

SOLAR MICROCREDIT,

or how to facilitate access to electricity in rural areas: an example in Burkina Faso

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Example of activity that may be developed: charging of mobile phones
Source: Fondem

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KEYWORDS

- MICROCREDIT
- SOLAR KIT
- ELECTRICITY
- BURKINA FASO
- DEVELOPMENT

This article presents the “Solar Microcredit in Burkina Faso” program of the Fondation Energies pour le Monde (Fondem) which enables electrification by solar kits through microfinance. This innovative program relies on pairing subsidies, covering 40 to 50 % of the investment, and microcredit. It helps satisfy local demand by overcoming the barrier posed by the limited payment capabilities of rural and peri-urban customers.

INTRODUCTION

Burkina Faso is a country whose population is 71% rural (World Development Indicators, 2014). Burkina Faso is strongly dependent on its agriculture. Over 80% of the active population live off farming and cattle raising and contribute 34% to the country's GDP (Ibid.).

Access to basic social services such as health, education, water or energy, is poor. In 2013, with 14 million people without electricity, Burkina Faso posted an electrification rate of 17% (World Energy Outlook, 2015). The situation was even more alarming in rural areas, with a 1% electrification rate (Ibid.).

The Fondation Energies pour le Monde (Fondem) has been working in Burkina Faso since 1995, through:

- electrification of individual venues (schools, health centers),
- electrification of village in pilot projects,
- dissemination of solar kits through microcredit.

In the early 2000s, Fondem was approached by resellers of solar kits, themselves approached by rural populations wishing to access of electrical services via a kit, but lacking the means to pay cash for the equipment.

Fondem then set up an innovative scheme, named “Energy Credit”, based on the credit sale of photovoltaic systems with a subsidy covering 40 to 50 % of the investment amount. Involving technical (supplier and local installer) and financial partners (local microfinance institution), this scheme can satisfy local demand by overcoming the barrier of the limited payment possibilities of rural and peri-urban customers. The method helped disseminate a little over 300 complete photovoltaic kits in the 14-65 Wp range between 2003 and 2010, reaching out to

approximately 4,000 beneficiaries. Despite a modest start in terms of quantitative results, this first step served to determine an operating scheme and the associated business model, which needed to be analyzed in depth in order to enable kit distribution on a larger scale.

1. PRESENTATION OF THE PROGRAM

In the face of this scheme's promising results in Kourittenga province in east Burkina Faso, in mid-2011 Fondem launched a 5-year solar microcredit program (MICRESOL) in Burkina Faso, whose aim is to adapt and extend the "solar microcredit" scheme to the entire Est region of Burkina Faso, in order to:

- distribute up to 1,000 solar kits and reach approximately 15,000 beneficiaries by the end of the program in mid-2016,
- make the business model sustainable and replicable.

The operating partner of the MICRESOL program is the Réseau de Caisses Populaires de Burkina Faso (RCPB), the country's first microfinance institution (MFI).

The financial partners of the program are:

- the European Union, in the framework of the Energy Facility II of the 10th European Development Fund (EDF),
- the French Ministry of Ecology, Sustainable Development and Energy (MEDDE),
- the French Environment and Energy Management Agency (ADEME),
- the Credit Coopératif (cooperative bank), through its partnership with Fondem around Agir products, which serve to receive additional donations intended for field programs,
- the Fondation Énergies pour le Monde (Fondem),
- the Réseau des Caisses Populaires du Burkina (RCPB).

The overall cost of the program is EUR 1.9M over 5 years. The area of operation concerns the east part of Burkina Faso. The program is still ongoing. It will end in mid-2016.

The solar microcredit combines two mechanisms without which the equipment would be outside the financial reach of the targeted clientele (rural and peri-urban):

- a subsidy component used to bear the cost of the equipment. This component concerns the photovoltaic modules, batteries, regulators, inverters and converters. It is covered by Fondem through the program's various co-financing schemes, based on an international call for tender for the provision. The amount of the subsidy has been set following a survey conducted by RCPB revealing the capabilities for payment through microcredit of the targeted rural populations,
- a microcredit component serving to spread the remaining financial effort of the kit buyers. This component relates to the provision of electrical equipment and the installation-maintenance service. It is therefore borne by the final customer through a microcredit granted by the local partner of the RCPB.

1.1. ORGANIZATIONAL DIAGRAM

Fondem is in charge of general program coordination, management of the business model, relations with the main financial backers, and the operation of the subsidy component serving to disseminate quality equipment at locally affordable microcredit conditions.

The RCPB manages the development and implementation of financial terms favorable to proper product dissemination, the implementation of a training and support program for its credit agents, the monitoring of microcredit applications made and granted, as well as visibility and communication actions aimed at commercial promotion of the product.

The following organizational schema was retained for MICRESOL:

- on one hand, a provision agreement between Fondem and the supplier K&K International, for the subsidized part, which concerns the provision of solar kits: photovoltaic modules, batteries, regulators, inverters, step-down regulators, lamps,
- on the other hand, a service contract between the Délégation des Caisses Populaires de l'Est (DCPE) – the RCPB's regional branch – and BETA, a proximity structure, for the part covered by the consumer through the solar microcredit granted by DCPE, which concerns:
 - The provision of the small equipment (battery boxes, module supports, wiring and interior installation),
 - the solar kit installation service,
 - the kit maintenance (preventive and curative) service for the duration of the microcredit.

Provision agreement

Following an international call for tender applying European Commission procurement rules, a framework agreement for the provision of photovoltaic components for autonomous electrification systems (individual solar kits), was signed between Fondem and Burkina Faso supplier K&K International, based in Ouagadougou.

The aim of the framework agreement was to define the terms and conditions for the provision of photovoltaic components for autonomous electrification systems, with a view to several subsequent contracts. The contract states no contractual amount but it indicates a maximum overall financial volume for all subsequent contracts to the framework agreement, in accordance with the European budget.

Following the signature of the framework agreement, several subsequent contracts were signed between Fondem and K&K International for the provision, in Ouagadougou, at the warehouse of K&K International, of photovoltaic components.

Service contract

Knowing that DCPE has no technical expertise in terms of individual photovoltaic solar systems, Fondem placed itself as technical advisor to DCPE for the preparation of this DCPE/BETA service provision contract.

BETA is a network of technicians-installers based in Koupela, in the heart of the area of operation.

This contract describes in specifically:

- the human and logistical means supplied by BETA to conduct its activities in the framework of MICRESOL,
- the technical and financial content of BETA's services, for the provision of electrical equipment and for the installation-maintenance service,
- the terms of payment by DCPE to BETA for the provision of the contracted services.

This contract was finalized once the supplier had been selected (in order to complete some parts concerning the interactions between the supplier and BETA, in charge of the provision of small electrical equipment for the assembly of the photovoltaic components, and of kit installation) and signed immediately afterwards, in September 2013.

WHY CHOOSE BETA?

Under the "Energy Credit" scheme implemented by Fondem, BETA, was selected as the structure in charge of kit installation and maintenance for the duration of the credits.

BETA is a relatively small structure governed by Burkinabe private law, based in Koupela, administrative seat of Kourittenga province. Its geographical proximity to the installation sites is an asset to ensure a high service quality while reducing transportation costs.

Its CEO, Boureima Kabre, is perfectly familiar with the area of operation's economic and sociological background and has a considerable experience in development. Indeed, for many years he was the coordinator of various projects in the fields of health, education and rural economic development.

BETA operates within a social entrepreneurship scheme, in the sense that it tries to reconcile economic viability and collective interest and/or social purpose.

Between 2008 and 2011, under the "Energy Credit" scheme, the work of BETA's local and proximity team made it possible to a cut back costs and delays between the granting of a microcredit and kit installation, and provided a regular and quality maintenance service. Moreover, his good interaction with the Caisses Populaires, already partnering this operation, had helped attain that past program's goals – both quantitative and qualitative.

Under MICRESOL, feedback concerning BETA being positive and since very few Burkinabe structures involved in individual photovoltaic solar systems professionally are based in the Est region, Fondem and the local operating partners chose to continue to work with BETA.

Fondem MICRESOL organizational diagram

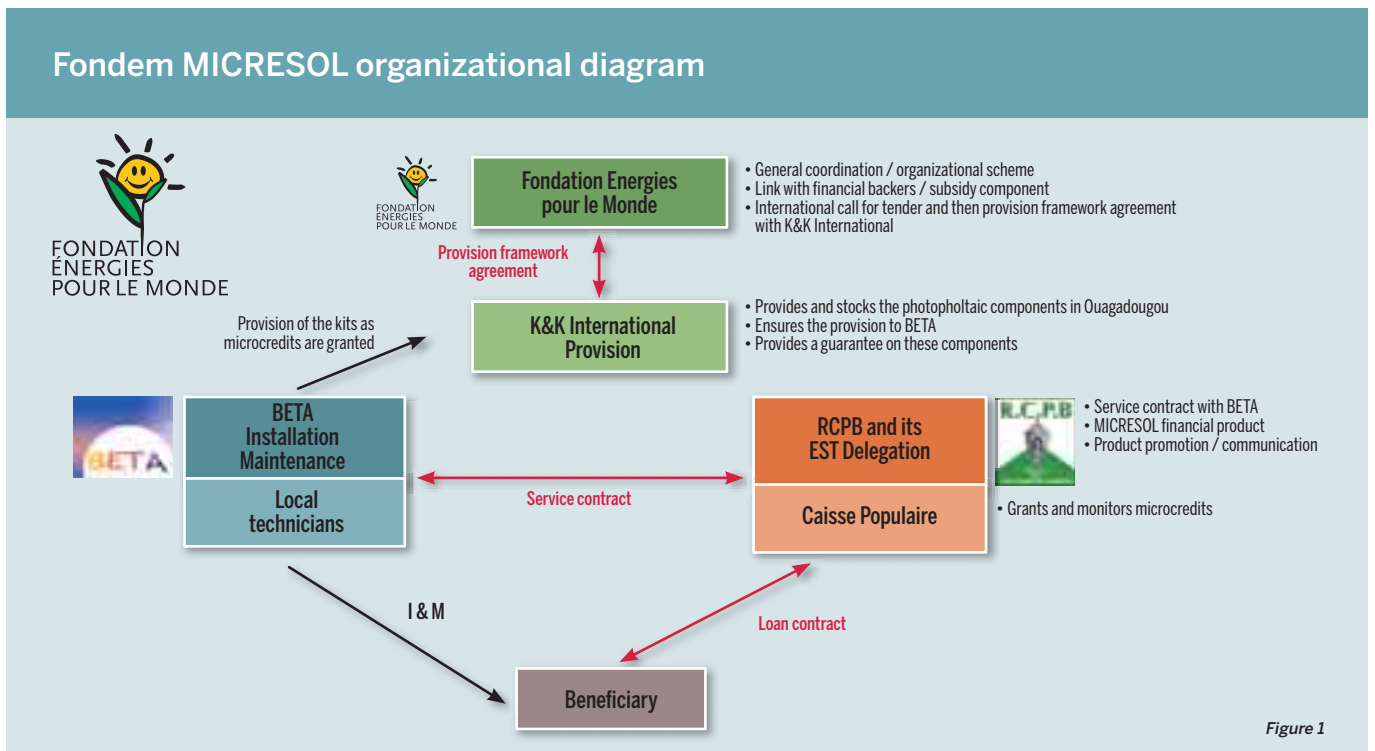


Figure 1

This diagram was chosen for the following key reasons:

- it complies with the framework agreement set by the main financial backer (the European Commission), for whom the only contractual contact is Fondem:
 - RCPB and DCPE being Fondem's partners,
 - K&K International being a contractor of Fondem for the provision of photovoltaic equipment, covered by the subsidy,
 - and BETA being DCPE's partner for the installation-maintenance service, which is a commercial operation (without subsidy);
- it separates contractual relations and thus clarifies/simplifies interactions between the program's various stakeholders;
- it enables setting up a warranty on the equipment, provided contractually by K&K International, which replaces faulty components that are the responsibility of the original suppliers (manufacturers).

The very reasons for this choice entail some restrictions / disadvantages:

- The supplier, K&K International and the installer, BETA, although working very closely (since, as the solar microcredit applications are made, BETA will procure from K&K International in Ouagadougou the photovoltaic components needed to create the kits), have no contractual relationship, which may create difficulties or delays in the smooth running of activities,
- DCPE has no contractual relationship with the supplier K&K International, so it may experience difficulties to manage possible delays in solar equipment procurement,
- Fondem has no contractual relationship with the installer BETA, and has therefore few means of applying direct pressure should installations not be strictly up to standard.

Furthermore, the fact that the supply of the equipment (photovoltaic components) is entirely governed by the procurement rules of the European Union (and in particular, the rules concerning equipment origin and contract award) has a direct impact on the cost of the equipment, making it necessarily higher.

1.2. MICRESOL TECHNICAL PRODUCT: A RANGE OF 4 SOLAR KITS

The program seeks to offer electrical equipment likely to meet the demands of:

- households, for domestic purposes: lighting, radio, TV, charging mobile phones, ventilation, refrigeration,
- micro-entrepreneurs, for economic uses: shops, hairdressing shops, dressmaking shops, video rental stores, sale of fresh products, etc.,
- social infrastructures: schools, colleges, health centers, community buildings.

In order to develop the range of photovoltaic kits to offer, a local market survey served to:

- provide feedback about the domestic and economic applications developed under the "Energy Credit" scheme,
- assess the type of photovoltaic equipment available in local markets,
- analyze the new domestic applications requested by the households in the east area (e.g. ventilation),
- identify new economic activities, presenting a good potential for development through the use of a photovoltaic kit.

"IT SEPARATES CONTRACTUAL RELATIONS AND THUS CLARIFIES/ SIMPLIFIES INTERACTIONS BETWEEN THE PROGRAM'S VARIOUS STAKEHOLDERS."

A range of 4 kits was selected:

- **an 8 Wp "mini-kit"**, supplied with 3 portable LED lamps and a cigar lighter socket to recharge mobile phones. This kit was designed without external battery, but rather with built-in accumulators, thus reducing its cost of acquisition by potential customers. This makes it possible to reach out to part of the population with little capacity to pay.
- **an 80 Wp kit (Figure 2)**, capable of supplying 5 low consumption lamps and various electrical appliances running on direct current or alternating current (by supplying an UPS). This kit can be used not only for domestic purposes (lighting, charging mobile phone, radio and TV), but also for economic uses (mobile phone charging center, hairdressing shop, dressmaking shops, etc.) or social purposes.
- **an 160 Wp kit (Figure 3)**, capable of supplying 5 low consumption lamps and various electrical appliances running on direct current or alternating current (by supplying an UPS). This kit is designed for the development of video rental stores, but can be used to develop other economic activities, for domestic life by an affluent household, or by a community social infrastructure.
- **an 320 Wp kit (Figure 4)**, capable of supplying 5 low consumption lamps and various electrical appliances running on direct current, and in particular, a refrigerator, supplied with the kit. It allows the development of activities related to the sale of fresh products or infrastructure services such as health centers (particularly for vaccine conservation).

Illustration diagram of components of Kit 2 - 80 Wp

PRODUCTION

1 PV module, 80 Wp



LOAD REGULATOR

Load regulator - 15 A 12/24 V



STORAGE

Sealed solar battery - 1 x 170 Ah - 12 V



CONSUMPTION



UPS 200 VA

AC - 220 V



Not supplied

DC - 12 V



4 indoor compact fluorescent lamps
1 outdoor compact fluorescent lamp



Not supplied

Source: Fondem

Figure 2

Illustration diagram of components of Kit 3 - 160 Wp

PRODUCTION

2 PV modules, 80 Wp - 160 Wp



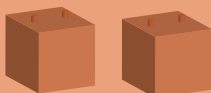
LOAD REGULATOR

Load regulator - 15 A 12/24 V



STORAGE

Sealed solar batteries - 2 x 170 Ah - 12 V



CONSUMPTION



UPS 300 VA

AC - 220 V



Not supplied

DC - 12 V



4 indoor compact fluorescent lamps
1 outdoor compact fluorescent lamp



Step-down regulator
24V/12 V

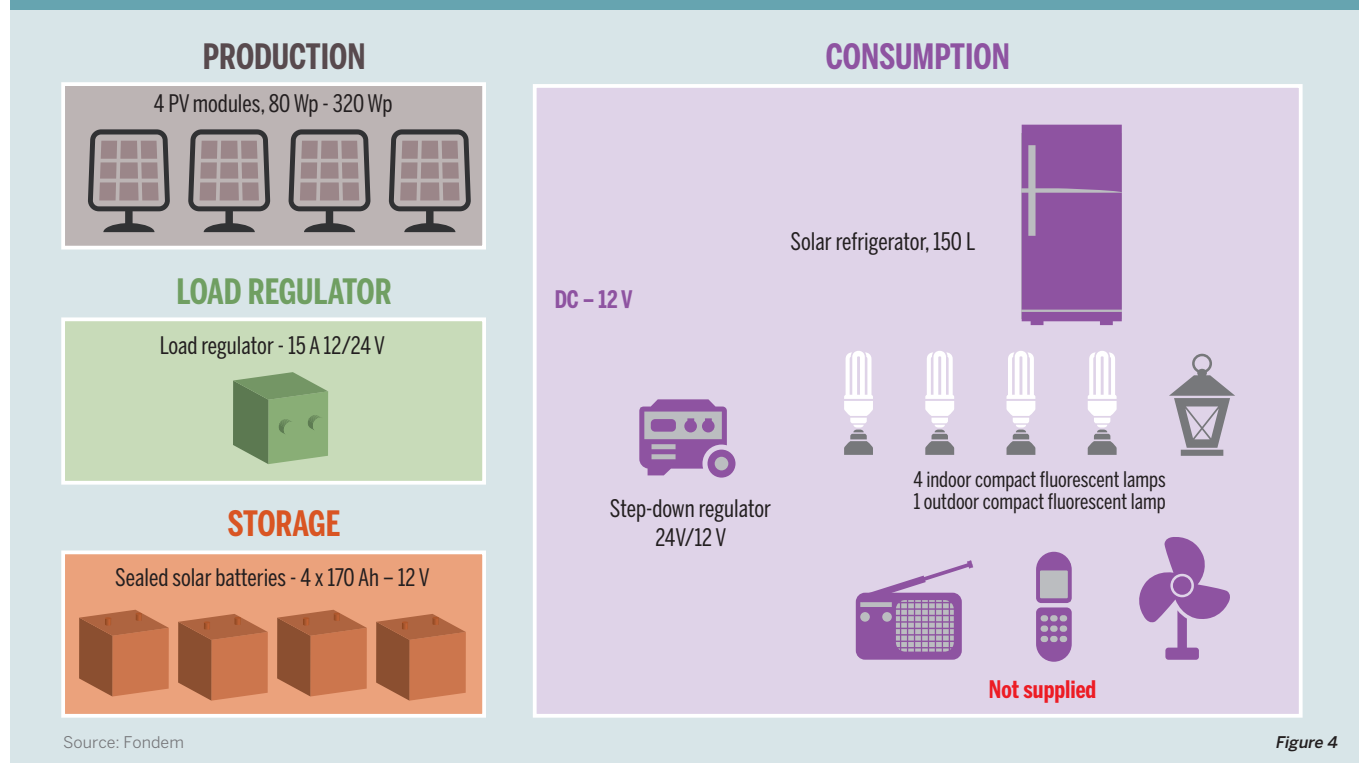


Not supplied

Source: Fondem

Figure 3

Illustration diagram of components of Kit 4 - 320 Wp with refrigeration



All components of the 4 kits of the MICRESOL range have been designed to be as standardized as possible, in order to be simply able to multiply them depending on the kit requested, since the pace at which the customers would decide to buy solar kits, the final number of kits subscribed to, and the distribution between the various kits of the range were unknown parameters.

To limit the risk (both in organizational and financial terms), it was considered unreasonable to sign a single provision contract at the start of the program. That is why Fondem chose to sign a framework agreement and then place successive orders in line with the dissemination of the kits in the field.

However, this option has some disadvantages: more administrative work due to placing several orders instead of a single one, and to the difficulties of setting up the supplier's terms of payment.

1.3. FINANCIAL PRODUCT: CONDITIONS FOR GRANTING A MICROCREDIT FOR THE ACQUISITION OF EACH KIT

The financial product indicates, for each kit of the MICRESOL range, the associated microcredit banking conditions:

- the total amount of the microcredit,
- the microcredit duration (12 to 36 months, depending on the kit it concerns and the microcredit amount),
- the interest rate,

- the amount required by the Caisse Populaire on opening the microcredit: application fee, credit insurance scheme, management fees, compulsory savings,
- the amount of the monthly installments payable by the client.

The financial product was finalized in October 2013 for the product launch at the end of 2013. It was subsequently revised to take account of the change in demand and promote faster kits sales.

“ALL COMPONENTS OF THE 4 KITS OF THE MICRESOL RANGE HAVE BEEN DESIGNED TO BE AS STANDARDIZED AS POSSIBLE, IN ORDER TO BE SIMPLY ABLE TO MULTIPLY THEM DEPENDING ON THE KIT REQUESTED.”

The financial product currently in force is the following:

Table 1. MICRESOL financial product in Euros

MICRESOL financial product	Kit 1 8 Wp	Kit 2 80 Wp	Kit 3 160 Wp	Kit 4 320 Wp
Share Fondem - K&K International - Financial backers subsidy component				
Photovoltaic components: solar module(s), battery(ies), load regulator(s), possibly UPS	65%	60%	55%	45%
Share DCPE - BETA - Beneficiary microcredit component				
Supply of small equipment: module support, regulator/UPS support, battery box, wiring, small equipment (sockets, connectors, switches etc.) + solar refrigerator for Kit 4	€ 18.50	€ 180.00	€ 280.00	€ 1,870.00
Transport Ouagadougou to Koupela and then Koupela to installation site	€ 7.50	€ 30.00	€ 80.00	€ 110.00
Storage(intermediate) at Koupela	€ 4.00	€ 15.00	€ 35.00	€ 45.00
Installation	€ 0.00	€ 105.00	€ 135.00	€ 225.00
Maintenance during the microcredit refund period	€ 0.00	€ 70.00	€ 120.00	€ 250.00
TOTAL PRICE PER KIT TARGETED BY THE MICROCREDIT	€ 30.00	€ 400.00	€ 650.00	€ 2,500.00
Amount of monthly installments (for 3 years)	€ 1.00	€ 14.00	€ 20.00	€ 84.00

Source: Fondem-RCPB

The entire cost of the installation-maintenance services carried out by BETA is included in the amount of microcredit granted, and thus to the customer load.

2. IMPLEMENTATION OF THE PROGRAM

2.1. PRODUCT MARKETING AREA AND NETWORK OF TECHNICIANS-INSTALLERS

The DCPE savings bank participating in the dissemination of the MICRESOL product have been identified with the double goal of:

- disseminating the product in an area to achieve the long term quantitative target of 1,000 kits installed by mid-2016, meeting rural and peri-urban demand in the east regions,
- allow DCPE staff to adopt the solar microcredit product little by little, in particular through various training series.

Initially, 11 branches (savings banks) located in 4 areas of operation were selected. In addition to the initial 11, it was thought that new branches could be involved in MICRESOL over the course of the following years to follow changes in the demand of the potential customers.

Based on these 11 DCPE branches selected to disseminate the solar microcredit, the network of BETA technicians in charge of the associated installation/maintenance was defined. BETA set up the following team of technicians:

- 2 technicians based in Koupela, covering the areas of Koupela and Boulsa,
- 2 technicians based in Tenkodogo and Garango, covering in pairs the entire Tenkodogo area (up to Zabré),
- 1 technician based in Fada N'Gourma, covering the area of Fada.

In terms of geographic positioning, BETA first undertook to cover the following areas:

- a 50 km installation/maintenance area around the 4 main branches (Koupela, Boulsa, Tenkodogo and Fada N'Gourma),
- a 20 km installation/maintenance area around the branches slightly more distant and not covered in the previous areas (Mogtedo and Zabré).

In early 2014, the marketing area of the MICRESOL product was extended to covering the entire DCPE catchment area (i.e. 26 branches and points of sale), thus covering the south-east quarter of the country.

With the expansion of the area of operation, and the integration of all the DCPE agencies, even with no new recruitment, BETA deployed to cover DCPE's entire area of influence.

“WITH THE EXPANSION OF THE AREA OF OPERATION, AND THE INTEGRATION OF ALL THE DCPE AGENCIES, EVEN WITH NO NEW RECRUITMENT, BETA DEPLOYED TO COVER DCPE'S ENTIRE AREA OF INFLUENCE.”

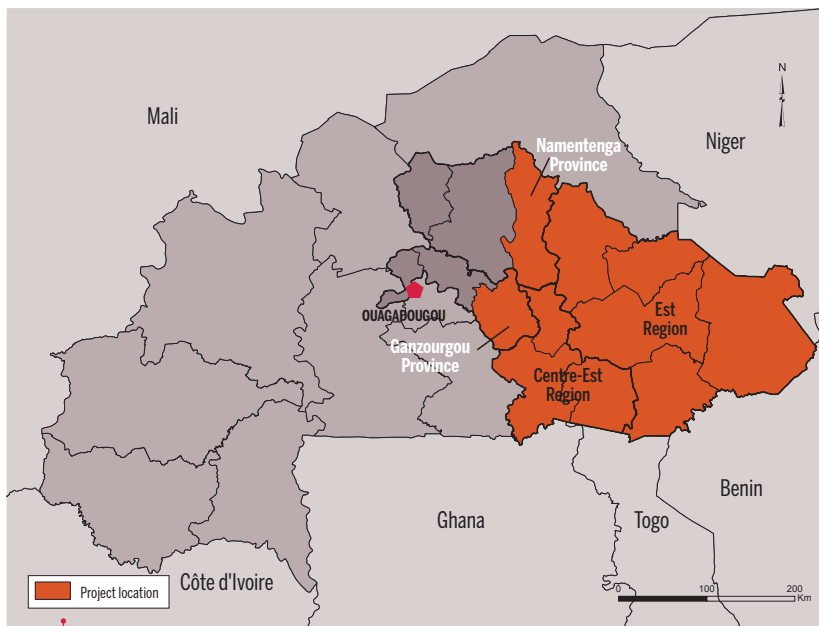


Figure 5. Project location - Source: FERDI

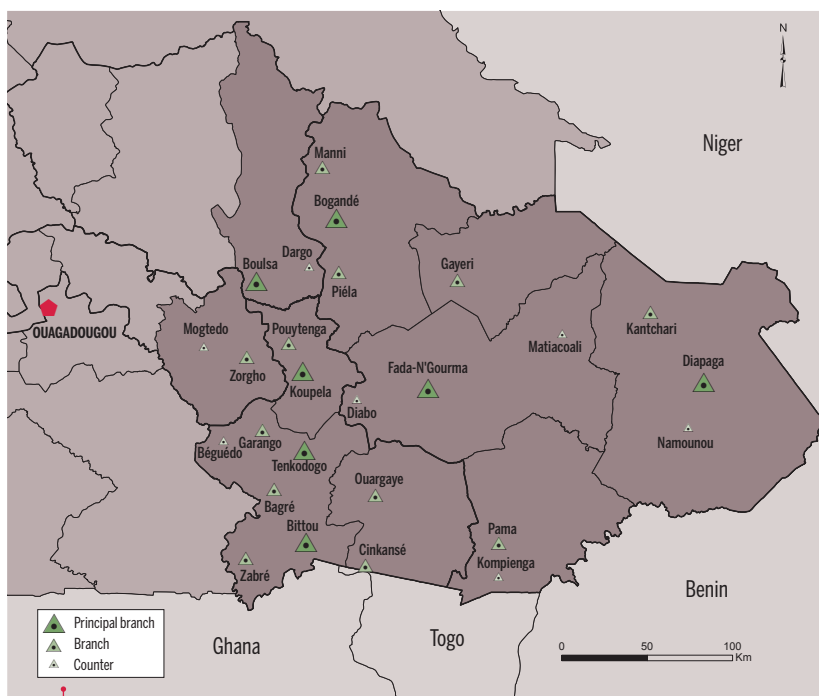


Figure 6. Network of the Délégation des Caisses Populaires de l'Est (DCPE) Source: FERDI

“THE IDEA IS TO ENSURE A CLEAR AND COHERENT DISSEMINATION OF INTERNAL INFORMATION AND PROCEDURES IN ORDER TO SUPPORT THE CONCEPT AND THE SALES PITCH OF DCPE CREDIT AGENTS FOR THE CUSTOMERS.”

The procedures guide is organized in sections presenting the program, its various stakeholders and the MICRESOL product, both technical and financial. It sets the rules for the situations related to implementation of the program: promotion and communication, microcredit application preparation, kit installation and maintenance, and monitoring of the solar microcredit beneficiaries.

The guide was completed following validation of the financial product and the selection of the supplier of the photovoltaic components. It was then disseminated widely to the program partners.

In addition, a **teaching workbook** was developed with various aims:

- present the operation of the MICRESOL project to credit agents,
- familiarize the credit agents with the product that they offer their clients,
- allow the credit agents to guide customers towards a product that suits them,
- allow them to give the customer basic information about the systems and their operation.

The idea is to ensure a clear and coherent dissemination of internal information and procedures in order to support the concept and the sales pitch of DCPE credit agents for the customers.

With this aim, the teaching workbook recaps the structure of the program procedures, presents the specific features of the solar photovoltaic electricity, the uses that customers can make of the energy and the MICRESOL technical range. It also sets forth a series of arguments to promote the MICRESOL product before future customers.

After exchanges and consultation focusing on MICRESOL within the DCPE staff, the teaching workbook was finalized in October 2013, and then released from November 2013 to all branches participating in the launch of the program.

2.2. TRAINING AND EDUCATIONAL TOOLS

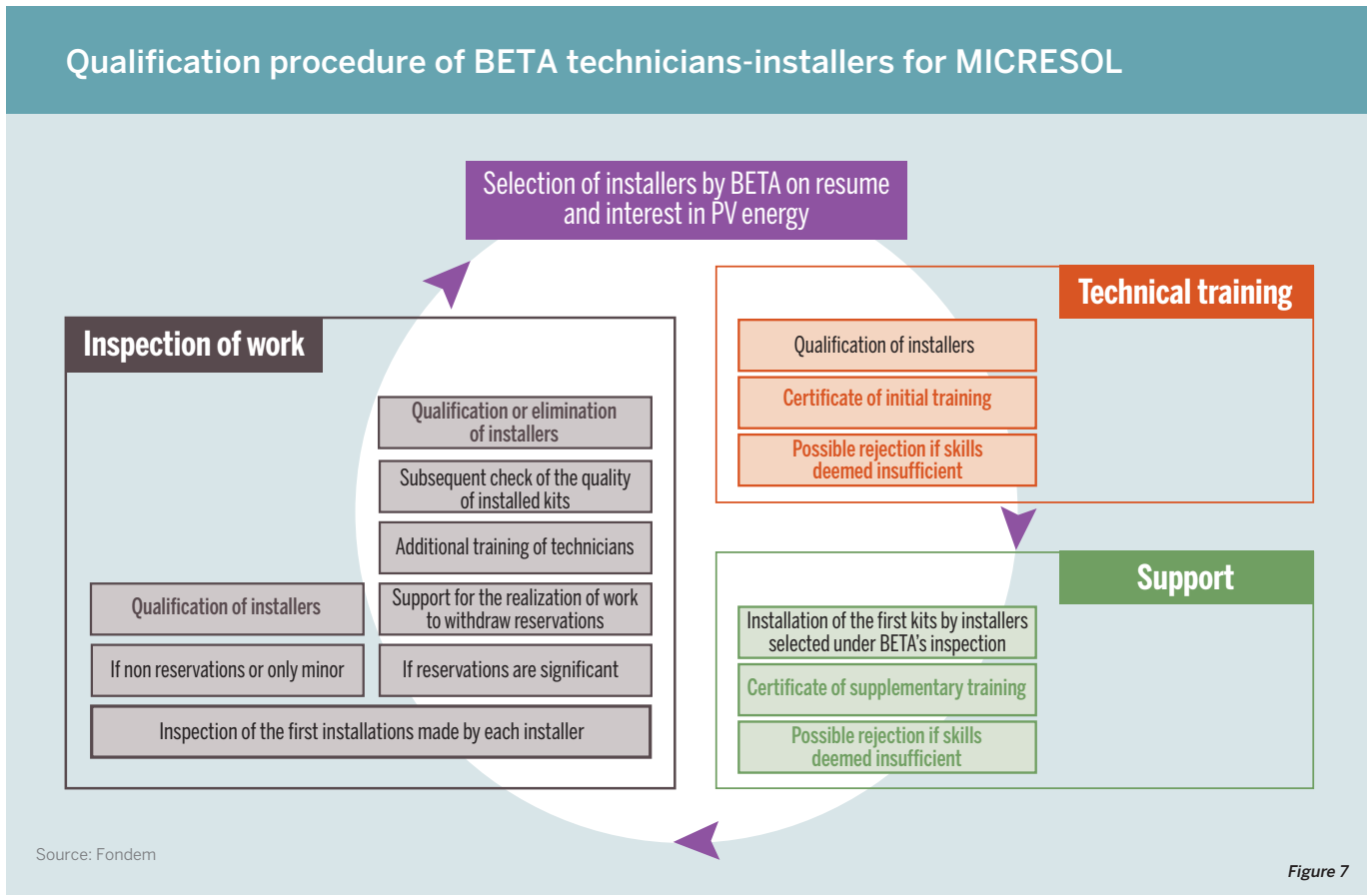
2.2.1. Procedures guide and teaching workbook

A **procedures guide** was developed to define the roles, responsibilities and interactions between each stakeholder of the MICRESOL program, from the microcredit application to reimbursement of the credit by the customer.

Based on the feedback from the “Energy Credit” scheme, this guide was the result of a close consultation between all stakeholders: the DCPE, K&K International, BETA and Fondem.

2.2.2. Qualification procedure of technicians-installers

At the end of 2012, Fondem developed a qualification procedure with technical training and support to qualify skilled technicians for installation and maintenance of individual photovoltaic solar kits.



On the basis of this qualification procedure,

■ An **initial technical training** was given to 5 BETA technicians by an international consultant in January 2013. This training concerned:

- some theoretical issues concerning solar photovoltaic electricity,
- practical exercises on demonstration solar components (modules, batteries, regulators, etc.).

At the end of the training session, the trainer assessed the technicians' skills according to a qualification grid, and then gave out "Certificates of initial training in photovoltaic kit installation and maintenance" to 5 BETA technicians involved in MICRESOL since they all had demonstrated the required skills.

■ A BETA **technician-installer support** service during the first kit installations carried out supplemented this "MICRESOL qualification" procedure between December 2013 and February 2014.

This installer support service was carried out by a Burkinabe consultant specialized in photovoltaic solar energy. The BETA CEO could have provided this support to his technicians himself (in terms of skills), but it was decided to go through an outside consultant in order to improve technical

exchanges (since relations between employer and employee can be complicated), and because the outside consultant was readily available.

The support was carried out according to a two-step process:

- Strengthening of the technical training of the 5 BETA technicians,
- Support and assistance in the field during the first installations.

Initial technical training for BETA installations for MICRESOL
Source: Fondem





Signing of a solar microcredit application - Caisse Populaire of Tenkodogo
Source: Anne Mimault

This support was intended to help the technicians during their operations to improve their technical skills and enable them to deliver a quality service.

■ A “**quality control of the installation work of supplementary training**” service, conducted by an independent international consultant, in close partnership with a Burkinabe solar PV expert.

The service, which started in early 2015, was divided into 3 inspection missions, whose final aim was to validate the technicians’ skills and hand out of certificates to the qualified technicians.

2.2.3. Training of DCPE banking staff

The MICRESOL product being atypical for a microfinance organization, one of the challenges of the program was to ensure a consistent concept among the banking staff of the DCPE branches. They had to be able to gain an understanding of solar photovoltaic technology, the technical range of kits on offer and the specific rules for the use of renewable electricity.

With this aim, the first step concerned training in the technical product of the DCPE “MICRESOL Project Leader”, who was recruited in mid-2012, to work specifically and full-time on MICRESOL.

The subjects covered during this training were: definition and operation of the “Solar microcredit” scheme, feedback of the “Energy Credit” scheme, basic technical training in individual photovoltaic solar systems, presentation of the MICRESOL program: goals and provisional work program.

Moreover, in 2012, Fondem contracted a Burkinabe consultancy firm for a service regarding “training in solar microcredit product for customer management staff”.

This service was organized in two steps:

- First step, in mid-2013: presentation of the “Solar microcredit” scheme, feedback of the “Energy Credit” scheme, presentation of the MICRESOL program, its goals and its implementation methods (organizational diagram, stakeholders, etc.)

- Second step, just before the start of dissemination of the solar microcredit, at end 2013: presentation of the MICRESOL range of kits, description of a PV kit, presentation of the financial product associated with each kit, presentation of the installation/maintenance service performed by BETA.

The DCPE agents were then able to acquire the practical knowledge concerning the implementation of a solar microcredit through photovoltaic systems in the field.

They were thus capable of:

- informing and advising potential and existing customers of solar microcredits about its operation and terms,
- raising awareness of potential customers about solar photovoltaic,
- comparing the photovoltaic solution with conventional solutions (grid, line extension, generator),
- identifying the components of a solar system,
- ensuring that the system matched the use intended by the customer,
- advising the customer on the rational use of electricity and the routine service and maintenance tasks,
- promoting the MICRESOL product within the branches.

2.3. MICRESOL PRODUCT PROMOTION CAMPAIGNS

The information, awareness-raising and communication around the MICRESOL product were intended to:

- demonstrate the interest and relevance of the PV kits to solve a demand for electricity,
- show the interest of the solar microcredit as a tool to facilitate access to PV kits,
- show the quality of the components and products offered with MICRESOL,
- show the need for the rational use of the PV kit to extend its useful life.

As a reminder, RCPB is in charge of preparing, developing, and implementing all the information, awareness and communication tools concerning MICRESOL.

In mid-2013, RCPB developed a marketing plan, making it possible to set the targets to achieve in terms of marketing of the MICRESOL product and the means to achieve them.

In the framework of their marketing plan:

- RCPB and DCPE created a flyer about the MICRESOL product that was printed and distributed through the DCPE network in the east zone.
- DCPE created an advertising poster campaign. It was deployed on the main communication routes of the program area in December 2013, at the time of the launch of the solar microcredit within the Caisses Populaires.

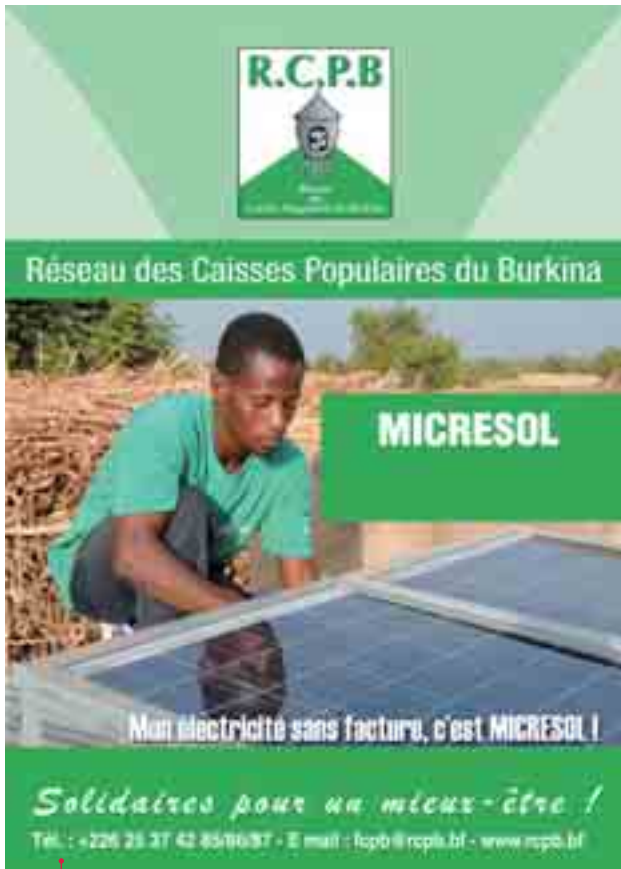


Figure 8. Solar microcredit promotional flyer
Source: RCPB

- A radio spot was also broadcast in French, Mooré, Bissa and Gourmantché by local radio stations in the east area, at the time of the effective launch of the MICRESOL product in early December 2013.

From mid-2014, and for approximately 9 months, a new promotion campaign was launched and supported by RCPB in order to revitalize marketing of the product:

- broadcasting the advertising spots on the radios of the entire area of operation,
- distributing promotional goods to MICRESOL product customers,
- strengthening internal communication to boost the marketing of kits, for instance through the distribution of photos of Kits 1 and 4 at the points of sale for a better knowledge of the technical product and optimal transmission of the information concerning the MICRESOL product to potentially interested members,
- boosting the skills of some stakeholders, including within the branches that had newly joined the product MICRESOL dissemination circuit (with the support of the procedures guide and the teaching workbook) for a better promotion of the kits.

3. RESULTS

3.1. DISSEMINATION OF SOLAR MICROCREDIT

From December 2013, the inhabitants of the east part of Burkina Faso were able to acquire a solar photovoltaic kit from the DCPE branches.

While the kit dissemination was encouraging during the initial phase (between December 2013 and June 2014), the pace of solar kit sales slowed down a little from June 2014.

Following several studies to identify the causes of this slowdown, and the gathering of several MICRESOL committees (steering committees bringing together operating staff of the Caisses Populaires, and possibly the assets: local coordinator, Fondem, etc.), some decisions were made:

- reduce the basis of the microcredit amounts, thanks to a significant effort from BETA to cut back the price of its own services,
- improve the financial product to make it more attractive while remaining viable for RCPB: relaxing the conditions for granting the credit (in particular by facilitating access to the Solar microcredit to persons not members of RCPB, and by cutting back the number of documents to provide to make an application), decreasing the rate of compulsory savings and the rate of interest,
- start a new promotion/communication campaign around the MICRESOL product, whose details are given in the previous paragraph.

The benefits of these new measures were quickly apparent, and the demand for kits, whose quality had been formally proven, has since grown apace.

In fact, from September 2014, demand has increased strongly, attaining **708 microcredit applications in early September 2015**.

The kits are intended not just for domestic but also for economic use, with the creation of video clubs, lighting of shops, the sale of mobile phone battery charging or the sale of fresh products thanks to the solar refrigerator.

As regards community social infrastructure, ten health centers (admittedly, in a vast area: 10 provinces of the east of the country) acquired kits in order to be able to offer care both day and night, but especially for 5 centers to offer new vaccination services (thanks to the purchase of a kit 4, equipped with a solar refrigerator, allowing vaccine conservation).

In the face of the success of the MICRESOL product, Fondem has initiated contact with the European Union in order to:

- increase the amount allocated to the provision of equipment, and thus reach out to a maximum of beneficiaries,
- carry out several budgetary adjustments to match actual situations in the field in order to be able to complete the project (mid-2016) in the best possible conditions.

708
microcredit
applications in early
September 2015

22%
of households had
begun to develop at
least one economic
activity thanks to their
new MICRESOL kit

62%
of children who
study in the evening
do so thanks to
MICRESOL kits

38%
of households reported
having stopped
using batteries

Table 2. Distribution of microcredit applications in September 2015

	KIT 1 8 Wp	KIT 2 80 Wp	KIT 3 160 Wp	KIT 4 320 Wp	TOTAL
Nbr kits	455	75	157	21	708
Outstanding credit	FCFA 8,781,500	FCFA 20,122,125	FCFA 62,860,602	FCFA 34,541,661	FCFA 126,305,888
	€ 13,387	€ 30,676	€ 95,830	€ 52,658	€ 192,552

Source: Fondem

Examples of customers equipped with solar kits



Source: Fondem

Figure 9

3.2. MEASURE OF THE IMPACT OF THE NEW ACCESS TO ELECTRICITY

3.2.1. Methodology

In 2012-2013, a survey of the initial situation, before electrification, was carried out by a Burkinabe consultancy firm on the basis of a grid of impact indicators and adapted survey questionnaires in 6 “witness-communities” of the

project’s area of operation, with characteristics matching the socio-economic makeup of the program beneficiaries.

This survey was mostly reused for the impact survey of the MICRESOL program launched by Fondem in early 2015 and carried out by a Burkinabe consultancy firm:

- the grid of indicators was recovered,
- the results of that survey are used as reference situation.

Examples of activities that may be developed: sale of fresh products, charging of mobile phones, hairdressing shop, video store



Source: Fondem

Figure 10

This survey seeks to show how and to what extent the installation and use of a solar kit acquired through a microcredit induces a change or changes in the living conditions of the beneficiaries (households, small or micro-entrepreneurs, health centers).

The grid of indicators used focuses on poverty reduction, improvement of well-being and access to the means of communication and information, the involvement of women in domestic, economic and social life, the means for educational achievement, improvement of health and safety, economic and community development, and the environment.

A sample was selected of 100 beneficiaries representative of different social strata and the various professional categories.

Two surveys of these 100 beneficiaries were scheduled, the first in early 2015, the second in early 2016.

3.2.2. Results of the survey

The results of the first part of the survey carried out in early 2015, conducted when approximately 250 kits had been installed, show that, compared to all the households that before the MICRESOL project undertook no income-generating activity (IGA), **22% of households had begun to develop at least one economic activity thanks to their new MICRESOL kit**, mainly recharging mobile phones (a little over 80% of cases of IGA development), and also development of video stores (almost 15%) and sale of fresh products (5%).

In addition, **62% of children who study in the evening do so thanks to MICRESOL kits**.

The need for lighting is very high and the use of the kits replaces the excessive use of the batteries by the beneficiaries. Thus **38% of households reported having stopped using batteries** since they have a MICRESOL kit.

The changes most cited (spontaneously) during the qualitative surveys are:

- children can do their homework in the evening (85%);
- a more open outlook thanks to television and radio (75%);
- lighting makes it possible to work at night (60%);
- improved safety thanks to light - theft, snake bites (55%);
- health centers have become more effective (30%);
- electricity enables greater productivity and therefore increases revenue (25%).

“THIS SURVEY SEEKS TO SHOW HOW AND TO WHAT EXTENT THE INSTALLATION AND USE OF A SOLAR KIT ACQUIRED THROUGH A MICROCREDIT INDUCES A CHANGE OR CHANGES IN THE LIVING CONDITIONS.”

CONCLUSION

After 4 years of project implementation, the MICRESOL product has won over all program stakeholders:

- *firstly, the beneficiaries; households that can improve their living conditions and their domestic comfort, micro-entrepreneurs who can develop income-generating activities (video stores, shops, hairdressers, sewing shops, sellers of fresh products, diners, etc.), infrastructures such as health centers,*
- *RCPB, the main operating partner, and its Délégation de l'Est (DCPE), for whom the MICRESOL product is a true loss leader, but allows it to further diversify its offer of cooperative financial services adapted to the Burkina rural and peri-urban areas, which often have a very limited capacity to pay,*
- *the local technical partners, the supplier K&K International and BETA, the installation-maintenance structure, who were able to develop their skills and activities through the project,*
- *the project financial backers.*

The MICRESOL product, intended for rural and peri-urban areas of Burkina Faso's east regions, appear to be relevant both technically and financially. The range of kits chosen matches the needs of the beneficiaries and has enabled the development of many economic activities, while remaining affordable for the most fragile populations.

In September 2015, more than 700 microcredit applications were made, allowing the installation and maintenance of quality kits. This result was achieved through the involvement of all the project stakeholders. The training of the banking and technical agents proved to be one of the key factors of its success.

Kit installation will continue until mid-2016 under the contract with the European Union, trying to reach the ambitious goal of 1,000 kits installed.

More widely, Fondem is currently working on upscaling this solar microcredit scheme to the Nord region, and then expanding nationwide. For this purpose, it is looking for:

- *the technical means to decrease the amount of the subsidy applied to the kits, the biggest restriction for replication of the model, while taking into account the technological developments of photovoltaic equipment and maintaining a competitive and quality product,*
- *financial partners to allow the coordination, training, and building up of the capacities of all the participants necessary to the proper operation of such a scheme.*