

Evaluation Summary

Sere Wind Farm Project – Eskom

Country: **South Africa**

Sector: **Wind power**

Evaluator: **Haute Performance**

Date of the evaluation: **December 2017**

Key data on AFD's support

Projet number: CZA 6012

Amount: €64 million in non sovereign loan

Disbursement rate: 100%

Signature of financing agreement: February 2011

Completion date: December 2014

Total duration: 3 years and 10 months



Context

The climate change related problems afflicting the world and the quest for sustainable development and health concerns provided opportunities for Eskom to implement **efficient usage of energy, clean energy generation and efficient usage of other scarce input resources such as water.**

Eskom has recognized sustainable development as a key pillar in its business and, as such, has taken bold steps to **support South Africa's green economy and other development policies.**

Objectives

- 1. To increase energy security.**
- 2. To increase the share of renewable energy in the production of electricity in South Africa by financing Eskom's first wind farm in this country.**
- 3. To initiate a long-term partnership between AFD and Eskom, with a view to support renewable energy projects (wind, solar, etc.) and energy efficiency projects.**

Expected outputs

- To build a 100MW wind farm in the Western Cape province of South Africa**
- To produce 280 GWh per year**
- To reduce CO₂ emissions to 250 000 t per year**

Performance assessment

Relevance

The Sere project is **in line with the strategic objectives of both Eskom and AFD**, as determined during the individual interviews as well as the strategic documents published by each.

Effectiveness

It is the view of the stakeholders, and especially Eskom, that **the project is a huge success**. The Sere project has resulted in **the first utility-scale wind farm for Eskom**, laid the foundation for cooperation between Eskom and Development finance institutions (DFIs). Furthermore, it had a **catalytic effect on the renewable energy sector** in South Africa in general.

Efficiency

This project was **satisfactory for both parties**, with positive results dominating the outcome. The USD/kW ratio of Sere is within the global range of onshore windfarms as per the 2011 International Renewable Energy Agency report. Furthermore, the optimization of Wind turbine generator (WTG) position and height has resulted in **higher than expected (business case) capacity factors**.

Impact

It can be concluded that the project had a **high impact**, as it:

- improved the availability of electricity for consumers,
- laid the foundation for DFI funding of renewable projects of Independent power producer (IPP) in South Africa,
- and conducted the first environmental impact assessment for a utility-size wind farm in South Africa.

Sustainability

The evaluation indicated that, if the Sere wind farm were to be ring-fenced in Eskom's context, it would be able to pay back the associated debt.

Importantly, **the project has institutionalized a working relationship between Eskom and the DFIs**, allowing for this capacity to be built within Eskom.

Added value of AFD's contribution

Based on all relevant discussions, the evaluation team believes AFD has played an **additional role** during the project, appreciated for its **flexibility** as compared to other DFIs and without which the project would have been more challenging.

Unfortunately, AFD's processing of supplier invoices **requires improvement** and will **benefit from adopting an electronic process**, such as used by other DFIs.

Conclusions and lessons learnt

Haute Performance is of the opinion that the allotted funds have been **well spent** and can be considered as a **success** to both Eskom and AFD. The project is very important to the South African power generation landscape and represents a step in the right direction of **lessening the dependence on coal fire power stations** for the national utility, Eskom.

There are **no major concerns** regarding the sustainability of the project and the only points worth mentioning are those of a long-term nature, specifically **the wind farm's ability to maintain an adequate level of highly trained Operations and maintenance (O&M) resources** and not lose these to IPP projects in less isolated locations.

Additionally, harmonic currents generated by the wind farm interact with the impedance of the power distribution system and create voltage waveform distortion that can affect both the distribution system equipment and the loads connected to it. Not unique to the Sere wind farm, **it will eventually necessitate an additional investment in order to rectify this phenomenon**.