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The RePower project aims to improve access to electricity in rural Africa by installing renewable plug-and-play microgrids in Madagascar, Niger, and Senegal. Our goal is to provide 20,000 off-grid consumers with access to clean, affordable, and reliable electricity by 2027. Additionally, the project includes a replication site in Ghana, demonstrating the scalability and impact of this initiative.

In this section, you will discover the innovative microgrid technologies behind RePower, and understand how RePower is designed to foster socioeconomic growth by promoting inclusion and encouraging productive uses of energy.

The Solartainer(R) system, a containerised PV[1] plus BESS[2] solution developed by Africa GreenTec, is the centrepiece of the microgrids installed by the RePower project. The Solartainer(R) is a proven solution that is already delivering renewable electricity to over 25,000 off-grid customers and powering 900+ SMEs in more than 20 locations across Africa.

The microgrids installed by the RePower project will incorporate batteries supplied by BlueNova, a South African supplier of lithium-ion battery energy storage systems (BESS). By incorporating BESS, the microgrids will be able to provide electricity steadily throughout the day despite variable weather conditions. Follow this link to learn more about the Solartainer(R)

The biomass combined heat and power (BCHP) system supplied by Mash Makes, will further enhance the reliability and extend the operating hours of the microgrids. This supports productive uses of energy by local businesses that operate after sunset, including welders and food processing operations that require cold storage around the clock.

The Energy Management System (EMS), supplied by Hybrid Greentech, harnesses weather forecasting data, hourly consumption patterns, and many other data points to optimize the use of the BESS. This bolsters the resilience of microgrids and enables microgrid operators to provide a better service and minimize unscheduled downtime. The EMS employed by the microgrids will provide system control, monitoring and metering. Resource data is provided by Remote Sensing Solutions.

The StreetUP from Africa GreenTec is a standalone street lighting solution that enhances security in rural communities without needing an external power source. Its innovative design features a bifacial PV panel, a powerful lithium-ion battery, and an LED with high luminous efficiency. Available with two mounting options, the StreetUP is easy to install, and its components are replaceable, ensuring sustainability.

The RePower project is deeply committed to engaging local communities in the development and implementation of microgrid systems in the chosen sites in Madagascar, Niger, and Senegal. This engagement

is critical as it ensures the microgrids are well-suited to meet local needs and are embraced by the communities they serve. The project incorporates local partners and affiliates into its consortium, allowing for a nuanced understanding of the diverse regulatory environments across different countries.

In the demo sites managed by country affiliates of Africa GreenTec and in Ghana, where the Ministry of Energy operates microgrids, community involvement is facilitated through securing necessary permits and licences in collaboration with local authorities. Moreover, after the installation, these affiliates will manage the operations and maintenance (O& M), and provide training for local personnel on various operational aspects including customer relations and facility protection.

To maximise the benefits for local populations, RePower utilises a design thinking approach to involve community members in the planning and design of the microgrids. Through a series of workshops, participants go through a co-design process where they learn to empathise with their communities, define problems, and prototype solutions. This participatory approach not only ensures that the microgrid designs reflect the community"s needs but also empowers local participants to become ambassadors for the technology"s adoption.

This work package focuses on administrative management, legal and financial coordination, and ensuring technical coherence to facilitate communication, maintain timelines, and meet budget requirements, while proactively addressing potential issues within the project.