

## Case study:

# Harnessing wind energy in south Benin

A Climate Technology Centre and Network (CTCN) project examined the potential to develop a small wind turbine sector in Benin to bring power to rural communities in the West African country.

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Like many coastal and windy regions in sub-Saharan Africa, Benin wants to harness the power of wind to generate electricity. The south of the country, with its coastline on the South Atlantic, is particularly rich in this natural resource.

Yet despite its geographical advantage in this regard, Benin's wind power generation has not taken off. One of the factors is cost: buying turbines from external suppliers is expensive.

But what if Benin could develop and build its own small-scale wind turbines? By setting up a local industry, wind technology may become more cost-competitive and easier to maintain. Besides providing electricity to rural communities who

currently lack power, it could also create jobs for the local population.

Benin therefore asked the Climate Technology Centre and Network (CTCN) to help test the feasibility of establishing a locally manufactured small wind technology sector in the country.

### Project objective

Benin's Department of New and Renewable Energy requested support to conduct a feasibility study and develop an action plan for setting up a small-scale wind turbine sector. The study was to identify both barriers and opportunities for creating a local manufacturing industry of small wind turbines, as well as a market with potential for growth.

The project looked at both demand and supply. On the demand side, would enough people in rural communities currently without power want and use the electricity produced by local wind turbines? On the supply side, is there sufficient potential to establish and grow the infrastructure, finance, skills and workforce to successfully develop the sector? The objective of the action plan was to look at the immediate to long-term actions needed to develop the sector. It looked at four areas:

- sector programming;
- targeted implementation;
- coalition building;
- knowledge development.

### Participants

The CTCN and the Department of New and Renewable Energy (Benin) commissioned the project. We at Partners for Innovation BV implemented it. We are a consultancy firm based in the Netherlands and Niger with experience in renewable energy project management and feasibility studies.

We worked with a Dutch wind turbine specialist, a Beninese energy technology manufacturing and supply-chain specialist, and a Togolese gender assessment specialist.

Benin's country representative and CTCN focal point for the project was Raphiou Aminou, of Benin's Directorate General for Climate Change.

### Challenges

A key challenge was to keep the project focused and to manage expectations. Direct and regular communication between Partners for Innovation, the CTCN and Benin's Department of New and Renewable Energy helped to achieve this. The Energy Department also organised meetings with local stakeholders, which helped to convince the latter of the benefits of the project, as well as generating widespread media coverage.

The project showed that future success of the sector will depend upon utilising the relevant networks of project participants to organise high-profile, in-country meetings with key partners and decision-makers.



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Ouidah, Benin. The southern coast of Benin benefits from abundant wind potential. © Peeter Viisimaa/Getty Images

Another challenge was how to transfer technical knowledge and expertise to the local workforce – an essential element of the sector's future success. One of the key lessons learnt from the project was the need for international technical experts to cooperate with local experts. This will allow for both in-depth knowledge transfer and lower production costs as expertise grows within Benin.

### Climate action

The project shows that enabling the production of small wind turbines in Benin has the potential to reduce greenhouse gas emissions in the country's rural and peri-urban areas by 5 kilotons of CO<sub>2</sub>e every year.

It will also contribute to the country's Nationally Determined Contribution (NDC) goal of increasing domestic renewable energy production. In total, Benin can expect to produce 7.7 GWh of renewable energy each year if all the locations identified in the project are electrified. The project shows that wind speeds are high and reliable enough for generating significant kilowatt hours of energy.

The project's action plan contributes to Sustainable Development Goal (SDG) 13 on climate action, as it provides clear steps to follow for stimulating clean energy production in Benin. And we hope that the project will also help to engage private investors in climate action – one of the key targets of the UN Framework Convention on Climate Change.

### Other benefits

The project contributes to Benin's NDC goal of increasing household energy access. If the sector is developed as hoped, some 200,000 people will have access to affordable, reliable, sustainable and modern energy (SDG 7).

The project highlights the potential to develop local industrial capacity and provide jobs for local communities, particularly young people. The results of the CTCN's technical assistance also have the potential to be replicated and scaled up at regional level through relevant financial mechanisms – both institutional and private.

Longer-term, as the sector matures, the project shows that Benin would have

the potential to generate income through exporting small wind turbine components, systems and knowledge. ■

## KEY FACTS

### Organisations involved:

CTCN, Department of New and Renewable Energy (Benin), Partners for Innovation BV (Netherlands)

**Budget:** \$83,075

**Start date:** 1 July 2017

**Completion date:** 31 July 2018

### Benefits:

Identified potential to develop wind turbine sector in Benin, which could cut 5 kilotons of CO<sub>2</sub>e, generate 7.7 GWh of renewable energy per year and connect 200,000 people to clean energy supply.