Evaluation Summary

Ashegoda Wind Farm

Country: Ethiopia Sector: Wind power

Evaluator: **Economic Consulting Associates**Date of the evaluation: **February 2018**

Key data on AFD's support

Projet number: CET 1029

Amount: €45 million in non-sovereign loan

Disbursement rate: 99%

Signature of financing agreement: May 2009

Completion date: July 2014

Total duration: 5 years and 2 months

Context

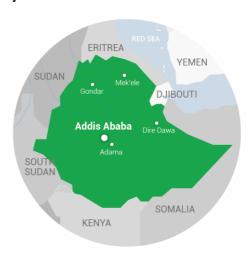
Ethiopia sought to **diversify its renewable energy sources** and to distance itself from hydropower.

At the planning stage of the project there was a premium on new generation capacity that allow to **reduce load shedding** and blackouts.

Actors and operating method

The **contracting authority** was the Ethiopian Electric Power Corporation (EEPCo). During the project, it was replaced by the Ethiopian Electric Power (EEP).

The contractor was Vergnet.



Objectives

The project aimed at increasing the production of new forms of renewable energy in Ethiopia, in order to:

- Reduce dependence on hydropower within the country.
- Produce a demonstration effect and incite follow-on investments in wind generation.
- Initiate a long-term AFD-EEP partnership.

Expected outputs

The construction of a 120 MW wind farm north of the country near Mek'ele, in an isolated area, as well as interconnection with the national grid.



Performance assessment

Relevance

The Ashegoda project is **highly relevant to the national objectives** of increasing and diversifying the mix of renewable energy generation capacity in Ethiopia. The perceived success of the project has led to other wind farm projects being undertaken, and a strong relationship developing between AFD and EEP.

Effectiveness

Performance of the wind farm for the periods where data is available (2014, 2015, 2016 and the first ten months of 2017) has fallen well short of expectations. The gap in generation as compared to preconstruction estimates appears most likely due to an overestimation of the long-term mean wind speed at the site. The turbine availability exceeding contracted levels for all but the final part of 2017 when O&M contractor suspended due to non -payment.

The project has admirably fulfilled its objective of being a demonstration project, with Adama 1 and 2 being developed in its wake. Further wind power projects are being planned.

Efficiency

The first of a kind nature of the project and turnkey contracting basis would both contribute to higher costs. Taking these factors into account, the unit costs of Ashegoda are within **acceptable** benchmark bands.

Impact

The main positive impacts of the project are the **stimulus to the local economy during the construction phase** (also, but to a lesser extent, during the operational phase), and the **demonstration effect** which has led to other wind power projects being developed.

The positive impact anticipated for electricity consumers as a whole was in practice limited by the **significant delays** in getting the units on line and **concurrent development of additional hydro generation facilities**.

Sustainability

The withdrawal of the personnel of the O&M contractor as a result of lack of payment and the resultant rapid decline in turbine availability is testimony to **significant risk** in the sustainability of the project. This situation is being addressed, but the current surplus generation capacity on the system does not impose any sense of urgency on the government side. An **expansion in exports** allied to **bringing forward suppressed domestic demand** may serve to mitigate this risk.

Added value of AFD's contribution

AFD did not just provide a concessional non-sovereign loan, which clearly contributed to the project reaching financial close, but successive Project Managers also undertook to help see through to completion a project that was difficult to implement, thereby fulfilling the objective of forging a strong link between AFD and Ethiopian Electric Power.

Conclusions and lessons learnt

It was a significant achievement that by June 2014 all of the turbines in Ethiopia's first grid-connected 120 MW wind project had been handed over.

However, the **performance** of the wind farm has also been well **below the levels envisaged** in the Feasibility Study, most likely due to the long-term mean wind speed at the site being below that forecasted in preconstruction estimates.

The Ethiopian side considers the project to be highly successful and praises the role that AFD played.

Greater attention should have been paid to ensuring that the O&M agreement would succeed (e.g. that should be at least covered with the revenue obtained from the wind farm) and a sufficient number of EEP staff would be trained and retained to take over at the end of the contract.

