Microgrid design afghanistan

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An innovative solar mini-grids project will lay the foundations for Afghanistan’s mini-grids market, with the aim of helping the country to reduce its greenhouse gas emissions while tackling rural energy poverty and supporting a green recovery amid the COVID-19 crisis.

The Green Climate Fund (GCF) approved funding of around $17.2 million for the project with a total budget of $21.4 million, which will be implemented by the Ministry of Rural Rehabilitation and Development and co-financed by the United Nations Development Programme (UNDP) as well as the Ministry of Rural Rehabilitation and Development (MRRD).

Renewable energy mini-grids are independent energy systems that operate outside of the national electricity grid. As renewables equipment becomes cheaper and disruptive digital technologies more accessible, mini-grids have garnered a lot of interest from public and private actors as a solution to bridge the energy access gap in areas where expanding the national grid would be too costly or challenging.

The country’s Nationally Determined Contribution (NDC) under the Paris Climate Agreement identifies extreme hunger and poverty as key issues for the country, and states that climate change could deepen both. The COVID-19 crisis now adds a new layer of challenges. At the core of these intertwined crises lies rural energy poverty—a complex, multifaceted issue with considerable environmental, social and health impacts.

Only 30 per cent of people in the country have access to electricity through the national grid. Most people without access to the national grid rely on costly and polluting diesel generators or kerosene for basic energy needs. In rural areas, 95 per cent of people are using fuels such as firewood or charcoal for cooking and heating. This leads to health issues related to air pollution and forest degradation.

This widespread energy poverty is also significant for Afghanistan’s greenhouse gas emissions. If the 24.5 million people who are currently not connected to the grid resort to diesel generators for their energy needs, it would amount to 2.76 million tCO2 emissions per year.

That’s where mini-grids come in. A rapidly deployable solution, expected to become cost-effective in the near future, mini-grids have great potential to bring steady electricity to communities while reducing air pollution and greenhouse gas emissions.

It will also set up 3 solar mini-grids to showcase the viability of this model, with the aim of driving future investments. These first proof-of-concept mini-grids alone are expected to bring clean energy to 49,000 beneficiaries, almost half of them women, and result in 173,082 tCO2 emissions reduction over the lifetime of the deployed technology.

“This project will help Afghanistan on its journey towards clean energy by creating market conditions to scale up mini-grids,” said UNDP Afghanistan Resident Representative Abdallah Al Dardari. “This has potential to change the lives of millions of people in the country. Access to clean energy not only helps curb greenhouse gas emissions; it also empowers people and builds resilience. It improves education and healthcare. It supports farmers, small businesses, and can create new livelihoods.”

Through this project, Afghanistan is set to advance its 2030 Sustainable Development agenda. Beyond being Sustainable Development Goal (SDG) 7, access to clean energy enables the realization of a range of other SDGs—from climate action to gender equality, poverty reduction, education, and achieving zero hunger by increasing agricultural productivity.

As COVID-19 threatens to unravel the country’s painstaking efforts to recover from decades of war, access to clean energy will help communities rebuild, and bring hope for a better future for all.

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