



Rural electrification: A public-private partnership for innovative projects in Senegal

The Partners

In 2010, 80% of Senegal's rural population did not have access to electricity. **PERACOD**, a programme of the Ministry in charge of Energy, supported by the German Federal Ministry for Economic Cooperation and Development via the GIZ, aims at improving access to modern energy services in Senegal's rural areas.

The corporation **INENSUS** West Africa S.A.R.L was born on December 2008 as a joint-venture of the German enterprise INENSUS GmbH and the Senegalese enterprise MATFORCE Compagnie Sahélienne d'Industrie. In a development partnership with PERACOD, INENSUS WA promotes the use of renewable energies in Senegal's rural electrification market.



In 2010, INENSUS won the Innovation Prize for Climate and Environment (IKU) awarded by the German Federal Ministry for the Environment (BMU) and the Federation of German Industry (BDI).

INENSUS also won the SEED Award for entrepreneurship in sustainable development.



The rural electrification project of PERACOD

Within the scope of the local rural electrification initiative (ERIL) projects, PERACOD and the Senegalese Rural Electrification Agency (ASER) have implemented the ERSEN project (Électrification Rurale Sénégal). Financed by the Directorate-General for International Cooperation (The Netherlands) and implemented by the German-Dutch partnership "Energising Development", ERSEN is a project promoting the use of renewable energies in isolated zones where classical means of electrification, such as the extension of the main grid, are difficult to realise.



ERSEN aims to electrify 265 villages. In most of these villages solar-diesel hybrid solutions are used to produce electricity.



In January 2010 the solar-wind-diesel mini power plant of Sine Moussa Abdou started operating, and its users have been connected.

The pilot project in Sine Moussa Abdou

The village:

- >> 70 households
- >> One primary school with 70 pupils
- >> One Arabic school with 120 pupils
- >> One health centre with an average of 70 patients per month

The power plant:

- >> One wind turbine of 5 kW
- >> One photovoltaic plant of 5 kWp
- >> One diesel generator of 11 kVA

INENSUS produces and sells electricity in a mini-concession according to the "MicroPowerEconomy" model for a minimum of 15 years. Due to its flexible technical concept, this innovative management scheme allows a better supply of electrical energy adaptable to the users' demand.

Economic growth in the village is encouraged by a stimulation of productive uses of electricity (agriculture, milling, sewing, metal-work etc.).

Deriving electricity from a combination of solar energy, wind energy and diesel has various advantages:

- >> Low probability of interruption of electrical services, because these two systems (solar and wind) can produce electricity night and day.
- >> Reduction of diesel consumption in comparison with the classical system.
- >> The costs of the system are relatively low, since it is not necessary to have a large wind turbine and batteries of very high capacity.

Over the next years, INENSUS aims at electrifying one hundred villages in Senegal with this concept.

The partnership between PERACOD and INENSUS

1. A business trip of German Entrepreneurs to Senegal in 2007 was the starting point for the partnership between PERACOD and INENSUS WA. One of the co-founders of INENSUS GmbH, Mr. Jakob Schmidt-Reindahl, found that the coast of Senegal provides adequate conditions for a decentralised production of electricity from wind energy.
2. In 2007 measurements of wind energy potential were carried out in five villages along the coast. These measurements as well as the socio-economic analysis have shown that there is a significant potential for solar and wind energy powered electrification.
3. The village of Sine Moussa Abdou in the region of Thiès, which has one of the highest wind energy potentials, was chosen as a location for a pilot project. In 2009 a public-private partnership between PERACOD and INENSUS was signed for the development of this first project in Senegal of decentralised electrification based on solar, wind and fossil fuel energy.

"Before the electrification, nobody went out after dinner. We all went to our rooms. Everything was switched off and life stopped".

Malick Thioun,
Sine Moussa Abdou village chief.



“Attending school is not enough, students have to study at home to follow the programme’s rhythm, and to ensure their progress. The electricity also helps the teachers to prepare the lessons, as we have a lot of work outside of class. The village that I come from did not have electricity and the children were faced with enormous difficulties. They had to work Saturday and return well before dusk if they wanted to avoid doing their homework at night in weak candle light.”

Baba Malick, teacher



Impacts

Children’s education and facilitation of household chores in Sine Moussa Abdou

Today, the village chief of Sine Moussa Abdou, happy father of 19 children, observed that the education level of his toddlers is making progress : *“Henceforth we make the children gather in the living room, and thanks to the lighting they can review their lessons”*.

The teacher Baba Malick agrees. Arriving in Sine Moussa Abdou shortly after the installation of the first electricity connections, he saw that this year’s success rate of the entrance exam for secondary school was – for the first time in the village’s history - 100%.

Spirits revive and ideas gush. The possibilities that are opening up seem endless. It will be possible to equip a school with a computer, and the installation of an internet access point will allow students to do research and teachers to be up to date and inform themselves.

The women do not lag behind. Often alone with their children for a long period of time, they experienced a considerable relieve since the arrival of electricity.

Everything has changed since the day the connection was installed. Today, they develop projects of commercial activities and are planning on buying fridges, which would allow them to stock vegetables, meat and fish.

Ideas for various activities can develop thanks to the purchase of devices that work with electrical energy.

The development of the village is linked to revenue-generating activities, which the inhabitants can now pursue thanks to electricity access. Supported by a system of microcredits, they can invest in electrical devices and develop their business. Being able to consume energy, they will thereby boost the economic development.

“The electricity management system installed by INENSUS and PERACOD and the support of microcredits are a great help to realise our investments”, confirms Modou Samb, the president of the villagers’ committee of electrification monitoring in Sine Moussa Abdou.

M’baye Djuene, the village’s tailor, has multiplied his revenue by six since he has electricity.

Thanks to this, his life and working conditions have considerably improved, likewise for his family who can now cover daily expenses. In addition to being faster, the electricity allows M’baye to work night shifts in times of high demand, e.g. around days of traditional celebrations, like Tabaski (Aïd-el-kebir).

The projects flourish in the head of M’baye: he is planning on buying two more machines in the next months and on employing new personnel.



“We are not obliged to finish all the household chores before dark. The children and old women can watch television and go out, finding their way without stumbling over dangerous snakes or scorpions.”

ENERGY for SUSTAINABLE DEVELOPMENT



“ Great changes will take place in one or two years. Finally, we will have the opportunity of developing ourselves thanks to electricity. Our recent opening to the world is an accelerator of development. “

Modou Samb,
President of the village electrification committee
in Sine Moussa Abdou

M'baye Djuene, the village's tailor, can still not believe the amount of work he can do thanks to the electricity. Barely lifting his head from his desk, he calculates quickly that he can now do six pieces of cloths per day, whereas he only did one before. His revenues have multiplied by six and daily profits have risen from 3 to 18 Euros.



From



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