Energising Development
Progress Report 2021

endev

Energising change

Partnership between

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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, self-sustaining 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, and Switzerland.; donors who are committed to accelerating energy access and socio-economic development.

Key achievements

1. Executive summary

EnDev aims to achieve sustainable access to modern energy for 28.5 million people by 2025 with a currently allocated total budget of EUR 452.2 million. By the end of 2021, EnDev facilitated sustainable access to modern energy services and technologies in total for 25.8 million people, 30,900 social infrastructures, and 81,700 micro, small and medium-sized enterprises. In 2021, 2.0 million people, 2,400 social infrastructures and 8,170 micro, small and medium-sized enterprises were reached additionally. 31,900 people are employed either in the related supply chains or directly in the enterprises that were provided with energy access. EnDev interventions saved 2.55 million tons of CO_2 emissions in 2021.

Key trends

Regionally, the focus continues to be on sub-Saharan Africa. 69% of the funds were committed to sub-Sahara Africa, 68% of the global results can be attributed to this region. 71% of the target achievement at household level comes from access to thermal energy (cooking), while households with access to electrical energy contribute 29% to the overall target achievement. The 2.0 million people reached in 2021 correspond to an overall increase of 8%.

From 30,900 social infrastructures reached, 2,400 received access in 2021 which is an overall increase of 8%. In total, 2,135 health centers and rural clinics were provided with access to modern energy, a majority of 1,540 are in sub-Saharan Africa.

Until the end of 2021, a total of 81,700 micro, small and medium-sized enterprises was reached. The share of enterprise access to electricity is 58%, while access to clean cooking stands at 42%. In 2021, the additional number of micro, small and medium-sized enterprises again increased in comparison to the average result of the past five years. In 2021, 8,170 micro, small and medium-sized enterprises received new or improved access which is an overall increase of 11%. Again, this result was achieved despite the persistent challenges to implementation resulting from COVID-19 restrictions in most countries. With 52% of the enterprises gaining access to thermal and 48% to electrical energy the share in 2021 stands nearly at parity. In total, 31,899 people are employed in jobs that can be attributed to EnDev. Most of these positions are part time.

Financial situation

In 2021, EnDev has received additional core funding from BMZ and DEZA of EUR 27.13 million. Additionally, an amount of EUR 7.75 million new earmarked funds (co-financing contracts) was secured from RVO in the context of EnDev associated projects. As a result, additional total funding was secured of EUR 34.88 million.

EnDev's total allocated budget sums up to EUR 452.19 million of which EUR 448.88 million are currently available. Therefore, the allocated budget has a funding gap of EUR 3.32 million.

EnDev's Consultative Group held two virtual meetings in 2021. The virtual 24th EnDev Consultative Group meeting took place in May 2021 and was chaired by Norway (NORAD/MFA). The virtual 25th EnDev Consultative Group meeting took place in November 2021 and was chaired by Switzerland (SDC).

Portfolio development

2021 was the year of recovery in the energy access markets within EnDev's portfolio. After

being slowed down in 2020 by the COVID-19 pandemic, EnDev country projects increased their implementation activities and gained momentum again in 2021. The pandemic is not over and continues to affect the implementation of the country projects. With specific adjustments to the local context, projects managed to bring the progress achievement mostly back on track. In 2021, the portfolio of country projects remained unchanged. The next regular portfolio review is scheduled for 2022 and will be followed by a (re-)programming cycle at the end of 2022 resp. beginning of 2023.

Co-management
GIZ resumes the overall responsibility for programme management vis-à-vis the commissioning party BMZ, the Consultative Group and additional co-financing parties. RVO complements GIZ in programme management tasks (commissioned by DGIS in the context of its core contribution to EnDev) particularly regarding strategy, quality control, learning, innovative approaches (end user subsidies, access to finance, business development support) and strengthening networks with partners.

Associated projects
EnDev's portfolio witnessed the emergence of a new associated project. The project *Strengthening the Entrepreneurial Ecosystem for Clean Cooking* (SEE-CC) aims to develop the market for higher tier cooking. SEE-CC consists of the *Higher Tier Cooking Component* (HTCC) and the *Africa Biodigester Component* (ABC). SEE-CC is commissioned by DGIS and managed by RVO, it receives co-financing by the European Union (for HTCC) and the *Danish International Development Agency* (for ABC). HTCC aims to further strengthen the supply side of the clean cooking sector. It does this by helping small and medium-sized enterprises improve their business operations, get access to finance for scale and innovation and by helping build an enabling environment in support of clean cooking in Bangladesh, Cambodia, Ethiopia, and Uganda. ABC aims to develop and strengthen demand, supply and enabling environment to create sustainable bio-digester markets in Burkina Faso, Kenya, Mali, Niger, and Uganda.

Challenges
In 2021 the EnDev teams were focused on supporting post-COVID-19 efforts, guided by a new round of programming that helped to re-focus from short-term and reactive activities towards more long-term goals and impacts in the context of the so-called "new normal". Still, global supply chain issues hampered operations (e.g. lack of technical equipment and rising costs) and it is foreseen that these global trends will continue to have a moderate impact.

The security situation in some countries has become more volatile and made implementation more challenging, most notably in Ethiopia where international EnDev staff had to be temporarily evacuated and operations halted for a while, but also the situation in Mali needs is closely monitored.

Partnerships, innovation and learning
EnDev has continued its cooperation with strategic partners in 2021. A project on e-waste is being implemented with the *Global Association for the Off-Grid Solar Energy Industry* (GOGLA) in Kenya, the work on so-called Energy Compacts with partner countries has expanded the standing of the programme in international policy debates, and with the engagement in the *End-User Subsidy Lab* the cooperation with the World Bank's *Energy Management Assistance Programme* (ESMAP) is coming to a new level.

EnDev concluded its first round of the *Innovation and Learning Agenda*, conducted a series of webinars on different topics, influenced global debates with hands-on knowledge products and started a series of innovative pilot projects. Building on its expertise, EnDev also pursued a stronger focus on e-cooking via pilots, research, and market analysis as well as knowledge exchange with key actors.

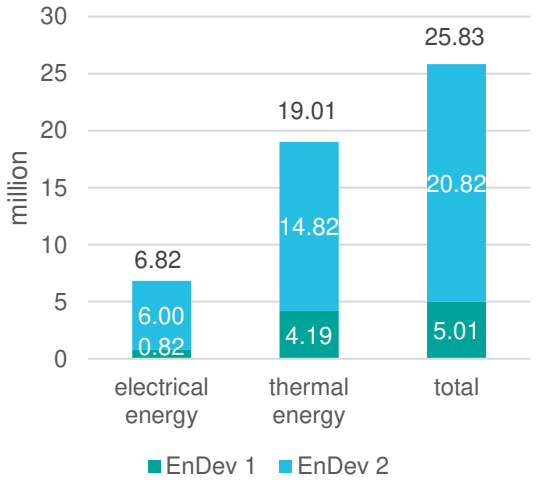
The results of the first year of the real time evaluation provided valuable independent insights into the performance of the programme and is expected to continue to support strategic steering in the coming years.

2. Outcomes and impacts

2.1 Dashboard

Since 2005, EnDev facilitated sustainable access to modern energy services and technologies for about 25.83 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 20.82 million people. During EnDev 2 access to electrical energy is now available for a total of 6.00 million people (29%) and 14.82 million people (71%) 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 67% in 2020 respectively 69% in 2021 of committed EnDev 2 funds (Figure 2-3). The share of least developed countries (LDC) supported by EnDev is 71% (Figure 2-4). 58% of expenditures can be allocated to electrical energy and 42% to thermal energy (Figure 2-5).

Figure 2-2
People reached by technology

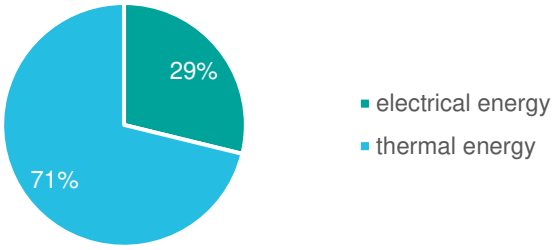


Figure 2-3
Funding by region

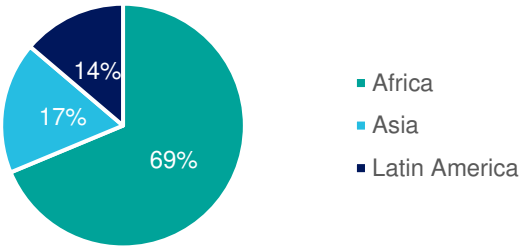


Figure 2-4
Funding by country classification

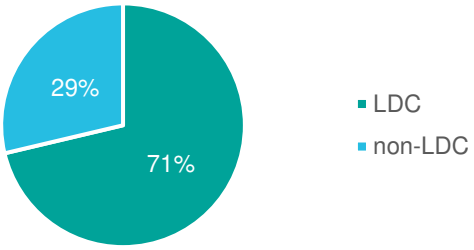


Figure 2-5
Expenditures by technology

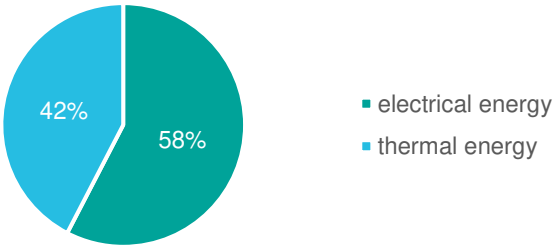


Table 2-1

Countries[1] and technologies in 2021 of the EnDev core programme and associated projects

	Thermal energy			Electrical energy		
	Improved cookstoves	Biogas	Higher-tier cooking	Soalr PV stand alone systems	Mini-grids	Grid
Countries						
Bangladesh	●		● AP	●		
Benin	●			●		●
Bolivia	●			●		●
Burkina Faso		AP				
Burundi	●					
Cambodia (with Laos)	●		● AP			
Democratic Republic of the Congo (DRC)	●			●	●	
Ethiopia	●		AP	●	●	
Kenya	AP	AP	●	●	●	
Liberia (with Sierra Leone and Guinea)	●			●	●	
Madagascar	●					
Malawi	●			●		
Mali	●	AP		●	●	
Mozambique	●			●	●	●
Nepal	●		●		●	●
Niger		AP				
Rwanda	●	●		●	●	
Senegal	AP			●	●	●
Tanzania	●		●	●		
Uganda	●	AP	AP	●	●	●

[1] Components that are phasing out are shown in lighter colour; components of associated projects are indicated by AP.

2.2 Energising Lives: Social development

By December 2021, EnDev 2 reached 20.82 million people. In 2021 the number of people that received new access is 2.02 million which is more than double of the annual growth in 2020 which was 0.92 million. The low target achievement in 2020 was mainly caused by the impacts of the COVID-19 pandemic. In 2021, energy access markets gained momentum again. The target achievement in 2021 is also clearly higher than in 2019 which was at 1.6 million people. Figure 2-6 shows the development of the target achievement during the last six years.

For the future, an increase by additional 2.8 million people until 2024 as laid out in the *Programming Report 2021 Update* is expected. EnDev core is on track to reach the target of 23.5 million people set for EnDev 2 by 2024.

Looking at the projections it can be observed that the growth between 2021 and 2024 is in the range of 4.8 million people. In terms of scale, this is comparable to the growth between 2018 and 2020. It needs to be considered that this is based on a considerably lower budget of an estimated 60% when looking at a 3-year horizon. This indicates that EnDev's ambition to break away from the linear relationship between inputs and results continues to resonate at country level.

In addition, to the above described results of the EnDev programme associated projects[2] begin to have an effect on EnDev's overall target achievement as well as future outlook.

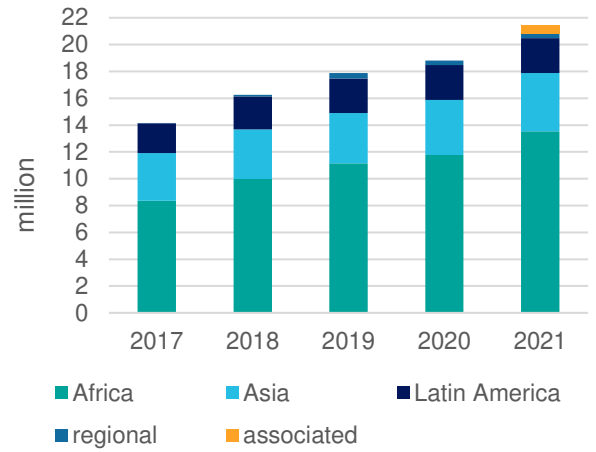
- The Green Climate Fund (GCF) co-financed project *Promotion of climate-friendly cooking: Kenya and Senegal (GCF)* started implementation in 2021. This was a slightly delayed start which led to a target achievement of 0.7 million people in 2021 which is slightly behind schedule. In the following years this delay in target achievement will be compensated. An additional result of 7.10 million people until end of 2024 is expected.
- The contribution of SEE-CC: ABC from activities in Burkina Faso, Kenya, Mali, Niger, and Uganda, is estimated to reach additional 250,000 people by 2025; HTCC with activities in Bangladesh, Cambodia, Ethiopia, and Uganda to reach an additional 600,000 people by 2025 with access to tier 3+.

Adding the results of EnDev 1 to the expected results of EnDev 2 and the associated projects, EnDev's overall global target is expected to reach 35.84 million people by 2024.

During the past years, EnDev has increased its focus on sub-Saharan Africa. This can be clearly seen on the growth of the results.in 2021 results in Africa increased by 15% while results in Latin America increased by 1% and respectively by 6% in Asia.

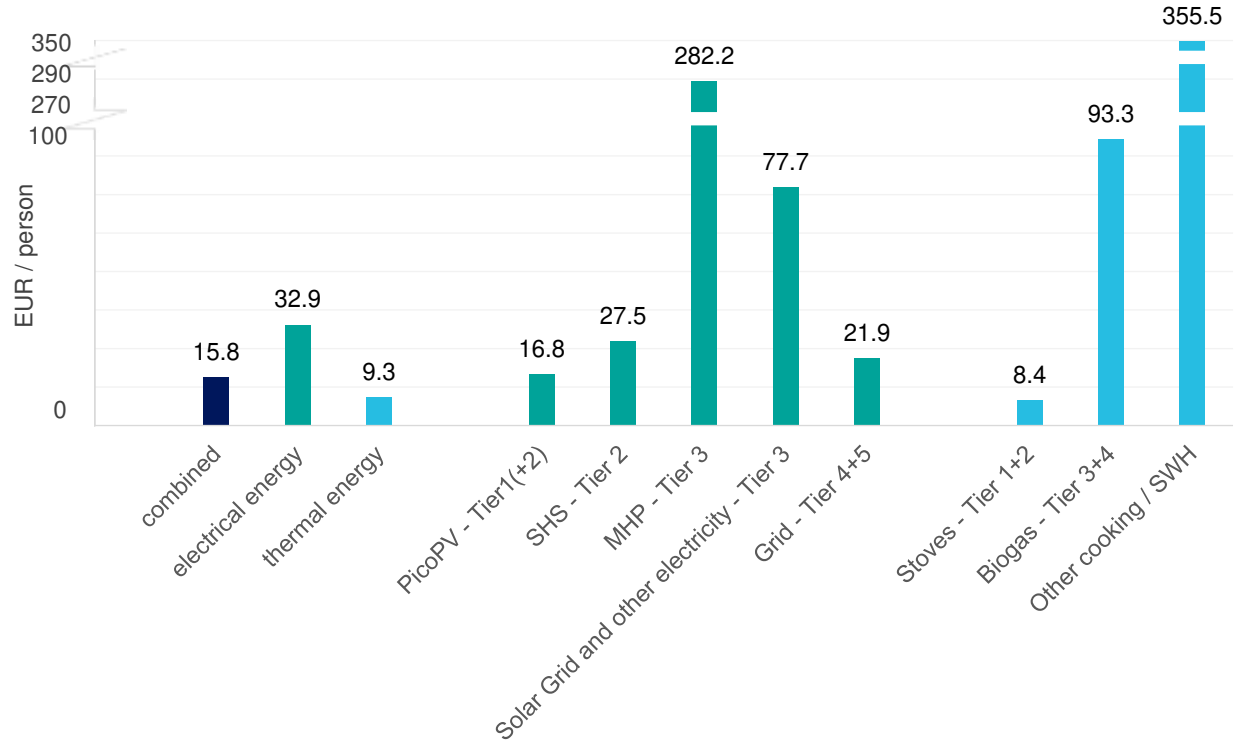
[2] Actual results of associated projects will be adjusted to match EnDev's robust and conservative monitoring system taking into account sustainability, attribution and additionality.

Figure 2-6
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 (2021: 68%; 2020: 72%) while households with access to electricity contribute 32% (2020: 28%) to the overall target achievement (Figure 2-2). This shift towards an increased share of people reached with electrical energy derives from the projects increased focus on electrification. In 2021, 1,370,000 additional people were reached with cooking energy technologies and additional 650,000 people gained access to electricity. 42% (2020: 43%) of the country budgets are used for activities to promote modern cooking, 58% (2020: 57%) to promote access to electricity (Figure 2-5).
The cost efficiency to reach one person hardly changed in 2021. While by the end of 2020, the average cost efficiency was at EUR 15.7 per person this figure changed to EUR 15.8 per person in 2021 (Figure 2-8). This stable development can be observed for nearly all technologies. For electrification the cost efficiency was at EUR 32.9 per person in 2021 (2020: EUR 31.2 per person). The cost efficiency for cooking energy went down slightly (2021: EUR 9.3 per person; 2020: EUR 9.5 per person).

Figure 2-7
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	865,466	14%
4	limited grid	810,710	14%
3	mini-grid	249,972	4%
2	solar home system	1,739,717	29%
1	picoPV	2,329,665	39%
	total	5,995,529	

Access to clean cooking

Based on EnDev's project level methodology corresponding with the MTF for Cooking, EnDev's target achievement in clean cooking can be attributed as follows:

Table 2-3
Access to clean cooking

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	955,397	6.4%
3	Access to needed quantity of energy source: ≥ fair Health protection: ≥ fair; Convenience: ≥ fair	496,996	3.4%
2	Access to needed quantity of energy source: ≥ limited Health protection: ≥ limited, Convenience: ≥ sufficient	8,662,044	58.4%
1	Access to needed quantity of energy source: ≥ deficient Health protection: ≥ low; Convenience: ≥ low	4,687,165	31.6%
0	Access to needed quantity of energy source: ≥ highly deficient Health protection: ≥ very low; Convenience: ≥ very low	18,277	0.1%
	total	14,819,879	

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 2.02 million women and 4.04 million young children benefit from lower exposure to hazardous pollutants like particulate matter and carbon monoxide.

During 2021, additional 2,416 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 23,401 SI. The annual target achievement in 2021 is more than double compared to the achievements in 2020 (1,096) in 2019 (1,035 SI). Thus, showing a clear growth path that reflects the project ambitions presented in the *Annual Planning 2021 update.* Regionally, the largest contribution to SI target achievement is Latin America with 49% (in total 11,475 SI (see Figure 2-9). Africa contributes 37% (in total 8,750 SI), Asia the remaining 14% (in total 3,176 SI).

The growth in 2021 happened in Africa which contributes 97% to the additional result in 2021. In total 1,840 SI have been reported in Africa with new access to cooking energy and additional 510 SI with access to electricity. Asia contributed 49 SI and Latin America 17 SI with access to electricity.

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Figure 2-8
Results for social infrastructure - EnDev 2

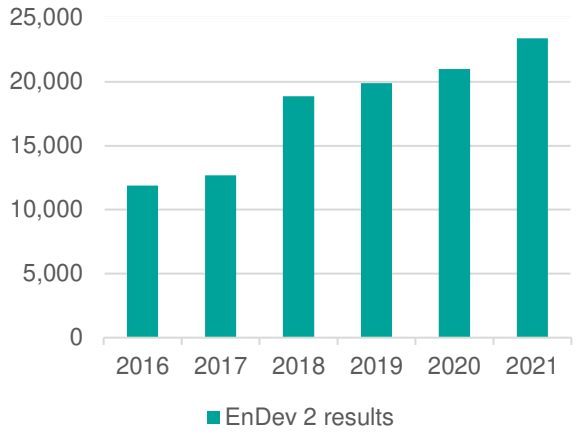
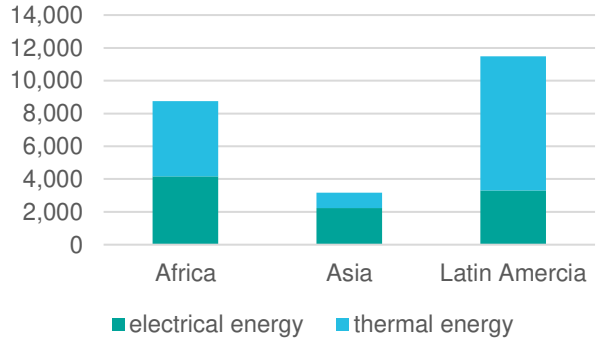


Figure 2-9
Social infrastructure by technology and region



Within EnDev 2, in total 1,783 health institutions were provided with access to modern energy. This represents 7.6% of the 23,401 SI that have been supplied. Including results from EnDev 1, in total 2,135 health institutions were reached. The analysis shows that a majority of 1,540 of the health institutions are in Africa. This corresponds to 72% of all health institutions

2.3 Energising Opportunities: Economic development

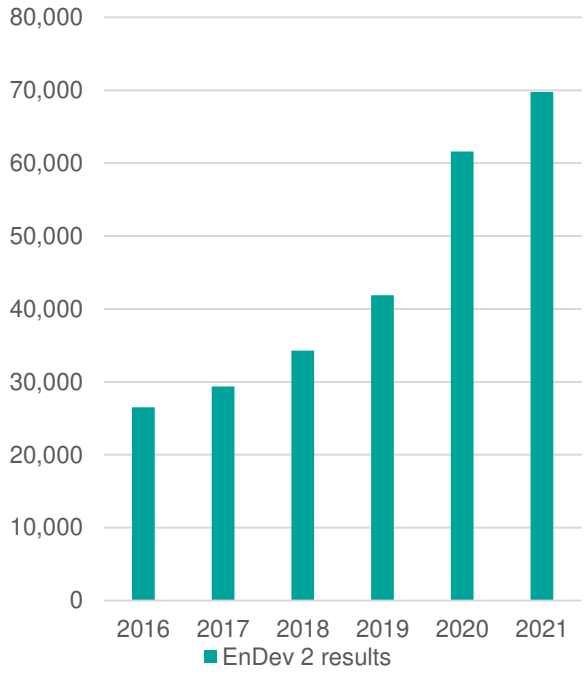
Since 2005, EnDev has provided access to modern energy to 81,700 micro, small and medium-sized enterprises (MSME). Of these, 69,800 have received access under EnDev 2 – about a half with access to electricity and a half with access to thermal energy. In 2021, an additional 8,170 MSMEs received new or improved access to modern energy, which is slightly above the average annual results despite the persistent challenges to implementation resulting from COVID-19 restrictions in most countries.

In total, 13 countries contributed to the additional results of 2021. With 61% the largest share of additional MSMEs reached in 2021 are in sub-Saharan Africa (ten countries). This is followed by 21% in Latin America, where Bolivia is the sole remaining country, and 18% in Asia (two countries). As a result, the overall share of MSMEs reached in Africa in the context of EnDev 2 increased from 19% to 23% (Figure 2-13), reflecting EnDev's strategic focus on sub-Saharan countries.

The majority of supported enterprises (84.5%) are micro enterprises with one to five employees, as in years past. The fraction of companies with six to ten employees (15.5%) is however growing and shows targeted efforts through the portfolio to reach enterprises with growth potential in rural settings, such as food processors or cooperatives.

EnDev is making progress towards its gender goals for economic empowerment also. 43% percent of employees in new MSMEs reached in 2021 are female and 5% of businesses are led by women. This should increase as EnDev's country-specific gender action plans as well as further targeted support for women entrepreneurs begins to show traction.

Figure 2-10
Results for micro, small and medium-sized enterprises – EnDev 2



52% of the companies were reached with thermal energy, which were mainly used in the food and beverage sector (restaurants, cafes, etc.) but also for food manufacturing (bakeries, fish smoking, etc.).

The other 48% of the additional companies reached in 2021 used electrical energy – about two thirds using stand-alone systems for their businesses. Four out of five companies reached with stand-alone systems used energy to illuminate workplaces – across all sectors such as in agriculture, manufacturing, shops as well as restaurants and cafes. Another 5% of these companies, mostly larger in size, used energy for agricultural activities of higher energy consumption such as water pumping, milling, incubating, as well as for cooling or freezing their harvest. The remaining companies used different kinds of electrical devices for services such as haircutting and shaving, and charging or to run radios and TVs in cafes.

In terms of access to electrical energy, efficient electrical appliances (e.g. pumps, milling machines, efficient freezers, etc.) play a substantial role. In some cases, obtaining such a system means a tier improvement rather than new access to electricity for the companies, as these appliances allow their users to run devices at lower consumption rates for a longer time or even additional devices. This category is important because it represents businesses moving beyond lighting to become more productive or to replace inefficient or diesel-powered appliances. The results based on tier increase is expected to become more prominent in the future.

Figure 2-11
MSMEs by region - EnDev 2

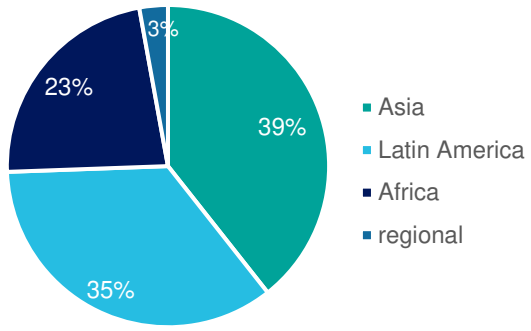


Figure 2-12
MSMEs by region and technology - EnDev 2

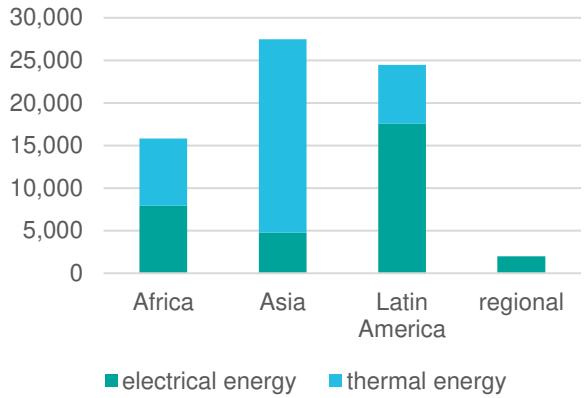
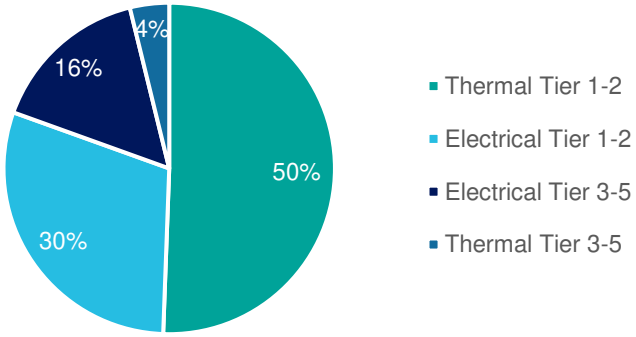


Figure 2-13
MSME tier distribution - EnDev 2



The number of people in employment increased in 2021 by nearly 2,000 and reached 31,899 (2020: 29,992). In the production of cooking energy technologies, 8,617 people were employed, while 2,254 people worked in the respective sales and distribution chains. For solar systems the number of people being employed along the distribution chain was 1,523.

During the operational phase of mini-grids, 5,544 people work in operation and maintenance, administrative and managerial tasks. 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 13,960 part-time jobs exist. In total, 31,889 people are employed in partner countries that can be attributed to EnDev. Detailed data on people with employment for 2021 is presented in Table 2-3.

Table 2-4
Employment effects - people with employment

	Direct			Indirect
	Production	Distribution/sales	Operations	SME application of technologies
cooking energy	8,617	2,254		
solar lights		1,523		13,960
mini-grid			5,544	
Total	**31,899**			

2.4 Energising Climate: Combating climate change

Annual savings of CO_2 emissions show a continued growth. In 2021, 2.55 million t CO_2 were saved that can be attributed to EnDev. The overall Endev CO_2 savings accumulate to 19.5 million t by the end of 2021.

A breakdown of CO_2 savings per region 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 2021 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 10% 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 2.37 million tonnes CO_2 which are 93% 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 2-14
CO_2 savings - EnDev 1+2

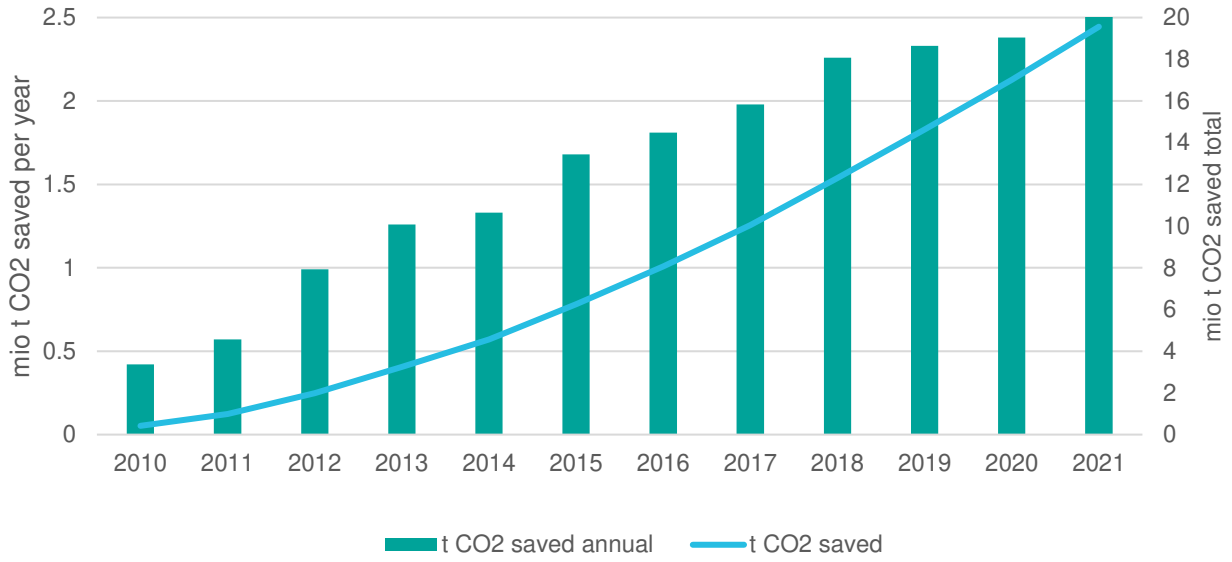
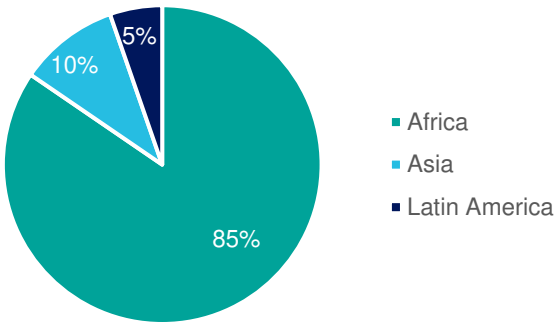
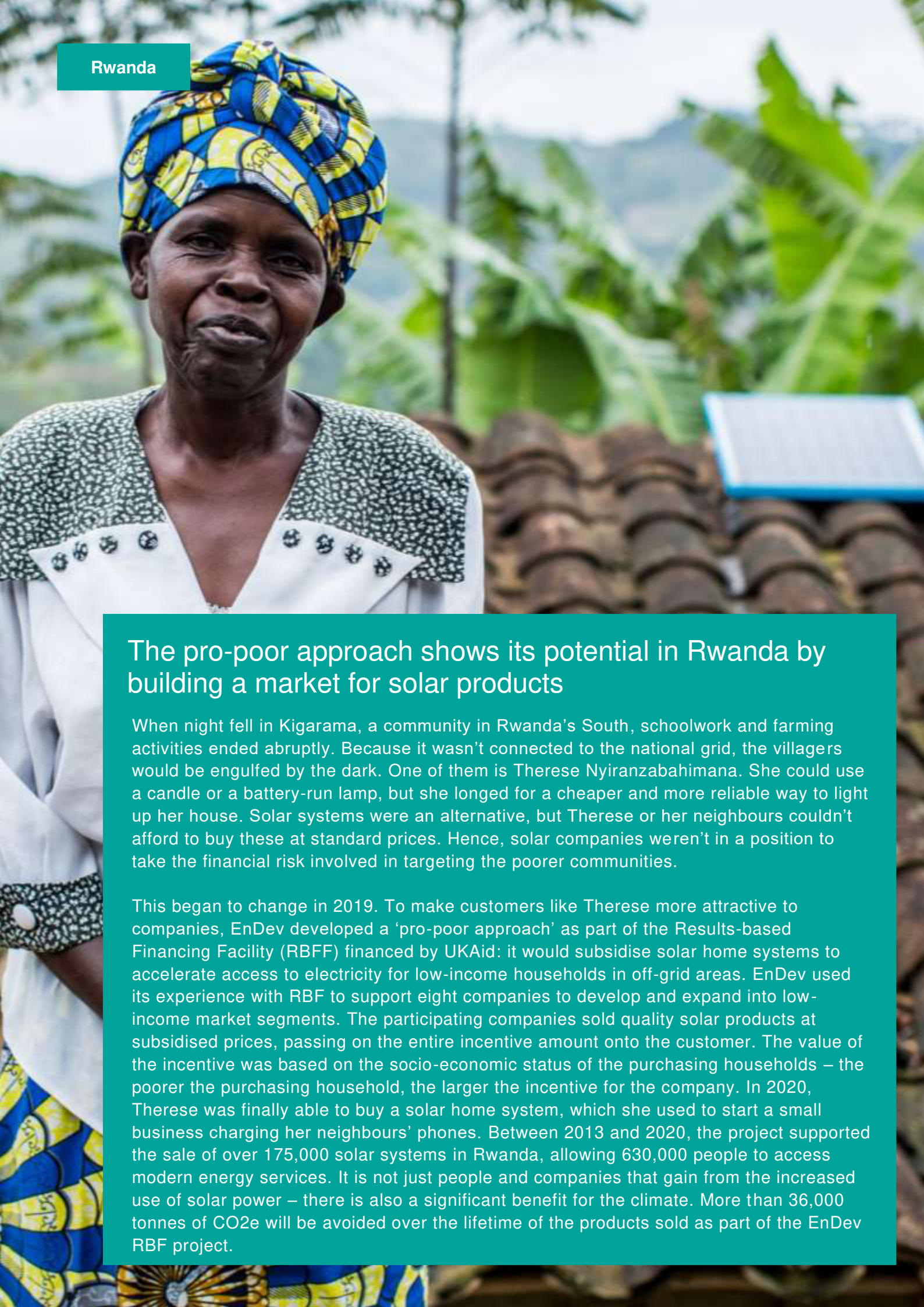


Figure 2-15
Annual CO_2 savings by region



Rwanda



The pro-poor approach shows its potential in Rwanda by building a market for solar products

When night fell in Kigarama, a community in Rwanda's South, schoolwork and farming activities ended abruptly. Because it wasn't connected to the national grid, the villagers would be engulfed by the dark. One of them is Therese Nyiranzabahimana. She could use a candle or a battery-run lamp, but she longed for a cheaper and more reliable way to light up her house. Solar systems were an alternative, but Therese or her neighbours couldn't afford to buy these at standard prices. Hence, solar companies weren't in a position to take the financial risk involved in targeting the poorer communities.

This began to change in 2019. To make customers like Therese more attractive to companies, EnDev developed a 'pro-poor approach' as part of the Results-based Financing Facility (RBFF) financed by UKAid: it would subsidise solar home systems to accelerate access to electricity for low-income households in off-grid areas. EnDev used its experience with RBF to support eight companies to develop and expand into low-income market segments. The participating companies sold quality solar products at subsidised prices, passing on the entire incentive amount onto the customer. The value of the incentive was based on the socio-economic status of the purchasing households – the poorer the purchasing household, the larger the incentive for the company. In 2020, Therese was finally able to buy a solar home system, which she used to start a small business charging her neighbours' phones. Between 2013 and 2020, the project supported the sale of over 175,000 solar systems in Rwanda, allowing 630,000 people to access modern energy services. It is not just people and companies that gain from the increased use of solar power – there is also a significant benefit for the climate. More than 36,000 tonnes of CO2e will be avoided over the lifetime of the products sold as part of the EnDev RBF project.

3. Partnerships

Energy access gained political momentum in 2021 on global level. The year witnessed several high-level events such as the *United Nations High-Level Dialogue on Energy*, the *Vienna Energy Forum* and *CoP 26*. In the wake of these global fora, philanthropic organizations entered the stage claiming to provide significant financial support in the areas of energy access and climate. EnDev is actively engaging with both established political partners as well as these new emerging actors.

International fora

The UN Secretary General convened the HLDE at the UN General Assembly in September 2021 in New York to accelerate SDG 7 action for the achievement of the 2030 Agenda for Sustainable Development and the Paris Agreement on climate change. This event was the first of its kind since 1981.

A central pillar of the political commitment expressed during the HLDE were the so-called *Energy Compacts*. EnDev supported particularly the compact development in Kenya, Malawi, Rwanda (in cooperation with SEforALL) and Sierra Leone. These compacts were presented at HLDE and CoP 26. EnDev is following up on implementation of the energy compacts in aforementioned countries. In their role as global champions for clean cooking, EnDev partner country governments of Kenya and Malawi together with the Netherlands advocated the need for targeted action in order to achieve SDG 7 clean cooking targets. As a consequence, clean cooking is integral part of several *Energy Compacts*.

During CoP 26, EnDev together with the IKEA Foundation organized a side-event entitled “Making small-holder farming future-proof: smart approaches to promoting productive use of energy & strengthening climate resilience”. This event built on the initial learnings of the IKEA co-financing for the “Sustainable Energy for Smallholder Farmers” project.

Partners for scale

In 2021, EnDev spearheaded a new line of activities on the topic of demand-side subsidies (DSS), which both strengthened existing partnerships and established new ones. In response to a request from DGIS, EnDev conceptualized a flagship initiative which will pilot a variety of DSS modalities for off-grid solar and clean cooking solutions in four to five countries in the coming years. Ultimately, it is envisaged that each of these pilots will be handed over to, and scaled up by, government agencies and development finance institutions, in particular the World Bank. As such, the World Bank -- through its *Energy Sector Management Assistance Program* (ESMAP) -- has been closely involved in the DSS design as well as the country selection process. This partnership was inspired by past successful collaborations, most notably in Rwanda, where EnDev's Pro-Poor RBF pilot was scaled up under the World Bank's *Rwanda Renewable Energy Fund*.

Building upon this momentum, a consortium of development partners including ESMAP, the *Global Off-Grid Lighting Association* (GOGLA), Acumen and *Africa Clean Energy* (ACE) launched the *End-User Subsidy Lab* in late 2021 to facilitate knowledge exchange and to support the development and piloting of new DSS designs. EnDev has joined the lab as core member.

Thematic cooperation
In 2021, EnDev teamed up with GOGLA to establish a *producer responsibility organisation* for the off-grid sector (OGS) industry in Kenya – building on the existing cooperation between members of the Kenya Solar Waste Collective (a.o. Solutions for Industrial Ecosystems, Kenya Renewable Energy Association). The purpose of the project is to support an operational joint enterprise for collection of e-waste in Kenya and generate links for a regional approach on e-waste.

Learning and innovation
EnDev concluded a first 2-year cycle of its new Learning and Innovation Agenda in 2021. With the support of implementing partners such as Practical Action, SNV, GIZ and AVSI four products are capturing the vast expert knowledge of the partnership and have since been presented on multiple international fora.

The process also helped expand the EnDev network to new actors (e.g. in the humanitarian sector) and vitalized the ecosystem in which EnDev operates. It also helps by crowding in new ideas and approaches. For these reasons the EnDev Learning & Innovation Agenda will be continued also in the next years to come, albeit with focus on different thematic areas.

Another important trajectory of the EnDev Learning and Innovation Agenda in 2021 was the innovation window.

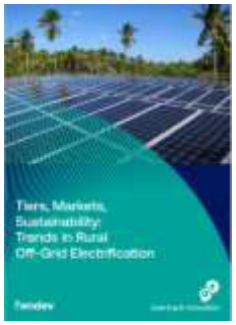
EnDev recognizes that experimenting, learning and uptake of lessons learned is crucial to remain additional, increase impact and accelerate EnDev's contribution to reaching SDG7.

EnDev consequently opened a EUR 2.0 million innovation window and challenged its implementers to come up with innovative ideas under this window. Out of 20 ideas, nine were selected to actually test their suggested innovation in pilot projects, which are described in the table 3-1. Around these projects an innovation community is being

The publication "Behavioural change promotion toward cleaner cooking solutions" casts a spotlight on normative and other aspects that influence if and how clean cooking solutions are being utilized.

"Humanitarian Energy: Energy for micro-enterprises in displacement settings" presents innovative solutions for refugee camps and host communities and profited heavily from the collaboration with the humanitarian energy sector.

Introducing a new ecosystem approach, "Productive Use of Energy: Moving to scalable business cases" provides a comprehensive solution to this emerging trend in off-grid energy solutions.



The guideline "Tiers, Markets, Sustainability: Trends in Rural Off-Grid Electrification" provides insights for implementers with a special focus on sustainability of projects dedicated to delivering electricity to rural off-grid areas.

formed amongst others with webinars aiming to support one another and exchange lessons learned.

The projects are commissioned for about a year and are expected to present their final results in the first quarter of 2023.

Table 3-1
Overview selected innovation pilot projects

Country	Implementer	Innovation
Tanzania	SNV	**Women's Employment Stimulus RBF Fund for Off-grid Solar** Testing the effect of a financial incentive for off-grid solar companies to employ (young) women, on the sales figures, customer base and the inclusiveness of those companies
Malawi	MAEVE	**Pump-preneurs: Energy solutions for the smallholder sector** Testing a PAYGO solar portable water pump as a business case for "pump-preneurs" offering irrigation services to smallholder farmers
Bangladesh	SNV with CLASP	**Bangladesh Energy Access to Modernisation (BEAM) Fund** Testing a conditional demand-side financial contribution for e-cooking technologies on the inclusion of vulnerable consumer segments, with eligible cooking products tested by CLASP together with a local laboratory
Nepal	Practical Action	**Digital innovations for e-cooking market development** Testing whether digital solutions (including to track delivery of products, inform consumers and facilitate communication between Community Rural Electrification Entities) set up and owned by partners can spur e-cooking market development.
Kenya	SNV with CLASP	**Piloting Electric Pressure Cookers in Kakuma & Kalobeyei** Testing the potential and the use of Electric Pressure Cookers by refugees and host communities powered by a mini-grid.
Rwanda	GIZ	**Cold Storage as a Service (CaaS) Rwanda** Testing the development of a business that provides storage in cold hubs at food markets in Rwanda and getting it ready for commercial investment and scale.
Kenya	GIZ	**Stimulate Digital A2F Services for PUE Solutions in Groups ('e-chama' services for PUE)** Testing consumer financing by financial service providers to village savings and loan groups for Productive Use of Energy technologies.
Uganda	GIZ	**Supporting market development of Electric Pressure Cookers in rural Uganda** Testing the potential and the use of Electric Pressure Cookers in grid connected households in Uganda, while contribution to a conducive enabling environment.

In the spotlight: e-Cooking

e-Cooking combines access to electricity with access to clean cooking – interventions are extremely complementary. Nevertheless globally, approximately 2 billion people have access to some form of electricity but do not have access to clean cooking, the majority of which rely on the traditional use of biomass.

EnDev has significantly ramped up its resources in exploring the potentials for e-Cooking – ranging from detailed market assessment and technology options to first concrete pilot implementation. Important partners in this avenue are the *Modern Energy Cooking Services* (MECS) programme and the *Collaborative Labeling and Appliance Standards Program* (CLASP). EnDev organized four webinars in 2021 covering the thematic areas of technologies and quality standards, experiences of first pilots, and mini-grid-based e-Cooking.

The series concluded with a webinar about "Pathways to Clean Cooking in 2050" addressing the transitional efforts needed for clean cooking, including the combination of efficient biomass stoves, and clean fuel stoves and e-Cooking.

As a highlight in 2021, EnDev and MECS developed a comprehensive *e-Cooking Market Assessments* to systematically explore potentials in eight EnDev countries (Bangladesh, Benin, Ethiopia, Kenya, Mozambique, Nepal, Rwanda and Uganda). The studies will be published on the MECS website and will soon get posted on the EnDev website. The findings are also feeding into different trajectories which EnDev has started to pursue in 2021 for distinct initiatives that provide targeted support to promote e-Cooking.

Honduras

EnDev's long breath: Reviving hydro power plans in Honduras finally pays off

The communities of Las Dantas, Los Chiles and Playitas are home to about 150 families and a population of roughly 800 people, who are represented by a committed leader: María Esperanza Cortés. For years, María has fought to improve families' living standards, including access to electricity. Until 2018, the communities relied on oil and gas lamps and firewood as sources of energy, which meant that they were not able to use basic kitchen appliances for food storage and cooking. María worked tirelessly to realize a hydroelectric power plant for the communities – 15 years after it was originally designed. Because unfortunately, the project development had to be halted due to lack of funding.

In 2016, EnDev Honduras pledged to provide technical assistance to reinitiate the project. And it remained not the only one: EnDev has supported 8 micro-hydro projects in Honduras providing more than 5,700 people with modern energy. But this was only half of the story: apart from construction and overcoming budget limitations, somebody had to resume responsibility for operation. In a community assembly, the three communities decided to organize themselves and started their own cooperative COMISERICLAL. It manages the day-to-day operation and maintenance of the plant. Supported by the National Electric Energy Company and municipal and central governments, the Río Claro Hydroelectric Plant opened in December 2018. In Lempira, life became much easier for the people – as well as for the community's six social institutions and three enterprises. María explains: "People can now refrigerate their food, so that it lasts longer. We have stoves, coffee makers and microwaves and can use these appliances whenever we want." COMISERICLAL charges users a monthly fee to cover its running costs; energy has become reliable and energy costs have been halved. Together with EnDev, María will continue shaping the young people of her community into future leaders who will one day sustain and manage the hydroelectric plant.

4. Safeguards and gender

A key element of EnDev's strategy 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. Representing a historic level of commitment, EnDev developed a tailor-made holistic safeguards and gender approach for the whole portfolio to further increase the program's ambition on safeguards and especially gender-sensitive programming on country level. On impact level, a special emphasis was put on gender and specifically women's economic empowerment.

In line with GIZ's mandatory requirements, EnDev passed the internal process and clearance on safeguards and gender in terms of the programming cycle of the EnDev portfolio. The two-step process included:

- 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.
- **21 in-depth assessments** for conflict and context sensitivity, human rights, and gender equality on country level. In addition, 3 countries implemented an in-depth environmental assessment, due to the technologies promoted (e.g. hydro power) and respective risks identified in step 1.

During the in-depth assessment process, country projects implemented a comprehensive review of their activity planning in terms of conflict and context sensitivity, human rights, and gender equality. Based on the results the countries were able to raise the ambition level and design more targeted measures especially concerning designing gender-sensitive activities.

To further amplify its impact on gender, EnDev teamed up with the energy-gender network ENERGIA and focused on three core processes during the reporting period:

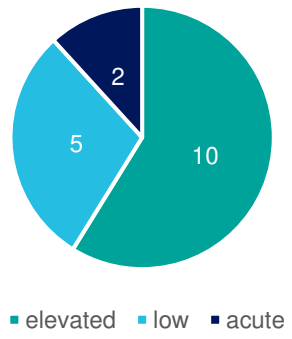
1. **Sensitizing monitoring and log-frame operationalization**: EnDev identified blind spots in its overall monitoring approach and developed an extensive set of gender-sensitive indicators to better track impacts of its actions in this regard and to underpin the strong positive effects that energy access has especially for women.
2. **Gender Action Plans:** Three country projects (Ethiopia, Tanzania, Uganda), building on the gender analysis, pioneered *Gender Action Plans* that translate the key findings of the analysis into concrete actions that are embedded into the overall project approach at country level. This approach will be rolled out in 2022 to additional countries.
3. **Gender strategy and guidelines:** To provide clear guidance, a EnDev Gender Strategy is under development and will be complemented by a robust and detailed set of guidelines and resource packs. This will propel EnDev to be one of the most gender-sensitive and gender-actionable energy access programs on global scale and – more importantly – guide country teams in increasing their efforts to become more gender transformative.

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. 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.

EnDev was also quick to react on the emerging security crisis in Ethiopia. Whilst staff was evacuated, remote management enabled EnDev to continue operations, albeit on a lower scale. Meanwhile, EnDev has fully returned to normal operations in Ethiopia.

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



EnDev Tanzania Participatory Action Learning for Sustainability approach tackling gender norms

In Tanzania, EnDev not only supports ICS producers to scale up their business but also engages the female as well as male ICS producers' spouses in a workshop to understand how the ICS business fits into the wider, more holistic view of the family, and their life vision. The aim is to increase stove sales by supporting the entrepreneurs and their spouses in setting a family vision as well as business targets. The workshop encourages discussions on household labour division, which is especially relevant for female-led business owners that carry the double burden as well as a reflection on cultural stigmas and their impacts especially on women as business owners. As a result, family gender norms are transformed leading to more gender equal divisions of labour, reflection and changes of cultural stigmas attached to gender and providing equal access to finance. So far, the majority of women-led enterprises undergoing this training were able to increase their sales and thus their income.

Uganda

EnDev Uganda's COVID-19 Relief Fund for the Solar and Cookstove Sector

Similarly to many other countries in the world, the government of Uganda placed a number of restrictions upon the population to curb the effects of COVID-19. The lockdown and imposed curfew were preventing solar and cookstove companies to reach out to existing and new customers, as well as from retaining qualified staff and providing safe work environments. Due to the overall economic slowdown in the country, existing and potential new customers were not able to pay for Solar Home Systems, which threatened energy access rates achieved in the last years and hampered future growth. With these challenges of the sectors in mind, EnDev Uganda in cooperation with the Ugandan Ministry for Energy and Mineral Development and support from the BMZ set up a COVID-19 Economic Relief Fund targeting the solar and cookstove sectors. The nearly 1 Mio EUR Fund that ran for 7 months was managed by the Private Sector Foundation in Uganda (PSFU), an apex body for the private sector in Uganda. Companies were called upon to apply to the competitive grant through an open advertisement process. The fund was disbursed to 26 eligible companies who applied for 12 different support lines spanning from support for trainings, staff salaries, inventory stock ups, digitalization of their ales operations as well as promotions. The impact assessment shows that overall awarded companies sold more products and generated double digit revenue in Jan to June 2021 than March to October 2020. One beneficiary explains: *"Marketing is now easier since we've invested in digitalization and so many people can order online".* Two solar companies utilised the Fund to provide payment holidays to their PAYGO customers. With this, access to electricity of 3907 customers could be safeguarded.

5. Report and accounts

In 2021, EnDev secured additional funds of EUR 34.88 million. This includes core funding contributions from BMZ and DEZA, as well as earmarked funds from RVO.

In 2021, EnDev has received additional core funding from BMZ and DEZA of EUR 27.13 million. Additionally, an amount of EUR 7.75 million new earmarked funds (co financing contracts for associated projects) was secured from RVO. As a result, additional total funding was secured of EUR 34.88 million.

EnDev's total allocated budget sums up to EUR 452.19 million of which EUR 448.88 million are currently available. Therefore, the allocated budget has a funding gap of EUR 3.32 million. Expenditures in 2021 reached EUR 37.32 million which represents a slight increase compared to the annual average of the three previous years of EUR 36.37 million (2018-2020). Total expenditures until the end of 2021 reached EUR 382.68 million. Thus, an allocated amount of EUR 69.51 million remains available for planned activities until 06/2023.

Table 5-1
Global budget and funding of projects - EnDev 2 (in EUR)

Allocation of EnDev 2 Total Budget	
Allocated to country projects based on EnDev 2 Programming Report 2022	402,470,014
Allocated to programme management level	49,723,000
Total budget	452,193,014
Total available funds	448,877,961
Remaining funds according to Programming Report 2022	**-3,315,053**

5.1 Funds

As of end 2021, BMZ had commissioned an amount of EUR 451,83 million. Figure 5-1 shows shares of funds by donor, including earmarked funds.

Table 5-2
Funds by donor – EnDev 2 (in EUR)

Donors	2019	2020	2021
Consultative Group			
BMZ	94,870,000	104,870,220	123,595,220
DEZA	13,530,000	13,530,000	21,930,000
DFAT	15,858,077	15,858,077	15,858,077
DGIS	100,629,138	131,879,138	131,879,138
FCDO RBF	50,216,000	50,216,000	50,216,000
Norad (MFA)	52,455,404	52,455,404	52,455,404
SIDA	12,774,794	12,774,794	12,774,794
Additional donors			
EU	13,020,014	23,020,014	23,020,014
FCDO Bangladesh	3,260,000	2,049,360	2,049,360
ICEIDA	715,000	715,000	715,000
IKEA Foundation	0	8,000,000	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	1,531,773	1,531,773
USAID	2,952,000	2,952,000	2,952,000
Total	**367,033,370**	**424,704,723**	**451,829,723**

Figure 5-1
Funds by donor (in million EUR, in % of total funds)

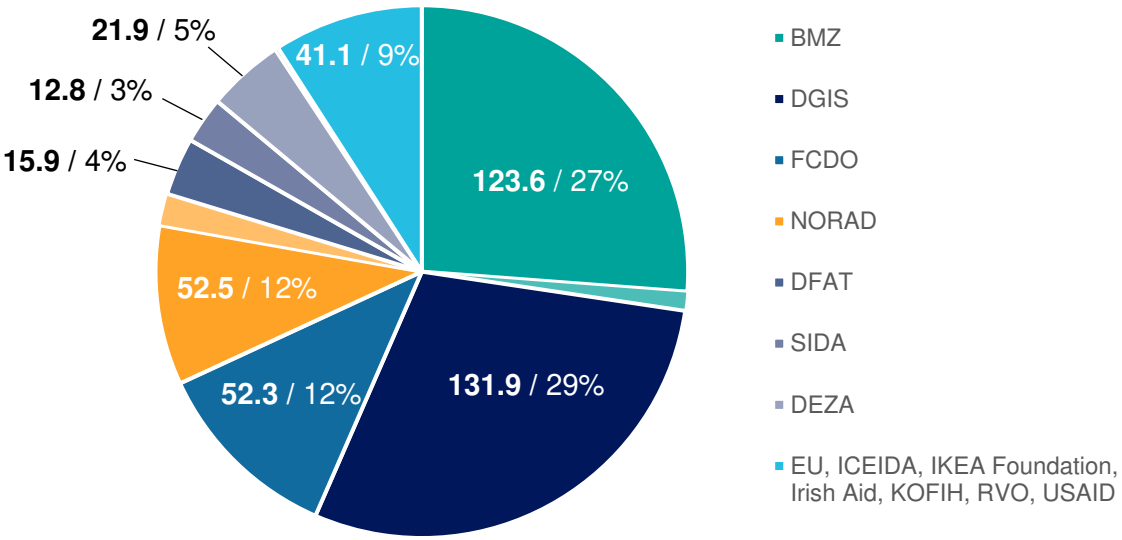


Table 5-3

Funds of EnDev 2 according to BMZ commissioning, available funds, expenditures and income (in EUR)

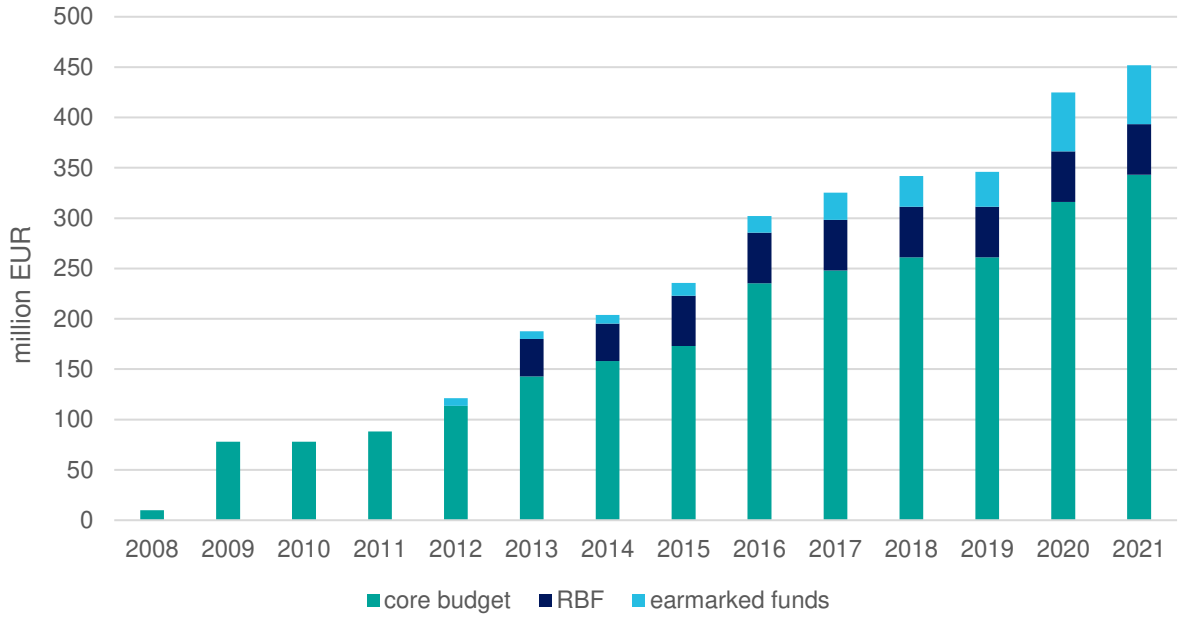
Donors	funds according BMZ commission	Available funds [a]	Expenditures	Income
Consultative Group				
BMZ	123,595,220	123,595,220	111,071,817	111,071,817
DEZA	21,930,000	22,355,424	16,440,815	16,755,426
DFAT	15,858,077	15,858,077	15,858,077	15,858,077
DGIS	131,879,138	131,879,138	112,375,145	114,658,737
FCDO RBF	50,216,000	46,928,726	43,546,823	43,026,005
Norad (MFA)	52,455,404	52,276,727	46,114,300	47,333,269
SIDA	12,774,794	12,774,794	12,869,085[b]	12,774,794
Total Consultative Group funds	**408,708,633**	**405,668,107**	**358,276,062**	**361,478,125**
Additional donors				
EU	23,020,014	23,020,014	12,405,482	14,380,875
FCDO Bangladesh	2,049,360	2,049,360	2,086,261[b]	2,049,360
ICEIDA	715,000	715,000	495,336	715,000
IKEA Foundation	8,000,000	8,000,000	994,616	5,459,954
Irish Aid	3,944,943	3,944,943	3,999,134[b]	3,947,475
KOFIH	908,000	908,000	704,118	684,000
RVO	1,531,773	1,531,773	1,540,213[b]	3,540,773 [c]
USAID	2,952,000	3,048,505	2,178,372	2,963,705
Total additional funds	**43,121,090**	**43,217,596**	**24,403,532**	**33,741,141**
Total	**451,829,723**	**448,885,702**	**382,679,594**	**395,219,266**

a) Due to contributions in foreign currencies (CHF, GBP, NOK, USD), an amount of EUR 2.94 million is reserved for the exposure to exchange rate fluctuations resulting in available funds of EUR 448.89 million in comparison to commissioned funds of EUR 451,83 million.

b) Expenditures to be corrected at the end of the project. Possible overspendings will be levelled and charged to the commissioning party.

c) Income includes prefinancing for the new earmarked contributions.

Figure 5-2
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 2021, 76% of funds did not have earmarking while 24% of funds were earmarked (11% RBF, 13% bilateral co-financings and soft earmarking for technologies and/or countries). In 2021, 76% of funds did not show an earmarking while 24% of funds were earmarked (11% RBF, 13% bilateral co-financings and soft earmarking for technologies and/or countries).

5.2 Expenditures and income by donor

Table 5-4
Expenditures by donor (in EUR)

	2009-2018	2019	2020	2021	Total [a]
BMZ	66,798,442	7,949,601	24,025,204	12,298,570	**111,071,817**
DEZA	9,531,826	1,090,105	768,917	5,049,968	**16,440,815**
DFAT	15,859,815	-1,739	0	0	**15,858,077**
DGIS	90,668,075	10,247,196	28,851	11,431,022	**112,375,145**
FCDO RBF	26,428,791	7,681,316	9,035,868	400,849	**43,546,823**
Norad (MFA)	31,797,174	2,454,512	9,392,573	2,470,041	**46,114,300**
SIDA	11,802,783	1,066,303	0	0	**12,869,085**
EU	7,249,669	2,320,046	-131,384	2,967,150	**12,405,482**
FCDO Bangladesh	2,144,796	-54,012	66	-4,588	**2,086,261**
ICEIDA	0	3,716	104,542	387,078	**495,336**
IKEA Foundation	0	0	0	994,616	**994,616**
Irish Aid	3,499,202	342,610	165,663	-8,341	**3,999,134**
KOFIH	508,949	188,265	11,738	-4,834	**704,118**
RVO	1,322,414	134,331	84,428	-960	**1,540,213**
USAID	24,641	234,151	576,863	1,342,717	**2,178,372**
Total [a]	267,636,577	33,656,402	44,063,328	37,323,288	**382,679,594**

a) 2009-2021: Differences due to rounding are possible.

Table 5-5
Income by donor (in EUR)

	2009-2018	2019	2020	2021	Total [a]
BMZ	66,798,874	7,475,625	23,991,535	12,805,784	**111,071,817**
DEZA	9,869,602	2,253,267	1,856,321	2,776,235	**16,755,426**
DFAT	15,858,077	0	0	0	**15,858,077**
DGIS	100.658.737	0	7,000,000	7,000,000	**114,658,737**
FCDO RBF	29,201,300	8,359,749	5,464,956	0	**43,026,005**
Norad (MFA)	32,679,946	6,004,443	3,678,430	4,970,450	**47,333,269**
SIDA	12,774,794	0	0	0	**12,774,794**
EU	6,860,614	4,500,000	3,020,260	0	**14,380,875**
FCDO Bangladesh	1,010,110	1,039,249	0	0	**2,049,360**
ICEIDA	0	445,000	0	270,000	**715,000**
IKEA Foundation	0	0	2,587,766	2,872,188	**5,459,954**
Irish Aid	3,947,475	0	0	0	**3,947,475**
KOFIH	684,000	0	0	0	**684,000**
RVO	1,700,000	0	-168,227	2,009,000	**3,540,773**
USAID	878,248	383,024	1,334,671	367,762	**2,963,705**
Total [a]	282,921,777	30,460,358	48,765,712	33,071,420	**395,219,266**

a) 2009-2021: Differences due to rounding are possible.

Table 5-6
Funding and expenditure by type or country (in EUR)

EnDev	Funding	Expenditures [a)]
EnDev 2 programme total available funds	**448,877,961**	**382,679,594**
Total funding according Programming Report 2022	**452,193,014**	
Remaining available funds	**-3,315,053**	
Programme management and cross-cutting activities	**Funding**	**Expenditures [a)]**
Total	**49,723,000**	**35,519,712**
Management, monitoring, backstopping, learning, etc.	33,946,000	28,343,297
Globally managed country activities (SCCIF, SIINC, IKEA, etc.)	11,955,000	3,346,495
Globally managed extra activities (refugees, RBF preps, etc.)	3,822,000	3,829,921
Country activities	**Funding**	**Expenditures [a)]**
Total	**318,952,000**	**266,954,033**
Bangladesh	27,405,000	26,181,958
Benin	21,401,000	19,034,258
Bolivia	19,692,000	17,938,084
Burundi (from 01/2021)	516,000	406,923
Cambodia (with Laos)	6,659,000	4,770,968
DRC	1,481,000	875,102
Ethiopia	46,082,000	35,692,337
Kenya	27,509,000	25,608,791
Madagascar	1,848,000	1,342,371
Malawi	9,181,000	7,207,657
Mali	12,394,000	10,425,243
Mozambique	37,589,000	27,653,427
Nepal	10,863,000	8,618,059
Rwanda (incl. Burundi until 12/2020)	31,377,000	24,548,133
Senegal	23,571,000	20,773,202
Sierra Leone (with Liberia and Guinea)	10,026,000	9,118,424
Tanzania	14,090,000	11,112,590
Uganda	17,268,000	15,646,507
Completed activities	**Funding**	**Expenditures [a)]**
Total	**83,518,014**	**80,205,849**
Burkina Faso	6,970,000	7,015,963
Cambodia (until 11/2019)	3,150,000	3,058,628
Central America (Guatemala, Honduras, Nicaragua)	17,640,000	17,755,135
Ghana	3,845,000	3,678,702
Indonesia	16,231,000	16,180,035
Mongolia	495,000	495,046
Peru	17,257,000	17,120,723
Vietnam	4,432,000	4,186,412
RBF 3: Mozambique, Rwanda, Uganda	3,283,000	1,833,224
RBF 3: Bangladesh, Kenya, Rwanda, Tanzania, Uganda	6,580,000	5,506,020
RBF 3: Kenya, Tanzania, Uganda	1,835,000	1,575,947
ProCEAO (EU West Africa: Burkina Faso, Benin, Senegal)	1,800,014	1,800,014

a) 2009-2021: Differences due to rounding are possible.

Annex A. Country overview

Table A-7

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	**06/23**	**27,405**	3,514,000
Benin	Ministère de l'Energie	10/09	**06/23**	**21,401**	795,000
Bolivia	Vice-Ministry of Electricity and Alternative Energy (VMEEA) of the Ministry of Energy	10/09	**06/23**	**19,692**	608,000
Burundi	Suspended; focus on local private sector	01/21	**06/23**	**0,516**	79,000
Cambodia (with Laos)	Cambodia: Ministry of Environment (MoE) and Ministry of Rural Development (MRD) Laos: Ministry of Science and Technology (MoST)	03/15	**06/23**	**6,659**	176,000
DRC	Ministère des Affaires Etrangères	12/19	**06/23**	**1,481**	99,000
Ethiopia	Ministry of Water and Energy (MoWE)	01/10	**06/23**	**46,082**	2,549,000
Kenya	Ministry of Energy	04/09	**06/23**	**27,509**	4,297,000

[1] Indicative target forecasts are not adjusted to the extended project duration. Indicative targets span a time horizon until end of 2023 and 2024 depending on the categorization as medium-/long-term involvement countries and are not broken down to mid-term (06/2023) targets.

Country	Lead political partner	Project duration		Funding (in EUR 1,000)	Planned outcomes on HH level in persons[2]
		start	end		
Madagascar	Ministère de l'Energie et des Hydrocarbures	12/12	**06/23**	**1,848**	174,000
Malawi	Ministry of Energy	12/12	**06/23**	**9,181**	1,764,000
Mali	Ministère des Mines, de l'Energie et de l'Eau	04/09	**06/23**	**12,394**	310,000
Mozambique	Ministry of Mineral Resources and Energy	10/09	**06/23**	**37,589**	454,000
Nepal	Ministry of Energy, Water Resources and Irrigation	05/09	**06/23**	**10,863**	531,000
Rwanda	Ministry of Infrastructure (MININFRA)	10/09	**06/23**	**31,377**	460,000
Senegal	Ministère du Pétrole et de l'Energie	04/09	**06/23**	**23,571**	1,404,000
Sierra Leone (with LR and GN)	Sierra Leone: Ministry of Energy; Liberia: Ministry of Mines and Energy; Guinea: Ministère de l´Energie, de l´Hydraulyque et des Hydrocarbures	05/12	**06/23**	**10,026**	140,000
Tanzania	Ministry of Energy	12/12	**06/23**	**14,090**	1,471,000
Uganda	Ministry of Energy and Mineral Development (MEMD)	04/09	**06/23**	**17,268**	1,372,000

[2] Indicative target forecasts are not adjusted to the extended project duration. Indicative targets span a time horizon until end of 2023 and 2024 depending on the categorization as medium-/long-term involvement countries and are not broken down to mid-term (06/2023) targets.

Table A-8
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[3]	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	11/20	6,580	305,00
RBF Mozambique, Rwanda, Uganda,[4]	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[5]	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

[3] Transitional funding also to cover continuation of stove components in Cambodia and prospectively in Laos.

Table A-9

Management and thematic activities

Topic and/or country		Duration		Funding (in EUR 1,000)
		start	end	
Global level	Management, monitoring, backstopping, learning, etc.	01/09	**06/23**	33,112
Global level	Globally managed country activities (SCCIF, SIINC, IKEA[6])	08/18	**06/23**	10,422
Innovation Fund	Bangladesh, Madagascar, Mali, Mozambique	11/18	**06/21**	1,250

[4] 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

[5] 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

[6] Lead political partners for IKEA-funded activities at country are: Ethiopia: Ministry of Water, Irrigation and Electricity (MoWIE); Kenya: Ministry of Energy; Uganda: Ministry of Energy and Mineral Development (MEMD). The lead political partners for SCCIF and SIINC in Kenya and Uganda are the same ministries as listed for IKEA-Foundation in Kenya and Uganda.

Annex 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 2020. The tables allow an easy attribution of results to the respective project phases.

Table B-1
Overview of results

		EnDev 2		EnDev 1+2	
		2021	2020	2021	2020
People with access [mio]	People with access	20.82	18.80	25.83	23.81
	People with access to thermal energy	14,82	13.45	19,01	17.64
	People with access to electrical energy	6.00	5.35	6.82	6.17
	People with new access in 2019	2.02	0.92		
	Women with reduced exposure to IAP	2.02	1.47		
	Children with reduced exposure to IAP	4.04	2.94		
Social institutions	SI with access	23,402	20,985	30,900	28,500
	Schools	13,979	13,686	18,350	18,059
	Health centres	1,783	1,728	2,135	2,080
	Additional SI in 2021	2,416	1,096		
SME	SME with access	69,800	61,600	81,700	73,600
	Additional SME in 2021	8,170	19,688		
EUR/person	Cost efficiency thermal energy	9.3	9.5		
	Cost efficiency electrical energy	32.9	31.2		
	Cost efficiency combined	15.8	15.7		

Table B-2
Climate and employment results

		only 2021	only 2020
Employment Effects[9]	People with jobs in cooking energy technologies production	8,617	8,759
	People with jobs in cooking energy technology distribution	2,254	1,766
	People with jobs in solar system distribution	1,523	1,653
	People with jobs in mini-grid operation	5,544	5,496
	People with jobs in SME	13,960	12,318
	Total people with jobs	31,899	29,996
Climate [in mio t]	Annual t CO_2 savings all technologies (EnDev 1+2)	2.55	2.39
	t CO_2 saved total (EnDev 1+2)	19.5	17.0
	Annual t CO_2 savings ongoing projects	2.37	2.20

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

Annex C. Monitoring and Evaluation

EnDev is an outcome-oriented program and therefore places a strong emphasis on quantifying results. This is achieved by EnDev's transparent annual monitoring following a strict monitoring methodology. Continuous learning through evaluation is a centerpiece of EnDev's management strategy.

Monitoring
EnDev's stringent focus on results is combined with a robust and reliable monitoring system based on energy access data on individual beneficiary level. Detailed outcome data is collected and compiled on program level at a regular interval and reported to the donors.

Conservative corrections for sustainability of access, attribution, and additionality are applied. In addition, data for market development (sales figures, features of sold products or installed systems, turnover of energy companies, job creation in the energy sector and through the provision of energy) as well as data on health and climate effects of energy technologies are collected.

In line with latest international developments, EnDev is introducing a state-of-the-art approach of revised conservative monitoring (adjustment) factors in its monitoring system in 2022. The objective is to streamline EnDev's monitoring system and further increase transparency while at the same time ensuring the renowned level of robustness and accuracy.

Verification
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 result 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.

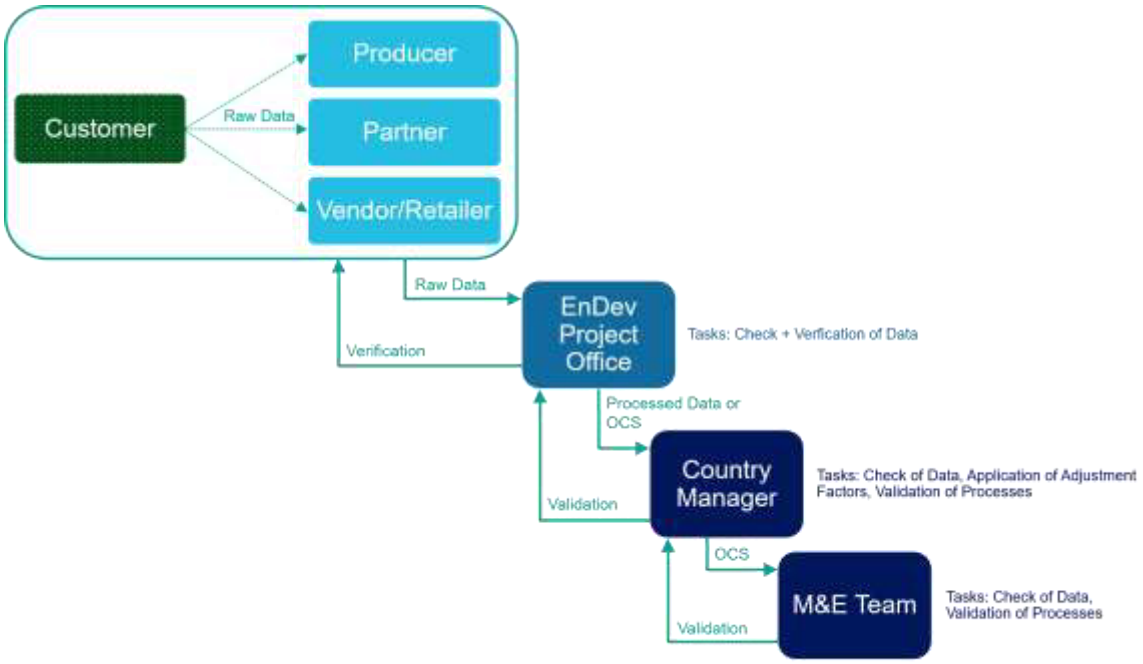
Figure C-1 describes EnDev's monitoring cycle and how high-quality data is ensured through validation and verification measures.

Raw data is collected at 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-3
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 started in 2020, the finalization was delayed due to COVID-19 and is now planned for 2022 with the respective roll-out to follow thereafter. The guideline will include best 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 is submitted annually to EnDev's global monitoring team, providing an additional level of validation.

MTF for Cooking

Corresponding with the World Bank MTF for cooking, EnDev has developed a project-level methodology for assessing the access quality to clean cooking and the relevant tier attribution. The methodology reflects that access quality is not just based on access to a

certain technology but also on the context/situation in which the technology is being used, including fuel quality, kitchen characteristics, or user behaviour. This systemic approach also reflects that a household is using various cooking technologies in parallel (stacking). EnDev's project-level methodology has contributed significantly to the development of the multi-dimensional (WB) MTF for cooking. EnDev's methodology provides a high level of granularity at the level of project intervention areas, including a resource-efficient monitoring approach to assess progress of access over time, whereas the MTF is used to assess the state of cooking at national level. EnDev's project-level methodology is instrumental to inform project planning and feeds into EnDev's outcome data collection tools.

The outcome results reported by Kenya and Senegal have been analysed with the EnDev project-level methodology of the MTF for cooking. This analysis is reflected in Table 2-3 which provides an overview of the EnDev 2 outcomes corresponding with the access quality tiers. In 2022 and 2023 it is foreseen to analyse all EnDev cooking energy outcomes against the project-level methodology of the MTF for cooking.

Evaluation

EnDev has engaged on a real-time evaluation for the period of three years. This assignment is carried out by an independent evaluation consortium led by PWC and the Free University of Amsterdam. The objective is to evaluate the EnDev program during its implementation period (2020-2023) according to the OECD-DAC criteria. It also includes a reflection on the program's fit for purpose' in relation to its ambitions. The findings and recommendations should allow for strategic reflections and refine the program during implementation. In 2021, the first RTE annual report was presented to the Consultative Group. It allowed discussions at a strategic level on market development, inclusivity, energy transition and strategic partnerships. These themes will be explored during the coming two years in case study evaluations and the learning activities.

EnDev also engaged an independent evaluator to conduct the evaluations for the phase out countries (POC). This assignment includes two exit studies and seven ex-post studies. These studies were grouped together in order to systematically assess sector development and the sustainability and impact of EnDev interventions. The exit studies serve as a baseline for the post-project evaluations in two years' time. Besides accountability, findings should also support the cross learning within the EnDev community on similar technologies and approaches.

In 2021 two exit studies were started in Vietnam and Cambodia and two ex post studies in Peru and Central America. Once finalised, the executive summary of these studies will be published on the EnDev website.

In 2021, a phase out country study was finalised for mini-grids in Indonesia, which will also be published on the EnDev website.

Annex D. Country project status

D.1 Ongoing projects

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

Bangladesh

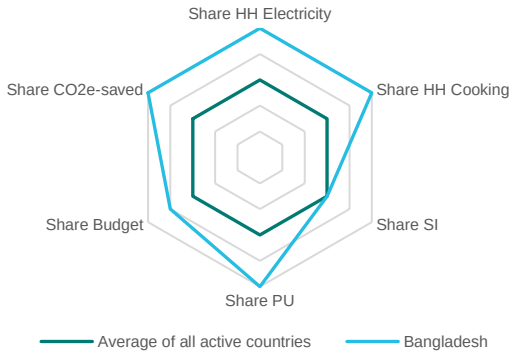
Country facts

Population	164,7 million
Human Development Index	133 ↓ | Total (0.63)
UN Classification	LDC
Access clean cooking	57% (urban) 8% (rural)
Access electricity	98% (urban) 89% (rural)

Project facts

Project period	06.2009 – 06.2023
Budget	EUR 27,405,000
Core funding incl. RBF	EUR 27,405,000
Earmarked	-
Average annual turnover	EUR 719,461
Implementing Organisation	GIZ
Lead political partner	Bangladesh Ministry of Power, Energy and Mineral Resources

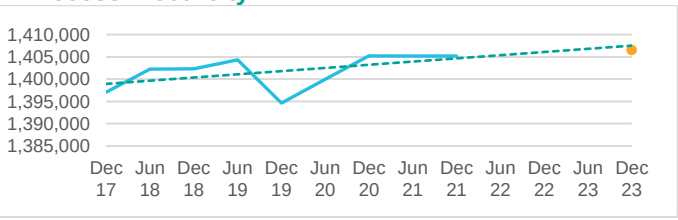
Relevance



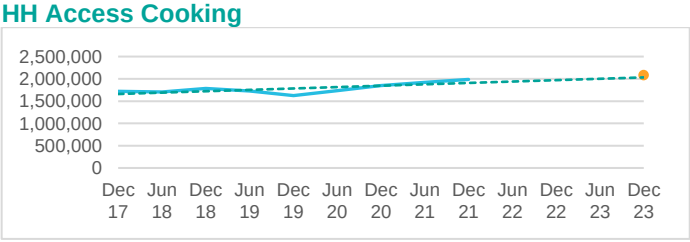
Country facts

	Targets	Achieved
HH Access Electricity	1,406,593	1,405,220
HH Access Cooking	2,079,839	1,986,911
SI Access	942	942
PU Access	25,106	19,912

HH Access Electricity



HH Access Cooking



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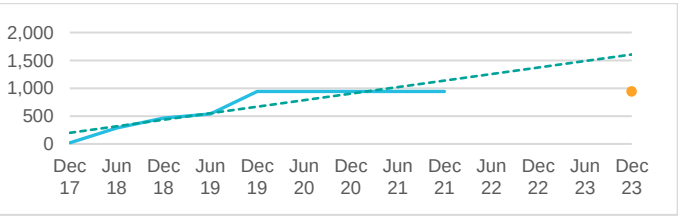

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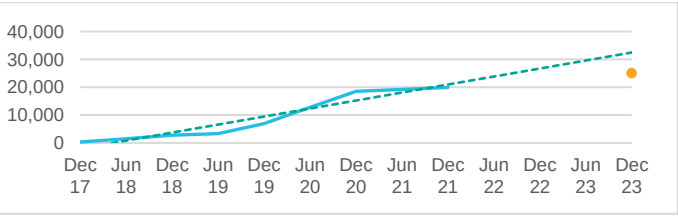


Bangladesh:
“Big changes start small” – women empowerment in challenging times

Mrs. Hosne Ara Nila, in her tailoring shop along with her employees. © Mrs. Hosne Ara Nila

Background information

EnDev Bangladesh supports the provision of efficient and clean cooking technology as well as the productive use of solar energy. This programme currently focuses on three main areas: development of the market for electric cooking (“e-cooking”) appliances, support for biomass-based improved cookstoves (including policy support for the sector) and demonstration of business cases for solar battery charging stations for electric-powered rickshaws.

Despite various challenges in 2021, EnDev initiated activities to support the development of the e-cooking appliance market in the current program phase and successfully finalized four COVID-19 response projects to mitigate the effects of the pandemic on the most vulnerable communities through renewable energy and energy efficient technologies.

Project progress during monitoring period

The dissemination of improved cookstoves (ICS) with chimneys – known locally as “Bondhu Chulas" – was continued in cooperation with the Bangladesh Bondhu Foundation (BBF). Due to the COVID-19 pandemic and associated lockdowns, the number of stoves sold was lower than expected but has since gradually increased. During the monitoring period, more than 60,000 domestic ICS and over 2,800 productive use ICS were installed. BBF was also supported in the areas of capacity and business development, including the “Bondhu Chula Doctor” program, which trained 1,760 women to become qualified maintenance and service providers for Bondu Chulas, creating job opportunities and improved livelihoods for impoverished rural women.

In the clean cooking sector, EnDev – through its implementing partners SNV and Practical Action – completed a market assessment for improved biomass briquette production and also supported capacity development for 16 ICS and five biomass briquette manufacturers, with a focus on briquettes made from faecal sludge.

As a COVID-19 response, EnDev implemented four projects specifically targeted towards mitigating the impacts of the pandemic on poor and vulnerable communities. These projects included support for women-led businesses in the garment and poultry sectors, development of eight rural solar electrification systems including electrifying the women led-business as well as a health complex in a remote location through solar energy, assistance for e-mobility and the introduction of incentives biomass-based ICS businesses.

Bright prospects for an entrepreneur

Mrs. Hosne Ara Nila (37) from Jhenaidah district has been running a cottage tailoring business for around six years. She always wanted to expand her business but was limited by a lack of capital and knowledge about marketing and business promotion. After the surge of COVID-19, she noticed a significant decrease in sales, suffered severe financial losses and faced an uncertain future.

With support from the EnDev project “Livelihood Support of COVID-19 Pandemic Affected Low-income Community through Solar Energy Interventions”, Mrs. Nila was able to buy two electric sewing machines. This, together with capacity development activities by SNV, enabled her to further expand and develop her business. She hired new staff, increased production, and started providing free trainings to local women.
Now she is receiving more orders and preparing readymade clothing, which led to higher profits. In addition, a solar system installed on her rooftop helped to reduce her utility bills and provide energy security.
Through the COVID-19 livelihood support fund and cooperative, she found a new source of financing and networking. Her new employees and trainees were also able to improve their skills and livelihood opportunities.
Mrs. Nila is optimistic about her business prospects. the sure of bringing changes in other women’s lives. As she puts it: “Big changes start small.”

Benin

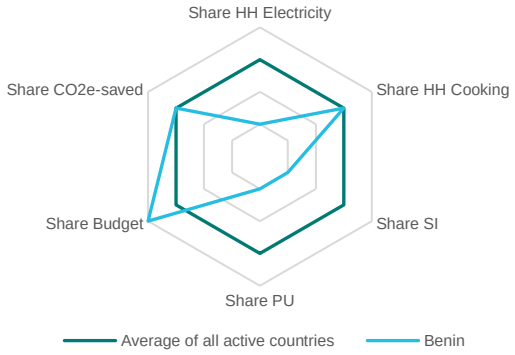
Country facts

Population	12,1 million
Human Development Index	107 → | Total (0.55)
UN Classification	LDC
Access clean cooking	7% (urban) 1% (rural)
Access electricity	65% (urban) 17% (rural)

Project facts

Project period	10.2009 – 06.2023
Budget	EUR 21,401,000
Core funding incl. RBF	EUR 21,401,000
Earmarked	-
Average annual turnover	EUR 1,867,853
Implementing Organisation	GIZ
Lead political partner	Ministère de l'Energie

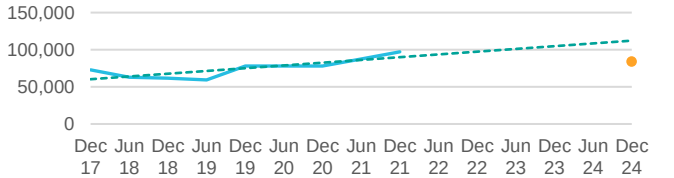
Relevance



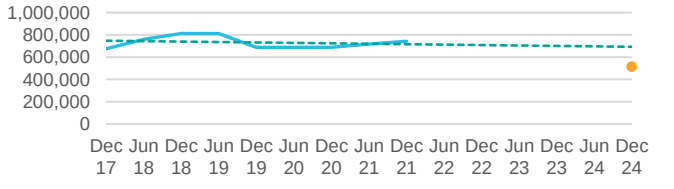
Country facts

	Targets	Achieved
HH Access Electricity	84,283	97,151
HH Access Cooking	513,232	742,884
SI Access	185	195
PU Access	239	151

HH Access Electricity



HH Access Cooking



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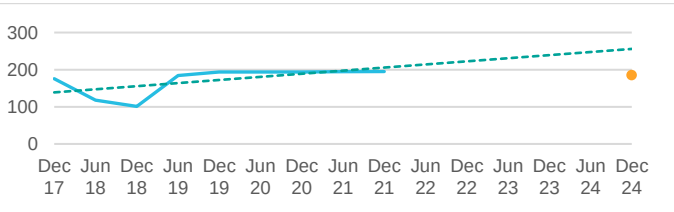

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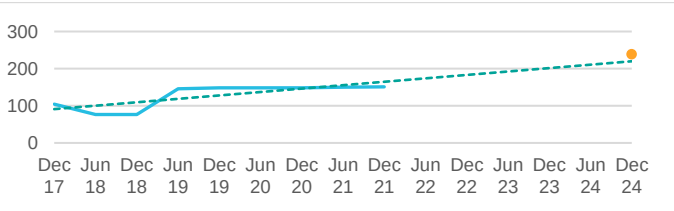


Benin: “With the solar water pumps, we have water at all times of the year for farming.”

Background information

EnDev Benin has been supporting the cookstove market since 2009 through technical assistance for producers and distributors of improved cookstoves (ICS). In 2014, EnDev Benin expanded its activities into the solar sector. Since then, the programme has been facilitating the development of the solar market through result-based financing (RBF) and capacity building for market actors. Supported technologies include solar lamps, small plug-and-play and larger customised solar home systems, solar water pumps, and streetlights.

Discussions with the EU on co-financing are ongoing and may allow the programme to scale up activities in the solar and ICS sectors.

"Since 2014, the programme has been facilitating the development of the solar market through result-based financing (RBF) and capacity building for market actors."

Project progress during monitoring period

Solar Energy Component: In 2021, 18 companies sold 14,621 solar products with the support of EnDev’s RBF incentives, the majority of which in peri-urban and urban areas. So far, the volume of solar products sold in rural areas is limited. To overcome this situation, EnDev launched a dedicated ‘last mile’ RBF pilot and started promotional campaigns in rural areas in collaboration with the Rural Electrification and Energy Efficiency Agency (ABERME).

Cooking Energy Component: During the reporting period, the supported cooperatives produced and sold 117,330 ICS, from which households, social institutions and productive users benefited. Sales increased compared to 2020, which shows a progressive recovery of the market from the pandemic. Traditionally, EnDev has worked with cooperatives to develop the ICS market. However, given the great need for ICS and a more professionalised, consolidated market, EnDev started to also support the introduction of new companies from adjoining sectors in the ICS market. In addition, EnDev launched the RBF “défis”, which aims to incentivise the commercialisation of ICS across all tiers, with a particular focus on higher-tier stoves, and the expansion of distribution networks towards rural areas.

Farming through the seasons

OMAEL is a large farm in Ouidah, south Benin, that produces vegetables and fruits on a large scale, and employs many women and youth, such as Ms. Zomakpe Pérèle: "I have been working at OMAEL since 2018 as supervisor of vegetables harvest and sale. Just for the harvest of peppers, we have two teams of ladies who are always hired when the peppers are ripe and ready to be picked."

In the past, OMAEL faced significant challenges during the dry season due to a lack of rain. However, thanks to a new solar pumping system the farmers no longer need to fear droughts. Mr. Isidore Viera installed a solar irrigation system in 2018 on his farm. This was made possible by EnDev Benin’s solar RBF, which supports off-grid solar companies in expanding and consolidating their business. “With the solar water pumps, we have water at all times of the year for farming.”, attests Mr. Isidore Viera. An additional benefit of having water year-round is that the women who assist with harvesting are called more frequently to work and can earn more money for their families.

Bolivia

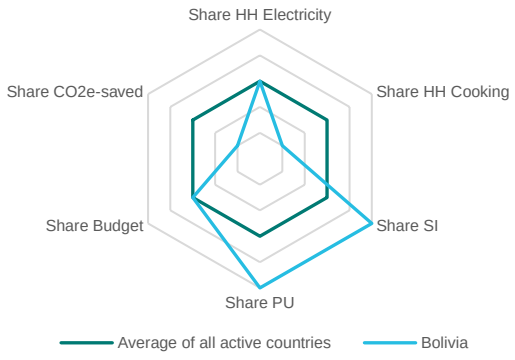
Country facts

Population	11,7 million
Human Development Index	158 ↓ | Total (0.72)
UN Classification	LLDC
Access clean cooking	99% (urban) 57% (rural)
Access electricity	100% (urban) 88% (rural)

Project facts

Project period	10.2009 – 06.2023
Budget	EUR 19,692,000
Core funding incl. RBF	EUR 19,692,000
Earmarked	-
Average annual turnover	EUR 864,897
Implementing Organisation	GIZ
Lead political partner	Vice-Ministry of Electricity and Alternative Energy (VMEEA) of the Ministry of Energy

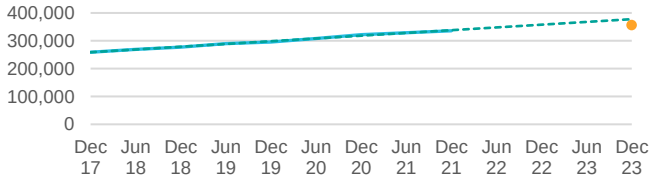
Relevance



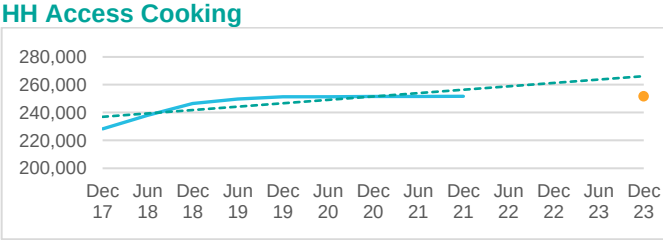
Country facts

	Targets	Achieved
HH Access Electricity	356,889	335,870
HH Access Cooking	251,565	251,715
SI Access	2,474	2,457
PU Access	19,764	14,700

HH Access Electricity



HH Access Cooking



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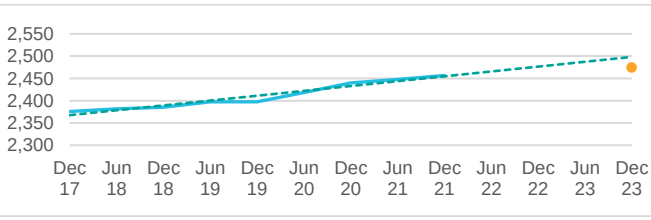

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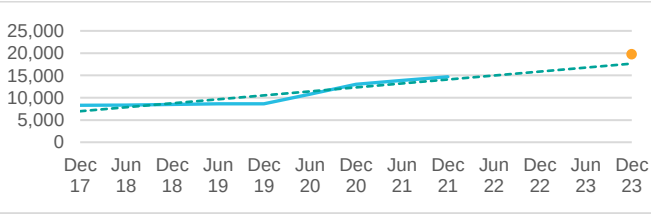


Bolivia: “Kneading dough was very time consuming and the number of breads to be baked daily limited. With our new industrial kneading machine, we are now able to produce and sell twice the amount each day. “

Background information

EnDev Bolivia continued working on its three main components: (1) grid densification, (2) market development for solar products by increasing the product range supply of high-quality products, and (3) promoting Productive Use of Energy (PUE) by strengthening rural productive organizations in production and harvesting, efficiency and income generation.
In 2021, EnDev continued working with its partners IICA (Interamerican Institute for Cooperation on Agriculture) and Practical Action. IICA implements the Fund for Sustainable Access to Renewable Energies (FASERTe) and completed the third round with 800 systems sold, bringing the total to more than 3,000 systems sold over three rounds. With Practical Action, as an implementing partner for PUE, EnDev Bolivia expanded its geographical reach and support for specific value chains such as cacao, coffee, quinoa and apiculture (among others), benefiting more than 2,500 producers so far.

Project progress during monitoring period

Despite the persistence of the pandemic, the recovery continued with a noticeable growth towards target achievement: 48% overall increase in electrification (Grid + PV systems) and 82% increase in PUE, compared to 2020. Also, new initiatives were developed:
COVID-19 Response measures were concluded positively. Solar handwashing sinks were implemented in 11 social infrastructures, almost 2,300 solar lamps + radios were distributed for supporting children’s remote education, 28 improved ovens benefited 547 rural producers (mostly women), 26 electrical installations were improved in 6 rural health centres treating Covid patients.
The Interamerican Development Bank (IDB) and the Ministry of Energy (MoE) sought for EnDev’s experience to harness the potential benefits of PUE to increase the impacts and sustainability of rural electrification projects. EnDev provided expertise and knowledge in developing PUE projects, whilst IDB provided financial input. This resulted in 40 PUE projects developed jointly by EnDev, IDB and the MoE.
Through **cooperation with the Financial Sector,** EnDev is developing trajectories to link and engage the financial sector with actors of the EnDev supported solar (PV) and solar appliances sector in rural areas. This includes seminars and other networking opportunities to enable knowledge exchange between PV providers and financial institutions. The focus of the cooperation is to encourage the development of financial products for these technologies by further sensitizing and qualifying the financial sector.

Women Energy Fund – FEM

FEM, an initiative designed and implemented by EnDev Bolivia, facilitates financial and technical support to rural and peri-urban SMEs led by women, for accessing Productive Use (PU) technologies. It also provides specialized advisement and capacity building in rural business management and PU technology operation and maintenance (O&M).
FEM aims to: (i) Increase the visibility of women-led businesses and improve women’s confidence in their productive capacities and financial contribution to their families. (ii) Design, develop and introduce technologies that lead to time savings and increase productivity (iii), strengthen/develop capabilities related to proper O&M of the supported technologies.
In 2021, four out of five business plans presented by women-led SMEs were approved by the FEM Assessment Committee (made up of EnDev and partners) and are currently being implemented. More than 200 women will be benefiting from activities such as baking, plastic-waste recycling, medicinal plant processing and natural cosmetic products. Several new plans will be evaluated and implemented in 2022.

Burundi

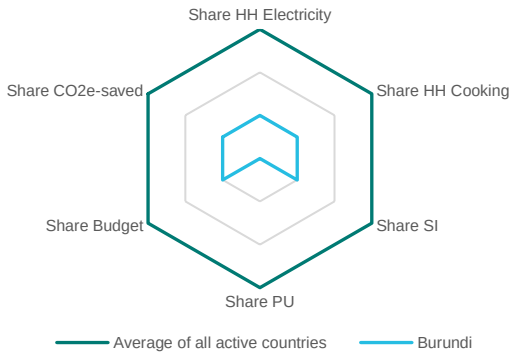
Country facts

Population	11,9 million
Human Development Index	185 ↑ | Total (0.43)
UN Classification	LDC / LLDC
Access clean cooking	0% (urban) 0% (rural)
Access electricity	63% (urban) 3% (rural)

Project facts

Project period	01.2021 – 06.2023
Budget	EUR 516,000
Core funding incl. RBF	EUR 516,000
Earmarked	-
Average annual turnover	EUR 1,437,424
Implementing Organisation	AVIS
Lead political partner	suspended; focus on local private sector

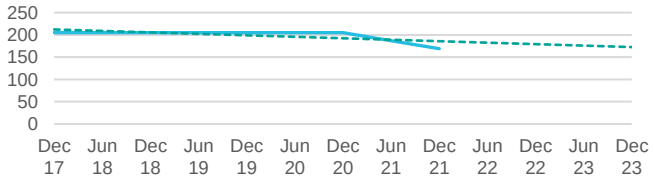
Relevance



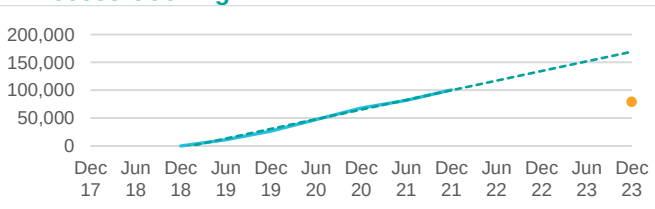
Country facts

	Targets	Achieved
HH Access Electricity	-	205
HH Access Cooking	79,131	100,671
SI Access	-	22
PU Access	-	-

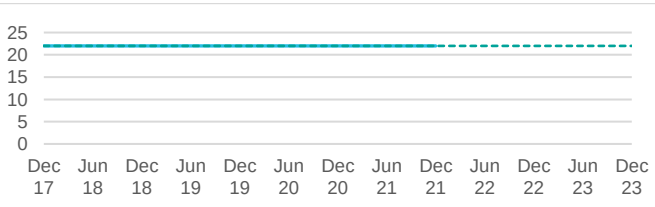
HH Access Electricity



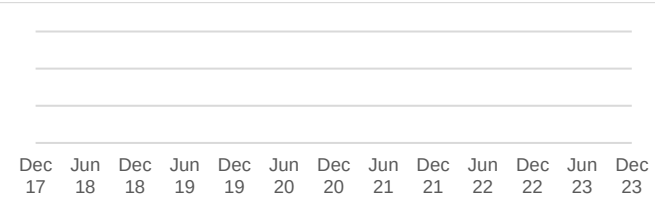
HH Access Cooking



SI Access



PU Access



Burundi: Successful synergies for the promotion of improved cook stoves

Charles Ndikumana with stoves from his company.
© AVSI/Ntaraka

Background information

EnDev Burundi supports local producers in the production of BIIKIGITI, an improved dual-use cook stove, which can efficiently burn both charcoal and firewood. The stove was designed and first promoted in Tanzania as the “Matawi” stove. In 2017 it was successfully introduced in Burundi and enjoys increasing market-share. The components main objectives are to support producers in professionalisation, to increase their market, and to develop an active distribution network. Media and road shows are used for behavioural change campaigns in partnership with local government and civil society. The project also offers training on entrepreneurship, marketing, and financial education for producers – which have greatly changed the capacity and vision of partners producers.

« I have managed my expenses and allocated my income, I am comfortable with family needs, and I have also developed a good relationship with customers. Long live the BIIKIGITI Stove!» - Charles Ndikumana, BIIKIGITI producer

Project progress during the monitoring period

In 2021, the AVSI Foundation took over the country component lead of EnDev. Under the new leadership, the production and sales of the fuel-saving stoves has continued to grow strongly, despite COVID-19 pandemic impacts e.g. on awareness-raising activities. The BIIKIGITI was also endorsed on radio by the national ministry responsible for clean cooking in the frame of the behavioural change campaign. Further, the project put in place innovative strategies to facilitate the dissemination of BIIKIGITI. Among these strategies, EnDev has established partnerships for the dissemination of ICS with international organisations such as the TUBURA project (One Acre Fund), GVC (Gruppo di Volontariato Civile) and the EU-funded UMUCO W`ITERAMBERE project. These projects collaborate with EnDev in the production and/or extension of BIIKIGITI market in their intervention zone following EnDev’s market driven approach and using EnDev’s behavioural change materials. The project has also created a mobile phone communication service that brings together producers, sellers and technicians for exchange and support. In 2021, the EnDev project has supported 21 production workshops, 296 sellers of improved stoves and has reached over 34,000 households with fuel-saving ICS.

Informal trader to professional entrepreneur

Charles Ndikumana, a 41-year-old family father of five, completed his primary education in the midst of Burundi's civil war, forcing him to stop his schooling. His first livelihood was the production and sale of bricks, something that was difficult for him since he had no professional experience or technical supervision. He was always in conflict with his customers, sometimes for his poor estimate of the cost of production, sometimes for his poor management of expenses. In 2017, he was invited to participate in a BIIKIGITI improved stove production training, which he describes as a crucial moment for his life. "What I praise about the EnDev project is not the introduction of BIIKIGITI stove, but above all training that has changed our mentality and know-how. Most entrepreneurs fail due to lack of guidance on financial education and entrepreneurial spirit,” Charles says.
Two years later, Charles was ranked among the top 5 producers. Since then, he has made real changes in his company. His staff grew from 5 to 10 employees, and he has renewed his shed and kiln. Today, he easily supplies private sellers, cooperatives, NGOs and village savings and loan organisations from different regions. For the year 2021, Charles was awarded best producer of the year.

Cambodia (with Laos)

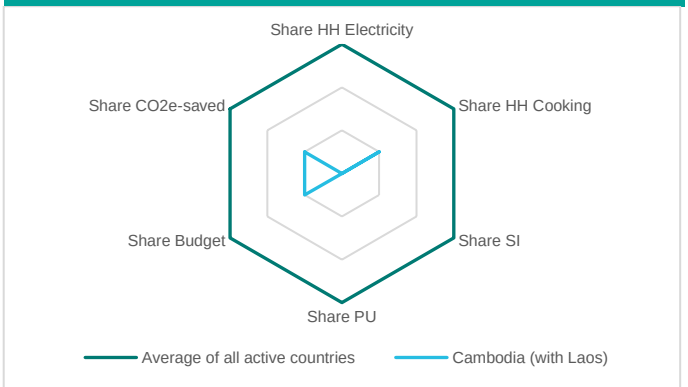
Country facts

Population	KHM: 16,7 million LAO: 7,3 million
Human Development Index	KHM: 144 → | Total (0.59) LAO: 137 → | Total (0.61)
UN Classification	LDC (all)
Access clean cooking	KHM: 70% (urban) 20% (rural) LAO: 18% (urban) 2% (rural)
Access electricity	KHM: 100% (urban) 91% (rural) LAO: 100% (urban) 100% (rural)

Project facts

Project period	03.2015 – 06.2023
Budget	EUR 6,659,000
Core funding incl. RBF	EUR 6,659,000
Earmarked	-
Average annual turnover	EUR 907,937
Implementing Organisation	SNV
Lead political partner	KHM: Ministry of Environment (MoE) and Ministry of Rural Development (MRD) LAO: Ministry of Science and Technology (MoST)

Relevance

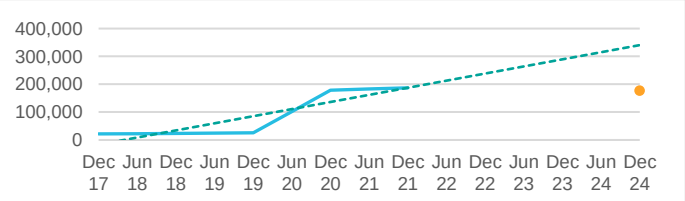


Country facts

	Targets	Achieved
HH Access Electricity	-	-
HH Access Cooking	175,935	187,149
SI Access	-	-
PU Access	1,120	0

HH Access Electricity

HH Access Cooking



SI Access

PU Access

Mekong: “With an electric rice cooker, cooking is not really a burden to me; it is so much efficient and easier, and our kitchen is also cleaner.”


© E.C. Contreras, for RVO

Background information

Since 2016, EnDev has supported market development for higher-tier biomass cookstoves in the Mekong region.

In Cambodia, the clean cooking sector was supported through a dynamic RBF approach to kick start a new market segment for advanced biomass cookstoves (ABC). Inspired by the *Community Led Total Defecation* approach in the WASH sector, which promotes sanitary measures in rural areas, the project now ignites a collective change towards clean cooking under an approach called *Smoke Free Villages* (SFV). The campaign, which is conducted in collaboration with commune councils, schools and religious centres, invites suppliers of modern energy solutions to partake and create business opportunities for them.

In Laos, the project is mainstreaming more advanced artisan cookstove models that offer an upgrade by superior combustion and heat transfer, and new models with a metal base. This further extends the product range of improved cookstoves (ICS) and is expanding the scope of the supply chain to unserved areas and supports the establishment of producers in underdeveloped regions in the north of the country. Furthermore, the project optimised production by applying quality assurances, testing, research and development and marketing.

Project progress during monitoring period

In Cambodia, the approach of SFV has been expanded to 178 additional villages resulting in 16,883 clean cookstoves sold in mostly local shops. As a result, the share of households having access to clean cookstoves in their kitchen increased from 10% to 66%. From a gender equity and social inclusion perspective, poor, female-led, and disabled -households were reaching comparable levels. And 3,695 households stopped using unprocessed firewood for using a more efficient type of fuel altogether. Furthermore, incentives for 1,894 ABC and 8,743 artisan ICS (a model from Laos) were disbursed to the private sector.

Despite COVID-19 related challenges, progress has been good in Laos. Thanks to EnDev’s support, 22,265 households received access to thermal energy through ICS. The project now works with a total of 31 production centres across the Southern, Central and Northern provinces – ensuring the nationwide coverage. The project has also expanded the distribution network to over 1,600 retail points. To cater to the needs of schools and hospital canteens, road-side noodle shops, and monasteries, the project designed a new institutional ICS, which will be disseminated in 2022. Structural market barriers such as unorganized and fragmented distribution networks, lack of technical know-how for mechanization and standardization of production, behaviour and perceptions of people in Laos have changed.

Revolving fund under the Gold Standard project

The EnDev project in Laos facilitated access to finance opportunities mainly to the producers to enhance and expand their production facilities, through a revolving fund created under the Gold Standard project as part of the Improved Cookstove programme (ICS), initiated by SNV, Oxfam and ARMI, and funded by the European Union (EU) Switch Asia Programme during the period 2014-2016. Through its registration under gold standard back then, ARMI, as well now the local partner, is allowed to sell carbon credits to individuals and organisations. The revenue is put back into the project to ensure its sustainability and continue scaling up of ICS nation-wide. Part of the carbon revenue is used to create a revolving fund. Producers willing to invest in scaling up their business are eligible to receive loans under certain terms and condition mutually agreed. In 2021, eighteen producers received loans from this revolving fund. The total loan amount is US$35,672, out of which US$11,087 has been paid back.

Democratic Republic Congo

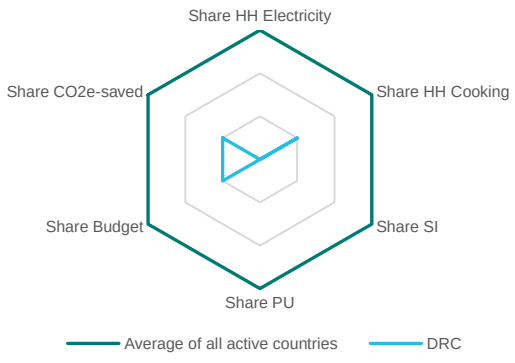
Country facts

Population	89,6 million
Human Development Index	175 ↑ | Total (0.48)
UN Classification	LDC
Access clean cooking	10% (urban) 0% (rural)
Access electricity	41% (urban) 1% (rural)

Project facts

Project period	12.2019 – 06.2023
Budget	EUR 1,481,000
Core funding incl. RBF	EUR 1,481,000
Earmarked	-
Average annual turnover	EUR 291,719
Implementing Organisation	AVIS
Lead political partner	Secrétaire Général à la Coopération Internationale, Ministère des Affaires Etrangères

Relevance

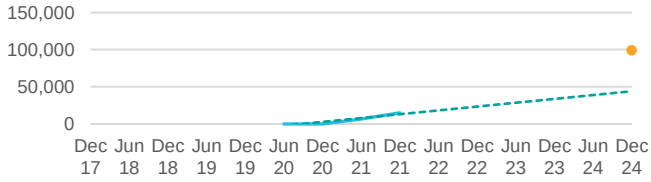


Country facts

	Targets	Achieved
HH Access Electricity	-	-
HH Access Cooking	98,812	15,047
SI Access	-	-
PU Access	-	-

HH Access Electricity

HH Access Cooking



SI Access

PU Access

Protecting **Congo**'s natural resources and fostering development through clean cooking and PUE

Producers on Idjwi Island prepare clay© AVSI/Pontonio 2021

Background information

EnDev DRC is implemented by AVSI in the three eastern Provinces of Ituri (City of Bunia), Tanganyika (City of Kalemie) and South Kivu (Idjwi Island) since 2020. Eastern DRC is a very low-income region, chronically affected by political crises, armed group activities and some of the lowest energy access rates in the world - only 1% in rural areas (World Bank, 2019). EnDev's three intervention areas host approximately 178,000 households, composed on average of 7 persons each and with an average monthly income of USD 90 to USD 195. Families spend approximately USD 20 per month for charcoal and firewood, yet the charcoal production often stems from armed groups, hidden in the Virunga National Park.

The resulting depletion of protected forests – home to almost unparalleled biodiversity – for charcoal production is an increasingly critical issue, while interventions for reforestation and conservation are very hard to implement, due to armed groups' activities.

EnDev DRC promotes sustainable development and access to energy in Eastern Congo through the promotion of clean cooking and support for the productive use of energy (PUE) on newly installed mini-grids on Idjwi Island.

EnDev producer and trainer preparing for sales of the Jiko Nguvu in Kalemie © AVSI/Pontonio 2021

Project progress during monitoring period

In 2021, despite setbacks from COVID-19, a volatile security situation and a volcano eruption, the first improved cook stoves (ICS) entered the market and sales grew quickly. Three new producers were trained in 2021, for a total of nine local producers trained since the project inception. Also more than 80 points of sale were established, which dramatically increased the dissemination capacity of the three ICS models supported by the project. The producers are supported with results-based incentives, which consist of technical, business management and marketing training, individual coaching, guided marketing campaigns, and support for production and distribution. Three nation-wide marketing campaigns were coordinated, and a second market assessment was carried out. Furthermore, an advocacy partnership was established with the Worldwide Fund for Nature (WWF) for the development of an energy transition road map, commissioned by the North Kivu Province. At least 150 jobs were created in the ICS value chain during the monitoring period. Further, approximately 9,000 tonnes of CO_2 were saved through the market-based distribution of 12,283 ICS.

Building local expertise

Rocky Mpora Kitungano heads the CEPROSOPE production workshop and is shown on this page preparing for sales in Kalemie. One of the first beneficiaries to be trained, he is now an expert technician acts as a local trainer on ICS production. He represents the emergence of a local expertise and Congo's willingness to claim its chance for development.

Expanding the market

Producers on Idjwi Island, through market exploration activities coordinated by EnDev, are realizing that their market is not limited to the island. Selling to the mainland would be a great means to boost the very limited local incomes on the island. Now, EnDev artisans are already piloting commercial activities in Bukavu and Kalehe (South Kivu Province).

Ethiopia

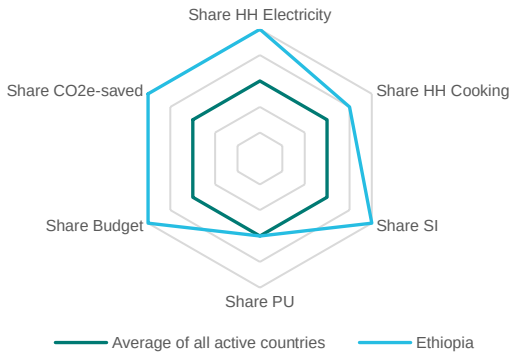
Country facts

Population	115,0 million
Human Development Index	173 ↓ | Total (0.63)
UN Classification	LDC / LLDC
Access clean cooking	27% (urban) 0% (rural)
Access electricity	93% (urban) 36% (rural)

Project facts

Project period	01.2010 – 06.2023
Budget	EUR 46,082,000
Core funding incl. RBF	EUR 28,758,599
Earmarked	EUR 17,323,401
Average annual turnover	EUR 4,335,413
Implementing Organisation	GIZ, SNV
Lead political partner	Ministry of Water, Irrigation and Electricity (MoWIE)

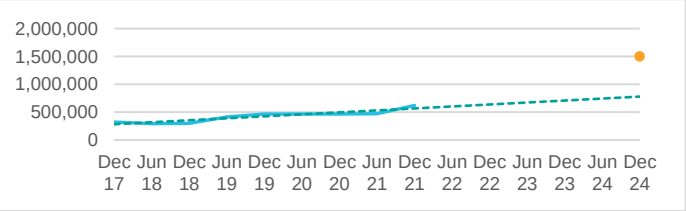
Relevance



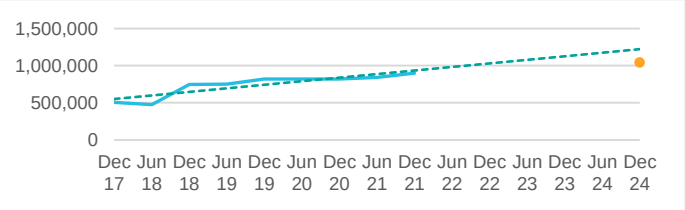
Country facts

	Targets	Achieved
HH Access Electricity	1,501,501	620,480
HH Access Cooking	1,039,500	899,623
SI Access	2,325	2,564
PU Access	5,258	3,918

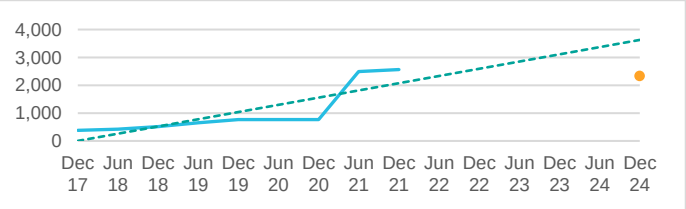
HH Access Electricity



HH Access Cooking



SI Access



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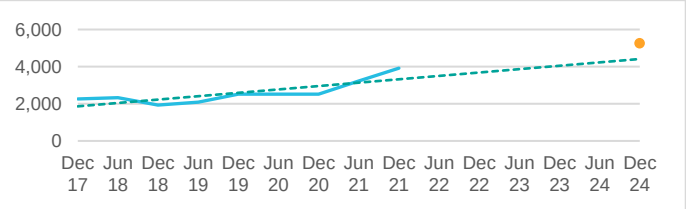


Ethiopia:
Gender interventions for transformational empowerment of women

Background information

EnDev Ethiopia, forging strategic partnerships, supports the private sector and the government in creating sustainable energy access for households, institutions and small businesses. With additional co-financing from the EU (European Union), EnDev Ethiopia aims to establish self-sustaining markets for modern energy supply based on improved and modern cooking solutions, off-grid solar and mini-grid electrification.

Project progress during monitoring period

The regional solar and improved cookstove (ICS) associations based in Amhara, Oromia and Southern Nations, Nationalities, and Peoples' Region (SNNPR), as well as associations representing Addis Ababa were supported in setting up their secretariats with office facilities and administrative staff to enhance service capacities to their members. EnDev is further supporting these associations to strengthen their capacities as a consolidated industry voice in shaping the enabling environment in the sector. To this effect, the German Solar Association, in a consortium with the European Solar Association, have been recruited to support these regional associations.

On the topic of gender, EnDev Ethiopia, with professional support from ENERGIA, sharpened the gender focus under all project components, particularly through the support of the first Ethiopian Women in Energy Association geared in the direction of women empowerment.

A scoping assessment of the Ethiopian energy financing sector by EnDev Ethiopia was initiated in 2021 and will provide an overview of the players in the financial system on the micro-, meso- and macro-levels. The assessment will also shed light on the critical linkages and gaps between the financial sector and the energy access market, and provide recommendations for interventions.

EnDev Ethiopia continued to support the Ministry of Water and Energy in 2021 with the development of a user-friendly, digital mapping system, featuring information about major existing or planned solar electrification initiatives in Ethiopia. When complete, this tool will streamline on-demand repair and maintenance measures and allow for more refined planning of future installations.

Related to e-waste management, EnDev Ethiopia supported the Ethiopian Environmental Protection Authority and other key stakeholders in developing a directive and licensing scheme for sound environmental management of used lead-acid batteries (LAB). The directive is accompanied by technical guidelines for LAB producers, as well as collectors, transporters, and recyclers of LAB. Furthermore, the development of an extended producer responsibility system and take-back scheme for actors dealing with lead-acid and lithium-ion batteries is ongoing.

Striving for higher tier clean cooking

EnDev continued to better understand market potential for e-cooking, higher tier clean cooking technologies and the investment climate by conducting two studies. One study assessed the status and potential of e-cooking in the country. The second one investigated the experiences and the status of cooking habits, cooking fuels and cooking technologies as well as investment decisions by households. Both studies reflected on how private sector engagement in the cooking energy sector could be improved. The studies were conducted through close consultations with relevant partners from government, private sector, NGOs and development organisations to strive for higher tier clean cooking in the country.

In a partnership with the GET.invest programme, four Ethiopian ICS companies participated in a masterclass training on access to finance for clean cooking companies.

Kenya

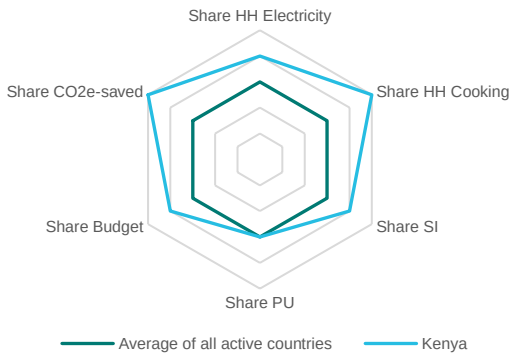
Country facts

Population	53,8 million
Human Development Index	143 ↑ | Total (0.60)
UN Classification	-
Access clean cooking	38% (urban) 5% (rural)
Access electricity	91% (urban) 62% (rural)

Project facts

Project period	04.2009 – 06.2023
Budget	EUR 27,509,000
Core funding incl. RBF	EUR 27,509,000
Earmarked	-
Average annual turnover	EUR 2,980,355
Implementing Organisation	GIZ, SNV, Practical Action (PA), Energy for Impact (E4I)
Lead political partner	Ministry of Energy

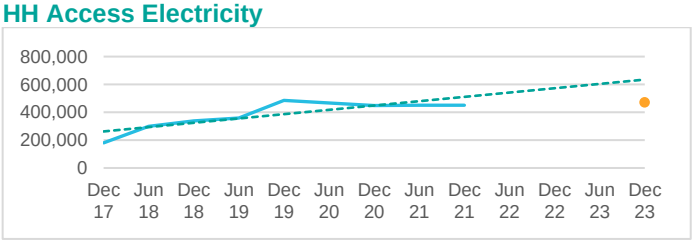
Relevance



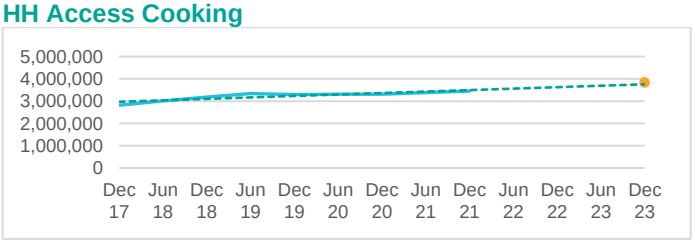
Country facts

	Targets	Achieved
HH Access Electricity	470,800	450,327
HH Access Cooking	3,825,877	3,451,134
SI Access	3,072	1,124
PU Access	10,260	3,565

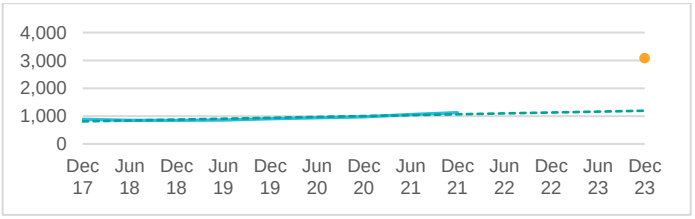
HH Access Electricity



HH Access Cooking



SI Access



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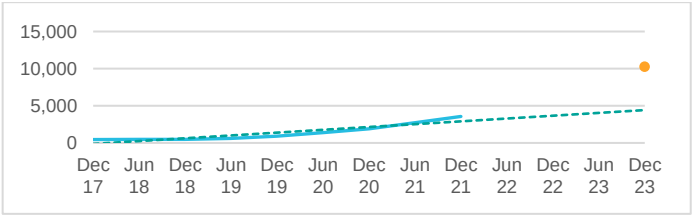


The Government of **Kenya** launched the Energy Compact on Clean Cooking, committing to achieve Universal Access to Modern Cooking Energy Services by 2028.

Background information

In 2021 EnDev Kenya focused on solar for productive use, ICS for SI and MSMEs, e-cooking for households and energy access for vulnerable groups. Additional co-financing was provided by USAID for a project under the Smart Community Coalition Innovation Fund, which supports solar e-cycles in the humanitarian context. The Swiss co-financing of the Social Impact Incentives (SIINC) pilot project aims to provide RBF incentives particularly for energy access companies, which demonstrate measurable social impacts. Sustainable Energy for Smallholder Farmers in Ethiopia, Kenya and Uganda, funded by IKEA Foundation promotes energy solutions for productive use among smallholder farmers focussing on dairy and horticultural value chains.

In addition, the associated project Africa Biogas Component Kenya was launched and aims at a sustainable, stable and growing market for biodigesters that significantly contributes to achieving national energy access and climate targets.

Project progress during monitoring period

Despite the impact of the continued global COVID-19 pandemic, the energy access market in Kenya partially returned to normality. The lifting of public COVID-19 related restrictions allowed the project to resume operations. Local stoves enterprises reported a sales increase in 2021 compared to 2020. The sales are comparable and even slightly higher than in 2019 (pre-Covid), which indicates a market recovery. In the solar for productive use component, five solar companies and eight financial intermediaries were contracted under an RBF scheme, to provide innovative products to enhance affordability and uptake of productive use technologies in agricultural value chains.

As one of the Global Champions for Clean Cooking the GoK took lead in Ministerial Forums and the UN High Level Dialog on Energy, and launched an Energy Compact, focussing on Clean Cooking commitments. EnDev supported the development of the Energy Compact and stands ready to contribute to the actions stated in the Compact, towards universal access to Modern Cooking Energy Services for rural and urban households, institutions and small commercial enterprises by 2028.

In preparation of the COP26, the Rapid Response Facility (RRF) was launched as a new technical assistance initiative to support countries' energy transitions by the Energy Transition Council. GoK handed in a RRF request to develop and deliver a National Clean Cooking Strategy, including a *Nationwide Electric Cooking Strategy*. Together with UK Partnering for Accelerated Climate Transitions (UK PACT), Modern Energy Cooking Services (MECS), and Agence Française de Développement (AFD), EnDev provided a response to jointly support MoE Kenya developing these strategies.

EnDev lives diversity

Peter Obell, a 35-year-old local stoves entrepreneur, was born with disability. He became a stove producer in 2008 and earns his living from selling liners and stoves at the nearby Ng'iya market. EnDev offered technical training (on stove design, quality and production processes) and once Peter was progressing with his production, we was offered stove installer as well as business training, in order to diversify his enterprise and increase profitability. He produces about 10 liners and 20-30 cladded stoves per day. "Thanks to this God given skill, I do not feel like a burden to my family and the society at large. I am able to earn a living, and this gives me a voice and makes me someone respectable in the society." He is also the treasurer at Nyagundo Moyie Group, a group for people living with disability.

EnDev Kenya believes leaving no one behind should also be reflected in the interventions, without boundaries and living inclusivity. As a next step, Peter was selected to undergo capacity development to become a trainer of trainees to help creating awareness and providing capacity.

Madagascar

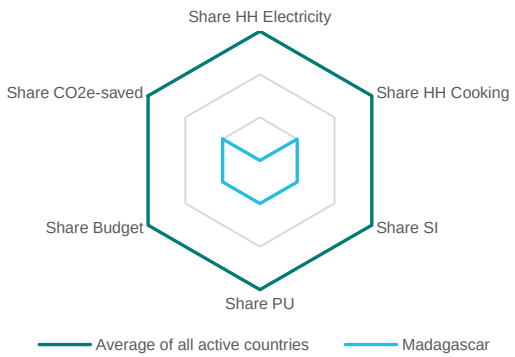
Country facts

Population	27,7 million
Human Development Index	164 ↑ | Total (0.53)
UN Classification	LDC
Access clean cooking	2% (urban) 0% (rural)
Access electricity	79% (urban) - (rural)

Project facts

Project period	12.2012 – 06.2023
Budget	EUR 1,848,000
Core funding incl. RBF	EUR 1,848,000
Earmarked	-
Average annual turnover	EUR 218,885
Implementing Organisation	ADES
Lead political partner	Ministère de l'Energie et des Hydrocarbures

Relevance

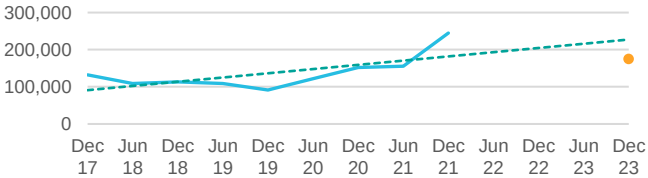


Country facts

	Targets	Achieved
HH Access Electricity	-	-
HH Access Cooking	174,280	244,888
SI Access	563	242
PU Access	934	951

HH Access Electricity

HH Access Cooking



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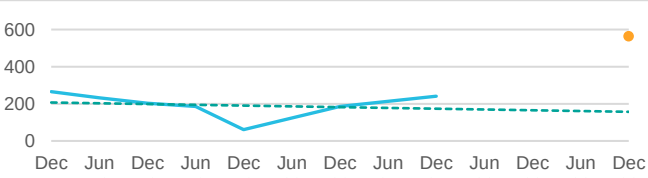

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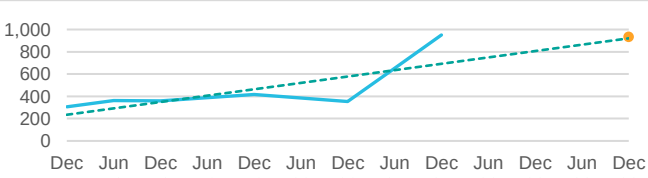


Madagascar: Seven new branches for a significant increase in ADES' reach.

Background information

In Madagascar, EnDev works with the Swiss NGO ADES, which advocates for the preservation of natural resources through energy-efficient cooking solutions, reforestation and educational projects. 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 its own production factories, eight sales and distribution centres and three mobile branches, ADES reaches a large part of the population in all regions of the island.

In Madagascar, the Covid pandemic and the ongoing extreme drought in the south of the country pose challenges. The extraordinary growth of ADES in this difficult environment proves the great demand of the population for its products.

Project progress during monitoring period

ADES opened seven new regional branches across the country in 2021 and more than 56,000 improved cookstoves were sold. To cope with this growth, the new metal workshop, which was built and commissioned in 2021, plays a crucial role. Thanks to this new production site, ADES can produce the buckets for its cookstove at a second location, which allowed production capacity to double and the transport distances to the place of final assembly in Antananarivo to be reduced. Since 2020, ADES has significantly expanded its production and sales capacities and is therefore prepared for further growth in the coming years.

Despite the pandemic, the number of resellers increased from 175 to 214 and the permanent staff in Madagascar grew from 176 to 218.

“Their work is brilliant, innovative and impactful in many ways that needs to be globalized.” PIR CEO Jon Nevett justifies awarding ADES the title of *Org of the Year 2021* of the international .ORG Impact Awards.

The work of ADES is also attracting international attention. At the *.ORG Impact Awards 2021*, ADES not only won in the category "Overcoming Climate Change", but also the top prize “Organisation of the Year”.

Customized institutional cooking

Between December 2018 and March 2021, ADES has been piloting modular cooking solutions in school kitchens after conducting an overall analysis and needs evaluation, making building improvements, training staff and measuring the improvements achieved. By switching to energy-efficient cooking solutions, the pilot project aimed to reduce fuel consumption, reduce and channel smoke emissions, and make workstations in the kitchens more ergonomic. Results show that schools participating in this project reduced their fuel consumption by up to 80 - 90 percent, spent up to 3 hours less on cooking per day and almost complete reduced harmful fumes in the kitchen.

After this successful pilot phase, ADES is building on lessons learned and installed commercial kitchens in six additional schools in 2021. In 2022, an additional ten schools will benefit from this remodeling of their commercial kitchens and ICS.

Malawi

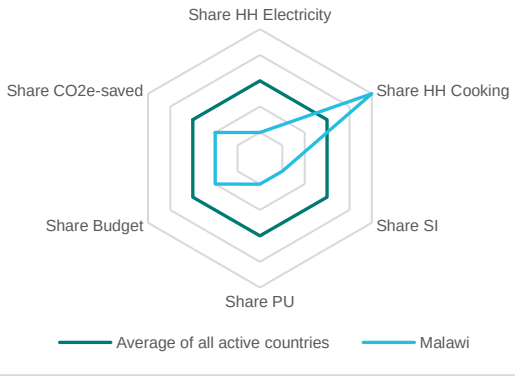
Country facts

Population	19,1million
Human Development Index	174 → | Total (0.48)
UN Classification	LDC / LLDC
Access clean cooking	8% (urban) 0% (rural)
Access electricity	46% (urban) 4% (rural)

Project facts

Project period	12.2012 – 06.2023
Budget	EUR 9,181,000
Core funding incl. RBF	EUR 8,466,000
Earmarked	EUR 715,000
Average annual turnover	EUR 1,334,103
Implementing Organisation	GIZ, United Purpose
Lead political partner	Ministry of Natural Resources, Energy and Mining / Ministry of Gender, Children, Disability and Social Welfare (for RBF)

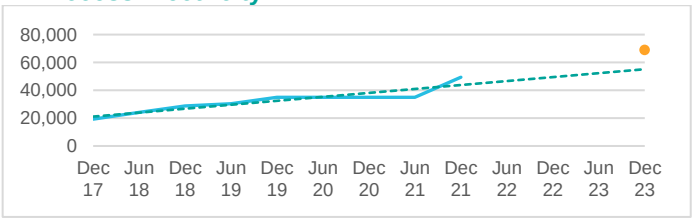
Relevance



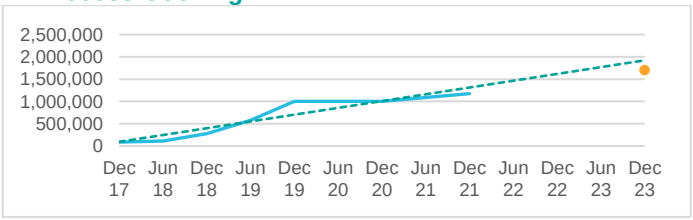
Country facts

	Targets	Achieved
HH Access Electricity	69,034	49,386
HH Access Cooking	1,695,439	1,174,407
SI Access	27	21
PU Access	425	130

HH Access Electricity



HH Access Cooking



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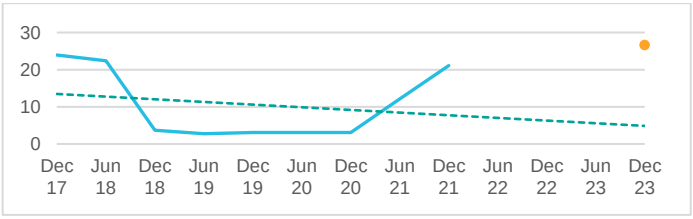

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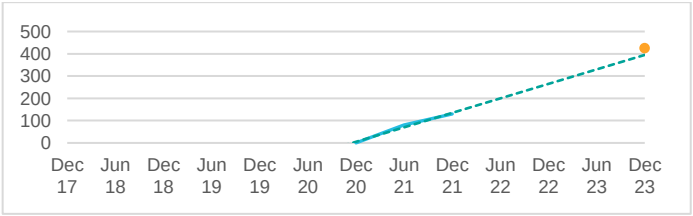


Malawi: “My fritter sales have increased because the stove helps me to fry faster and keeps my cooking space clean.”

Background information
Since 2012, EnDev in Malawi facilitates sustainable energy access to households, micro, small and medium enterprises, and social institutions. The program’s activities are based on two funding streams. Under the core-funding, EnDev is implementing market development activities for ICS and solar PicoPV / SHS across the country. The project focuses on the private sector, but also works with NGOs to support the steps towards full commercialization and coordinates sector networks, such as the National Cookstoves Steering Committee and the Renewable Energy Industries Association of Malawi. With funding from the Embassy of Iceland, EnDev is pursuing a district-focused approach in Mangochi. Here, activities from the national level are intensified and accompanied by energising social institutions with solar installations and institutional ICS, as well as promoting the PUE - thermal and electric.

Project progress during monitoring period
The third wave of COVID-19 presented challenges to the project implementation, mainly stemming from restrictions on gatherings and the reduction in customers’ disposable income. All project activities were adapted to include preventative measures.

Improved cookstoves: The project continued to support supply and demand side activities for the ICS market. Stove production groups received business development services, financial literacy trainings as well as support for warehouse construction, the application of quality standards, and vertical integration along the ICS value chain. Simultaneously, demand was stimulated through marketing activities and the expansion of a countrywide agent network. Roadside food businesses and small restaurants also benefited from ICS for commercial use and in 2021, a fuel-efficient fish processing ICS, called Chitofu 3-in-1, was successfully trialled. Four research institutions and seven fish cooperatives received 22 Chitofus for research and to improve business operations. EnDev supported Malawi’s nomination as a Global Champion on Energy Access for CLEANER Cooking at the UN High-Level Dialogue on Energy. In this context, the Ministry of Energy was supported with the formulation of an Energy Compact for the cooking sector, which was endorsed by the president of Malawi.

PicoPV and SHS: In the solar sector, a key activity in 2021 was to provide tailor-made marketing support to solar companies. This will transition into a wider needs-based business development support intervention for at least 15 solar and PUE companies. EnDev also assisted with the development and piloting of PUE approaches. These included e.g. solar companies selling solar lights to bicycle taxi operators and solar water pumps for irrigation to farmers. To upscale its PUE activities, EnDev has started consultations with the EU Delegation in Malawi on a co-financing agreement.

Social Institutions: Thirteen health facilities were supported with newly constructed cooking shelters for patient guardians. Through the co-financing agreement with the Embassy of Iceland, 40 large-capacity ICS were installed for school meal programs. Additionally, a tender process was concluded for the installation of state-of-the-art PV systems at eight health facilities in Mangochi. The installation is foreseen to be concluded in the second quarter of 2022.

Energising Public Primary Schools

In line with the goals of the Energy Compact for CLEANER Cooking, EnDev collaborated with two new partners, namely, the Ministry of Education and German Development Bank (KfW). Under the “Improving Primary School Education (IPSE)” project, EnDev offered its expertise to support the construction of fixed ICS in over 50 public primary schools. In total, 350 fixed stoves were installed at newly constructed teacher houses and student teacher hostels with dedicated outdoor communal kitchens. An additional 150 portable stoves were supplied to allow mobile cooking, if required by users. It is estimated that more than 1,000 people will benefit from using these stoves.

Mali

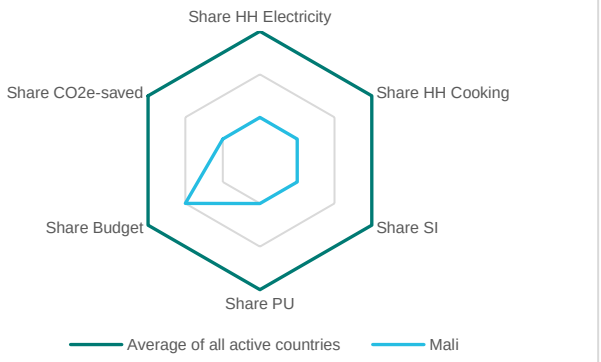
Country facts

Population	20,3 million
Human Development Index	1184 → | Total (0.43)
UN Classification	LDC / LLDC
Access clean cooking	2% (urban) 0% (rural)
Access electricity	95% (urban) 15% (rural)

Project facts

Project period	04.2009 – 06.2023
Budget	EUR 12,394,000
Core funding incl. RBF	EUR 12,394,000
Earmarked	-
Average annual turnover	EUR 2,433,858
Implementing Organisation	GIZ, SNV, NIS
Lead political partner	Ministère des Mines, de l'Energie et de l'Eau

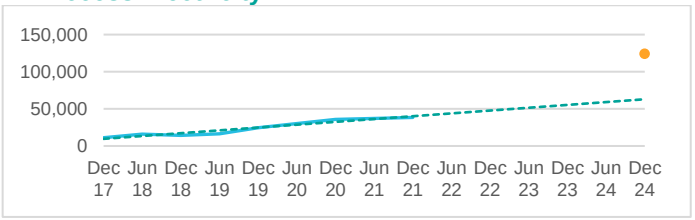
Relevance



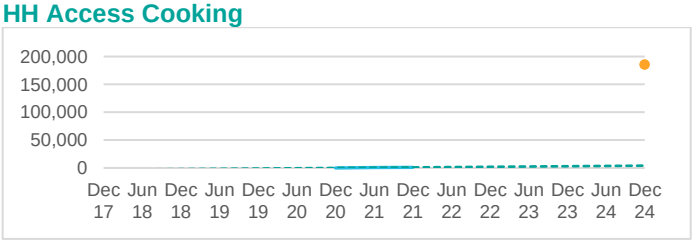
Country facts

	Targets	Achieved
HH Access Electricity	124,142	38,440
HH Access Cooking	185,535	1,041
SI Access	503	266
PU Access	725	198

HH Access Electricity



HH Access Cooking



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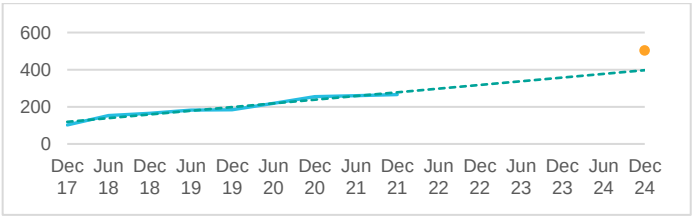

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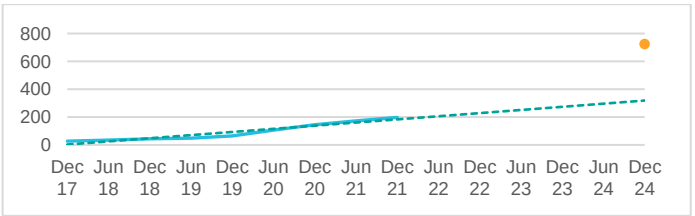


Mali: Form follows demand: Demand based, integral approach

120 kWp PV-hybrid mini-grid in the commune of Sanando ©EnDev Mali

Background information

In 2021 EnDev Mali continued to support the development of the solar market with a comprehensive portfolio of technologies (incl. picoPV, solar home systems (SHS), energy kiosks, and mini-grids), as well as the market for ICS and electricity access in vulnerable settings. To increase the sustainability of its interventions and generate learnings for future activities, EnDev has started to analyse the current state of mini-grids installed in the past and is supporting the recycling of electronic waste (e-waste) from picoPV.

After the coup d'état in 2020, another coup took place in May 2021. Although the coup did not have a lasting impact on project implementation, recent sanctions imposed by international actors on the Malian government might negatively affect operations in future. The project is currently developing strategies to mitigate these effects on the programme's interventions.

Project progress during monitoring period

The demand based, integral approach in Barouéli is evolving positively. In 2021, EnDev Mali focused on the installation of **mini-grids with and without private sector participation**. Two mini-grids were realized, one of which in cooperation with the private sector. Despite the current instable political and deteriorating security situation the preparations for three further mini-grid installations are ongoing. Overall, the cooperation with private investors on mini-grid installations in Barouéli is evolving positively and will be further strengthened in the future.

In the solar sector, EnDev's **SHS lease purchase facility** has enabled over 20 productive users to gained access to electricity. Additionally, EnDev trained 32 technicians and supported the electrification of 24 health stations under its component **sustainable PV installations for clinics.** The programme also facilitated the signature of a collaboration agreement between a cotton producers union and companies selling picoPV products to expand the picoPV market in rural areas in the south.

Complementary to these activities, opportunities for **recycling and repairing picoPV systems** were improved as EnDev supported the development of a specific bin for collecting PV e-waste and trained energy kiosk employees on how to repair and recycle picoPV products properly. In total eight bins for collecting PV e-waste have been installed one of which at a repair workshop for electronic products.

The implementation of activities in **vulnerable settings** were slowed down due to the extremely difficult security situation in the North and COVID 19 related supply chain delays. In response, the project adapted the implementation strategy and revised the list of targeted villages.

The RBF that seeks to stimulate sales of **ICS** in regional cities has been launched leading to the opening of a new production facility of one company in Segou. Regional campaigns to launch the quality label GWA+, that has been developed with the support of EnDev, in Segou and Sikasso have received broad interest from companies, the local government and population.

Community-based energy funds

EnDev has supported the establishment of community-based energy funds in Barouéli for many years. These funds are managed by local community committees and invest in local energy infrastructure development. In 2021, the number of loans continued to increase, showing the funds' relevance. In the community of Tamani such a fund was established in 2020 and provided financing for a SHS, which is used to power a fridge. The fridge enables the sale of fresh products, resulting in additional income generation and employment opportunities.users. It is estimated that more than 1,000 people will benefit from using these stoves.

Mozambique

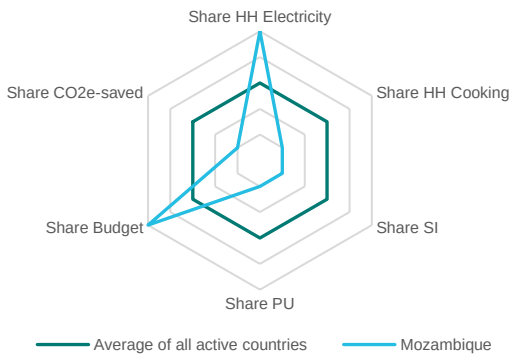
Country facts

Population	31,3 million
Human Development Index	181 → | Total (0.46)
UN Classification	LDC
Access clean cooking	13% (urban) 0% (rural)
Access electricity	73% (urban) 5% (rural)

Project facts

Project period	10.2009 – 06.2023
Budget	EUR 37,589,000
Core funding incl. RBF	EUR 23,656,000
Earmarked	EUR 13,933,000
Average annual turnover	EUR 4,553,518
Implementing Organisation	GIZ
Lead political partner	Ministry of Mineral Resources and Energy

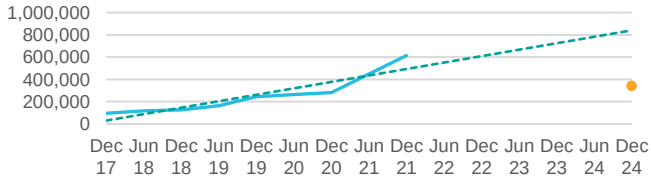
Relevance



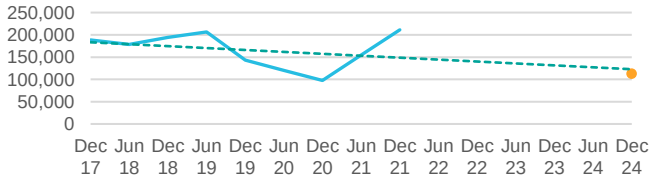
Country facts

	Targets	Achieved
HH Access Electricity	342,064	614,607
HH Access Cooking	112,320	211,263
SI Access	23	7
PU Access	51	43

HH Access Electricity



HH Access Cooking



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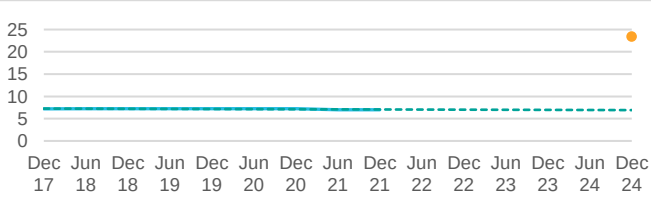

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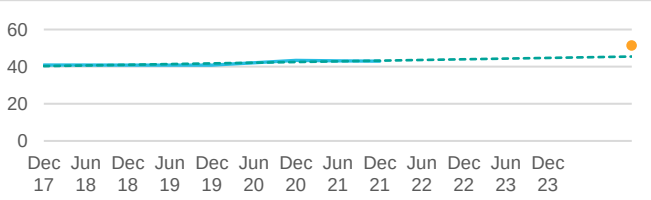


Mozambican energy access companies are still in business and thriving – while leaving no one behind

Background information

EnDev Mozambique follows a holistic, multi-tier approach, covering different off-grid electrification and improved cooking technologies, as well as grid densification, to provide access to households and micro-, small- and medium-enterprises (MSME). EnDev also supports social institutions, such as schools, with access to electricity and improved cooking and supports the commercialisation of energy access technologies for internally displaced persons in resettlement areas. Its key intervention areas are access to finance; business development services; evidence generation, learning transfer and innovation; policy advice and capacity development; and partnerships and alliances.

Based on a well-functioning results-based financing mechanism in place, EnDev Mozambique was able to turn the rapid implementation of the COVID-19 measures into a success. These measures ensured that the positive developments promoted by EnDev in the energy access market were maintained. This makes certain that Mozambique remained on track towards its goal of universal energy access by 2030, while leaving no one behind.

Project progress during monitoring period

In 2021, EnDev continued to support the national electricity provider EDM (*Electricidade de Moçambique*) to connect vulnerable households that live close to the grid, but which did not yet have access to electricity.

Through a results-based financing initiative, *Fundo de Acesso Sustentável às Energias Renováveis* (FASER), EnDev was able to quickly introduce two COVID-19 impact mitigation mechanisms for the energy access sector: COVID-PAY and CovidPlus. The two measures were designed to be complementary to one another, based on EnDev's extensive market knowledge: COVID-PAY maintained the energy access achieved in recent years and to help companies avoid bankruptcy, whereas CovidPlus ensured continuity of new access efforts during the pandemic. During the reporting period, significant progress was made in the implementation of both measures.

The COVID-PAY window for Companies Vulnerable to Increased Default is a mechanism, which enables clients of PAYGO-companies to maintain their energy access, despite the economic challenges caused by the pandemic. Until December 2021, over 200,000 promotions through this demand side subsidy mechanism were allocated – allowing those households to maintain their energy access.

The CovidPlus incentive under the Humanitarian Window of FASER provides grants to energy technology and service providers, which must be partially passed on to the customers, thereby allowing the households to gain access to energy at a very low cost. The *Fundação para o Desenvolvimento da Comunidade* (FDC), as the host of FASER, managed to quickly implement a BMZ-financed tranche of COVID-19 funds in the first half of 2021. The CovidPlus incentive scheme was upscaled with EU co-financing funds: in total, more than 270,000 people gained new access to improved cooking solutions or off-grid electricity in 2021.

Business Continuity during Covid-19

ENGIE Energy Access, one of the leading solar home system (SHS) companies in Africa, entered as a new player in the energy access sector in Mozambique in 2019. When the COVID-19 pandemic hit, the company was in the process of setting up its operations. As such, the investments and effort put into Mozambique were at serious risk of being put on hold given the uncertainties brought up by this situation. However, backed by EnDev through the COVID-PAY and CovidPlus support mechanisms, ENGIE was able to continue its planned expansion with minimised risk and has experienced exponential growth despite the pandemic.

Nepal

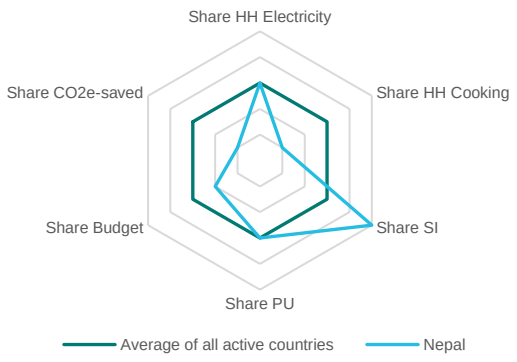
Country facts

Population	29,1 million
Human Development Index	142 ↓ | Total (0.60)
UN Classification	LDC / LLDC
Access clean cooking	65% (urban) 16% (rural)
Access electricity	94% (urban) 89% (rural)

Project facts

Project period	05.2009 – 06.2023
Budget	EUR 10,863,000
Core funding incl. RBF	EUR 10,863,000
Earmarked	-
Average annual turnover	EUR 895,185
Implementing Organisation	GIZ, SNV, Practical Action
Lead political partner	Ministry of Energy, Water Resources and Irrigation

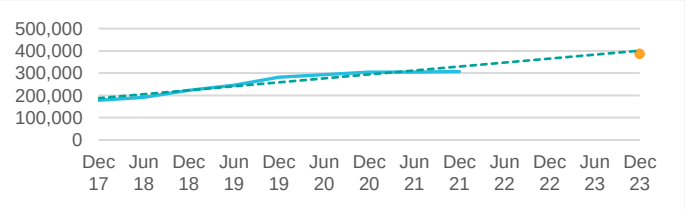
Relevance



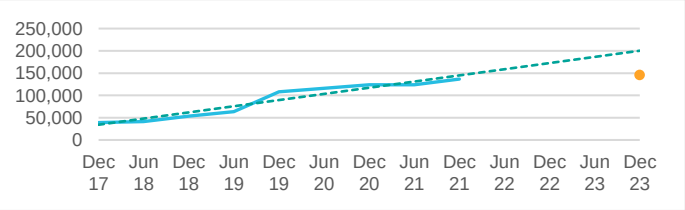
Country facts

	Targets	Achieved
HH Access Electricity	385,991	307,321
HH Access Cooking	145,269	136,663
SI Access	1,769	1,657
PU Access	6,146	3,880

HH Access Electricity



HH Access Cooking



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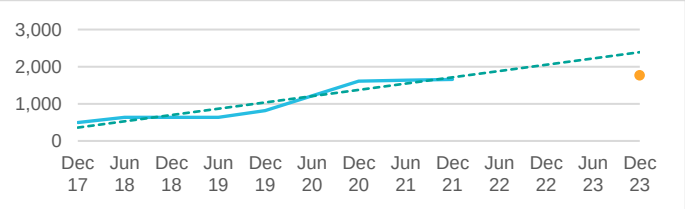

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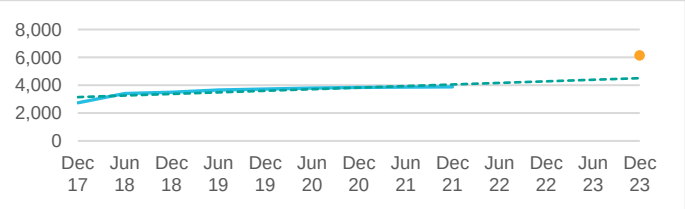


Nepal: “Since I switched from a biomass to an electric stove, I am able to devote my free time in a saving and credit group”

Background information

EnDev supports access to electricity for rural communities through multiple interventions. The project has set up (1) a Revolving Fund for Community Rural Electrification Entities to enable these entities to pay their required share of the total project cost. Additionally, the project supports (2) grid extensions through grants to Local Government Units and (3) grid densification by covering initial connection costs for poor, marginalized, and natural disaster affected households and enterprises (“leave no one behind” approach). EnDev also has a long track record in hydropower development through e.g. the establishment of the (4) Micro Hydro Debt Fund. The fund aims to reduce the perceived risk of commercial banks and encourage investment into off-grid hydro power projects. Aside from this, EnDev supported the installation of (5) pico-hydro systems in the high hills of Nepal where micro hydro plants and grid electrification are impractical for providing electricity to remote communities. Beyond the electricity sector, EnDev continues to support access to clean cooking by (6) creating a sustainable improved cookstove / electric cookstove market in rural areas of Nepal.

Project progress during monitoring period

A new contract with the National Association of Community Electricity Users Nepal (NACEUN) for managing the Revolving Fund has been signed. Under the new agreement loan provisions for Community Rural Electrification Entities (CREEs) are not limited to new electrification or system upgrades but also cover e-cooking promotion and enterprise development, to help CREE’s sustainability.

Through the Micro-Hydro Debt Fund (MHDF), a field level consultant was engaged as a social mobilizer to support the Alternative Energy Promotion Center on loan recovery. As a result, three micro-hydro projects (MHPs) settled their loans and the repayment rate from other MHPs has increased. The revision of the MHDF design is also well underway to allow loan provisions for grid-interconnection of MHP and mini-hydro projects.

After a successful e-cooking pilot in 2019 / 2020, EnDev Nepal scaled up the promotion of electric cooking in 2021. Together with its partners NACEUN and Practical Action, EnDev seeks to enable the sale of more than 10,000 devices in rural and semi-urban areas using an RBF approach.

Moving beyond Fire: A simmering story of e-cooking in rural Nepal

Almost all families in Temal, a village located 60km east from the capital city Kathmandu, used firewood as a primary cooking fuel. While many households have access to electricity, its use was mostly limited to lighting, charging mobile phones, and watching television until EnDev started a pilot program to promote e-cooking in the region.

Manju Tamang, 24, one of the early adopters of an induction cookstove in Temal, heard about e-cooking through EnDev’s awareness campaigns. She lives with her two children and husband in a temporary shelter since their house collapsed in the devastating earthquake of 2015. She happily explains one of the benefits of using an induction cookstove – less time spent cooking. “I am able to invest the time saved in other household chores as well as devote my free time in a saving and credit group, whose members meet at least twice a month. I use this platform to discuss and share my positive experience with using the induction cookstove and encourage others to use it too.”

In the nearby town Bhakundebeshi, 14.5 km away from Temal, Yamu Lama, 34, also got wind of the EnDev’s e-cooking campaign two years back. Ever since then, he has been using induction cookstoves to run a small tea shop. With a joyful smile he highlights one of the major benefits of this stove: “Since I started using an induction cookstove, I use less LPG for cooking and am able to save NPR 4,000 (approx. EUR 29.75) annually.’’

Rwanda

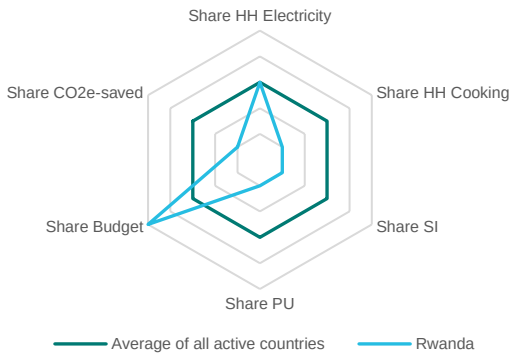
Country facts

Population	13,0 million
Human Development Index	160 ↑ | Total (0.54)
UN Classification	LDC / LLDC
Access clean cooking	6% (urban) 0% (rural)
Access electricity	93% (urban) 26% (rural)

Project facts

Project period	10.2009 – 06.2023
Budget	EUR 31,377,000
Core funding incl. RBF	EUR 24,967,000
Earmarked	EUR 6,410,000
Average annual turnover	EUR 1,908,487
Implementing Organisation	GIZ, SNV, AVSI
Lead political partner	Ministry of Infrastructure (MININFRA)

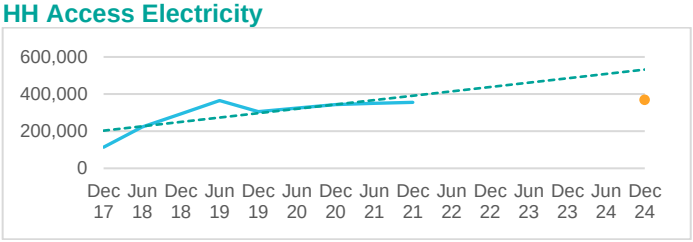
Relevance



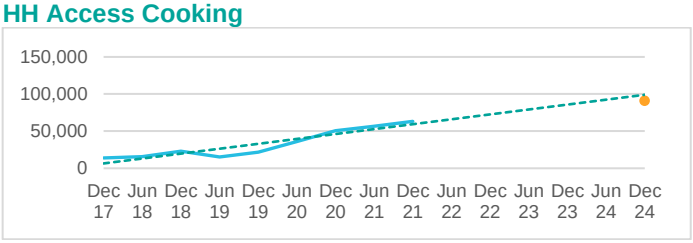
Country facts

	Targets	Achieved
HH Access Electricity	369,071	355,984
HH Access Cooking	90,617	63,231
SI Access	34	12
PU Access	240	240

HH Access Electricity



HH Access Cooking



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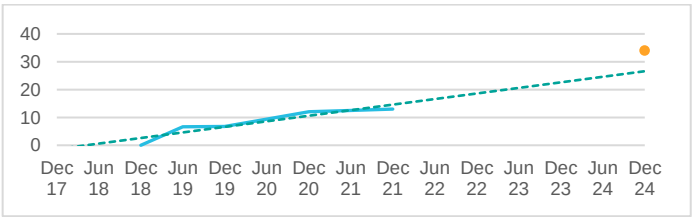

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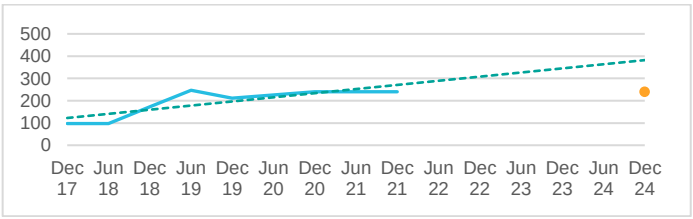


Rwanda: “Thanks to EnDev’s support, I am a stronger player in the market”

Gerard Niyitegeka while doing pottery an ICS in his workshop © Jacques Nkinzingabo

Background information

The Government of Rwanda (GoR) aims to achieve universal access to electricity by 2024. As of December 2021, 67% of households are connected to grid systems, with 18.5% of those connections using off-grid technologies. The GoR has recently changed its off-grid and on-grid electrification targets drastically from 52% on-grid and 48% off-grid to 89.9% on-grid and 10.1% off-grid. A share of 182 villages (equivalent to 1.2%) is proposed for mini-grid development. Over 80% of Rwandan households use wood for their cooking fuel and 66% use three-stone cookstoves. The GoR seeks to reduce firewood usage from 83.3% (2014) to 42% by 2024.

Project progress during monitoring period

Mini-grid & PUE: In 2021 mini-grid development and PUE became the focal intervention areas. The design of a new mini-grid RBF program was completed in 2021, integrating lessons learned from its previous Village-Grid program funded by UK Aid. It will be launched in early 2022. The AVSI-implemented PUE program started in January 2020 and is supporting 80 entrepreneurs over six mini-grid sites. In 2021, 56 of them have received the appliances through a matching grant. With funding from the Innovation Window, a new project titled “Cold Storage as a Service” was acquired. It will pilot an innovative solar-powered cold storage technology and business model in cooperation with the private sector. All preparatory activities have been completed and inception is planned for early 2022.

Private sector participation in hydropower (PSP hydro): In 2021, the component has been preparing for a phase out. No new projects have been commissioned, but 4,771 people benefited from access to electricity through all completed projects. Three hydro power plants are still under construction. Once they are completed a total of 2 MW will be added to the national grid, which translates into approx. 37,000 beneficiaries (non-adjusted).
PicoPV: The Pro Poor RBF project, extended with funding from USAID, ended in June 2021. During the monitoring period, EnDev supported the sale of over 8,591 picoPV systems.

Cooking: Since November 2020 EnDev is implementing the ‘Reducing climate impact of cooking in Rwanda through improved cooking energy systems (ReCIC) Action co-financed by the EU under the GCCA+ fund. ReCIC seeks to create a sustainable market in the cooking energy sector. Interventions include capacity-building, equipment supply and incentives for producers or distributers of ICS and alternative fuels. In 2021, 6 supported workshops disseminated 15,413 stoves. Moreover, EnDev supports the GoR in strengthening the regulatory framework, the testing capacities and overall sector coordination to improve the existing market conditions. In 2021, EnDev advised the GoR in developing a Clean Cooking Compact and recruited an Integrated Expert, to support the cooking team within the +Energy Development Corporation Limited (EDCL)-

From potter to promising business owner

Gerard Niyitegeka (34) was a potter in a cooperative previously supported by EnDev and realised the business potential of creating his own company. He started his business “Environ Green Conserve” with his extended family in 2020 by borrowing temporarily a working space. After some business connections and trainings facilitated by EnDev, Gerard moved to a permanent workshop and hired 3 permanent staff. Thanks to an upgrade of his kiln supported by EnDev, his production capacity went from 1500 stoves to 3200 stoves per month. He is now prototyping a new stove model that responds to his customers’ preferences with EnDev’s technical assistance and gratefully reports: “Thanks to EnDev’s support, I am a stronger player in the market. I can now compete with other companies on same footing and this new stove type gives me hope that I can do an impact in Rwanda with my company”

Senegal

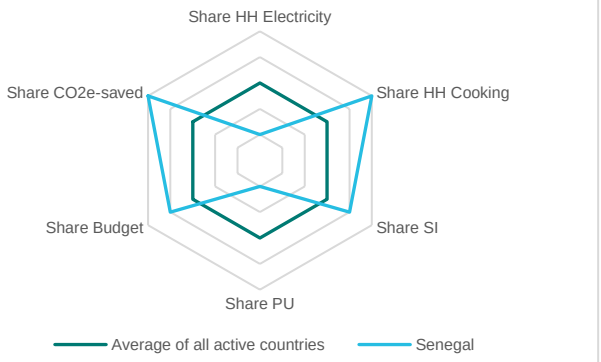
Country facts

Population	16,7 million
Human Development Index	168 ↑ | Total (0.51)
UN Classification	LDC
Access clean cooking	46% (urban) 4% (rural)
Access electricity	95% (urban) 48% (rural)

Project facts

Project period	04.2009 – 06.2023
Budget	EUR 23,571,000
Core funding incl. RBF	EUR 21,201,000
Earmarked	EUR 2,370,000
Average annual turnover	EUR 2,618,423
Implementing Organisation	GIZ
Lead political partner	Ministry of Petroleum and Energy

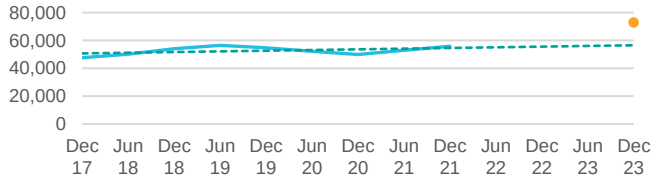
Relevance



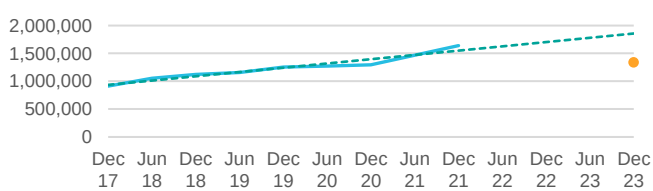
Country facts

	Targets	Achieved
HH Access Electricity	72,907	55,938
HH Access Cooking	1,333,993	1,640,566
SI Access	1,183	1,088
PU Access	1,572	757

HH Access Electricity



HH Access Cooking



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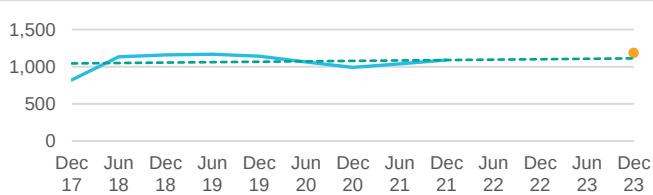

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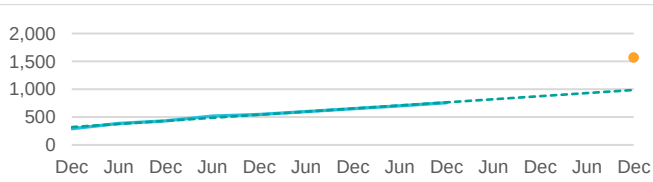


EnDev introduces energy efficient fish smoking technology in **Senegal**

Background information

EnDev's interventions on domestic cooking energy were handed over to the Green Climate Fund (GCF) project, an EnDev associated project, in November 2020. Since this hand over, EnDev has been focusing its efforts on the promotion of 1) sustainable production of fire wood and 2) productive use of biomass energy in the fish processing sector. The use of rudimentary technologies in the fish processing sector to date results in significant smoke and overall high greenhouse gas emissions per kilogram of processed fish.

In the sector of rural electrification, EnDev's role is to be the 'innovation lab' for testing and scaling of new, more sustainable solutions.

Project progress during monitoring period

During the reporting period, EnDev enabled the maintenance and repair of several mini-grids through financial assistance (a COVID-19 response measure) and a battery replacement scheme set up with a local recycler and manufacturer (see green box). Additionally, EnDev has been providing business development support to operators, notably on the digitalization of their operations.

In the solar home system component, new integrated technical innovations (i.e. smart charge controllers to enable remote payments and activation/deactivation, etc.) are being piloted in several villages. The project's PUE promotion activities further enabled the installation of several productive solar appliances.
In the context of COVID-19 response measures, rural health centres were provided with solar fridges and water treatment systems to support the fight against the corona virus.

After ten years of steady sales growth, COVID-19 has had a significant negative impact on the country's improved cookstove sector. In 2020, annual sales shrunk by 30% compared to 2019. Thanks to EnDev's COVID-19 relief package, the sector quickly recovered and even exceeded 2019 sales in 2021.

Beyond these ICS activities, Malawi's proven fish processing technology was adapted to the Senegalese context in collaboration with the *Centre d'Études et de Recherches sur les Énergies Renouvelables* (CERER) and local fish processors. Laboratory tests of this adapted technology showed significant energy efficiency gains compared to traditional technologies. The team identified a pilot site to further explore user acceptance and economic viability.

Additionally, EnDev is exploring various plant species for firewood to improve the sustainability of fuelwood production. For this purpose, 12,000 energy dense seedlings were planted in ten pilot sites.

57 tons of lead-acid batteries recycled

Lead-acid batteries are often used in off-grid electrification. If not disposed of correctly, these batteries can pose a significant risk to the environment and human health. In Senegal, EnDev is committed to supporting the development of the national solar waste management sector. For this purpose, EnDev — in partnership with GIZ's Sustainable Energy Programme (PED) — has developed a waste management strategy and is working with local partners to implement it. In addition, EnDev is supporting the Senegalese Agency for Rural Electrification (ASER) in the implementation of recycling activities. By the end of 2021, more than 57 tons of used lead batteries from the solar sector could be collected and recycled in accordance with relevant standards. The recovered lead is being used to produce new batteries for solar applications, thus contributing to a circular economy.

Sierra Leone (with Liberia & Guinea)

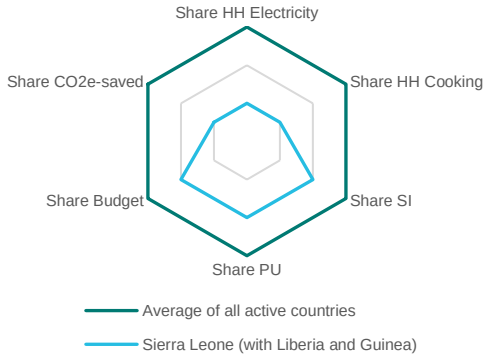
Country facts

Population	GIN: 13,1 million LBR: 5,1 million SLE: 8,0 million
Human Development Index	GIN: 178 ↑ | Total (0.48) LBR: 175 ↑ | Total (0.48) SLE: 182 → | Total (0.45)
UN Classification	LDC (all)
Access clean cooking	GIN: 4%(urban); 0%(rural) LBR: 0%(urban); 0%(rural) SLE: 1%(urban); 0% (rural)
Access electricity	GIN:88%(urban);16%(rural) LBR: 46%(urban);8%(rural) SLE: 51%(urban);2%(rural)

Project facts

Project period	05.2012 – 06.2023
Budget	EUR 10,026,000
Core funding incl. RBF	EUR 10,026,000
Earmarked	-
Average annual turnover	EUR 1,447,495
Implementing Organisation	GIZ
Lead political partner	GIN: Ministère de l´Energie, de l´Hydraulyque et des Hydrocarbures LBR: Ministry of Mines and Energy SLE: Ministry of Energy

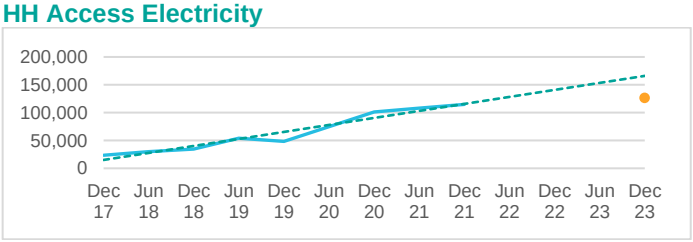
Relevance



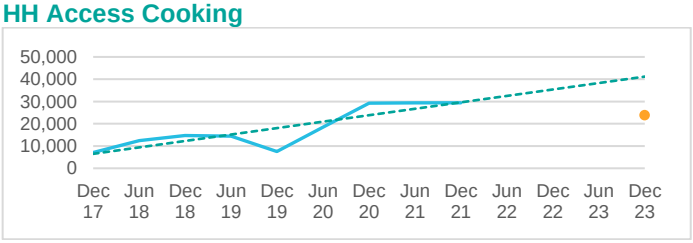
Country facts

	Targets	Achieved
HH Access Electricity	126,341	114,774
HH Access Cooking	23,780	29,396
SI Access	1,613	621
PU Access	1,767	1,679

HH Access Electricity



HH Access Cooking



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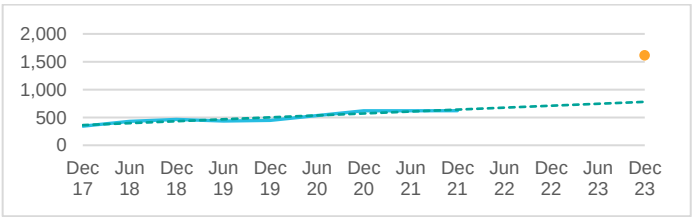

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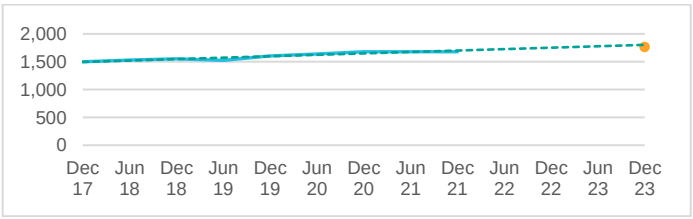


Sierra Leone: "Thank you very much for joining us in the fight to improve quality of care in Masongbo and Panlap. Both Chiefs send their sincere gratitude and have expressed that you are now one of them"

Background information

EnDev, supports the development of private sector driven markets for improved cookstoves (ICS) and solar technologies (PicoPV, SHS, Mini-Grids, Solar Dryers) in Sierra Leone, Liberia and Guinea. EnDev provides technical, administrative and management expertise of key stakeholders in the sector through advisory services, training and networking. EnDev pays specific attention applying a gender perspective, when holding trainings, empowering women and creating economic opportunities, working towards gender transformative outcomes and environmental justice.

Through promotion of data and information sharing, EnDev creates replicable knowledge. EnDev looks at IT solutions (such as e-Learning, EnDev collect App) to strengthen impact verification in sustainable development policies and activities. EnDev collaborates with other national and international projects and foster synergies in the Renewables sector.

Project progress during monitoring period

EnDev continued to offer opportunities to SMEs and households for climate-neutral growth and economic emancipation through the promotion of Renewable Energy (RE) Technologies and ICS. In particular

- EnDev established the Freetown Peninsula Working Group which works on the promotion of environmental awareness and climate change mitigation measures
- EnDev is collaborating with the ECREEE and the Government Technical Institute (GTI) in Freetown to develop course modules for RE and to establish examination center at GTI to empower solar technicians.
- EnDev promotes an independent means for data verification for both private and public activities
- EnDev integrated activities around deforestation, completed studies about charcoal production and deforestation of the Freetown Peninsula and its effects on water resources and supply.
- The project contributed to building up the Clean Cooking Alliance in Sierra Leone and was active in a working group around water protection, health and cooking to be considered in the overall energy approach.

The Compact on Clean Cooking Energy (SDG7)

EnDev supported the Government of Sierra Leone (GoSL) to develop the “Cleaner Cooking Energy Compact of Sierra Leone”, a next decade action agenda to advance SDG7 in line with the Paris Agreement on Climate Change. After long consultations with almost all major Ministries (Energy, Environment, Forestry and Agriculture, Land, Trade and Finance, and Education), Institutions and Partners, the document was approved and presented by the Energy Minster Alhaji Kanja Sesay at the United Nations General Assembly in September in New York.

The compact highlights ambitions to achieve the SDG7 by 2030 as follow:

- Ensure universal access to affordable, reliable, and modern energy services
- Doubles the global rate of improvement in energy efficiency
- Enhance internal cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advance cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology
- Expand infrastructure and upgrade technology for supplying modern & sustainable energy services for all in developing countries, in accordance with country perspective programmes of support.

Tanzania

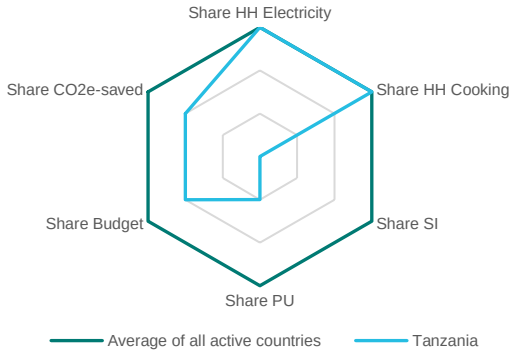
Country facts

Population	59,7 million
Human Development Index	163 ↓ | Total (0.53)
UN Classification	LDC
Access clean cooking	11% (urban) 1% (rural)
Access electricity	73% (urban) 19% (rural)

Project facts

Project period	12.2012 – 06.2023
Budget	EUR 14,090,000
Core funding incl. RBF	EUR 14,090,000
Earmarked	-
Average annual turnover	EUR 1,771,281
Implementing Organisation	SNV
Lead political partner	Ministry of Energy

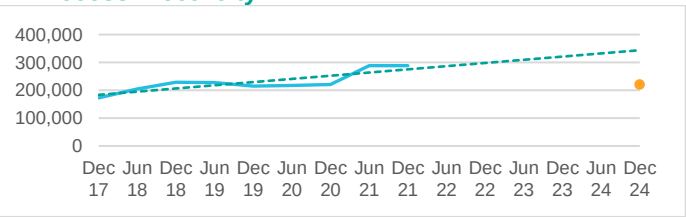
Relevance



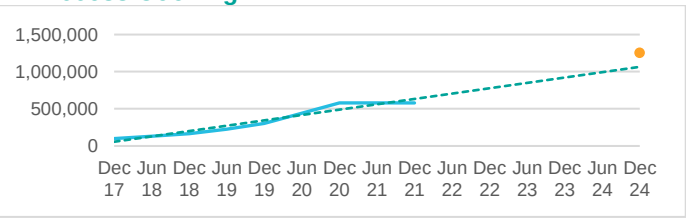
Country facts

	Targets	Achieved
HH Access Electricity	221,001	388,377
HH Access Cooking	1,250,229	579,791
SI Access	-	-
PU Access	200	220

HH Access Electricity



HH Access Cooking



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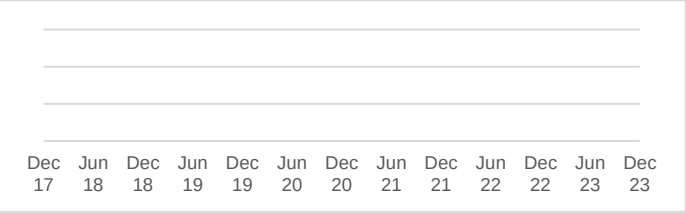

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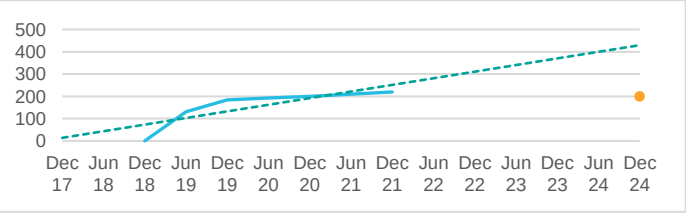
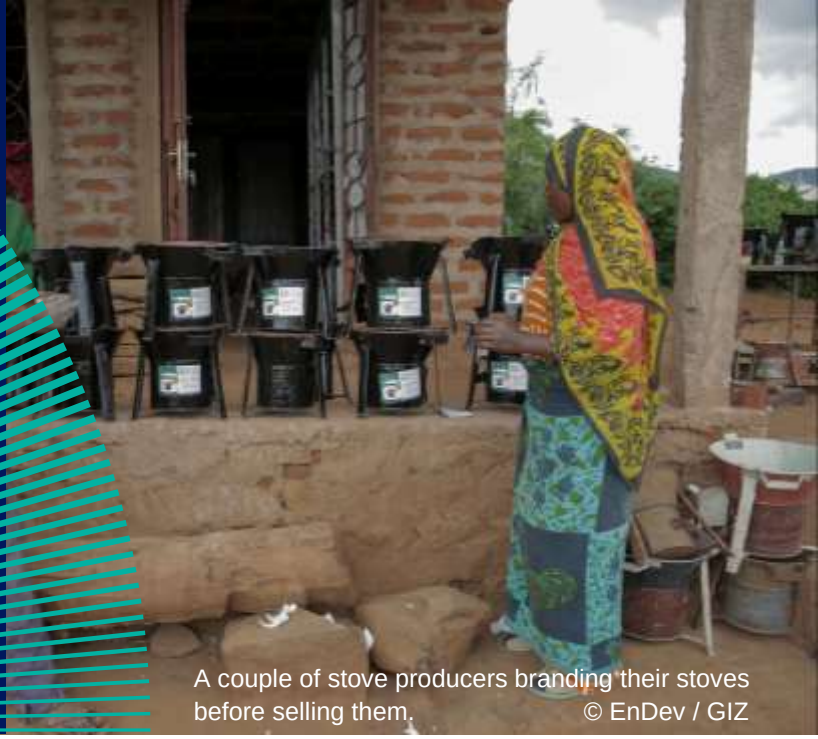


Tanzania: Consolidating results before embarking in the e-cooking journey



A couple of stove producers branding their stoves before selling them. © EnDev / GIZ

Background information

EnDev Tanzania supports the development of the clean cooking market in the country. The component focuses on the establishment of pre-commercial cookstove producers and the transition of high performers to pioneering commercial enterprises. In 2021, the impact of the pandemic was very limited which enabled EnDev Tanzania to strengthen the support of clean cooking companies.

Project progress during monitoring period

EnDev has reached one more region in 2021 while it has strengthened the support in the four new regions reached in 2020. EnDev is now present in 15 of the 27 regions of mainland Tanzania. The project has continued to provide business support component paired with awards of performance based on non-monetary incentives such as manufacturing equipment and tailored marketing tools. Finally, EnDev Tanzania has initiated a scalable **Behaviour Change Communication** approach to generate increased demand around the clean cooking supply hubs. It uses targeted messaging and communications, and a community-driven campaign led by the Improved Clean Cooking Advocates (ICAs) who enable the adoption of clean stoves through the promotion of behaviours around cooking, health, nutrition and environment.

In the meantime, the **Gender Action Plan** for the cooking sector has been developed with the support of EnDev. The SNV team on spot has been therefore assisted by the specialists of Energia. EnDev will strengthen women's leadership and agency content. It will also train women ICS producers on marketing and sales techniques, including after sales services, to address their mobility challenges. In 2022, EnDev Tanzania will reinforce its offer by supporting the sales of e-cooking products and services in rural Tanzania.

As part of its learning agenda, EnDev Tanzania conducted a survey of Productive Use of Energy (PUE) on customer perceptions across six solar firms to learn about their views on productive use of energy – both current and aspirational. The report presents aggregated and summarised insights to highlight key takeaways and trends. It shows that EnDev succeeds in reaching low-income customers. A small portion of these customers (25%) using their Solar Home System (SHS) for income-generating activities. The majority of customers work in the agricultural sector and are attracted by the purchase of a solar water pump.

The Green Economic Recovery Fund

Between October 2020 and March 2021, EnDev Tanzania through SNV established the Green Economic Recovery Fund (GERF) hosted by the Tanzania Investment Development Bank (TIB). The GERF built upon EnDev Tanzania's successfully established RBF mechanisms and structures to support recovery of solar firms at a national scale in the wake of the early stages of the pandemic. Through the support of the fund more than 100,000 solar units were sold to rural customers throughout Tanzania.

Results went beyond expectations as the fund was initially created to support 70,000 sales. It was exemplary for support mechanism adapted to the recovery of last mile off-grid products distributors. The initiative worked with 10 off-grid solar suppliers that sell VeraSol-approved products (ranging from picoPV to SHS). The fund scaled the presence of EnDev to all regions of Tanzania. It offered an advance payment instalment to pre-verified firms to accelerate market recovery.

A short video about the fund is available here.

Uganda

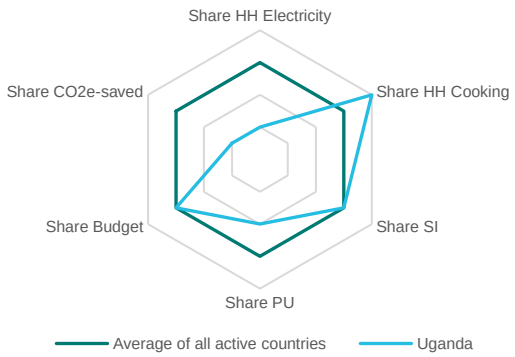
Country facts

Population	45,7 million
Human Development Index	159 ↓ | Total (0.54)
UN Classification	LDC / LLDC
Access clean cooking	1% (urban) 0% (rural)
Access electricity	71% (urban) 32% (rural)

Project facts

Project period	04.2009 – 06.2023
Budget	EUR 17,268,000
Core funding incl. RBF	EUR 17,268,000
Earmarked	-
Average annual turnover	EUR 1,947,091
Implementing Organisation	GIZ
Lead political partner	Ministry of Energy and Mineral Development (MEMD)

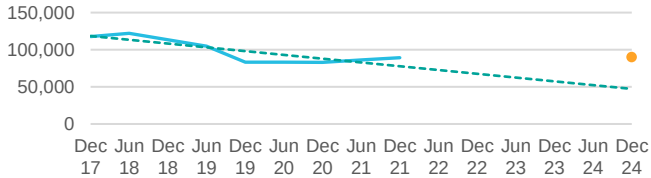
Relevance



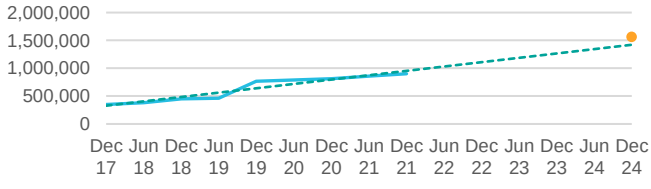
Country facts

	Targets	Achieved
HH Access Electricity	89,943	89,184
HH Access Cooking	1,558,183	901,471
SI Access	1,256	971
PU Access	3,114	2,630

HH Access Electricity



HH Access Cooking



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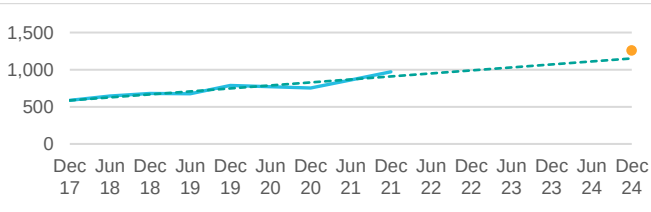

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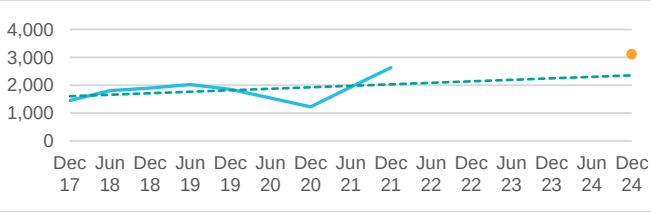


Uganda: Energising opportunities through a difficult economic situation

Background information

Despite the various restrictions affecting Uganda, EnDev has maintained its high ambition to deliver energy access while also conceptualizing new innovative approaches in 2021 (i.e. innovation window, gender pilot country, COVID-19 Economic Relief Fund). The three components of the programme - cooking energy, solar energy and refugees - were all impacted by the economic downturn resulting from the pandemic. Companies lost clients, while also facing supply chain constraints and movement restrictions, which hampered customer relations.

EnDev creatively responded to these challenges by e.g. providing electricity access to health centres in displacement settings and setting up new result-based financing (RBF) mechanisms to incentivise sales to small businesses, schools, last-mile and refugee households. These were complemented by activities (i.e. support on implementation of cooking standas and policy development) to enable local energy market development.

Project Progress during Monitoring Period

A new RBF facility, which supports clean cooking companies and matches investments made in production infrastructure, made a significant contribution to the increase in people reached during the monitoring period. The creation of the COVID-19 Economic Relief Fund also helped to maintain sales of clean cooking and off-grid companies in 2021. Additionally, EnDev supported clean cooking companies to expand their business through coaching and planned new activities on e-cooking and biogas that will be implemented in 2022.

The increase in people with access to electricity in 2021 was driven by a pilot co-financed by USAID targeting remote customers. As part of the pilot, companies received RBF incentives, which were linked to the distance of the customer from main trade centres - the harder to reach the customer, the higher the incentive. Simultaneously, two RBFs came to an end in 2021 - the PUE RBF and schools RBF. The former reached nearly 200 micro, small and medium enterprises (see box below for details on the school RBF). EnDev also provided targeted business development support to companies and supported the Uganda Solar Energy Association to set up a helpline for potential clients who want to learn more about and invest in solar products.

Under the EnDev refugee component, three health centres in refugee settings as well as a community hall, which serves as a business hub, were electrified. This was complemented by the launch of the first two RBFs in displacement settings in Uganda for clean cooking and picoPV. These mechanisms have been supporting companies to reach last-mile customers with high quality products. The EnDev team is preparing additional exciting activities for 2022 to support female refugee entrepreneurs with productive use technologies and financial literacy.

Electrifying schools in Uganda despite COVID

The rural electrification rate in Uganda was at 32 % in 2019. In 2020, EnDev launched an RBF mechanism to electrify schools in rural areas. Unfortunately, the schools in Uganda were ordered to close in March 2020 and only reopened in January 2022.

As such, the electrification of schools only showed a moderate growth with connections increasing by 5 % in 2020. In 2021, the project showed encouraging results and electrified more than 125 schools thanks to the support of EnDev and renewable energy companies.

D.2 Finalized projects – evaluation brief

- Indonesia biogas

Indonesia biogas

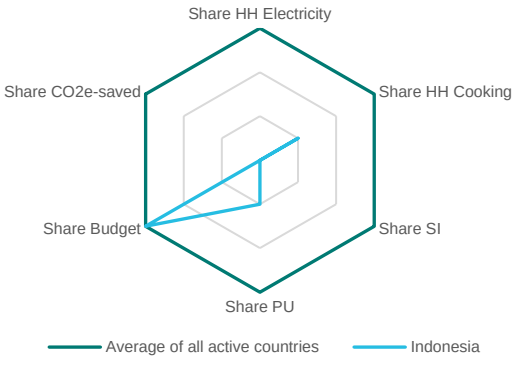
Country facts

Population	267,6 million
Human Development Index	107 ↓ | Total (0.72)
UN Classification	-
Access clean cooking	92% (urban) 72% (rural)
Access electricity	100% (urban) 98% (rural)

Project facts

Project period	05.2009 – 06.2021
Budget	EUR 16,231,000
Core funding incl. RBF	EUR 16,231,000
Earmarked	-
Average annual turnover	EUR 4,629,038
Implementing Organisation	GIZ
Lead political partner	Ministry of Energy and Mineral Resources (MEMR)

Relevance

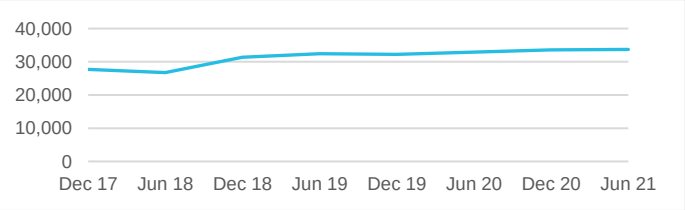


Country facts

	Targets	Achieved
HH Access Electricity		-
HH Access Cooking		33,723
SI Access		
PU Access		102

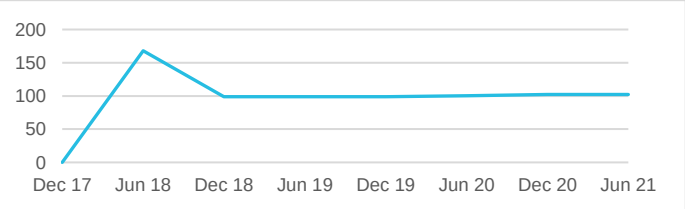
HH Access Electricity

HH Access Cooking



SI Access

PU Access



Introduction

The Indonesia Domestic Biogas Programme (IDBP) funded by EnDev and implemented by Hivos aimed to promote the use of biodigesters as a local, sustainable, energy source by developing the market while working towards the development of a commercial, market-oriented sector, leading to the creation of jobs. Since its start of implementation in May 2009 to March 2021, the IDBP has built 25,305 biogas reactors in 14 provinces in. Further, the IDBP program has reduced 370,000 tCO2e cumulatively since 2009.
In June 2019, Hivos received its last funding from EnDev to implement the Phase Out Proposal (POP) of the IDBP. This 21-months POP focused on preparing the Indonesian domestic biogas sector for the withdrawal of Official Development Assistance (ODA) by strengthening and hand-over to the local biogas foundation YRE, developing the entrepreneurial skills and capacity of biogas SMEs, preparing the market for the phase out of subsidies, and strengthening the enabling environment.

Relevance & Coherence

The IDBP is well aligned with national and regional policies in energy which aims at ensuring the availability of energy sources; ensuring the management of energy resources is optimal, integrated and sustainable; efficient utilization of energy; ensuring public access to energy; improving industry capacity and domestic energy services in order to be more independent; creation of jobs; and ensuring environmental sustainability.
It also significantly contributes to the circular economy by targeting the program onto the local farmers as to help reduce the methane from waste, while empowering the local economy through strong involvement of MSMEs.
Further, IDBP touches multi sectoral issues that intertwine from upstream to downstream sectoral issues such as waste management, food resilience, organic farming and the 1.000 cattles program, households targeted for biogas as well as MSME's economic recovery after the COVID-19 pandemic.
In order to accommodate different target communities' needs in accessing biogas through organic waste utilization as well as farmers who have less than 4 (four) cattle and having limited space, the IDBP team designed a biogas technology innovation from polyethylene (PE) material called BioMiru (*Biogas Mini Rumahan*/Mini Domestic Biogas). It offers cheaper construction costs and requires a smaller construction area in meter square. By using PE material, BioMiru is also able to accommodate kitchen waste which allows urban communities accessing free gas for cooking and organic fertilizer to support urban farming.

Effectiveness

On the demand side EnDev has contributed to the development of 11,300 digesters. This number is contributing to the total of 25,305 digesters constructed by IDBP since 2009. The construction of digesters supported by EnDev has reached 53,900 people and 100 MSMEs.
On the supply side, EnDev provided trainings to 9,400 users and 460 masons and CPOs.
In December 2020, EnDev provided a business capacity training to market biogas using a gender inclusive approach to 160 people, including users, Loan Partner Organizations (LPOs) and Construction Partner Organizations (CPOs), working in the bio-slurry value chain.
Also in December 2020, EnDev set up the Bioslurry Support Facility (BSF) for two selected CPOs based on their track records in running bioslurry as a business and demonstrating readiness for entering the commercialisation stage. The BSF is a financing support facility that provides grants to the CPOs in order to expand their bioslurry business including to establish a storage facility, processing equipment, mandatory permits, distribution license and lab tests that will help the CPOs in increasing the quality of the products and outreach to wider market. YRE is continuing this venture as part of their ambition in bridging these CPOs to national industrialised fertilizer companies
To localise the manufacturing of appliances, and to intensify the work on local the value chain and bioslurry business development, since November 2019, EnDev supported the incubation of four Biogas Service Centers (BSCs). These BSCs received trainings on facilitating skills, financial management, business development, and organizational development. As a result, all four BSCs do have proper organizational and financial management systems in place today.
On the enabling environment side, IDBP has established examples for public-private partnerships between users, CPOs, the private sector, donors and the government at various levels specifically in the East Java region. Overall, based on the final evaluation of IDBP, the program effectiveness in terms of biogas infrastructure is achieved to 80.50%. This means that most of the constructions that were built experience no problems. In terms of providing after-construction services, the achievement rate

is 74.5%. This means that assistance in the use of biogas is relatively consistent.

Efficiency

The total funding from EnDev to support IDBP was EUR 3,249,926.44.[1] This funding was provided to develop the biogas sector in Indonesia which include costs for digester constructions, community development works, capacity building of users, masons, CPOs, etc., Biogas User Surveys, promotion and communication to stakeholders, lobby and advocacy of policies, etc. With the total cost for digester construction supported by EnDev since 2019 amounted EUR 1,432,359 and the total beneficiaries of EnDev 53,875, the cost efficiency reached EUR 26.6/person. This cost is significantly higher compared to EnDev global average for cooking energy projects set at EUR 8/person. However, the higher investment is considerable, looking at higher Tier energy level that biogas has, which could last for up to 20 years with various co-benefits compare with other clean cooking solution such as Improved Cook Stoves (ICS).

From the data on the number of Biogas constructions built, the growth rate is around 1,710.4 units per year. The final evaluation survey also concluded that IDBP is able to reduce 79.01% of LPG consumption for the biogas user. Serious implementation delays specifically in reaching the target of POP happened starting in March 2020 in relation to Covid-19 pandemic where national and district governments applied restrictions to travel and gather people. Not only in terms of mobilizing people, but the pandemic also affected the reallocation of Regional Budget Revenues and Expenditures from the local government to prioritize the budget for COVID-19 measures.

Impact

Based on the Biogas User Survey (BUS) 2020[2], household biogas users can save money for buying energy with an average amount of approx. EUR 2.9 a month. Further, they can reduce their expenditure on chemical fertilizer and pesticide through the use of bio slurry by 56.4 kg and 1.3 kg respectively for each season, which is significant to small-scale farmers. The use of bio slurry also increases the quality of the soil which makes the plants more protected against pests, lets them grow better with better harvest qualities, and get stronger against dryness.

On the environmental aspect, the use of biogas has lessened the use of kerosene, from 4% of the users before the biogas installation to only 2% afterwards; with an average reduction of kerosene consumption of 9.6 litres per month. It has also lessened the use of LPG, from 82% before the biogas installation, to 65% after biogas installation; with reducing a consumption of 5.5 kg / month on average. On the use of firewood, biogas has reduced the consumption from 8.9 kg to only 3.7 kg on average per day. With these results IDBP has contributed to the approximate cumulative reduction of 370,000 tCO2e since 2009.

With regards to human health, the use of biomass, particularly firewood, significantly produces smoke that can cause air pollution in the kitchen and can cause respiratory problems. After using biogas, overall, 67% of users mentioned that the air condition in their kitchen is now better.

On the impact related to the socio-economic condition, EnDev through IDBP has provided 565 full-time job equivalents (170 female, 395 male) through the creation of 11,300 digesters. More than 40% of the respondents said that after having biogas, they now have spare time that can be spent to take care of the family better, participating in social activities, and performing income generating activities.

A paradigm shift is introduced that attracts farmers' interest in having biogas digesters mainly as a source of family income *(either by using slurry for fertilizer or vermin farming, or by selling slurry for fertilizer)*; meanwhile the free and easily energy output is only an additional benefit. The household additional income from selling bio

[1] Endev supported IDBP in 3 periods: 1st Period 15 February 2013 - 31 December 2016 = EUR 1.300.000; 2nd Period 1 January 2017 - 31 December 2018 = EUR 1.000.000; 3rd Period Dec 2018 - 1 July 2019 = EUR 200,000; 4th Period 1 July 2019 - 31 March 2021 = EUR 749.926.44

[2] The Biogas User Survey (BUS) is an important instrument to annually measure the satisfaction rates of users towards biogas, to check the technical performance of the digesters and to use the result as the source of carbon monitoring of IDBP. The BUS 2020 was conducted by interviewing 314 of biogas user households who are still using biogas. The samples consist of eleven groups of users from 9 provinces of Indonesia (West Java, Central Java, Yogyakarta, East Java, Lampung, South Sulawesi, Bali, West Nusa Tenggara and East Nusa Tenggara), based on methodology settled by Gold Standard.

slurry per month is equal to 100-130 kg of rice consumption/year.

Sustainability

On demand side, IDBP has identified agents of change in each community to be involved in joint sustainability planning, especially in the context of encouraging changes in the behaviour of the consumption of renewable fuels in the region to foster self-sufficiency. However, acceleration in scaling-up capacities of these agents of change is still needed.

On the supply side, the capacity building of YRE, as the main implementer of IDBP, ensures biogas users, CPOs, masons etc. will be able to produce, implement, and maintain biogas digester sustainably.

IDBP's new strategy of promotion and campaign is also focusing on increasing the capacities of LPOs (Loan Partner Organizations) in promoting their services (loans) for biogas products. This strategy is pursued because of limited understanding of MFIs / Financial Institutions regarding the potential business of biogas technology. On the enabling environment, identifying sectoral potentials in order to formulate concrete strategies that have synergies between agencies at the regional levels will be crucial.

Conclusion

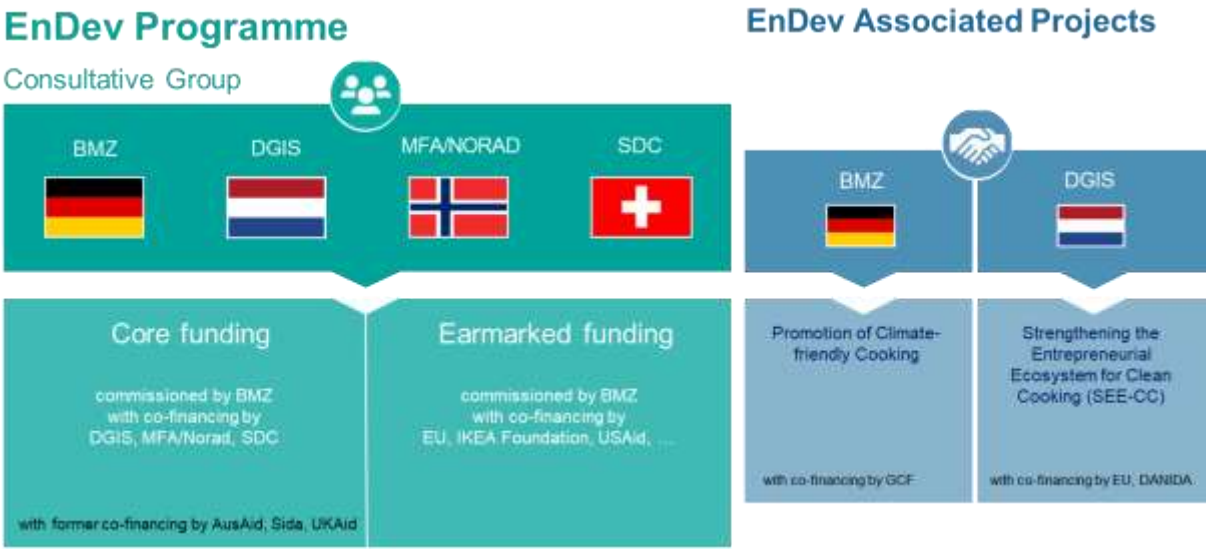
YRE as one of the leading actors for domestic biogas in Indonesia and inherit of what Hivos has started including the carbon funds management, will continue the mission of IDBP in further developing the sector by collaborating with the government, private sector and MSMEs. The 1 million domestic biodigester ambition will be the new shared-target. For this, YRE will continue the effort in building a stronger local market through various cross cutting opportunities and at the same time maintain its quality delivery and contribute to a long-term carbon emission reduction.

Annex E. Associated projects

Associated projects to the EnDev programme, under the umbrella of the EnDev partnership, leverage further political commitment to the multi-donor partnership and its objectives. Through synergies at country and global level, the combined impact of EnDev associated projects and the EnDev programme will increase.

Associated projects adhere to the **EnDev Strategy 2019-2025** stipulating the objectives, key features, and logframe of the EnDev programme. In addition, projects are aligned with EnDev´s monitoring, reporting and verification system (MRV), safeguards and gender approach as well as its transparency in attribution of results.

While the EnDev design/branding is reserved for use by the EnDev programme, associated projects and the EnDev programme strive to communicate with one voice making best use of the external communication channels of the EnDev partnership. To ensure a clear visible distinction between the EnDev programme and associated projects, implementers apply their own corporate design. To visualize the partnership they may use the EnDev logo preceded by “In partnership with”.



Strengthening the Entrepreneurial Ecosystem for the Clean Cooking Sector (SEE-CC)

Project facts	
Commissioning party	DGIS
Additional contributor(s)	EU Commission, DANIDA
Management	RVO
Region(s)/countries	Africa: Burkina Faso, Ethiopia, Kenya, Niger, Mali, Uganda Asia: Bangladesh, Cambodia
Project period	2021-2025
Budget	EUR 43.0 million
Implementer(s)	SNV, GIZ, Practical Action, CLASP, Energia and others

Project brief

The main objective of the project is to support market development of Higher Tier Cooking solutions. Up to 850,000 people will gain access to clean cooking solutions by 2025. In the process, greenhouse gas emissions of up to 250,000 tCO_2e per year will be reduced. The project thereby contributes to the Dutch target of providing 50 million people with access to clean and affordable energy by 2030 and the EU commitment to contribute to SDG2, SDG7 and SDG13. The project consists of two components: 1) *Africa Biogas Component* (ABC), and 2) *Higher Tier Cooking Component* (HTCC). Both components support a) pipeline development for professionalization and financing of clean cooking companies; b) Access to Finance for growth and innovation; and c) improvement of the business environment.

Promotion of Climate-friendly Cooking: Kenya and Senegal

Project facts	
Commissioning party	BMZ
Additional contributor(s)	GCF
Management	GIZ
Region(s)/countries	Africa: Kenya, Senegal
Project period	2020-2024
Budget	EUR 51.16 million
Implementer(s)	GIZ and others

Project brief

The main objective of the project is to accelerate the growth and transformation of the improved cookstove (ICS) sector to reduce greenhouse gas emissions by 6.47 Mt of CO_2e during the project period and 25 Mt of CO_2e until 2030. In addition, 11.23 million people will gain access to improved cooking solutions. The project works closely with Kenya's Ministry of Energy and Senegal's Ministries of Petroleum and Energy, Environment and Sustainable Development. It takes a holistic approach in promoting clean cooking technologies. Thereby, the project supports the two countries in reaching their NDC targets until 2030.

Abbreviations

ABC	Africa Biodigester Component
ACE	African clean energy
ADES	Association pour le Développement de l'Energie Solaire / Solar Development Association, Switzerland
AFD	Agence Française de Développement
AP	Associated project
AVSI	Association of Volunteers in International Service
BBF	Bangladesh Bondhu Foundation
BEAM	Bangladesh Energy Access to Modernisation
BMZ	German Federal Ministry for Economic Cooperation and Development
BSC	Biogas service center
BSF	Bioslurry Support Facility
BUS	Biogas user survey
CDM	Clean Development Mechanism
CERER	Centre d'Études et de Recherches sur les Énergies Renouvelables, Senegal
CES	cooking energy systems approach
CLASP	Collaborative Labeling and Appliance Standard Program
CPO	Construction Partner Organisation
DAC	Development Assistance Committee
DEZA / SDC	Swiss Agency for Development and Cooperation
DFAT / AusAID	Australian Department of Foreign Affairs and Trade
DGIS	Netherlands Ministry of Foreign Affairs Directorate-General for International Cooperation
DRC	Democratic Republic of the Congo
DSS	Demand side subsidy
ECOWAS	Economic Community of West African States
ECREEE	ECOWAS Center for Renewable Energy and Energy Efficiency
EDM	Electricidade de Moçambique/ Energy Public Utility, Mozambique
EnDev	Energising Development programme

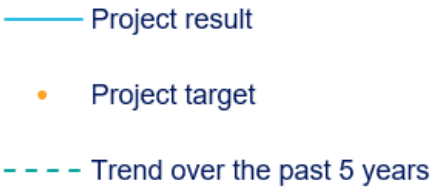
ESMAP	Energy Sector Management Assistance Programme
EU	European Union
FASER	Fundo de Acesso Sustentável às Energias Renováveis / Renewable Energy Fund, Mozambique
FCDO	The UK Foreign, Commonwealth and Development Office
FDC	Fundação para o Desenvolvimento da Comunidade / Foundation for Community
FEM	Women energy fund
FTE	Full time employment
GCF	Green Climate Fund
GERF	Green Economic Recovery Fund
GHG	Greenhouse gases
GIGA	German Institute of Global and Area Studies
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
GOGLA	Global association for the off-grid solar energy industry
GTI	Government Technical Institute, Sierra Leone
HH	Households
HIVOS	Humanistisch Instituut voor Ontwikkelingssamenwerking / Humanist Institute for Cooperation with Developing Countries
HLDE	United Nations High-Level Dialogue on Energy
HTCC	Higher Tier Cooking Component
IAP	Indoor air pollution
ICEIDA	Icelandic International Development Agency
ICS	improved cookstove
IDB	International Development Bank
IDBP	Indonesia Domestic Biogas Programme
IICA	Inter-American Institute for Cooperation on Agriculture
KOFIH	Korea Foundation for International Healthcare
LAB	Lead-acid Batteries
LDC	Least developed countries
LLDC	Landlocked developing countries

LPG	Liquified Petroleum Gas
LPO	Loan Partner Organisation
MECS	Modern Energy Cooking Services
MFI	Micro finance institution
MHDF	Micro Hydro Debt Fund, Nepal
MHP	Micro hydropower
MoE	Ministry of Education
MRV	EnDev´s monitoring, reporting and verification system
MSME	micro, small and medium-sized enterprises
MTF	Multi-Tier Framework
NACEUN	National Association of Community Electricity Users Nepal
NDCs	Nationally Determined Contributions
NGO	Non gouvernemental organisation
NORAD (MFA)	Norwegian Ministry of Foreign Affairs
OECD	Organisation for Economic Co-operation and Development
ODA	Official Development Assistance
OGS	Off-grid sector
PA	Practical Action
PALS	Participatory Action Learning for Sustainability
PAYGO	Pay-As-You-Go
PE	Polyethylen
PED	GIZ's Sustainable Energy Programme
picoPV	pico photo voltaic
POC	Phased out countries
POP	Phased out proposal
PSFU	Private Sector Foundation in Uganda
PSP	Private sector participation
PUE	productive use of energy
PV	Photo voltaic
RBF	results-based finance

RBFF	Results-based Financing Facility
RE	Renewable Energy
RRF	Rapid Response Facility
RVO	Rijksdienst voor Ondernemend Nederland/ Netherlands Enterprise Agency
SCCIF	Smart Communities Coalition Innovation Fund
SDC	Swiss Agency for Development and Cooperation
SDG	sustainable development goals
SEE-CC	Strengthening the Entrepreneurial Ecosystem for Clean Cooking
SFV	Smoke free village
SHS	solar home system
SI	social institutions
SIDA	the Swedish International Development Cooperation Agency
SIINC	Sozial Impact Incentives
SME	small and medium-sized enterprise
SNNPR	Southern Nations, Nationalities, and Peoples' Region in Ethiopia
SNV	Stichting Nederlandse Vrijwilligers / Netherlands Development Organisation
SSHS	Small solar home systems
SWH	Solar water heaters
SWP	Solar water pumps
TIB	Tanzania Investment development bank
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
VMEEA	Vice-Ministry of Electricity and Alternative Energy
WB	World Bank
WHO	World Health Organization
YRE	Yayasan Rumah Energi, Indonesia Biogas organisation

Legends in Country Sheets

Legend for access graphs in chapter D:



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Access Electricity: The World Bank (2021), The Energy Progress Report 2021, p.194:
https://trackingsdg7.esmap.org/data/files/download-documents/2021_tracking_sdg7_report.pdf

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