

Progress Report 2010

on

Energising Development – Phase 2

Partnership between

The Netherlands Ministry for Foreign Affairs

and

**The Bundesministerium für wirtschaftliche Zusammenarbeit und
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executed by

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A Executive Summary

In September 2008 BMZ and DGIS agreed to implement a second phase of the Dutch-German Energising Development programme. In the new phase (EnDev 2) the programme is supposed to provide additional 3 million people with access to modern energy services, which will contribute to sustainable development and poverty reduction.

In 2010, the EnDev Partnership comprised 19 activities in 18 different countries. The focus is on partner countries of the Netherlands and Germany, and particularly on those in Africa. 58 per cent of the EnDev 2 funds are allocated for Africa.

Until December 2010, EnDev 2 provided 2.21 million people with sustainable access either with electricity by connecting households to the central grid, a mini grid powered by hydropower or through photovoltaic systems or with improved cooking technologies, such as improved firewood and charcoal stoves or biogas plants (Table 1). In addition, more than 1,600 social institutions got access to improved cooking energy, electricity or other modern energy carriers and 6,800 small and medium enterprises were provided with a modern form of energy for productive use.

When looking at the overall EnDev programme, starting from phase one in 2005 up to December 2010 in phase two, the total number of people, which got sustainable access to modern energy services on household level amounts to 7.22 million.

These figures take into account:

- a “sustainability adjustment factor,” which takes into consideration that the access provided to modern energy technologies is not sustainable in all cases
- a “windfall gain factor” considering that some households supported by EnDev would have gained access to modern energy services anyway even without support
- a “double energy factor”, which accounts for households and welfare institutions, which received an improved stove or other modern cooking energy technologies but already had access to electricity

Table 1: Adjusted number of people with access to modern energy services (EnDev 2; in millions)

Lighting/ Household application	Cooking	HH Total
0.45	1.76	2.21

EnDev has studied the impacts of the different country activities to verify the assumptions regarding the impact of energy development measures, the links between energy for development and the Millennium Development Goals (MDGs) and to check the sustainability of the EnDev results and impacts. Six case studies have already been carried out (in Ethiopia, Kenya, Malawi, Uganda, Bangladesh and Indonesia). The results of the Uganda (stoves), Bangladesh (SHS & stoves), Ethiopia (stoves), Malawi (stoves), Nicaragua (SHS) and Senegal (stoves) studies were presented in previous reports. In the present report the impact of the EnDev activities in Indonesia and on Pico PV in Ethiopia will be summarized.

The expenditures for EnDev 2 activities amounted to 33.1 million EUR until December 2010.

B Introduction - Energising Development Partnership – Phase 2

B.1 Overall Objective of the Partnership

In December 2004 the Netherlands Minister for Development Cooperation (DGIS) and the German Federal Ministry for Economic Cooperation and Development (BMZ) launched a partnership on Energy Access. The Partnership aimed at providing 3.1 million people in developing countries with sustainable access to modern energy services till 2009. In 2008 the Netherlands and Germany decided to extend the partnership on Energy Access and to continue the Energising Development Programme in a first step until at least 2012 aiming at providing additional 3 million people with modern energy services. In the beginning of 2011, a further extension until 2014 has been agreed upon.

The defined outcomes are considered a measurable and significant contribution to the achievement of the MDGs, as energy is a key requirement to reduce poverty and to improve the standard of living and an input for economic activities and growth. Consequently, the success of the programme does not only depend on the number of reached people but also on the impact of the provided modern energy service on income, health, education and well being.

B.2 Relevance of EnDev for International Energy Initiatives, Donor and Partner Country's Development Strategies

The overall objective of EnDev to provide access to modern energy services is shared by a number of international initiatives and partner countries strategies as described below. This highlights the relevance of energy access and of the global EnDev programme.

a) On international level: Several regional and UN organisations as well as national donors are currently supporting or implementing programmes and initiatives with the declared objective of providing access to modern energy technologies and services to poor households, social institutions and enterprises.

Among the most important international organisations and programmes in the field of access to energy are:

The **Africa-EU Energy Partnership (AEEP)**. The first High-Level Meeting (HLM) of the AEEP in 2010 approved a declaration with the commitment to bringing access to modern and sustainable energy services to at least an additional 100 million Africans by 2020. EnDev is part of the AEEP. EnDev actively participated in the organisation of the high level meeting and co-organised one session.

The **ACP-EU-Energy Facility (EUEF)**, which is co-financing projects on increasing access to sustainable and affordable energy services for the poor living in rural and peri-urban areas in African, Caribbean and Pacific (ACP) countries. The current EUEF has a total budget of € 200 million.

EnDev presented one regional and one bilateral project proposal which both were approved. In addition EnDev is part of three additional projects led by other organisations.

The **Global Alliance for Clean Cook Stoves** led by the UN Foundation. The goal of the alliance is for 100 million homes in developing countries to adopt clean and efficient stoves and fuels by 2020. The alliance is part of a major UN initiative to achieve universal access to modern energy services by 2030. UN-Energy – a collaboration of 20 UN agencies – will lead the effort.

EnDev experts are participating in working groups of the alliance and provide other kind of support.

The **World Bank Group (WBG)** with several programmes for energy infrastructure development, both on- and off-grid approaches (incl. renewable energy technologies like PV, wind and hydro). One of the most prominent WBG programmes focusing on access is the **Lighting Africa initiative** which supports the private sector to develop, accelerate, and sustain the market for modern off-grid lighting technologies tailored to the needs of African consumers. Main activities include supporting market research; networking between international and local entrepreneurs; financing facilitation; developing standards; certification and labelling; aggregating market demand; knowledge sharing and capacity building. Other WB led programmes with strong energy access components are the **African Energy Initiative (AEI)**, **Asia Sustainable and Alternative Energy Program (ASTAE)**, the **Global Partnership on Output-Based Aid (GPOBA)**, the **Energy Sector Management Assistance Program (ESMAP)**.

EnDev has established working partnerships to almost all of these programmes. Quite close is the partnership with Lighting Africa (LA). EnDev has provided LA with results from field tests and impact studies of different lighting systems and is intensely involved in the development of quality standards, consumer protection measures, promotion of marketing and rural sales structures.

UNEP started in 2010 the **en.lighten** initiative. Aim of the initiative is to promote product quality and performance of lighting products, enhance monitoring and verification procedures, promote favourable political conditions for energy efficient lighting and to strengthen consumer and environmental protection in the lighting sector.

EnDev is part of the task force on off grid lighting and actively contributing to the intended outcomes of the initiative.

The **Energy for All Initiative** led by the Asian Development Bank (ADB). The Partnership aims to provide access to safe, clean, affordable modern energy to an additional 100 million people in the region by 2015.

EnDev is in regular information exchange with the Energy for All Initiative and individual members of the initiative. TERI, one of the leading members of the initiative, and EnDev signed a MoU on the cooperation between these two organisations.

The **Global Environment Facility (GEF)** which provides grants to developing countries and economies in transition for energy projects related to climate change, international waters and land degradation. Global environmental protection rather than improved energy access is the primary goal of the GEF although energy is an implicit objective of the GEF.

EnDev is cooperating in several countries with programmes of World Bank and other international organisations which also include GEF-Funding

The **Global Village Energy Partnership (GVEP)**, a network of 2000 private sector members, developing and developed countries governments, NGOs, academia and international development agencies working to accelerate access to affordable and sustainable energy services for poverty reduction.

EnDev is discussing with GVEP joint activities in the hydropower sector in Rwanda.

The **Alliance for Rural Electrification (ARE)**, a network of private sector actors, which promotes and provides efficient renewable solutions for rural electrification in developing countries. Consisting mainly of multi-national enterprises and industry associations of the renewable energy sector, the primary mandate of ARE is to lobby for the use of renewable

energy technologies for rural electrification in developing countries rather than deploying them at the operational level.

EnDev has established information exchange with ARE.

b) Other donors: Several other donor organisations notably DFID and NORAD have expressed their interest in the concept and results of EnDev. DFID has developed a Result Based Financing (RBF) approach for the energy sector and is discussing the possibility to integrate this approach into EnDev. NORAD is interested to establish a close cooperation with EnDev in some selected countries, namely Burundi, Mozambique and Nepal.

c) On national level: Many developing countries are working to extend access to modern energy services, including safe and sustainable cooking fuels, to their entire population. According to a study of UNDP and WHO 68 developing countries have defined tangible access targets¹. In addition energy access is increasingly becoming part of national Poverty Reduction Strategies (PRSs). Thus, the EnDev programme is coherent with the national energy sector policies of the countries in which it is active.

As a special contribution to harmonize German and Dutch initiatives to provide access to energy EnDev participated actively at the “Energising Development Together” event of the Netherlands Directorate General for International Cooperation (DGIS) on 26 and 27 May 2010 in The Netherlands. The goal of the conference was to exchange knowledge and experiences and identify bottlenecks and lessons learnt regarding 'access to energy' and renewable energy in developing countries. The Netherlands 'Promoting Renewable Energy Programme' comprises after all of a wide range of investments and interventions leading to a broad range of experiences which can be better shared among the stakeholders involved. Moreover the conference aimed to achieve more synergy between the individual activities and to discuss strategies on further collaboration between implementing organisations.

The conference resulted in a number of concrete follow-up activities expressing the shared desire for synergy amongst the participants. Among these are some in which EnDev took the lead:

- Better exchange of experiences in workshops and through EnDev's energypedia; EnDev opened the energypedia platform to all energy organisations funded by DGIS;
- The organisation of a practitioners workshop on marketing and distribution in Autumn 2010, which was held in October in Driebergen. At this workshop the strong desire for more regular discussions and exchange of experience was expressed by all the participants. EnDev currently looks into the follow-up of this;
- The organisation of a workshop on sustainability and impact monitoring in autumn 2011;
- Participation in the Dutch Base of the Pyramid Innovation Centre, which took place in October 2010;
- To contribute to the investigation of a climate financing plan for Indonesia, an initiative of FMO (not under EnDev but under AgNL's Indonesia programme);
- To start cooperation with the IS academy;

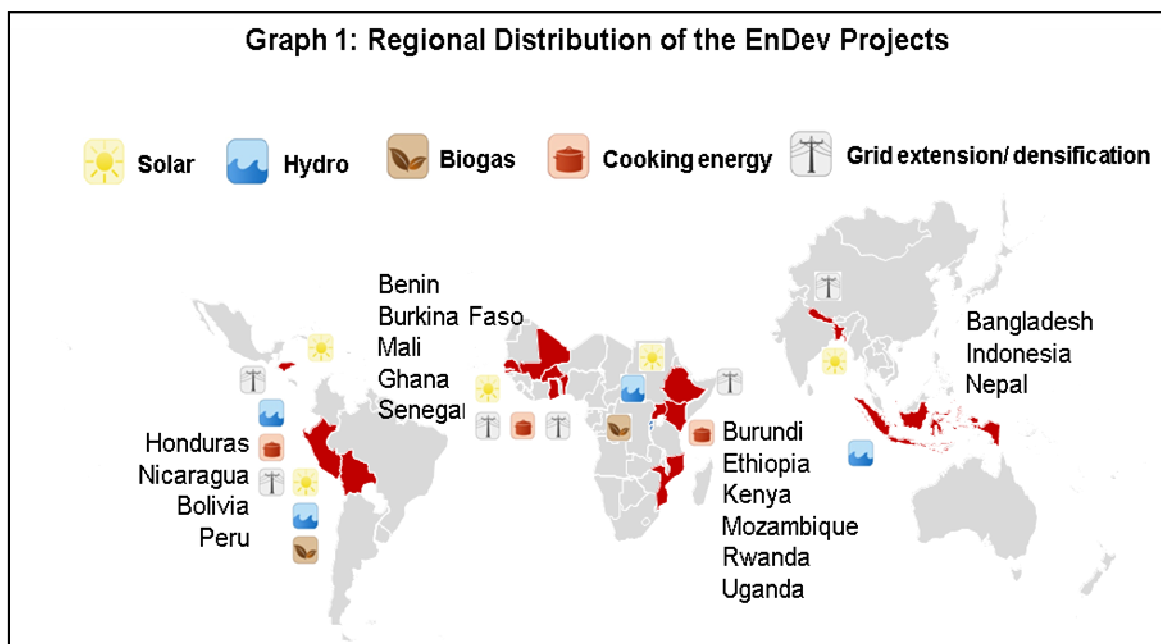
¹ UNDP, and WHO. 2009. The Energy Access Situation in Developing Countries - A Review on the Least Developed Countries and Sub-Saharan Africa. New York.

- To investigate the possibility of a trip to EnDev projects for Dutch and German journalist (on the request of the Ministry this initiative was postponed until the new government in The Netherlands has been appointed).

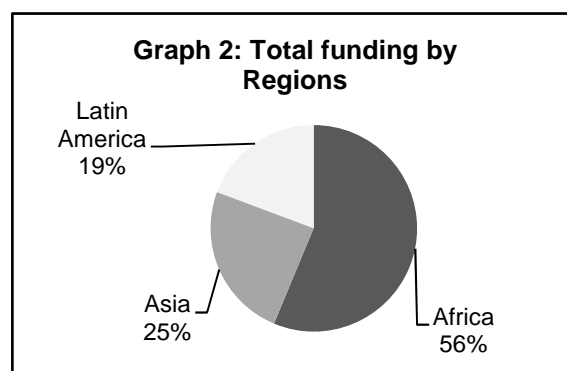
C Achievements of EnDev 2

C.1 Number of projects and regional distribution

In the second phase of the EnDev Partnership projects are currently carried out in 18 countries (Graph 1).



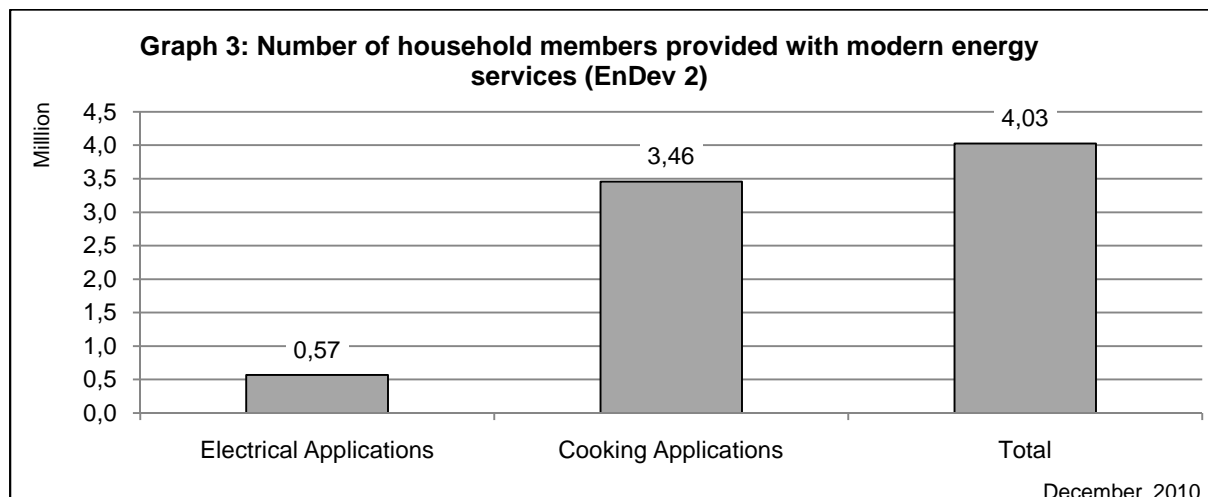
The regional focus is on Africa. Eleven out of the 18 countries where EnDev has been active belong to Africa, followed by 4 countries in Latin America and 3 countries in Asia. The focus on Africa is also reflected in the allocation of financial resources to the different regions. Out of the EUR 61.4 million allocated to country projects 58 per cent will be spent in Africa followed by 22 per cent in Asia and 20 per cent in Latin America (Graph 2). Four EnDev Projects in Africa (Ethiopia, Senegal, Benin, Burkina Faso) applied for additional funds from the ACP-EU Energy Facility II to upscale their activities. The proposals for Senegal Benin and Burkina Faso were approved.



C.2 Achieved number of persons

By December 2010, 4.03 million household members were provided either with electricity or improved cooking technologies under EnDev 2. Out of this figure, 568,000 people were connected to a grid/ mini grid or are benefiting from the installation of a Solar Home System. The remaining 3.46 million people were provided with access to improved cooking energy,

when households acquired an energy efficient improved stove (Graph 3). In addition, more than 1,600 social institutions got access to improved cooking energy or electricity, or other modern energy carriers and 6,800 small and medium enterprises were provided with a modern form of energy for productive use.



When assessing the outcomes it is important to consider the sustainability of the achieved access as well as windfall gain effects and a so called double energy effect.

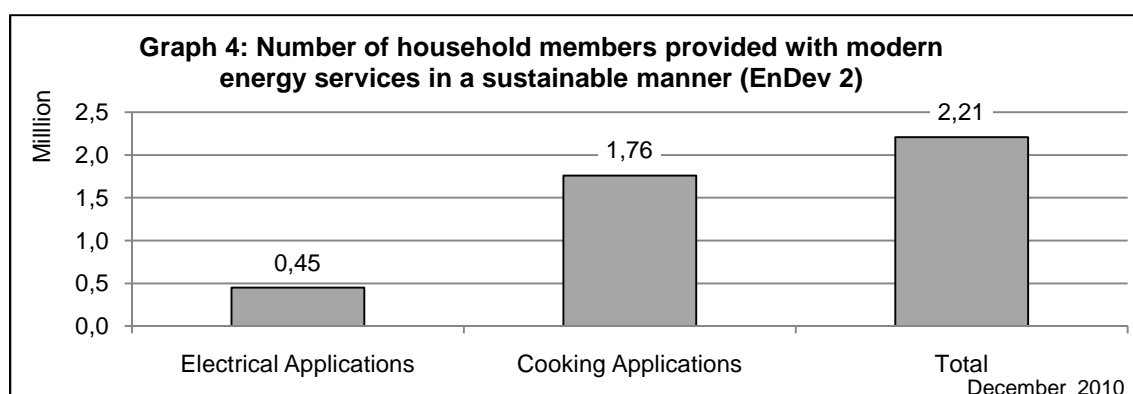
EnDev interventions aim at establishing or enhancing sustainable markets for affordable energy technologies, fuels and services adapted to needs of the target population. Thus, one of the key activities of EnDev projects is to train and support local manufacturers in technical and business skills. However, not all of the trained manufacturers stay in business. Especially in the case of stoves where profit margins are low due to affordability or willingness to pay issues, up to 50% of trained stove producers stop this business after the project support in terms of backstopping and training, and promotion and awareness campaigns ended. EnDev does generally not provide buy down subsidies for stoves. In case of solar systems and hydropower plants households and communities may not be able or willing to maintain the service or technology for a longer period of time due to shortage of money or risk factors (e.g. disasters) which are hardly addressable by development actors. These losses of access are not easily compensated through the market forces. Consequently, the number of people having durable access to modern energy services is generally lower than the number of people who were initially provided with modern energy services. This is, in particular, the case for devices that have a short lifespan and require frequent maintenance. Depending on the technology or provided services as well as the attractiveness and lifespan of the devices and services, a sustainability adjustment factor is applied ranging from -5% to -40% based on empirical evidence. In some cases as for grid extension and hydropower, the decrease of the number of people who already had access to modern energy through EnDev and who have been disconnected again due to above mentioned reasons is exceeded by an increase. This increase goes back to people migrating from remote areas into villages with grid electricity as they also wish to benefit from the new infrastructure. Therefore, a growth adjustment factor is applied for these specific cases.

The windfall gain factor takes into account that some households benefit from support and subsidy measures of the EnDev programme, although they would have gained access to

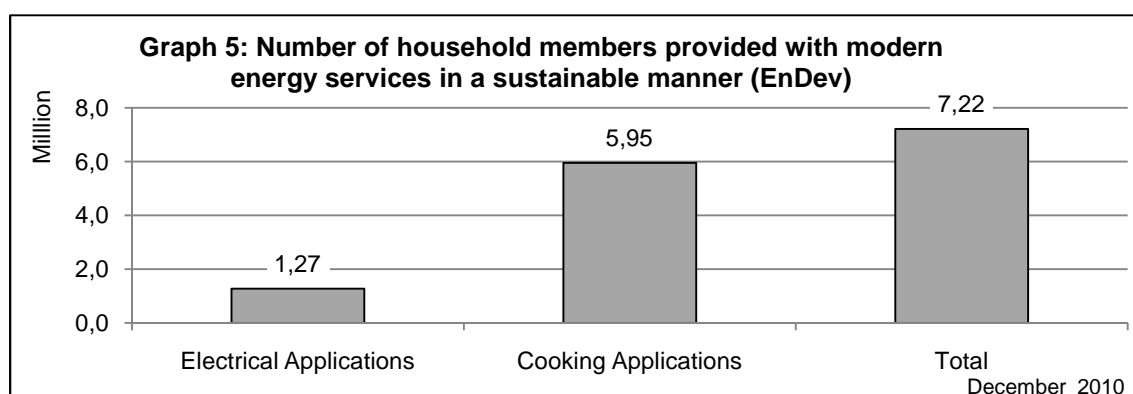
modern energy services anyway. For instance, a significant percentage of households in Bangladesh would acquire a Solar Home System even without any support from the project but of course they take advantage of the subsidy schemes provided by EnDev.

A third adjustment factor (double energy factor) is related to the fact that some households and welfare institutions which benefit from improved stove activities may already have access to electricity or to liquefied petroleum gas (LPG). This is especially the case for households and institutions in urban and peri-urban areas. In most cases these households are poor and improved stoves contribute to improve their living conditions. However, they already had access to a modern energy service and thus are not counted.

When applying these three different adjustment factors the total number of people provided with modern energy services in a sustainable way under EnDev 2 is 2.21 million (1.76 million with stoves² and 0.45 million with electricity and other modern energy carriers) (graph 4).



The total number of people who got sustainable access to modern energy services and technologies on household level through the EnDev program (phase 1 and 2) amounts to 7,22 million (graph 5).



In order to better analyze and strengthen sustainability, together with the Netherlands IS Academy a framework for assessing access (and therefore outcome) sustainability is currently under development.

² For stoves also types that in the field perform less than anticipated, i.e. below 40% energy efficiency improvement, are deducted from the “gross counting”

C.3 Impacts

EnDev aims at providing people in developing countries with access to modern energy services. Combined with this outcome it is intended:

to increase the efficiency of the use of cooking and lighting energy sources by 40% in benefitting households;

to reduce indoor air pollution for at least 1,100,000 women and children;

to increase the turnover of energy enterprises involved in the programme by 30%, and

to generally improve people's living conditions - thus often a basic requirement for achieving the Millennium Development Goals.

The monitoring and reporting system currently in place for EnDev focuses on measuring the activities implemented, the number of people provided with modern energy services and the energy efficiency of the promoted energy technology or service. In an ad-hoc and limited way, projects report on the direct benefits of having access to energy services as well, such as cost savings, improvement of health situation, better educational conditions, opportunities for income generation and turnover of energy enterprises.

In addition to the regular reporting, impacts of EnDev are studied through baseline studies, special impact assessments, mid-term reviews and ex-post evaluations. The results of eight case studies (Uganda, Bangladesh, Ethiopia, Malawi, Kenya, Bolivia, Nicaragua and Senegal) were already presented in previous progress reports under EnDev 1. The results of two new studies (Indonesia and Pico PV in Ethiopia) are summarized in the present report. Key findings of the studies are regularly published in the "EnDev report on impacts".

In addition, four of the EnDev country activities will be evaluated by IOB, the Policy and Operations Evaluation Department of DGIS. The planned impact evaluation by IOB in Ethiopia had to be canceled due to a budget cut at IOB. All preparatory missions have been finalised and Terms of References (ToR) for the coming baseline surveys have been prepared. EnDev activities will be evaluated particularly in Burkina Faso and Indonesia. The status of the planned studies in Senegal and Rwanda are unclear due to budget constraints. Baseline survey activities in Burkina Faso may start soon (March/ April 2011) and in Indonesia the baseline is already conducted by RWI. IOB staff will add qualitative assessments of different policy and sustainability aspects. Finally, this should result in an overall policy assessment in 2014.

Increase the efficiency of the use of the primary energy source

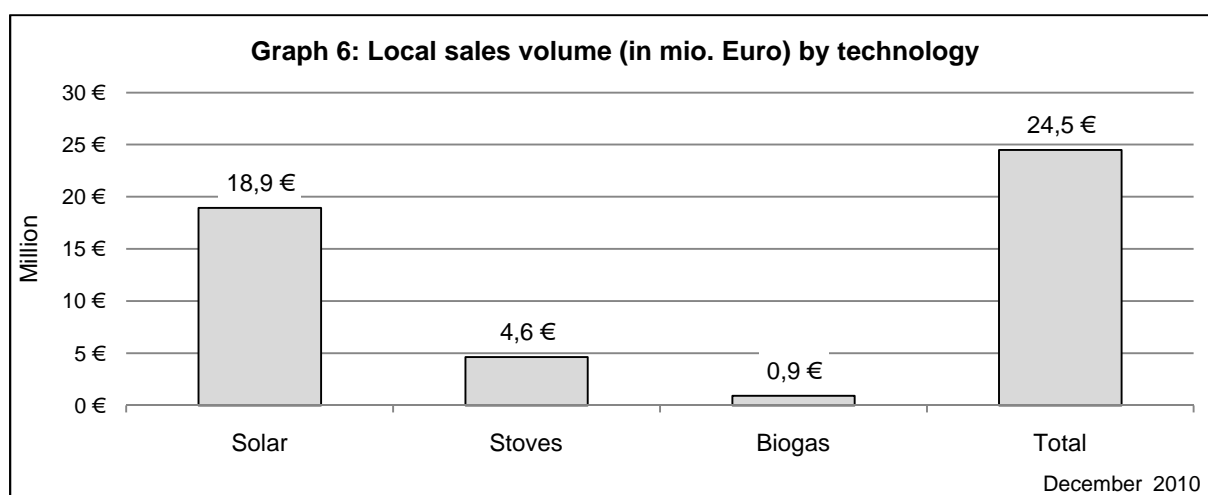
Stoves, that are not saving 40% of energy, are generally not included in the adjusted number of outcomes. However, they are not excluded from project activities because they often have positive impacts on indoor air pollution and work load, even if they don't reach 40%.

Reduction of Indoor Air pollution

Improved stoves promoted by EnDev have directly reduced indoor air pollution through a) saving of firewood, b) the improvement of burning process leading to reduced smoke emissions and c) by introducing chimneys for specific stove types. The new stoves have therefore enhanced indoor air quality, as well as the safety and hygiene of kitchens in the households involved. A detailed quantitative study about the impact of improved stoves on indoor air pollution and health for Peru is now being carried out. Researchers are about to start their field work as soon as the research area will be accessible.

Increase of the turnover of energy enterprises

For the development of self-sustaining markets it is essential that sales figures of energy products and services reach a critical mass of customers and sufficient turnover, allowing enterprises to stay in business on medium and long term. Based on this concept a calculation was carried out about the total number of sold/installed energy technologies/services and the corresponding turnover of the involved enterprises (graph 6). According to these preliminary data, the total number of sold household stoves within 2010 is more than 740,000. At the same time more than 62,000 solar systems were sold to households. The total turnover directly linked to EnDev activities is estimated to be around 24 million EUR.



In some countries EnDev activities have contributed to develop a market for modern energy technologies and services which already has reached a significant level. For example the sales figures of SHS systems in Bangladesh have continuously increased over the last 5 years starting from several hundreds a month to several ten thousands nowadays. The turnover of these sales is not included in the above figures but has to be considered when assessing the degree of market development.

Other socio-economic impacts

Households with an efficient cooking stove spend less on burning material, such as charcoal, than those without, so that these households can save part of their income. Households connected to the grid or benefiting from a photovoltaic system reduce drastically their expenditures for kerosene, candles and single-use batteries. However, the overall impact on the family outlay depends on the amount of the electricity consumed.

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. With access to electricity, businesses can diversify the service they offer and extend their working hours into the evening. However, it is very rare for new income generating activities to arise as a direct consequence of a new electricity supply.

Impact Case study: Promotion of Hydro Power in Indonesia

In Indonesia only 65 percent of the population have access to electricity. Particularly in rural areas the energy situation is still a challenge. Hydro power is a suitable technology to face this challenge. Consequently, the GIZ Mini Hydro Power Project (MHPP) has been successfully supporting the mini hydro power sector in Indonesia since the 1990s. Since 2006, as part of the global Energising Development Programme, MHPP has been scaled-up to further enhance sustainable access to energy in rural Indonesia. Between 2006 and 2009, over 90 additional mini hydro power (MHP) schemes went into operation. By 2009, these MHP schemes supplied 68.000 persons in households, 427 social infrastructure measures, and 2.020 small business initiatives with sustainable energy.

In autumn 2010 a monitoring survey visited 20 MHP sites which were built in Sumatra and Sulawesi under EnDev I. The survey mission found 19 of these 20 MHP sites still operational and in an overall good condition. Only one system is temporarily out of operation due to land conflicts. Currently, on average a capacity of about 240 W is available for each of the 1.638 households supported by the 19 MHP investigated. Additionally, 88 percent of the social infrastructure buildings in the communities are supplied with electricity and small businesses profit from the MHP. All sites are looked after by trained operators, who receive a regular salary. All communities defined a tariff system, whereby rules for customers and social infrastructure tariffs are set; 5 communities even introduced special tariffs for productive use of energy. In each community established technical and financial management systems are in place. All villages save the collected tariff for future maintenance and repair of the systems. All operational sites are run without any further external support.

Thus, an immediate economic development as a result of energy access is limited to affected entrepreneurship either in producing energy services or using energy for (mostly already existing) productive means.

On the other hand the economic development of the rural population is highly influenced by factors such as the level of education, the state of health and the general living conditions of households which again are positively affected by improved cooking technologies and access to electricity. Savings in firewood consumption of 40–60% relieves children of some of their time consuming housework (fuel collection). This creates free time for children to attend school and to study after school. Electric light offers children the possibility to study after dark and parents the chance to help them. Households with electricity use more intensively mobile phones, radios and TVs which increases significantly their access to information and knowledge. Through electrification of schools teachers can use computers, televisions, and tape recorders, which is a significant contribution to better quality of the education system. In addition, adult education in the evening hours becomes more attractive.

Socio-cultural impacts

In most project regions mainly women and children, particularly girls, are responsible for firewood collection. Women of households with improved cooking stoves therefore need to invest less money and effort in collecting or purchasing fuel and can use the saved

time and/or money for other activities. In some countries women have become stove entrepreneurs, thus improving their social position, and enhancing their roles within families and villages.

Electric light offers women the freedom to do some of their housework after dark, so they have more time for other activities during day. With (bright) light all household members generally feel more secure from theft, violations, and wild animal attacks.

In addition to the above mentioned benefits, improved stoves and electric light generally facilitate improved food, personal and family hygiene with positive effects on health. EnDev has also provided access to electricity for health centres, using grid connections or solar energy systems. This access has improved the quality of medical treatment.

Ecological impacts

Improved stoves help reduce demand for firewood. They therefore reduce deforestation, soil erosion, land degradation and desertification, and they improve water control. A further consequence of more efficient burning and lower demand for firewood is the reduced emission of greenhouse gases. Compared to cooking on open fires, the improved stoves emit between one and one and half tons of CO₂ less per stove annually.

Electrification through grid extension, mini hydropower plants or photovoltaic installations have reduced waste problems by decreasing the demand for small throw-away batteries. Even though used batteries are toxic waste, they usually are discarded in the local environment without further treatment. Mini hydropower plants also contribute to increased awareness of environmental issues due to the importance of proper watershed management and reforestation to secure a long-term water supply. Photovoltaic installations, such as solar home systems, do contribute to environmental sustainability by decreasing the demand for kerosene and gasoline. However, special attention must be paid to the proper disposal of the solar batteries, a process which is still in its infancy in many project regions.

Impact Case study: Pico PV Systems in Ethiopia

PicoPV systems, such as solar lanterns or micro solar home systems, are a promising option to provide access to modern energy for low-income households living in rural areas. Therefore, EnDev is exploring options to use such technologies on large scale.

A qualitative impact study, conducted in Ethiopia, detected -in addition to expected impacts on health, education, security and economic factors – several other interesting results. Access to solar lanterns for instance reduces stress on women concerning their planning of energy supply. Furthermore, children become more autonomous, because parents let them walk alone with the solar lamps (to go to toilet or study) without fear of accidents; in total, children benefit the most of the solar lamps. Additionally, users stated an improved family life, because solar lamps can be used simultaneously by various users, due to a large and bright light cone. As consequence, users mentioned less conflict among family members.

Experience shows that users select lamps according to specific criteria such as the duration of light, brightness and robustness. Additionally, quality of lamps is measured in terms of glare, cone of light, ease of operation for children and a regulator in order to change the level of brightness. Moreover, people choose white, bright light instead of yellow light. A built in switch was favored in contrast to a pull switch.

Impacts on information and knowledge exchange

Starting from 2008 EnDev introduced a wiki webpage for its knowledge and project management. An increasing number of energy experts join the global network (over 950 energy experts worldwide signed up) and exchange information on energy issues. Since the number of users continuously grows and since not all usergroups directly cooperate with EnDev, the wiki has been restructured: Content of general interest was separated from

EnDev specific content and the wiki re-launched under the new name “energypedia” on June 8th 2010 (www.energypedia.info).

“energypedia” is an internet platform similar to Wikipedia. “energypedia” provides articles about renewable energies and experiences in the context of development cooperation. Unlike conventional web-platforms, “energypedia” allows all its users to place their contributions by providing and revising knowledge. This is possible partly due to the fact that it is not organized in responsibilities or hierarchies. All wiki users have equal rights to create content. Consequently, the articles are and will be updated continuously with everyone’s collaboration (collective intelligence)! As a result, all relevant contents concerning renewable energies in the context of development cooperation are available and continuously revised. By now energypedia provides over 530 articles regarding renewable energy.

D Country activities

Benin stoves

PN 08.2139.7-111

Country/ Region	Benin					
	New Project <input type="checkbox"/>		Follow-up Project of EnDev 1 <input checked="" type="checkbox"/>			
Project Phase	10.2009 – 12.2012		Project Budget	2,000,000 €		
Target Groups	Poor rural, peri-urban and urban households					
Outcomes				Target till project end	Achieved until reporting date	
	Energy for lighting and el. HH Appl.					
	Cooking Energy for Households			400,000	38,097	
	Electricity for social infrastructure					
	Cooking/ Heating Energy for social infrastructure (number of SIs)				14 SI	
	Energy for prod.use/income generation (number of SMEs)				245 SME	
Technology applied	<input type="checkbox"/> Solar	<input type="checkbox"/> Biogas	<input checked="" type="checkbox"/> Stoves	<input type="checkbox"/> Hydro	<input type="checkbox"/> Grid	Other
Summary of Key interventions and outputs	<p>1. Component 1: Scaling-up of stove promotion for rural households in the North of Benin:</p> <ul style="list-style-type: none"> - Promotion of fixed rocket stoves for cooking with firewood; - Promotion of clay stoves for cooking on charcoal or wood. <p>2. Component 2: Promotion of improved cook stoves in urban and peri-urban areas in the South of Benin:</p> <ul style="list-style-type: none"> - Promotion of Rocket stoves for cooking with firewood; - Promotion of pure clay stove using wood or charcoal; - testing of market opportunities and possible promotion of mobile household rocket stoves (locally produced or import of industrial products from Asia). <p>Expected Outputs: 80,000 stoves sold</p>					
Involved Bilateral Programme	ProCGRN- Programme of Conservation and Management of Natural resources					
Lead Executing Agency	Ministry of Agriculture and Ministry of Environment (Partners of ProCGRN)					
Implementing Partner	Ministry of Energy					

1. Current progress towards the project objective

Overall, the current level of achievement (136,386 people reached) is about 39% higher as compared to the final overall reporting of EnDev 1 one year ago (98,292 people reached). However, the 38,097 additional people attributable to phase 2 are only app. 10% of the overall target of 400,000. However, there are good reasons to expect that with the start of the intervention in the South, the new liner-production in the North-West and the new interventions in the North-East, the sales rate will increase substantially in 2011.

Key intervention 1: Based on the capacity development investments in 2009, the promotion of the improved stoves in the North has been fostered. Particularly the annual sales of household Rocket stoves and mobile clay stoves have increased. A semi-industrial production of ceramic inserts for metal-cladded charcoal stoves started production in October

2010. Additionally, more tin smiths were trained for the production of the metal claddings. First impacts of this development are expected to be seen in the next reporting (first half 2011).

Key intervention 2: The main challenge for the planning in the South is the success of "intermediary technologies" with regard to Charcoal burning stoves (app. 20-30% better than the previous baseline). These stoves are now available nearly everywhere at a very low cost. The currently known "improved stoves" (e.g. Nansu - a Type of the Kenya Ceramic Jiko) are app. 10-20% better than these intermediary technologies. Hence the Nansu only qualifies for EnDev if it replaces an old baseline stove, but not if it replaces an intermediary stove (e.g. Cloporte).

Based on the results of a Study on market potentials for ICS in 8 urban centres of the South, and in consideration of the definition of "modern energy" of EnDev, a first strategy planning has been done for the promotion of firewood cook stoves in the South. A tendering and selection of private partners for the commercial dissemination of rocket stoves in suitable areas in the South has been done.

Based on international discussions on design-principles of improved charcoal stoves (Aprovecho Institute in Oregon), and the use of already proven stove designs in other countries in the region (Roumdé stove in Burkina Faso), a prototype of a new charcoal stove for Benin has been developed. First tests in December 2010 delivered promising results (40% reduced consumption as compared to the most common stove (Cloporte)).

2. Observed or monitored impacts of the project for the target group

The focus of the team was to find the right products and their markets for the South. Hence no new observations on impacts since end of EnDev 1 have been collected.

3. Experiences and lessons learnt

In a much segmented market with a variety of "intermediary technologies" (=old improved stoves with a small reduction of fuel use) it is difficult to identify the right niche markets for a successful scaling-up.

4. Sustainability

The focus of the team was to find the right products and their markets for the South. Hence no new observations on sustainability since end of EnDev 1 have been collected.

5. Outlook on planned activities and interventions for the next reporting period and expected Outcomes

Key intervention 1: Support of the new semi-industrial production of liners and the new stove producers with technical advice, quality control, awareness- and marketing activities. Additional women groups will be trained in the promotion of rocket stoves in 13 communes of Atacora/Donga. A follow-up study on impacts in the old intervention area of Atacora-Donga (first Study was done in 2008) will be implemented to learn more about environmental and social impacts. An implementation structure will be established in the North-East to increase the outreach on rural communities. First producers of portable stoves at market points in small rural towns will be identified and trained.

Key intervention 2: First producers of firewood burning stoves will be trained in selected peri-urban areas of the South. The technology-development activities for the new charcoal stove will be continued with lab test as well as field tests.

Benin rural electrification

PN 08.2139.7-105

Country/ Region	Benin				
	New Project [<input type="checkbox"/>]		Finalisation of EnDev 1 activities [<input checked="" type="checkbox"/>]		
Project Phase	12.2009 – 12.2011		Project Budget	1,600,000 € (approved under EnDev 1)	
Target Groups	Rural poor HH, SI and SME				
Outcomes				Target till project end	Achieved until reporting date
	Energy for lighting and el. HH Appl.			15,399	8,519
	Cooking Energy for Households				
	Electricity for social infrastructure			79 SI	68 SI
	Cooking/ Heating Energy for social infrastructure (number of SIs)				
	Energy for prod.use/income generation (number of SMEs)			37 PU	53 PU
Technology applied	<input type="checkbox"/> Solar	<input type="checkbox"/> Biogas	<input type="checkbox"/> Stoves	<input type="checkbox"/> Hydro	<input checked="" type="checkbox"/> Grid Other
Summary of Key interventions and outputs	Rural electrification through grid installations, densification together with utility SBEE by introducing adequate tariffs and access structures (e.g. downsizing connections, collective meters), and installation of non grid power supply together with rural (off grid) electrification agency ABERME				
Involved Bilateral Programme	BMZ-GTZ Decentralization Programme & BMZ GTZ Water Programme				
Lead Executing Agency	GTZ				
Implementing Partner	SBEE, local communities				

1. Current progress towards the project objectives

This intervention has started in 2005 in the first phase of EnDev with the targets as stated under “(a)” in the table below (SI and PU converted into # of institutions/businesses). At the end of the first phase, final results were reported as in column “(b)”. Remaining budgets were carried forward into EnDev 2, with new targets being calculated by “(a)” minus “(b)”. The current overall level of achievement is listed in column “(d)”. Since a part of this result level has already been reported as final result of EnDev 1, the achievement attributable to the work under EnDev 2 is calculated in column “(e)” as “(d)” minus “(b)”.

	(a)	(b)	(c)	(d)	(e)
Outcome	Target Endev 1	Final result Endev 1	Target Endev 2	Current (12_2010) result level overall (EnDev 1 & 2)	Result attributable to EnDev 2
Calculation			= (a) – (b)		= (d) – (b)
# People in households	26,200	10,661	15,399	19,180	8,519
# Social insitutions	105	26	79	94	68
# Productive use (SMEs)	122	85	37	138	53

The results show that more than 55% of the outcome target have already been achieved. 86% of the target for social institutions have been fulfilled and 143% of the targeted small enterprises have been reached.

The current increase in comparison to the final report of EnDev 1 at December 2009 is deriving from further usage of the EnDev 1 investments and are therefore 100% attributable to EnDev. In 2011, new villages will be connected in the framework of a multi-donor project which is financed by EnDev (the EnDev 1 1.6 Mio as co-financing) as well as by the EU-Energy Facility (7.7 million Euro), the French AFD (7.8 million Euro), the Government of Benin (2.4 million Euro), and the German Government (1.8 million Euro). The results of these new connections can only be fractional attributed to the EnDev contribution (8,5% of the overall international budget).

Follow-up EnDev 1 villages

An increase in connections in the 12 villages of the EnDev 1 phase can still be observed. All 94 social institutions and 138 SMEs are now using electricity. Capacity building of end-users (including commercial and institutional consumers) have been implemented. A pre-paid card system has been introduced.

Preparation of new villages under the multi-donor project

The target villages for the multidonor project have been selected, and the baseline studies and material procurement are finalized. Construction is expected to start in spring 2011. A concept for grid-densification has been developed for the implementation in the new phase. Improvements in the planning process will allow for a higher number of villages to be reached with the same budget (105 instead of 59).

A new strategy regarding customer management which includes STS prepaid systems through GSM utilities has been developed and is under consideration by SBEE.

2. Observed or monitored impacts for the target group

New businesses and start-ups have been created in the electrified villages. For example, in the village of Kansoukpa a woman came back from Cotonou to live in her native village and started a business centre with computer and photocopy services. Other new businesses are e.g. a saw mill, a fish shop and an ice production unit. A survey will be implemented in 2011 to appraise systematically the impact (in comparison with the baseline study).

The demand for connections within the villages as well as people living beyond the grid demanding SBEE to further extend the grid to their places have increased.

3. Experiences and lessons learnt

Utility and main counterpart SBEE is quite persistent in its risk avoiding technical approach of rural electrification (discussions are ongoing), e.g.

- SBEE could improve its planning approach by considering socio-economic and financial impact assessment for the projected lines.
- SBEE could better appreciate the importance of social mediation as well as the interaction between the sensitization instruments in the context of the planning process for the low voltage lines
- High technical standards could be adapted to the realities of rural areas to reduce costs without undermining quality of service (potential cost reduction of 25% in Benin).

4. Sustainability

No new observations on sustainability.

5. Outlook on planned activities and interventions for the next reporting period and expected Outcomes

The electrification of the villages under the multi-donor activity is going to start in spring 2011.

Burkina Faso

PN 08.2139.7-106

Country/ Region	Burkina Faso					
	New Project []		Follow-up Project of EnDev 1 [X]			
Project Phase	10.2009 – 12.2012		Project Budget	1,000,000 €		
Target Groups	Rural and urban population					
Outcomes				Target till project end	Achieved until reporting date	
	Energy for lighting and el. HH Appl.					
	Cooking Energy for Households			200,000	117,800	
	Electricity for social infrastructure					
	Cooking/ Heating Energy for social infrastructure (number of SIs)			200 SI	61 SI	
	Energy for prod.use/income generation (number of SMEs)			2000 SMEs	744 SMEs	
Technology applied	<input type="checkbox"/> Solar	<input type="checkbox"/> Biogas	<input checked="" type="checkbox"/> Stoves	<input type="checkbox"/> Hydro	<input type="checkbox"/> Grid	Other
Summary of Key interventions and outputs	<ol style="list-style-type: none"> Promotion of household stoves by supporting the private sector to produce and sell high quality improved stoves in big and small cities and rural areas and by supporting loans from financial institutions to stove producers; Promotion of stoves for restaurants, beer brewers, shea butter producers and other SMEs; Promotion of stoves for social institutions; Promotion of efficient charcoal production by introducing new carbonization methods; Support government institutions to create conditions favouring the introduction of improved stoves as an obligatory tool in the production process of the most biomass consuming processes. <p>Expected outputs: 40,000 improved household stoves, 10,020 stoves for productive use and 500 for institutional use disseminated</p>					
Involved Bilateral Programme	Foyer Amélioré in Burkina Faso (FAFASO)					
Lead Executing Agency	Ministry of Environment					
Implementing Partner	e.g. Governmental institutions, producers' association, NGOs, IRSAT					

1. Current progress towards the project objective

Overall, the current level of 507,435 people reached is 30% higher than the final result of people reached with household stoves at the end of EnDev 1 (December 2009: 389,635). The additional 117,800 people attributable to EnDev 2 represent 59% of the overall target of this current phase.

Key Intervention 1: In the second half of 2010, 19,715 household metal and 55 household ceramic stoves have been sold. Due to early and massive rains, the development of the mud and ceramic stoves has been disappointing (only 55 as compared to 2,567 in the previous reporting period). FAFASO focused on capacity building and promotion of clay and mud stoves to increase its outreach to rural poor households. Trainings on business skills and microfinance were implemented to boost the commercial capacities. In order to address poor target groups, peri-urban women groups were encouraged to form saving groups (in cooperation with the French NGO "Entrepreneur de Monde").

Key Intervention 2: In the last 6 months, 2,153 big metal stoves for restaurants have been sold, and 170 mud stoves for beer brewers have been constructed. Early and heavy rains

hindered the promotion of the mud stove types. Where markets are already saturated, masons are not (yet) ready to search for new markets. There are indications of underreporting of beer brewing stoves by the artisans.

- In Bobo Dioulasso, 65 masons for the construction of dolo (beer) stoves were trained.
- 5 editions of the nationwide TV cooking show "bien manger - mieux vivre" have been produced, featuring the large scale ICS.
- In cooperation with the French NGO "TechDev", 3 shea butter production units have been equipped with new developed ICSs.

Key Intervention 3: In the second half of 2010, 100 stoves have been installed in school canteens. The government has started a campaign "1 school - 1 school kitchen - 2 roundé stoves" aiming to equip all primary schools of the country with canteens and improved stoves. As there is no budget allocation, the purchase of stoves has been left for the parents association. No big impact as of now on stove sales.

Key Intervention 4: Unlikely to be implemented in the near future (lack of active support by the Ministry of Environment).

Key Intervention 5: See key Intervention 3 (above)

2. Observed or monitored impacts of the project for the target group

Previous studies (2009) show good impacts of ICS for both the producers (income) and users (reduced fuel consumption, faster cooking, reduction of smoke). A new impact study has been conceived with DGIS and RWI and will start by February 2011.

3. Experiences and lessons learnt

For decades, the same trainers were used from various organisations for the training of producers of ICS. While these experts are highly qualified and experienced, there was no initiative to build up a younger generation of trainers. With the current drive towards scaling-up of stove promotion in many areas of the country, it has become clear that the availability of trainers has become a bottleneck. Hence capacity development needs to be considered not only on the level of the target groups (producers and users of the ICS), but also on the level of the trainers and managers who are required to implement the scaling-up processes.

4. Sustainability

Producers associations in Ouaga and Bobo took over quality control and are only partly controlled by IRSAT. This is a transition towards a long term (= project independent) quality control system. In the rural regions, FAFASO's staff members are still doing quality control of the metal stoves as FAFASO has started to work here much later as compared to the urban centres and the stove producers in rural areas are living scattered and are less organized.

FAFASO started to create associative structures for the stove producers (tin smiths, masons and potters together) at least in 9 provinces of the main intervention areas.

A new generation of trainers (for stove producers) have been trained late 2010 to slowly replace the "old generation" which was formed in the 1980s. These trainers are available not only for GIZ, but for all stakeholders in the sector.

5. Outlook on planned activities and interventions for the next reporting period and expected Outcomes

- Review of the current kiln design and promotion of better kilns for the production of ceramic stoves.
- Full integration of ceramic stoves in the promotion activities.
- Systematic follow-up of underreporting of beer-brewing stoves.
- Promotion of geographic flexibility of builders for beer brewing-stoves to find new markets outside of their own location.
- Further broadcasting of cooking shows on national TV featuring promoted ICS.
- Monitoring of performance of stoves for shea butter production and development of a dissemination strategy.

Burundi

PN 08.2139.7-112

Country/ Region	Burundi					
	New Project <input checked="" type="checkbox"/>		Follow-up Project of EnDev 1 <input type="checkbox"/>			
Project Phase	09.2010 – 08.2012		Project Budget:	900,000 €		
Target Groups						
Outcomes			Target till project end	Achieved until reporting date		
	Energy for lighting and el. HH Appl.		11,000	0 people		
	Cooking Energy for Households		-	0 people		
	Electricity for social infrastructure		12 Soc. Institutions 30 Street lights	0 institutions		
	Energy for prod.use/income generation		150	0 SMEs		
Technology applied	<input checked="" type="checkbox"/> Solar	<input type="checkbox"/> Biogas	<input type="checkbox"/> Stoves	<input type="checkbox"/> Hydro	<input type="checkbox"/> Grid	Other
Summary of Key interventions and outputs	<p>1. Training of communal staff and management committee on their respective tasks as owner and supervisory body and for service providers on operation and maintenance of PV solar systems and business tools;</p> <p>2. Co-financing of the installation of solar PV-systems for the electrification of key communal services: schools, health centres, town halls, solar street lights and battery charging stations;</p> <p>3. Setting up Sales and Maintenance Shops attached to SI PV for SL, SHS, PV Pumps, battery lamps, batteries.</p> <p>Expected outputs:</p> <p>1. 12 solar-powered battery charging stations established;</p> <p>2. 12 Social institutions (schools, health centres, city halls) equipped with PV and 30 Solar Street lights installed;</p> <p>3. 1,350 Pico PV Lanterns and 30 PV Pumps installed;</p> <p>4. 1 NGO strengthened to implement stove projects successfully.</p>					
Involv. Bilateral Programme	<p>GTZ Reintegration project (Appui au Programme Burundais de Réintégration) until 12/2010</p> <p>GIZ Decentralization and Poverty Alleviation project (Appui à la Décentralisation et à la Lutte contre la Pauvreté) from 01/2011</p>					
Lead Executing Agency	Ministry of Energy and Mines (MEM)					
Implementing Partners	DGHER - General Directorate of Water and Rural Energies IFDC - Catalyst SEW Project					

1. Current progress towards the project objective (number of people with access to modern energy services in the different categories)

EnDev Burundi started in September 2010. So far no beneficiaries have been reached. A detailed activity plan was developed in close cooperation with the relevant partners and stakeholders. A baseline study was conducted.

2. Observed or monitored impacts of the project for the target group

No impact can be observed up till now. Expected impacts at the project end are the amelioration of services in social infrastructure and living standards of households through use of electric light and ICT, and additional income generation for shop keepers who start battery charging as an extra activity.

3. Experiences and lessons learnt

First field trips showed that some solar systems for social infrastructure do already exist, especially on new build health centers. However no technicians are trained, no maintenance is organized and no users are sensitized so that most of the systems break down after a short period of time. Some health centers and schools would be capable to pay new light bulbs and other spare parts but they couldn't source the proper equipment (e.g. 12 W bulbs).

4. Sustainability

To assure the sustainability of the project the following strategic orientations and activities are planned:

Training of technicians and organization of maintenance systems to keep installations running. The Department of Rural Energy in the DGHER and the maintenance team for the electric lines are very eager to cooperate on training and maintenance of solar systems, especially those mounted on social infrastructure. The technicians of DGHER as well as private operators will be integrated in the maintenance system.

To ensure that battery charging stations are viable they will be integrated in existing shops as an additional service offered. Also smaller battery charging systems will be promoted that can be taken inside the shop after sunset. For the security of battery charging stations shops build of concrete will be prioritized instead of wooden shops to secure the equipment inside.

Network building between actors: solar companies in Burundi, shop keepers and pool of technicians, municipalities, provincial health and education department as well as between solar companies and suppliers of quality products.

There will be no subsidies on Pico PV lamps to assure the market will not be destroyed.

The project team is discussing security issues to prevent thefts of solar panels etc. However when it comes to armed hold-ups there are no technical ways to prevent this. Until now these attacks have been exceptions but the project team is watching the development.

5. Outlook on planned activities and interventions for the next reporting period and expected Outcomes

The promotion of Pico PV Lanterns, Battery charging stations and SHS in rural municipalities of Gitega will be done through sales exhibitions (road shows) that will be organized close to commercial centers by the project team and several solar companies.

The project team will support the administration of the municipalities in calculating the investments planned for PV systems on social infrastructure. This will be followed by a tender for installation of the PV systems for the first four municipalities.

Several (2 levels of) trainings to ensure quality in installations and maintenance will be conducted.

One Consultancy for a stakeholder analysis of the cooking energy sector is planned to support our partner IFDC. Possibilities to test existing Burundian ICS are being checked in cooperation with neighbouring EnDev countries.

Ethiopia

PN 08.2139.7-107

Country/ Region	Ethiopia					
	New Project <input type="checkbox"/>		Follow-up Project of EnDev 1 <input checked="" type="checkbox"/>			
Project Phase	01.2010 – 06.2012		Project Budget	6,000,000 €		
Target Groups	Households in rural towns and semi-urban regions, poor rural households					
Outcomes			Target till project end	Achieved until reporting date		
	Energy for lighting and el. HH Appl.		25,000	96 persons (MHP)		
	Cooking Energy for Households		500,000	219,438		
	Electricity for social infrastructure		11 Com. Ctr. 50 HC Ph. 1	SHS:4CC +34HC MHP:2 SI		
	Cooking/ Heating Energy for social infrastructure (number of SIs)		500			
	Energy for prod.use/income generation (number of SMEs)		500 Stoves, 50 battery charging Stations, 10 PV Kiosks	8 SMEs (MHP)		
Technology applied	<input checked="" type="checkbox"/> Solar	<input type="checkbox"/> Biogas	<input checked="" type="checkbox"/> Stoves	<input checked="" type="checkbox"/> Hydro	<input type="checkbox"/> Grid	Other
Summary of Key interventions and outputs	<p>Key Interventions (AMES-C / Stoves):</p> <ol style="list-style-type: none"> 1. KI 1: Raising awareness regarding the advantages of improved stoves with the aim of creating a sustainable market: through use of mass media (radio, TV, newspapers), exhibitions, trade fairs & capacity building of stakeholder institutions technical staff; 2. KI 2: Establishing a network of stove producing micro enterprises for sustainable supply of improved stoves for local communities; 3. KI 3: Enhancement of biomass fuels supply through firewood planting and marketing by different parts of the community and private sector. <p>Key Interventions (AMES-E / Solar & Hydro):</p> <ol style="list-style-type: none"> 1. KI 1: Energising Public Institutions (PV for Social Infrastructure); 2. KI 2: PV Market Development; 3. KI 3: Dissemination of Micro Hydro Power. <p>Expected Outputs (AMES-E / Solar & Hydro):</p> <ol style="list-style-type: none"> 1. 125,000 people have access to better services of 50 community centres with PV Systems; 2. 25,000 people benefit from low cost SHS; 3. 5 Solar and 3 MHP Training, Testing and Maintenance Centres established. 					
Involved Bilateral Programme	Sustainable Land Management, Urban Governance & Decentralisation Programme, Engineering Capacity Building Programme; SNV Biogas (NL)					
Lead Executing Agency	Ministry of Mines and Energy (MME)					
Implementing Partner	Governmental institutions at all levels, local and international NGOs, business and development associations, etc.					

1. Current progress towards the project objective

AMES-C / Stoves: Until December 2010, 219,438 people got access to improved household stoves. Looking at the sales record of 'Mirt-stove', it indicates 83% of the stoves were sold to

rural/peri-urban households. This shows a significant increase in rural penetration rate as compared to the ratio of the last reporting period which was 53%:47% respectively. AMES-C is continuing its leading role in the development of the national BEST (Biomass Energy Strategy) document.

AMES-E / Solar & Hydro: The hydropower component has inaugurated the first MHP sites and supplies 96 persons, 8 SMEs and 2 Social Institutions with electricity. This good operation is convincing more households and small businesses to invest in a connection. The programme has installed PV systems on 34 health centers and 4 community centers.

2. Observed or monitored impacts of the project for the target group

AMES-C / Stoves: A user acceptance study for the Tikikil Stove showed good user satisfaction. WFP is starting to introduce improved stoves (as promoted by AMES-C) into their school feeding program which will also reduce pressure on local biomass resources.

AMES-E / Solar & Hydro: Community Centers supplied with PV and the SMEs powered by the MHP are providing a better service, based on a reliable power supply. The conditions in the health centres and health posts are improved after the installation of the PV panels.

3. Experiences and lessons learnt

AMES-C / Stoves: Increasing material costs for the MIRT stove appear to prevent a faster role out of the technology. However, sales figures are on a high level already. The production capacities for Institutional Stoves and Tikikil stoves were increased and will soon contribute to reach the target. The production of the liners still needs improvement or a change of material. The production of quality Household Rocket Stoves outside of Addis Abeba shows lack of skills among the work force and needs improvement through additional training.

AMES-E / Solar & Hydro: For the MHP component the initial slow uptake of connection rates at the first operational MHP plant might go back to a mix of slowly growing confidence in MHP and the idea that the project might still connect people for free. At the same time, migration of dispersed population to the area of the min grid, can already be observed.

4. Sustainability

AMES-C / Stoves: Close cooperation with governmental and non governmental institutions mainstreams the promotion of efficient cooking technology into these institutions. A national stove program will increase awareness and demand. The supply side is strengthened by supporting a stove association, through promotion, networking and quality control etc.

AMES-E / Solar & Hydro: The number of local companies providing SHS installation and maintenance services has increased from 6 to 10. Additional user trainings have been ongoing at the solar training facilities, such as several training programmes alongside the MHP pilot plants on technical expertise in the MHP sector. The cooperatives that will run the pilot plants are trained in management, finance, administration, operation and maintenance. As consequence of several discussions with the Ministry of Water and Energy as well as with stakeholders, the import tax has been removed on a large number of renewable energy products, like batteries, panels, load controllers and wind turbines.

6. Outlook on planned activities and interventions for the next reporting period and expected Outcomes

AMES-C / Stoves: Supply side intervention for the new regions are planned for 2011. More networking with the project counterparts will be done along with the field work routine. A baseline study in a new region is among the major activities in 2011. Generally, the project will strongly engage in capacity building and coaching of the implementing partners to maintain effective and sustainable structure in the promotion and dissemination of stoves.

AMES-E / Solar & Hydro: The remaining community and health centres will be electrified until end of 2011. For these installations, designs, procurement and other preparations are well under way. The next reporting period for hydro will show further evidence of connection rates in the MHP pilot sites.

Ghana

PN 2008.2139.7-108

Country/ Region	Ghana					
	New Project []			Follow-up Project of EnDev 1 [X]		
Project Phase	01.2010-12.2012		Project Budget:	900,000 €		
Target Groups	Start-ups and relocated SMEs					
Outcomes		Target	till	Achieved	unitl	
		project	end	reporting	date	
	Energy for lighting and el. HH Appl.		300		117	
	Cooking Energy for Households		0		0	
	Electricity for social infrastructure		6 electric connections		55 Street lanterns	
	Cooking/ Heating Energy for social infrastructure		0		0	
	Energy for prod.use/income generation		300 electric connections		84	
Technology applied	<input type="checkbox"/> Solar	<input type="checkbox"/> Biogas	<input type="checkbox"/> Stoves	<input type="checkbox"/> Hydro	<input checked="" type="checkbox"/> Grid	Other
Summary of Key interventions and outputs	<ol style="list-style-type: none"> 1. Co-financing of hardware for connection of new industrial zones to the national electricity grid; 2. Facilitating dialogue between District Assemblies, and Northern Electricity Department (NED) of the Volta River Authority (VRA), Electricity Company of Ghana (ECG) and Associations of Entrepreneurs for the establishment of new industrial zones; 3. Establishment of a management and maintenance structure involving District Assemblies and Business Associations; 4. Consulting and training of enterprises located in the industrial zones in sustainable business development, esp. eco-efficiency; 5. Improve business skills of entrepreneurs in newly electrified industrial zones. 					
Inv. Bilat. Programme	Programme for Sustainable Economic Development (PSED)					
Lead Execut. Agency	Ministry of Trade and Industry (MoTI)					
Implementing Partner	Ministry of Energy, District, Municipal and Metropolitan Assemblies, Local Business Associations, Regional Coordinating Councils, Environmental Protection Agency					

1. Current progress towards the project objective

By December 2010 the number of enterprises supported in the industrial zones has risen to 84 companies who have a new electrical connection being countable for EnDev 2. These companies employ 267 persons at their enterprise (EnDev 1 and 2 in total: 173 SME's with 601 personnel).

As additional outcomes, some nearby households have been connected to the grid, providing 117 people with new access to electricity for lighting and household applications. Further, 55 street lighting lanterns have been provided in four Industrial Zones.

2. Observed or monitored impacts of the project for the target group

Electricity supply in the EnDev-supported industrial zones is reportedly very stable. The interactions between businesses, district assemblies and electricity utilities continues to improve.

Although still anecdotal evidence, businesses at the industrial zones report in majority that their businesses have improved and their customer base stayed stable or has grown since their (government suggested) relocation. The fairly high rate of start-ups also points to the favorable business conditions at the site.

The evaluation of the business entrepreneurship trainings (CEFE) continues to show a significant impact. Financial and administrative management of the SMEs is improving. Street lighting is highly appreciated in the industrial zones where it has been installed, and in the very large Techiman zone, the business association has continued to procure and install additional street lamps to cover the entire zone, as the 20 lamps provided were not enough.

3. Experiences and lessons learnt

EnDev 2 insists on more initiative from the Assemblies and Business Associations in dealing with the utilities and contractors, as the utilities respond more quickly to direct requests from their customers.

EnDev 2 also insists on more evidence from the Assemblies of their ability and intention to quickly develop the land and other infrastructure for the zone before EnDev commits to their support. For this reason, EnDev 2 towns are being selected in two waves. The first selections were made in July 2010, the second round of "wait-listed" towns are being reevaluated for their readiness in March 2011. So far, this approach seems to be proving itself, although it is fairly impossible to develop a fail-safe way to guarantee the partners will deliver on all their commitments within our time frame.

The difficulties in procuring transformers in 2010 has shown that the supplier must prove he has the transformers in stock; also that local procurement is faster than ordering from overseas. Moreover, a testing certificate is necessary to make sure the transformers have no defects. Procurement in 2011 is being conducted locally where possible. The slow, or rather stalled movement of companies in Goaso underlines the necessity of a sufficiently large industrial zone for all interested artisans. In Goaso the Assembly is developing a second, much larger industrial zone on the other side of town, which could accommodate all of the interested groups, including palm oil processors. This however, puts the original site in danger of never being fully occupied, as most artisans say they would rather move to the larger site.

The success of the radio programs in Berekum and Techiman indicate that the use of popular local media to advertise the benefits of the intervention and encourage dialogue about issues related to SMEs can have a significant positive impact.

4. Sustainability

Hardware for grid extension is procured on the local market, such as consultants. The electricity hardware is installed either by the local government or the local business associations as part of their commitment to develop the sites. Once installed, the hardware becomes the property of the utility (VRA-NED or ECG), who has the responsibility to maintain and repair or replace.

The majority of costs for developing the industrial zone are met by the local government and private sector. EnDev and PSED contributions represent only a small part of these overall costs. Thus, ownership for the site development is clearly in the hands of the local actors. As the intervention subsidies can be seen mainly as catalyst funding and advisory services, it can be reasonably expected that the approach (development of light industry zones with adequate electricity and other infrastructure) will be sustainable.

5. Outlook on planned activities and interventions for the next reporting period and expected Outcomes

In three zones the transformers will be installed as soon as March 2011. For additional three zones the procurement should be finalised by April 2011, and installation could start in June. The training programs will strive to link to other institutions and programs to increase their impact and ensure them an institutional home that will be able to provide these training services after the end of the PSED-EnDev intervention.

Local radio programs in at least three more towns will also be launched and publications on the current programs will be carried out.

An Impact Study, originally scheduled for September 2010, will be carried out in 2011.

Kenya

PN 08.2139.7-101

Country/ Region	Kenya					
	New Project []		Follow-up Project of EnDev 1 [X]			
Project Phase	06.2009 – 12.2011		Project Budget	2,500,000 €		
Target Groups	Rural poor					
Outcomes			Target	till	Achieved	until
			project end		reporting date	
	Energy for lighting and el. HH Appl.					
	Cooking Energy for Households		850,000 people		2,202,147	
	Electricity for social infrastructure					
	Cooking/ Heating Energy for social infrastructure (number of SIs)		700 stoves for SI → 350SI		1 SI	
Energy for prod.use/income generation (number of SMEs)		250 stoves for PU →140 SMEs		242		
Technology applied	<input type="checkbox"/> Solar	<input type="checkbox"/> Biogas	<input checked="" type="checkbox"/> Stoves	<input type="checkbox"/> Hydro	<input type="checkbox"/> Grid	Other
Summary of Key interventions and outputs	<ol style="list-style-type: none"> 1. Scale up production and promotion of ICS for HH; 2. Scale up production and promotion of ESD for SI; 3. Scale up production and promotion of ESD for PU; 4. Awareness creation on use of efficient use of ESD; 5. Intervention to ensure sustainability. 					
Involved Bilateral Programme	Promotion of Private Sector Development in Agriculture (PSDA)					
Lead Executing Agency	Ministry of Agriculture					
Implementing Partner	Ministry of Agriculture					

1. Current progress towards the project objective

At the end of December 2010 the project has achieved to serve 2,202,147 people with improved cooking stoves (ICS) in households. In 1 Social Institution (SI) and in 242 SMEs energy saving devices are in use.

2. Observed or monitored impacts of the project for the target group

On household level the increased preference for Rocket Stoves (RS) compared to Jiko Kisasa stoves (JK) continues. This might be caused by the fact that a Rocket Stove is much easier to use. Due to its easiness of use and the safe operation it is good to be used even with children being in the cooking area.

3. Experiences and lessons learnt

The availability of stove skills at community level enables the consumers to assess the quality of the stoves easily.

Partnering with new stakeholders (e.g. banks, teachers) has enabled the project to access new clients.

The popularity of the rocket stove has created a high demand for this stove.

The favourable local availability of construction materials (e.g. fired clay bricks) played an important role for the positive achievements.

4. Sustainability

The high and increasing number of stoves is an indication of a growing market and an increasing business. The still growing number of people doing stove work as business shows the commercial demand for stoves. As those builders are benefiting financially they have a high motivation to continue this type of work.

Through forming small companies to do stove work, builders strengthen their position in the market.

The low results on social institutions show that only the same number of SMEs is supplied as at the end of EnDev 1. No significant increase in access has happened since the start of EnDev 2. This might be due to the fact that institutional stoves are purchased on an irregular basis by independent institutions. Most times they are produced on demand and not kept on stock.

5. Outlook on planned activities and interventions for the next reporting period and expected Outcomes

The cooperation with agro industries will be intensified. Focus will now be on follow up in old areas where stove work was done in the past 3 years to monitor how the replacement, access to new stoves is taking place. Support will be given to the newly established Stove Value Chain implementing Committee, where various actors have a forum to exchange and share the progress in the sector and networking to get more Kenyans to use the stove.

A study about Indoor Air Pollution (IAP) will be finalized.

The result on social infrastructure and the related strategy will be analysed carefully, an adjustment of the strategy will be considered.

Mali

PN 08.2139.7-102

Country/ Region	Mali					
	New Project <input type="checkbox"/>		Follow-up Project of EnDev 1 <input checked="" type="checkbox"/>			
Project Phase	04.2009 – 12.2011		Project Budget	2,000,000 €		
Target Groups	Rural poor					
Outcomes			Target till project end	Achieved until reporting date		
	Energy for lighting and el. HH Appl.		19,800	0		
	Cooking Energy for Households		---	---		
	Electricity for social infrastructure		180 SI	1 SI		
	Cooking/ Heating Energy for social infrastructure (number of SIs)		---	---		
	Energy for prod.use/income generation (number of SMEs)		---	---		
Technology applied	<input checked="" type="checkbox"/> Solar	<input type="checkbox"/> Biogas	<input type="checkbox"/> Stoves	<input type="checkbox"/> Hydro	<input type="checkbox"/> Grid	Other
Summary of Key interventions and outputs	<ol style="list-style-type: none"> 1. Identification (by means of tender) of rural communes: that comply with EnDev criteria; (2) that comply with good governance criteria and (3) that have the capacity to contribute financially; 2. Set-up of institutional framework in the communes based on a public-private approach by agreement on (1) management committee selection; (2) assignment on duties/rights for operator and committee including fee-for-service models; (3) stakeholder supervision; 3. Training for (1) communal staff and management committee on their respective tasks as owner and supervisory body; for (2) service providers on operation and maintenance of PV solar systems and business tools (in the training centre established under the first phase of ELCOM (Electification Communale)); 4. Financing of installation of solar PV-systems for the electrification of four key communal services: schools, health centres, town halls, solar street lights and battery charging stations; 5. Technical, as well as managerial coaching and backstopping for institutions and operators running public energy services; integration of public energy services concept into communal development plans. Monitoring and follow-up on the installations realised during the first phase of ELCOM. <p>Expected Outputs: 50 solar-powered battery charging stations established; 50 schools, 20 health centres, 10 city halls and 100 street lighting facilities provided with solar energy.</p>					
Involved Bilateral Programme	Programme Promotion of Local Government (PACT)					
Lead Executing Agency	Ministere de l'Administration Territoriale et des Collectives Locales (MATCL)					
Implementing Partner	Direction Nationale de Collectivites Territoriales (DNCT) AMADER Agence Malienne pour le Devoleppement de de Energie Domestique et de l'Electrification Rurale					

1. Current progress towards the project objective

The installation of solar equipment in the selected communes has been delayed by the procurement process. Preparatory work has progressed, but no new commune has been provided with modern energy yet. The delay in implementation has been taken into consideration. Due to the cost neutral extension of the program until December 2012, there is still time to progress towards the overall target.

Key intervention 1: Feasibility studies for 15 potential communes have been done. Based on criteria of EnDev, good governance and financial viability, 8 communes have been selected. 5 of these communes have paid their own contribution which allowed starting the work.

Key intervention 2: The management committees and the technicians of 5 communes have been selected. 3 Operators have been identified so far.

Key intervention 3: Training has started in 5 communes.

Key intervention 4: Materials arrived with great delays. The civil works for the battery charging station has been finalized in 1 commune, in another one this work is ongoing. For the other 3, the tender has been completed. For 5 communes, the installation plans are completed. For 2 villages, the contractor for the installation has been selected. First installations are expected early 2011.

Key intervention 5: There have been some doubts on the monitoring concept for the usage of the battery charging station by the community. In order to overcome uncertainties concerning the real level of usage, dataloggers will be installed at each battery charging station to actually measure the electricity provided to the customers. This system will be in place within the next reporting period. Until then, no additional households reached in old communes will be attributed to EnDev.

2. Observed or monitored impacts of the project for the target group

The electrification of the city hall provided important support to the municipal elections in April 2010.

The counting was done in the evening of the Election Day in clear electric light and thus contributed to more transparency in the election process. Since the electrification of the health centers, the number of women coming for giving birth has increased. In many electrified schools evening classes are offered to the pupils, in others the class rooms stay open in the evening allowing the pupils to study on their own at night. People are extremely happy to have solar street lights.

3. Experiences and lessons learnt No new lessons have been learnt so far under EnDev 2.

4. Sustainability

Datalogger will be installed in all battery charging stations (EnDev 1 and EnDev 2) to verify the reported battery charges of the technicians. If there is proof for substantial underreporting of the number of charges by the technicians, the control system has to be modified as only the officially registered payments for the charges are contributing to the repair fund.

5. Outlook on planned activities and interventions for the next reporting period and expected Outcomes

- In 5 communes, construction and installation of battery charging stations will be completed
- Completion of the training of the technicians, management committees etc. in 5 communes.
- Follow-up of the remaining 3 selected villages in respect to their payment of own contribution.

Mozambique

PN 08.2139.7-109 and PN 08.2139.7-120

Country/Region	Mozambique					
	New Project []		Follow-up Project of EnDev 1 [X]			
Project Phase	10.2009 – 12.2012		Project Budget	3,000,000 €		
Target Groups	Poor rural households					
Outcomes				Target till project end	Achieved until reporting date	
	Energy for lighting and el. HH Appl.			45,600 ³	38,700	
	Cooking Energy for Households					
	Electricity for social infrastructure					
	Cooking/ Heating Energy for social infrastructure (number of SIs)					
	Energy for prod.use/income generation (number of SMEs)					
Technology applied	[X] Solar	[] Biogas	[] Stoves	[X] Hydro	[X] Grid	Other
Summary of Key interventions and outputs	<ol style="list-style-type: none"> Promote grid densification [KI 1]; Small PV for households [KI 2]; Pico/micro hydro sites [KI 3]; PV (and hydro) for Social Infrastructure (KI4); Modular service delivery to FUNAE in Manica province incl. pico/microhydro (Ref.3), Battery Charging stations, Productive Use of Energy, Integrated improved stove component, PV training programme, Integrated M&E. <p>Expected outputs:</p> <ol style="list-style-type: none"> 6,600 HH connected; 5 additional hydro power plants constructed. 					
Involved Bilateral Programme	Decentralisation Programme (PPFD) and Education Programme (PEB)					
Lead Executing Agency	Ministry of Energy (MoE)					
Implementing Partner	EdM, FUNAE (Fundo Nacional de Energia), MFis, NGOs and private enterprises					

1. Current progress towards the project objective

Key Intervention 1 (Grid): Since the start of the 2nd phase in the August 2009 up to December 2010, 7,309 households were connected to the grid in a suburb of Maputo, Matola. As a result EDM (Electricidade de Mozambique) has fulfilled all its contractual obligations. EDM is interested in another contract, but the focus of the project is currently not on grid extension.

Key Intervention 2 (Small PV): The field test with different small PV systems was finished and is currently being evaluated. The GIZ Solar box has received interest from consumers during the fieldtests but the ultimate design is too expensive. The company Phaesun will incorporate the basic concepts of the Solar box and make an effort for local assemblee at a feasible price within the frame of a DEG financed PPP. AMES-M will supply educational tools (hardware) to the PPP and candidates for the training programmes from our partner organisations. The PPP is intended to establish a national commercial network for the

³ The original target was 35600 people for the budget of 3 Mio EUR. Due to the increase of the budget to 3.8 Mio EUR the target was increased to 45600.

(assembly), distribution, marketing and after sales service for SSSH, potentially also suitable for the Social Infrastructure.

Key Intervention 3 (Hydro): The new contract with AKSM (*Associação Kwaedza Simukai Manica*) and cooperation with Banco Terra and the international NGO Practical Action has resulted in 5 new project sites which are under negotiation.

Key Intervention 4 (PV SI): Negotiations with FUNAE did not result in a contract yet. Several meetings were held and proposals tabled. Negotiations were stopped and new plans for cooperation agreed. AMES-M offered several additional service packages to FUNAE including battery charging stations, productive use of energy, improved cook stoves, PV training programme, and integrated M&E,

2. Observed or monitored impacts of the project for the target group

For the grid component, impact evaluations are planned for early 2011.

The approach with SHS in Sofala province is currently being evaluated.

3. Experiences and lessons learnt

GTZ Ames-M is a relatively small player in the energy sector and energy donor community in Mozambique. Actors like the World bank, EIB, Kuwait Fund, Belgium, the Nordics (Sweden Norway), Japan, Korea, Portugal, Brasil, China, come in with huge incomparable amounts of money and a good part of those also planning or currently active in similar fields. EnDev's comparative advantages are the strong representation on the ground, the high efficiency of the work and the well developed monitoring system. Main selling point technically is the microhydro approach in Manica. The minister took the example of EnDev's (I) Hydro achievements in Chua as a model to be pursued and copied when addressing the entire (energy) donor community and involved government bodies. NGO's, such as the Dutch Rural Energy Fund (REF) and the nationals ADEL and Kulima, would like to work with EnDev. Corresponding discussions are going on.

4. Sustainability

General: Quality control of services and products is ensured. Prices of technology providers/producers cover costs and create profit. After-sales structure exists.

One of the weaker points of FUNAE and reason for stagnating donor willingness to contract them is the financing and management of maintenance and after "sales" service. Although it works in some sectors (health clinics) to a certain extent, meaning that funds for maintenance are available and channeled through the health ministry, in others (education) the availability of funds stagnates and leads to substantial problems. Also donor coordination in this field should be improved.

5. Outlook on planned activities and interventions for the next reporting period and expected Outcomes

Key Intervention 1 (Grid): By the middle of 2011 we will have a view on the possibilities of reviving the old powerline in Chacuzza. However, the current budget does not allow a new substantial engagement with EDM.

Key Intervention 2 (SHS): Involvement and integration of EnDev activities with the DEG-Phaesun PPP is established. Cooperation with the GTZ national vocational education component will result in a Solar training centre at the Instituto industrial de Maputo in the course of 2011 expectedly. The centre will be equipped with hardware and curricula that facilitate use for regular training programmes and short custom made short term training programmes.

Key Intervention 3: Further integration with FUNAE projects and the hydro component is worked out and additionally allocated. This does not mean entire abandoning of the SI involvement but rather cooperation with FUNAE preferences on SI electrification and take our part in these environments, with possibly other technologies such as micro hydro options and battery charging stations and include private consumers.

Rwanda

PN 08.2139.7-110 and PN 08.2139.7-121

Country/ Region	Rwanda					
	New Project <input type="checkbox"/>		Follow-up Project of EnDev 1 <input checked="" type="checkbox"/>			
Project Phase	10.2009 – 12.2011		Project Budget	5,000,000 €		
Target Groups	Min Infra/Rural households					
Outcomes				Target till project end	Achieved until reporting date	
	Energy for lighting and el. HH Appl.			700 (+19,000)	0(1,813) ⁴	
	Cooking Energy for Households			20,544 ⁵	5,279	
	Electricity for social infrastructure			1 SI connected		
	Cooking/ Heating Energy for social infrastructure (number of SIs)			5 SI with biogas system		
	Energy for prod.use/income generation (number of SMEs)			30 SMEs		
Technology applied	<input type="checkbox"/> Solar	<input checked="" type="checkbox"/> Biogas	<input type="checkbox"/> Stoves	<input checked="" type="checkbox"/> Hydro	<input type="checkbox"/> Grid	Other
Summary of Key interventions and outputs	<p>PSP Hydro: (1) Six private utilities; (2) Six MHPPs; (3) Four pico-hydro power plants.</p> <p>Biogas: (1) Sustainable market for domestic biogas (2) 5,000 new biogas digesters by Dec 2011 (3) Increased capacity in institutional biogas sector.</p>					
Involved Bilateral Programme	GTZ Health Programme Rwanda					
Lead Executing Agency	Ministry of Infrastructure (MININFRA): Energy Sector					
Implementing Partner	MININFRA, Private sector (MHP), SNV (Biogas)					

1. Current progress towards the project objective

PSP Hydro: One grid connected Micro Hydro Power Plant (MHPP) is in operation since 12.03.10. The development of two more MHPPs is still not completed due to delays in construction, the rapid grid role extension and tariff negotiations. Both sides will be completed in 2011. Three additions projects are under study and could be developed by three new implementing partners.

Biogas: End of December 2010 in total 988 mason type biogas digesters were installed providing 5,279 people with biogas for cooking. Although a reasonable increase since the previous monitoring report, the increase in implementation speed is far too low to reach the projected (revised) outcomes by the end of 2011. Reasons for this were already for a large part identified during a mid term review at the end of 2009, but recommendations were only implemented to a limited extend. A mission to the project in November 2010 clearly tabled the issues, including some additional recommendations, with the relevant stakeholders in the project, and agreed with the counterpart on substantial changes in the project implementation. However, concerns remain whether changes can be made in time and

⁴ The first figure counts directly connected HH, the figure between bracket gives the HH indirectly connected via grid feed in.

⁵ has been revised from 30,000. the figure of 20,544 reflects the target 3,500 digesters but excludes 76 fiber glass digesters granted by the PRC.

whether they will be effective enough to finally kick-start a commercial biogas market in Rwanda. Benchmarks regarding program adjustments and outcomes (1,400 digesters) were set for the end of April 2011 which will determine EnDev's future involvement. SNV, with partial EnDev funding, send in an advisor to assist Mininfra with the implementation of the changes.

2. Observed or monitored impacts of the project for the target group

PSP Hydro: Private implementing partners of the PSP Hydro project show more ownership in negotiations with Utilities and Regulator. The new developers are attracting international investors for further MHP sites to be developed in Rwanda. This can clearly be taken as a spin off of the EnDev activities.

The MHPP of Murunda is providing 96 kW to the national grid, which is a decisive contribution within the serious power deficit context of Rwanda.

Biogas: The user survey aimed at revealing impact that was originally planned for September and has been replanned to early 2011, to be implemented together with an NGO at the appropriate grass root level. Previous assessments indicate users to be very satisfied, but more systematic data are required.

3. Experiences and lessons learnt

PSP Hydro: Construction of a MHPP cannot start before detailed design is done and financial closure is reached. The participation of private companies in the power sector pushes the government to set clear regulatory and legal frameworks. Private companies can learn and apply their entrepreneurship spirit to develop new MHPPs but this process takes a long time.

Biogas: The high (and risen as compared to the project design period) costs of the 6 m³ digesters are prohibitive for many potential clients in the Rwandese market. As recommended by the mission the program starts in 2011 immediately with the construction of 4m³ digesters which in most cases also provide sufficient biogas for cooking. Other lessons learned and recommendations to the project are to concentrate efforts on successful masons, regions/districts and promotion instruments instead of spreading resources to promote and support development over large areas, i.e. create growth centres to foster the market.

4. Sustainability:

PSP Hydro: The case of the 1st successful MHPP developer (REPRO) shows that the grant provided is enough to reach feasibility for the company. However, there are still not enough private companies within the hydropower sub-sector in the country to make it sustainable. The attraction of international investment capital by new developers indicates that future sites can be financed with a lower grant component.

Biogas: Both technical and commercial sustainability have to be warranted by market forces. Until the time of a mature market, checks are necessary by the NDBP program. Field technicians identify and repair shortcomings for now. Commercial sustainability depends on the successful bringing down of investment costs. This has to materialize early 2011 by implementing smaller digester types and growth of competition.

5. Outlook on planned activities and interventions for the next reporting period and expected Outcomes

PSP Hydro: The privatization of existing public owned plants (both providing and strengthening PSP private concept) will be analysed in early 2011. Negotiations with other donor institutions are ongoing in order to raise additional funds to scale up the PSP Hydro project.

The first months in 2011 are crucial for the biogas program. The project will have to prove in May that the recommendations of the mission in November are implemented and have resulted in a substantial increase the number of digesters built or at the very least started construction and that the benchmarks set are reached. A mission mid May will verify the progress and discuss whether or not the EnDev support will be continued, and in what way.

Senegal

PN 08.2139.7-103

Country/ Region	Senegal					
	New Project []		Follow-up Project of EnDev 1 [X]			
Project Phase	04.2009 – 12.2011		Project Budget	7,200,000 €		
Target Groups	Rural and urban households					
Outcomes				Target till project end	Achieved until reporting date	
	Energy for lighting and el. HH Appl.			59,700		
	Cooking Energy for Households			400,000	41,618	
	Electricity for social infrastructure			549 SI		
	Cooking/ Heating Energy for social infrastructure (number of SIs)					
	Energy for prod.use/income generation (number of SMEs)			145 SME		
Technology applied	[X] Solar	[] Biogas	[X] Stoves	[] Hydro	[X] Grid	Other
Summary of Key interventions and outputs	<p>Component 1: Rural Electrification (ERSEN)</p> <ol style="list-style-type: none"> Village electrification: electrification of households, schools, health posts and community centres as well as productive use applications. Set-up of an institutional and financial framework and management based on private operations and fee-for-service models; Installation of SHS and PV-diesel village grids and extension of the medium voltage grid. Infrastructure will be installed and privately operated by local companies. Training of personnel for operation and maintenance and business training; Implementation of productive use applications and methods of promotion for income-generating activities; Electrification of villages by means of hybrid minigrids integrating a PV generator and small-scale wind turbines. <p>Component 2: Energy for cooking (FASEN)</p> <ol style="list-style-type: none"> Increase of production capacity through set-up of semi-industrial manufacturing of metallic stoves and ceramic inlets; Further development and strengthening of the distribution network; Awareness raising campaign targeting at mass diffusion of improved stoves; Improvement of finance mechanisms in collaboration with MFIs and through carbon finance; Development of stove distribution chains for institutional stoves (in SMEs, schools, public institutions, etc.). 					
Involved Bilateral Programme	Promotion of Renewable Energies, Rural Electrification and Sustainable Supply of Household Fuels (PERACOD)					
Lead Executing Agency	Ministeres de l'Energie (ME)					
Implementing Partner	Direction des hydrocarbures et combustibles domestiques, Agence Senegalaise de l'Electrification Rurale (ASER)					

1. Current progress towards the project objective

ERSEN: All preparation is done and first civil work activities have started (16 of 30 power-houses). Installation has been intentionally slowed down due to annual cash flow problems. Implementation is on track even though no new person has been reached in EnDev 2.

FASEN: Under EnDev 2, additional 41,618 people have been reached. The rural program is not progressing due to some technical issues under investigation. Overall, the progress is significant but relatively modest as compared to the overall target of 400,000 people.

Key intervention 1: In Dakar, 13 metal workshops have doubled their weekly stove production due to an improved tooling.

Key Intervention 2: Five more urban groups are promoting ICS. For the rural areas, forest extension workers have been trained on the construction of mud brick stove. Due to some durability problems of the initially build stoves, the dissemination has been set on hold.

Key Intervention 3: Sensitisation messages on ICS were broadcasted on TV and radio. 2 showrooms for ICS are now in operation. A caravan with music in the out-skirts of Dakar offers poor households to get an ICS for their old stove and at a reduced cost.

Key Intervention 4: A new microcredit financing alliance for the promotion of improved cook stoves has been established between FASEN, ENDA-Energie and Sen Finance. This will both improve the distribution network as well as the financing of the stoves.

Key Intervention 5: World Food Programme is ready to promote the use of improved cook stoves for schoolfeeding interventions in 2011. There is a great interest of muslim organisations to purchase large scale portable stoves for their weekly ceremonies.

2. Observed or monitored impacts of the project for the target group

ERSEN: No new impacts under ERSEN 2

FASEN: RWI finalised an impact monitoring study on the stove activities of FASEN. It has been found that many urban stove owners actually mainly cook on LPG and are using the improved charcoal stove either additionally or only as a standby stove if there is no LPG available. FASEN is therefore creating targeted interventions for those settlement areas in Dakar where people without LPG are living . The results of a kitchen performance test show that for the preparation at lunch time, the reductions are in average at 37%. Based on own measurements and calculations of FASEN, the stoves promoted save 8,000t charcoal annually. Due to this, app.12,000 ha of forest will not have to be cut as compared to the situation without ICS use.

3. Experiences and lessons learnt

No new lessons learnt under ERSEN 2 or FASEN 2

4. Sustainability

ERSEN: No new observations to sustainability under ERSEN 2

FASEN: There are potentially serious threats towards the long term sustainability of the stove market in Senegal. Two initiatives - a world bank funded program as well as a regional carbon funded programm - are planning to disseminate the very same stoves as FASEN, but with a substantial subsidy (app. 40%) on the end-user price. They envisage to use those artisans which have been trained and equipped by FASEN in the passed 4 years.

5. Outlook on planned activities and interventions for the next reporting period and expected Outcomes

ERSEN: First installations are to be expected early next year (2011).

FASEN:

- Further testing of traditional and improved stoves (water boiling tests, kitchen performance tests) and household energy profiles in current and future intervention zones;
- Further collaborations for the increase of industrial production capacities and the promotion and distribution of inserts and stoves; Implementation of new distribution channels in the most disadvantaged areas (e.g. caravan) and training of stove producers;
- Communication campaigns for the commercialization of the stoves will be increased;
- Cooperation with WFP for the promotion of institutional cook stoves for schools.

Uganda

PN 08.2139.7-104

Country/ Region	Uganda					
	New Project []		Follow-up Project of EnDev 1 [X]			
Project Phase	06.2008 – 12.2012		Project Budget:	EUR 4,000,000		
Target Groups	Rural and urban households in Uganda					
Outcomes			Target till project end	Achieved until reporting date		
	Energy for lighting and el. HH Appl.		29,000	1,302 people		
	Cooking Energy for Households		1,100,000	565,375 people		
	Electricity for social infrastructure		(65,960)	16 institutions		
	Cooking/ Heating Energy for social infrastructure		(32,000)			
	Energy for prod.use/income generation		(10,050)	31 SMEs		
Technology applied	[X] Solar	[] Biogas	[X] Stoves	[X] Hydro	[X] Grid	Other
Summary of Key interventions and outputs	<ol style="list-style-type: none"> 1. Stoves (rural): training of trainers who teach local people; 2. Institutional stoves/ovens: Techn. support to professional producers; 3. Solar home systems: support to rural solar dealers and MFIs(training in marketing, installation, business management etc.); 4. PV electrification of social institutions: Subsidised installations done by local companies; 5. Micro-hydro: Community projects and technical as well as financial support to private project developers; 6. Grid densification: Implementation of grid densification in cooperation with utility. 					
Involv. Bilateral Programme	Promotion of Renewable Energy and Energy Efficiency Programme (PREEEP)					
Lead Executing Agency	Ministry of Energy and Mineral Development					
Implementing Partners	Rural Electrification Agency, NGOs, Private Project Developers					

1. Current progress towards the project objective (number of people with access to modern energy services in the different categories)

By December 2010 more than 560,000 people gained access to improved household cooking stoves through the program.

The first pico-hydro power plant was installed in Eastern Uganda and supplies 30 people and SME with electricity.

The solar market development activities are implemented in cooperation with a consortium of Ugandan and Kenyan consultants. So far 1272 person got access to Solar Home Systems (SHS) in households and 30 SMEs are equipped with SHS. The electrification of social institutions with solar PV has supplied 14 institutions.

In the field of grid extension, two small projects electrifying a secondary and a primary school were finalised. In addition, suitable areas for grid extension of entire trading centres have been identified. Procurement of works for these activities has started, others are under construction.

2. Observed or monitored impacts of the project for the target group

It has been observed that households using improved stoves save time and/or money (depending on whether they buy firewood or not). Monetary saving can be reported for institutions and SMEs using improved stoves or ovens, too.

Further observations are that some electrified health centres open at night and improve their services. They save money on paraffin for light whereas night time services can be improved.

Households and SMEs using solar home systems reported reduced expenditures on paraffin and phone charging.

3. Experiences and lessons learnt

The hydro power initiative to support private project developers has been started. In general it can be observed that hydro projects have long lead times. It is expected that most of the connections will be done towards the end of the implementation period.

Availability of stock/finance is one of the biggest constraints for increased sales of solar systems.

Radio adverts are crucial to create awareness/demand for products.

Impact of electrification of health centres is limited because many health centres are closed at night.

4. Sustainability

All social institutions electrified under EnDev 1 are re-visited for follow-up purposes, if needed, minor errors are corrected and users re-trained. Social institutions have to contribute 20 % of the overall project costs.

Follow up visits to private/SME users of SHS are in planning. Solar dealers are linked to micro-finance institutions - MFI representatives and solar dealers attend business trainings together. Solar dealers offer 1 year warranty.

Stove dissemination in former intervention areas keep the market penetration high through follow up activities.

5. Outlook on planned activities and interventions for the next reporting period and expected Outcomes

Two more pico hydro schemes are under preparation and several Micro Hydro Plants will be commissioned (Bwindi MHP, Suam MHP, Fofu MHP).

Stove dissemination activities in new districts will be intensified and follow up in old districts will continue.

The support for solar market development will also continue, as well as electrification of secondary schools with solar PV in Central and Southern Uganda.

Bangladesh

PN 08.2139.7-204

Country/ Region	Bangladesh				
	New Project []		Follow-up Project of EnDev 1 [X]		
Total EnDev 2 Project Phase Initial 2009 Upscaling 2010	06.2009 – 12.2012 06.2009 – 06.2010		Project Budget	5,500,000 € 3,500,000 € 2,000,000 €	
Target Groups	Rural poor				
Outcomes			Target till project end	Achieved until reporting date	
	Energy for lighting and el. HH Appl.		687,500	337,981	
	Cooking Energy for Households				
	Electricity for social infrastructure				
	Cooking/ Heating Energy for social infrastructure (number of SIs)				
	Energy for prod.use/income generation (number of SMEs)				
Technology applied	<input checked="" type="checkbox"/> Solar	<input type="checkbox"/> Biogas	<input type="checkbox"/> Stoves	<input type="checkbox"/> Hydro	<input type="checkbox"/> Grid Other
Summary of Key interventions and outputs	1. Dissemination of Small Solar Home Systems (SSHS; 20 Wp) - Expected Outputs: 7,792 SSHS; 2. Dissemination of Solar Home Systems (SSHS; 50Wp) - Expected Outputs: 53,659 SHS; 3. Dissemination of Solar Lanterns - Expected Outputs: 0.				
Involved Bilateral Programme	Renewable Energy and Energy Efficiency/ Sustainable Energy for Development (SED)				
Lead Executing Agency	Ministry of Power, Energy and Mineral Resources				
Implementing Partner	IDCOL and private companies				

1. Current progress towards the project objective

The Focus of the EnDev project in Bangladesh under the second phase of EnDev is on SSHS and Solar Lanterns.

The dissemination of SSHS is implemented through the implementing partner IDCOL. A total of almost 81,500 SHS and 24,500 SSHS has already been disseminated through IDCOL under EnDev 1. EnDev 2 funds have contributed to the dissemination of another 53,659 SHS and 7,792 SSHS so far. According to IDCOL around 30,000 Solar Systems are being sold per month. 20% of these are SSHS.

2. Observed or monitored impacts of the project for the target group

In an impact survey of households involved in a Bangladeshi project to distribute solar home systems (SHS), about one quarter of the 178 households interviewed described the lack of electricity as a major problem of daily life. 40% of the SHS households cited the improved availability of information as an important change, followed by improved lighting conditions (34%). 26% of the respondents with SHS stated that the main benefit of the electric light was their children's ability to learn, and agreed with the statement, "it is easy to read in the evening". Of the non-electrified households, however, only 3% agreed with the statement. The average studying time in the evening was 21 minutes longer in SHS households compared to the households without solar electricity. In addition: Data supplied by IDCOL

shows that 10% of all installed SSHSs and 5% of all SHSs are being used for productive use.

3. Experiences and lessons learnt

All disseminated SSHS are attributable to the project, no wind fall gain factor has to be taken into account.

4. Sustainability

- Quality control of services and products is being done by IDCOL through technical inspectors and additional personnel. Around 18,000 systems are physically inspected every month
- The market for SHS is a profitable business for private companies. An increasing number of organisations is willing to import and sell systems with required quality standards. By now IDCOL has done a good job in ensuring after sales service by the POs. Still the market has to be observed properly to make sure that low quality products do not harm the market.
- Subsidies: By 2012 all subsidies will be phased out (Clear exit strategy).

5. Outlook on planned activities and interventions for the next reporting period and expected Outcomes

It is estimated, that the market of SHS can be considered sustainable already, while SSHS still require some additional support. For the next project phase (beginning in 5/2011) it is planned to monitor the development of the SHS market while not giving subsidies for this product anymore and provide advisory in case of occurring problems. EnDev 2 funds will thus only be used for distribution of SL and SSHS.

For SL a baseline survey in 1,500 rural households regarding user behavior and lighting expenditures is currently being conducted.

A field test of four selected lamp models is already planned. All together 4,000 lamps are going to be distributed through commercial partners, that already have a broad dissemination infrastructure.

Indonesia

PN 08.2139.7-201 and PN 08.2139.7-202

Country/ Region	Indonesia					
	New Project <input type="checkbox"/>		Follow-up Project of EnDev 1 <input checked="" type="checkbox"/>			
Project Phase	05.2009 – 09.2012		Project Budget	8,000,000 €		
Target Groups	Rural villages					
Outcomes			Target till project end	Achieved until reporting date		
	Energy for lighting and el. HH Appl.		170,000 (340,000 until 2015)	1,925		
	Cooking Energy for Households					
	Electricity for social infrastructure		160 schools, 60 health centres (HC), 90 community centres (CC)	4 schools, 3 HC, 4 CC		
	Cooking/ Heating Energy for social infrastructure (number of SIs)					
	Energy for prod.use/ income generation (number of SMEs)		150 agro processing, 400 metal & wood working applications	0		
Technology applied	<input type="checkbox"/> Solar	<input type="checkbox"/> Biogas	<input type="checkbox"/> Stoves	<input checked="" type="checkbox"/> Hydro	<input type="checkbox"/> Grid	Other
Summary of Key interventions and outputs	<p>Key Intervention of MHP-TSU</p> <ol style="list-style-type: none"> MHP project preparation and implementation by supporting villagers' site identification and verification, feasibility studies and MHP-specific aspects of community preparation; Capacity building through MHP-specific training in sustainable MHP project planning & development, operation & management issues and income generating end-use of energy; Capacity building for local MHP hardware and service providers; Information and knowledge management. <p>Key interventions of MHPP²</p> <ol style="list-style-type: none"> Consolidating of nationally available and previously developed MHP experiences and capacity development approaches; Policy advisory, i.e. design for rural electrification as well as for grid-interconnection; Promotion/introduction of feedback loops on policy effectiveness. <p>Expected Outputs: 250-300 MHP plants have been installed and the relevant institutions and organisations have the capacity to independently implement further sustainable schemes. Both the capacity and institutional framework of the micro hydro sector as a whole are improved.</p>					
Involved Bilateral Programme	Indonesian-Dutch Energy Working Group/RE Programme					
Lead Executing Agency	MHP-TSU: Ministry of Home Affairs MHPP ² : Ministry of Energy and Mineral Resources					
Implementing Partner	PNPM, PSOs, CSOs, NGOs					

1. Current progress towards the project objective

MHP-TSU: TSU has reviewed 367 proposals for new MHP sites in the focus areas in Sulawesi and Sumatra of which approx. 2/3 are theoretically feasible. The 26 sites selected in the 2009 Green PNPM budget year are in the process of commissioning. 3 were handed over to the village communities by the end of 2010. The other 23 will be handed over in the first quarter of 2011. In the reporting period pre-commissioning management and operator trainings have been conducted for 70 people from 13 villages. Feasibility studies for the 2010 budget sites have been made and designs prepared. For the year to come the Green PNPM provides funding for the construction of 50 sites, 40 in Sumatra and 10 in Sulawesi. Site identification in Papua has started. Approximately 4 pilot sites will be built in 2011.

MHPP²: A strategy for supporting productive use of energy has been designed and implementation will start in 2011. A multimedia tool for facilitating the promotion, implementation, planning, monitoring and evaluation of MHP projects is under preparation. For supporting new financing possibilities MHPP² supported its counterpart, the Directorate General for Electricity and Energy Utilization (DGEEU), to design a special government allocation fund - DAK. It will promote rural electrification, based on renewable energy. An impact assessment has been carried out in 40 MHP sites, with results available in February.

2. Observed or monitored impacts of the project for the target group

TSU: The number of proposals received (367) indicate that villagers are aware of the possibility to tap the PNPM process for electrification via MHP. Detailed impacts will be revealed by the impact assessment which report is due in February.

MHPP²: The joint development and start of key activities strengthened the cooperation with the counterpart organization DGEEU. The change of responsibilities temporarily led to a setback, but the new counterpart is very eager to cooperate in a similar way as his predecessor.

3. Experiences and lessons learnt

TSU: Green PNPM was designed as a village empowerment program, to strengthen the rural areas. This approach increases the ownership of the communities but risks to be extremely vulnerable to delays. For some of the 23 not-yet commissioned sites TSU identified the necessity to improve and strengthen current construction of the civil work, an experience which will be integrated in future capacity development activities. The impact study which was conducted in September and October also revealed that the accounting training for MHP personal has to be improved. Fraud was no issue, but a systematic transparent book keeping was not adopted in many villages and will be part of future management training concept.

MHPP²: In 2010 a new DG for New and Renewable Energy was established. Responsibilities within the counterpart organization were temporarily unclear which has slowed down implementation of MHPP² activities.

4. Sustainability

TSU: In autumn 2010 an impact assessment study has been conducted. First findings state, that 19 of the 20 visited sites build under EnDev 1 are operational and in an overall good condition. One system was temporarily out of operation due to land conflicts. All operational sites are run without any further external support.

5. Outlook on planned activities for the next reporting period and expected Outcomes

TSU: The tendering of the 50 MHP schemes financed in 2010 will start in January. It is expected that the experiences made in Sulawesi will smoothen the construction process. In Sumatra the first generation of EnDev 2 sites will be built with the 2010 budget, therefore some challenges might appear. Productive use of energy will be one of the main topics for 2011 in order to secure economic sustainability by providing additional income.

MHPP²: With the installment of the new Directorate General for New and Renewable Energy and the final assignment of personnel early 2011, the focus of the counterpart will be back on the project work. Cooperation with private sector stakeholders will be strengthened.

Nepal

PN 08.2139.7-203 and PN 08.2139.7-206

Country/ Region	Nepal					
	New Project [<input type="checkbox"/>]		Follow-up Project of EnDev 1 [<input checked="" type="checkbox"/>]			
Project Phase	05.2009 – 04.2011		Project Budget	1,300,000 €		
Target Groups	Rural communities					
Outcomes			Target till project end	Achieved until reporting date		
	Energy for lighting and el. HH Appl.		11,825 (hydro) / 60,062 (grid extension) ⁶	0 / 46,903 (grid-extension)		
	Cooking Energy for Households					
	Electricity for social infrastructure		6,947 (hydro)			
	Cooking/ Heating Energy for social infrastructure (number of SIs)					
	Energy for prod.use/income generation (number of SMEs)		633 (hydro)			
Technology applied	<input type="checkbox"/> Solar	<input type="checkbox"/> Biogas	<input type="checkbox"/> Stoves	<input checked="" type="checkbox"/> Hydro	<input checked="" type="checkbox"/> Grid	Other
Summary of Key interventions and outputs	<p>Grid-extension component:</p> <ol style="list-style-type: none"> 1. Creation of a Community Rural Electrification Fund (CREF) in the Community Rural Electrification Department of Nepal Electricity Authority CRED/NEA to provide financial support to rural communities; 2. Training of communities in institutional development, accounting and financial management, electrical safety, house wiring and community mobilisation for productive use of electricity; 3. Institutional Support to the National Association of Community Electricity Users – Nepal (NACEUN). <p>Micro hydro component:</p> <ol style="list-style-type: none"> 1. Set up and financially support the establishment of a micro-hydropower debt fund providing investment capital to communities intending to build and operate their own power station in remote communities; 2. Advise and support the partner bank in developing credit appraisal procedures; 3. Advise and support communities in their technical capacities to efficiently run their own power stations (tariffs, productive end-use). <p>Expected outcome: 15-20 MHPP with approximately 416 kW installed.</p>					
Involved Bilateral Programme	Small Hydro Promotion Project (SHPP)					
Lead Executing Agency	Ministry of Energy (MoE)					
Implementing Partner	grid-extension: Nepalese Energy Authority (NEA) hydro: Alternative Energy Promotion Centre (AEPC)					

1. Current progress towards the project objective

Hydro Power: The financing contract over EUR 500,000 between GIZ and AEPC has been signed in December on the implementation of a micro hydro debt fund of Ministry for Foreign Affairs. The contract will allow to disburse the funding to AEPC which will have

⁶ Until December 2009, 3,625 households representing 19,938 persons were connected to the national grid. The project continued working under EnDev 2 to achieve the originally planned figure of 80,000 beneficiaries. Thus, the target outcome figures for the grid extension component under EnDev 2 is the overall set target (80,000) minus the already connected persons (19,938).

responsibility to transfer the funds to two commercial banks. The criteria for the fund allocation, the evaluation raster and the credit agreement with the banks have been finalised and coordinated with all involved partners from the ESAP (Danida/NORAD) and REDP (UNDP/World Bank) programme.

Grid-extension: By the end of 2010 households in 13 rural communities have been provided with electricity. In 6 of these communities verification and customer satisfaction surveys were carried out. The state of electrification in the communities still strongly varies. Some are fully electrified, others are in the tendering process for construction or the initial feasibility studies have only been completed. The reasons for delays are different in the various communities but can be related in mainly to the contractors not doing their work timely, a lack of progress monitoring by NEA and a lack of ability within the communities to handle the administrative process. Training on Repair and Maintenance of Distribution Networks was conducted end 2010 for 18 participants from 9 CREEs, as well as a training on Financial Management and Accounting in Kathmandu in early December 2010 for 18 participants from 11 CREEs.

2. Observed or monitored impacts of the project for the target group

A detailed baseline study has been finalised in 5 rural communities and 3 control groups collecting socio-economic data for intensive impact monitoring in the future. Due to the short period of electrification of many communities, relevant impacts cannot be monitored yet.

3. Experiences and lessons learnt

Grid extension: The community electrification model has the advantage to decrease the costs of managing the electricity supply due to the community entity acting as a single local provider. It also decreases pilferage of electricity dramatically. In the beginning most the available power is mainly used for mainly lighting, communication (mobile phone), entertainment (radio, TV) and cooking (rice cookers). Surveys show that it takes time until productive uses are fully applied in the communities. The consumption is thus very low at first and as many communities have a minimum purchase for 80 kWh per household some have to pay higher quantities than they consume. Some communities therefore revised their tariff system for introducing lower minimum tariffs. Others are hesitant as it would even more decrease the small profit of the CREE. Some communities introduced support systems, allowing poorer households not to pay the initial connection fee. The perception of the consumers about the quality of repair service in the CREE is mixed. Some CREE struggle to provide sufficient customer services. The low consumption of households leads to limited financial resources thus also to limited number of staff. Due to geographic conditions it is difficult for staff to provide repair services for remote households and answer requests timely.

4. Sustainability Measures for sustainability:

Grid-extension: The participation of women in particular in the bookkeeping and accounting training was encouraged, because women are more likely to remain in the community and continue their work for the CREE. The participation of women in technical trainings remains a difficult task. The project has also conducted awareness raising measures for productive use application, i.e. identification of business opportunities, training of some potential entrepreneurs. The portion of productive use in the energy consumption of the CREE still has to rise to increase the profits of the CREEs.

5. Outlook on planned activities for the next reporting period and expected Outcomes

Hydro Power: The selection committee (involved partners and donors) will meet to evaluate the received letters of intent from banks on the implementation of a micro hydro dept fund. Suitable banks will then be asked to provide a detailed proposal and present this to the selection committee.

Grid extension: The electrification process will continue. The verification visits assessing the current progress in the EnDev target communities will continue with the participation of NACEUN as representative of the communities in the surveys and the general monitoring.

Bolivia

PN 08.2139.7-252

Country/ Region	Bolivia					
	New Project []		Follow-up Project of EnDev 1 [X]			
Project Phase	10.2009 – 12.2012		Project Budget	5,000,000 €		
Target Groups	poor rural households, farmers, social institutions					
Outcomes			Target till project end	Achieved until reporting date		
	Energy for lighting and el. HH Appl.		200,000 persons	62,175 persons		
	Cooking Energy for Households		77,000 persons	96,549 persons		
	Electricity for social infrastructure		1,200	409		
	Cooking/ Heating Energy for social infrastructure (number of SIs)		500	1,040		
	Energy for prod.use/income generation (number of SMEs)		8,200 families	5,489 families		
Technology applied	[X] Solar	[X] Biogas	[X] Stoves	[X] Hydro	[X] Grid	Other
Summary of Key interventions and outputs	<p>Support governmental and partner institutions to:</p> <ol style="list-style-type: none"> 1. Design policies and cofinance mechanisms to grant better access to energy; 2. Train, advice producers/retailers/providers in the provision of innovative modern energy products and services and in opening up markets for them (Stoves, Pico PV, Biogas); 3. Support local stove and biogas plant installers as a complementary job opportunity; 4. Support awareness and public relations campaigns about Indoor Air Pollution (IAP), productive energy use, proper use of natural gas and safe indoor electric installations; 5. Advise and financially support financing institutions that offer loans to producers/retailers and households; 6. Facilitate and support networking between stakeholders in the energy sector, e.g. through workshops, working groups. 					
Involved Bilateral Programme	PROAGRO, PADEP					
Lead Executing Agency	Ministry for Hydrocarbons and Energy, Vice Ministry for Electricity and Renewable Energy					
Implementing Partner	e.g. Vice Ministry for Electricity and renewable Energy, business association, NGOs, municipalities, communities, cooperatives, electricity facilities					

1. Current progress towards the project objective

In EnDev 2 from November 2009 to December 2010 about 158,000 persons gained access to energy services. Also, a total of 1,449 social infrastructures benefited and 5,489 small farmers and entrepreneurs have now reliable access to energy.

The project is implementing new Monitoring and Evaluation improvements related to further improve the coherency and reliability of reporting tables, while providing better analysis of information for the different levels of decision making. Also, the introduction of "Capacity Works" in the project management is being continued. The future 2011 activities will focus on

impact, sustainability and strategy adjustment while maintaining a high level of implementation in the rural areas. The joint implementation with national counterparts is growing both in numbers as in strategies involved. In December, a new "umbrella"-agreement between the Ministry for Hydrocarbons and Energy and the GTZ was signed that basically covers all EnDev activities.

2. Observed or monitored impacts of the project for the target group

EnDev Bolivia has published an impact summary report resulting from the study done with more than 1,200 surveys. This period will have the complete impact study finalized. Some key findings are that 87% of beneficiaries answered that the grid connection had an overall positive and significant impact on life conditions and family dynamics. The impact study indicates that stove abandonment is lowest with the Malena mud-adobe stoves (20%). Families that use the stoves stated positive impacts in consumption and IAP reduction, data that was also confirmed with water boiling- and kitchen performance test (WBT and KPT) results. Sampled small producers had significant increase in their income.

3. Experiences and lessons learnt

The project receives strong support by local as well as the national governments. The strong governmental support and the excellent cooperation with NGOs and the private sector have significantly contributed to the fast progress of the EnDev activities. In order to have a better reporting, automatization of the M&E tables is under development. This will make the reporting faster with better quality data and analysis tools.

4. Sustainability

Dropouts from the electric grid are insignificant. Infield monitoring indicates that roughly 75% of stoves are being used continuously. As far as productive use is concerned, some associations and families complement their productive equipment with their own means and operation and maintenance seem to have reached a satisfactory level. Technologies such as grid connection, Solar Water Heaters and stoves have been standardized or certified.

5. Outlook on planned activities and interventions for the next reporting period and expected Outcomes

The different activity lines in the category energy for lighting will continue with a strong support and coordinated work with the Vice Ministry. It is planned to increase the dissemination of photovoltaic lamps.

The stove dissemination component will also continue. Special emphasis will be laid on trainings for people from the communities who are expected to be hired by households for the construction of the "Malena" Stove. The strategy for energy for social infrastructure will concentrate on some of the Municipalities that are more active and also with strategic alliances.

Ongoing activities to promote dryers, roasters, electric pumps will further strengthen the provision of energy for productive uses in 2011 and beyond.

Honduras

PN 08.2139.7-256 and PN 08.2139.7-253

Country/ Region	Honduras				
	New Project <input type="checkbox"/>	Follow-up Project of EnDev 1 <input checked="" type="checkbox"/>			
Project Phase	10.2009 – 12.2011	Project Budget	2,000,000 €		
Target Groups	Rural poor				
Outcomes		Target till project end	Achieved until reporting date		
	Energy for lighting and el. HH Appl.	14,000	1,696		
	Cooking Energy for Households	15,300	3,755		
	Electricity for social infrastructure	20,000			
	Cooking/ Heating Energy for social infrastructure (number of SIs)	8,500			
	Energy for prod.use/income generation (number of SMEs)	11,000	4 Cooperatives, 23 members		
Technology applied	<input checked="" type="checkbox"/> Solar	<input type="checkbox"/> Biogas	<input checked="" type="checkbox"/> Stoves	<input checked="" type="checkbox"/> Hydro	<input type="checkbox"/> Grid Other
Summary of Key interventions and outputs	<ol style="list-style-type: none"> Promotion and Dissemination of Improved Cooking Stoves (Justa) and Biomass Fuelled Ovens; Rural Electrification through PV and micro hydro power installations; Promotion of Local Capacities on Renewable Energy. 				
Involved Bilateral Programme	Natural Resources and Economic Development Programme				
Lead Executing Agency	Secretaria Tecnica de Planificación y Cooperacion Internacional				
Implementing Partner	Communities, NGOs				

1. Current progress towards the project objective

During the second phase of the project 5,501 persons benefited until the end of December 2010. Four grid extensions provided 372 households with access to electricity (with 1,746 persons benefiting). Throughout the installation and use of improved stoves, model "Justa", 648 households have been reached, providing 3,755 persons access to healthier cooking methods. Moreover four small and medium enterprises (SME) are benefiting from newly installed solar coffee dryers.

2. Observed or monitored impacts of the project for the target group

An impact study on families' perception of change as a result of access to modern energy sources, improvement in health as a result of enhanced cooking methods and higher incomes due to an increase in product quality in the case of solar dryers will be implemented in 2011.

3. Experiences and lessons learned

The project has observed a growth and a strengthening of local capacities, not only with regard to community members who have been trained in basic electricity, system maintenance and the construction of stoves and solar dryers, but also in NGO's and other partners, such as Hermandad de Honduras and AHPROCAFÉ, who have had to lead and coordinate complex bidding processes.

4. Sustainability

- General: Quality control of services and products is ensured
- Technology providers/ Producers: Prices cover costs and create profit; After-sales structure exists

- Subsidies: Clear exit strategy; Local contribution
- Capacity building: Training on technical aspects and local subsidies management

5. Outlook on planned activities and interventions for the next reporting period and expected Outcomes

PV for households:

A financing agreement with a key NGO partner, Hermandad de Honduras, has initiated a bidding process from which more than 1,600 households, 10 health centres, 41 schools and 33 community centres with SHS are benefiting. The systems have been designed to provide 30Wp for lighting, radio and cell phone charging. A second bidding process, led by the Honduran Association of Coffee Producers (AHPROCAFÉ), will provide access to modern energy services to 220 households and 1 school, with SHS of 50Wp. EnDev has intended to increase local contributions made by the beneficiaries and local governments, therefore, lowering the project's contribution ratio.

Micro hydro power plants:

The project has planned to finance the installation of 3 micro hydro power plants in collaboration with the Honduran Foundation of Agricultural Investigation (FHIA). Further activities will be oriented towards the improvement of the current micro hydro power plants that have been financed by EnDev 1.

A series of courses with an orientation to micro hydro electricity have been designed, in collaboration with EnDev Nicaragua, with the objective of improving and creating new local capacities, ranging from project design to the construction of small-scale turbines and electronic regulation.

Grid extension and densification:

Four communities, with 372 households and 1,746 persons, gained access to electricity through grid extensions connecting to the National Interconnected System (SIN). Grid extensions in these communities have been executed with the support of local governments, local community organizations, as well as the beneficiaries.

New grid extensions will be reported in June 2011 once the census data has been verified by the project.

Improved Stoves:

The Honduran Association for Development (AHDESA) has been the project's key partner in the promotion of the improved stoves, model "Justa". Up to the reporting date 648 Justa stoves have been installed in households, benefiting 3,755 persons. Information on 352 Justa stoves is under verification, and will be reported in June 2011. A bidding process for the construction and distribution of material for more than 1,600 Justa stoves is currently underway. Results will be reported in June 2011.

Solar Dryers:

Two hundred and thirty solar coffee dryers will be installed for coffee producers in the department of Comayagua, a project that will be executed with collaboration and funding of the Honduran Coffee Institute (IHCAFÉ). Information on solar coffee dryers for five organizations in the Río Plátano Biosphere will be reported in June 2011.

Nicaragua

PN 08.2139.7-254 and PN 08.2139.7-255

Country/ Region	Nicaragua					
	New Project <input type="checkbox"/>		Follow-up Project of EnDev 1 <input checked="" type="checkbox"/>			
Project Phase	10.2009 – 12.2011		Project Budget	2,200,000 €		
Target Groups	Rural poor					
Outcomes			Target till project end	Achieved until reporting date		
	Energy for lighting and el. HH Appl.		29,000	7,285		
	Cooking Energy for Households					
	Electricity for social infrastructure		25,000	22 social institutions were connected to the national grid		
	Cooking/ Heating Energy for social infrastructure (number of SIs)					
	Energy for prod.use/income generation (number of SMEs)		8,000	SME connected to the national grid to be reported until mid of 2011		
Technology applied	<input checked="" type="checkbox"/> Solar	<input type="checkbox"/> Biogas	<input type="checkbox"/> Stoves	<input checked="" type="checkbox"/> Hydro	<input checked="" type="checkbox"/> Grid	Other
Summary of Key interventions and outputs	<ol style="list-style-type: none"> 1. Financing and Co-financing of installation and dissemination of energy systems through partner organisations; 2. Inspection and maintenance of installed systems 3. Trainings of staff and customers; 4. Advertisement and awareness building. 					
Involved Bilateral Programme	Sustainable Management of Natural Resources and Strengthening of Entrepreneurial Competencies					
Lead Executing Agency	Ministerio de Energia y Minas					
Implementing Partner	NGOs, communities					

1. Current progress towards the project objective

In the second phase of the project, until December 2010, 7,285 persons have been reached with energy for lighting and household appliances.

Also some small and medium enterprises (SME) have been connected to the grid. However the number of SMEs needs to be verified.

In the period June – December 2010 no additional access outputs are reported because the installation works are not yet terminated. However the major interventions were prepared with their respective agreements during this reporting period.

2. Observed or monitored impacts of the project

An impact study to trace the changes in rural migration patterns and the economic and social impacts of rural electrification, which were implemented during EnDev 1, is currently under way. Its results will be available latest by the end of 2011.

3. Experiences and lessons learnt

A joint evaluation of ten micro hydro plants implemented by EnDev 1 in cooperation with the local partners in Nicaragua (government and private companies) and Honduras has

revealed the following experiences and lessons learnt that apply for both countries:

Opportunities:

- Technical implementation of the sites is in general satisfactory, but there are occasional needs for improvements in management.
- Design and construction of the Pelton turbines and the generators used are sound and of good engineering quality.
- Local operators are qualified and able to handle operation and maintenance of the plants and the technology is readily accepted by the villagers.
- All actors in the micro hydro sector are highly motivated in improving their performance and broadening their technical approaches and skills.

Constraints:

- Only the Pelton technology and limited types of generators are known and applied, leading to relatively high costs and inefficient power outputs.
- Only inefficient (mechanical) or no load regulation at all is applied, which leaves the risk of voltage instabilities to the consumers only.
- Only two site contractors and two turbine producers are qualified and active in the micro hydro power sector in Nicaragua. They are not able to cope efficiently with the potential market and growing demand throughout the two countries.
- Only a part of the village population can be covered with electricity service due to the local settlement patterns (30 to 50%) The private sites are reaching even much less coverage.

4. Sustainability

Technical design, construction and operation of hydro power sites are good. No problems to be expected in that area. However economical sustainability is some times weak as tariffs charged by the communal operators are too low to be able to cope with unforeseen maintenance challenges, and inhibit power extension.

5. Outlook on planned activities and interventions for the next reporting period and expected Outcomes

With relation to grid extension and densification, activities such as the design of a low cost electrification plan will be priority for the next period. This design will aim to reduce connection costs per household by grid densification based on the grid extension works implemented during EnDev 1. It is envisaged to augment local contributions by substantially sharing costs between EnDev, the Fund for the Development of the National Electric Industry (FODIEN) of the Ministry of Electricity and Mines (MEM), local governments and other actors, as well as consumers.

Further activities related to SHS will focus on: a) rising cost contribution by including local governments, and b) downscaling the technology by introducing Pico-PV products for household lighting, radio and cell phone charging. Thus families with less ability to pay for the systems will be able to participate in the project. For both activity lines it is envisaged to include local Micro Finance Institutions (MFI).

Within the next reporting period 07 micro hydro power plants will be terminated. Additionally EnDev will carry out the introduction of battery charging services for the families that could not be connected to the mini grids because of their distance to the plants or restricted power production by the natural site parameters. Parallely a pilot with locally produced pico hydro power turbines will be implemented for downscaling the technology for household lighting and productive use contributing to important local value chains by mechanical cooling technology.

Peru

PN 08.2139.7-251

Country/ Region	Peru					
	New Project []		Follow-up Project of EnDev 1 [X]			
Project Phase	06.2009 – 12.2011		Project Budget	2,900,000 €		
Target Groups	Rural poor					
Outcomes			Target till project end	Achieved until reporting date		
	Energy for lighting and el. HH Appl.		100,000	58,770		
	Cooking Energy for Households		60,000	171,640		
	Solar Heaters / HH Appl.			1,255		
	Electricity for social infrastructure (# of institutions)		15,000	568 institutions		
	Cooking/ Heating Energy for social infrastructure (number of SIs)		320,000	450 social institutions		
	Energy for prod.use/income generation (number of SMEs)		5,000	321 enterprises		
Technology applied	[X] Solar	[X] Biogas	[X] Stoves	[X] Hydro	[X] Grid	Other
Summary of Key interventions and outputs	<ol style="list-style-type: none"> 1. Promote grid densification; 2. Promote improved stoves and solar heaters in social institutions; 3. Information campaign; 4. Promote improved stoves; 5. Access to modern energy services for productive use. 					
Involved Bilateral Programme	None					
Lead Executing Agency	Agencia Peruana de cooperacion internacional APCI, Presidencia del consejo de Ministros PCM					
Implementing Partner	Ministry of Energy and Mines, Ministry of Agriculture, Ministry of Health, Support Program for the poorest JUNTOS, Regional Governments, Governments of the Provinces. Private companies especially mining.					

1. Current progress towards the project objectiveEnergy for lighting households

11,724 households in 10 regions have benefited through secure indoor electrical connections. 30 households in San Martin district have received energy for lighting through pico PV systems.

Energy for home cooking

A total of 34,328 households has received an improved cook stove. Financial support has been given by local governments to this component of the project.

Energy for lighting in social infrastructures

A total of 568 social institutions have benefited from lighting interventions. The implementation strategy and support is similar to the interventions for Energy for lighting households, in which a subsidy is made available for a secure indoor connection or for the installation of a low tension connection.

Energy for cooking and solar water heaters in social infrastructures and households

In 426 institutions improved institutional stoves are introduced. In 24 institutions a subsidy has been given for the installation of a solar water heater.

Energy for productive usage

A total of 21 of small and medium size entrepreneurs have been given access to modern energy services with electrical connections, solar dryers, improved stoves, biodigestors, solar water heaters, portable improved metallic stoves and metal ovens.

2. Observed or monitored impacts of the project for the target group

According to a recent self-evaluation of the project, beneficiaries of access to grid electricity stated the following benefits: improved access to communication and information, improved living standards and comfort in households, less expenses for lighting and a reduced risk of accidental burns.

The implementers of the National Campaign to promote improved cook stoves have calculated that the use of improved cook stoves saves Peru a lot of money, because of reduced health expenses. At the moment 80% of all visits to health posts are related to smoke in houses.

The availability of electrical equipment or solar dryers in the coffee industry means an increase of income, because the quality of the coffee is better which gives a higher price.

3. Experiences and lessons learnt

- a. The government support to access to energy is a great advantage. It allows regional and local governments to allocate budgets for the topic. This support accelerates the access to energy.
- b. The solar heaters are expensive and only for a small group affordable. It will be considered to stop this intervention.
- c. It is important not only to give people access to energy, but to come back on a regular basis to check on proper use and maintenance of the devices.

4. Sustainability

- a. Quality control of services and products: the project carries out technical supervision in the field on a regular basis. Through additional participative evaluations of households the correct use of the technology is evaluated.
- b. Prices cover costs and create profit; After-sales structure exists: In each region, local producers, constructors and technicians are selected to provide the services. They are selected according to criteria like their capacity, quality of their products, their market strategy.
- c. Subsidies (Clear exit strategy; Local contribution): the intention is to reduce the subsidies over the next years.

5. Outlook on planned activities and interventions for the next reporting period and expected Outcomes

Energy for lighting in households and social institutions: It is expected to consolidate the access to safe indoor connections, involving the sector actors (government, companies & users).

Energy for cooking in HH: Work will continue within the framework of the Campaign for a Smoke Free Peru by a Peru without smoke.

Energy in SI for cooking and water heating: Alliances with key actors of the health and education sectors will be continued.

Energy for productive use: Work will continue in cooperation with the regional and local governments, private companies and financial institutions that offer micro credits to the rural producers.

E Budget allocation and expenditures

Out of the total budget of EUR 78,000,000 an amount of EUR 61,400,000 has been allocated to country activities.

Allocation of EnDev 2 Budget	
allocated to projects based on EnDev 2 Annual Planning	60,800,000
allocated to projects based on EnDev 1 Annual Planning	600,000
allocated to program level activities	4,600,000
not allocated	12,000,000
Total	78,000,000

The total expenditures of EnDev 2 until end of 2010 are amounting to EUR 33,144,907 (see table below).

EnDev 2 Projects on 31.12.2010 (Amount in EUR, accumulated from project start)

Country / activity	Project no.	EnDev 2 Funding	Disbursements
EnDev 2 program	08.2139.7	78,000,000	33,144,907
BMZ funds not allocated	08.2139.7-001	5,400,000	0
DGIS funds not allocated	08.2139.7-002	6,600,000	0
Program management	08.2139.7-003	3,000,000	1,248,312
Grant Agreement Agentschap NL	08.2139.7-004	1,600,000	514,436
Kenya	08.2139.7-101	2,500,000	1,551,083
Mali	08.2139.7-102	2,000,000	885,245
Senegal	08.2139.7-103	7,200,000	3,808,764
Uganda	08.2139.7-104	4,000,000	1,811,917
Burkina Faso	08.2139.7-106	1,000,000	518,746
Ethiopia	08.2139.7-107	6,000,000	4,333,331
Ghana	08.2139.7-108	900,000	370,086
Mosambique	08.2139.7-109	1,000,000	769,126
Rwanda	08.2139.7-110	2,000,000	1,215,368
Benin, stoves	08.2139.7-111	2,000,000	338,460
Burundi	08.2139.7-112	900,000	56,386
Mosambique, financing	08.2139.7-120	2,000,000	601,165
Rwanda, financing	08.2139.7-121	3,000,000	986,087
Indonesia, component 1	08.2139.7-201	6,000,000	2,663,851
Indonesia, component 2	08.2139.7-202	2,000,000	423,468
Nepal, financing	08.2139.7-203	700,000	40,156
Bangladesh	08.2139.7-204	5,500,000	3,111,961
Nepal	08.2139.7-206	600,000	319,527
Peru	08.2139.7-251	2,900,000	1,970,825
Bolivia	08.2139.7-252	5,000,000	2,239,947
Honduras	08.2139.7-253	1,520,000	942,109
Nicaragua	08.2139.7-254	1,520,000	418,629
Nicaragua, financing	08.2139.7-255	680,000	411,953
Honduras, financing	08.2139.7-256	480,000	30

EnDev 2 disbursements of projects on 31.12.2010 already approved under EnDev 1

Benin, electrification	08.2139.7-105	0	1,227,467
Benin, electrification, financing	08.2139.7-122	0	16,954
Mongolia	08.2139.7-205	0	349,515

F EnDev Publications

Publications:

Attigah, Benjamin; Brüderle, Anna; Grüner, Roman; Hellpap, Carsten; Reiche, Kilian: **What difference can a PicoPV system make?** Early findings on small Photovoltaic systems - an emerging lowcost energy technology for developing countries, Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), Eschborn May 2010.

Attigah, Benjamin; Brüderle, Anna; Grüner, Roman; Hellpap, Carsten; Reiche, Kilian: **Que peut apporter un système pico PV?** Premiers constats relatifs aux petits systèmes photovoltaïques – une technologie émergente à faible coût pour les pays en développement, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Eschborn February 2011.

Brinkmann, Verena; Feldmann, Lisa; Heine, Robert; Huntjens, Els; Op de Coul, Maartje: **Energising Development- Report on Impacts**, Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) and SenterNovem, Eschborn July 2009 and 2nd edition May 2010.

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ): **Factsheet „Energising Development Partnership“** – EnDev, Eschborn January 2011.

Grüner, Roman; Lux, Stephan; Reiche, Kilian; Schmitz-Gunther, Thomas: **Solar Lanterns Test**. Shades of Light, Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), Eschborn May 2009.

Reports and Research:

Bagayoko, Amadou; Kone, Aboubacar; Coulibaly, Amadou: **Etude de la situation de référence dans les communes des régions de Koulikoro et Ségou pour le volet ELCOM du PACT**; GTZ, Mali July 2010.

Bensch, Gunther; Kluge, Jochen; Peters, Jörg: **Rural Electrification in Rwanda – An Impact Assessment Using Matching Techniques**, Ruhr Economic Papers # 231, Essen 2010.

Communication & Management Institute (COMAT): **Impact Assessment on 35kW Khola Micro Hydro Power Plant in Phugmoche**, Solukhumbu Distrikt, Baseline Survey Report; Kathmandu Nepal January 2011.

Feibel, Hedi: **How Micro Hydro Power Systems implemented during EnDev 1 are performing, evaluation of a monitoring survey of 20 MHP Systems**, entec Consulting & Engineering on behalf of Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ); St. Gallen Switzerland November 2010.

Institute/Consulting-Firm on behalf of Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ): **Improved Stoves Dissemination in Senegal**, Interim evaluation / Final evaluation / Ex-post evaluation 2009 – Main Report, Essen August 2010.

Müggenburg, Hannah: **Rural Electrification: Acceptance of Pico Photovoltaic Systems in Ethiopia** - Which conditions contribute to a sustainable integration of technical innovations into work and daily life in developing countries and implementation in the context of development cooperation?, Diploma thesis, Darmstadt March 2011.

Philipp, Wellbrock: **Socio-economic Impacts of a Rural Electrification Initiative in Northern Nicaragua** – Sustainable Livelihoods and Migration, Diploma thesis, Hamburg December 2010.

For further reading see the **internet platform**: www.energypedia.info