

Project Fact Sheet

Project Title Collaborative Project PROCEED – Pathway to Renewable Off-Grid Community Energy for Development
Subproject: Mini-Grid Technology Research

Keywords Rural Electrification, Sustainable Energy Supply, Off-Grid-System, Solar Mini-Grid, Off-Grid Hybrid-System, Renewable Energies, Photovoltaic, Technology Transfer, Internationale Partnerships, Namibia

Project Details

Project Start	April 2019	Duration	4 Years
Grant Scheme	CLIENT II – International Partnerships for Sustainable Innovations	Project ID	614658-PANAF-I-2019-I-KE-PANAF-MOBAF
Funding Authority	BMBF		
Project Budget	858.091 € (Subproject THI)		
Project Leader	Prof. Dr.-Ing. Wilfried Zörner		
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Project Partners

German Collaborative Partners: IBC Solar AG, Bad Staffelstein, University of Applied Sciences Neu-Ulm (HNU), University of Bayreuth (UBT), Asantys Systems GmbH
Project Partners: Namibia Energy Institute (NEI), Alensy Energy Solutions (Pty) Ltd, Central North Regional Electricity Distributor (CENORED), Renewable Energy Industry Association of Namibia (REIAoN), SADC Centre for Renewable Energy and Energy Efficiency (SACREEE), Hanns-Seidel-Stiftung Namibia (HSS)

Description

In Namibia, more than half of the rural population has no access to electricity. In many parts of the country, connecting these households to the national grid is neither technically nor economically feasible. This lack of access to electricity remains one of the biggest obstacles to efforts of poverty reduction and industrialisation. The German-Namibian collaborative project PROCEED analyses options for an efficient, sustainable and renewable energy-based power supply in rural Namibia via so-called island networks. These renewable energy-based hybrid systems, consisting of regenerative power sources, a battery system and fossil-powered backup generators, are already available on the market. But despite the falling costs of such off-grid technologies, the majority of the population living in rural areas of Namibia cannot afford to purchase electricity from these systems.

The objective of PROCEED is to improve the situation of the population living in remote areas

without access to a reliable energy infrastructure. To this end, suitable options for the design of renewable energy-based models of energy supply via hybrid energy systems will be developed. Both an analysis of the existing energy demand and an evaluation of potential solutions for a secure energy supply in rural areas in Namibia will be conducted, while focusing on case studies on three existing off-grid systems, so-called mini-grids. An analysis of these off-grid hybrid energy systems will identify models for the use of renewable energies that not only correspond to the local needs and societal context but are also technically up-to-date, economically viable, easy to maintain, and therefore sustainable. Concepts for the optimisation of rural electrification will be developed in close cooperation with local partners.

PROCEED is characterized in particular by its combination of technological, social, economic and environmental aspects of energy supply. The project activities are coordinated by the Ingolstadt University of Applied Sciences. Likewise, the Ingolstadt University of Applied Sciences directs the Work Package *Mini-Grid Technology*, whose research focus is on the determination of consumption profiles and building loads as well as the optimal design of hybrid systems based on renewable energies.

Researchers at the University of Bayreuth are conducting interviews and data surveys to analyse geographic and sociocultural conditions (Work Package *Mini-Grid Communities*) for increased power generation through off-grid hybrid energy systems. Regarding the Work Package *Mini-Grid Economics*, the University of Applied Sciences Neu-Ulm is investigating the issue of a cost-covering tariff and payment system for decentral hybrid energy systems and developing suitable business models for the commercial use of the generated electricity. By formulating practical recommendations and developing training concepts based on the outcomes of these three main research areas, the fourth Work Package, *Mini-Grid Sustainability*, will enable the sustainable utilisation of project results at national and regional levels.

PROCEED is not only promoting technology transfer in the field of renewable energies, but is also strengthening the network of relevant stakeholders. All project activities are carried out in close cooperation between German and local partners. The Namibia Energy Institute, its corporate partner Alensy Energy Solutions Ltd and the Renewable Energy Industry Association of Namibia, for example, are contributing findings from previous electrification projects. Moreover, continuous exchanges with national and regional institutions ensure that the project is in line with the prevalent policy agenda. Hence the project's results become a valuable resource for the long-term promotion of renewable energy-based hybrid energy systems.

Overall, PROCEED's interdisciplinary approach contributes to the development and implementation of technologies, system solutions and services in the field of energy supply in rural Africa.