Renewable energy storage turkmenistan

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Turkmenistan is a landlocked developing member country (DMC) with abundant gas and oil deposits. Most of the country is desert, with the population concentrated in a few urban areas.

Despite the country"s reliance upon hydrocarbons, the government recognizes the importance of climate action and is exploring renewable energy sources, including solar. This shift could open up new export markets for the country, such as through Green Energy corridors to transport renewable energy from Central Asia to Europe,which would support regional and cross border cooperation.

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The Arkadag Smart City Project is an innovative initiative by the Government of Turkmenistan to advance sustainable development through an environmentally friendly, digitally advanced, resource-conscious, and socially inclusive urban ecosystem. The key objectives of the city are: (1) Environmental Sustainability, (2) Inclusive Growth, (3) Technological Advancement, (4) Economic Diversification, (5) Community Participation, (6) Resilience and Disaster Management, and (7) Data Privacy and Security.

The proposed TA will complement ADB"s existing grid strengthening investments in Turkmenistan"s energy sector while setting the foundations for future engagement in renewable energy generation, including in urban settings. The majority of the technology promoted under the TA would be new for the country.

"Turkmenistan is highly dependent upon hydrocarbons and has an undiversified export basket dominated by a single productnatural gas. In 2021, hydrocarbons comprised about 85% of total exports.

"Despite the country"s reliance upon hydrocarbons, the government recognizes the importance of climate action. Turkmenistan"s Nationally Determined Contribution (NDC) commitment to mitigation focuses on improving energy efficiency and conservation, promoting the sustainable use of hydrocarbons, and increasing alternative energy sources.

"In the country"s transition to alternative energy sources, Turkmenistan recently completed a 10MW (solar 7MW, and wind 3MW) power plant last January, of which 7MW of solar power has been connected to the grid. Solar is thus a new technology for the country despite its desert features and high potential for generation and offers significant export opportunities with new initiatives in energy generation and transmission from Central Asia to Europe.

"Under the recently approved Turkmenistan CPS (2024-2028), ADB will support Turkmenistan in its efforts to become a more sustainable, climate-resilient, and competitive economy. Urban development is identified as

a key potential area for engagement under the CPS with support planned for sustainable cities that incorporate innovations, new technologies, and international best practices.

"Arkadag City is a new "smart and "green city in southern Turkmenistan that will fully incorporate modern advanced technologies and digital solutions.

"Environmental Sustainability is the first objective of Arkadag City. The Government of Turkmenistan has sought ADB"s help in advancing this objective and is interested in a small-scale solar demonstration, which can then be scaled up including for Ashgabat city. For the demonstration, more than 4 GWh of renewable energy is targeted to be produced annually, resulting in a reduction of more than 3,000 tons of GHG emissions each year.

"Complementing the proposed assessment, feasibility studies, and demonstration, the Technical Assistance would also be engaged for capacity building for government officials, local contractors, and the local community.