



Programme for the promotion of renewable energy, rural electrification and sustainable supply of household fuels



## The Rural Electrification Senegal (ERSEN) Project: Electricity for over 90,000 persons.

### Background

In 2010, over 80% of rural Senegalese households still had no access to electricity. In a great number of communities, schools and health posts deliver their services without any electricity. The Government of Senegal has therefore set itself the challenge of increasing access to electricity in rural areas to 50% in 2012. That requires delivering electricity to approximately 90,000 new households every year!

To reach this ambitious goal, the Senegalese Agency for Rural Electrification (ASER) is in charge of promoting electrification by providing support to local, national, and international initiatives. Its approach rests upon an electrification plan established by the Ministry in charge of Energy.

In support of local initiatives for electrification, PERACOD and ASER are implementing the ERSEN Project, which is financed by the Directorate-General for International Cooperation (Dutch cooperation). The ERSEN project

uses renewable energy (solar and wind power) to provide electricity to remote areas that cannot be immediately or easily connected to the existing distribution grid.

### ERSEN objectives

In its first phase (2005 – December 2009), the ERSEN project brought electricity to 74 villages in the regions of Kolda, Sédhiou and Kaolack.

The second phase started in May 2009 and carries the objective of bringing electricity to a further 70 villages in the Fatick region, and 121 villages in the Sédhiou region, with a co-financing of the European Union.



*The 265 target villages of the ERSEN project have a maximum population of 1,000, are usually situated at a long distance from the medium voltage grid, and must dispose of at least one school and one health post to be eligible for investment.*

Region	Villages provided with electricity	Persons benefiting from access to electricity in their homes	Schools	Health posts	Public lighting points
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#### First phase

Kaolack	32	7 780	33	23	141
Kolda	20	3 350	13	5	57
Sédhiou	22	5 920	18	11	97
<b>TOTAL</b>	<b>74</b>	<b>17 050</b>	<b>64</b>	<b>39</b>	<b>295</b>

#### Second phase

Sédhiou	121	46 076	121	121	699
Fatick	70	31 893	72	71	449
<b>TOTAL</b>	<b>191</b>	<b>77 969</b>	<b>193</b>	<b>192</b>	<b>1 148</b>
<b>TOTAL</b>	<b>265</b>	<b>95 019</b>	<b>257</b>	<b>231</b>	<b>1 443</b>

*Solar home systems are usually installed in smaller villages with a population of less than 500. They can generate sufficient electricity to power four lighting points, a black and white TV, a radio, and a mobile phone charger.*



## Technical Solutions

In order to make electricity useful and accessible to all, different technical solutions are on offer, each with its own specific uses adapted to consumer needs: solar home systems, minigrids (solar-

diesel or solar-wind-diesel) and solar street lights. Solar street lights are used for public lighting purposes such as lighting pathways, public places or other social facilities such as places for prayer.



*Hybrid minigrids (solar-diesel or solar-wind-diesel) have the capacity to provide electricity to households in villages of approximately 700 inhabitants. The service is comparable to that provided in big cities allowing the use of all types of equipment and therefore adapted for productive uses of electricity.*



*Private Senegalese companies selected by ASER are responsible for operating the systems in target villages for a period of fifteen years. Operators collect initial installation and monthly fees from consumers (households, social infrastructure, and productive users).*



## Local governance of electricity supply

The ERSN project has developed several innovations concerning the social aspects of rural electrification. The project ensures that an adequate social structure is put in place to help manage electricity provision.

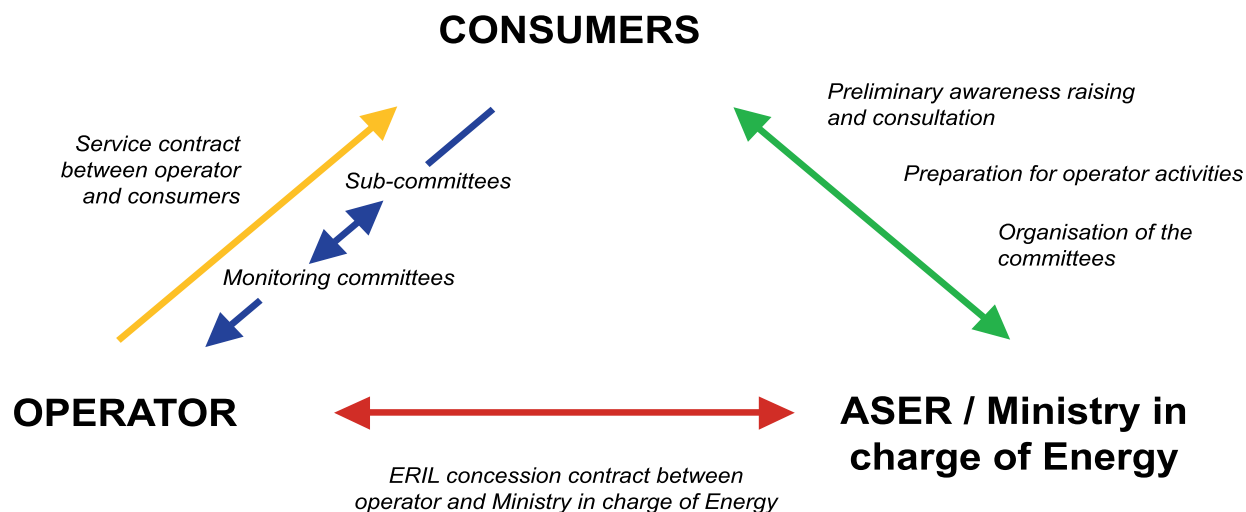
A consultation and decision-making forum is thus set up at village level in order to mitigate social impacts and risks. This is embodied by the “Monitoring and oversight committees for electricity service delivery”.

This careful integration into the socio-economic context favours the durability of equipment on one the hand, and facilitates private sector investment and operations on the other hand. The key stakeholders are therefore solicited by the project in different manners:

- >> Rural communities must position themselves as primary project stakeholders: they provide a financial participation in the initial investment, they are directly involved in the awareness raising and information processes as well as in managing the services provided by the private operators.
- >> Private operators are also required to contribute financially to initial investment in electrification projects. They ensure electricity provision as well as technical and commercial management of the equipment installed
- >> Electricity consumers, whether they are households, social facilities or productive users, must pay their access through an initial one-off access fee and monthly fees for the service.

*In the villages, ERSN develops a social engineering system for rural electrification. This consists in integrating preliminary information, awareness raising and training of target groups and closely associating the local communities in decision-making.*





*Newly acquired access to electricity presents great opportunities for economic development in villages. The ERSEN project therefore provides a support to the development of productive uses of electricity for rural entrepreneurs.*



## Electricity as a means of creating wealth in rural area

Downstream from electricity services, the development of productive uses is carried out using a four-step approach:

1. Systematic identification of potential productive uses of electricity during the preliminary survey stages.
2. Careful analysis of value-added chains of each identified activity sector and of the economic and financial viability of investing into productive uses.
3. Identification and development of synergies with financial and non-financial partners (business development services).
4. Integration of these productive uses into designs for electricity supply.

## Impacts

### Important social changes

In Keur Madiouf, the first village to be provided with electricity by the ERSEN project in the Kaolack region, the son of the village chief was “dazzled” by the electrification of his village.

After a first evening spent under the light provided by the new system, he addressed his father as follows: “Dad, when I pressed the switch and the room was lit up, I thought I was staying at my Un-

cle’s in Dakar! I never would have thought we would get light other than from our oil lamps. I will now be able to study properly here at the village during the holidays and help you with your work in the fields rather than go to Dakar”. Electricity having brought the same facilities in the village as can be found in town, the population can now practice similar activities.



## Information and communication are made easier

Thanks to rural electrification, one can witness the emergence of new habits with regards to accessing information (TV, Radio).

In all the electrified villages, the population seems to be very satisfied with their access to TV, or not having to travel to town to charge their mobile phone.

In Ndiaye Kahone (Kaolack region), village inhabitants now use new technologies and the village youths surf the internet with their computers.

## School results improve

Teachers and students alike also benefit from access to electricity. Children can do their homework in the evening in much better conditions and benefit from the teachers' use of new teaching supports that would otherwise not be available.



*Each day, children from villages having benefited from ERSEN project interventions study 30 minutes longer on average than children with no access to electricity. (RWI impact study, 2011)*

## The quality of medical services improves

Certain services, such as childbirth at night, can now be provided in much better conditions. The small health post in Ndiaye Kahone thus benefits from access to electricity: Faama Diop, the midwife of the village, is very taken by her work, especially during the rainy season.

According to her, the quality of services has vastly improved: *"I have a minimum of five patients a day. Thanks to electricity, I can even carry out nighttime visits, including for childbirths".*

## The local economy is boosted

Thanks to solar mills, sewing workshops, carpentry and metalwork businesses, the communities are also witnessing a new boost in income-generating activities.

In villages such as Ndiebel (Kaolack region) and Diaoule (Fatick region), electrical installations have allowed women to use solar freezers in which they can preserve fresh product for sale on the weekly markets. In Sine Moussa (Thiès region), the village tailor multiplied his income by six since he began using the electricity generated by the wind-solar-diesel power plant.



*From a health standpoint, a great improvement has been made in the conditions in which medical consultations are carried out.*

# ENERGY for SUSTAINABLE DEVELOPMENT



*In 2010, 17,000 persons have a sustainable access to electricity in their homes thanks to the ERSN project. In 2012, approximately 90,000 people in total will benefit from the same service.*

*“Right in the first months after electrification, I was able to achieve a higher net income, it now varies around 600 € per year, revenue on which the entire family depends.”*

**Ndiaga Syll**  
Grocer in Ndiaye Kahone (Kaolack region)



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