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Energising Development – Phase 2



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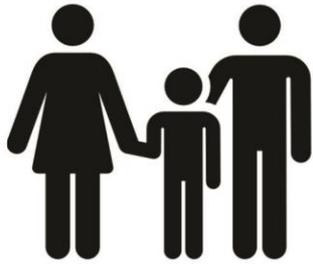


Eschborn, Germany, October 2017

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Key Achievements since 2005



Energy access for
18.2 million
people accomplished

13.8 

million
household members
with improved
cooking solutions



4.4

million
household members
with electricity

Broader Impact

Indirectly, EnDev supported
– together with others –
access to sustainable
energy for at least

77

million people



1.9

million t of CO₂ saved per year – equivalent to planting of more than 4.6 billion trees

 6.7

million women, children and men with drastically reduced exposure to indoor air pollution

40,200

small and medium enterprises with a modern form of energy for productive uses



A total installed power with renewable energies of MW



57.5

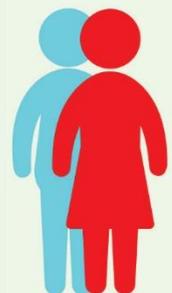
19,900

social institutions with a modern form of energy: among them 13,500 schools and 1,300 health centres



40,000

trained technicians, stove producers, sales agents



A. EnDev in 2018

In the first half of 2017, EnDev facilitated sustainable access to modern energy services for additional **940,000** people, increasing the total number of people benefiting from the programme to **18,200,000**. Most country projects can implement planned activities without major interference. Only the instable political situation in Burundi seriously has affected the project work and led to a reorientation of the country measure towards a regional approach covering the three countries Rwanda, Burundi, and DR Congo. Thus, the basic conditions for the development of the programme in the second half of 2017 and in 2018 are good. It is expected that the number of additional beneficiaries will presumably rise by roughly 1.8 million in the next 18 months so that the programme will reach around 20 million people for the period 2005 – 2018.

A.1 Approaches for promoting renewable energy technologies

Grid approach: EnDev will continue to facilitate access to the grid in at least 9 countries (Benin, Bolivia, Ghana, Honduras, Mozambique, Nepal, Nicaragua, Senegal, and Uganda). In the Latin American countries, EnDev will focus its activities mainly on capacity development of local technicians to improve quality and safety of indoor installations, and on punctual support, where extension programmes of utilities face bureaucratic problems. In up to two countries grid extension will be co-financed through a results-based financing scheme. In Nepal, EnDev will co-finance grid extension in combination with community training and promotion of productive use. In Ghana, EnDev facilitates connection of water pumps and other productive equipment to the grid. In Senegal, EnDev supports communities, which received access to the grid during the last project periods.

Mini-grid approach: EnDev will support installation and operation of mini-grids in at least 10 countries (Ethiopia, Honduras, Indonesia, Kenya, Liberia, Mali, Mozambique, Nepal, Rwanda, Senegal, and Uganda). The focus of the activities is more on ensuring a high quality of the installations, and the professional technical and financial management of the systems. In several countries, a considerable number of already existing mini-grids have difficulties to achieve financial viability. Typical problems for sustainability are the limited or even lacking room to set tariffs according to costs, weak business models and demand uncertainty. Therefore, EnDev will support coordinated efforts of donors and investors to improve the frameconditions for mini-grids (favourable import duties and taxes, transparent and less bureaucratic permit and licence procedures, flexible tariff regulations, FiT type public tariff support, foreseeable grid extension). It will also strengthen the business concepts of mini-grid operators (e.g. more productive use) instead of investing resources in new installation. In other countries like Ethiopia and Liberia where mini-grids are still scarce EnDev is following a parallel approach by contributing to new installations as well as enhancing the operation of existing ones. In Rwanda, EnDev continues to support private investments in mini-grids. Several new sites have been tendered for investments of private companies. EnDev is providing technical and business advice and moderating the discussion with national authorities to create supportive framework conditions for the investments. EnDev activities in Kenya will be confronted with a new situation. The project has followed the example of Rwanda and stimulated investments by the private sector by offering results-based financing in addition to capacity development and negotiations with regulator and government about permission for local tariffs. However, the government and World Bank agreed recently to start a mini-grid programme with uniform tariffs at the level of the main grid. The investments in the mini-grids will be highly subsidized, which makes the continuation of the RBF in its current form difficult.

Off-grid and cooking approach: EnDev will promote market development for photovoltaic systems (solar home systems, small solar home system, pico solar kits and solar lanterns) in at least 17 countries and for improved cooking systems (improved or advanced cookstoves, biogas) in at least 23 countries. Market development is at different stages in these countries depending on technology and region, therefore, requiring context specific interventions.

In general, markets for solar home systems, small solar home systems, pico solar kits, and solar lanterns have gained considerable momentum in many African and Asian countries. In 2016, around 8

million units of these solar products were sold worldwide. Sub-Saharan Africa and South Asia account for approximately around 50% and 38% respectively. It is expected that sales figures in 2017 will be similar. Roughly 1/3 of the reported products sold worldwide were single light products in the range of up to 1.5 W_p. Products with a single light and mobile phone charging capability in the 1.5-3 W_p range, account for nearly 48% of all reported sales. Thus, these two categories are responsible for the lion's share of the cash sales of solar lanterns and solar kits. The more expensive product category of 3-10W_p products represent around 13% of the sales. Most of them are sold through instalment payments using the Pay-As-You-Go systems (PAYG).¹

EnDev will support cash sales of solar products as well as PAYG or fee-for-systems for solar systems. In the case of over-the-counter solar products, the intervention comprises mainly capacity development of entrepreneurs and awareness raising among customers. Activities include information and knowledge management, training, introduction of innovations, networking and awareness creation. In countries, where the market is in an advanced stage (e.g. Kenya), EnDev will focus its activities on rural undersupplied regions and market segments, on last mile entrepreneurs as well as on areas that supplement and enhance market development such as local assembling, warranty and repair systems, electronic/battery waste management and recycling. In the case of PAYG systems, EnDev mainly provides result-based incentives and other forms of temporary subsidies for installing systems in remote areas and in poor households. Projects are advised to provide any financial support in a way that distortions of markets and a culture of dependency are avoided.

Market development for improved cooking systems is complex. Affordability and the willingness to pay higher prices for stoves are generally low among energy poor households. As a result, high quality stoves with strong positive health and energy impacts are difficult to bring to the market if the price significantly exceeds current expenditures for traditional cooking systems. EnDev follows a parallel strategy by supporting continuous improvements of locally produced stoves in the low price segment as well as the introduction of technically more advanced cooking systems (stoves and biogas) for households willing to pay an adequate price for the higher quality and service level. The concrete interventions depend on the specific bottlenecks and stage of market development in the different countries and regions.

A.2 Stepping up engagement with global initiatives

In addition to the country activities, EnDev will further increase its engagement with global initiatives in 2018. Some of the exchanges and cooperations have been ongoing for years (SEforAll, although in transition now, Lighting Global, 1 Gigaton coalition), others have only emerged quite recently and have not yet reached the implementation stage, like f.i. the NDC's, GCF and AREI, and EnDev is subsequently still exploring adequate contributions.

SEforAll/World Bank-ESMAP energy access programmes/SREP: EnDev is in discussion with the global team of SEforAll about participating in so-called accelerators groups. The purpose of the groups is to increase and speed up energy access activities in high impact countries as progress in creating access to sustainable energy is insufficient and will affect not only the realization of SDG 7 but also of other SDGs. EnDev will continue to be in regular exchange with the World Bank, its national programmes and ESMAP to support a coordinated implementation of national strategies and projects for achieving universal access. Particularly in the field of cooking energy, EnDev and World Bank are planning a closer coordination of their activities in selected countries such as Bangladesh and Kenya. EnDev is part of the international debate on how to track progress in delivering energy access and achieving SDG7 on international and national level. EnDev will have intensive discussions with World Bank/ESMAP and WHO for refining the Global Tracking Framework and its Multi-Tier Framework especially regarding the indicators (service attributes) for off-grid electrification and modern cooking systems. It will also support local statistical and census offices in cooperation with others to establish reliable tracking

¹ https://www.gogla.org/sites/default/files/recource_docs/final_sales-and-impact-report_h22016_full_public.pdf

systems on national level. Data from EnDev shall help to improve analysis of the energy situations and interventions along the energy market chain.

AREI: EnDev's work in Africa fits well with the basic goals of AREI and has the potential to provide a meaningful contribution to the AREI ambitions. EnDev can be part of projects attributed under AREI, can prepare the ground for high impact (up-scaling) investments from other public and private sources, as well as be a program receiving funding through AREI funds. However, it is currently unclear whether EnDev can and should become part of AREI, and which role EnDev should play.

Lighting global/World Bank-IFC-ESMAP/GOGLA: Since several years EnDev is cooperating with the Lighting Africa/Lighting Global initiative. EnDev will continue to coordinate the country activities in Bangladesh, Ethiopia, Kenya, and Tanzania with Lighting Global. In addition to joint country activities, EnDev will contribute actively to impact studies about pico solar systems and the conceptual discussions how to achieve the last mile and develop sustainable business concepts for solar companies and retailers. In addition, EnDev will continue supporting the Global Off-Grid Lighting Association (GOGLA) regarding quality assurance activities, the general strategy and specific conceptual direction of the association. EnDev is represented by GIZ in the advisory board of GOGLA.

NDC partnership: For EnDev the promotion of sustainable access to modern energy services in developing countries is a means to inclusive social, economic and low carbon development. EnDev is promoting the development of markets for energy technologies in LDCs that are climate-smart and environmentally friendly and thus contribute to a climate resilient development. EnDev has been registered in the "NDC funds and initiatives navigator" portal showing programmes that support the implementation of NDCs. In 2018, EnDev will further explore modalities of cooperation with the NDC partnership. However, EnDev original plans to contribute to a harmonization of national energy plans and NDC, and to participate in energy sector and climate dialogues in the different countries, proved to be more difficult than anticipated as NDC activities in general are weak in most least developed countries. At least, EnDev will indirectly support NDC through actions that contribute to SDG 7 and the Paris Agreement. This also includes a refinement of the monitoring and evaluation system to capture climate effects and to direct activities targeting to contribute to the Paris Agreement.

1 Gigaton Coalition: EnDev is part of the coalition and provides regularly its results on the reduction of greenhouse gas emission and on the used methodology. Information on EnDev is found in the reports of the coalition. EnDev will continue to participate in discussion and dialogues on how to reduce information gaps on emission and appropriate calculation methods.

A.3 Readjustment of EnDev's strategy for the period 2019-2022

EnDev's general mission is to promote sustainable access to modern energy services for households, small and medium enterprises, schools, health centres and community centres in developing countries as necessary means to inclusive social, economic and low carbon development. In addition to the access objective EnDev has a strong climate mitigation and adaptation orientation, clear targets regarding gender and job creation and is emphasising the nexus to health and to different productive sectors especially in rural areas. EnDev focuses its activities mainly on decentralised small to medium scale energy solutions that are especially suited for rural communities but also supports grid activities to a limited extent. EnDev interventions comprise business development, technical, policy, advocacy, awareness raising, and grant financing support.

EnDev's strategy is periodically reviewed and updated to accommodate changes in the global energy access agenda. Part of this review and basis for further funding of (current and future) donors is an external evaluation of the EnDev programme, of its relevance, its performance, its structures, its alignments, and its management. The review also serves to identify ways to improve further the programme strategy and implementation. The next external evaluation of EnDev is scheduled for the period November 2017 to February 2018. The evaluation will reflect the changes in the global development landscape that took place in the last four years, particularly the adoption of the Agenda

2030 and the Paris Agreement. In the Agenda 2030, 17 Sustainable Development Goals (SDGs) are defined to end poverty, protect the planet, and ensure prosperity for all as part of a new sustainable development agenda. SDG 7 is specifically addressing universal energy access, energy efficiency and renewable energies. The Paris climate accord sets the goal to limit the impact of climate change to below 2 degrees Celsius. The Paris Agreement acknowledges the importance of up-scaling and distributing renewable energy as well as the need for universal access to energy through renewable energy solutions. Both the Agenda 2030 and the Paris Agreement provide the strategic direction and are the central pillars of international development cooperation for the coming years.

Based on the discussions of the last Governing Board meetings, EnDev has already reacted to the political changes by emphasizing more climate related aspects of the work and by targeting higher tier access to push economic development and improve social services in rural areas.

The evaluation shall build on the strategy discussion begun in the board meetings and identify the specific strengths of EnDev compared to other initiatives and to place EnDev in a position where its experiences so far are used in an optimal way. The purpose of the strategy discussion is among others:

- to increase the added value of EnDev for donors, for international initiatives in support of the Agenda 2030 and the Paris Agreement as well as partner countries; and
- to develop options for EnDev's future strategy towards scaling its impact on the universal energy access ambitions, the national and global energy transformation(s), and social and economic development of its target groups.

A.4 Midterm Evaluation of the Results-Based Financing (RBF) facility

In 2016 and 2017, a consortium led by Particip GmbH conducted a mid-term evaluation (MTE) of the EnDev Results-Based Financing for Low Carbon Energy Access (RBF) Facility. Twelve out of the 17 RBF projects were evaluated in order to assess the Facility's performance since its start in 2013 until December 2016. The MTE report provides an initial understanding of the extent to which RBF as a market development tool has worked and under which circumstances. Moreover, it derives recommendations and lessons learnt for the remaining RBF implementation period and for future programmes.

Until December 2016, 445,154 people had gained access to modern energy services through the RBF Facility, with commensurate co-benefits. This represented only a small part of the overall **target** of the Facility, as it was defined by the RBF projects. The low degree of target achievements is mainly attributable to significant delays of the RBF projects. In fact, already the set-up of the projects took much longer and significant sales uptake in most projects started much later than anticipated². Other Key Performance Indicators (KPI) of the RBF projects are well on track such as the greenhouse gas emission reduction or the private sector leverage. Apart from the general fact that projects take significantly more time than foreseen to achieve results, projects differ in their effectiveness of achieving them. The RBF projects also exhibit different levels of **additionality**³. Some are driving market development in a new geographic area or for a new product. However, other projects were found not to be the main drivers of market development due to other trends in the respective country market and thus their subsequent additionality could not be clearly demonstrated.

Most projects incentivize the sale of energy services and technologies to the end users. However, some **incentive structures** aim to incentivise capital-intensive upstream activities like product development and certification. Such incentives bear the significant risk of de-linking upstream activities from the sales, and from the end users. Thus, potentially, incentives are paid out without a development result. The MTE found that the effectiveness of incentives depends mainly on the decision on which result to

² The RBF Facility has more than doubled its achievements between December 2016 and June 2017 now reaching 17% of its overall target and showing the expected accelerated growth in target achievement.

³ The term additionality refers to the development impacts that result from an RBF project that would not have occurred without it or would have occurred only later.

incentivize exactly and who will be the incentive recipient. When designing incentive structures it is therefore crucial to clearly understand the market barriers and to continue observing them during project implementation. A lesson from the RBF Facility is that different incentive designs should be tested in the portfolio. This should include approaches specifically targeting poor and vulnerable groups. In addition, the combination of incentives benefiting different groups of recipients along the supply chain – e.g. such as importers, wholesalers and end-mile retailers – should be further explored. It is important to strike a good balance between adjusting incentives quickly and offering a reliable and predictable support mechanism to the private sector. For the project success, the exact level of the incentive is less critical than determining the recipients and results to be incentivized. The level can be adjusted if required, always keeping in mind to not make changes too frequently, so that the private sector is able to plan accordingly. The phasing out the RBF incentives has not yet been sufficiently addressed in the projects. Particularly the first round projects should now be actively working on their phase-out strategies. Generally, exit-strategies should be considered right from the project design phase.

The analysis of existing **monitoring and verification** systems reveals that their specific purposes and the information they are expected to deliver are not always consistently defined. On the one hand, the data collection for verification is often more comprehensive than what is strictly needed for fraud prevention. On the other hand, the data alone provide insufficient information to projects and evaluators as to which specific elements of the RBF exactly work well and how. The MTE recommends projects to choose from two strategy options, either rationalise data sampling, collection and management for verification (e.g. by increasing phone as compared to field verification samples), or enhance data collection at limited extra cost (e.g. by including additional questions when conducting field visits). Statistical evidence needs and deliberate decisions regarding verification methods and sampling methodologies should drive the setup of such verification systems.

The **implementation structures** proposed in the projects' design phases have mostly been suitable for the interventions. Exceptions to this rule are the projects that tried to engage with the financial sector: Getting banks and Micro Finance Institutions (MFIs) on board whether as RBF fund management agents or as incentive recipients remains challenging; financial institutions are in most cases too risk averse to spearhead new sectors. Engaging EnDev as implementing partner was confirmed to have been an efficient choice, the RBF projects have significantly capitalised on long-term presence and technical expertise of the implementing organisations. Most RBF projects needed to draw on significant technical assistance. They strongly benefitted from already well-established implementation structures. In all projects, there was a permanent challenge to cope with constrained **management** resources. Overall, the 20% ambition for management and delivery costs has proven to be unrealistic⁴. Especially for project preparation, sufficient funding is essential. RBF implementation has benefited from a high level of flexibility in project management. As a result, the final setup of the interventions varies significantly across the RBF portfolio. Individual tailoring has resulted in a rising level of complexity thereby also affecting transaction costs.

In spite of the management resource constraints, EnDev headquarters has been able to facilitate **knowledge exchange** and mutual learning across the RBF portfolio. The dissemination of guidance and knowledge products, however, was mainly secured through co-financing by other projects. EnDev headquarters should set minimum standards for certain processes and provide tools to give more guidance and ensure increased standardisation of processes (e.g. relating to verification, designing incentive structures). Projects should aim to improve further on process management and the transparency of operations.

With respect to **market transformation**, the MTE found that RBF projects can remove market barriers, however, not all of them. Generally, market barriers need to be clearly understood when designing the project and should be reassessed over time during implementation. Additionally to RBF, other mechanisms might be required to unlock potential markets. Therefore, the coordination with other

⁴ This has been recognized in the RBF project reviews. In many cases, project budgets have been adjusted.

support programmes can be essential. It was found that new technology businesses have greater interest in the incentive schemes than the retail mainstream or the financial sector. The MTE confirmed that RBF helps businesses grow. Doing so, enterprises first choose 'low-hanging fruit' while expanding their businesses. Therefore, it is recommended for the future to test more approaches that target the incentives towards poor and vulnerable groups as well as women. This should be done by revising the current incentive structures. The MTE report concludes that RBF cannot solve all the challenges that **mini-grid projects** are exposed to. Therefore, it is suggested to reconsider whether to keep mini-grids as part of the (future) RBF portfolio. Potentially long-term and/or forgivable loans, policy advice and technical assistance are more suitable instruments for the establishment of mini-grids.

The full MTE report can be accessed on the EnDev website. Currently the EnDev Management is discussing intensively the main findings of the midterm review and the measures to be taken in 2018 to implement relevant recommendations in the ongoing RBF projects.

A.5 Introduction of an EnDev innovation challenge fund

Innovation in EnDev projects is often restricted by its rigorous output orientation prioritizing the pursuance of relatively "safe" interventions. Especially in the survival mode EnDev forced its country projects to operate in the last years, due to funding restrictions, there was little room for out-of-the-box thinking on particular issues. At the same time, EnDev needs to engage in a number of key strategic challenges where innovative thinking is required. To mobilize the programmes full innovation potential EnDev management proposes to establish an EnDev Innovation Challenge Fund rewarding the most innovative ideas from its country programmes with funds for demonstration projects (beyond pilots) on defined themes. The Fund will be open for ideas (one or multiple windows to be decided) about:

- economic development through energy access (preferably cross-sectoral and private sector led), following up on the Governing Board call for the subject,
- sustainability of social infrastructure (post EnDev- intervention, also cross sectoral), a struggling agenda in all energy access programmes,
- recycling of solar access products waste, notably batteries, which is a largely neglected (or unsolved) area in the access sector.

Selected ideas should be replicable and scalable in other EnDev countries.

The fund will be open to all EnDev implementers and country projects and proposals (and concept notes) will be transparently evaluated and selected. EnDev management proposes to allocate 1-1.5 million EUR for the 3 themes, financing maximum 3-4 projects, at such time the financial situation of the program allows, expectedly first half of 2018.



Induction of the new mobile stove vending point in Madagascar

EnDev financed the purchase of a new sales truck to promote and sell on site improved cookstoves in Madagascar.

On the 4th of June the truck arrived in Tamatave harbour with a special cargo ferry, together with other heavy equipment such as motor boats and caterpillar vehicles. It stayed in the harbour for another four weeks due to the extensive customs process and a strike of the customs staff.

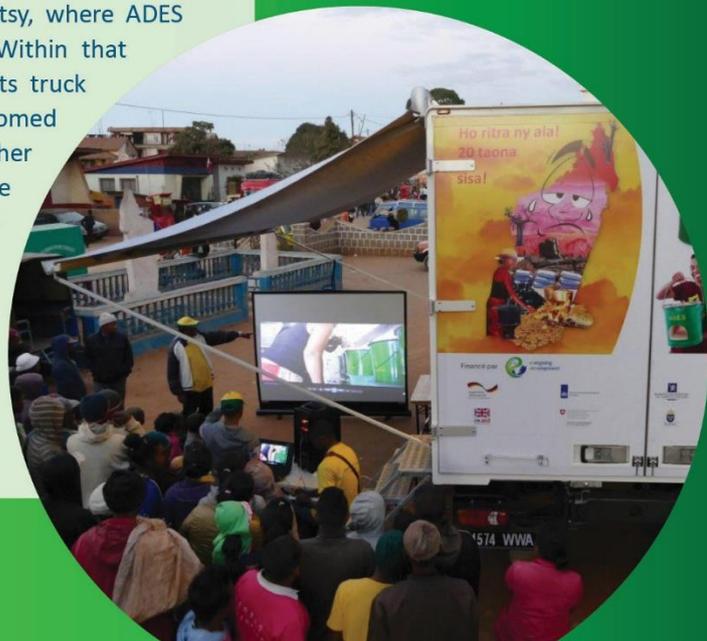
On the 1st of July the so-called 'centre mobile' was then driven to Tana where the next step of the setting up process was carried out. The truck received its exterior promotion wrap, which was designed in a participatory process. In a competition, the staff of ADES, the NGO implementing the EnDev activities in Madagascar, had been asked to hand in design ideas. The winner design was produced and attached to the truck. This way it was made sure

that the local esthetics are met, and the people got very much involved in the setting up and the test run of this new sales truck. In Tana, the truck received in addition its custom-made interior: closets, boards, and a small safe to store valuables were installed.

The truck was then ready for a test run. ADES had planned one induction week in order for the new team to get accustomed with their upcoming work in the vehicle. However, it turned out to be massively successful: without any plans to actually sell stoves during the first week, more than one hundred improved cookstoves of the model 'OLI' were sold. During that week the new team was also trained in bookkeeping, marketing, and environmental protection.

In Mahitsy, 35 kilometres north of Tana, the 'centre mobile' was welcomed with open arms. The mayor liked the truck so much, he helped raise awareness by giving a speech. It attracted a lot of attention and numerous inhabitants watched the screening of an educational film about cooking energy in front of the truck.

The next stop was in Fihaonana, about 30 kilometres north of Mahitsy, where ADES sold even more OLIs. Within that week, the team and its truck were warmly welcomed by mayors in two other villages and were invited as guests to stay overnight in communal spaces. In sum, the 'centre mobile' had an auspicious start and the team is looking forward to working with it.



B. Overview of current status of the EnDev programme

B.1 Outcomes in the period 2009 – June 2017 (EnDev 2)

This chapter provides information on energy access outcomes, health impacts and CO₂ emission reduction for phase 2 starting in 2009. Since the beginning of 2015, EnDev also reports on specific job creation, leverage and gender indicators.

By mid-2017, the EnDev partnership comprised 30 projects in 25 different countries, with side activities in additional 5 countries. EnDev supports access to improved cooking systems in 21 of the 30 projects, to off-grid solar technologies (solar home systems and picoPV) in 18, to mini-grids (solar/hybrid or hydropower) in 12 projects, grid extension in 11 projects and biogas in 5 projects (see table B.1).

Table B.1: Overview of technologies supported in EnDev projects in 2017

		stoves	biogas	other cooking/thermal	SHS	picoPV	solar mini-grid	hydro mini-grid	grid	other lighting/electricity
country projects	Bangladesh									
	Benin									
	Bolivia									
	Burkina Faso									
	Burundi ⁵									
	Cambodia									
	Ethiopia									
	Ghana									
	Indonesia									
	Indonesia biogas									
	Kenya									
	Liberia ⁶									
	Madagascar									
	Malawi									
	Mali									
	Mozambique									
	Nepal									
	Peru									
	Rwanda									
	Senegal									
Tanzania										
Uganda										
Vietnam										
multi-country projects	BD, KE, RW, TZ, UG ⁷									
	Central America (HN, NI) ⁸									
	Kenya, Tanzania, Uganda									
	Malawi, Mozambique									
	Mekong (KH, LA, VT)									
	Sub-Saharan Africa (MOZ, UG)									
	Cooking sector support and coordination (BD, GH, KE, UG)									
	Refugee activities (KE, ML, SO,TZ,UG)									

⁵ with some activities in DR Congo

⁶ with some activities in Guinea and Sierra Leone

⁷ focus is on off-grid appliances

⁸ with some activities in Guatemala

Outcome figures

By June 2017, EnDev 2 facilitated sustainable access to modern energy services and technologies for about **13.20 million people**. Of these, 3.62 million people (27%) were connected to the central grid or a mini-grid, or used standalone electric systems. 9.58 million (73%) are now using improved cooking technologies, such as improved firewood and charcoal stoves or biogas plants (figure B.3). In addition, **12,446 social institutions** gained access to electricity or improved cooking systems and **28,249 small and medium enterprises** now have access to a modern form of energy for productive use.

The focus of the EnDev programme is on Sub-Saharan African countries. Around 61% of the committed EnDev 2 funds are currently allocated to this part of Africa (figure B.1). The share of least developed countries (LDC) supported by EnDev is 62% (figure B.2).

The outcome figures reported in this report are verified in the field through detailed lists of customers of energy services and products, and/or sales figures of energy companies and retailers. In cases when not only EnDev but other international partners have been involved, only a part of the outcomes are counted according to the financial share of EnDev in the total cost of a measure. EnDev does also not simply sum up outcomes achieved in the course of the programme but tries to capture those processes which **reduce outcomes** through so-called adjustment factors. Thus, figures of six-month reporting periods are adjusted down before the total number of beneficiaries is presented to donors and the public.

EnDev applies four adjustment factors:

- a “sustainability adjustment factor”, which takes into account that the access provided to modern energy technologies is not sustainable in all cases;
- a “windfall gain factor”, considering that some beneficiaries supported by EnDev would have gained access to modern energy services anyway even without support;
- a “double energy factor”, which accounts for beneficiaries which already have access to modern energy services in the same category (modern cooking energy technologies or electricity);
- a “double EnDev counting factor”, which ensures that beneficiaries whose access to both cooking energy and electricity is facilitated by EnDev are only counted once in the aggregate figure.

In addition, the EnDev figures already include a discount for **replacement** which reflects the limited life span of some of the technologies promoted. This typically concerns cookstoves and picoPV devices: In order to continuously benefit from the service, the system may have to be bought more than once over the course of the project period. Some of the later-stage sales will go to beneficiaries reported before. It would therefore be wrong to simply add up all sales numbers. Only sales beyond replacement generate new access.

In the past, EnDev has subtracted 100% of the systems after their estimated life-span. However, evidence emerges that this approach may be overly conservative. Not all systems registered in EnDev’s monitoring require replacement: For example, people buy replacement systems from providers not

Figure B.1: Funding by region

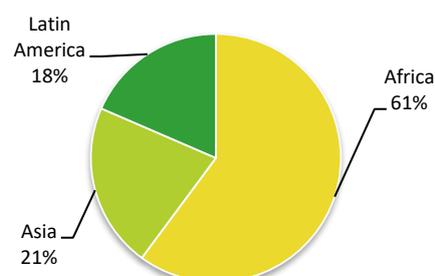
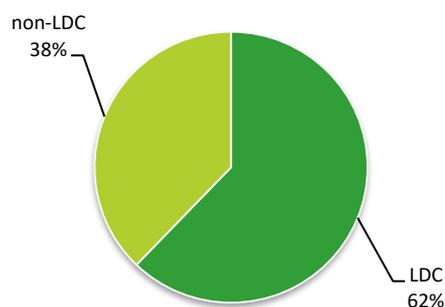
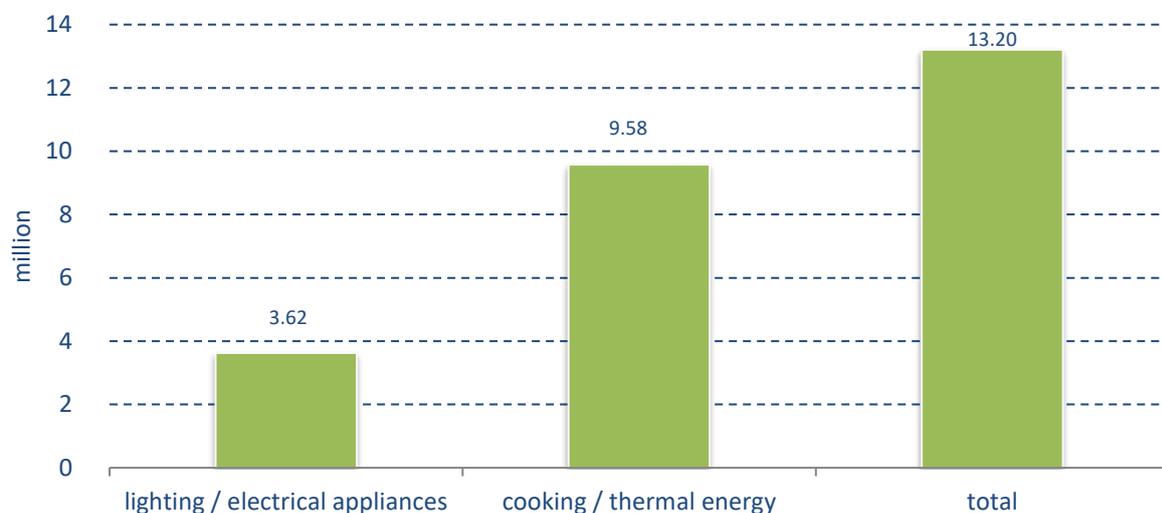


Figure B.2: Funding by countries



captured by EnDev’s monitoring. EnDev currently develops an enhanced replacement logic which takes these and related aspects into account.

Figure B.3: Adjusted number of household members provided with modern energy services in a sustainable manner (EnDev 2)



Access to electricity

EnDev uses a tier system to define different levels of **access to electricity**. In this system, access to electricity is defined in terms of services, for which both “energy” and a device turning the energy into a useful service are required. As it is often difficult to directly monitor a service, access can be claimed by demonstrating access to the respective device and the required energy. Alternatively, access can be claimed on the grounds of certain electricity consumption.

The EnDev tier system is aligned with the tier system of the SEforAll global tracking framework. Based on this system the EnDev electrification outcome figures in the different tiers for the **EnDev 2** phase are as follows:

Table B.2: EnDev 2 outcomes according to the tier system for electrification

Tier	Services	Typical system	Number of people
5	tier 4 services plus use of devices typically requiring a few kilowatt like air conditioners	grid	690,530
4	tier 3 services plus use of devices typically requiring a kilowatt like water heaters, irons	limited grid	273,654
3	tier 2 services plus use of devices typically requiring a few hundred watt like rice cookers, refrigerators	mini-grid	146,709
2	bright light, radio, telephone plus use of devices typically requiring tens of watts like TV, video, fan	solar home system	1,600,271
1	medium bright light and, if possible, limited radio use and telephone charging	picoPV, battery charging station	912,125
		total	3,623,289

These figures reflect only those people which had no access to electricity beforehand. Out of these 347,616 would have gotten access without the support of EnDev, but on a lower tier level.

Access to improved cooking devices

The SEforAll tier system for **improved cooking systems** is still not 100% developed. Especially the health indicator is difficult to define for all levels. EnDev is involved in intense discussion with WHO, World Bank and partner organisations to finalize the matrix. The tier system currently implemented by EnDev is in line with the current state of the multi-tier framework presented in the 2015 tracking framework. EnDev outcomes are attributed to the 5 tiers as follows:

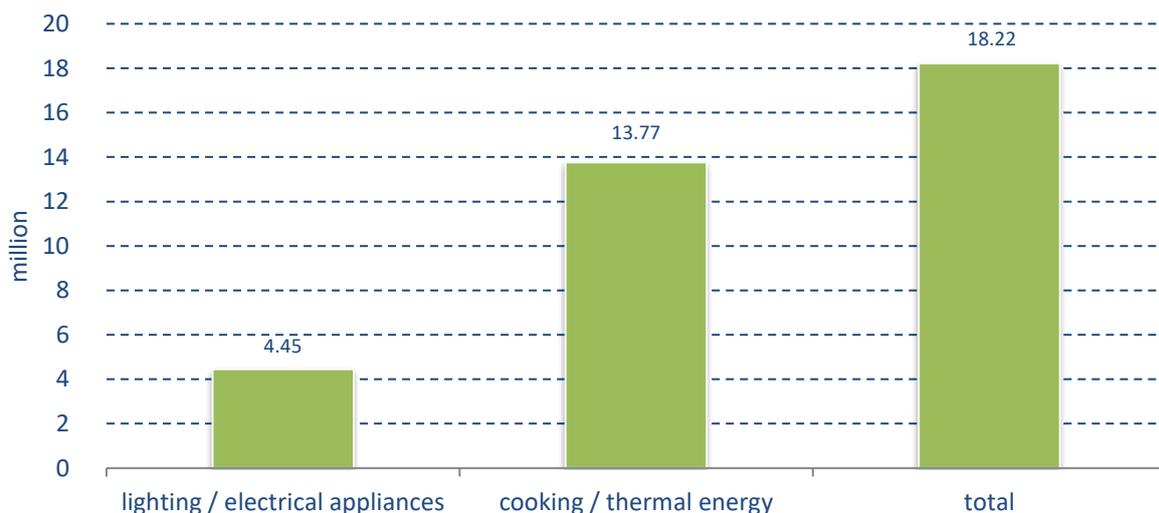
Table B.3: EnDev 2 outcomes in the EnDev tier system for improved cookstoves

Tier	Services	Number of people (EnDev methodology)
5	Access to needed quantity of energy source: ≥ very good Health protection: ≥ very high Convenience: ≥ very high	0
4	Access to needed quantity of energy source: ≥ good Health protection: ≥ high Convenience: ≥ high	87,883
3	Access to needed quantity of energy source: ≥ fair Health protection: ≥ fair Convenience: ≥ fair	78,520
2	Access to needed quantity of energy source: ≥ limited Health protection: ≥ sufficient Convenience: ≥ sufficient	4,117,096
1	Access to needed quantity of energy source: ≥ deficient Health protection: ≥ low Convenience: ≥ low	5,290,056
0	Access to needed quantity of energy source: ≥ highly deficient Health protection: ≥ very low Convenience: ≥ very low	6,559
		9,580,114

B.2 Overall outcomes in the period 2005 – June 2017 (EnDev 1 + 2)

Looking at the overall EnDev programme, starting from phase 1 in 2005 up to June 2017 in phase 2, the **total number of people** having gained sustainable access to modern energy services on household level amounts to **18.22 million** (figure B.4). The total number of **social institutions** is more than **19,900**; the total number of **small and medium enterprises** is around **40,200**, respectively.

Figure B.4: Adjusted number of household members provided with modern energy services in a sustainable manner (EnDev 1 and 2 combined)



CO₂ savings

An improved firewood cookstove, which saves 30% of firewood in practice and which is used to prepare 80% of all meals, saves around 0.55 t CO₂ per year (on average, over all EnDev stoves) compared to cooking on open fires. The total savings of all EnDev stoves for one year amount to approximately 1,567,223 t of CO₂. In addition, 214,651 t of CO₂ savings are generated for which emission reduction certificates are sold on carbon markets. Air pollutants as a result of incomplete combustion, including black carbon, are not included in this calculation.

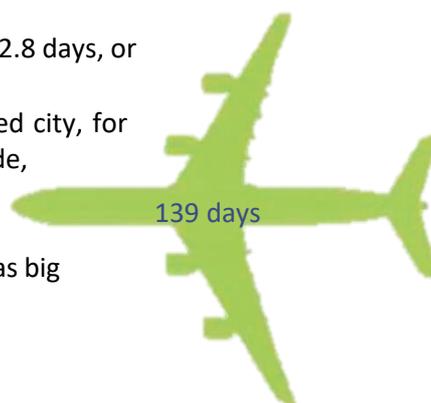


One electric lamp powered by SHS and mini-grid or grid connections replaces at minimum two kerosene lamps, thus saving at least 0.18 t CO₂ per year. A solar lantern replaces approximately one kerosene lamp, saving 0.09 t CO₂ per year.

The total CO₂ saving of 3.1 million stoves and access to solar home systems, mini-grid connections or solar lanterns for 945,135 households supported by EnDev are 1,929,984 t of CO₂.

For comparison: this amount corresponds to

- CO₂ emissions of all intra-European flights during 12.8 days, or
- Norwegian car traffic during 139 days, or
- annual household CO₂ emissions of a medium-sized city, for example, Leverkusen, Portsmouth, Enschede, Trondheim, Ballarat (Queensland) or Bern and Basel together or
- planting of more than 4.7 million trees on an area as big as 5,800 football pitches.



Installed generation capacity with renewable energies

The total power capacity based on renewable sources installed since the start of EnDev 2 is 42.5 MW.



The biggest share amongst the technologies with 48.1% is contributed by SHS. SHSs contribute 20.4 MW to the total result. The share of mini-grids is nearly the same with 19.4 MW (MHP: 12.5 MW, PV: 6.9 MW). PicoPV systems up to now have a total installed capacity of 2.6 MW. It is estimated that an additional 15 MW have been installed in the first phase of EnDev resulting in a totally installed capacity of 57.5 MW.

Health

As a result of EnDev activities the exposure level of indoor air pollution could be drastically reduced for more than 4.7⁹ million household members (particularly women and children). The improvement of the health protection was achieved by:



- reducing the quantity of emissions of particulate matters and CO through a) improved cookstoves with higher combustion efficiency, and lower heat losses b) improved fuel quality and c) fuel switch;
- removing pollutants from the cooking site through chimneys, flues, hoods or ventilation;
- reducing exposure to pollutants through changed cooking practices and placing of the stove and kitchen.

The specific assessment of the health impact of promoted cooking solutions is based on the type of stove and fuel, the use of chimneys, flues or hoods, the degree of ventilation and the cooking place. Only cooking solutions classified as tier 2 or higher are considered as sufficiently safe regarding exposure of household members to indoor air pollution. These include all stoves using electricity or gaseous fuels as well as improved biomass stove (rocket stoves, gasifier stoves) used outdoor or with chimney or hood when installed or placed indoor.

Gender impact

This paragraph presents data and findings on gender impacts in the period 2009 – June 2017.



The review of EnDev impact studies concerning gender-related effects provide ample evidence that access to modern energy improves:

- **employment of women and income generation:** Studies from Ethiopia and Kenya, inter alia, demonstrate that women trained by EnDev started successful stove businesses (production/retailing) both as secondary business and even full-time, created employment for assistants, and generated profit. In Kenya, the share of women among active entrepreneurs both in solar and cooking technologies is slightly above 50%, however, women have less income sources, lower sales in both technologies, and work fewer hours on income generation and eventually earn 25 and 40 percent less than male solar and stove entrepreneurs, respectively. Further, males are 70% more likely to have customers beyond their county borders. This adds to the evidence from international studies¹⁰ that the success of women entrepreneurs depends

⁹ All members of households that use a stove fulfilling the level 2 criterion for the health attribute of the multi-tier matrix for cooking solutions.

¹⁰ See, e.g. Bradshaw, Castellino and Diop, 2013, Women's role in economic development: Overcoming the constraints, Background paper for the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda, page 8 ff., retrieved from: <http://unsdsn.org/wp-content/uploads/2014/02/130520-Women-Economic-Development-Paper-for-HLP.pdf>

very much on the amount of household duties additional to their business endeavours. Nevertheless, even with small additional income, women contribute to the household earnings and spend it for the benefit of the whole family.

- **medical services especially for women in health centres:** Electrified health centres in Ethiopia now provide service also during night time which is specifically important for women in the final stage of their pregnancy;
- **indoor air quality in kitchen areas:** 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 household members are women and 2/5 young children it can be concluded that around 940,000 women and 1,88 million young children benefit from improved health protection;
- **safety against sexual harassments,** due to electric light that provides safety both inside homes by decreasing the number of burns and house fires and outside homes in public spaces, and the reduction of collection time for firewood;
- **working conditions and comfort** due to improved cookstoves that are easier to use and the replacement of kerosene lamps with PV-powered lamps (e.g. studies in EnDev Bolivia and Ethiopia).

Gender-disaggregated monitoring data about full time job creation is presented in the next paragraph.

Job creation

This paragraph presents data on employment effects for the period from July 2016 until June 2017.



EnDev project captures information about the time required for production of stove parts as well as for assembly and for installation. Based on the available data and the assumption of 240 working days per year with 8 working hours per day it can be calculated that 3,268 full-time equivalent jobs existed in the process steps of the production, assembly and installation of 1,507,332 stoves from July 2016 until June 2017.

Most of these work steps are not done by full-time labour. About 2/3 of the EnDev stove projects captured additional data about the number of people working in the production of stoves. These captured values (which include part-time labour) can be compared to the calculated full-time equivalents. The comparison reveals that on average 3.4 persons are involved for each full-time equivalent. Based on this ratio a total of 11,113 people worked in the production and installation of EnDev stoves during the last 12 months.

For calculating the number of jobs created along the distribution chain EnDev applied the methodology published by UNEP¹¹. It was calculated that an additional 496 full-time equivalent jobs exist in the distribution chain for stoves. For picoPV systems, which are mainly produced in China, the number of full-time equivalent jobs along the distribution chain was 656.

Altogether, 4,420 full-time equivalent jobs existed in the supply chain for stoves and picoPV in our partner countries.

The data presented in this chapter are still a preliminary description on the job creation impact of EnDev. EnDev is still working on an elaborate methodology to capture more precisely the job situation along the value chains for energy products and services. In addition, EnDev will analyse the number of jobs that is created as a result of the use of modern energy technologies and services.

¹¹ Light and Livelihood: A Bright Outlook for Employment in the Transition from Fuel-Based Lighting to Electrical Alternatives; UNEP 2014.

Leverage

This paragraph describes leverage effects since 2015.



The total value of all stoves and off-grid systems sold or installed by companies cooperating closely with EnDev since 2015 was EUR 168.1 million, which is a ratio of 2.17 in relation to the programme expenditures of EUR 77.4 million.

Since 2015, the total amount of investments along the market chain including intermediary products but excluding expenditures for private consumption is about EUR 402.4 million in the current semester alone, representing a ratio of 5.20 in relation to the EnDev programme expenditures.

Zainal Abidin, a local craftsman, is finishing a cupboard ordered by his neighbour. The electrical equipment used by Zainal, such as planer and sander, is powered by the electricity generated by the 20 kW micro hydro power supplying electricity for 125 people in Indonesia.



C. Overview of planned country activities in 2018

The total budget of the second phase is currently EUR 312.5 million. Below, an overview of all country activities is provided. Table C.1 gives an overview of ongoing and unchanged projects (compared to the previous Annual Planning 2017 Update document). Country activities that are foreseen to be extended without up-scaling are presented in table C.2. RBF Projects that shall be either upscaled or downscaled are presented in table C.3, one RBF project with an increased target is presented in table 4. Table C.5 presents ongoing EnDev sector development activities. EnDevs activities in the context of refugees and stabilisation in fragile environments are presented in Table C.6.

Due to lack of funds no upscaling proposals are included in this Annual Planning besides the up- and down scalings within the RBF facility.

Table C.1: Ongoing country activities under EnDev 2 *without changes*

Country	Activities	Project duration		Funding	Planned outcomes on HH level
		start	end	in EUR 1,000	in persons
Bolivia	solar, stoves, grid	10/09	08/18	15,000	886,100
Burkina Faso	solar, stoves	10/09	12/18	7,597	1,600,000
Central America	solar, stoves, hydro, grid	09/09	12/18	17,590	475,370
Indonesia	biogas	12/12	12/18	2,500	61,750
Indonesia	solar, hydro	05/09	07/18	11,960	172,000
Liberia	solar, mini-grids, solar dryers, stove	05/12	11/18	4,428	45,000
Madagascar	stoves	12/12	06/18	800	130,000
Malawi	solar, stoves	12/12	06/19	3,700	755,000
Mali	solar, mini-grids, energy kiosks	01/13	12/18	4,500	140,000
Nepal	stoves, hydro, grid	05/09	06/19	7,915	478,500
Peru	solar, stoves, grid, SWH, stoves	06/09	06/19	17,520	2,053,851
Senegal	solar, grid, stoves	04/09	12/18	16,701	1,765,000
Vietnam	biogas	07/13	06/18	3,740	275,000
RBF Mekong (Cambodia, Laos, Vietnam)	stoves	03/15	02/19	4,096	600,726
RBF Kenya, Tanzania, Uganda	biogas	03/15	02/19	3,870	128,940
RBF Bangladesh, Kenya, Rwanda, Tanzania, Uganda	off-grid solar	03/15	02/19	4,110	1,111,200
RBF Mozambique, Uganda, Sub-Saharan Africa	grid densification	03/15	02/19	4,421	200,000

Table C.2: Country activities intended to **be extended** without up-scaling

Country	Activities	Project Duration			Funding	Planned outcomes on HH level
		Start	Old end	New end	in EUR 1,000	in persons
Benin	solar, stoves, grid, picoPV, PVpumps, PVstreetlights	10/09	06/19	06/21	16,028	1,816,987
Cambodia	Biogas	12/12	06/18	06/19	2,550	34,000
Ghana	solar, stoves, grid	01/10	05/18	12/18	3,675	mainly SME
Mozambique	Solar, stoves, grid Regional RBF on grid densification	10/09	12/18	06/19	14,500	549,000
Tanzania	stoves, solar-RBF	12/12	10/18	12/18	5,660	560,000
Uganda	stoves, solar, grid	04/09	08/18	02/19	12,250	707,800

Table C.3: Country activities in which RBF component is intended to be **scaled up or down**

Country	Activities	Project duration			Funding in EUR 1,000		Planned outcomes on HH level in persons	
		start	old end	new end	old funding	new funding	old target	new target
Ethiopia	solar, grid stoves, hydro	01/10	12/20	12/20	34,651	34,086	2,210,000	1,872,500
Kenya	stoves, picoPV, SHS, mini-grids	04/09	06/19	06/19	21,435	22,515	7,130,000	7,284,000
RBF Malawi, Mozambique	stoves	03/15	06/19	06/19	1,258	490	640,000	339,500

Table C.4: Country activities with intended **change of the target** in the RBF component

Country	Activities	Project duration		Funding	Planned outcomes on HH level in persons	
		start	end	in EUR 1,000	old target	new target
Bangladesh	solar, stoves, stoves-RBF	06/09	05/19	24,069	6,792,500	6,870,330

Table C.5: Country activities with **change of the budget, target and project duration**

Country	Activities	Project duration			Funding in EUR 1,000		Planned outcomes on HH level in persons	
		start	old end	new end	old funding	new funding	old target	new target
Rwanda (with Burundi, DRC)	solar, hydro, biogas, stoves	10/09	06/19	12/20	17,840	21,240	1,171,974	1,359,074

Table C.6: Ongoing EnDev sector development activities *without changes*

Countries	Title	Budget EUR in 1,000
Bangladesh, Ghana, Kenya, Uganda	Cooking sector support and coordination	2,000

Table C.7: Special country activities in the context of refugees and stabilisation in fragile environments

Countries	Activities	Budget EUR in 1,000
Kenya, Somalia		985
Kenya	stoves, picoPV	approx. 550
Somalia	grid, solar street light	approx. 350
Uganda	stoves, picoPV	300
Uganda	stoves, picoPV	300
Mali	solar street light	255
Tanzania	stoves, picoPV	1,600

Review of RBF projects

In July 2017, EnDev management and DFID evaluated and revised five individual RBF projects. During the yearly RBF project review in March, the final decision on its revision had been made contingent on achievement of certain conditions until mid of 2017 for three of the projects. These proposals are therefore now included in this Annual Planning: (i) the Ethiopia RBF stove project was not able to deliver the expected outcomes until mid 2017 and is therefore proposed to be terminated and accordingly downscaled; (ii) the Kenyan picoPV RBF project did fulfill the conditions imposed by contracting one large financial institution until mid 2017 and is therefore proposed to be up-scaled; (iii) for the Bangladesh picoPV project all project stakeholders agreed to switch the technology focus from picoPV to improved cookstoves. Two additional projects required individual adjustments out of the regular yearly RBF review process as these revisions were deemed important for the overall successful steering of the RBF facility: (iv) the Rwanda picoPV project had been down-scaled in the Annual Planning 2017 Update due on its low performance in achieving outcomes over various years. The market, however, is now showing very promising and concrete signals to take off. The project therefore is proposed to be up-scaled again and furthermore suggest to introduce a pro-poor window within the RBF project. Furthermore, in one of the regional projects from the third round of RBF projects it has become clear that the approach for one of the countries (Mozambique) will not be feasible. This regional cookstove project therefore is proposed to be downscaled focusing on activities in Malawi only.

The proposed budget and timeline changes, as well as readjusted KPIs are provided and briefly commented in the chapters below.

Lalmatiya, a remote village located in western plains of Nepal, is home to around 152 poor families. Due to their low income, they are unable to afford the high upfront cost required for grid connection and the installation of energy meters. Despite being aware of the benefits of electricity, they are still dependent on kerosene and sometimes firewood for lighting. Puspa Kumari Chaudhary represents these poor families in Lalmatiya. She is a housewife and mother of two children, and uses a total of 4 liters of kerosene per month. A liter of kerosene costs NPR 75, so she spends NPR 250 on kerosene per month – just to light the house at night. “...I know electricity is much cheaper and it is cleaner too... I have seen my neighbors using it... I always wanted to have it in our home but the initial required upfront payment is too expensive for us...,” explains Puspa. EnDev Nepal in collaboration with Swargadwari Rural Electrification Co-operative supported Puspa and 151 other families with fully subsidised meters. “...My home is much brighter and livelier now and the best part is that all this service is affordable for NPR 60 per month...” says Puspa, smiling. Besides being housewife, during daytime she also works as a part time tailor. Now with electricity, she is able to work at night. “...I can now watch my children do their homework and do my tailoring job at night simultaneously... with increase in my working hours, I can save a little money for my children’s education... In the near future I am determined to start my own tailoring shop...” adds Puspa.



Successful Stove Entrepreneur

Mr. Laurence Kamoni was among the first group of artisans trained by EnDev Kenya in artisanal stoves construction and marketing. Hailing from the populous and densely populated Kiambu County that borders Nairobi, he had a ready market for his skills as an improved stoves entrepreneur.

He had initially trained as a mason and carpenter, knowledge that put food on his family table, but not much more. With increased experience in construction and marketing of stoves, and with his good communication skills, he soon was a trainer of other artisans hired by EnDev.

From earning about €20 a month, he now regularly averages a monthly income of €500. He engages 2-3 casual employees on regular basis paying them about €10 daily. Mr. Kamoni has embraced social media in his work and has increased his market to many corners of Kenya and is a sort after builder and advisor on Institutional stoves. The Kamoni family appreciates the good fortune from stove entrepreneurship, and has a nice permanent house and life style to show for it. He is regularly interviewed by the mainstream media in the country and is a responsible and valued member of his community and the Stove Association of Kenya.



Madhumalla is a village located in the eastern plains of Nepal. Most of the people living in this village come from disadvantaged groups with a low economic status. Two years ago a massive flood swept away houses and fields, which had a devastating impact on the economy and livelihoods of people in the village. Harikala Rai's family is one of the families affected by the flood. Harikala and her husband both work in the sand mines. She was unable to afford an electricity connection in her house, as the initial deposit of NPR 10,000 required for the installation of an energy meter was too much for her family. Harikala says "...I have a two year old daughter; she used to be sick frequently... before electricity we used kerosene lamps which produced thick dark smoke while burning, and found out the smoke was the cause for her illness. We then switched to candles but they were very expensive, costing around NPR 300 per month... finally we decided to access ("borrow") electricity from neighboring houses, and we had to pay NPR 250 just for two bulbs per month".





After three years of access to electricity, Jalpa Village in Khotang District, Nepal, has 17 micro enterprises now: 13 shops, a mill, a computer training institute, a mobile and electronic repair center and a poultry farm. Just like Mrs. Maili Dhan Rai, who owns a small grocery shop, other women in the village also understand that electricity can be used not only for lighting purposes but for productive use and are engaged in income generating activities.

Abbreviations

ABC	advanced biomass cookstoves
ABPP	Africa Biogas Partnership Programme
ADES	Association pour le Développement de l'Energie Solaire, Switzerland
ADES	Association pour le Développement de l'Energie Solaire, Madagascar
AEPC	Alternative Energy Promotion Centre, Nepal
AHPROCAFE	National Coffee Growers Association, Nicaragua
AMADER	Agence Malienne pour le Développement de l'Energie Domestique et de l'Electrification Rurale, Malian Agency for Household Energy and Rural Electrification, Mali
BCE	Biogas Construction Enterprise
BCS	battery charging station
BMZ	the German Federal Ministry for Economic Cooperation and Development
BRD	Rwandan Development Bank
CAP	Country Action Plan, Bangladesh
CDM	Clean Development Mechanism
CLASP	Collaborative Labelling and Appliance Standard Program
CLASP	Collaborative Labelling and Appliance Standard Program
CPO	Construction Partner Organisations
CREE	Community Rural Electrification Entities, Nepal
CSC	Customer Service Centre
CSI	Credit Sanctioning Incentive
DA	development advisor
DEZA / SDC	the Swiss Agency for Development and Cooperation
DFID	the UK Department for International Development
DJEBTKE	Directorate General for New and Renewable Energy and Energy Conservation
DRC	Democratic Republic of the Congo
E4I	Energy for Impact
EDCL	Energy Development Company Limited
EDM	national utility, Mali
EDM	Electricidade de Moçambique/ Energy Public Utility, Mozambique
ELCOM	Electrification COMmunale, Mali
ENDE	National Electricity Company, Bolivia
EnDev	Energising Development programme
ERC	Energy Regulatory Authority, Kenya
ERSEN	The Rural Electrification Senegal Programme
ESMAP	Energy Sector Management Assistance Program
FI	finance institution
FOCAEP	Central American Fund for Access to Sustainable Energy and Poverty Reduction
GA	grant agreement
GACC	Global Alliance for Clean Cookstoves
GCF	Green Climate Fund
GHACCO	Ghanaian Alliance for Clean Cooking

GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
GOGLA	Global Off-Grid Lighting Association
GPOBA	Global Partnership on Output-Based Aid
HEP	national household energy platform, Bangladesh
HH	households
HIVOS	Humanistisch Instituut voor Ontwikkelingssamenwerking
ICS	improved cookstove
IDCOL	Infrastructure Development Company Limited
IDCOL	Infrastructure Development Company Limited
IDP	internally displaced people
ILF	International Lifeline Fund, stove producers in Uganda
INDCs	Intended Nationally Determined Contributions
IVA	independent verification agent
IWA	International Workshop Agreement
IWME	improved water mills electrification
KESDM	Ministry of Energy and Mineral Resources, Indonesia
KOSAP	Kenya Off-grid Solar Access Programme
KPI	key performance indicator
KPT	kitchen performance test
LDC	least developed countries
LG	Lighting Global
LMEs	last mile entrepreneurs
MARD	Ministry of the Agriculture and Rural Development, Vietnam
MEDER	Ministère en charge de l'Energie, Ministry of Energy, Senegal
MEEM	Ministre de l'Energie, de l'Eau et de Mines / Ministry of Energy, Water and Mines, Benin
MEMD	Ministry of Energy and Mineral Development, Uganda
MEMR	Ministry of Energy and Mineral Resources, Indonesia
MFI	micro finance institution
MHE	Ministry for Hydrocarbons and Energy, Bolivia
MHP	micro hydropower
MINEM	Ministry of Energy and Mines
MININFRA	Ministry of Infrastructure, Rwanda
MME	Ministry of Mines and Energy, Cambodia
MoEF	Ministry of Environments and Forests, Bangladesh
MoEP	Ministry of Energy and Petroleum, Kenya
MoF	Ministry of Finance, Vietnam
MoP	Ministry of Power, Ghana
MoST	Ministry of Science and Technology, Laos
MoU	Memorandum of Understanding
MoWIE	Ministry of Water, Irrigation and Energy, Ethiopia
MSME	micro, small and medium enterprise
MTE	mid-term evaluation

NAMA	Nationally Appropriate Mitigation Actions
NCSC	National Cookstoves Steering Committee, Malawi
NEA	Nepal Electricity Authority
NIS	Nordic International Support Foundation
OES-ENEE	Social Electrification Office of the National Electricity Utility of Honduras
OGE	Off-grid Electric, Rwanda
OHN	National Standards Bureau, Honduras
PASES	Projet d'accès aux services électriques des localités de petite taille dans la région de Sédhiou / EU-co-funded electrification project, Senegal
PAYG	Pay-As-You-Go
picoPV	pico photo voltaic
PICS	portable improved coostoves
PMU	Production and Marketing Unit, Benin
PO	partner organisation
PPP	public private partnership
ProCEAO	Programme pour l'Energie de Cuisson économique en Afrique de l'Ouest / Cooking energy in East-Africa
PU	productive use of energy
QC	quality control
QPI	Quality Plant Incentive
RBF	results-based finance
RDF	Rural Development Fund, Ghana
REA	Rural Electrification Authority
REASL	Renewable Energy Association of Sierra Leone
REG	Rwanda Energy Group
RREA	Rural Renewable Energy Agency, Liberia
RUMI	Rural Mini-grid Management Model, Indonesia
RVO	Rijksdienst voor Ondernemend Nederland
SACCOs	savings and credit cooperative societies
SCT	social cash transfer
SDG	sustainable development goals
SEforAll	Sustainable Energy for All initiative
SHS	solar home system
SI	social institutions
SIDA	the Swedish International Development Cooperation Agency
SME	small and medium enterprise
SMSS	solar multi service stations
SNV	Stichting Nederlandse Vrijwilligers / Netherlands Development Organisation
SREP	Scaling Up Renewable Energy Programme
SSHS	small solar home systems
SWC	Social Welfare Council
SWH	solar water heaters
TICS	Tanzania Improved Cook Stove programme

UNACC	Uganda National Alliance for Clean Cooking
UNEP	United Nations Environment Program
UP	United Purpose, Malawie
VAT	Value-Added Tax
VMEEA	Vice Ministry for Electricity and Renewable Energy, Bolivia
VSL	Village Savings and Loan
VWU	Vietnamese Women's Union
WBA	winning bid amounts
WHO	World Health Organization

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