Solar Energy in Public Buildings in Ojodu, Nigeria

City Climate Finance Gap Fund

Location and Impression from Ojodu Local Council Development Area in Nigeria

CHALLENGES AND SOLUTIONS

The Ojodu Local Council Development Area (Ojodu LCDA), located in the city of Lagos, Nigeria, is facing challenges to serve primary schools, secondary schools and public healthcare centres (PHCs) with reliable electric energy. These facilities are mostly connected to the national power grid, but power delivery is frequently interrupted, negatively impacting students' education and patient care. As a consequence, such facilities operate their own small generators, relying on electrical power generated from fuel- or diesel to back-up their power systems, which is increasing operation costs of these facilities while negatively impacting the Environment through CO2 emissions.

To address this challenge, the municipality of Ojodu LCDA has received technical support through a pre-feasibility to fit 23 public facilities – 7 primary schools, 11 secondary schools, and 5 healthcare centers – with solar thermal and photovoltaic (PV) systems. Based on an energy audit and a proposed layout, 19 facilities are recommended for PV installation, with 3 buildings needing roof refurbishment, adding up to 120 kW of solar PV power.

OVERVIEW OF THE PROJECT'S EXPECTED IMPACTS

The project aims to minimize generator use, reduce emissions, and enhance educational and healthcare experiences in Ojodu LCDA by installing solar PV systems in public facilities. This will provide clean and reliable electricity for schools and healthcare centers, stabilize energy costs, improve reliability, and lower maintenance costs compared to fuel or diesel generators, contributing to energy autonomy and improved students' and teachers' educational experiences and usage of amenities in the case of schools.

Example of Power Generators
(file image; source: BBC/Getty Images)

THE GAP FUND'S SUPPORT

1. Collecting and analysing baseline data, meeting with key stakeholders and developing reports on the status quo of the selected facilities.
2. Conducted detailed study for 23 schools and healthcare centers to assess solar energy potential.
3. Offered financial guidance on subsidies, grants, and loans; outlined next steps for project preparation and contractor selection.

Sector

Energy

Project stage

Prefeasibility

Idea — Implementation

19
Facilities included in the intervention (schools and PHCs)

55,7 T
Tones of CO2-equivalent emissions reduced per year

14,000
Estimated number of people to be directly impacted from the intervention

170,000€
Estimated value of the investment project

EXPECTED CO-BENEFITS

Implementing solar technologies in schools offers an educational opportunity for children to learn about CO^2 emissions, the potential to produce their own energy, and the limitations of renewable energy production, particularly without storage options as foreseen in this project. Additionally, when Ojodu LCDA demonstrates its success with these solar installations, it may inspire private, small-scale investors to install their own solar thermal or PV plants.

FINANCIAL PATHWAYS

As part of the pre-feasibility studies, options for financial pathways include finding government subsidies to lower initial capital costs. Additionally, the following prospects have been developed concerning project's bankability and further preparation:

1. **Shared investment and risk sharing (PPP):** Developing a PPP model and involving private partners to invest in the project.
2. **Third-Party Financing (PPAs):** financing, installation, and maintenance of equipment through a third party. Community buys generated power at a predetermined rate.
3. **Cooperative models:** community invests in solar projects, ensuring buy-in and support.
4. **Low interest loans from Development Finance Institutions:** examples include the World Bank and the AfDB.

Other possible funding options identified: World Bank's NEP, REA's Rural Electrification Fund; bilateral aid from the USA, Germany, and Japan; UNICEF, UNDP's GEF SGP, and CSR initiatives from blue-chip companies.

SCALE-UP POTENTIAL

Upscaling the project's results and learnings into the wider Lagos region may face limitations due to prior similar investments. However, there are possible benefits to extending the project to rural Nigerian schools and PHCs, especially in combination with the usage of Battery Energy Storage Systems (BESS) to reduce generator use. Another possibility is using solar thermal systems for hot water production, along with a distribution system.

An additional option for scaling up is pairing operation and maintenance (O&M) measures with educational training, in order to sustain positive effects in Lagos.

NEXT STEPS

Following the Gap Fund's intervention, these steps are recommended in further project preparation:

- Deciding to invest into solar energy generation and on possible extension into BESS and / or O&M.
- Preparing a simple Request for Proposal (RfP) for companies within Lagos area.
- Selecting a contract partner for the installation and, if applicable, O&M.
- Installing assets on the schools and PHCs, and reviewing the refurbishment of the roof tops of the schools under discussion.

TA BENEFICIARY:

OJODU LOCAL COUNCIL DEVELOPMENT AREA
OKE-IRA
Motto: Service to the people

TA IMPLEMENTED BY:

intec
GOPA International Energy Consultants

THE GAP FUND IN A NUTSHELL

Since its launch in 2020, the City Climate Finance Gap Fund provides technical assistance to cities in low and middle income countries to support the early preparation of climate-smart infrastructure projects, including energy, transport, waste, and nature-based solutions (NbS).

For additional information, please contact:
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ABOUT THIS FACTSHEET

This document is a summary of the pre-feasibility study Scaling Up of Photovoltaic (PV) in Public Schools and Primary Healthcare Centres (PHCs) in Ojodu Local Council Development Area (LCDA), Nigeria, with the support of the Gap Fund in partnership with GIZ.

Find more about the project on: City Climate Finance Gap Fund

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Federal Ministry for Economic Affairs and Energy
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