



Annual Planning 2020

Energising Development – Phase 2

Final version



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Registered offices: Bonn and Eschborn, Germany
P.O. Box 5180
65726 Eschborn, Germany
T +49 61 96 79-0
F +49 61 96 79-11 15
E info@giz.de
I www.giz.de

Contact:

Energising Development
Daniel Busche
T +49 6196 79-6179
F +49 6196 79-806179
E endeve@giz.de
I www.endeve.info

Photos:

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Responsible:

Daniel Busche
Signature:

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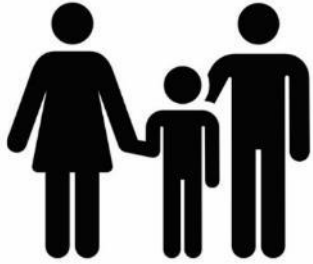
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Key Achievements since 2005



Energy access for
22.1 million
people accomplished

16.3 
million
household members
with improved
cooking solutions

 **5.8**
million
household members
with electricity

Broader Impact

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

88
million people



2.3 million t of CO₂ saved per year – equivalent to planting of more than 5.5 billion trees

 **8.7**

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

48,800

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



A total installed power with renewable energies of MW



64.7

26,600

social institutions with a modern form of energy: among them 13,577 schools and 1,247 health centres



40,500

trained technicians, stove producers, sales agents



A. EnDev in 2020

After the portfolio review and the presentation of the recommendations to the Governing Board in its 19th meeting in November 2018 on the future EnDev country portfolio, the Governing Board mandated EnDev to re-conceptualize project approaches in line with their strategic and policy priorities. These priorities are elaborated in EnDev's new strategy which at the moment of publication of this report is under finalization. Key features of the new strategy include:

Agenda 2030: EnDev will continue to be a core programme delivering on SDG7 ("Ensure access to affordable, reliable, sustainable and modern energy for all"), with a global reach and, at the same time, a focus on sub-Saharan Africa.

Paris Agreement: EnDev will more strongly align with international commitments to combat climate change by delivering particularly on NDC targets of partner countries, contributing to keeping the increase in global average temperature to well below 2°C above pre-industrial levels.

Against the backdrop of the new strategy and taking differing sector and market conditions in each country into consideration, EnDev will continue to provide energy access for households and social institutions as well as small and medium-sized enterprises in line with needs. While being geared towards providing access to modern energy services and products at outcome level, for EnDev energy access serves as the means for delivering more broadly on social, economic, and environmental impacts:

Energising Lives: EnDev's impact area on **social development** directly linked to leaving no one behind and SDG1 "End poverty", SDG3 "Ensure healthy lives and promote well-being", SDG4 "Ensure inclusive and equitable quality education", SDG5 "Achieve gender equality and empower all women and girls" – e.g. by improved HH income situation and reduced vulnerability, improved health through reduced indoor air pollution or improved service quality of health centers and clinics, better learning environment through electrified schools in off-grid rural areas, improved gender equality, etc.

Energising Opportunities: EnDev's impact area on **economic development** is directly linked to SDG8 "Promote inclusive and sustainable economic growth and employment" – e.g. by strengthened rural economic activity by targeted promotion of productive use of energy along value chains, improved job creation, etc.

Energising Climate: EnDev's impact area on **combating climate change** is directly linked to SDG13 "Take urgent action to combat climate change and its impacts" – e.g. by reduced GHG emissions through dissemination of improved cookstoves and decentralized renewable off-grid solutions, reduced forest degradation through reduced biomass fuel needs, etc.

Based on the portfolio review, EnDev presented a comprehensively streamlined programming of all country projects in June 2019 for approval by the Governing Board in its 20th meeting. At this stage, there are no changes foreseen at country level which is why this Annual Planning 2020 does not put forward any new and/or amended proposals for country projects.

Once the EnDev GCF project in Kenya and Senegal is formally commissioned and operations can start, EnDev's core interventions for both countries will be revised and re-programmed. Due to the cyclone Idai which hit the Mozambican coast in March 2019, the country project will need to adjust its strategy and approach to the new situation. This will be done once the full extent of damages to the country's infrastructure and the negative implications on the local economy has been assessed. Therefore, EnDev management plans to present the three amended country proposals for Kenya, Mozambique, and Senegal in the Annual Planning 2020 Update, which is to be submitted to the Governing Board in spring 2020.

While EnDev aims at a balanced portfolio reflecting the diverse priorities of its donors, EnDev will gradually and where in line with final beneficiaries' opportunities shift from lower to higher tier

electricity services as well as promote a transitional approach to modern and clean cooking solutions. To this end, EnDev will also continue to reach out to forge strategic partnerships on country and international level. The focus of portfolio development in 2020 will be the assessment whether the implementation of the new strategy at country level is progressing and reflecting the planned changes and, if not, orienting country projects respectively – including interventions from programme management level if needed. In this context, EnDev will also revamp and strengthen its collaboration of implementers by a joint knowledge management and innovation agenda.

A.1 Outcomes in the period 2009 – June 2019 (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-2019, the EnDev partnership comprised 28 projects in 25 different countries, with side activities in additional 5 countries. EnDev supports access to improved cooking systems in 20 of the 28 projects, to off-grid solar technologies (solar home systems and picoPV) in 17, to mini-grids (solar/hybrid or hydropower) in 10 projects, grid extension in 11 projects and biogas in 5 projects (see table A.1).

Table A.1: Overview of technologies supported in EnDev projects

		stoves	biogas	other cooking/thermal	SHS	picoPV	solar mini-grid	hydro mini-grid	grid	other lighting/electricity
country projects	Bangladesh	☑				☀				
	Benin	☑			☀	☀			⚡	☀
	Bolivia	☑				☀			⚡	
	Burkina Faso	☑								
	Cambodia		🌿							
	Ethiopia	☑			☀	☀		🌊		
	Ghana	☑							⚡	☀
	Indonesia						☀	🌊		
	Indonesia biogas		🌿							
	Kenya	☑				☀	☀			
	Liberia (with Sierra Leone and Guinea)	☑		☀		☀	☀			
	Madagascar	☑								
	Malawi	☑				☀				
	Mali				☀	☀	☀			☀
	Mozambique	☑						🌊	⚡	
	Nepal	☑						🌊	⚡	
	Peru	☑		☀	☀	☀			⚡	
	Rwanda (with Burundi and DRC)		🌿			☀		🌊		
	Senegal	☑			☀		☀		⚡	
	Tanzania	☑					☀			
Uganda	☑			☀	☀		🌊	⚡		
Vietnam		🌿								
multi-country projects	BD, KE, RW, TZ, UG ¹				☀					
	Central America (HN, NI) ²	☑		☀	☀	☀		🌊	⚡	
	Kenya, Tanzania, Uganda		🌿							
	Mekong (KH, LA)	☑								
	Sub-Saharan Africa (MOZ, UG)								⚡	
	Refugee activities (KE, ML, SO, TZ,UG)	☑				☀	☀		⚡	

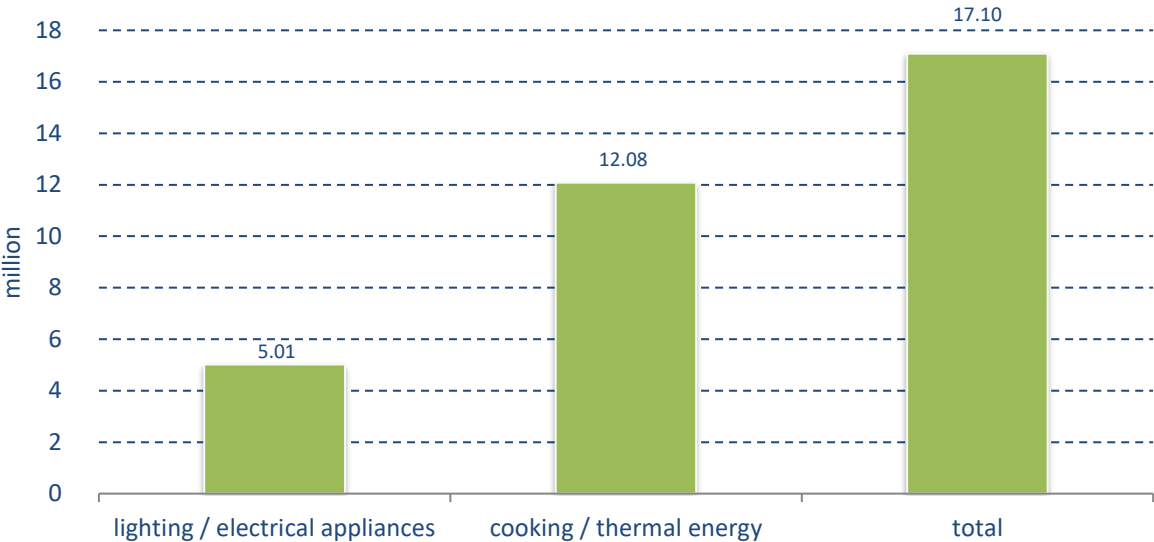
¹ focus is on off-grid appliances.

² with some activities in Guatemala.

Outcome figures

By June 2019, **EnDev 2** facilitated sustainable access to modern energy services and technologies for about **17.1 million people**. Of these, 5.0 million people (29%) were connected to the central grid or a mini-grid, or used standalone electric systems. 12.1 million (71%) are now using improved cooking technologies, such as improved firewood and charcoal stoves or biogas plants (figure A.1). In addition, **19,152 social institutions** gained access to electricity or improved cooking systems and **36,842 small and medium enterprises** now have access to a modern form of energy for productive use.

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



The focus of the EnDev programme is on Sub-Saharan African countries. Around 62% of the committed EnDev 2 funds are currently allocated to this part of Africa (figure A.2). The share of least developed countries (LDC) supported by EnDev is 63% (figure A.3).

Figure A.2: Funding by region

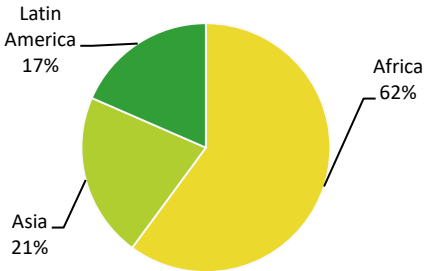
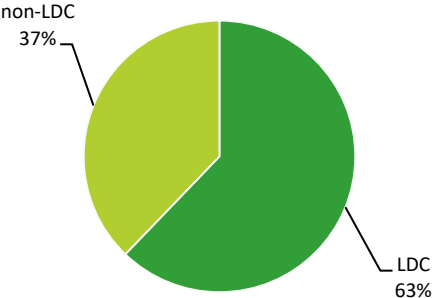


Figure A.3: Funding by countries



The majority of the target achievement on household level comes from access to modern cooking solutions (71%) while households with access to electricity contribute 29% to the overall target achievement (figure A.4). 44% of the country budgets are used for activities to promote modern

cooking, 56% to promote access to electricity (figure A.5). Especially the sales of picoPV systems experienced the highest growth rate.

Figure A.4: Target achievement - People with access to energy - EnDev 2

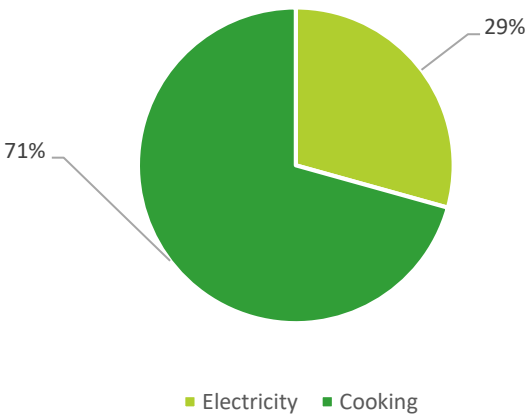
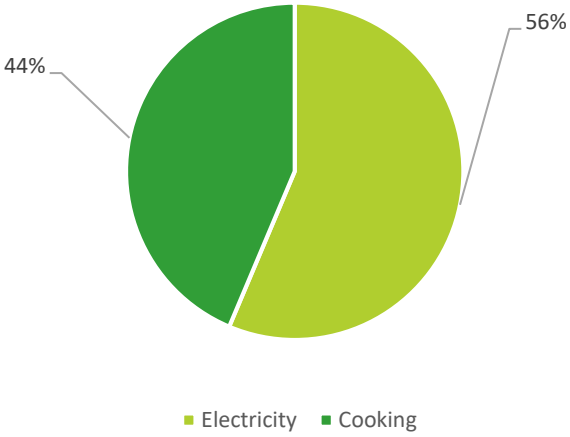
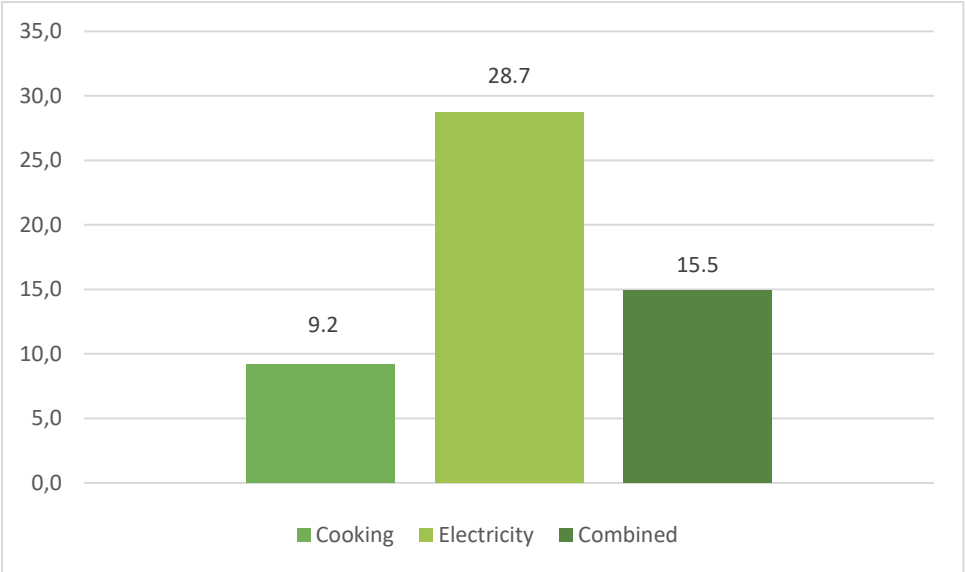


Figure A.5: Expenditure - EnDev 2



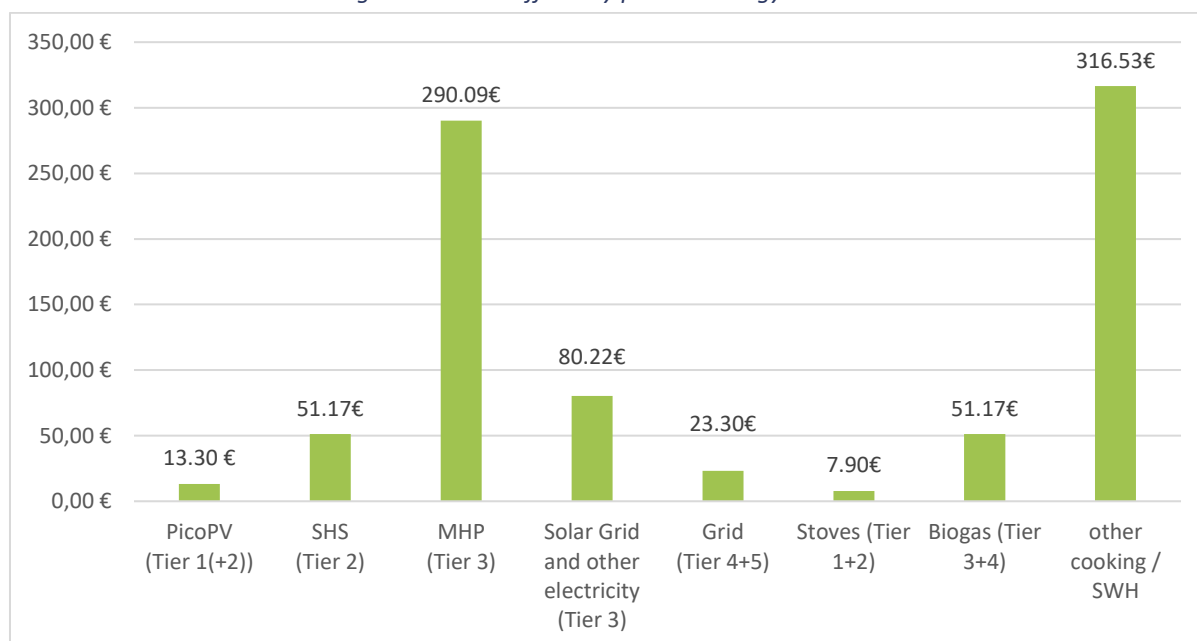
The cost efficiency of cooking technologies (stoves and biogas) is currently EUR 9.2 per person on average and EUR 28.7 per person in the case of electrification (figure A.6).

Figure A.6: Cost efficiency in EUR per person reached – EnDev 2



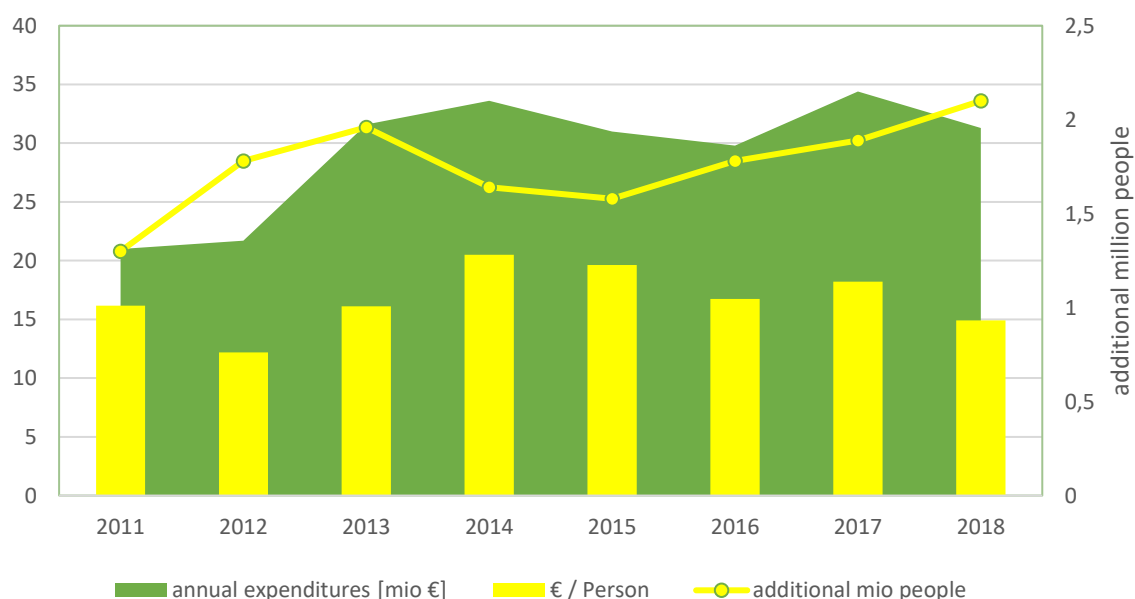
Within EnDev projects, a set of different energy technologies is promoted (figure A.7). Only the cost efficiencies of stove and picoPV activities are below the overall EnDev benchmark of EUR 20 per person.

Figure A.7: Cost efficiency per technology - EnDev 2



Overall, since 2013 there is a slight trend related to the above analysis. While projects expenditures within this period were on average around EUR 32 million per year, the achievement of additional targets show a slightly increasing trend. Related to this a slight decrease of the overall cost efficiency can be observed. This reflects the big increase in the target achievement of tier 1 and tier 2 technologies with a low value regarding cost efficiency as shown above. (figure A.8).

Figure A.8: Overview development Targets/expenditures in projects/cost efficiency



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. Up to now, EnDev applies **four adjustment factors** concerning sustainability, windfall gain, double energy and double EnDev counting. The background for each factor was described in previous progress reports.

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.

The adjustment factors described above were reviewed in 2018. Currently a system with new factors based on some methodological improvements is under testing. Application of the new factors for selected countries is foreseen for the Progress Report 2019. Hereby EnDev aims to keep the high accuracy of its monitoring data while reducing the complexity and the efforts that are required to keep it progressing.

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 Multi-Tier-Framework (MTF) of the SEforAll presented in the Global Tracking Framework (GTF). Based on this, EnDev electrification outcome figures in the different tiers for the **EnDev 2** phase are:

Table A.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	836,501	17%
4	tier 3 services plus use of devices typically requiring a kilowatt like water heaters, irons	limited grid	507,742	10%
3	tier 2 services plus use of devices typically requiring a few hundred watt like rice cookers, refrigerators	mini-grid	182,591	4%
2	bright light, radio, telephone plus use of devices typically requiring tens of watts like TV, video, fan	solar home system	1,682,131	34%
1	medium bright light and, if possible, limited radio use and telephone charging	picoPV, battery charging station	1,804,707	35%
		total	5,013,671	

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:

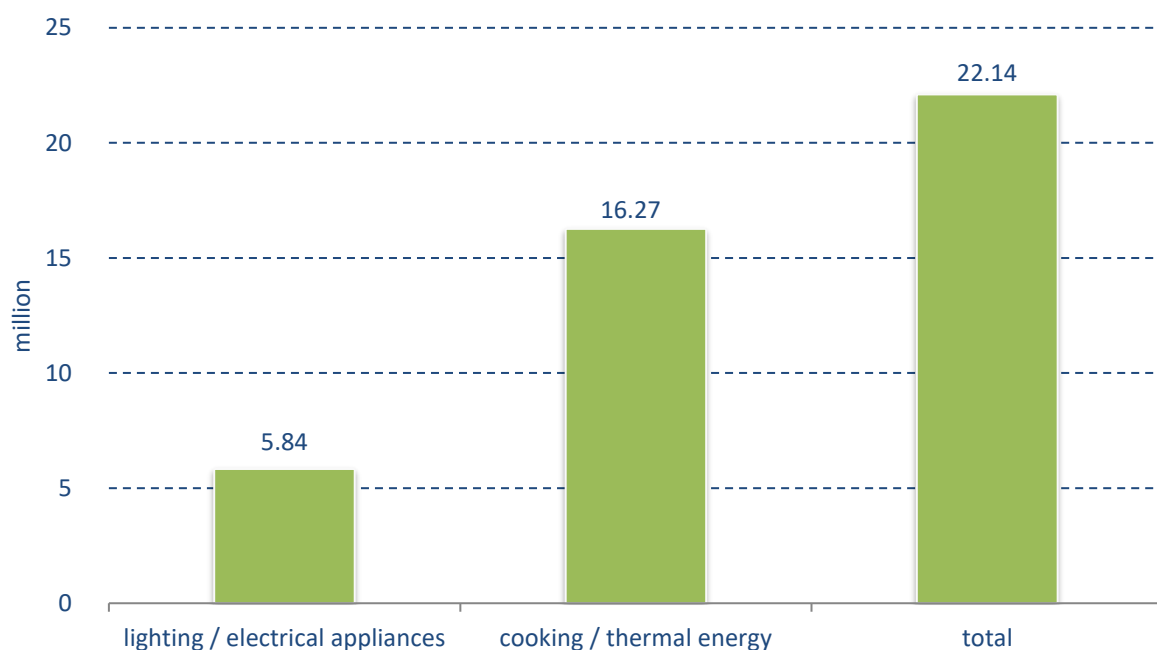
Table A.3: EnDev 2 outcomes in the EnDev tier system for improved cookstoves

Tier	Services	Number of people (EnDev methodology)	%
5	Access to needed quantity of energy source: ≥ very good	0	0
	Health protection: ≥ very high		
	Convenience: ≥ very high		
4	Access to needed quantity of energy source: ≥ good	189,935	1.6%
	Health protection: ≥ high		
	Convenience: ≥ high		
3	Access to needed quantity of energy source: ≥ fair	69,040	0.6%
	Health protection: ≥ fair		
	Convenience: ≥ fair		
2	Access to needed quantity of energy source: ≥ limited	6,430,275	53.2%
	Health protection: ≥ sufficient		
	Convenience: ≥ sufficient		
1	Access to needed quantity of energy source: ≥ deficient	5,376,466	44.5%
	Health protection: ≥ low		
	Convenience: ≥ low		
0	Access to needed quantity of energy source: ≥ highly deficient	17,263	0.1%
	Health protection: ≥ very low		
	Convenience: ≥ very low		
		12,082,979	

A.2 Overall outcomes in the period 2005 – June 2019 (EnDev 1 + 2)

Looking at the overall EnDev programme, starting from phase 1 in 2005 up to June 2019 in phase 2, the **total number of people** having gained sustainable access to modern energy services on household level amounts to **22.1 million** (figure A.9). The total number of **social institutions** is more than **26,600**; the total number of **small and medium enterprises** is around **48,800**, respectively.

Figure A.9: Adjusted number of household members provided with modern energy services in a sustainable manner (EnDev 1 and 2 combined)



The absolute numbers of verified beneficiaries (taking into account replacement but not the adjustment factors described above) are 30.4 million for EnDev 2 and 39.4 million for EnDev 1 and EnDev 2 combined.

In addition to the main objective of the partnership to facilitate access to modern energy technologies and services, EnDev has four impact targets: **a)** climate mitigation, **b)** health prevention, **c)** improved gender balance, **d)** job creation, and two outcome targets: **e)** leverage of funds and **f)** increase of power generation with renewable energies.

CO₂ savings

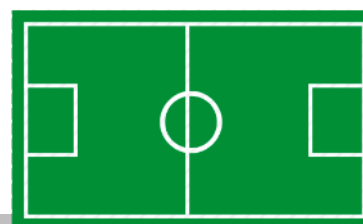
An improved firewood cookstove, which saves 30% of firewood in practice and which is used to prepare 80% of all meals, saves around 0.55 t CO₂ per year (on average, over all EnDev stoves) compared to cooking on open fires. The savings of all EnDev stoves for one year attributable to EnDev amount to approximately 2,198,085 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 3.7 million stoves and access to solar home systems, mini-grid connections or solar lanterns for 1.36 million households supported by EnDev are 2,600,545 t of CO₂.

For comparison: this amount corresponds to

- CO₂ emissions of all intra-European flights during 17 days, or
- Norwegian car traffic during 186 days, or
- 80% of the CO₂ emissions of all inhabitants of Bonn, or
- planting of more than 6.2 million trees on an area as big as 7,900 soccer fields.



An area of forest as large as 7,900 soccer fields are saved annually

Health

As a result of EnDev 2 activities, the exposure level of indoor



air pollution could be drastically reduced for more than 6.7³million 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 in the EnDev tier framework⁴ as tier 2 or higher are considered to have potential to be sufficiently safe regarding exposure of household members to indoor air pollution⁵. These include all stoves using electricity or gaseous fuels as well as improved biomass stove (e.g. rocket stoves, gasifier stoves and others).

Gender impact

This paragraph presents data and findings on gender impacts in the period 2009 – June 2019.



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% less than male solar and stove entrepreneurs, respectively. Further, males are 70% more likely to have

³ 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.

⁴ Closely related to the Multi Tier Framework

⁵ In 2018 and 2019 EnDev conducts various studies, in cooperation with RWI in Senegal and with Fresh Air in Uganda and a desk study with the University of Mexico to validate the impact chain of cookstove emission, indoor air pollution and personal exposure.

customers beyond their county borders. This adds to the evidence from international studies⁶ that the success of women entrepreneurs depends 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 nighttime 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 1.33 million women and 2.66 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 below.

Installed generation capacity with renewable energies

The total power capacity based on renewable sources installed since the start of EnDev 2 is 49.7 MW.



The biggest share amongst the technologies with 48.7% is contributed by SHS. SHSs contribute 24.2 MW to the total result. The share of mini-grids is nearly the same with 20.8 MW (MHP: 12.8 MW, PV: 7.9 MW). PicoPV systems up to now have a total installed capacity of 4.8 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 64.7 MW.

Job creation

This paragraph presents data on employment effects for the period from July 2018 until June 2019.



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 250 working days per year with 8 working hours per day it can be calculated that 3,290 full-time equivalent jobs existed in the process steps of the production, assembly and installation of 1,893,215 stoves from July 2018 until June 2019.

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 11,186 people worked in the production and installation of EnDev stoves during the last 12 months.

⁶ 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>

EnDev applied the methodology published by UNEP⁷ for calculating the number of jobs created along the distribution chain. It resulted in additional 745 full-time equivalent jobs which exist in the distribution chain for stoves. For picoPV systems, which are mainly produced in China, and for SHS the number of full-time equivalent jobs along the distribution chain was 802.

The mini-grid projects supported by EnDev also create jobs. Temporary jobs that exist during the construction of the mini-grid sites have not yet been considered. During the operational phase there are jobs in operation of the plant, administrative and managerial tasks and security service. It is calculated that by mid 2019, in total 2,748 full-time equivalent jobs existed that were related to these work profiles at the mini-grids.

In addition to direct employment effects described above, EnDev also created indirect employment effects. Within the SMEs that got access to energy through EnDev it is estimated that 3,684 full-time equivalent jobs were created.

Altogether, 11,617 full-time equivalent jobs existed in the supply chain for energy access technologies as well as in companies benefitting from new energy access in our partner countries that can be assigned to EnDev.

Table A.4: Employment effect of EnDev

Type of Technology	Type of employment effects			
	Direct			Indirect
	Production	Distribution/ Sales	Operation	SME's Application of Technologies
Cooking Energy	3,638	745		3,684
Solar light		802		
Mini-grids			2,748	
Total				
11,617				

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 308 million, which is a ratio of 2.2 in relation to the programme expenditures of EUR 140 million.

Since 2015, the total amount of investments along the market chain including intermediary products but excluding expenditures for private consumption is about EUR 765 million in the current semester alone, representing a ratio of 5.5 in relation to the EnDev programme expenditures.

⁷ Light and Livelihood: A Bright Outlook for Employment in the Transition from Fuel-Based Lighting to Electrical Alternatives; UNEP 2014.

A.3 Planned country activities in 2020

The total budget of the second phase is currently EUR 346 million. Below, an overview of country activities is provided. Table A.5 gives an overview of ongoing activities. As indicated in the previous Annual Planning 2019 update document the funding for each project was updated based on expenditures by June 2019 and the budget allocated for the phase starting in July 2019. Also, the planned outcome on household level was updated following the same methodology. Table A.6. provides an overview of ending and finalized projects. Table A.5 and A.6 include regional RBF projects. Table A.7 presents management and thematic activities. Thematic activities with separated funding are presented in table A.8.









Table A.5: Ongoing country and regional activities

Country		Lead political partner	Project duration		Funding (in EUR 1,000)		Planned outcomes on HH level in persons
			start	end	old	new ⁸	new ⁹
Bangladesh		Bangladesh Ministry of Power, Energy and Mineral Resources	06/09	12/20	26,424	26,416	3,433,500
Benin		Ministère de l'Énergie	10/09	06/21	20,245 ¹⁰	19,599	1,065,000
Bolivia		Vice-Ministry of Electricity and Alternative Energy (VMEEA) of the Ministry of Energy	10/09	06/21	17,640	17,584	591,000
Ethiopia		Ministry of Water, Irrigation and Electricity (MoWIE)	01/10	06/21	38,087	38,087	2,420,000
Indonesia		Ministry of Energy and Mineral Resources (MEMR)	12/12	03/21	3,222	3,431	51,000
Kenya		Ministry of Energy	04/09	06/21	26,316	26,230	4,895,000
Liberia (with SL)		Liberia: Ministry of Mines and Energy; Sierra Leone: Ministry of Energy	05/12	06/21	7,740	7,720	85,700
Madagascar		Secrétaire Général de la Région Atsimo Andrefana	12/12	06/21	1,428	1,289	145,000
Malawi		Ministry of Natural Resources, Energy and Mining / Ministry of Gender, Children, Disability and Social Welfare (for RBF)	12/12	06/21	7,942	7,951	1,513,000
Mali		Ministry of Water and Energy	04/09	06/21	10,154	10,057	168,800

⁸ Including old budget of Annual Planning 2019 update and real expenditures until June 2019

⁹ Including target achievement until June 2019 and the additional target for the current phase; all values as calculated adjusted outcome

¹⁰ Including up to EUR 468,041 contribution of EU to ProCEAO Benin.

Country		Lead political partner	Project duration		Funding (in EUR 1,000)		Planned outcomes on HH level in persons
			start	end	old	new ⁸	new ⁹
Mekong		Cambodia: Ministry of Mines and Energy (MME) Laos: Ministry of Science and Technology (MoST)	03/15	06/21	4,163	-	103,000
Mozambique		Ministry of Mineral Resources and Energy	10/09	06/21	18,883	21,576	tbd ¹¹
Nepal		Ministry of Energy, Water Resources and Irrigation	05/09	06/21	9,760	9,854	505,000
Rwanda (with BI, DRC)		Rwanda Energy Group (REG) – Energy Development Company Limited (EDCL) / Ministry of Infrastructure (MININFRA); BI+DRC: suspended; focus on local private sector	10/09	06/21	24,917	25,061	753,000
Senegal		Ministry of Petroleum and Energy	04/09	06/21	21,793 ¹²	21,298	1,800,000
Tanzania		Ministry of Energy	12/12	06/21	12,078	12,200	1,485,000
Uganda		Ministry of Energy and Mineral Development (MEMD)	04/09	06/21	14,153	14,043	915,000
RBF BA, KE, (RW,) TA, UG		BA: Ministry of Power, Energy and Mineral Resources (MoPEMR); KE: Ministry of Energy and Petroleum; Renewable Energy Directorate; TA: President's Office of Regional and Local Government (PO-RALG); UG: Ministry of Energy and Mineral Development (MEMD)	03/15	09/20	6,230	-	305,000

¹¹ After the cyclone Idai hit Mozambique, the project's approach and geographic scope needs to be adjusted to the new situation. The project is in the process of restructuring and starting activities as a direct reaction on the cyclone

¹² Including EU Co-financing budget: PASES up to EUR 2,370,000, ProCEAO Senegal up to EUR 531,354.

Table A.6: Ending and finalized activities

Country		Lead political partner	Project duration		Funding (in EUR 1,000)		Planned outcomes on HH level in persons
			start	end	old	new ¹³	new ¹⁴
Burkina Faso		Ministry of Environment, Green Economy and Climate Change	10/09	09/19	7,797 ¹⁵	6,970	585,600
Cambodia		Ministry of Mines and Energy	12/12	11/19	3,150 ¹⁶	-	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
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 MO, UG, SSA (and RW)		UG: Ministry of Energy and Mineral Development (MEMD) MO: Ministry of Mineral Resources and Energy; RW: Ministry of Finance and Economic Planning (MINECOFIN)	03/15	12/19	3,283	-	165,000
RBF KE, TA, UG		KE: Ministry of Energy and Petroleum; Renewable Energy Directorate; TA: President's Office of Regional and Local Government (PO-RALG); UG: Ministry of Energy and Mineral Development (MEMD)	03/15	12/19	1,835	-	24,500

¹³ Including old budget of Annual Planning 2019 update and real expenditures until June 2019

¹⁴ Including target achievement until June 2019 and the additional target for the current phase

¹⁵ This includes EUR 947,000 from EU for ProCEAO regional management and implementation in Burkina Faso.

¹⁶ Transitional funding also to cover continuation of stove components in Cambodia and perspective in Laos.

Table A.7: Management and thematic activities

Country / Region		Project duration		Funding (in EUR 1,000)
		start	end	
Head office	Programme mgmt., incl. DFAT prep. and Myanmar	01/09	06/21	28,426
Head office	Conceptual developing and piloting (DEZA, USAid)	08/18	12/20	1,494
RBF preparation		08/12	12/20	956
RBF evaluation		08/12	12/20	1,051
Cooking Sector support		05/16	03/19	1,900
Innovation Fund	Bangladesh, Madagascar, Mali, Mozambique	11/18	11/20	1,250
Refugees	Kenya - stoves, picoPV	11/17	09/19	650
	Somalia - grid, solar street light	06/17	02/19	350
	Uganda (Norad) - stoves, picoPV	10/18	12/19	100
	Uganda (RVO) - stoves, picoPV	11/17	12/19	300

Table A.8: Thematic activities, funded separately

Country / Region		Project duration		Funding (in EUR 1,000)
		start	end	
Refugees	Tanzania - stoves, picoPV	01/18	12/20	1,600
	Uganda (DFID) - stoves, picoPV (energy kiosks)	10/17	06/18	277
	Uganda (SIF)	08/19	06/21 ¹⁷	3,200
	Kenya (SIF)	01/15	06/21 ¹⁸	19,000
	Ethiopia (SIF)	11/19	06/21 ¹⁹	2,300

¹⁷ These activities are not funded by EnDev, hence not bound to the EnDev project period. Currently, EnDev only supports the activity until 06/21 but the activity itself is planned until 10/22.

¹⁸ These activities are not funded by EnDev, hence not bound to the EnDev project period. Currently, EnDev only supports the activity until 06/21 but the activity itself is planned until 12/22.

¹⁹ These activities are not funded by EnDev, hence not bound to the EnDev project period. Currently, EnDev only supports the activity until 06/21 but the activity itself is planned until 10/22.

A.4 Modalities: Results-based Financing

Review and consolidation of the RBF Facility

In February 2019, DFID and EnDev jointly reviewed and assessed the project portfolio of the RBF Facility and decided to extend the implementation period of three additional RBF projects into 2020. In summary, the following total of five RBF projects have been extended into 2020:

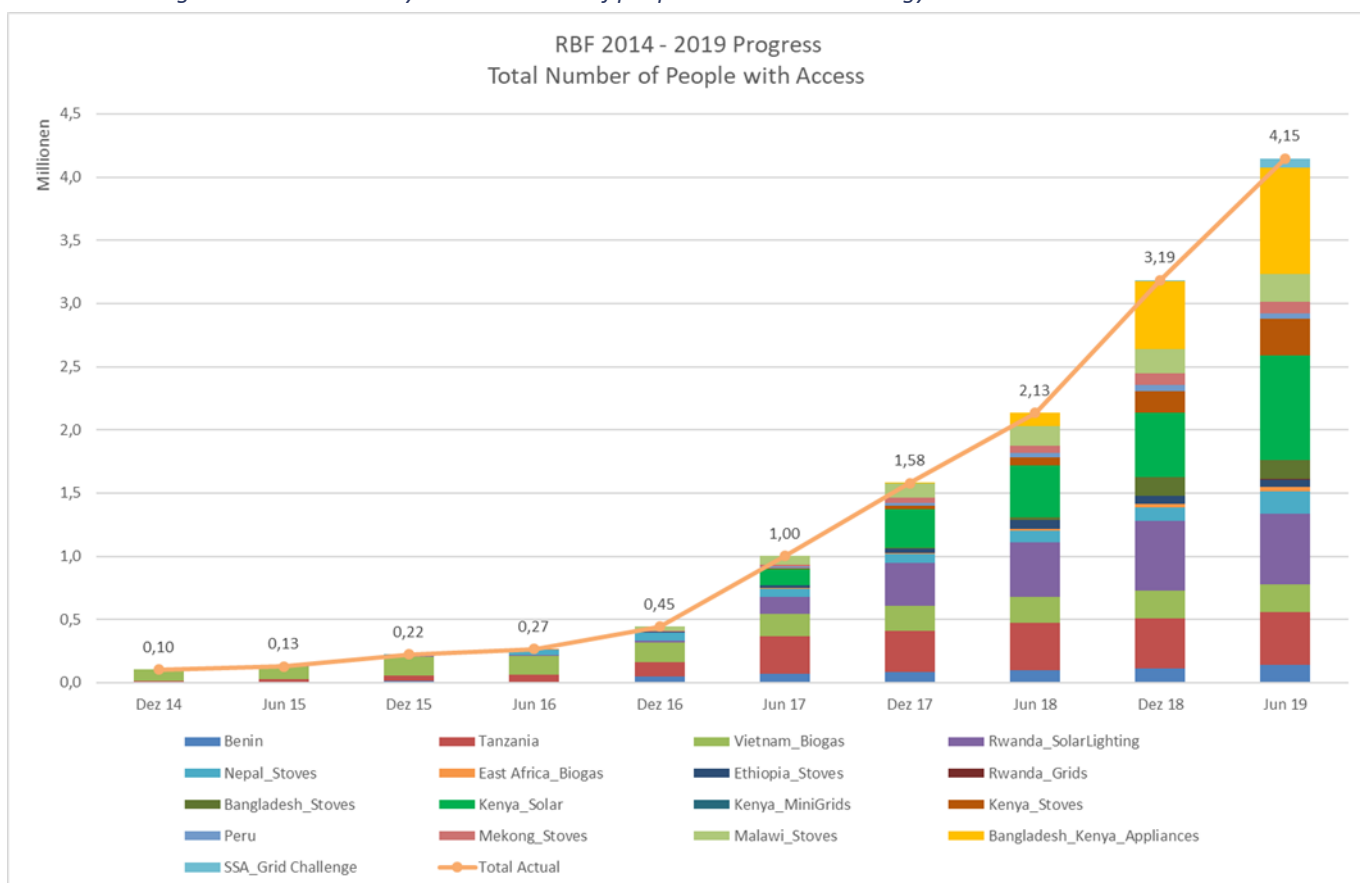
- Tanzania - Solar picoPV in the Lake and Central Zone (until 09/2020): shifting focus to more challenging district and regional consumer markets
- Rwanda - Sustainable market creation for renewable energy village grids (until 09/2020): adjustments only in terms of KPIs
- Rwanda – Solar Lighting (until 09/2020): shifting focus from general market transformation to leave-no-one behind
- Malawi – Access to modern cooking energy for poor and vulnerable groups (until 09/2020): upscaling into six more districts
- Regional RBF Bangladesh and East Africa - Accelerating the uptake of off-grid solar technologies with RBF (until 09/2020): changes in technology portfolio to include refrigerators and solar water pumps

All other ongoing RBF projects – seven in total – will be phased out according to plan by September or December 2019 respectively:

- Benin - Solar product promotion (until 09/2019)
- Nepal - A sustainable market for hood stoves (until 09/2019)
- Kenya - Building sustainable and affordable credit lines for small solar systems in rural areas (pico PV) (until 09/2019)
- Kenya - Higher tier clean cookstove market acceleration project (until 12/2019)
- Kenya - Market creation for private sector operated mini-grids (until 12/2019)
- Regional RBF East Africa - Biogas business boost benefitting farmers (4B-F) (until 12/2019)
- Regional RBF Sub-Sahara Africa - Sub-Saharan grid densification challenge fund (until 12/2019)

Since its initiation, the RBF Facility provided 4.2 million people with improved access to energy (based on data from June 2019). Results have developed in an exponential way over time (see graph “RBF 2014-2019 Progress” below). Against the backdrop of the Facility’s end in 2020 and phasing out of projects, results are expected to reach 5.0 million people gaining improved access to energy by end 2020.

Figure A.10: RBF Facility - Total number of people with access to energy - 2014-2019



With the consolidation and step-by-step phasing-out of individual RBF projects, the Facility is seeing a transition from focus on implementation to focus on the RBF learning agenda. The learning agenda will cover success factors and lessons learnt derived from implementation experience in the 17 RBF projects on three continents. Thematic clusters of key learnings will be presented and shared in communicable form for specific target groups. Communication products under preparation range from publications/brochures, public relation material in form of storytelling, concrete guidelines for practitioners and exchange formats like webinars and conferences.

The findings of the second impact study (market transformation survey) and the final evaluation of the RBF facility will be integrated into the learning agenda. The evaluation focusses on impacts and sustainability of project interventions, while assessing as well effectiveness, efficiency and relevance of the RBF approach. On top of the final evaluation, a thorough market transformation survey across the entire RBF portfolio will be conducted (second impact study). The objective is to gain a better understanding of the perspective of the private sector on Results-based Financing approaches as an instrument for market development.

Beyond the RBF Facility

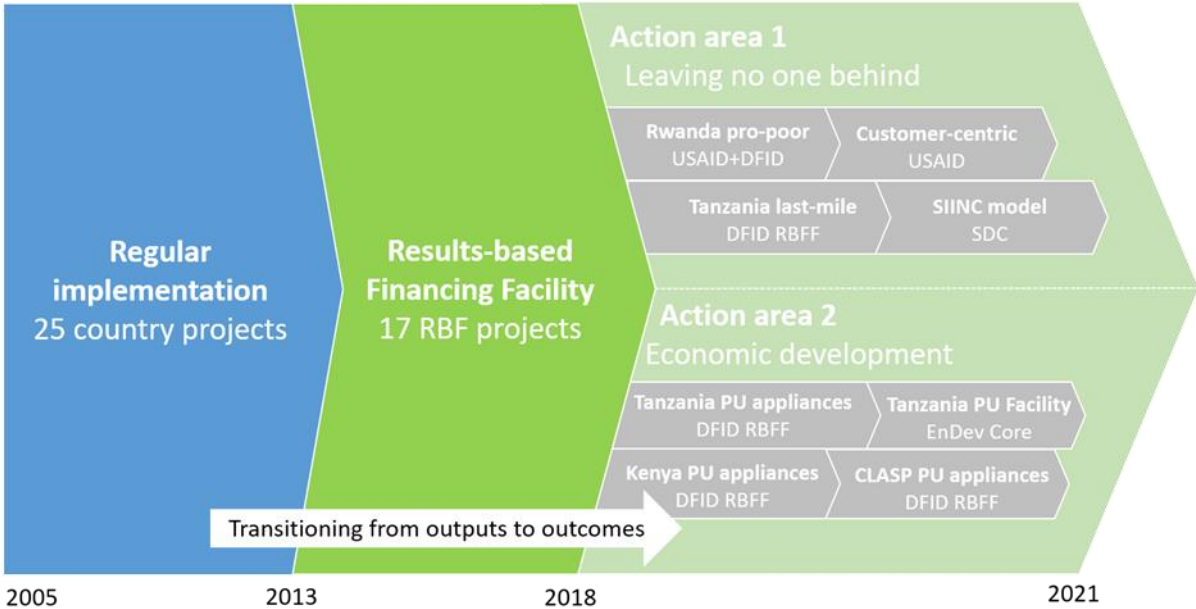
Beyond the RBF Facility, the RBF modality is increasingly seeing spillover effects into regular EnDev programming, with country interventions actively seeking out the instrument to support energy market development. Lessons learnt and knowledge generated by EnDev in the field of RBF are also sought after by a broad implementer base, inform international debate, and already provided valuable inputs for the design of new RBF interventions of other development partners.

This experience also serves EnDev to refine its RBF approach and to continue innovative groundwork. In 2019, EnDev has embarked on a transition process towards next-generation RBF approaches. Future RBF interventions shall not only enable a more explicit targeting of poor and/or last-mile customers but also facilitate the transition from output- to outcome-based payments; and foster innovative cooperation models with new actors such as social impact investors. This also includes a vision to broaden the current technology spectrum from largely domestic energy systems to products that contribute to economic development.

SDC and USAID are an integral part of EnDev’s transition to next-generation RBF approaches and support conceptual development of innovative pilot projects:

- The Social Impact Incentives (SIINC) model developed by SDC is a blended finance approach that utilizes public funds to unlock the investment readiness of energy enterprises and catalyzes private investments in underserved markets. This mobilizes private capital to overcome funding gaps for achieving SDG7. The pilot tests key features of the SIINC approach and develops processes for structuring RBF transactions at scale; and develops a solution that makes the measurement of outcomes on beneficiary level feasible. This will inform the potential set-up of a SIINC Outcomes Fund at scale.
- USAID partners with EnDev to pilot a novel RBF scheme that aims to evolve how energy companies are incentivized to reach specific last-mile customers, and to allocate incentives more precisely depending on the “last-mileness” of a customer. The pilot tests the ability of the approach to trigger last-mile expansion of off-grid energy companies. If proven successful, improving beneficiary targeting through customer-centric incentive valuation is expected to be transferable and scalable to other contexts.

Figure A.11: Transitioning EnDev RBF approach



Abbreviations

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
ASS	After Sales Service
AVSI	Association of Volunteers in International Service
BBF	Bangladesh Bondhu Foundation
BIRU	Blogas RUma indonesian for Household Biogas
BMZ	the German Federal Ministry for Economic Cooperation and Development
CDM	Clean Development Mechanism
CES	cooking energy systems approach
CLASP	Collaborative Labeling and Appliance Standard Program
CREE	Centre de Recherches en Education Environnementale, Madagascar
DEZA / SDC	the Swiss Agency for Development and Cooperation
DFAT	the Australian Department of Foreign Affairs and Trade
DFID	the UK Department for International Development
DRC	Democratic Republic of the Congo
EFCCC	Environment, Forest and Climate Change Commission, Ethiopia
EnDev	Energising Development programme
FDC	Foundation for Community: Fundação para o Desenvolvimento da Comunidade
FOCAEP	Central American Fund for Access to Sustainable Energy and Poverty Reduction
FTE	Full time employment
GCF	Green Climate Fund
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
GTF	Global Tracking Framework
HH	households
HIVOS	Humanistisch Instituut voor Ontwikkelingssamenwerking
IAP	Indoor air pollution
ICS	improved cookstove
IDBP	Indonesia Domestic Biogas Programme
IDCOL	Infrastructure Development Company Limited
IICA	Inter-American Institute for Cooperation on Agriculture
KOFIH	Korea Foundation for International Healthcare
KPI	key performance indicator
KPT	kitchen performance test
LDC	least developed countries
MARD	Ministry of the Agriculture and Rural Development, Vietnam

MFA / DGIS	the Netherlands Ministry of Foreign Affairs Directorate-General for International Cooperation
MFA-NOR	the Norwegian Ministry of Foreign Affairs
MFI	micro finance institution
MHDF	Micro Hydro Debt Fund, Nepal
MHP	micro hydropower
MoU	Memorandum of Understanding
MSME	mirco, small and medium enterprise
MTF	Multi-Tier Framework
NDCs	Nationally Determined Contributions
NEP	National Electrification Plan, Rwanda
NIS	Nordic International Support Foundation
OGS	off-grid solar
PAYGO	Pay-As-You-Go
picoPV	pico photo voltaic
PPP	public private partnership
PU	productive use of energy
QPI	Quality Plant Incentive
RBF	results-based finance
RVO	Rijksdienst voor Ondernemend Nederland
SCT	social cash transfer
SDG	sustainable development goals
SEforALL	Sustainable Energy for All initiative
SHEP	Self Help Electrification Project, Ghana
SHS	solar home system
SI	social institutions
SIDA	the Swedish International Development Cooperation Agency
SME	small and medium enterprise
SNNPR	Southern Nations, Nationalities, and Peoples' Region in Ethiopia
SNV	Stichting Nederlandse Vrijwilligers / Netherlands Development Organisation
SPIS	Solar powered irrigation system
SREDA	Sustainable and Renewable Energy Development Authority
SSHS	small solar home systems
SWH	solar water heaters
TICS	Tanzania Improved Cook Stove programme
UNACC	Uganda National Alliance for Clean Cooking
UNEP	United Nations Environment Program
UNHCR	United Nations High Commissioner for Human Rights
WHO	World Health Organization

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Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH
Registered offices Bonn and Eschborn, Germany

Dag-Hammarskjöld-Weg 1-5
65760 Eschborn, Germany

E endeve@giz.de

I www.endeve.info