

# **Evaluation of Rural Electrification Concessions in sub-Saharan Africa**

## **Short Case Study: Burkina Faso**

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## **Executive Summary**

Burkina Faso has implemented a unique approach to electrifying rural areas using a combination of cooperatives and private enterprise.

Around 80 to 100 electricity cooperatives (Coopels) and the state-owned electric utility SONABEL together are the primary agents for rural electrification in the country. The Coopels are managed by groups of community leaders, entrepreneurs and citizens who usually hire private operators to build grid extension projects. Sometimes those private contractors are retained to manage the ongoing operation and maintenance of the projects. The Coopels receive subsidies from the government for their projects but they also assume investment risk and operating risk, which in some cases they pass on to private companies

# 1 Introduction

In Burkina Faso, cooperatives known as coopels (Coopératives d'électricité), are partly responsible for rural electrification. As of 2014, there were almost 100 coopels providing electricity to around 112,000 people. The success of coopels varies, and the business models they employ vary as well. This model usually combines elements of cooperative with private enterprise. The coopels raise part of the financing for their projects, and a rural electrification fund the rest. After construction, the coopels either manage the operation themselves or delegate it to private companies using affermage contracts.<sup>1</sup>

## 2 Sector Background

Access to electricity in Burkina Faso is low. The overall electrification rate<sup>2</sup> in 2014 was 17.68 percent: 58.06 percent for urban areas and 2.91 percent for rural areas.<sup>3</sup>

Burkina Faso's national utility SONABEL (Société National d'Electrification du Burkina) serves primarily urban and peri-urban areas of Burkina Faso. A basic map of SONABEL's infrastructure is presented in Figure A.1 in the Appendix.

The rural electrification fund, FDE (Fond de Développement de l'Electrification), created in 2003, is a combined financing and implementation agency for rural electrification. FDE also regulates technical quality of rural electrification projects. As of May 2014, FDE had electrified 121 rural communities partly through mini-grids but mainly by grid extension.<sup>4</sup>

## 3 Rural Electrification Approach

The Government of Burkina Faso implemented electricity sector reforms in 1998. The goal of the reforms was to increase competition in the electricity sector and reduce costs.<sup>5</sup> SONABEL's distribution monopoly ended in 1998. The distribution segment was divided into two sub segments: The first covered the current service area of SONABEL and the second covered all the areas outside SONABEL's perimeter.

By 2007, around 10 private operators had entered the rural electrification market.<sup>6</sup> These operators either ran small mini-grids backed by diesel generators or extended the SONABEL grid. The private rural operators managed generation capacity of 16.8MW.<sup>7</sup>

Today, FDE, SONABEL and Coopels, and small private companies are each involved in rural electrification:

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<sup>1</sup> Le Fonds de Développement de l'Electrification (August 2013) Coopératives d'électricité <http://www.fde.bf/?p=106>

<sup>2</sup> Defined as number of households with electricity divided by number of total households.

<sup>3</sup> Alassane Agalassou (World Bank Burkina Faso Country Office), Email (October 2015).

<sup>4</sup> World Bank, "Burkina Faso Electricity Sector Support Project," May 15 2014, Project Paper, Report No: 87159-BF.

<sup>5</sup> Fondation Energie Pour le Monde, "De l'électricité verte pour cent mille ruraux au Burkina Faso" (Renewable Energy for One Hundred Thousand in Burkina Faso), 2007.

<sup>6</sup> Fondation Energie Pour le Monde, "De l'électricité verte pour cent mille ruraux au Burkina Faso" (Renewable Energy for One Hundred Thousand in Burkina Faso), 2007.

<sup>7</sup> Fondation Energie Pour le Monde, "De l'électricité verte pour cent mille ruraux au Burkina Faso" (Renewable Energy for One Hundred Thousand in Burkina Faso), 2007.

- FDE is responsible for planning and managing the extension of the grid
- Operations and maintenance of the newly built network is then undertaken by local cooperatives (Coopels) or by the national utility SONABEL
- Coopels and SONABEL contract with private contractors to build out the grid.

Cooperatives have faced competition from private companies.<sup>8</sup>

## 4 Characteristics of the Coopel Model

The cooperative is an entity formed by a collection of village leaders and entrepreneurs. A committee of 12 volunteers coordinates the coopel's activities. In some cases, each customer becomes a member of the cooperative after subscribing to an initial capital contribution.<sup>9</sup>

The coopel signs a concession contract with the FDE, the rural electrification fund. The coopel is then responsible for recruiting a builder for the generation and/or distribution assets. The coopel also hires a technical private operator to assume management of the network. The coopel is responsible for metering and billing and for compensating the technical operator.<sup>10</sup>

The contract between the coopel and the private technical operators is an affermage contract. The private operators are responsible for operation and maintenance of the infrastructure under long term lease contracts that include defined service and access targets.<sup>11</sup> As such, the approach is in some ways a conventional Public-Private Partnership (PPP). In the case that the private operators fail to provide its agreed services, FDE can help coopels hire full-time local permanent staff.<sup>12</sup> The coopels usually remain in charge of metering and billing.

A specific rural electrification project can result from a local initiative or it can be promoted by the national electrification plan (PNE - Plan National d'Electrification). The community in question must create a coopel, and obtain approval from the Ministry of Energy and the FDE (the rural electrification fund). The coopel must prepare a feasibility study. If the project shows itself to be feasibility, the coopel receives a public service concession.<sup>13</sup>

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<sup>8</sup> Energypedia, "Electrifying Africa: Grid Extension Models in Sub-Saharan Africa," 17 October 2014, available at [https://energypedia.info/wiki/Electrifying\\_Africa:\\_Grid\\_Extension\\_Models\\_in\\_Sub-Saharan\\_Africa](https://energypedia.info/wiki/Electrifying_Africa:_Grid_Extension_Models_in_Sub-Saharan_Africa) (Accessed September 30<sup>th</sup> 2015).

<sup>9</sup> Karim, K., « Coopératives d'électricité : La touche burkinabè à l'électrification rurale », April 30<sup>th</sup> 2012, Available at [www.lefaso.net/spip.php?article47721](http://www.lefaso.net/spip.php?article47721) (accessed October 2015).

<sup>10</sup> Kévin Z.SANOU, « Theme du Mémoire : L'électrification des Communes Rurales par la Concession du Service Public au Burkina Faso. Exemple des Communes Rurales de Bama et de Tanghin-Dassouri ».

<sup>11</sup> Group of African Agencies and Structures in charge of Rural Electrification (Club-ER): Public-Private Partnership in rural electrification programs in Africa (2010)

<sup>12</sup> Karim, K., « Coopératives d'électricité : La touche burkinabè à l'électrification rurale », April 30<sup>th</sup> 2012, Available at [www.lefaso.net/spip.php?article47721](http://www.lefaso.net/spip.php?article47721) (accessed October 2015).

<sup>13</sup> Kévin Z.SANOU, « Theme du Mémoire : L'électrification des Communes Rurales par la Concession du Service Public au Burkina Faso. Exemple des Communes Rurales de Bama et de Tanghin-Dassouri ».

Coopels are financed through a mix of loans and grants. The transmission lines are 100 percent financed by grants, and the distribution network is 40 percent financed by loans taken by the cooperatives and 60 percent by grants.<sup>14</sup>

The coopel is responsible for:

- Recovering the costs of the initial investment (and repaying any loans)
- Abiding by the legal and regulatory regimes for public service concessions
- Renewing its mandate every three years and its concession contract after 20 years.<sup>15</sup>

In terms of technological solution, cooperatives are a mix of grid extension and mini-grids. One source estimated that 15 percent of cooperatives operate mini-grids, and that the rest are grid extension projects.

## 5 Future Directions

FDE is now experimenting with grouping localities under a single technical operator “farmer” to improve efficiency. FDE is also in the midst of performing a study on optimizing the relationship between the coopels and the technical operators.<sup>16</sup>

## 6 Achievements

There were 92 cooperatives and private sector enterprises operating in Burkina Faso in selected rural areas at the end of November 2014.

**Table 6.1: Number of cooperatives and private sector enterprises providing energy services in selected areas of Burkina Faso (2007-2014)**

Indicator	Baseline Value	Original Target Values	Actual Value Achieved at Completion or Target Years
Number of cooperatives and private sector enterprises in selected areas	Less than 10	60	92
Date achieved	07/26/2007	07/26/2007	10/31/2014

Source: World Bank, Burkina Faso Energy Access Project (Implementation Completion and Results Report)

Coopels have made 14,250 connections, serving 120,000 people.<sup>1718</sup>

<sup>14</sup> Group of African Agencies and Structures in charge of Rural Electrification (Club-ER): Public-Private Partnership in rural electrification programs in Africa (2010)

<sup>15</sup> Kévin Z.SANOU, « Theme du Mémoire : L’électrification des Communes Rurales par la Concession du Service Public au Burkina Faso. Exemple des Communes Rurales de Bama et de Tanghin-Dassouri ».

<sup>16</sup> Lefaso.net, « Yacouba Camara, Directeur Général du Fonds de développement de l’électrification : « L’électricité pour tous se poursuit normalement sous la transition », 16th September 2015, available at : <http://mobile.lefaso.net/spip.php?article66888> (Accessed October 13th 2015).

Using a back-of-the-envelope calculation, coopels may have increased the rural electrification rate by 0.8 percent in the past 7 or 8 years.<sup>19</sup>

The main ongoing support given by the state to the coopels was reported to be diesel, an effective annual subsidy of CFA (West African Franc) 350 million (US\$ 0.70 million, 2013 exchange rate).<sup>20</sup>

## 7 Lesson for Africa

Burkina Faso's experience with concessions to coopels provides a lesson for other African countries: Cooperatives can be used to manage private operators. The cooperatives serve as an interface between the state and technical operators and customers.

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<sup>17</sup> Le Fonds de Développement de l'Électrification (August 2013) Coopératives d'électricité <http://www.fde.bf/?p=106>

<sup>18</sup> A different source gave similar estimates in 2013: there were 88 coopels in Burkina Faso operating in areas where SONABEL is not operating, providing electricity to more than 112,000 people. (Lefaso.net, « Electricité : le FDE et les Coopel accordent leur violon » (Electricity : FDE and Coopels tune their violins), April 11th 2013, available at <http://www.lefaso.net/spip.php?article53694> (Accessed September 30th 2015).

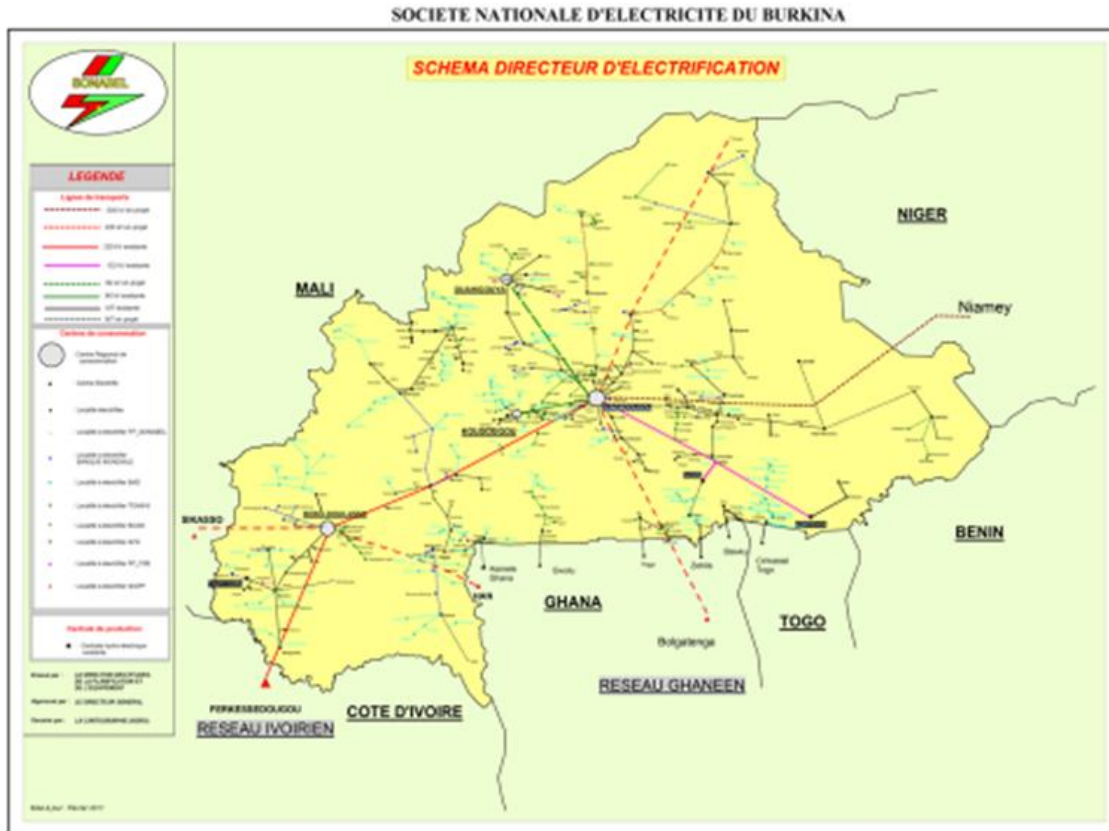
<sup>19</sup> In 2014, Burkina Faso had a rural population of 12.36 million (according to the World Bank Open database). Assuming an average household size of 7 people, Burkina Faso has 1.77 million households. 14,250 households is approximately 0.8 percent of all rural households. We can preliminarily conclude that coopels have increased the rural electrification rate by 0.8 percent.

<sup>20</sup> Lefaso.net, « Electricité : le FDE et les Coopel accordent leur violon » (Electricity : FDE and Coopels tune their violins), April 11th 2013, available at <http://www.lefaso.net/spip.php?article53694> (Accessed September 30th 2015).

# Appendix A: Map

Figure A.1 shows a map of the SONABEL grid.

Figure A.1: Burkina Faso Electricity System Map (2011)



Source: SONABEL