



Completion Report

Project Number: 48363-001
Technical Assistance Number: 8757
April 2017

Mongolia: Preparation of an Investment Plan for Scaling up Renewable Energy

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TA No., Country and Name:		Amount Approved: \$300,000	
TA 8757-MON: Preparation of an Investment Plan for Scaling Up Renewable Energy		Revised Amount: n/a	
Executing Agency: Ministry of Energy	Source of Funding: Strategic Climate Change Fund	Amount Undisbursed: \$ 89,432.18	Amount Utilized: \$ 210,567.82
TA Approval Date: 14 November 2014	TA Signing Date: 7 January 2015	Fielding of First Consultants: 2 March 2015	TA Completion Date Original: 19 January 2016 Actual: 19 January 2016 Account Closing Date Original: 19 January 2016 Actual: 30 March 2016
Description			
<p>In 2014, Mongolia's contribution to global greenhouse gas emissions was 32.88 million tons of carbon dioxide equivalent, representing 0.07% of the world's total. However, per capita emission of the country was 11.76 tons, which is almost twice the world's average. This is primarily due to its energy sector's heavy dependency on coal and existence of aging coal-fired powers with low-energy efficiency and high carbon intensity. While coal is abundantly available in Mongolia, the country also has impressive renewable energy resources especially solar and wind. But renewable energy resources were largely unexploited. A more balanced energy mix with larger share of renewable energy compared to existing 7.6% is imperative to decarbonize the energy sector. With this background, the government requested Asian Development Bank (ADB) to support preparation of an investment plan to scale-up renewable energy development. This was a precursor to the Government's determination to increase share of renewable energy to 20% by 2023 and 30% by 2030 as part of its Nationally Determined Contributions announced in 2015.</p> <p>Before the start of the study, ADB recognized the importance of mobilizing potential climate financing as a key part of this investment strategy. Since Mongolia is an eligible country under the Scaling Up Renewable Energy in Low-Income Countries Program (SREP), which is one of the subfunds of Climate Investment Funds, ADB together with other development partners (European Bank for Reconstruction and Development and the World Bank Group) approached SREP to consider this proposal. Upon approval of the SREP subcommittee to provide \$300,000 of technical assistance (TA) for preparation of renewable energy investment plan, the government requested ADB to lead other development partners in implementation of the TA to (i) comprehensively assess the country's renewable energy subsector to identify bottlenecks and recommend urgent policy actions to overcome these barriers, (ii) develop a comprehensive investment plan to meet medium- and long-term renewable energy targets, and (iii) enhance government capacity in renewable energy policy making and planning, grid control, and technology choice and tariff analysis.</p>			
Expected Impact, Outcome and Outputs			
The impact of the TA was increased renewable energy capacity. The outcome was increased readiness for investments in renewable energy. The TA outputs were (i) renewable energy investment plan for SREP funding prepared, and (ii) the government capacity for renewable energy and investment planning enhanced.			
Delivery of Inputs and Conduct of Activities			
The executing agency was the Ministry of Energy and the implementing agency was the National Renewable Energy Center. The executing and implementing agencies provided counterpart staff, office accommodation and other logistical support in a timely manner and their performance was satisfactory. The consulting team comprised two international and two national consultants. They were engaged in accordance with ADB <i>Guidelines on the Use of Consultants</i> (2013, as amended from time to time). The TA provided total input of 21 person-months including 7 person-months international and 14 person-months of national, compared to the original 18 person-months including 5 person-months international and 13 national. This was due to the additional work in preparing the pre-feasibility for decentralized renewable systems in the western region to raise investment project readiness. The performance of the consulting team was satisfactory, and all planned activities were conducted as scheduled. Activities included assessments of (i) renewable energy resource, (ii) technology choice and tariff, and (iii) grid stability and renewable energy evacuation. A policy note on policies and reforms recommendations, medium- and long-term renewable energy investment plan, workshops, and capacity development trainings were also completed. ADB led the development partners team and provided guidance, fielded missions for the TA's inception and final review. ADB performance was rated satisfactory.			
The TA was completed as scheduled, and the TA account was closed within 3 months after completion. Mongolia Renewable Energy Investment Plan (MREIP) was reviewed and endorsed by the government, and was submitted to the SREP subcommittee in September 2015 for further SREP funding assistance to support proposed priority investments.			

Evaluation of Outputs and Achievement of Outcome

The TA achieved its designed outcome. A total of about 200 megawatt (MW) of private sector led renewable energy projects listed in the MREIP have been granted license so far. The Law on Renewable Energy was amended in 2015 to introduce renewable energy surcharge on end-user bill for financially sustainable feed-in-tariff payment, which is expected to create potential private investor's confidence in long term renewable energy investment. Among those licensed projects, 10 MW of solar photovoltaic power plant in Darkhan has started commercial operation since January 2017, and 50 MW of wind power plant in Tsetsii has started construction since late 2016 for commercial operation in 2018. Further private sector investment in renewable energy in the central energy grid, which covers about 90% of total demand in the country is expected, provided that necessary regulatory reforms (such as grid control to reduce renewable electricity curtailment, and renewable energy surcharge adjustments to avoid underfunding for feed-in-tariff payment) in the MREIP are implemented in a timely manner. For promoting renewable energy diffusion in remote and less developed regions where 70% of load demand is being met by imported electricity from neighboring countries through long stretched transmission lines with high power loss, the distributed renewable energy system which locally produces reliable and clean electricity for local use while minimizing transmission loss was also programed in the MREIP.

All TA outputs were delivered as planned and were endorsed by the executing agency. The SREP subcommittee also endorsed the MREIP in November 2015 with indicative \$29.7 million of grant funding assistance for (i) upscaling rural renewable energy through developing distributed renewable energy systems in remote and less developed regions, and (ii) strengthening renewable energy regulations to stimulate private sector led investment in renewable energy. An investment project for upscaling renewable energy is currently at project preparation stage for ADB Board consideration in 2018. While the World Bank is supporting the complementary renewable energy regulation to enhance efforts and make it more attractive for private investments in renewable energy in the central grid system, the TA also developed a simulation model to estimate renewable energy curtailment and renewable energy capacity limit for power evacuation in the coal dominated energy system in the country. The simulation model was handed over to the executing and implementing agencies, combined with necessary capacity development trainings. Updating curtailment assessment using the model is expected to guide realistic renewable energy project development schedule to ensure renewable energy integration into the existing grid system.

Since commencement of the TA, all its activities were fully coordinated with the executing and implementing agencies, potential private sector developers, financiers, universities, non-governmental organizations, and bilateral donors through two workshops and joint multilateral development banks' missions. The MREIP was thoroughly reviewed by the executing and implementing agencies and endorsed by the cabinet. It was also disseminated through the government website for public comments both in English and Mongolian. The MREIP was also submitted to the SREP subcommittee for endorsement and was thoroughly reviewed by the international independent external reviewer for quality check and was assessed that it was well prepared, thorough, comprehensive, and pragmatic.

Overall Assessment and Rating

The TA is rated highly successful. The TA outputs were highly relevant and enabled to mobilize climate financing from SREP to implement priority renewable investments in remote and less developed regions and to undertake regulatory reforms to strengthen efforts to attract private investments in renewable energy. This is the first ever major climate fund assistance in Mongolia. Successful implementation of these activities is expected to lead to achievements of Mongolia's medium- and long-term renewable energy targets by 2023 and 2030.

Major Lessons

The government's ownership over the TA is essential for successful implementation. Since all the TA outputs from the inception stage were publicly open, finalizing the MREIP including priority investment and activity selection for SREP funding ensured the government and stakeholders strong ownership for the investment program. This should augur well for the larger uptake of renewable energy despite competing interests among many stakeholders in the country.

Recommendations and Follow-Up Actions

Implementation of the regulatory reform actions in the MREIP, especially (i) continuous renewable energy surcharge adjustment to avoid underfunding of feed-in-tariff payment and (ii) strengthening grid control measures to reduce renewable electricity curtailment, are the key to achieve the government's medium-and long-term renewable energy target. The implementation progress shall be continuously monitored through ongoing TA (TA 9224-MON: Upscaling Renewable Energy Sector) and sector policy dialogues.