Evaluation summary

ESSENTIAL SERVICES UNIT (ESU) IN A RURAL AREA, POWERED BY A TIDAL STREAM TURBINE

Countries: **Republic of the Congo** | Topic: **Access to electricity**

Assessed by: **NGO Development Initiatives**

Date of evaluation: **15 February 2023**

Key FFEM support data

Project name: Essential Services Unit (ESU) in a rural area, powered by a tidal stream turbine

Project number: AFD No. CCG 114I.01Y

Amount financed by the FFEM: €131,777

Grant date: 10/04/2018

Duration: 2018-2022

Context

Despite having a rich and varied supply of energy sources, the electricity access rate in the Republic of Congo remains low, particularly in rural areas where it is below 15% (World Bank, 2020). This is the case for M'bamou island, an exceptional site located on the Congo River between Kinshasa and Brazzaville. The island has no access to electricity, which greatly hinders the daily lives of its inhabitants. This situation brought about the project led by the Pot@maï association. The ESU is located on the Boeta site in Loubassa, where the current of the Congo River is particularly strong, making it an ideal location for a tidal stream turbine. However, the site is relatively isolated from residential areas.

Participants and operating methods

This programme was executed by a consortium of organisations with specific skills:

- L'Aquaphile, an innovative project sponsor responsible for the technical aspects of designing the tidal stream turbine;
- Pot@maï, a French association specialising in promoting renewable energies and access to essential services in developing countries;
- Aide à l'Enfance, a Congolese association dedicated to the professional training of vulnerable young people.

Aims

The overall aims of the programme are to improve the living conditions of residents, create sustainable local jobs and reduce greenhouse gas (GHG) emissions.

Specific objectives:

- Offer a technical and financial solution to deliver a social project: access to basic services, job creation, protecting the environment;
- Provide the inhabitants of M'bamou island (Loubassa, Sinoa and, to a lesser extent, the other villages on the island) with essential products and services;
- Provide sustainable access to essential services and create local jobs;
- Stimulate innovation to maximise social impact.

Performance appraisal

Relevance

Considering rural areas of Congo have very poor access to electricity, the project fulfils a need for the people on M'bamou island as it provides the goods and services they need. It is based on a preliminary study carried out in 2019, which helped to better define the people's needs and expectations and clearly identify the services to be provided. The local population were calling for the project and have supported it.

Coherence

The project does not appear to be inconsistent with domestic or international policies, but its originality makes it difficult to categorise. Its commercial dimension, in particular, transcends policies for rural electrification. Moreover, the experimental nature also explains the objective difficulties of estimating costs, although on the whole the funds budgeted for the project seem fairly accurate (internal coherence).

Effectiveness

For the most part, the project has been completed, despite facing a number of difficulties: COVID crisis, flooding on site, logistical and technical issues, etc. Current output is a long way short of the forecasts in the NEP (project engagement plan), but is expected to increase. Emphasis on planning (technical and commercial) appears essential in order to ensure this ESU is efficient and fully productive. Management tools and models must be honed and transferred to local teams, so they are implemented effectively.

Efficiency

Given the innovative nature of the project, the costs associated with implementing it are difficult to determine, and even more difficult to compare, so comparisons with other programmes have little relevance. It should be noted that this project could only be completed by significantly reducing staffing costs (among other things), which was not without consequence in terms of HR management.

Impact

It is difficult to gauge the extent of the impacts using results achieved so far, because the project is experimental and, at this stage, the activities – particularly economic – are incomplete and in their infancy. In the short term, the project has undoubtedly had a positive impact on the employability and skills of local residents.

Viability/sustainability

It should be noted that the project has not been fully operational long enough to have the necessary long-term data, so it is difficult to discuss sustainable results at this stage. Nevertheless, with an estimated €91,000 required to break even each year, the business plan – the balancing of which is a determining factor when assessing the sustainability of the project, as is the soundness of the technical provision – clearly appears to be very ambitious.

Added value of FFEM support

The financial contribution from the FFEM was decisive in launching this experimental programme. Because of its strong focus on research and technological development the global financial instruments traditionally accessible to NGOs would struggle to cover the financing. Assessing the unforeseen impacts of the project is complex at this stage, as the evaluation process is scheduled early on in the implementation of social and economic activities, which are still in the development phase.

Recommendations & learnings

Due to its "experimental" and innovative nature, the project sought primarily to resolve technical issues, which means it has not been possible to accurately assess the capacity of available markets to absorb ESU outputs at the proposed price, or factor in the slow scaling-up process. Therefore, during the design phase it would be interesting to prioritise less ambitious business plans, co-constructed with local stakeholders and factoring in the time required to structure and enhance skills (longer than a 3-year project).

The programme could then better balance the current highly technical emphasis (owing to the technical services of L'Aquaphile for the tidal stream turbine) with a more social and economic approach, for which siting the ESU in the village itself would certainly have been preferable. For this ESU to be situated in a village, a high voltage power line would have been required between the plant room and the village in question. The cost of building this could have been covered by the investments and would have boosted economic sustainability, which is still relatively uncertain for this first pilot project.

To ensure the compliance of activities and avoid any disruptions to output that may have occurred, business plans will need to be monitored more closely and supplies anticipated/streamlined. Although yet to be established, a local branch of Pot@maï would be vital.

Initial recommendations for successful replication include:

- Refocusing future projects on whether villages have the capacity to absorb and pay for the products and services delivered by the ESU.
- Establishing business plans based on market research.
- Siting the ESU within target villages.
- Setting up a local Pot@maï "branch".
- Engaging institutions and communicating the results of previous capitalisations.
- Preparing comprehensive management guides for the technical and organisational monitoring of future ESUs.