Annual Planning 2015

Energising Development – Phase 2

energising development

Partnership between

The Netherlands Ministry of Foreign Affairs

The Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (BMZ)

The UK Department for International Development

The Norwegian Ministry of Foreign Affairs

The Australian Department of Foreign Affairs and Trade and

The Swiss Agency for Development and Cooperation and

With co-financing from **Irish Aid** and the **EU**

Implemented by:

The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

In cooperation with:

Rijksdienst voor Ondernemend Nederland (RVO)

Netherlands Development Organisation (SNV)

Association pour le Développement de l'Energie Solaire Suisse (ADES)

Humanistisch Instituut voor Ontwikkelingssamenwerking (HIVOS)

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Practical Action

Published by:
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November 2014

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A. EnDev in 2015 – trends and challenges

In the first half of 2014, EnDev facilitated access to modern energy services for additional 690,000 people, increasing the total number of people benefiting from the programme to 12,948,000. Most country projects can implement planned activities without major interference. Only in a few countries unforeseeable events like the Ebola epidemic in Liberia seriously affects the project work and makes a reorientation of the country measure necessary. Thus, the basic conditions for the development of the programme in 2015 are good. It is expected that the number of additional beneficiaries will presumably again rise by roughly 1 million in the next year so that the programme will come close to the defined target of 15 million people having gained energy access by 2018.

In May this year, the Governing Board of EnDev approved a new strategy for the programme underlining the relevance of sustainable access to modern energy services as necessary means to inclusive social, economic and low carbon development. The new strategy emphasises EnDev's climate mitigation orientation, gender aspects and the nexus to health and to different productive sectors especially in rural areas, in addition to the access objective.

In 2014, EnDev has also been evaluated by independent consultants with the overall conclusion that EnDev is a unique programme, which provides not only a major contribution to the Sustainable Energy for All initiative, but as well plays a key role in driving the international agenda on management for development results. The EnDev Governing Board welcomed in general the findings of the external evaluation of the Energising Development (EnDev) partnership and advised to incorporate major recommendations in the programme approach for the coming years.

Implementation of the new strategy in 2015

Energy access: EnDev will continue to follow its main objective to facilitate sustainable access to modern energy technologies and services for poor households, social institutions and small and medium sized enterprises (SME) in selected countries. EnDev is committed to a high cost efficiency in its activities with the benchmark that a least 5,000 persons, 10 social institutions and 20 enterprises will gain sustainable access to modern energy technologies or services per EUR 100,000 programme budget.

Climate impact: EnDev promotes the use of renewable energies for rural electrification, the substitution of fossil fuel-based technologies (e.g. kerosene lamps) and an increased efficiency of biomass-based energy applications (improved cookstoves, biogas plants). All three activities contribute to emission reductions. For improved cookstoves, which consume 20-50% less biomass, an annual CO_2 reduction of about 0.5 t-1 t per household is assumed on average, depending on stove technology, user behaviour, fuel quality and fuel origin. In addition, a significant reduction of particulate matter and soot (black carbon) is achieved due to a better and more complete combustion. EnDev's objective is that per EUR 100,000 committed, at least 600 households will be using improved cookstoves sustainably (minimum half of these households shall be using at least "tier 2" stoves). This will generate annual savings of at least 400 t of CO_2 equivalents (CO_{2e}) emission.

In many countries it is not clear to which extent fuelwood and other biofuels originate from sustainable or unsustainable sources, which would influence the overall CO_2 balance. EnDev is planning to collect more field data about fuelwood sources for a more detailed picture of fuelwood and charcoal use. However, in any case it has to be considered that biomass burned in a stove is directly and immediately converted into CO_2, whereas saved biomass degrades. CO_2 is also emitted during this process but over a substantially longer time, and not nearly as completely. The degradation of vegetation is the primary source of carbon accumulation in the soil profile.

In addition to improved cookstoves, the replacement of kerosene lamps through electric lamps contributes to the mitigation of climate effects of energy consumption. Kerosene lamps emit significant amounts of black carbon. 7-9% of the fuel is transformed into soot particles during the process of combustion in kerosene lamps. Again, conflicting information exist about the current

relevance of kerosene lamps for lighting and the amount of soot released by them per year. EnDev will start to collect more information on the use of kerosene lamps for lighting in the project areas.

Health impact: EnDev will increase assessing and steering on impacts with regards to health and explore cooperation with other actors in these fields, especially with WHO. Cooking with solid biomass and rudimentary stoves causes toxic emissions that lead to severe health problems such as chronic lung diseases, acute respiratory infections, cataracts, blindness, and adverse effects on pregnancy. EnDev's new target is to reduce the health burden caused by smoke and soot in kitchens and cooking sites for at least 1,500 people for every EUR 100,000 spent. The target shall be achieved by using cooking systems that represent at least the level „tier2" according to the Sustainability Energy for All Initiative classification or a similar system. In the international debate on access to clean cooking it is suggested to promote clean cookstoves such as gasifier, gas and electric stoves and switching to liquid and gaseous fuels for heating and cooking purposes. However, most of the 2.7 billion people using traditional, inefficient and unhealthy cooking systems will not be able to afford these kind of stoves and the use of LPG or electricity for heating and cooking. They will continue to use wood and charcoal as the predominant fuel. Nevertheless, clean cooking can be achieved by a **clean kitchen** concept combining proper use of solid biofuels, energy efficient cookstoves, use of hoods and chimneys and good ventilation. In addition, EnDev will increase its efforts to promote biogas digesters.

Gender: The main sufferer of indoor air pollution are women, who do most of the housework, and young children, who are often carried on the mother's back while she is cooking. Given this situation, access to clean cooking sites and cooking systems is an important contribution to improve the living conditions of women. Positive gender impacts also result from access to electric light and access to electric power for appliances and equipment like sewing machines and refrigerators that are used by women for income generating activities. EnDev has recently reviewed 16 EnDev impact studies concerning gender-related effects and found clear evidence that access to modern energy can improve:

- the division of labour and responsibilities between men and women,
- employment of women and income generation,
- medical services especially for women in health centres,
- indoor air quality in kitchen areas,
- safety against sexual harassments, and
- working conditions and comfort.

For 2015 EnDev will monitor gender effects more systematically. Among others, it plans to collect gender disaggregated data concerning ratio of women and men owning businesses (including producing sector, logistics and service providers as well as SMEs with access to energy), primary users of energy services in households, social institutions and small and medium enterprises. In all these cases gender equality for access to and usage of energy technologies will be fostered.

Economic development: For small businesses, electrification makes a significant contribution to economic growth and poverty reduction. A bright illumination of markets and workshops helps to attract new customers, though partly to the disadvantage of businesses without electricity. With access to electricity, businesses can diversify the services they offer and extend their working hours into the evening. The possibility to recharge mobile phones at home is another major advantage of electrification. It helps expand the use of mobile phones with positive social and economic impacts.

In EnDev's experience, it is very rare for new income-generating activities to arise as an immediate consequence of the new electricity supply alone. Economic development is therefore often restricted to (1) entrepreneurship in providing the energy service itself and (2) electrification of existing businesses. EnDev will start to monitor more accurately the number of jobs created in both enterprise sectors: the energy service providers and the energy using companies. The target of our activities is that at least 5 jobs are directly created along the value chain of the supported energy

technologies or as a result from benefitting from the access to modern energy technologies for every EUR 100,000 invested by the programme.

In addition, it is expected that economic development of rural populations will benefit from increased levels of education, improved state of health and of the general living conditions of households as a result of improved cooking technologies and access to electricity.

Follow-up of the midterm evaluation

The overall conclusion of the evaluation has been that EnDev is relevant and effective with a good chance to be sustainable according to the OECD-DAC criteria. EnDev is relevant as it is suited towards priorities and policies of its target group, its recipients and its donors. Thereby, EnDev is complementary to other development partners´ interventions focusing on top-down approaches improving the enabling environment and offering capacity development on national level in the public sector. The evaluation describes EnDev as effective in attaining its objectives and largely additional. It recommends strengthening the validation of reported numbers and reduction factors which will be one of the priorities of the monitoring work in 2015. In addition, EnDev will pay special attention to sustainability issues especially for mini-grids because a sustainable operation of these systems is a challenge in several countries.

Another result of the evaluation is the introduction of two separate benchmarks: one for electrification and another one for cooking. Over the last 5 years, EnDev defined as target to facilitate access to modern energy with a maximum of EUR 20 spent per person. This target has been met with currently only EUR 13.66 per person. The Governing Board decided to keep the overall benchmark of EUR 20, but to establish an additional benchmark of EUR 45 for access to electrification and EUR 7.50 for access to improved cooking.

Result Based Financing activities in 2015

Since April 2014, activities under EnDev's RBF facility have continued to intensify strongly with the transition from start-up to initial implementation of the selected projects under the first tranche in parallel with the launch and management of the 2nd round for RBF projects. In addition, the opportunity to launch a 3rd round of projects to be commissioned by end of 2014 came up and is under development.

The start-up and initiation of the 1st round of RBF projects, after initial delays and in-depth analysis and development of basic (yet often tailor-made) RBF requirements has significantly progressed in the past six months. Many barriers and challenges in regard to identification of suitable financial institutions, defining the details of the RBF design and putting into practice the monitoring and (independent) verification system have been overcome in several projects. Therefore, two projects have now completed full RBF payment cycles from technology installation claims via quality control/monitoring to verification and incentive payment. Until end of 2015 it is expected to have other projects reaching this level of implementation, too, resulting in the RBF portfolio of round 1 and 2 fully entering the market in all countries in 2015.

International discussions about access definitions and criteria

EnDev has been strongly involved in the development of the multi-tier system to measure household electricity access of the SE4ALL initiative documented in the Global Tracking Framework. The system has been applied in the last three monitoring cycles of EnDev and results are reported in the Progress Reports and Annual Planning documents. In addition, EnDev tested the SE4ALL questionnaire on energy access to calculate an energy access index in a household survey in Ethiopia in 2014. As a result of this test, EnDev recommended several modifications of the questionnaire; modifications which were incorporated in the new version.

EnDev has also been contributing to the development of a tier system for cooking technologies. However, the system published in the SE4ALL tracking framework report in 2013 proved to be

difficult to implement. Meanwhile, the World Bank and ESMAP have developed a modified version, which also includes some changes for electricity. In the new system, access is defined as the ability to obtain energy that is adequate, available when needed, reliable, of good quality, affordable, legal, convenient, healthy, and safe for all required energy applications across households, productive enterprises, and community institutions. The table below illustrates the new model.[1] Certain indicators are binary, only allowing a yes or no answer. Others have several thresholds (gradations). The overall access tier of an individual household, enterprise, or social institution is determined by the lowest tier of any of the attributes.

The tier system covers the most relevant aspects of the supply and demand side of modern energy systems and services but it has also some weaknesses. In the case of cooking there would be no difference between tier 0 to tier 2, which would be characterised as having no access to modern energy cooking. Some of the attributes are also interlinked and thus accounted for twice. In addition, the system is mainly designed for household surveys. The model is still under discussion and may be presented in a revised version during upcoming SE4ALL conferences.

Table A.1: Tier system developed by World Bank/ESMAP and under discussion for the Global Tracking Framework

Attributes of energy supply		Tiers according to Global Tracking Framework					
		0	1	2	3	4	5
Capacity	Household electricity	No electricity	Very low power	Low power	Medium power	High power	
	Household cooking	Inadequate capacity of the primary cooking solution				Adequate capacity of the primary cooking solution	
Duration and availability	Household electricity	<4 hours	4-8 hours		8-16 hours	16-22 hours	>22 hours
	Household cooking	Inadequate availability of the primary cooking solution				Adequate availability of the primary cooking solution	
Reliability	Household electricity	Unreliable energy supply				Reliable energy supply	
Quality	Household electricity / cooking	Poor quality of energy supply			Good quality of energy supply		
Affordability	Household electricity	Unaffordable energy supply		Affordable energy supply			
	Household cooking	Unaffordable energy supply				Affordable energy supply	
Legality	Household electricity	Illegal energy supply			Legal energy supply		
Convenience	Household cooking	Time and effort spent sourcing energy cause inconvenience			Time and effort spent sourcing energy do not cause inconvenience		
Health and safety	Household electricity	Unhealthy and unsafe energy system				Healthy and safe energy system	
	Household cooking	Level 0	Level 1	Level 2	Level 3	Level 4	Level 5

Concerning household electricity EnDev is implementing basically the same approach as WB/ESMAP. Concerning household cooking EnDev has developed a tier structure which is applying similar criteria as in the tracking framework and following in principle the same philosophy as the WB/ESMAP model. The EnDev tier systems is specially adapted to project information and allows a more specific assessment of the level of access to modern cooking systems. In addition, the system distinguishes between attributes of cooking systems that are primarily relevant for households and those that have a social dimension.

[1] Capturing the Multi-Dimensionality of Energy Access, World Bank live wire No. 88699.

Table A.2: Tier system according to the EnDev methodology

Tiers for access to modern cooking systems						
Households indicators	0	1	2	3	4	5
Access to needed quantity of energy source for given stove	highly deficient	deficient	limited	fair	good	very good
Ia. Availability of energy source	highly deficient	deficient	limited	fair	good	very good
Ib. Affordability and accessibility of energy source in relation to stove type	highly deficient	deficient	limited	fair	good	very good
Health protection	very low	low	medium	sufficient	high	very high
IIa. Prevention of indoor air pollution	very low	low	medium	sufficient	high	very high
IIb. Safety	very low	low	medium	high		very high
Convenience of stove and fuel	very low	low	medium	sufficient	high	very high
IIIa. Ease of lighting the stove		low		medium	high	very high
IIIb. Ease of cleaning and maintaining the stove	very low	low	medium	fair	high	very high
IIIc. Ease of temperature control	low		medium		high	very high
Social indicators	0	1	2	3	4	5
Environmental protection	very low	low	medium	fair	high	very high
IVa. Climate protection (prevention of emissions)	very low	low	medium	fair	high	very high
IVb. Sustainability of energy source	very low	low	medium	fair	high	very high
IVc. Energy efficiency	very low	low	medium	fair	high	very high
Categories	no access	basic access			advanced access	

Households are first of all interested in having enough thermal energy to prepare whatever meal they like. To be able to do this, the energy source and corresponding stove must be available and affordable. The type of energy source (biomass, gas, electricity) is of minor importance. Households want to prepare their meals without affecting their health through high indoor air pollution and they want to avoid accidents and burns when cooking. The degree of health protection depends on several factors such as type of fuel, type of stove, ventilation, and use of flues/chimneys. These factors can be combined in different ways to obtain low levels of exposure to toxic emissions for the household. Finally households strive for cooking systems that are easy to operate. EnDev is using the three indicators “ample access to energy source and corresponding stoves”, “health protection” and “convenience” as basis for attributing a cooking system (fuel, stove, cooking environment) to a certain tier. In addition, EnDev assesses the social dimension of cooking systems by analysing quality and quantity of emissions, the sustainability of the energy source and the energy efficiency of the cooking systems. These three indicators are used to evaluate the contribution of the cooking systems to the two other goals of the SE4ALL initiative and to climate mitigation.

The data for the EnDev tier system are be collected from energy suppliers (manufacturers, retailers and installation companies) as part of the monitoring system. Complementary data concerning fuel collection time, fuel shortages, fuel costs, and cooking conditions (indoor, outdoor, type of ventilation) will be obtained through focus group interviews and small-sample surveys.

EnDev will test the tier system extensively in 2014. Based on the results, the current EnDev definition of “access to modern energy for cooking” which is solely based on a 40% reduction of specific fuel consumption in comparison to the baseline cooking technology will be substituted by the criteria of the tier system. In parallel, EnDev will continue engaging in the international debate on the access definition, using its strong link to the users as a reference.

Uganda: **Rocket Lorena** *improved cookstove*

Burkina Faso: A woman who just bought a **Roumdé** *improved cookstove*

Bolivia: Woman cooking on the **Malena** *cookstove*

Malawi: Family cooking with a **Chitetezo Mbaula** *improved cookstove*

B. Overview on current status of the EnDev 2 programme

By mid-2014, the EnDev partnership comprised 26 activities in 24 different countries. In 18 of the 24 countries EnDev is supporting access to improved cookstoves, in 18 access to off-grid solar technologies (solar home systems and solar lanterns), in 12 countries access to mini-grids (either solar or hydropower-based mini-grids), in 11 countries grid extension or densification are promoted and in 3 countries access to biogas. Table B.1 presents a summary of this information.

Table B.1: Overview of technologies supported in EnDev countries

	stoves	biogas	other cooking/ thermal	SHS	picoPV	solar minigrid	hydro minigrid	grid	other lighting/ electricity
Bangladesh	●			●	●				
Benin	●				●			●	
Bolivia	●		●	●	●		●	●	
Burkina Faso	●								
Burundi	●				●				●
Cambodia		●							●
Ethiopia	●			●	●		●		
Ghana								●	
Honduras	●		●	●			●	●	
Indonesia		●				●	●		
Kenya	●				●			●	
Liberia	●		●		●	●			
Madagascar	●								
Malawi	●				●				
Mali				●	●	●			●
Mozambique	●			●	●		●	●	
Nepal	●						●	●	
Nicaragua	●			●	●		●	●	
Peru	●		●	●	●			●	
Rwanda					●		●		
Senegal	●			●		●		●	
Tanzania	●				●				
Uganda	●			●	●		●	●	
Vietnam		●							

By June 2014, EnDev 2 facilitated sustainable access to modern energy services and technologies for about **7.94 million people**. Out of these, 2.12 million people (27%) were connected to the central grid or a mini-grid or used standalone systems. 5.82 million (73%) are now using improved cooking technologies, such as improved firewood and charcoal stoves or biogas plants (Figure B.3). In addition, **7,600 social institutions** gained access to improved cooking systems or electricity and **16,600 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 58% 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 59% (Figure B.2).

The figures reported here are verified in the field through detailed lists of customers of energy services and products, and sales figures of energy companies and retailers. EnDev does not simply add outcomes achieved in the course of the programme but tries to capture also 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 availing from both modern cooking energy and electricity through the EnDev programme are only counted once in the aggregate figure.

Figure B.1: Funding by region

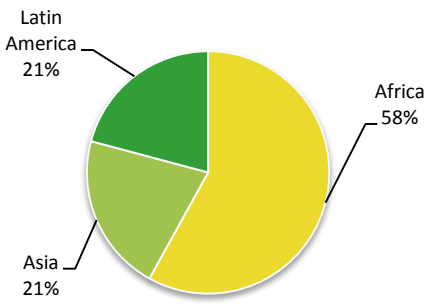
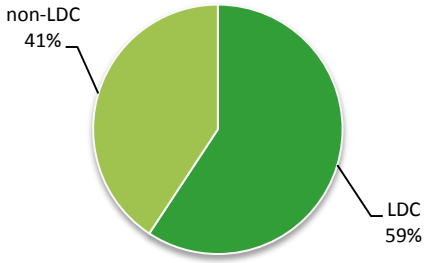


Figure B.2: Funding by countries



In addition, the EnDev figures already include a discount for replacement in order to consider the limited lifespan 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. 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.

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

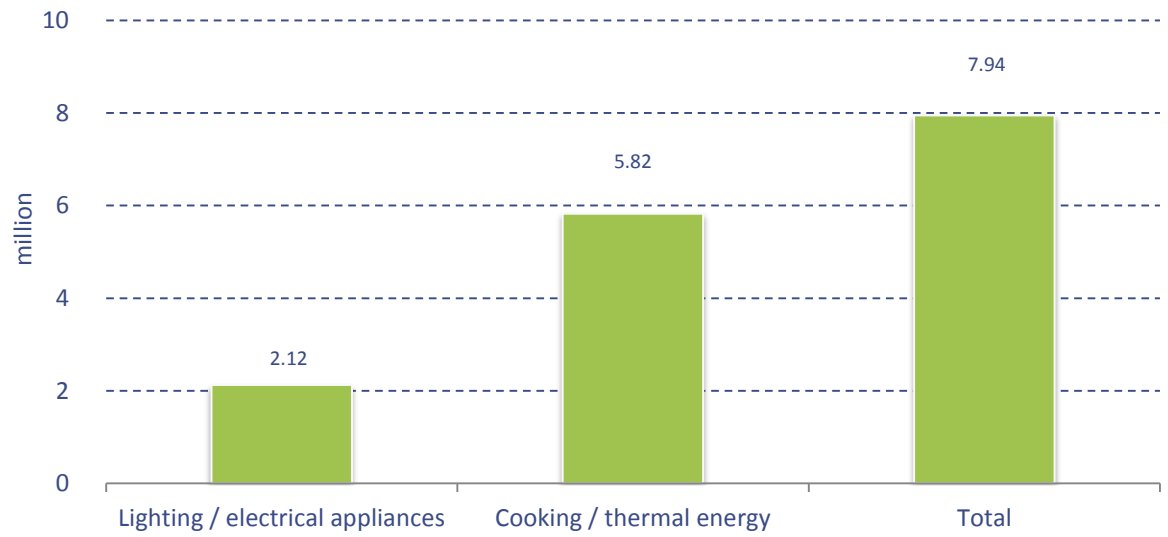
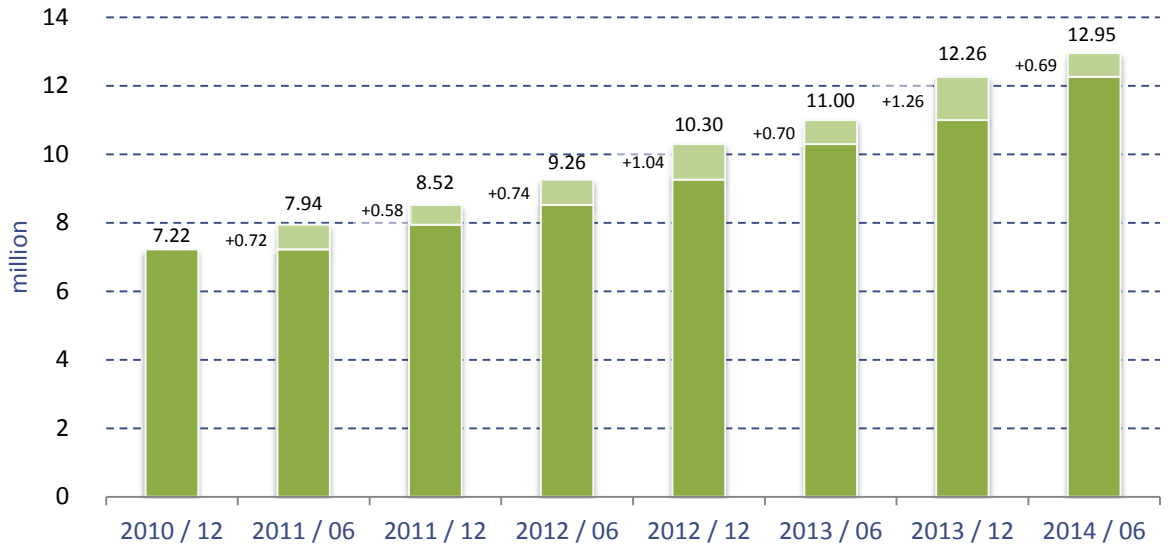


Figure B.4: Progress of EnDev 1 and EnDev 2 adjusted figures per semester



We expect that the outcomes for the second semester of 2014 will be again above 500,000. Nevertheless, on the long run the replacement factor will slow down the number of additional beneficiaries per semester, as markets will face certain saturation.

EnDev uses a tier system for defining 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 SE4ALL global tracking framework that was published in May 2013. Based on this system the EnDev electrification outcome figures in the different tiers are as follows:

Tier	Services	Typical system	Number of people
5	tier 4 services plus use of devices typically requiring a few kilowatt like air conditioners	grid	245,666
4	tier 3 services plus use of devices typically requiring a kilowatt like water heaters, irons	limited grid	191,371
3	tier 2 services plus use of devices typically requiring a few hundred watt like rice cookers, refrigerators	minigrid	128,393
2	bright light, radio, telephone plus use of devices typically requiring tens of watts like TV, video, fan	solar home system	1,334,496
1	medium bright light and, if possible, limited radio use and telephone charging	picoPV, battery charging station	222,439
		total	**2,122,365**

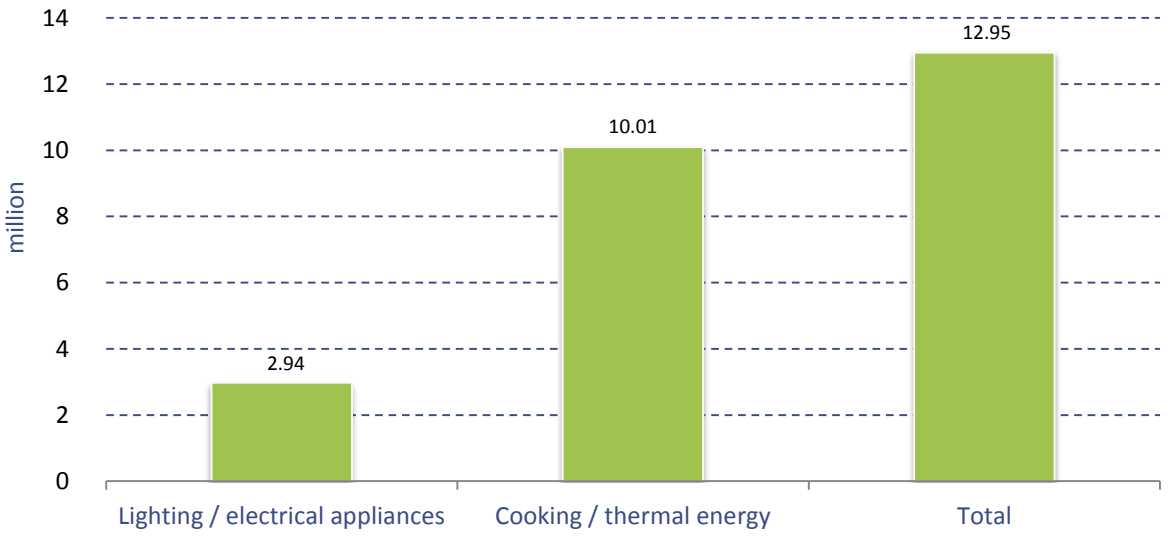
These figures reflect only those people which had no access to electricity beforehand. In several cases EnDev facilitated a better access (higher tier) for households that already had at least basic access to electricity (minimum tier 1). The number of beneficiaries whose access was raised to a higher level is 175,315.

The tier system for improved cookstoves is internationally still work in progress (see chapter A). If applying the current methodology as laid down in the last Global Tracking Framework and in parallel our current internal classification system the EnDev outcomes could be attributed to the 5 tiers as follows:

Tier	Services	Number of people (EnDev methodology)
5	Access to needed quantity of energy source: ≥ very Health protection: ≥ very high Convenience: ≥ very high	0
4	Access to needed quantity of energy source: ≥ good Health protection: ≥ high Convenience: ≥ high	0
3	Access to needed quantity of energy source: ≥ fair Health protection: ≥ sufficient Convenience: ≥ sufficient	18,404
2	Access to needed quantity of energy source: ≥ limited Health protection: ≥ medium Convenience: ≥ medium	3,297,904
1	Access to needed quantity of energy source: ≥ deficient Health protection: ≥ low Convenience: ≥ low	2,503,567
0	Access to needed quantity of energy source: ≥ highly deficient Health protection: ≥ very low Convenience: ≥ very low	2,181
total		**5,822,057**

When looking at the overall EnDev programme, starting from phase one in 2005 up to June 2014 in phase two, the **total number of people** having gained sustainable access to modern energy services on household level amounts to **12.95 million** (Figure B.5). The total number of **social institutions** is close to **15,000**, the total number of **enterprises** is around **28,500**, respectively.

Figure B.5: Adjusted number of household members provided with modern energy services in a sustainable manner (EnDev 1 and 2 combined)

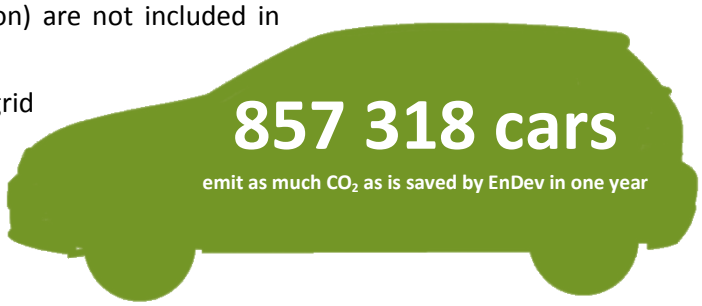


The absolute numbers of verified beneficiaries (i.e., without taking into account the adjustment factors described above) are 13.9 million for EnDev 2 and 22.9 million for EnDev 1 and EnDev 2 combined.

CO_2 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 CO_2 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 1,209,950 t of CO_2. This figure includes 170,054 t CO_2 for which emission reduction certificates have been generated and will be 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 0.15 t CO_2 per year. A solar lantern replaces approximately 90% of a kerosene lamp, saving 0.068 t CO_2 per year.



The total CO_2 saving of 2.2 million stoves and access to solar home systems, mini-grid connections or solar lanterns for 564,861 households supported by EnDev are 1,285,977 t of CO_2. This is as much as the yearly emissions of about 850,000 middle class cars with a kilometrage of 10,000 km per year.

Current status of the RBF facility

First tranche: In the first round of the RBF facility 6 projects were selected. Detailed information in terms of key performance indicators, learning topics and impact observations are presented in the respective country sheets of this report in the dedicated RBF section for each project.

Second tranche: A second round for RBF concepts and full proposals was initiated in September 2013 in order to complete the portfolio of the EnDev RBF Facility. A total of 28 project ideas were received, out of which 10 feasible concept notes were selected and 8 full proposals submitted. The successful 5 projects have been approved by the Governing Board in June 2014. All RBF 2 projects have since initiated project implementation and are expected to enter the respective country markets in 2015.

Due to the fact that projects were approved less than a month before end of the reporting phase, the respective country sheets have not yet been extended by the RBF specific information on the key performance indicators, learning topics and impact observations. With the next reporting all RBF 2 projects will initiate proper reporting through the respective country sheet formats.

Third tranche: At the Governing Board meeting held in Bonn, June 2014, DFID informed the GB members about a potential upcoming opportunity to increase the UK contribution to EnDev by GBP 10 million. This opportunity has become more concrete over the past months and a third tranche was initiated. Approval of the extension of the DFID business case is expected in October 2014. The available budget for the 3rd round is a combination of budget not committed to projects in round 2 and additional funding.

The key attributes of the 3rd round RBF projects are as follows:

- regional/multi-country approach – minimum 3 countries
- sector/technology focus – one technology
- geographic focus on Asia and Africa
- project period of four years
- project budget between GBP 3.5 and 5 million with a minimum of 80% directly going into the market as RBF incentive

By 25th August 2014, nine concept notes were submitted which were evaluated by the evaluation committee and six selected to be further developed into full proposals. Deadline for submission of full proposals is 14th November 2014. By end of November 2014 the full proposal will be evaluated by

the evaluation committee and successful full proposals will initiate implementation by beginning of 2015.

Learning and evaluation: In May 2014 a practitioner workshop of RBF 1 and RBF 2 project staff took place in Nairobi, Kenya. During the two days several important aspects of implementing RBF projects were discussed with a mix of basic information provided by the EnDev headquarter team combined with Q&A rounds, group work and individual "advisory" sessions for project specific aspects. The participants highly appreciated the opportunity to have personal exchange with colleagues working on similar projects. Especially the link between RBF 1 and RBF 2 staff has proven to add a valuable knowledge exchange dimension to the RBF facility. The efforts to use synergies between the RBF projects, ensure knowledge management and identify valuable lessons learnt will be a focus in 2015.

In regard to the overall evaluation of the EnDev RBF portfolio a consulting company was selected based on a European tender process. The consultant team expected to initiate work end of 2014. In 2015, the overall evaluation methodology will be agreed upon, the countries for missions and impact assessments selected and visited.

Benin: Stove sales of the black **Nansu métallique** *and others at the market*

Tanzania: **Matawi** *cookstove and the quality seal used for branding*

Uganda: **Rocket** *stove producer*

Burundi: Assembling the **Kamaro** *charcoal stove*

C. Overview about planned country activities in 2015

The total budget of the second phase is currently EUR 203.9 million. Below, an overview of country activities is provided. Table C.1 gives an overview of on-going and unchanged projects (compared to the previous Annual Planning 2014 document). Country activities that are foreseen to be extended without up-scaling are presented in Table C.2. Table C.3 presents the country activities that are proposed to be scaled up. Table C.4 presents the country activities that are proposed to be scaled up and extended.

Table C.1: On-going 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
Bangladesh	stoves, solar, solar-RBF	06/09	06/17	18,064[2]	5,000,000
Benin	grid, solar-RBF	10/09	06/17	7,160	406,415
Benin	stoves	10/09	12/17	4,000	800,000
Bolivia	grid, solar, stoves	10/09	06/16	11,400	637,000
Ghana	grid	01/10	05/16	3,150[2]	(1180 SMEs)
Indonesia	solar, hydropower	05/09	07/18	11,960	172,000
Madagascar	stoves	12/12	03/15	300	47,500
Malawi	stoves, solar	12/12	12/16	3,000[2,3]	725,000
Mali	BCS, solar, mini-grid	01/13	12/17	3,000	100,000
Mozambique	grid, solar, hydropower, stoves	10/09	12/15	10,800	321,000
Nepal	grid, hydropower	05/09	06/18	6,415	389,137
Rwanda	hydropower, biogas, solar-RBF, mini-grid-RBF	10/09	12/17	15,490	1,028,634
Tanzania	stoves, solar-RBF	12/12	06/17	2,041	226,970
Uganda	r.e., stoves	04/09	03/16	8,000	534,000
Vietnam	biogas	07/13	06/17	3,740	275,000

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	in persons
Cambodia	biogas	12/12	03/15	06/16	2,000	58,515
Indonesia	biogas	12/12	06/15	12/15	1,150	20,000

[2] currently only EUR 500,000 of additional funds are guaranteed, the remaining funding is subject to availability of EnDev global funds

[3] including EUR 500,000 pending Irish Aid proposal for the 2015 budget

*Table C.3: Country activities intended **to be scaled up***

Country	Activities	Project Duration		Funding in EUR 1,000		Planned outcomes on HH level in persons	
		Start	End	Old funding	New funding	Old target	New target
Ethiopia	grid, solar, stoves, RBF	01/10	06/17	15,487	18,137	1,055,000	1,562,750
Kenya	solar, stoves, mini-grids	07/09	06/18	14,735	19,435	4,708,500	6,550,000
Peru	grid, SHS, stoves, SWH	06/09	06/18	13,390	16,390	956,500	1,206,500

*Table C.4: Country activities intended **to be scaled up and extended***

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
Burkina Faso	stoves	10/09	06/15	06/16	3,500	4,500	500,000	800,000
Burundi	solar, stoves	09/10	06/15	06/18	1,500	3,200	34,000[4]	130,000
Honduras	solar, hydropower, stoves	10/09	12/16		5,630	8,130	174,300[5]	225,710[6]
Liberia	solar, solar dryer, stoves	05/12	03/15	05/17	990	3,200	10,500	50,500
Nicaragua	grid, solar, stoves	10/09	12/16		5,640	8,130	174,000[5]	225,710[7]
Senegal	mini-grid, solar, stoves	04/09	06/15	6/16	Up to 10,870	Up to 12,870	559,700	865,000

[4] Targets were modified; please see the Country Sheet Burundi for more information.
[5] Includes planned outcome of 125,000 of regional cookstove activities Nicaragua/Honduras/Guatemala.
[6] This target is 50% of the target for the Central America activities
[7] This target is again 50% of the target for the Central America activities

Table C.5: Analysis of country proposals according to up-scaling criteria

	Burkina Faso	Burundi	Central America	Ethiopia	Kenya	Liberia	Peru	Senegal
Cost/Outcome EUR per person								
ICS	EUR 7.94		EUR 50	EUR 11.98	EUR 2.63	EUR 34.05	EUR 7.54	EUR 7.35
picoPV		EUR 21.25		EUR 19.30		EUR 12.03	EUR 91.33	
minigrid			EUR 410	EUR 817.94				unclear
grid			EUR 65					
SHS			EUR 125				EUR 41.41	EUR 76.82
sustainability	high	unclear	grid: high SHS: high ICS: high MHP: medium	picoPV: medium ICS: medium MHP: low	ICS: medium to high	currently low	picoPV: unclear SHS: unclear ICS: medium	SHS: medium mini-grid: medium ICS: high
impact	proven impact through external study	high (expected but not yet proven)	proven impacts for SHS, ICS and MHP	proven impact for electrification of health centres	proven impact	high but not yet proven	high, proven impacts for ICS	proven impact for ICS
market development	basic market, no subsidies needed	initial stage	basic market for SHS and ICS	basic market for picoPV and ICS	advanced market	initial stage	basic market for ICS, initial stage for picoPV	advanced market for ICS
LDC	yes	yes	no	yes	no	yes	no	yes
strategic importance	no	yes	no	yes	yes	yes	no	yes
electrification	no	yes	yes	yes	yes	yes	yes	yes
remote area	yes	yes	yes	yes	yes	yes	yes	yes
higher tier energy access	partly yes	no	yes	no	no	no	yes	yes
Conclusion / remark	top performer for stoves transitional upscaling	moderate upscaling	moderate upscaling for grid and ICS and less for MHP and SHS	earmarked upscaling for solar and stove activities	significant upscaling because best performer for stoves	moderate upscaling	top performer for stoves, good performer for SHS moderate upscaling	top performer for stoves, delays and unclear situation for solar and mini-grids transitional upscaling

Peru: A man presenting a new picoPV system before installation

Mozambique: A solar home system installed on a traditional hut

Benin: Light at a market place during evening hours

Bolivia: Solar system for a school

D. Overview about planned general EnDev activities in 2015

Cooperation with other organisations and initiatives

EnDev will continue to contribute actively to the **Sustainable Energy for All Initiative (SE4All).** Staff members of EnDev will participate in relevant conferences and working groups (such as the Energy Access Committee) and provide background information and experiences of the programmes to delegates of the donor countries of the EnDev partnership. We will especially present our approaches to develop off-grid energy markets, to establish business models allowing a sustainability operation of mini-grids and to monitor access to electricity and cooking at different tiers. Selected EnDev country projects will test the SE4ALL survey methodology which had been developed together with ESMAP and the World Bank energy unit. We will also discuss with ESMAP the tier system for cooking. EnDev will contribute actively to events and campaigns that are linked to the UN initiative and support action plans on country level.

In countries, that are part of the **Energy+** initiative, EnDev will coordinate its activities with those planned by Norway and partner countries. We will participate in consultative meetings on the Energy+ initiative on country level if requested. In Ethiopia EnDev will look for synergism with different sub-programs operated by the Ministry of Water, Irrigation and Energy, with funds disbursed from Energy+ to the CRGE Facility (Climate Resilient Green Economy). In Nepal the EnDev team is already in close discussion with the Norwegian embassy how EnDev activities can also contribute best to the Energy+ Cooperation with the Government towards achieving "Sustainable Energy for All in Nepal" in the near future. EnDev generally follows a bottom-up approach, which is complementary to governmental measures that are part of the Result Based Aid approach of the Energy+ initiative. EnDev will provide the lessons learnt of its programme and contribute to capacity development of partner organisations as part of Energy+ activities.

EnDev is regularly exchanging information with the EU-Energy Initiative Partnership Dialogue Facility (EUEI-PDF) and supports the Africa-EU Renewable Energy Cooperation Programme (RECP) as well as the EU-Africa Energy Partnership (AEEP).

EnDev is cooperating with several **World Bank** Group programmes on national as well as on international level including the **Lighting Africa/Lighting Global** initiative. EnDev is currently coordinating several country projects such as 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.

EnDev is discussing with **ADB** a possible cooperation on the Energy for All agenda. ADB is interested in identifying innovative and successful project concepts that might be scaled up with ADB loan funding. ADB sees EnDev as a possible source for new (but bankable) concepts, as well as a programme providing 'pilots' that can be directly scaled up by ADB loan financing. Scaling up activities and transferring them into a more loan and less grant oriented environment is interesting from EnDev's sustainability perspective, too, although in the first phases of such a loan, additional EnDev support (in terms of TA and grants) might still be required. Currently a future cooperation in Bangladesh is discussed.

EnDev actively contributes to the **Global Alliance for Clean Cook Stoves.** EnDev experts are participating in different working groups of the alliance including the group developing ISO norms for quality and testing of stoves. In addition, EnDev participates in relevant conference and international discussions on how to develop sustainable markets for stoves. EnDev is also in close contact with WHO in the context of the GACC to exchange concepts and findings how to reduce indoor air pollution. EnDev is regularly reporting its outcome figures to GACC and is currently the main contributor to the GACC figures on global access to clean cooking. On country level EnDev is

supporting test and quality laboratories equipped by GACC. In addition, EnDev is participating in creating clean cooking associations and in developing country action plans.

Impact Monitoring and Evaluation

As described in chapters A and B, EnDev continues to invest resources in the monitoring of outcomes and impacts. This includes the RBF evaluation currently being contracted, but also a number of more specific studies that will directly inform implementation of country measures.

In 2015, activities related to impact monitoring will include

- implementation of at least one minigrid sustainability study, as we have doubts about the economic viability of a number of sites
- implementation of an impact study on job creation in the improved cookstove and picoPV value chains
- implementation of at least one study specifically on gender aspects of energy access
- a study on the actual replacement of kerosene lanterns by picoPV systems in order to verify EnDev's hypotheses in the CO_2 calculation

As proposed during the external evaluation, EnDev will intensify collaboration with academia and try to leverage funds in order to implement larger and more valid studies.

In addition, EnDev is currently in negotiations with KfW and BMZ in order to perform the first country baseline for SE4ALL. The target country is Bangladesh.

Energypedia

In March 2012, energypedia, founded by EnDev, was constituted as an independent non-profit organisation to operate the open and free knowledge platform for sharing information about renewable energies.

The outsourcing of www.energypedia.info to an independent organisation was mainly done to assure the sustainability of energypedia and to avoid that funding for energypedia depends on the project life span of Energising Development.

In April 2012, an additional energypedia consultancy was founded offering commercial services like customer-specific wiki solutions, web based monitoring tools and trainings. Profits will be transferred to the existing non-profit organisation, allowing a more independent financing. The overall goal of this organisational structure is the sustainable build-up of stable structures and a smooth long-term operation of www.energypedia.info.

The EnDev-Wiki is one of the restricted workspaces within energypedia and is the common interaction platform for all EnDev stakeholders and aims to improve the workflow efficiency.

In 2015, EnDev will continue to support energypedia with the aim to achieve independent financial viability of energypedia by the end of 2016.

Public Relation Activities

In 2015, the Energising Development partnership will exist for 10 years. It is planned to use this anniversary to organize a celebration or comparative event. Among other activities the illustrative film clip, describing the approach and impacts of the EnDev programme[8] will be updated and information on EnDev will be posted on several platforms including Twitter and Facebook pages.

Further EnDev will publish short fact sheets about country activities and specific impacts (like gender) to describe how access to modern energy devices can improve living conditions for people as well as other articles about results and impacts of the programme.

[8] http://www.youtube.com/watch?v=TwTaZuHuDNI

In 2015, EnDev will use a new corporate design in its Public Relation activities, which will be discussed during the board meeting in December. In addition, EnDev will be represented in public events on energy access and up-date the EnDev website as main source of information for the interested public.

Rwanda: Preparations for the installation of a biogas digester

Ethiopia: The micro hydropower station Erete provides electricity for 99 households, 1 school, 1 health centre and more than 10 stores

Mozambique: Maize mill operated with hydropower

Nicaragua: A pelton turbine ready for installation

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