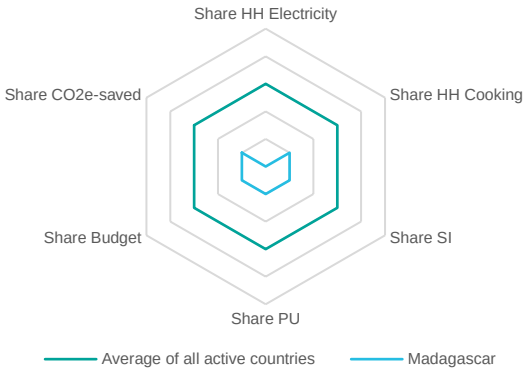
Dr. Kollie, chief physician of the Gouecké health centre proudly states: "There must be light so we are able to see everything that is happening and everything we encounter."

Madagascar

Country facts	
Population	26.9 million
Human Development Index	162 ↑ | Total (0.52)
UN Classification	LDC
Access clean cooking	< 5 % (urban) < 5 % (rural)
Access electricity	26 % (urban & rural)

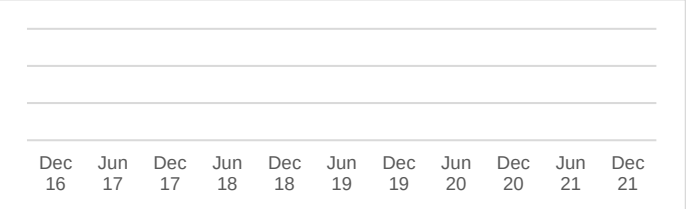
Project facts	
Project period	12.2012 - 12.2021
Budget	EUR 1,414,000
Core funding incl. RBF	EUR 1,414,000
Earmarked	-
Average annual turnover	EUR 223,907
Implementing Organisation	ADES
Lead political partner	Ministère de l'Energie, de l'Eau et des Hydrocarbures

Relevance

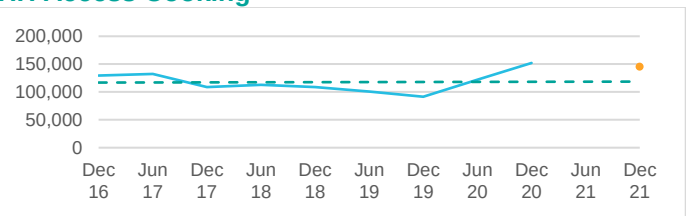


Country facts		
	Targets	Achieved
HH Access Electricity	-	-
HH Access Cooking	145,000	152,036
SI Access	185	186
PU Access	390	352

HH Access Electricity



HH Access Cooking



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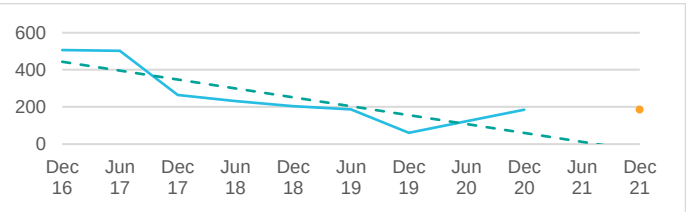

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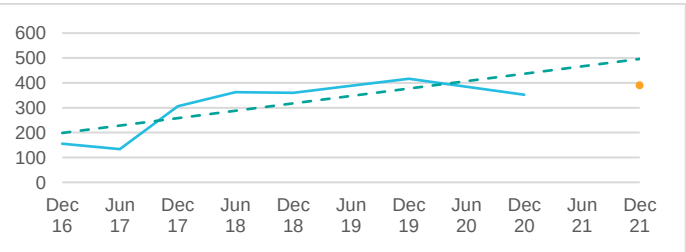


Madagascar

Since 2020, two additional mobile branches have been on the road to provide ICS to the North and South of Madagascar.

© ADES, A. Brückmann

Background information

In Madagascar, EnDev works with the Swiss NGO ADES, which advocates for the preservation of natural resources through energy-efficient cooking solutions. Over 90 percent of the forests in Madagascar have already been lost, threatening its unique biodiversity as well as its people. ADES has been active for 20 years, producing Improved Cookstoves (ICS) resulting in 50-70% fuel savings. Stove sales are accompanied by reforestation and educational projects. With two production factories, eight sales and distribution sites, and three mobile branches, ADES reaches a large part of the population in all regions of the island.

ADES continued to grow in 2020, despite the challenging situation of the COVID-19 pandemic, reaching pre-pandemic targets with nearly 50,000 ICS sold this year.

Project progress during monitoring period

The global COVID-19 pandemic has major implications on the informal sector in Madagascar and hits the poor and marginalized population the hardest. ADES is already taking measures to ensure that these people are not cut off from ADES services in the future.

Although ADES sales and production centres were temporarily closed due to restrictions on movement introduced by the Government, progress in sales numbers could be recorded. The increase in sales pave the way for the production and sales of 70,000 ICS per year by 2025. To accommodate future growth, ADES doubled its production capacity by building a second kiln for its ICS production. Initial conservative estimates show significant fuel savings of 15% per kiln operation. At the end of 2020, a duct was installed between the two kilns, where the hot air generated during cooling after the end of firing can be diverted for heating the newly built second kiln. In addition to the firing capacity, we improved the transport possibilities for preliminary and intermediate products. For this purpose, pallet trucks with pallets or rolling racks were integrated to transport the air-dried and burned clay bodies between production and the drying and firing rooms.

Since December 2018, ADES has been installing modular cooking solutions in school kitchens after conducting an overall analysis and needs evaluation, making building improvements, and periodically training staff and measuring the improvements achieved. By switching to energy-efficient cooking solutions, the project aimed to reduce fuel consumption, reduce and channel smoke emissions, and make workstations in the kitchens more ergonomic. Initial results show that schools participating in this project reduced their fuel consumption by up to 80 percent. After completion of the pilot phase in March 2021, ADES will assess the scale up potential of it approach and may provide customized institutional cooking to schools, hospitals, factories, and other businesses at larger scale.

Mobile branches to leave no one behind

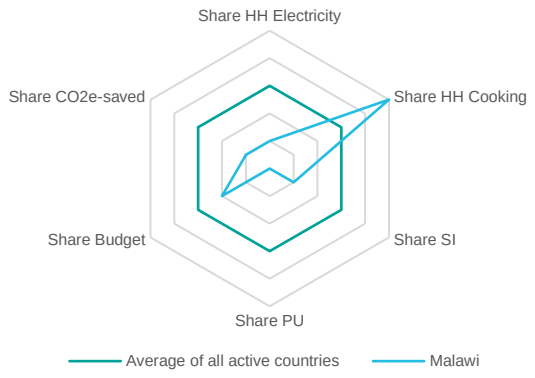
To date, ADES operates three mobile branches, one in the north, one in the south and one in the centre of the island. ADES staff working in the mobile branches spend most of the year on the road in the often hard-to-reach periphery of Madagascar. They raise people's awareness of environmental issues, deliver ADES ICS to these regions, and recruit resellers who will act as local multipliers for ADES in the future. In 2020, ADES increased the number of resellers from 100 to 175 and sold several thousand additional ICS thanks to the mobile branches.

RBF Malawi

Country facts	
Population	18.6 million
Human Development Index	174 ↑ | Total (0.48)
UN Classification	LDC / LLDC
Access clean cooking	9 % (urban) < 5 % (rural)
Access electricity	55 % (urban) 10 % (rural)

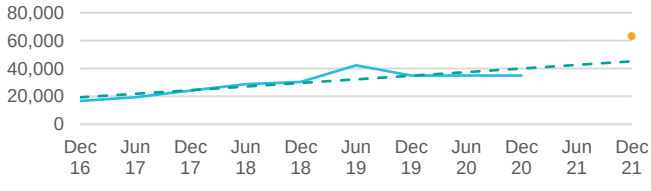
Project facts	
Project period	12.2012 - 12.2021
Budget	EUR 9,041,000.00
Core funding incl. RBF	EUR 8,326,000
Earmarked	EUR 715,000
Average annual turnover	EUR 1,156,561
Implementing Organisation	GIZ
Lead political partner	Ministry of Energy

Relevance

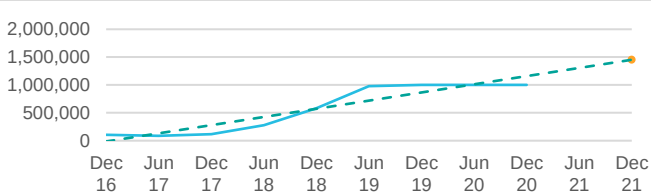


Country facts		
	Targets	Achieved
HH Access Electricity	63,000	34,994
HH Access Cooking	1,450,000	1,001,489
SI Access	15	3
PU Access	200	0

HH Access Electricity



HH Access Cooking



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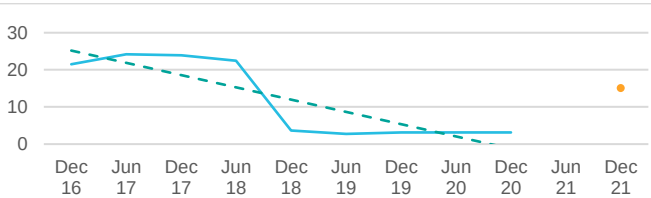

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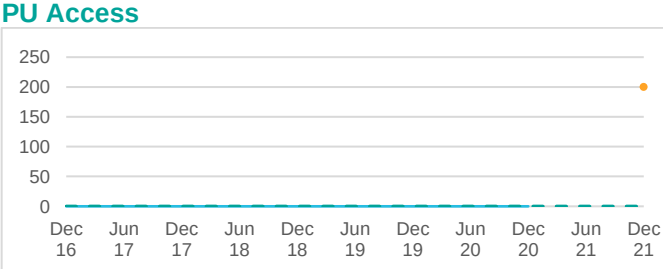


Malawi

I wish we used stoves like these when I was young. Then, we would still have our thick forests today.

Background information

Since 2012 EnDev Malawi facilitates sustainable energy access to households, SMEs and SIs. The programme implements its projects following two implementation streams. Under the core-funding stream, EnDev Malawi is implementing market development activities for improved cookstoves (ICS) and solar PicoPV/SHS across the country. Here, the project supports the private sector and coordinates sector networks that are Government-led, such as the National Cookstove Steering Committee and Energy Donor Coordination working groups. With financing from the Government of Iceland, EnDev Malawi has started a second implementation stream in one district called Mangochi. The project focuses on translating EnDev's activities from the national level to the district level and further includes energising SIs like health centers and schools with solar applications and cooking energy.

Project progress during monitoring period

2020 has led to reduced field presence due to the COVID-19 pandemic. However, EnDev still made strides towards key goals.

Improved cookstoves: Compared to the semester 2019/12 where 56,000 stoves were sold per semester, the project managed to increase sales to 65,000 stoves semester in 2020. The project has contributed to reaching the national goal of 2 million improved cookstoves in October 2020 - with EnDev contributing 40% to the goal. The project also influenced a VAT exemption for the stoves for formal markets, which has made stoves and fuels more affordable.

Productive Use of Energy: After conducting a market analysis study for the PUE sector in Malawi in conjunction with the University of Strathclyde, the project implemented side ventures that focused on energy access for SMEs active in street food production and distribution, and transportation services (such as bicycle taxis). Through these initiatives, at least 60 small medium enterprises gained access to energy for cooking. Through the co-financing agreement with the Government of Iceland, EnDev successfully developed an innovative energy efficient fish processing stove for frying, smoking and parboiling, known as the *Chitofu 3-in-1*. So far, 11 Chitofu stoves have been distributed to fish processing enterprises and a meat processor.

PicoPV and SHS: Despite the pandemic, radio adverts and controlled marketing campaigns have proven useful to facilitate sales. The project, in conjunction with its solar partner companies, successfully sold over 30,000 systems. Additionally, the project has been able to grow its portfolio of companies from an initial number of 12 to 14. As more companies continue to express interest in working with EnDev Malawi, it is expected that the portfolio will continue to grow.

Energising social structures with information through solar radios as a COVID-19 response

As one way of combating COVID-19 in Malawi, EnDev, through its co-financing agreement with the Government of Iceland in Mangochi District, has enabled access to information for 99 village health committees in the district. They received Lighting Global certified solar radios with pre-recorded COVID-19 messages in memory cards. This approach inspired GIZ sister projects (active in food value chains), which further procured 1500 radios for health care groups, educational centers, vocational centers and others.

The activity did not only enable EnDev partner solar companies to continue their business during the pandemic. Surveys conducted by two GIZ also projects estimate that at least 60,000 people have been reached with COVID-19 messages and are aware of the pandemic. The solar radios are deemed not only useful for the current situation, but also for mainstreaming other health and nutrition messages over time.

Malawi

Access to modern cooking energy for poor and vulnerable groups in Malawi

In 2020, two claims were submitted by the implementing partner, United Purpose. These constituted 9,018 stoves, amongst them 8,391 to SCT beneficiaries and 627 stoves sold commercially. Both claims were verified in June 2020 with a 99% success rate. In the remaining project period, the implementing partner focused on closing the project and following up with stove promoters on commercial sales, as it had anticipated a final claim submission with a volume of 8,000 sold stoves. However, due to prolonged redemption the claim could not be submitted to GIZ and sales could not be verified in time.

Due to the global Covid-19 pandemic, implementation had to be suspended for three months, which affected the final target achievement. At the end of the project in September 2020, 60%, of the pre-agreed target had been achieved.

Project facts	
Project period	12.2015-09.2020
Approved budget	EUR 900,000
Implementing Organisation	GIZ, United Purpose
Lead political partner	Ministry of Gender, Children, Disability and Social Welfare

RBF Learning points

The RBF learnings reported in the last reports are still valid. Finding the right incentive level is important to encourage private sector participation in the RBF project on the one hand but avoid market distortion on the other hand. In addition, the project learned again that flexible incentive structures are equally important to react timely to changes in the market. The project noticed that the stove price set by the implementing partner was slightly lower than the price set by the private sector and aligned the incentive level with the market price.

Targeting the poor through the cooperation with social protection programmes is a powerful, and fast, way to reach bottom of the pyramid households for a truly leave-no-one-behind strategy. The model provides a structured and efficient way to provide pro-poor subsidies.

Verifications show that there is a sustained uptake and use of improved cooking technologies amongst SCT recipients, and word of mouth from users is noted to be the best way to increase awareness and usage experiences influencing spill over effects inducing commercial sales.

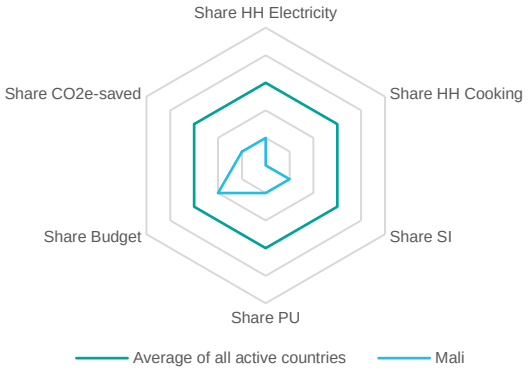
RBF Key Performance Indicator (KPI)	Target	Achieved
Number of beneficiaries	660,030	423,722
Number of social institutions	n/a	n/a
Number of SMEs	n/a	n/a
EUR per beneficiary	1.36	1.01
CO_2e avoided	119,788	92,263
EUR per t CO_2e avoided	7.51 €	4.62 €
Private sector leverage ratio	n/a	n/a
Jobs created	442	591
Jobs created thereof women	329	372
Enterprises created/upgraded	n/a	n/a
Number of technologies deployed	186,198	143,414

Mali

Country facts	
Population	19.1 million
Human Development Index	184 ↑ / Total (0.43)]
UN Classification	LDC / LLDC
Access clean cooking	<5 % (urban & rural)
Access electricity	86 % (urban) 25 % (rural)

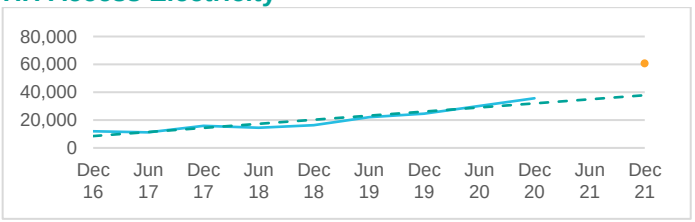
Project facts	
Project period	04.2009 - 12.2021
Budget	EUR 10,682,000
Core funding incl. RBF	EUR 10,682,000
Earmarked	-
Average annual turnover	EUR 1,813,834
Implementing Organisation	GIZ, SNV, NIS
Lead political partner	Ministry of Water and Energy

Relevance

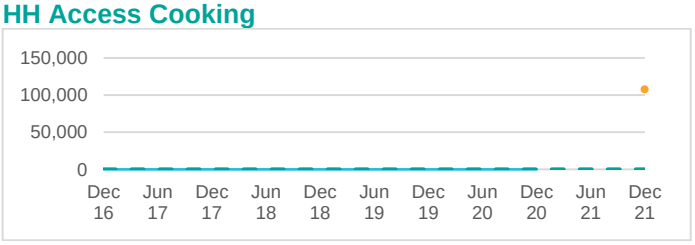


Country facts		
	Targets	Achieved
HH Access Electricity	60,800	35,637
HH Access Cooking	108,000	n/a
SI Access	500	255
PU Access	460	164

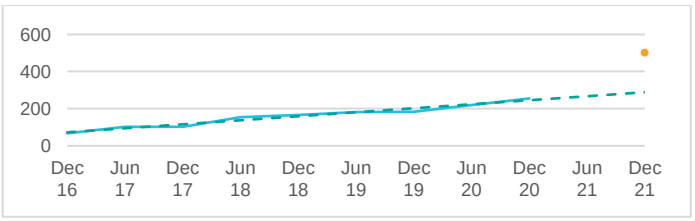
HH Access Electricity



HH Access Cooking



SI Access



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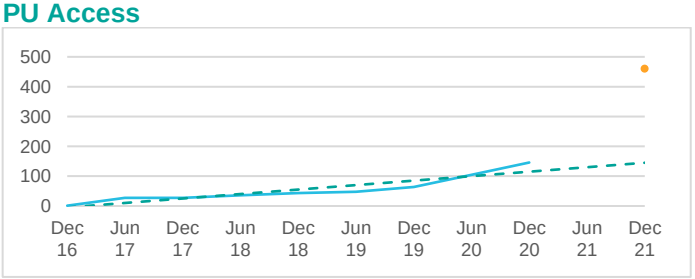


Mali
Energising peace & stability


Streetlights at marketplace in Gao © GIZ Mali

Background information

During the period 2009-2019, EnDev Mali supported the development of the solar market with a comprehensive portfolio of technologies (incl. PicoPV, SHS, solar energy kiosks, and mini-grids).

For the phase 2019-2021, EnDev Mali is focusing on market-based and demand-oriented energy access, quality of PV installations, repair & recycling and electricity access in vulnerable settings, while a new ICS component is added. The new ICS component aims to establish a national quality assurance system and boost semi-industrial producers using results-based incentives, while gaining market intelligence and testing pilots for commercial ICS and alternative fuels.

In 2020 a coup d'état took place in Mali. After a period of intensive (and partially violent) disturbances, the situation stabilized quickly. At present a transitional government is in place for two years. The new ministry of mines, energy and water has positively received the EnDev intervention and the national directory is actively engaged in the project.

Project progress during monitoring period

The demand based, integral approach in the region of Baroueli is evolving positively. The mini-grid facilitated by EnDev is nearly ready to electrify two dynamic villages with seven other villages in the pipeline - external (private) financing and TA by EnDev. Two somewhat smaller villages have been selected to pilot flex-grid (grid-capacity adaptable to demand). Over 50 productive users are electrified (lease purchase facilitated by EnDev), having already electrified social infrastructure. A strategy paper on integral electrification is in discussion with the energy directory to reach scale and better implicate the national utility to this extend (main challenge in the approach).

Sustainable installations. Electrification of clinics became even more prominent during the COVID-19 pandemic and its impacts. Twelve additional clinics have been electrified and exchange with multiple parties is initiated through the federation of clinics. Thirty technicians were trained by EnDev to facilitate PV service at proximity. Training of twenty technicians on **repair & recycling** took place as well. The Pico PV market is thus evolving despite the international pandemic. The reduced cultivation of cotton (due to Malian political crises) did, however, impact the sector in the south of the country.

NIS started execution of the project in **vulnerable setting,** putting streetlights at marketplaces to increase security and productive activities at night while assuring sustainability with direct implication of market committees. With multiple military actions ongoing in the region, planning is challenging.

The cooking component was quite severely impacted by the COVID-19 pandemic and political crises, which delayed the inclusive process of the creation of a label, including testing. Therefore, quantified results are still lacking. Some good progress has been made in the market intelligence component, with convincing perspectives with regard to biomass briquettes as alternative cooking fuel, a promising pilot on rock-bed stoves in rural areas and identification of potential PUE opportunities for milk pasteurisation and local beer brewing.

Mini-grid in construction

The commune of Sanando, part of the integral approach Baroueli, prepares to receive a new mini-grid facilitated by EnDev. The mini-grid will connect two villages with a distance of 2 km. One village has a very dynamic weekly market and solid potential for PUE. The other, the chief village with more inhabitants and social infrastructure, also has potential for PUE. The municipality will own the grid once transferred and agree on a contract for 15 years of operation by the (French/Malian) enterprise installing the mini-grid. The commune will receive its share of benefits from year three onwards to enable further investments in electrification.

Cambodia (with Laos)

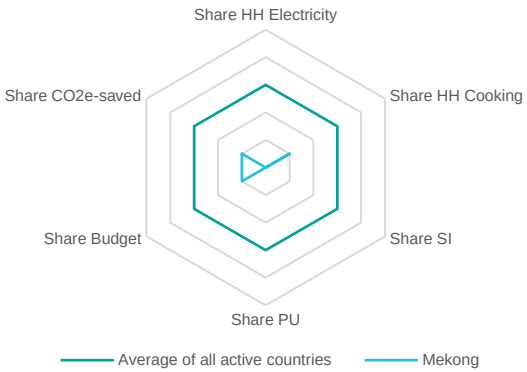
Country facts

Population	16.3 million
Human Development Index	146 ↓ / Total (0.59)
UN Classification	LDC
Access clean cooking	65 % (urban) 10 % (rural)
Access electricity	100 % (urban) 89 % (rural)

Project facts

Project period	03.2015 – 12.2021
Budget	EUR 4,813,000
Core funding incl. RBF	EUR 4,813,000
Earmarked	-
Average annual turnover	EUR 448,269
Implementing Organisation	SNV
Lead political partner	Cambodia: Ministry of Mines and Energy (MME) Laos: Ministry of Science and Technology (MoST)

Relevance

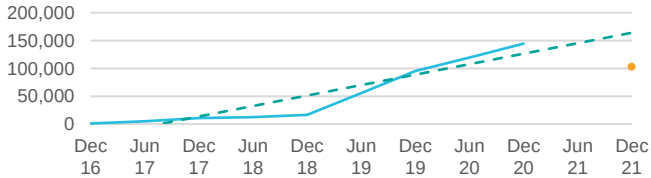


Country facts

	Targets	Achieved
HH Access Electricity	-	-
HH Access Cooking	103,000	144,380
SI Access	-	-
PU Access	-	-

HH Access Electricity

HH Access Cooking



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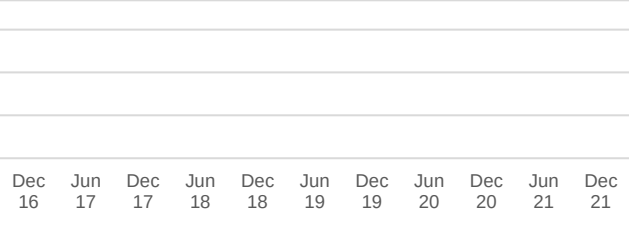


Cambodia (with Laos)

The ‘Smoke-free Village’ campaign makes my stove sales go twice as fast.

Children participate in wall painting competition during Smoke-free Village campaign. © Bastiaan Teune/SNV

Background information

The EnDev Mekong project has created an initial market for higher-tier improved biomass cookstoves in Cambodia and Lao PDR. The current phase of the project aims to support the maturing and scaling of the still nascent local industry and paves the way towards increasingly modern cooking solutions, including e-cooking. In Cambodia, next to building up early-stage supply side actors, the project focuses on demand creation through innovative behaviour change communication approaches (see text box). In Laos, the project is gradually mainstreaming more advanced cookstoves into the existing ecosystem for improved cookstoves (ICS), and expanding the reach of the supply chain to unserved areas - including a 'leave no one behind' focus on very poor/remote areas.

Project progress during monitoring period

In 2020, the project adapted its operations in Cambodia to help enterprises overcome the severe disruption of the clean cooking market caused by the impacts of the COVID-19 pandemic. The emergency response saw the project’s RBF mechanism adapted to increase enterprises’ cashflow. Through sales training and an intensive ‘Facebook’ marketing campaign, the project supported stove producers to pivot to e-commerce sales models. Building on the success of these demand side activities, the project over the course of the year focused increasingly on an innovative behaviour change communication approach (see text box). The project also launched a new support mechanism for distributors of e-cooking devices, such as induction, infrared, and pressure cookers. The Laotian stove model that was newly introduced in Cambodia at the beginning of 2020 sold the first 2,000 units by the end of the year.

Implementation progress has also been very good in Lao PDR. Focus in 2020 was on the scaling up and optimisation of cookstove production, marketing and distribution. Through the operationalisation of six new production centres in the multiple Northern provinces, the project opened up additional, previously untapped markets. The project now works with a total of 30 production centres across the Southern, Central and Northern provinces - increasingly expanding towards nationwide coverage and accessibility of ICS. Sixteen of the production centres are owned by women. With growing demand and additional sales from the new provinces, the project has seen a strong year in Laos, with over 116,000 stoves sold. Through another major activity, the project has also been able to expand the ICS distribution network to over 1,500 retail points. The project also facilitated access-to-finance opportunities and established a revolving fund for the stove producers to grow their operations further.

Smoke-free Village campaign changes behaviors and increases demand for cleaner cooking

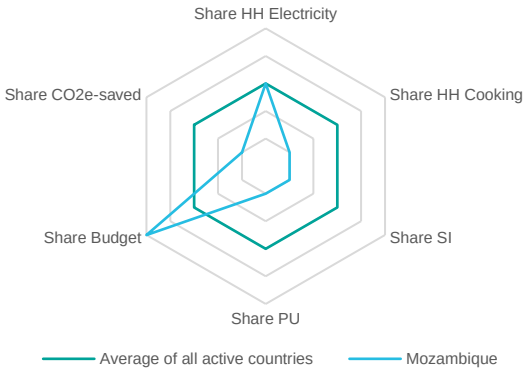
In Cambodia, the project started trialing community-based communication methods to ignite change in households’ use of cooking fuels and stoves. Taking inspiration from the successful ‘Open Defecation Free Village’ approach in the WASH sector, the project aims to ignite collective change towards ‘Smoke-free Villages’ through community dialogues. The campaigns are conducted in collaboration with local authorities, such as the ‘Commune Council for Women and Children’, as well as schools and religious organizations. The campaign invites suppliers of modern energy solutions to partake and create business opportunities for them: *“We recognise how the ‘Smoke-free Village’ campaign leads to a higher demand that makes our sales easier. We sell twice as much [...] for our company the campaign creates an entry to village authorities to gain necessary trust in the village community that used to be difficult to establish.”* (Daniel Walker, COO ACE Cambodia).

Mozambique

Country facts	
Population	29.5 million
Human Development Index	180 ↑ / Total (0.45)
UN Classification	LDC
Access clean cooking	12 % urban <5 % rural
Access electricity	72 % urban 8 % rural

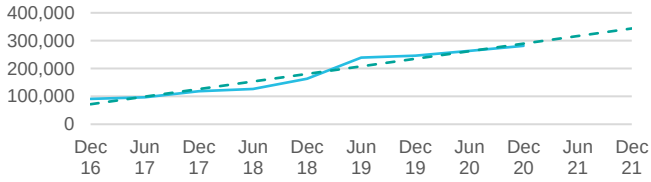
Project facts	
Project period	10.2009 - 12.2021
Budget	EUR 30,134,000
Core funding incl. RBF	EUR 21,201,000
Earmarked	EUR 8,933,000
Average annual turnover	EUR 2,804,750
Implementing Organisation	GIZ
Lead political partner	Ministry of Mineral Resources and Energy

Relevance

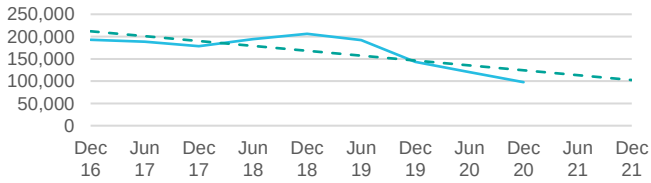


Country facts		
	Targets	Achieved
HH Access Electricity	TBD	281,548
HH Access Cooking	TBD	97,612
SI Access	TBD	7
PU Access	TBD	43

HH Access Electricity



HH Access Cooking



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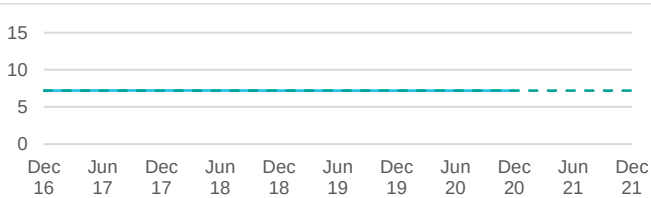

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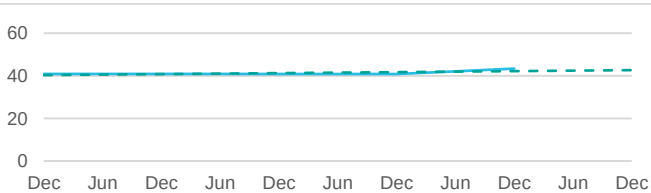


Mozambique
Securing energy access through COVID-19 demand side subsidies

Background information

EnDev Mozambique follows a holistic, multi-tier approach, covering different electrification and improved cooking technologies, including grid densification to provide access to households and MSMEs. EnDev supports social institutions like schools with access to electricity and improved cooking to improve their services, and supports the market-based commercialisation of electrification and cooking energy technologies for internally displaced persons in resettlement areas. Its key interventions areas are access to finance, business development services, evidence, learning transfer and innovation, policy advice and capacity development, as well as partnerships and alliances. In view of challenging times caused by the cyclones and the global COVID-19 pandemic in 2020, EnDev Mozambique adopted a flexible approach that allowed it to react to crisis situations and their effect on the energy market and its actors.

Project progress during monitoring period

In order to assist the Government of Mozambique in its fight against the pandemic, EnDev Mozambique designed a set of COVID-19 relief measures. Especially in rural areas, the supply of low-cost face masks was not sufficient. In collaboration with local NGOs and associations, EnDev Mozambique supported sewing work groups by equipping them with solar powered electrical sewing machines to improve their face mask production capacity. In total, 60 tailors received access to a sewing machine. Additionally, the groups were trained in correct handling of machines and proper face mask design.

To minimize the negative impact of national restrictions for containing the spread of COVID-19 on the energy access market, EnDev Mozambique set-up a new financing window for Companies Vulnerable to Increased Default (the COVID-PAY window), under the Results-based Financing (RBF) Fund FASER (Fundo de Acesso Sustentável às Energias Renováveis), which is hosted by the Fundação para o Desenvolvimento da Comunidade (FDC). COVID-PAY is a demand side subsidy mechanism, which enables clients of PAYGO-companies to maintain their energy access, despite the economic challenges they face during the pandemic. Until December 2020, 139,491 incentives were disbursed, and it is expected to continue in 2021. Furthermore, the new incentive scheme CovidPlus was established under the Humanitarian Window of FASER. The CovidPlus incentive provides grants to energy technology and service providers, which must be partially passed on to the customers, thereby allowing the households to secure access to energy at a very low cost. It was launched in 2020 with financing from the BMZ and has been topped up with additional co-financing from the EU in 2021.

Business Continuity Support during COVID-19

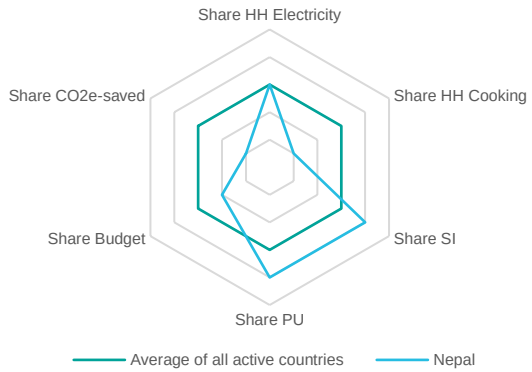
EnDev has introduced a Relief Scheme for Companies Vulnerable to Increased Default of Payments (COVID-PAY).The aim of this scheme is to ensure that customers continue to have access to energy, as well as supporting companies to avoid bankrupcy and continue to maintain their operations during the macro-economic crisis caused by the COVID-19 pandemic. The COVID-PAY scheme temporarily bridges resource gaps in a time of crisis which has heavily impacted company operations and consumers' ability to pay. Companies have been invited to design individual promotion schemes for their customers. EnDev provides EUR 10 financial support per customer per month for a maximum period of six months. So far, almost 48,000 promotions have been granted to Mozambican households that have been able to maintain their access to energy. Furthermore, CovidPlus, a support scheme for RE Businesses that provides access to energy in Mozambique during the COVID-19 pandemic, was set-up. Through CovidPlus. grants are provided to energy technology and service providers, which must be partially passed on to the clients, thereby allowing the households to secure access to energy at low cost. Additionally, the scheme ensures that energy technology and service providers can stay in the market until the pandemic and its consequences subside.

Nepal

Country facts	
Population	28.1 million
Human Development Index	147 ↑ | Total (0.58)
UN Classification	LDC
Access clean cooking	60.0 % (urban) 18.0 % (rural)
Access electricity	96.0 % (urban) 93.0 % (rural)

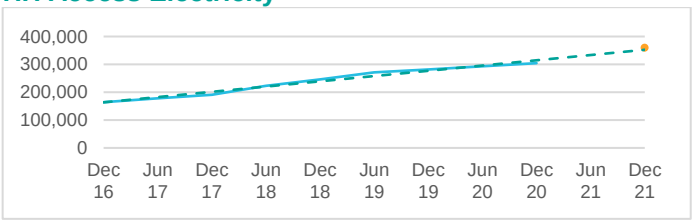
Project facts	
Project period	05.2009 - 12.2021
Budget	EUR 10,354,000
Core funding incl. RBF	EUR 10,354,000
Earmarked	-
Average annual turnover	EUR 867,454
Implementing Organisation	GIZ, SNV, Practical Action
Lead political partner	Ministry of Energy, Water Resources and Irrigation

Relevance

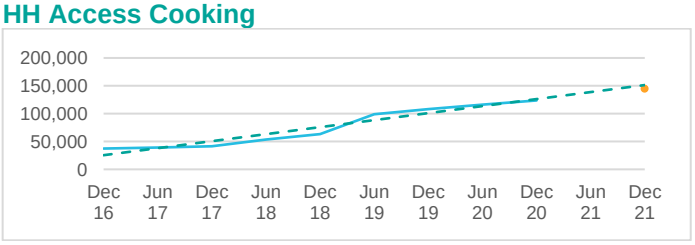


Country facts		
	Targets	Achieved
HH Access Electricity	360,000	304,317
HH Access Cooking	145,000	123,707
SI Access	820	1,608
PU Access	6,330	3,849

HH Access Electricity



HH Access Cooking



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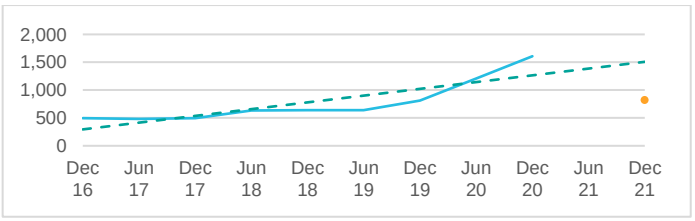

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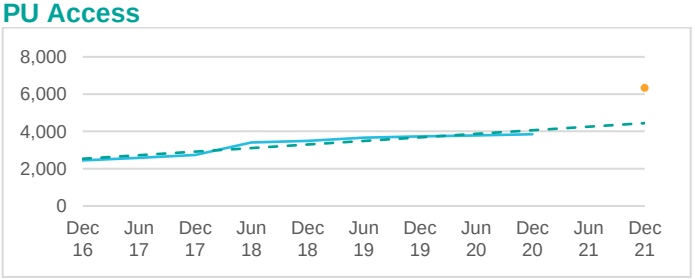


Nepal

I couldn’t have started my business without access to electricity.

© GIZ Nepal

Background information

Since 2005, EnDev Nepal supports access to electricity for rural communities through (1) a Revolving Fund (RF) for Community Rural Electrification Entities (CREE) to enable them to pay the required own share - a precondition to benefit from a National Rural Grid Extension Program; (2) a grid densification component to “leave no one behind” by covering initial cost of electricity connection to poor, marginalized, and natural disaster affected households (HHs) and enterprises in form of grants; (3) a Micro Hydro Debt Fund (MHDF) to reduce perceived risk of commercial banks to invest into the off-grid hydro power sector; and, (4) the electrification of mechanical watermills. Since 2014, EnDev also supports access to clean cooking through (5) a RBF approach to create a sustainable improved cookstove market in rural areas of Nepal.

Project progress during monitoring period

The RF previously managed by Nepal Electricity Authority has been handed over to the National Association of Community Electricity Users Nepal (NACEUN), an umbrella organization for community electricity user groups. NACEUN’s established ground networking among user groups, efficient and timely monitoring and follow up of the revolving fund will contribute to the success of the fund.

The construction of two Micro Hydro Power Plants (MHPP) in Karnali province was completed and the electrification process to connect 500 additional households is ongoing. Under the joint supervision of Alternate Energy Promotion Centre (AEPC) and EnDev Nepal, power output testing of two MHPPs and rehabilitation of two other MHPPs has been completed with significant improvement in the project’s infrastructure. In order to make tariff collection practices more efficient and the MHPPs more profitable for user committees, additional 175 smart prepaid meters have been installed in households benefiting from the Solu Khola MHPP project.

An electric cooking pilot project reaching 569 households was completed in early 2020, providing important insights around institutional readiness of CREEs, technical feasibility of CREE-managed electricity supply systems, and social behaviour change of users. Drawing on learnings from the pilot project, a more comprehensive and integrated intervention to upscale the efforts to promote electric cooking in five other CREEs in Bagmati Province is being planned.

Electricity access: Journey of a budding entrepreneur

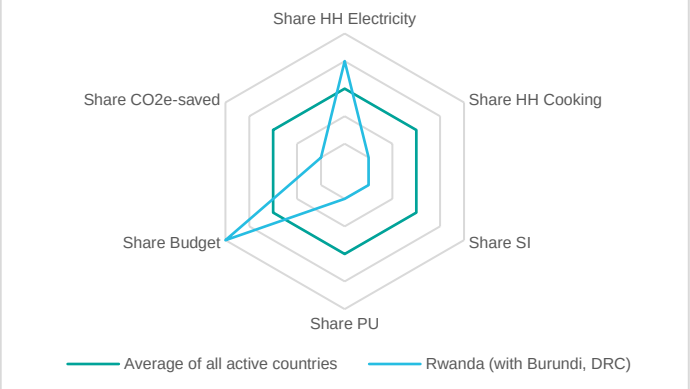
Rakesh Magar (23), an indigenous youth and resident of Dang in the Terai region, had to drop out of college to support his family of three. His idea: to start a poultry farm - based on the clear demand for poultry products in nearby towns. With little savings of his own, he relied mostly on his mother's savings to start housing 500 broiler chickens on a small piece of land leased from his extended family. With limited capital (€5,625) to work with, the entire construction and electrical setup was done in-house. What was missing was the connection to the national grid. EnDev’s grid densification grant support to leave no one behind came as a boon for this would-be-entrepreneur struggling with financial constrains inhibiting the farm to benefit from the grid. Access to electricity allowed Rakesh to equip his farm with heat lamps and fans which minimizes the risk of diseases and results in higher yields. This family-run business with recent good fortune has already scaled up with the construction of a second shed. In the future, Rakesh plans to increase his housing capacity for chickens even further.

Rwanda (with Burundi, DRC)

Country facts	
Population	BI: 11.2 million DRC: 86.8 million RW: 12.4 million
Human Development Index	BI: 185 ↑ / Total (0.42) DRC: 179 → / Total (0.46) RW: 157 ↑ / Total (0.54)
UN Classification	BI: LDC / LLDC DRC: LDC RW: LDC / LLDC
Access clean cooking	BI: <5 % DRC: <5 % RW: <5 %
Access electricity	BI: 11 % DRC: 19 % RW: 56 %

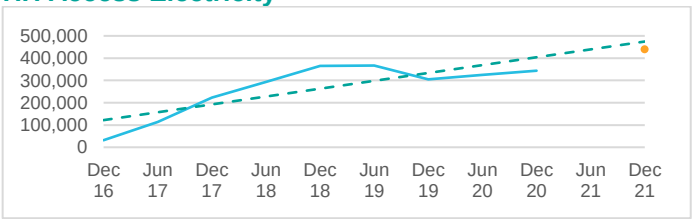
Project facts	
Project period	10.2009 - 12.2021
Budget	EUR 25,936,000
Core funding incl. RBF	EUR 24,526,000
Earmarked	EUR 1,410,000
Average annual turnover	EUR 3,421,344
Implementing Organisation	GIZ, SNV, AVSI
Lead political partner	Ministry of Infrastructure (MININFRA), Rwanda Energy Group (REG)

Relevance

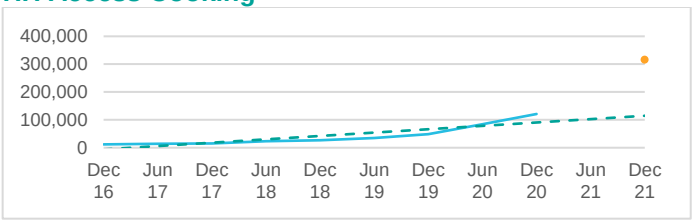


Country facts	Targets	Achieved
HH Access Electricity	438,000	343,625
HH Access Cooking	315,000	121,061
SI Access	55	34
PU Access	290	240

HH Access Electricity



HH Access Cooking



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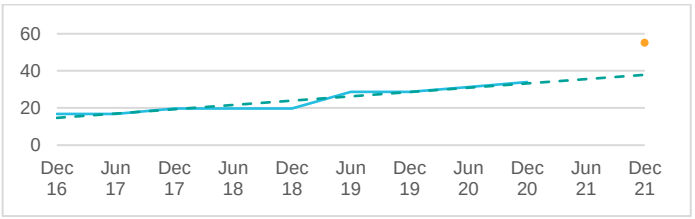

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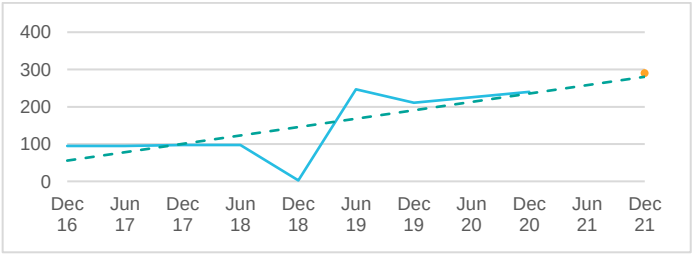


Rwanda (with Burundi, DRC)

I am now known as the 'star of improved cookstoves' in the city of Kirundo.

Best retailer agent in Burundi in 2020 © GIZ Jean Bosco Nkunzimana

Background information

The Government of **Rwanda** (GoR) aims to achieve universal electricity access by 2024. As of 2020, 41% of households are connected to the grid and 15% use off-grid technologies. In the cooking sector, the GoR seeks to reduce the share of households using inefficient cooking solutions from 83.3% (2014) to 42% by 2024.

In **Burundi**, only 11% of the population have access to electricity and more than 95% rely on biomass for cooking. As there is no structured approach or government strategy for the sector, EnDev works directly with target groups and independent from government institutions.

In **Democratic Republic of Congo** (DRC), approximately 95% of the population relies on biomass for cooking. This has consequently produced a high pressure on the second-largest forest stock in the world. Moreover, the central government's decentralised energy strategy means local authorities in Eastern Congo are in charge of future changes.

***"It is a complete satisfaction for me to have found a vocation that allows me to send my children to school and slowly start my own business."* – Mariame (Burundi)**

Project progress during monitoring period

In 2020, a power plant of 1,840 kW was successfully commissioned under the **Private Sector Participation in hydro power for rural development** component. Three other hydro power projects are still under development. Depending on the construction site, projects reached between 30% to 83% of completion and will be finalised in 2022. More than 53,000 people / 11,000 households benefited from access to electricity through all supported projects in 2020.

EnDev continued to implement its **cooking activities in Rwanda**. In 2020, 32,071 ICS were disseminated, and 42,674 people gained access to modern cooking services. EnDev also signed a co-financing agreement with the EU to expand activities in the cooking sector until October 2025. This agreement aims to increase the annual production capacity from 30,000 ICS to 200,000 ICS as well as support the production of alternative fuels.

In **Burundi**, EnDev strengthened the production capacities of 18 ICS producers and built a retail network of 229 sellers. In 2020, this resulted in the dissemination of 28,131 ICS, enabling 41,637 people to gain access to modern cooking service.

In **Eastern DRC**, EnDev is implementing a cooking energy component. In the reporting period EnDev conducted a market study to assess the market conditions in the cities of Bunia and Kalemie and on Idjwi Island, evaluate the local ICS options, and select most cost-efficient stoves for these untapped markets.

From tragedy to reinvention – a woman's Journey

During the 2015 political crisis in Burundi, Mariame's husband was forced to flee the country, leaving Mariame and her four children without a steady income. Lacking professional training and business experience, securing her family's livelihood seemed like a daunting task to 35-year-old Mariame. She first tried to become a hairdresser but was unable to provide for her children. In early 2020, she received the opportunity to take part in an EnDev training for selling "BIIKIGITI Kazoza" ICSs. Her courage and proactiveness made her the best trainee. Today, Mariame sells on average 150 BIIKIGITI Kazoza" per month, which has enabled her to become financially independent and made her one of the top five sellers in Burundian retail network.

RBF Rwanda Village Grids

EnDev Village Grid Results-Based Financing Facility (VG RBF)

The VG RBF concluded in September 2020 and has disbursed EUR 506,345 to four companies. In the first semester of 2020, VG RBF concluded the Meshpower extension project, disbursing EUR 6,175 for 308 household connections (EUR 20/connection). The project fell short of the 2,000 anticipated connections, due to subsequent changes in demarcation for its sites as a result of the National Electrification Plan (NEP), which hampered their expansion plans. Absolute Energy claimed their fourth connection claim of EUR 7,575 with 557 connections verified.

Equatorial Power (EP) was commissioned in the second semester of 2020 and was able to claim EUR 187,438 for 755 household connections out of a total of over 1,000 planned connections, with a generation capacity of 120 kWp. EP faced several technical and financial challenges due to the impacts of the COVID-19 pandemic. As a COVID-response measure, EnDev was able to make the partial payment before RBF project closure, with the remainder foreseen to be covered under the core funding stream upon the connection of the remaining customers by September 2021.

EnDev Rwanda continued its close cooperation with the Scaling-up Renewable Energy Program (SREP) -funded Renewable Energy Fund (REF). EnDev Rwanda's PUE programme, focuses on supporting the development of PUE activities at six mini-grid sites, including three RBF supported sites; Equatorial Power, Absolute Energy and ECOS.

Project facts	
Project period	06.2014 - 09.2020
Approved budget	EUR 1,891,000
Implementing Organisation	GIZ
Lead political partner	MININFRA, REG/Energy Development Corporation Ltd (EDCL)

RBF Learning points

Successful RBF programmes require conducive regulatory environment and are not standalone solutions to market development. An RBF design should consider a wider context of existing projects that provide capacity development (e.g. development of feasibility studies), complimentary financial services and promote regulatory or policy development (e.g. provision of experts in development of regulation). In the context of a nascent market – such as the case in Rwanda at the launch of the project – an RBF therefore needs to be complemented by additional action. By 2020, the sector has reached some maturity with an increasingly sound policy, regulatory and planning framework, higher private sector participation and increased financing available through the REF mini-grid financing window and SIDA's guarantee fund. EnDev contributed toward the development of this conducive market framework through policy dialogue, technical assistance and close collaboration with development partners.

RBF Key Performance Indicator (KPI)	Target	Achieved
Number of beneficiaries	23,300	10,641
Number of social institutions	40	24
Number of SMEs	250	364
EUR per beneficiary	EUR 81.16	EUR 198.48
CO2e avoided	7.000	3.113
EUR per t CO2e avoided	n.a.	EUR 123
Private sector leverage ratio	1	0.1
Jobs created	90	116
Jobs created thereof women	n.a.	56
Enterprises created/upgraded	200	280
Number of connections	36	2,763

RBF Rwanda Pro-Poor

Pro Poor Results-based financing (Pro Poor RBF)

2020 saw the implementation of the second phase of the UK Aid-funded RBF project – which started in 2019 and continues to focus on a Pro Poor approach. Contracts were signed with 7 additional companies, bringing the number of participating companies up to 8. The implementation of the Pro Poor RBF was slow during the first half of 2020 due to COVID-19 pandemic related import challenges, but accelerated during the second half. By end of the UK Aid-funded project, over 92,233 people benefited from the Pro Poor RBF of which more than 75% are among the poorest households.

Due to import delays, only three companies were able to claim and received EUR 1.18 million in incentives. As a result, it was not possible to disburse the total UK-Aid RBF budget until project closure. However, EnDev Rwanda receives additional co-funding from USAID to implement the Pro Poor RBF project, which will be available until June 2021.

The Government of Rwanda and the World Bank decided in early 2020 to upscale the Pro Poor RBF to a USD 30 million nationwide initiative. EnDev was consulted during the design phase and the Government has adopted and adapted the Eligibility Tool developed by EnDev for the Pro Poor RBF. The national RBF was launched in October 2020 and is expected to end in September 2023.

Project facts	
Project period	06.2013 – 09.2020
Approved budget	EUR 4,450,000
Implementing Organisation	GIZ
Lead political partner	MININFRA, REG/EDCL

RBF Learning points

Robust, digital systems for managing results.

RBF programmes are very data intensive. The more complex the programme, i.e. when specific income groups are targeted, the higher the need is to properly manage claim processes and track results. Robust, digital systems can significantly simplify the implementation and ensure data accuracy. The project developed the Eligibility Tool that sources and checks data from other databases to ensure that companies only sell to eligible customers. The Eligibility Tool also tracks sales and budgets in real time. Data collected through this tool is also used to cross-check data submitted for claiming, thereby providing an additional safety net for verification and data quality.

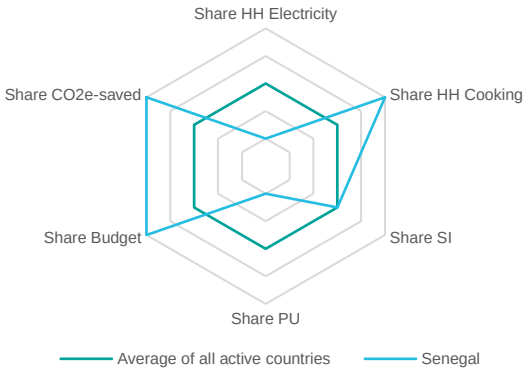
RBF Key Performance Indicator (KPI)	Target	Achieved
Number of beneficiaries	681,125	631,448
Number of social institutions	0	0
Number of SMEs	0	0
EUR per beneficiary	EUR 6.53	EUR 6.79
CO2e avoided	35,546	146,516
EUR per t CO2e avoided	EUR 125.19	EUR 29.27
Private sector leverage ratio	3	4.7
Jobs created	100	1,534
Jobs created thereof women	n.a.	394
Enterprises created/upgraded	10	14
Number of technologies deployed	172,643	175,536

Senegal

Country facts	
Population	15.9 million
Human Development Index	166 ↑ / Total (0.52)
UN Classification	LDC
Access clean cooking	41 % (urban) <5 % (rural)
Access electricity	92 % (urban) 44 % (rural)

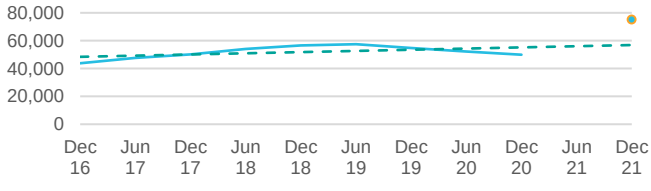
Project facts	
Project period	05.2009 - 12.2021
Budget	EUR 23,798,000
Core funding incl. RBF	EUR 21,428,000
Earmarked	EUR 2,370,000
Average annual turnover	EUR 2,997,676
Implementing Organisation	GIZ
Lead political partner	Ministry of Petroleum and Energy

Relevance

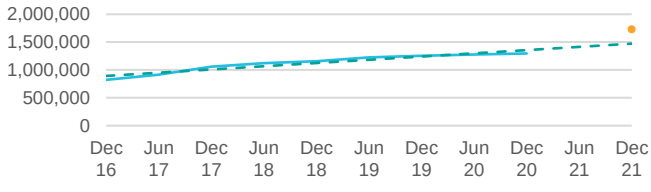


Country facts		
	Targets	Achieved
HH Access Electricity	75,000	49,819
HH Access Cooking	1,725,000	1,296,549
SI Access	1,350	988
PU Access	1,500	649

HH Access Electricity



HH Access Cooking



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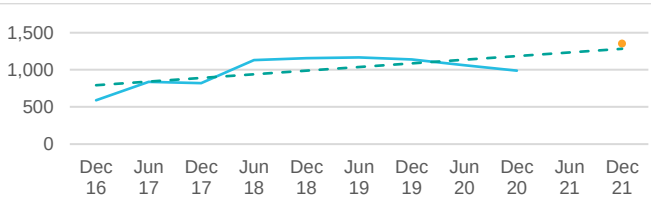

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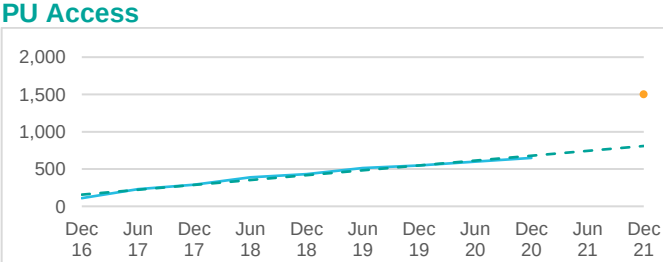


Senegal
2020:the year of restructuring & COVID-19

Training of mini-grid caretakers
Copyright: GIZ

Background information

Over the past years, EnDev Senegal prepared two new development initiatives: “Green Peoples Energy” (GBE; financed by BMZ) and “Promotion of Climate-friendly Cooking: Kenya and Senegal” (EnDev/GCF; co-financed by BMZ, GCF and national contributions). Both programmes were launched in 2020. Therefore, a newly established joint management structure for the entire sub-cluster “Access to Energy” is promoting good coordination and synergies between the three related development initiatives. Due to the emergence of the two new programmes, a partial replanning of Endev’s activities is presented in the AP 2021 up-date. At national level, the markets of access to modern energy for households, small businesses and social institutions were strongly hit by the impacts of the COVID-19 pandemic and the subsequent government measures. The value chains have been very vulnerable to the restrictions of local travel and the economic standstill.

Project progress during monitoring period

In the context of the pandemic, initially planned progress did not materialise, and even worse, severe set-backs have been observed:
In 2020, the active connections in mini-grids dropped by 26% and the average monthly ICS-sales reduced by 40%.

EnDev closely monitored these changes through bi-weekly telephone interviews with actors along the value chains throughout the 3 months of lockdown. Based on this intelligence, a concept for “building back better” the markets was developed. In the second half of 2020, field work resumed at a limited scale. After transferring all household ICS measures into the EnDev/GCF project, EnDev focussed on the implementation of the baseline study for fish-processing in the cooking energy component (see also green box). The results suggest a high potential for developing a market of modern fish-processing devices.

In the component on rural electrification, the start of the GBE project does not result in major replanning. GBE is applying complementary approaches and/or is operating in other regions. The concepts of the envisaged pilots for overcoming sustainability challenges of mini-grids have been developed and contracts prepared. The Senegalese Ministry of Petrol and Energy requested EnDev to support the development of a geospatial electrification planning tool enabling strategic planning and better consolidation of electrification efforts on national level. Consultations with various stakeholders informed the preparation of the contrct. The government documented its commitment to the process through a ‘Note de Service’, underlining the importance of this future planning tool for the joint planning in the sector and installing a committee of stakeholders for support of this intervention.

New baseline: artisanal fish processing as PUE

Rudimentary fish-smoking device
Copyright: GIZ

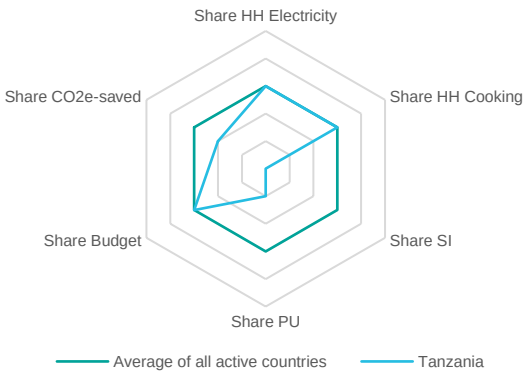
Artisanal fish processing is a large sector in Senegal that employs >17,000 mainly female entrepreneurs (approx. 75%). They use very basic technologies that lead to (a) high fish loss during processing, (b) inefficient fuel use, (c) low product quality and low selling prices and (d) high exposure to smoke. There is identified potential for developing a viable market for fuel saving and modern fish-processing appliances. The sector has high relevance for social development, gender and climate change.

Tanzania

Country facts	
Population	58.0 million
Human Development Index	159 ↓ / Total (0.53)
UN Classification	LDC
Access clean cooking	7 % (urban) <5 % (rural)
Access electricity	68 % (urban) 19 % (rural)

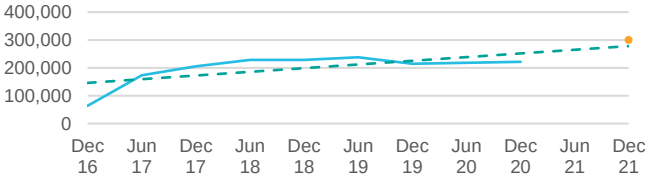
Project facts	
Project period	12.2012 - 12.2021
Budget	EUR 14,575,000
Core funding incl. RBF	EUR 14,575,000
Earmarked	-
Average annual turnover	EUR 1,997,970
Implementing Organisation	SNV
Lead political partner	Ministry of Energy

Relevance

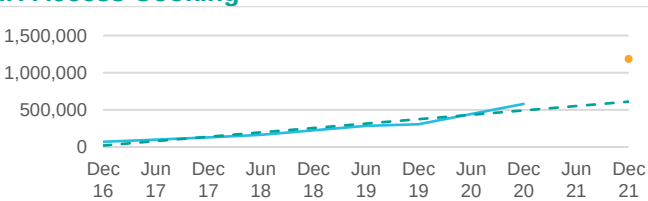


Country facts		
	Targets	Achieved
HH Access Electricity	300,000	221,001
HH Access Cooking	1,185,000	579,791
SI Access	-	-
PU Access	200	200

HH Access Electricity



HH Access Cooking



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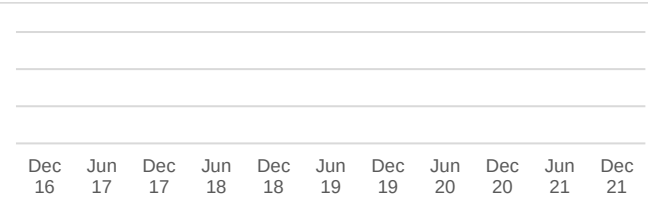

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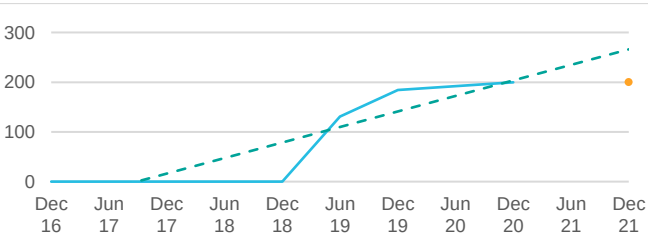


Tanzania

I have lights in my house and also installed lights at my parents' house. Since I am a sales agent, I am now able to support them."

Background information

EnDev Tanzania supports Improved Cook Stove (ICS) and pico-PV markets. The ICS component focuses on the establishment of pre-commercial cookstove producers and the transition of high performers to pioneering commercial enterprises.

Project Progress during Monitoring Period

EnDev Tanzania has increased its reach to four more clean cooking regional markets, implemented a business support component paired with awards of performance based on non-monetary incentives such as manufacturing equipment and tailored marketing tools. EnDev Tanzania has also developed a new Behaviour Change Communication (BCC) approach which utilizes awareness raising instruments (posters, aprons, packaging) to support clean cooking companies in spreading the word about their products.

Despite the economic impacts of the COVID-19 pandemic, EnDev Tanzania has supported the sale of ICS benefitting an additional 274,170 people in 2020. Through the FCDO-funded RBF, EnDev supported access to Pico-PV for 126,065 people and 200 MSMEs from the fishing sector. Since its start back in 2013, 15 firms were considered eligible to participate in the RBF project. In mid-March of 2020, the first case of COVID-19 was identified in Tanzania. Since then, sales of off-grid solar products have declined by approximately 56% compared to pre-pandemic sales in vulnerable RBF regional markets. Private sector companies experienced acute impacts on their operations ranging from diminished stocks due to global manufacturing declines and a general economic slowdown. During this period, the RBF Fund in Tanzania proved to be the only available means of responsive financing instruments available to companies.

In response to the COVID-19 pandemic and associated social restrictions, the project adapted its procedures to support more in-depth remote verification and increased claim frequencies to ensure timely cashflow support to firms in critical need. The Sustainable Market Incentives (SMI) verification survey of 60 Decibels has been expanded to assess COVID-19 impacts amongst consumers by applying industry standard questionnaires established in conjunction with GOGLA. EnDev has further acted as focal point in efforts for international coordination of firms with GOGLA and USAID/Power Africa. This has enabled further support from EnDev for off-grid companies in Tanzania and has also reinforced the role of the Tanzania Renewable Energy Association as the main voice from the private sector.

Kicking-off a Behaviour Change Communication (BCC) Approach in Mvomero District

To complement the ICS market uptake, EnDev Tanzania has developed a comprehensive BCC campaign to attract new clients for ICS producers.
The objective of the approach is to generate increased demand for ICS producers with high production capacity through the use of targeted messaging in media, promotional materials and a community-driven campaign led by the Clean Cooking Advocates. The Clean Cooking Advocates are supporting clean cooking messaging within their own communities through meetings and local events. The second element of this approach was to rebrand the famous 'Jiko Matawi' to increase name and quality recognition for potential customers. EnDev Tanzania provided manufacturing and marketing equipment to producers of the Jiko Matawi to look more modern and aspirational. In the Mvomero district, 3 champion female ICS producers engaged in the BCC pilot in 2020 and 12 Clean Cooking Advocates were trained.

RBF Tanzania

RBF Stage 2 - Rural Remote and Vulnerable Solar Market

The results-based financing project has been active in Tanzania since 2013 with an initial goal of establishing markets for Pico-PV systems in rural areas. In January 2019, EnDev launched the second stage of the project with a redesigned RBF incentive valuation and disbursement structure to increase private sector investment in more vulnerable and remote localities.
In 2020, 13 firms were considered eligible to participate in the RBF project. While four private sector companies were unable to initiate activities due to the advent of the COVID-19 pandemic, nine firms submitted their claims with a cumulative sales volume of 49,432 units and a total verified incentive value of EUR 1,015,715 between January and September 2020. Since its inception, the RBF project has supported the verified sale of 128,755 solar systems and disbursed EUR 2,246,952 of incentives.

In mid-March 2020, sales of off-grid solar products have declined by approximately 56% compared to pre-pandemic sales. Private sector companies experienced acute impacts on their operations ranging from diminished stocks to global manufacturing declines and a general economic slowdown. In response to the COVID-19 pandemic and social restrictions, the project adapted its procedures to support more in-depth remote verification and increased claim frequencies to ensure timely cashflow support to firms in critical need. After the end of the UKAid funded RBF project in September 2020 and as a response to the crisis, EnDev Tanzania launched the Green Economic Recovery Fund. This RBF fund builds on the experience of the UKAid funded project and is eligible for solar companies with the aim to build up sustainable market structures in the entire country.

Project facts	
Project period	07.2013-09.2020
Approved budget	EUR 6,300,000
Implementing Organisation	SNV
Lead political partner	Ministry of Energy

RBF Learning points
In the second stage of the RBF project, incentives have been disbursed based on a Vulnerability Access Index (VAI) that transparently considers regional socio-economic data in equal measure against regional level of past RBF market performance. As such, incentive values are highest in regions with the greatest level of socio-economic vulnerability. The analysis of the seven claim submission cycles showed that more than 20% of sales have shifted towards more vulnerable markets in comparison to the first stage of the RBF project. RBF incentives are disbursed to private sector companies in two separate instalments: the first instalment is paid upon verification of initial sales validity, while the second instalment is paid 4-6 months after the first instalment and only upon verification of customer satisfaction. This gages the extent of Sustainable Market Investments made by companies. The effect of a carefully selected RBF incentive design at points of transaction and valuation have proven to be a unique combination for steering both private sector planning and its responsiveness in delivering high-quality solar products and services to the most vulnerable rural families.

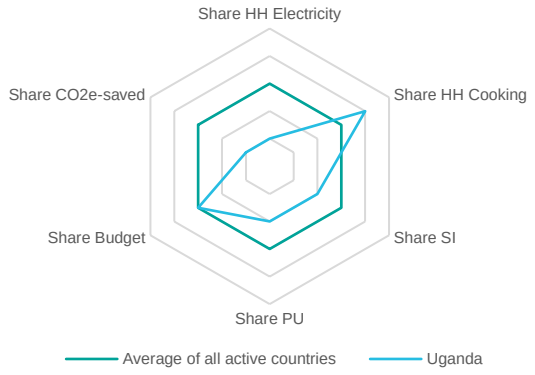
RBF Key Performance Indicator (KPI)	Target	Achieved
Number of beneficiaries	650,000	582,910
Number of SMEs	365	251
EUR per beneficiary	9.07	8.86
CO2e avoided	31,394	65,727
EUR per t CO2e avoided	187.94	78.56
Private sector leverage ratio	6.7	5.8
Jobs created	970	1,573
Jobs created thereof women	240	422
Enterprises created/upgraded	18	15
Technologies deployed	125,000	128,755

Uganda

Country facts	
Population	44.3 million
Human Development Index	159 ↑ / Total (0.53)
UN Classification	LDC / LLDC
Access clean cooking	<5 %
Access electricity	58 % (urban) 38 % (rural)

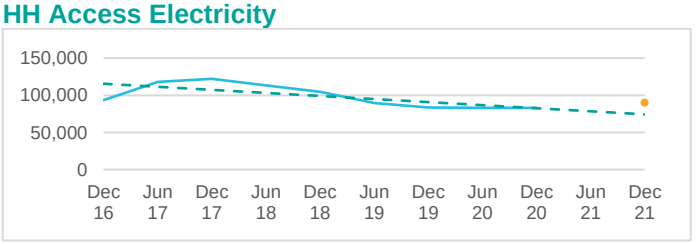
Project facts	
Project period	04.2009 - 12.2021
Budget	EUR 15,943,000
Core funding incl. RBF	EUR 15,943,000
Earmarked	-
Average annual turnover	EUR 1,607,362
Implementing Organisation	GIZ
Lead political partner	Ministry of Energy and Mineral Development (MEMD)

Relevance

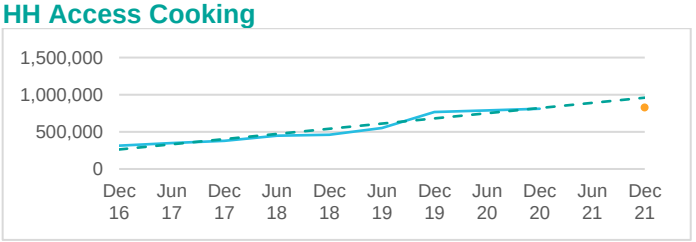


Country facts		
	Targets	Achieved
HH Access Electricity	90,000	82,967
HH Access Cooking	825,000	811,106
SI Access	1,450	751
PU Access	3,750	1,223

HH Access Electricity



HH Access Cooking



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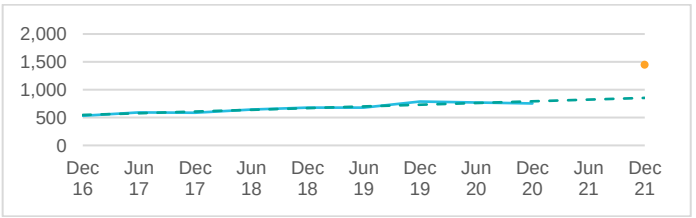

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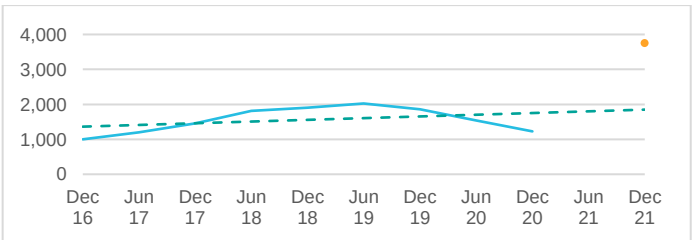


Uganda

Supported stoves sales have increased by 6% despite the pandemic


© GIZ Uganda

Background information

In 2020, EnDev Uganda has continued its efforts to improve energy access through its components on modern cooking energy, solar based electrification and energy access for refugees/host communities, despite tremendous impacts of the COVID-19 pandemic on the cooking and solar energy markets. Both sectors have been significantly affected by the socio-economic impacts of the pandemic and related restrictions: companies have lost clients, faced import and production capacity constraints due to disrupted supply chains, and reduced the number of employees and sales staff. At the same time, many customers lost energy access. EnDev has addressed these challenges by establishing a COVID-19 Economic Relief Fund, setting up new Result-Based Financing (RBF) mechanisms, looking into providing electricity to health centres in displacement settings, and by steering a number of activities enabling the local energy market environment.

Project Progress during Monitoring Period

During the monitoring period, modern cooking energy access numbers rose from 767,491 to 811,106, a net increase of 43,615 people. In the solar sector, the electrification of schools showed a moderate growth with a 5% increase of connections despite the closure of the Ugandan schools since March 2020. However, several challenges continued to affect the performance of the solar sector partners, including issues regarding credit management for their pay-as-you-go (PAYGO) portfolio and high competition from low-quality products on the market. This has led the project to propose to link Off-Grid Solar Energy Companies to a Credit Reference System. Additionally, three RBFs have been launched, including the first one in a displacement setting.

EnDev Uganda has greatly supported the enabling environment for sustainable energy markets by supporting two sector associations: the Uganda National Alliance on Clean Cooking (UNACC) and the Uganda Solar Energy Association (USEA) to improve their operations and the provision of services to their members (BDS, standards implementation). In 2021, EnDev will support the establishment of an USEA competence cluster for productive use of energy (PUE). Finally, EnDev together with the Ministry of Energy and Mineral Development has implemented a communications campaign to raise awareness about the benefits of improved stoves and cooking practices. A second campaign to support quality solar products is in progress.

The Smart Communities Coalition Innovation Fund

Uganda is part of a regional project bringing private sector-led innovative solutions to displaced populations and crisis-affected host communities. In 2020, 3 innovative business ideas from more than 50 applications were selected:

- EleQtra will deploy off-grid workspaces to provide access to “pay-as-you-use” appliances;
- Moban Savings and Credit Cooperative Society (SACCO), BiziSol and OffGridBox will establish a solar-powered utility providing clean and affordable energy, drinking water and connectivity;
- PHB Development, Yelekeni Farmers’ SACCO, BrightLife and UltraTech will develop a solar-powered hatchery and individual solar home systems for small-scale poultry farming.

The Last -Mile Solar RBF

The result-based financing (RBF) mechanism to increase access to higher tier solar home systems for 10,000 last-mile households has been established. The RBF incentivises companies to reach commercially viable remote areas and provide a default protection scheme.

D.2. Phasing out projects

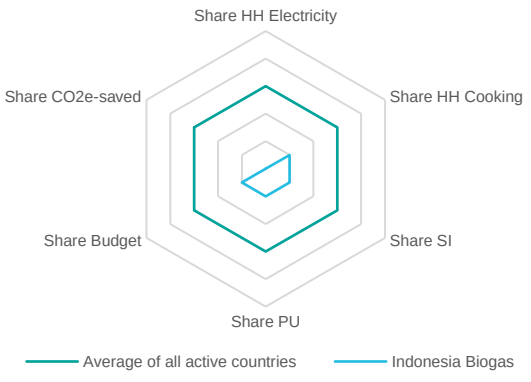
- Indonesia Biogas
- Regional RBF: Bangladesh and East Africa
- Regional RBF: Kenya, Tanzania, Uganda
- Regional RBF: Sub-Saharan Africa
- Vietnam

Indonesia Biogas

Country facts	
Population	269,6 million
Human Development Index	107 ↑ / Total (0.72)]
UN Classification	Developing Economy
Access clean cooking	91 % (urban) 68 % (rural)
Access electricity	100 % (urban) 97 % (rural)

Project facts	
Project period	12.2012 - 06.2021
Budget	EUR 3,431,000
Core funding incl. RBF	EUR 3,431,000
Earmarked	-
Average annual turnover	EUR 429,472
Implementing Organisation	Hivos
Lead political partner	Ministry of Energy and Mineral Resources (MEMR)

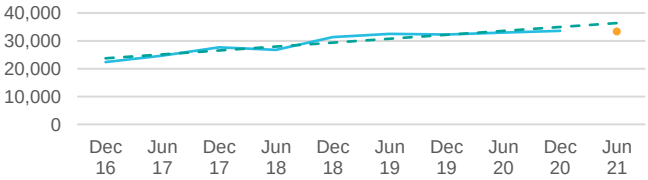
Relevance



Country facts		
	Targets	Achieved
HH Access Electricity	-	-
HH Access Cooking	33,320	33,568
SI Access	-	-
PU Access	100	102

HH Access Electricity

HH Access Cooking



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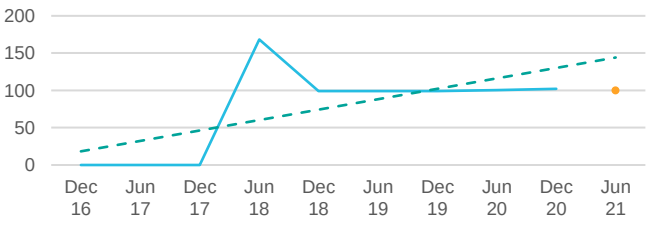


Indonesia:
BIOMIRU: an affordable alternative to reach small farmers for sustainable biogas

Jasiman - a biogas user in East Java Province. Photo credit: YRE

Background information

The in 2019 initiated 1.5 years Phasing-Out Period (POP) focuses on preparing the Indonesian domestic biogas sector for the withdrawal of ODA by: 1) strengthening and handing-over to the local biogas foundation YRE, 2) developing entrepreneurial skills and capacity of biogas SMEs, 3) preparing the market for the phase-out of subsidies, and 4) strengthening the enabling environment. The POP focuses on five provinces with the highest demand and best performing biogas SMEs. Biogas SMEs will be incentivised to promote biogas on commercial terms and supported in developing improved services and financial resilience. The establishment of public and private sector partnerships and policy advocacy will foster the enabling environment to ensure sustainable market structures in future.

Project progress during monitoring period

In 2020, the Indonesia Domestic Biogas Program (IDBP) has constructed 306 units of biodigesters in five provinces making the total of 25,157 units by the end of year. R&D on IDBP's prefabricated smaller 2m^3 biodigester named *Biomiru* has been carried out, aiming to accommodate users with only one or two cattle, living in semi-urban areas with limited availability of construction materials. As the digester can also be fed with food waste it offers a more affordable and feasible option for this new target group. For the technicians it means a faster completion and technical mistakes during installation are being minimized. Prototypes of the prefabricated *Biomiru* have been produced in December 2020 and installed in three areas near Jakarta. As of January 2021, the prefabricated *Biomiru* aimed to be scaled in all five provinces for the new target group. As part of the efforts to promote more construction through microcredit mechanism, IDBP has conducted Financial Action Learning System (FALS) advanced trainings for 154 persons from 23 construction and loan partner organizations in the five provinces aiming to strengthen their inclusive financial planning skills. The training is one of two approaches to streamline gender equality along the energy value chain, while at the same time it enables women and men from diverse economic background to benefit from financial services in an accountable, transparent, and ethical manner. During this year's monitoring cycle, additional 10 productive users were identified utilizing both biodigesters and bioslurry for business activities.

Transformative character of IDBP POP

While increased income of biogas users remains one of the intended impacts of the IDBP, it also recognizes the importance of innovation in its approaches and activities, such as:

1) Bioslurry market research to provide in-depth analysis on the prospect of bioslurry-based fertilizer business in Indonesia for commercialization and marketing strategies.
2) In addition to technical and business training, EnDev also supports bioslurry producers to expand their businesses. Further, a financial support facility will be provided for the two best performing SMEs most ready for commercialization stage.
3) Smart Biogas pilot in collaboration with the Connected Energy Ltd, a company which produces smart metering and monitoring systems. The Smart Biogas pilot uses software and compact sensing hardware allowing mobile payment and carbon monitoring implementation at the same time.

Regional RBF: Bangladesh and East Africa

Accelerating the uptake of off-grid solar technologies with RBF in Bangladesh, Kenya, Rwanda, Tanzania and Uganda

Progress of the RBF project in 2020

All participating companies participating in the RBF project were moderately to severely affected by the COVID-19 pandemic. Companies who mostly produce in China, already began reporting delays in production and shipping in early January, before the virus spread globally.

To cushion the negative impacts of the pandemic, the project successfully re-designed its RBF structure - it shifted the focus from verified sales to disbursements primarily based on inventory. This shift allowed the project to inject much needed cash flow into participating companies that were still experiencing difficulties to their operations brought about by the pandemic. When East African governments began to loosen their restrictions on movement, some renewed sale efforts by a few companies operating in the region could be achieved.

Solar water pump and refrigerator sales progress however remained slow and most distributors remained dormant. Of the 17 approved participating distributors in East Africa, by project close, only 8 had reported sales. On the contrary, demand for electric pressure cookers rose steadily, likely as a result of households having spent more time in their homes and consequently looking for more convenient cooking options. However, companies faced challenges of stock outages and logistical delays, which affected their overall sales achievement at project close.

Supported by a sub-contracted IVA, a total of 6,049 product sales (3,815 SWPs, 1,669 Refrigerators, 565 Electric Pressure Cookers) were verified in East Africa. No sales were verified in Bangladesh where companies reported much stricter government restrictions to movement.

Project Facts	
Project Period	03.2015 – 11.2020
Approved Budget	EUR 6,230,000
Implementing Organisation	CLASP
Lead Political Partner	Bangladesh: Infrastructure Development Company Ldt. (IDCOL) East Africa: not applicable

RBF Learning Points

The COVID-19 pandemic and resulting impacts are a great example of why it is recommended that RBF implementers design nimble and flexible RBF structures from the onset. Flexible structures allow them to quickly and easily respond to market conditions within the parameters of the approved contract. During such crisis, it is important for implementers to be in constant communication with companies to understand their current challenges. However, one should be aware that in such times, survey requests pile up. One possibility would be to join forces and start a joint survey in order not to overload the companies. A good example is the Energy Access Industry Barometer, a survey conducted by EnDev in a strategic cooperation with key sector players aiming toto provide a coherent and coordinated mechanism to gather insights from companies while reducing the number of surveys at the same time.

RBF Key Performance Indicator (KPI)	Target	Achieved (based on sales)
Number of beneficiaries	1,111,105	1,228,024
EUR per beneficiary	6.34	4.68
Number of enterprises gaining access		4,563
CO2e avoided	148,214	-
EUR per t CO2e avoided	39.47	-
Private sector leverage ratio	13	10.8
Jobs created	300	560
Jobs created thereof women	70	218
Enterprises created/upgraded	45	45
Technologies deployed	247,331	267,032

Regional RBF:
Kenya, Uganda & Tanzania

Kenya, Uganda and Tanzania: Biogas Business Boost Benefitting Farmers (4BF)

The RBF project is implemented under the umbrella of the Africa Biogas Partnership Programme (ABPP) phase II in Kenya and Uganda. The aim of EnDev is to accelerate the market uptake of biogas for energy generation by incentivizing private sector actors through (1) a sale incentive and, (2) a quality plant incentive (QPI). The additional income is supposed to stimulate enterprises to construct high-quality digesters and offer good after-sales service (AFSS) and customer care.

In December 2019, a cost-neutral extension until March 2020 was approved by FCDO. The first quarter of 2020 aimed exclusively at the disbursement of sale incentives for biogas plants constructed in the last months of 2019, as well as the QPI for their functionality three months after construction. In the final verification process, sales incentives for 452 plants and QPIs for 621 plants could be disbursed.

The African Biogas Partnership Programme (ABPP) will continue leveraging on the gains made by the RBF project. To keep the plant functionality momentum going, carbon income has been allocated to the respective country projects to offer incentives of EUR 75 per plant (to be split between Sale Incentive and Quality Service Provider). Carbon income for plants which have been generated since the beginning of ABPP is one of the sustainability mechanisms put in place by the programme to ensure the continuity of the project.

In addition, the carbon income will be used to continue with the robust monitoring system and the work of the independent verification agents. Other activities that will continue under ABPP until June 2020 are the provision of extension services and trainings to farmers on operation and maintenance of the biodigesters as well as optimal use of bio slurry.

Project facts	
Project period	03.2015-03.2020
Approved budget	EUR 1,641,498
Implementing Organisation	Hivos
Lead political partner	Kenya: Ministry of Energy, Petroleum; Renewable Energy Directorate Uganda: Ministry of Energy and Mineral Development

RBF Learning points
Carbon income for plants is one of the sustainability mechanisms put in place by ABPP to ensure continuity of the project. Carbon income will only be awarded if plants are functional. Ultimately, the RBF project that was aimed at paying incentives on sales and functionality have positively contributed to increasing the number of plants that are functioning thereby qualifying for carbon revenue..

RBF Key Performance Indicator (KPI)	Target	Achieved
Number of beneficiaries	36,132	45,989
EUR per beneficiary	50.79	22.03
CO2e avoided	540,781	604,499
EUR per t CO2e avoided	3,39	1.68
Private sector leverage ratio	2.3	5.1
Jobs created	488	304
Jobs created thereof women	29	15
Enterprises created/upgraded	61	435
Number of technologies deployed	7,622	8,521

Regional RBF: Sub-Saharan Africa

Sub-Saharan Africa: Sub-Saharan Grid Densification Challenge Fund

The grant agreement between EnDev Mozambique and Electricidade de Mocambique (EDM) came to an end as planned in June 2019. With a total of 13,497 verified connections, the grid densification challenge in Mozambique achieved 78% of its final target. These results also include connections in the region of Beira, which has been affected by the tropical Cyclone “Idai” in March 2019. The RBF project closed as planned by the end of September 2019.

In February 2020, the Independent Verification Agent verified the last connection claim in Rwanda and Uganda.

With a total of 14,800 connections and the disbursement of incentives amounting to EUR 1,000,036, Rwanda met the full target. In Uganda, verification resulted in over 90% eligibility. Therefore, REA was able to account for enough eligible sales to achieve 100% of the target - 9,750 connections in total under this grant agreement.

Project facts	
Project period	03.2015-02.2020
Approved budget	EUR 3,283,000
Implementing Organisation	GIZ
Lead political partner	Rural Electrification Agency (REA, Uganda), Electricidade de Moçambique (EdM, Mozambique), and Energy Development Corporation Limited (EDCL) through the Ministry of Finance and Economic Planning (MINECOFIN), Rwanda

RBF Learning points
The RBF learnings reported in the last report are still valid. The time required for contractual processes and approvals of RBF contracts that follow an output-based aid approach with partner government institutions needs to be taken into account. It is crucial to assess jointly with the private partners their priorities, processes, timelines and expectations to deliver a realistic work plan.

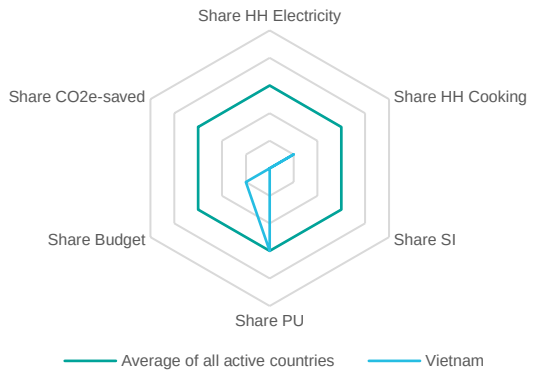
RBF Key Performance Indicator (KPI)	Target	Achieved
Number of beneficiaries	207,963	192,936
Number of social institutions	-	-
Number of SMEs	3,750	21
EUR per beneficiary	15.79	0.51
CO2e avoided	54,776	50,103
EUR per t CO2e avoided	59.94	1.96
Private sector leverage ratio	1.0	2.9
Jobs created	4,450	-
Jobs created thereof women	1,650	-
Enterprises created/upgraded	-	-
Number of technologies deployed	41,750	38,247

Vietnam

Country facts	
Population	95.6 million
Human Development Index	118 ↓ / Total (0.70)
UN Classification	Developing Economy
Access clean cooking	82 % (urban) 54 % (rural)
Access electricity	100 % (urban and rural)

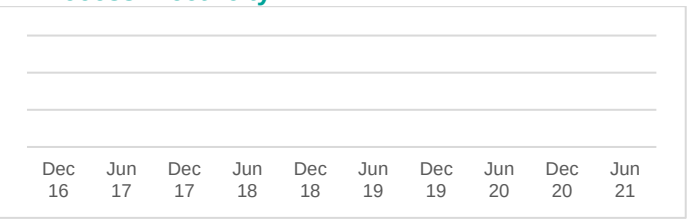
Project facts	
Project period	07.2013 - 12.2020
Budget	EUR 4,432,000
Core funding incl. RBF	EUR 4,432,000
Earmarked	-
Average annual turnover	EUR 456,570
Implementing Organisation	SNV
Lead political partner	Ministry of Agriculture and Rural Development (MARD)

Relevance

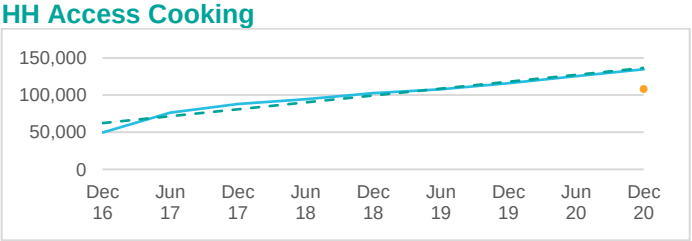


Country facts		
	Targets	Achieved
HH Access Electricity	-	-
HH Access Cooking	107,700	134,820
SI Access	-	-
PU Access	880	2,673

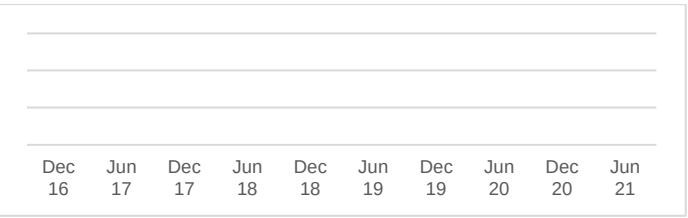
HH Access Electricity



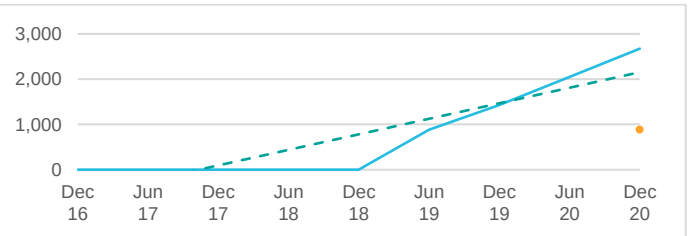
HH Access Cooking



SI Access



PU Access



Vietnam
Transition to a private sector market

Background information

The EnDev country project in Vietnam aimed to transform the local biogas sector into a self-sufficient, private sector-driven market. After 7.5 years of support, EnDev ended its engagement in Vietnam at the end of 2020. During this time, EnDev supported biodigester enterprises (BEs) to become commercially viable companies and take on sector tasks such as marketing, end-user training, and after sales services. The project trained over 250 BEs in 45 of Vietnam's 63 provinces in providing quality biodigester services to livestock farmers. More than 53,000 biodigester were constructed in the project period, enabling enterprises to continue connecting rural households to energy services in the future.

Project progress during monitoring period

Although Vietnam was uniquely successful in managing COVID-19, the pandemic nevertheless had an impact on project activities in 2020. Despite nationwide lockdowns in place in March and April, and again in June, BEs were able to reach out and provide services to households in 32 provinces. The project saw an additional 5,961 biodigesters built, bringing the cumulative project total to 53,973 biodigesters. The country project also continued to foster productive use of biodigesters for income generation. Three training courses on bio-slurry processing and application provided capacity building to BEs as well as provincial and district authorities on how to utilize the biodigester byproduct for organic agriculture. By the end of 2020, the project, together with the political partner – the Vietnamese Ministry of Agriculture and Rural Development (MARD) – organized the closing workshop for the project. The event gave opportunity for sector actors to come together and reflect on sector developments and achievements over the past years, and to plan ahead. The closing workshop also allowed for a stock-take of the Biogas Innovation Fund (BIF) that was launched with EnDev's support in mid-2019. In the fast-changing agricultural sector in Vietnam, the BIF aimed to catalyze new ideas for biogas use applications that would allow BEs to find new business opportunities in additional market segments in the future. In total, nine initiatives by academia and the private sector received co-funding to bring new prototypes to commercialization stage (see box below).

Biogas Innovation Fund opens up new market opportunities

By investing in nine competitively selected innovations, the EnDev-supported Biogas Innovation Fund (BIF) fostered the creation and testing of new types of biodigesters and biogas uses. The BIF supported, for instance, a digester for household food waste; a community-based biogas sharing system (mini-grid); a digester specifically designed for wastewater from shrimp farms in the Mekong Delta; and a biogas heating system for pig farms. One of the nine innovations, the 'Biogas Filtration and Electricity Generation Project' by applicant EGREEN, modified common diesel generators to be powered by biogas to produce electricity. Two initial generator units were installed at two large-scale pig farms with 4,000 pigs. The installations quickly proved to reduce the farms' electricity expenses. EGREEN uses a business modality in which it builds, operates and maintains the biogas power system while farms purchase the electricity at low cost without having to make an initial investment for the generator. The success of the pilot projects encouraged EGREEN to sign contracts for electricity generation with four more farms. The proven concept will allow EGREEN to explore this market further. The model could be promising, with over 20,000 large-scale pig farms in Vietnam that could engage in electricity production with this model.

Abbreviations

ABPP	Africa Biogas Partnership Programme
ADES	Association pour le Développement de l'Energie Solaire / Solar Development Association, Switzerland
ADELE	Access to Distributed Electricity and Lighting in Ethiopia
AEPC	Alternative Energy Promotion Centre, Nepal
ASS	After Sales Service
AVSI	Association of Volunteers in International Service
BBF	Bangladesh Bondhu Foundation
BDS	Business Development Support
BEAF	Biogas Enterprise Acceleration Facility
BIF	Business Innovation Fund
BMZ	German Federal Ministry for Economic Cooperation and Development
CAP	Country Action Plan for Clean Cookstoves
CCA	Clean Cooking Alliance
CCAK	Clean Cookstove Association of Kenya
CDM	Clean Development Mechanism
CES	cooking energy systems approach
CESPA	Cambodian Efficient Stove Promotion Association
CLASP	Collaborative Labeling and Appliance Standard Program
CPS	Consumer Product Sales
CREE	Community Rural Electrification Entities Nepal
CRS	Credit Reference System
DAC	Development Assistance Committee
DCHI	Dutch Coalition for Humanitarian Innovation
DEZA / SDC	Swiss Agency for Development and Cooperation
DFAT / AusAID	Australian Department of Foreign Affairs and Trade
DFID	UK Department for International Development
DGIS	Netherlands Ministry of Foreign Affairs Directorate-General for International Cooperation
DRC	Democratic Republic of the Congo

EDCL	Energy Development Company Limited
EDM	Electricidade de Moçambique/ Energy Public Utility, Mozambique
EnDev	Energising Development programme
ESMAP	Energy Sector Management Assistance Programme
EU	European Union
FAA	Funded Activity Agreement
FASER	Fundo de Acesso Sustentável às Energias Renováveis / Renewable Energy Fund, Mozambique
FCDO	The UK Foreign, Commonwealth and Development Office
FDC	Fundação para o Desenvolvimento da Comunidade / Foundation for Community
FGD	Focus Group Discussions
FI	finance institution
FNAP	National Federation of ICS artisans of Burkina Faso
FOCAEP	Central American Fund for Access to Sustainable Energy and Poverty Reduction
FTE	Full time employment
GBE	Grüne Bürgerenergie – Citizens' Green Energy Programme (BMZ)
GCF	Green Climate Fund
GEIF	Gender and Energy Innovation Facility
GHG	greenhouse gases
GIGA	German Institute of Global and Area Studies
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
GTF	Global Tracking Framework
HH	households
HEPA	Health and Energy Platform of Action
HIVOS	Humanistisch Instituut voor Ontwikkelingssamenwerking / Humanist Institute for Cooperation with Developing Countries
IAP	Indoor air pollution
ICEIDA	Icelandic International Development Agency
ICS	improved cookstove
IDBP	Indonesia Domestic Biogas Programme
IICA	Inter-American Institute for Cooperation on Agriculture
IRS	Institutional Rocket Stoves

IRSAT	Institut de Recherche en Sciences Appliquées et de Technologie / Institute for Research in Applied Sciences and Technologies, Burkina Faso
ISO	International Organization for Standardization
ITAC	Independent Technical Advisory Committee
KOFIH	Korea Foundation for International Healthcare
KOSAP	Kenya Off Grid Solar Programme
KPI	key performance indicator
LDC	least developed countries
LIZ	light industrial zones
LLDC	landlocked developing countries
LV	low voltage network
MECS	Modern Energy Cooking Services
MFA-NOR	Norwegian Ministry of Foreign Affairs
MFI	micro finance institution
MGP	Mini-Grids Partnership
MHDF	Micro Hydro Debt Fund, Nepal
MHP	micro hydropower
MSME	micro, small and medium-sized enterprises
MTF	Multi-Tier Framework
NCSC	National Cookstoves Steering Committee, Malawi
NDCs	Nationally Determined Contributions
NIS	Nordic International Support Foundation
OAS	Organization of American States
ODA	Official Development Assistance
PA	Practical Action
PAYGO	Pay-As-You-Go
PE	Poly-ethylene
picoPV	pico photo voltaic
PNSER	National Program for Sustainable Electrification and Renewable Energies
PU	productive use of energy
QPI	Quality Plant Incentive

RBF	results-based finance
REG	Rwanda Energy Group
RF	Revolving Fund
RVO	Rijksdienst voor Ondernemend Nederland/ Netherlands Enterprise Agency
SCCIF	Smart Communities Coalition Innovation Fund
SDG	sustainable development goals
SHS	solar home system
SI	social institutions
SIDA	the Swedish International Development Cooperation Agency
SME	small and medium-sized enterprise
SMI	Sustainable Market Investments
SNI	the Indonesia National Standards Agency
SNNPR	Southern Nations, Nationalities, and Peoples' Region in Ethiopia
SNV	Stichting Nederlandse Vrijwilligers / Netherlands Development Organisation
SREDA	Sustainable and Renewable Energy Development Authority
SREP	Scaling Up Renewable Energy Program in Low Income Countries
SSHS	small solar home systems
SWC	Social Welfare Council
SWH	solar water heaters
SWP	solar water pumps
TICS	Tanzania Improved Cook Stove programme
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
USAID	the United States Agency for International Development
VAT	value added tax
VMEEA	Vice-Ministry of Electricity and Alternative Energy
WHO	World Health Organization

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the_energy_progress_report_full_report.pdf

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