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CASE STUDY

Sub-Saharan Africa • Mali

Rural Electrification in Mali: Improving Energy Accessibility to the Rural Poor

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Summary

Only ten percent of Mali's 12 million inhabitants have access to electricity, a figure that goes down to two to three percent in rural areas where appliances are powered by car batteries and kerosene lamps, and where candles are used for lighting. Koraye Kurumba and Yeelen Kura are two Rural Energy Services Companies (RESCOs) created in 1999 and 2001 in two areas of rural Mali. The companies were created by France's electricity company EDF, in partnership with the Dutch energy company NUON, the French TOTAL and with the support of the French Agency for the Environment and Energy Efficiency. The provision of low-cost electricity, based on solar home systems or small low-voltage village micro-networks supplied by diesel generators, resulted in undeniable development impacts, such as enhancing standards of living, favoring the development of income-generating activities, and improving quality of healthcare and education. Backed by a new institutional framework and international donors, the model—designed to ensure profitability, sustainability, replicability and local ownership—is to be expanded beyond the 24 villages and 40,000 people it currently serves.

Access to Energy in rural Africa and Mali

ENERGY POVERTY IN RURAL AFRICA

Out of the six billion people living in the world today, around 2.5 billion have no access to modern energy services. In Africa, electrification programmes cover only nine percent, according to Energy of Mali Executive Manager. Energy needs in Africa are real and even greater in rural and informal areas around the periphery of cities. Electrification is a necessary precondition for socioeconomic development, poverty reduction strategies and attaining the Millennium Development Goals (MDGs) in African countries.

MALI

Mali is a Sahelian country with a population of 12 million, of which only ten percent have access to electricity. People are scattered throughout the country in relatively low densities. Economic activity is largely confined to the towns and the area irrigated by the Niger. In the north of the country, populations are more nomadic. In the rest of the country, livelihoods are typically based on three types of activities: farming, animal husbandry and fishing. Mali is among the poorest countries in the world, with 65 percent of its land area desert or semi-desert and with a highly unequal distribution of income. The Gross National Income per capita in Mali is around US\$380¹ and about 64 percent of the population lives below the poverty line.²

Electricity Coverage and Demand

¹ Source: The World Bank Key Development Data & Statistics, 2005

² Source: The CIA World Factbook, 2007



About 80 percent of the Malian population lives in rural areas, and of this 80 percent, only two to three percent have access to electricity. As a comparison, about 15 percent of the rural population in Senegal has access to electricity.³ Most of the electricity in Mali is generated either by coal or through hydro-turbines (Manantali, Sélingué, Felou, etc). The remaining part is provided by diesel-operated power generators. Household demand for electricity is directed towards four main elements: electric lighting of the household, refrigerating and food freezing, pumping water and powering motors for income-generating activities.

For the small proportion of people with access to electricity, the price is higher than other countries in the region. The relatively high cost of electricity in Mali is due to structural aspects: its neighboring countries are globally more developed, and the Ivory Coast produces energy based on its own gas fields while Senegal has an interconnected network benefiting from the hydraulic energy provided by Mali. To date, Mali has developed dams on the Senegal River for electricity generation (Manantali, Felou), as well as on the Niger River (Sélingué). There is also an ongoing Markala electric dam programme, which, in the future, is projected to provide electricity to the rural areas around the River Niger. Mali has also considered buying electricity from neighbouring countries, but, so far, because of the ongoing unrest in Ivory Coast, there has been stagnation.

THE IMPORTANCE OF ENERGY

Mali's Poverty Reduction Strategy Paper (PRSP) was worked out by the Malian Government and describes the country's target of achieving five percent annual economic growth through three priority areas: education, water and development of the productive sector. It is not possible to develop the national economy of Mali without rural electrification. In a number of rural areas, especially in the region between Tombouctou and Mopti, water shortages can become acute, and there is an urgent need to pump water from wells to remedy this. Energy of Mali (EDM) is the historical provider of water and electricity in Mali and the only one until a few years ago.

The Rural Energy Services Companies (RESCOs)

STRUCTURE AND MAIN PARTNERS

Against this background, Electricité de France (EDF), the French electricity utility, decided more than ten years ago to explore the possibility of bringing electricity to rural areas of developing countries such as Mali through the development of Rural Energy Services Companies (RESCOs). EDF initiated the cooperation in Mali according to three key criteria which orient its strategy in this matter: profitability, sustainability, replicability of the project, including the fact that the companies it contributes to and creates with local partners should be ultimately owned and run by local actors. In the RESCO model, as designed by EDF, the

³ Source: interview with Guy Marboeuf



companies install and manage local electricity generating systems to help stimulate local economic activity and reduce poverty. They are operated on a commercial basis and run by local managers and employees. The RESCOs are independent Malian companies and make all the decisions autonomously. They have a link with the shareholders through the Board of Directors. Therefore, EDF brings strong support to its subsidiaries through training programmes, development of appropriate equipments (customer interfaces for example) and support to management.

EDF began its exploration of creating RESCOs in Mali in the mid-1990s with a comprehensive study of the socio-economic, technical and environmental feasibility of rural electrification in the country. These feasibility studies were carried out in partnership with the French Environmental Agency ADEME (Agency for the Environment and Energy Efficiency) and its partners Total and Nuon in 1996-1997.



The authorization to set up RESCOs had been given originally by the Malian Ministry of Mining and Energy, but now the RESCOs' main public interlocutor is the Malian Agency for the Development of Household Energy and Rural Electrification (AMADER). Amader contributes to the development of electrification in Mali through the use of subsidies, within the framework of its programme that is financially supported by the World Bank and other international donors (e.g. KfW, African Development Bank, etc). Amader is also responsible for setting up an adequate legal, regulatory and fiscal environment for rural electrification by private operators, and helps to arbitrate any disputes between the operators and communities.

KORAYE KURUMBA

The first RESCO, Koraye Kurumba (meaning “*New Light*” in the Soninké language), was created in 1999 by EDF (shareholder at 70 percent) and Total (30 percent), a major French oil company. This RESCO operates in the Kayes region, in the west of the country (see map, Figure 1) along the border with Senegal and Mauritania. It is currently providing energy to 510 clients in four villages selected by request of the Malian immigrants in Paris. In addition to providing electricity for domestic uses, Koraye Kurumba also provides public street lighting, water pumping, schools, health centres, and productive uses. Koraye Kurumba employs 15 people, distributed between the villages and the headquarters. All the employees are Malian, including the director, Mr. Abdoulaye Keita.

YEELLEN KURA

The second RESCO, Yeelen Kura (meaning “*New Light*” in the Bambara language) was created in 2001. Its shareholders are EDF (50 percent) and NUON, a Dutch energy company (50 percent). The two partners had the same objectives- to supply modern energy to rural population to contribute to the eradication of poverty- with slight differences. NUON's

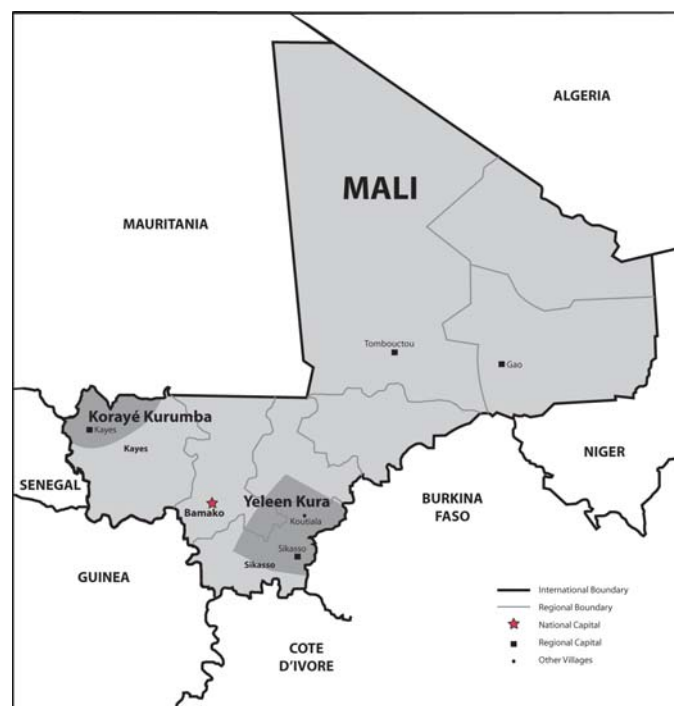


objective was also to develop renewable energies, however, the use of renewable sources of energy was not an end in itself for EDF. Renewable sources are used by EDF if they are appropriate to the needs of the community and economically viable. If not, it is believed to be more the responsibility of the international community to support the extra costs than the local farmer. The idea, beyond the creation of Yeelen Kura, was to commit electricity services to a local company. The French Agency ADEME (with a background in sustainable energy in developing countries) also joined the partnership to train and support local operators in the operation of electricity infrastructure.

Yeelen Kura operates in the cotton area, in southeastern Mali, on the border with Burkina Faso (see map, Figure 1). This area was chosen because it is the most economically active, which would attenuate somehow the numerous barriers and risks faced by the RESCOs in addressing low-income markets in rural areas. Yeelen Kura is currently providing modern energy to 1,700 clients in a dozens of villages. As for Koraye Kurumba, its client base represents about 60 to 70 percent of the population living in those villages.

Till now, Yeelen Kura counts over 15 decentralized offices and 33 employees, 25 of whom live in the villages. For the first three years of the company's operation, a Dutch director managed Yeelen Kura, but management was soon passed to a Malian director, Amadou Diallo, who manages the operations business. Two vice-directors support Diallo: one director is responsible for the technical aspects of the business, and one is responsible for the financial and commercial aspects.

Figure 1: Map of Mali with Yeelen Kura and Koraye Kurumba Service Areas



Source: Rebecca Langstaff, 2007



START-UP FINANCING

Because the RESCOs were created before the implication of the World Bank, they did not benefit from its financial support at the beginning. In terms of financing, Koraye Kurumba originally relied on Malian immigrants in Paris to support the costs of the operation.

Most of the financing for Yeelen Kura came from EDF and NUON (see Figure 2). The Dutch government provided 760,000 Euros (over US\$1 million), which covered around 30 percent of the cost of installing 1,500 solar home systems. The initial feasibility studies had identified that this donor subsidy was essential in making the overall project feasible and allowing tariff rates to remain affordable for many customers.

Figure 2: Yeelen Kura Financing (in million Euros)⁴

EDF	2.22
NUON	2.22
Dutch Government	0.76
Connection fees (clients)	0.3
TOTAL	5.5

Business model

CLIENTS

A client is a household, which in rural Mali comprises an average of 15 to 20 people (up to 80), with an average monthly income of US\$40 to \$68. Thus, with 510 clients, Koraye Kurumba benefits 10,200 people, while Yeelen Kura benefits more than 30,000 (1,700 clients). Clients can also include groups of civil servants, craftsmen, farmers, business owners, schools, as well as medical centres and local community centres.

SERVICES

Koraye Kurumba offers a wide range of domestic services, from small (two lamps) to large (18 lamps and two electrical sockets), and provides public street lighting (about 75 lamps in total) in the four villages it serves. Ninety percent of the electricity provided by Koraye Kurumba is based on small low-voltage village micro-networks supplied by diesel generators, and ten percent is based on solar kits.

⁴ Source: EDF France



At the beginning of the programme, one hundred percent of the electricity provided by Yeelen Kura was based on solar home systems (PV kits). Solar home systems are stand-alone, household-sized, photo-voltaic electricity generation systems comprised of a solar panel, battery, controller and related wiring. The solar systems have panels ranging in capacity from 43 Wp to 120 Wp. This resulted from an agreement with the Dutch government, which agreed to subsidize Yeelen Kura for connecting 1,500 clients only if solar kits were to be used. Under this agreement, the Dutch government directly granted Yeelen Kura with material, supporting 30 percent of the real costs, while the remaining 70 percent was supported by EDF and NUON. However, under this agreement, the

material provider was imposed with no bidding process and could therefore charge high prices. In addition, the regulators that make the solar kits operate were of poor quality, resulting in short-lasting batteries and higher costs for Yeelen Kura.

Yeelen Kura has set up approximately 15 local energy stores in the villages within a 300 kilometre radius from Yeelen Kura's head office in the town of Koutiala. In each store, one or two employees are responsible for installing, maintaining and repairing the systems in their area, as well as collecting fees and keeping track of the accounts. Additional staff in the head office coordinates the company's overall operations, as well as marketing and liaising with various partners.

FEE STRUCTURE

Under their contract with the Malian government, the RESCOs are free to set their own electricity tariff rates. The tariffs are computed in a way that tries to make the service as affordable as possible, while ensuring that the company will be able to cover its operating costs and remain economically viable. In many cases, family expenditures on electricity are the same or less than they would previously spend for traditional sources of light and energy (oil lamps, batteries, candles, etc).

At the beginning, the fee structure is composed of (VAT – 18 percent included):

- (i) *fixed fee* based on the size and capacity of the system, ranging from US\$11.8 (5,900 FCFA)⁵ to \$96 (48,380 FCFA) for Koraye Kurumba, and from US\$11.8 (5,900 FCFA) to \$23.6 (11,800 FCFA) for Yeelen Kura.⁶
- (ii) *guarantee deposit* and a *connection fee*, charged once, ranging from US\$62.5 (31,240 FCFA) to \$378 (189,320 FCFA) for Koraye Kurumba, and from US\$45 (33,040 FCFA) to \$132 (66,080 FCFA) for Yeelen Kura.

⁵ US\$1 = 500 CFA (approximately)

⁶ The fees were higher for Koraye Kurumba given that they were initially covered by Malian immigrants in Paris, whose purchasing power is higher than the one of local communities.



The fees are collected periodically (at a payment frequency chosen by the customer), generally on a monthly basis, by clients coming to the offices. The RESCOs allow some flexibility, such as annual payments, for customers whose resources are received once a year (e.g. farmers). In addition, the largest clients have now had individual meters installed. Public electricity provided by Koraye Kurumba is reflected in customers' invoices, in accordance with a decision from Amader.

Originally, the Malian immigrants living Paris recovered Koraye Kurumba's, but the collection system was too complex and the collection rates too low to be sustainable. Therefore, since 2005, the collection is withheld (i.e. directly recovered in Mali) from resources coming from remittances. As a consequence, the collection rates have increased to almost 100 percent. The collection rate for Yeelen Kura is around 90 percent. However, even among the remaining ten percent, there are no bad payers but rather people asking to be disconnected due to their inability to pay.

Figure 3: Yeelen Kura Fee Structure for Various Solar Home System Packages, in FCFA (2001 to 2004)

System Capacity	Connection Fee	Guarantee Deposit	Monthly Fee	Tariff/day
S1: 2 Lamps	21,240	11,800	5,900	195
S2A: 3 Lamps S2B: 2 Lamps + 1 Socket	29,500	17,700	8,850	295
S3: 3 Lamps + 1 Socket	42,480	23,600	11,800	395

Two factors explain the RESCOs ability to offer low fees. One is that the supply is adapted to the demand: as the demand is modest, so are the installations. Second, the RESCOs' simplified management and operation procedures by applying fixed fees instead of having individual meters for each client. In addition, the new institutional framework, which will provide the RESCOs with investment aid, will enable the RESCOs to offer even lower fees.

FINANCIAL VIABILITY

Originally, the RESCOs did not have the necessary conditions to be profitable, but EDF involved itself knowing that a new institutional framework was being prepared that would enable the RESCOs to profit. So far, the low tariffs that the companies charge and their fee-for-service business models only raised enough revenue to cover ongoing operations and maintenance costs. The expansion of Yeelen Kura's and Koraye Kurumba's coverage was dependent on donor grants to cover the costs of additional generating systems.

With the planned expansion, the RESCOs should start being profitable by the year 2008. Although the RESCOs did not receive subsidies at their beginning, their expansion will be financially supported by Amader- up to 70 percent of the investment. The profitability for both RESCOs is expected to be around 12 to 15 percent (up to 20 percent), a high rate due to



the high-risk investment. However, the RESCOs are not looking for higher profitability rates, because that would result in a cut in subsidies.

Expansion Plans

After the success of both companies, EDF has been seeking additional funds to allow them to expand and, in July 2006, EDF started signing financing conventions with Amader. Under the expansion plan, Koraye Kurumba's and Yeelen Kura's customer bases will be multiplied by ten and four respectively. As both RESCOs will benefit from international donors' subsidies (through Amader), their tariffs will be divided by two, which should increase the access to 80 to 90 percent of the population living in those villages.

The first beneficiary of the new Amader financing conventions will be Yeelen Kura, which will expand its coverage to cover 5,000 customers in 24 villages by 2008. Following a pragmatic approach based on local needs, 60 percent of these expanded services will depend on the use of low-voltage micro-networks powered by small diesel generators, and the other 40 percent will depend on solar home systems. Further details on the planned expansion of Yeelen Kura are provided in Figure 4 below.

Figure 4: Yeelen Kura's Existing Coverage and Planned Expansion⁷

BUSINESS PLAN	PHASE 1: 2001-2005	PHASE 2: 2006-2008
Customers	1,500	5,085
Habitat	Villages	24 villages
Framework	Authorization by the Ministry of Mining and Energy on December 17, 2003	Authorization by AMADER on July 27, 2006
Investments	2 million Euros	3,24 million Euros
Grants	0.76 million Euros (equivalent to 30% of solar systems' costs)	2,29 million Euros
Capital and loans	1,7 million Euros	0,96 million Euros
Tariff freedom	Yes	Yes
Payment	Basic monthly fee	Basic monthly fee and energy metering
Programme's duration	15 years	15 years

Koraye Kurumba is also in discussions with Amader to expand its programme. The planned global financing is 3.23 million Euros, with 2.29 million from Amader (see Figure 5, below). That will cover public and domestic electrification, health care centres, schools and community centres.

⁷ Source: EDF



Figure 5: Koraye Kurumba's Existing Coverage and Planned Expansion

BUSINESS PLAN	PHASE 1: 1999-2005	PHASE 2: 2006-2008
Customers	480	5013
Habitat	4 Villages	22 villages
Framework	Authorization by the Ministry of Mining and Energy on December 17 th 2003	Authorization by AMADER (still in progress)
Investments	0.75 million Euros	3,23 million Euros
Grants	No subsidy	2,29 million Euros
Capital and loans	0.75 million Euros	0,94 million Euros
Tariff freedom	Yes	Yes
Payment	Basic monthly fee	Basic monthly fee and energy metering
Programme's duration	15 years	15 years

NEW TARIFFS

In the framework of these expansion plans, the two RESCOs are able to decrease their tariffs in order to facilitate access to electricity services for the customers. The new tariffs, based on the size and capacity of the systems, range from US\$4 (2,000 FCFA) to \$18 (9,000 FCFA) for Koraye Kurumba, and from US\$5.6 (2,800 FCFA) to \$11.8 (5,900 FCFA) for Yeelen Kura,⁸ which means a division by two for equivalent service. For bigger customers, energy can be sold by kWh through meters at 175 FCFA/kWh. Connection fees and guarantee deposit decrease in the same way.

Challenges

Some of the challenges Yeelen Kura and Koraye Kurumba have faced include:

ACCESSIBILITY FOR THE POOREST

The limited donor funding required a tariff structure which meant that not all poor people could access electricity services.

LEGAL AND REGULATORY ISSUES

Before the establishment of the two rural energy service companies by EDF and its partners, the public electrical utility (EDM) had maintained a monopoly in the country. The initial establishment of the companies required the need for authorizations at various levels of the government and the Ministry of Mining and Energy, and this necessitated



⁸ The fees were higher for Koraye Kurumba given that they were initially covered by Malian immigrants in Paris, whose purchasing power is higher than the one of local communities.



bureaucratic processes. It also required the companies to work with the government to implement local judicial, fiscal and regulatory frameworks with well established rules that would allow for the proper functioning of the companies (e.g. allowing them to collect electricity bills). This institutional framework has been worked out by the Malian government with the strong support of the World Bank.

TECHNICAL AND OPERATIONAL ISSUES

The low population density and the remoteness of villages in rural areas translated into relatively high transaction costs and costs of installing electrical systems.

CLIENTS

Current and potential clients often had high expectations of the performance of their systems that had to be managed given the necessity for usual repair and maintenance of the systems. Clients also had to be trained on the use of their systems and measures that can be taken to prevent theft of valuable components. Overall, the company's clients remained located in areas with a fragile economy and limited income generating opportunities.

HUMAN CAPACITY ISSUES

With low levels of literacy and business management capacity in the rural areas, the training of employees (as well as the senior management of the companies) was a challenge that had to be overcome. The mayors and other village representatives had to be convinced that the tariff rates and charges were necessary for the sustainable functioning of the business and were not subject to political favors or interference.

FUTURE COMPETITION

Future challenges faced by the companies include potential international competition as the energy sector in Mali becomes more liberalized, although for now, the agreement with the Malian government guarantees monopoly of the RESCOs on their areas of operations. In addition, it is possible that other sources of energy, either imported from the Ivory Coast or Ghana or developed by the Markala electric dam, may create additional competitive pressure on the companies over time.

LACK OF CUSTOMER RESOURCES

As a consequence of the raise of the VAT (from 10 to 18 percent), the economical difficulties of the cotton area and the closing of the borders with the Ivory Coast, Yeelen Kura's customer base had very meager resources, and the company had to lower its fees and appeal to public subsidies. Another challenge relates to the connection fees, because the clients tended to undertake the installation themselves to avoid this additional cost, which often resulted in unsafe installations. The RESCOs overcame this challenge by offering micro-credit solutions in order to spread installation fees over several months.



Innovations and Success Factors

TECHNOLOGICAL INNOVATION

The main innovation is not on the technical side, as the main sources of energy used by the RESCOs are existing ones. However, once the fees were fixed, the RESCOs had to find an innovative mechanism in order to ensure that the client did not add more lamps to the network and thus did not overcome 50 or 100 watts, for example (as defined in the customer contract). There were existing devices that could limit the power and sometimes the energy used, but originally, they were conceived for developed countries' needs and were unable to limit the consumed energy to such the small amounts needed in this case. As a result, EDF had to develop its own devices appropriate for developing countries.

INSTITUTIONAL FRAMEWORK

Since the change of the Malian institutional framework in 2006, other energy providers have been entering the market, under the control of Amader. This new legal framework enables private operators to provide electricity in Mali, either through spontaneous candidacy (in that case, Amader provides financial support and the operations are limited in size- i.e. hundreds of clients) or through rural concessions. The latter is based on the cutting of the Malian territory in ten zones, in which one private operator (either Malian or foreign) has a monopoly and can serve thousands of clients. In 2006, Amader signed over fifty contracts with small operators, among which two or three are already operational. Each of these small operators aims to provide electricity in rural areas to a limited number of clients- i.e. between 100 and 500 (the scale of a village).

When the RESCOs were created, there was no regulation of energy provision in Mali, and it is their success, together with the support of the World Bank, that convinced the government to set up a new legal framework. The role of the World Bank in this context was to work with the Malian authorities on the regulation and to finance the small operators, through investment aid (i.e. a short term start-up aid). Over three years (2005 to 2007), the World Bank foresees to provide US\$30 million for rural electrification in Mali. By law, the operators are bound to contribute to investments by at least 20 percent, and the World Bank and other international donors, through Amader, provide the remaining 80 percent.

FLEXIBILITY AND LOCAL OWNERSHIP

Koraye Kurumba and Yeelen Kura offer a wide range of services (over 20) and allow some flexibility in terms of payment modalities, based on customers' needs and preferences. Furthermore, the RESCOs have been designed with a view to favor local ownership as much as possible. Indeed, all the employees are Malian and both companies take a participatory approach to involving local authorities, including mayors and representatives of the communities in which they operate. Furthermore, EDF's objective is to gradually transfer its shares to Malian companies in order to guarantee local ownership once the companies are mature and their viability is ensured.



PARTNERSHIPS

One of the unique features of Koraye Kurumba is that the company was created in partnership with Malian immigrants in France, who paid both the connection fees and monthly tariffs from Paris. These fees were collected quarterly with the support of the Malian village associations in the Parisian region, federated within the Sahel Development Immigration Association. However, due to some difficulties in ensuring an efficient collection in Paris, this collection has been transferred in Kayes's area in the year 2005 and works much better.

The French Environmental Agency ADEME (Agency for the Environment and Energy Efficiency) has played an important role with both companies and ensuring that the businesses were benefiting the poor and the environment to the greatest extent possible. For example, ADEME serves as a resource centre and gathers the results of all the experiences to date to promote and share best practices with all of the actors involved. ADEME also provides training and orientation to communities that are interested in benefiting from rural electrification.

Development Impacts

ACCESS TO ELECTRICITY



The provision of electricity by the RESCOs provides many benefits including improving people's ability to pump water for livestock and to electrify healthcare centres, schools and small businesses. In addition, a small business zone provided with electricity access was established in the village of Tambacara in 2004.

Yeelen Kura and Koraye Kurumba brought electricity to customers in rural Mali that would not otherwise have had access to modern energy services. This activity is aligned with the Poverty Reduction Strategy and economic growth plans of the Malian government. Provision of electricity in rural Mali provides a number of social and financial benefits and reduces

the costs, risks and negative health impacts of traditional lighting and electricity sources.

Standards of living are enhanced as electricity is available for studying at night and other productive activities that can boost livelihoods and the local economy. In addition, electricity can be less expensive than traditional sources of energy, and the quality of services is proved to be much better than their alternatives.⁹

⁹ Some electricity disconnection might occur sporadically but they never last.



Schools and community centres can be lit at night for socializing or community gatherings. Health centres can stay open later, be lit at night to provide urgent medical services and can conserve vaccines and other medicines in refrigerators. With greater access to electricity to power cell phones, radio, televisions and internet enabled computers, people in remote rural areas can follow the news and feel more closely connected to their countrymen and the rest of the world. Electric pumps can also pump water for drinking, irrigation and watering livestock. For example, solar pumps are now being set up in the village of Koury and will be run and maintained by Yeelen Kura to ensure a sustainable source of drinking water for the community.

EMPLOYMENT AND CAPACITY BUILDING

Yeelen Kura and Koraye Kurumba themselves have created approximately 55 jobs to date. This figure could double during the year 2008 with the expansion programme. Both companies hire and train local workers, thus providing a variety of valued job skills and experience. There are also local economic spin-off benefits such as the creation of different local equipment and services suppliers, especially for the recycling of used batteries. EDF also provides training and competences support.

ENVIRONMENTAL IMPACTS

Indoor air quality is also improved through the elimination of kerosene lamps, and safety is improved due to the reduced risk of fires from candles and lanterns. Furthermore, the environmental impact of the diesel generators is taken into account. Indeed, compared to traditional sources of energy, generators save 80 to 90 percent of CO₂ emissions, i.e. only 10 to –15 percent less than sources of renewable energy. In addition, EDF is conducting research and development studies with a view to replace the diesel used in generators by biofuels. There are also global environmental benefits to Yeelen Kura's activities, because it is estimated that each household using a solar home system saves 350 kg of CO₂ annually. Yeelen Kura won EDF an award from the European Commission for Best Renewable Energy Partnerships with Developing Countries in 2002.

Opportunity for Replication and Scaling Up

EDF wants to go beyond relying on local companies, by gradually transferring its shares to Malian companies. Until now, the local operators did not want to be involved, because the risks were too high for uncertain benefits. Therefore, EDF is willing to create the conditions for a sustainable business model and undertake the beginning risks. But EDF's ultimate objective is to sell its shares to local companies once the sustainability of the company is ensured, thus enabling local ownership while recovering at least the investment costs. Besides, rather than accumulating profits and electrifying the entire country, EDF foresees reinvesting the funds into similar activities, in order to prove that local ownership and financial sustainability are possible. As a result, EDF will not start any future operations without preliminary partnerships with local operators, whose ownership should gradually rise to 100 percent over time.



In 2001, EDF created a permanent institutional programme for developing rural energy service companies in isolated areas of less developed countries called “Access to Energy and Services” or ACCESS. EDF’s ACCESS programme is currently studying the feasibility of similar initiatives in Africa and Southeast Asia. Two other RESCOs were created under this programme: Temasol in Morocco (objective- 58,500 customers) and KES in South Africa (objective- 15,000 customers in the first phase, extended to 45,000 in a second phase).

In addition to EDF’s projects, the Malian government is currently attributing rural concessions to private operators, and Amader signed over fifty contracts with small operators in 2006. Also, a similar regulatory framework is being set up in Senegal and Madagascar. In both countries, EDF already found a local operator with which to partner (Matforce in Senegal and EDM in Madagascar), and the French Development Agency (AFD) already agreed to contribute to the financing of the Senegalese programme with the World Bank, the Africa Development Bank and the German development bank (KfW).

Conclusion

The provision of electricity in rural areas helps create economic opportunities and supports local self-reliance. Because the provision of electricity is a prerequisite to development on many levels, Koraye Kurumba and Yeelen Kura effectively enable progress towards the attainment of most of the Millennium Development Goals by facilitating improved health, education and livelihoods, while taking into account the prevention of climate change. Furthermore, the value added aspects of the RESCO model is that it guarantees local ownership and can therefore be easily replicated. Indeed, both companies are currently expanding their coverage within Mali, and similar projects are being developed in other countries.



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The information presented in this case study has been reviewed and signed-off by the company to ensure its accuracy. The views expressed in the case study are the ones of the author and do not necessarily reflect those of the UN, UNDP or their Member States.

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