Federal Ministry
of Education
and Research

Eine Initiative des Bundesministeriums
für Bildung und Forschung
CLIENT II
Internationale Partnerschaften
für nachhaltige Innovationen

PeopleSuN – Optimization of Off-Grid Energy Supply Systems in Nigeria

CLIENT II – International Partnerships for Sustainable Innovation

Nigeria is the most populous country and the largest economy in Africa – yet it has low electrification rates and is the country with the most diesel generators. The overall goal of the PeopleSuN research project is therefore to improve access to reliable and sustainable energy for underserved regions in Nigeria. A comprehensive quantitative and qualitative data collection forms the basis for the development of tools for the determination of electricity demands, for the optimization of off-grid PV systems and for a handbook for decision makers and SMEs, with special consideration of local conditions and in close German-Nigerian cooperation.

Lack of data as an obstacle to the electrification

To improve access to reliable and sustainable energy in Nigeria, rural electrification strategies that use off-grid systems are being developed.

While the Nigerian government has recognized the need for and added value of deploying off-grid systems to improve the energy supply, stakeholder interviews and workshops conducted ahead of the project have highlighted three key challenges to implementing off-grid photovoltaic solutions:

1. Lack of information on the electricity demands and solvency of potential users.
2. Technical barriers to sizing and optimizing appropriate off-grid systems and services.
3. Lack of economically viable deployment models for off-grid electrification.

Diesel engines are often used as a source of energy.

These challenges are to be addressed in close German-Nigerian cooperation. While the project focuses on technical solutions, it places particular emphasis on developing an understanding of local needs and realistic financial frameworks in order to make the most of the potential of off-grid systems. Finally, the project team will derive recommendations for economic deployment models and concrete policy measures from this.

Incorporating local conditions and needs into the best possible solutions

Due to the high level of cultural diversity within Nigeria, PeopleSuN is employing a bottom-up approach, with a special emphasis on ensuring that the project‘s results are individually adapted to local needs and circumstances and are available to the public. To ensure this, the project team uses an agenda process to guarantee the constant involvement of local stakeholders from politics, business, civil society and science. In workshops, expert interviews and through regular exchange, the team constantly verifies whether the results are actually applicable.

One of the core contents of the project is a representative qualitative and quantitative data collection. This forms the basis for developing open tools to assess specific electricity needs and solvency, to improve system designs and to evaluate different energy supply models. The tools will be validated by applying them to demonstration projects provided by local academic and SME partners. Subsequently, they will be applied across Nigeria and additionally tested in Niger.

Available results and the involvement of local partners

The following concrete results are expected:
(1) Open and available datasets on the electricity demands and solvency of rural electricity users;
(2) open and freely available tools for project developers, researchers and policy makers for improved and evidence-based decision-making processes; and
(3) recommended actions for SMEs and policy makers to improve framework conditions.

The results will be developed by the network co-ordinator Reiner Lemoine Institute in close cooperation with the following partners: TU Berlin, the Wuppertal Institute, Fosera and MicroEnergy International. Local project partners are Covenant University, Obafemi Awolowo University, Abdou Moumouni University, PowerGen Renewable Energy, Creeds Energy, the Clean Technology Hub and the Rural Electrification Agency.

Solar system Dakwa PHC.

Funding initiative
CLIENT II – International Partnerships for Sustainable Innovation

Project title
PeopleSuN – Optimization of Off-Grid Energy Supply Systems in Nigeria

Duration
01.07.2020–31.12.2024

Funding code
03SF0606A

Funding volume
1,614,290 Euro

Contact
Philipp Blechinger
Reiner Lemoine Institut gGmbH
Rudower Chaussee 12
12489 Berlin, Germany
Phone: +49 30 1208 434 40
E-mail: philipp.blechinger@rl-institut.de

Project partner
Technische Universität Berlin; Wuppertal Institut; MicroEnergy International GmbH; Fosera GmbH; Covenant University; Obafemi Awolowo University; Université Abdou Moumouni WASCAL program; PowerGen Renewable Energy; Creeds Energy; Clean Technology Hub; Rural Electrification Agency

Internet
bmbf-client.de

Published by
Bundesministerium für Bildung und Forschung/
Federal Ministry of Education and Research (BMBF)
Division Energy; Hydrogen technologies
53170 Bonn, Germany

November 2023

Editing and layout
Project Management Jülich, Forschungszentrum Jülich GmbH; adelphi research GmbH

Photo credits
Reiner Lemoine Institut GmbH