



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

Project Name	Preparation of an Investment Plan for Scaling Up Renewable Energy
Project Number	48363-001
Country	Mongolia
Project Status	Closed
Project Type / Modality of Assistance	Technical Assistance
Source of Funding / Amount	TA 8757-MON: Preparation of an Investment Plan for Scaling Up Renewable Energy Strategic Climate Fund US\$ 300,000.00
Strategic Agendas	Environmentally sustainable growth Inclusive economic growth
Drivers of Change	Governance and capacity development Knowledge solutions Partnerships Private sector development
Sector / Subsector	Energy - Energy sector development and institutional reform
Gender Equity and Mainstreaming	No gender elements
Description	The TA will support the government in (i) comprehensively assessing the country's renewable energy subsector to identify bottlenecks and recommend urgent policy actions to overcome these barriers and create an enabling environment for sustained public and private investments; (ii) developing a comprehensive investment plan to meet 20%_25% of the renewable energy target by 2020; and (iii) enhancing government capacity in renewable energy policy planning, grid control and protection, and technology and tariff analysis.

Project Rationale and Linkage to Country/Regional Strategy

Mongolia currently has a total of 1,062 megawatts (MW) of installed capacity, but because of aging power facilities that are well past their economic life, only 836 MW is available. Power supply is unreliable and losses exceed 30%, largely because of the aging transmission lines and substation facilities, and poor maintenance. Rapid economic growth has increased demand for electricity and heating. In 2013, the reserve margin for electricity and heat supply was reduced to almost zero. The ADB-assisted energy sector master plan study concludes that new capacity additions of 900 MW in 2020 and 1,020 MW in 2025 are essential to meet the growing demand by 2025, while maintaining an adequate reserve margin of about 20%.

The development gap between urban and rural areas is significant due to uneven access to productive employment opportunities, education and health services, and basic infrastructure. In 2011, poverty incidence in rural areas is 33.3% compared with 26.6% in urban areas. While about 94% of the population has access to either a grid system or stand-alone electricity supply, access to electricity is uneven among regions and households. About 13% of the rural population and 17% of the rural poor do not have access to electricity. Access to reliable heating service is even worse. About 1,200 coal-fired heat-only boilers with a low thermal efficiency of about 40% (compared with a modern combined heat and power plant of about 80% efficiency) are used for heating in aimag (province) and soum (district) centers. The condition of boilers and the associated heating pipeline has deteriorated significantly because of poor maintenance and aging.

The coal-dependent energy system and the prevailing low energy efficiency is resulting in significant air pollution in Ulaanbaatar, especially during heating season, which lasts more than 9 months. During winter, particulate matter (less than 10 micrometers) in Ulaanbaatar's atmosphere routinely measures 279 micrograms/cubic meter of air, which is about five times higher than the World Health Organization's air quality guideline of 50 micrograms/cubic meter. The use of low calorie coal and inefficient coal-fired family stoves without proper pollution control measures in the ger district (where low-income households and the poor reside) is exacerbating poor air quality and contributes to indoor air pollution.

Mongolia is currently the world's fifth most carbon-intense economy (2.86 tons of carbon dioxide equivalent per \$1,000). Moving toward a more diversified energy mix with a reduced share of coal is a policy imperative. Renewable energy, most notably wind and solar energy and hydropower, is abundantly available. The country's estimated 3,800 small rivers with a total length of 65,000 kilometers have 6.2 gigawatts of hydropower potential. Solar energy has moderate potential, ranging from 4.5 kilowatts/square meter (m²) in the north to 6.0 kilowatts/m² in the southern Gobi. Wind resources are excellent with 400_600 watts per m² in 10% of the country's land area, with the potential for 1,100 gigawatts of utility-scale wind power (footnote 3).

In 2007, the government enacted the Renewable Energy Law to stimulate renewable energy development. It was accompanied by a set of regulatory arrangements with a feed-in tariff (FIT) for renewable energy to increase its share to 3%_5% by 2010 and 20%_25% by 2020. The government has taken several initiatives for renewable energy deployment. Most notably, (i) implementing the successful 100,000 Solar Ger Electrification Program (2000_2012), which provided access to modern energy to over half a million nomadic herders through solar home systems; and (ii) facilitating the development of the 50 MW Salkhit wind farm, the first private power producer. Renewable energy deployment has made steady progress. The current share of renewable energy in total capacity is 7.92% (84.15 MW).

However, increasing the use of renewable energy further is a challenge. Persisting fundamental bottlenecks include (i) diminishing reserve margin and lack of regulating capacity in the power system to compensate for fluctuating outputs from intermittent renewable energy such as wind and solar power; (ii) inadequate balance in the renewable energy fund account to pay the FIT premium; (iii) inadequate FIT, which deters potential project developers and investors from setting up new capacity; and (iv) lack of government targeted support to scale up stand-alone and mini-grid systems in rural areas, and to switch to renewable energy from coal for heating.

Mongolia is currently on the reserve list of the Scaling Up Renewable Energy in Low-Income Countries Program (SREP), which operates under the Strategic Climate Fund, one of two subfunds of the climate investment funds framework. The SREP supports developing countries to expand energy access and stimulate economic growth through scaled-up deployment of renewable energy solutions, and provides a trigger for transforming the renewables market in each target country through a programmatic approach that involves government support for market creation, private sector implementation, and productive energy use. Multilateral development banks (MDBs) implement the SREP in close collaboration with other development partners including the United Nations (UN) and bilateral agencies. In March 2012, the SREP subcommittee agreed to support the preparation of investment plans for countries on the reserve list and to provide up to \$300,000 for that purpose for Mongolia. It also agreed upon the maximum amount of \$30 million for Mongolia, should additional funding become available.

In its endeavor to support renewable energy, the government is keen to utilize the SREP investment. It expressed its interest in being one of the pilot countries under the SREP and was included in the reserve list. Participation in the SREP is expected to help the government attain its targeted 20%_25% renewable energy in the energy mix by 2020. This will help overcome current capacity constraints in meeting heating and electricity demand in an environmentally sustainable manner, especially in remote rural areas where renewable energy is an attractive alternative.

Impact

Scaled-up renewable energy capacity in Mongolia

Project Outcome

Description of Outcome

Increased readiness for renewable energy investments in Mongolia.

Progress Toward Outcome

Implementation Progress	
Description of Project Outputs	Renewable energy investment plan for SREP funding. Enhanced capacity of the government in renewable energy policy and investment planning.
Status of Implementation Progress (Outputs, Activities, and Issues)	Work of individual consultants has been completed. Final workshop with major stakeholders held in September 2015.
Geographical Location	

Summary of Environmental and Social Aspects

Environmental Aspects

Involuntary Resettlement

Indigenous Peoples

Stakeholder Communication, Participation, and Consultation

During Project Design

During Project Implementation

Business Opportunities

Consulting Services	The TA requires consultants with expertise in renewable energy technology, energy sector planning, energy economics, and grid stability and integration. It is proposed to engage individual consultants because (i) only two international experts and two national consultants for 6 person-months each are required; (ii) renewable energy in Mongolia is a nascent industry and very few national or international experts have prior experience of Mongolia, which is crucial to prepare a realistic investment plan. These consultants will be engaged by ADB in accordance with the Guidelines on the Use of Consultants (2013, as amended from time to time).
Procurement	The procurement of equipment by consultants, under the TA, will follow ADB's Procurement Guidelines (2013, as amended from time to time). The proceeds of the TA will be disbursed in line with ADB's Technical Assistance Disbursement Handbook (2010, as amended from time to time). The equipment procured under the TA will be turned over to the executing agency upon TA completion.

Responsible Staff

Responsible ADB Officer	Yamamura, Shigeru
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Responsible ADB Division	Energy Division, EARD
Executing Agencies	<i>Ministry of Energy, Geology and Mining Baga Toiruu 6 Ulaanbaatar 46 Mongolia</i>

Timetable

Concept Clearance	30 Sep 2014
Fact Finding	01 Oct 2014 to 03 Oct 2014
MRM	-
Approval	14 Nov 2014
Last Review Mission	-
Last PDS Update	01 Apr 2016

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Milestones					
Approval	Signing Date	Effectivity Date	Closing		
			Original	Revised	Actual
14 Nov 2014	07 Jan 2015	07 Jan 2015	19 Jan 2016	-	-

Financing Plan/TA Utilization						Cumulative Disbursements		
ADB	Cofinancing	Counterpart				Total	Date	Amount
		Gov	Beneficiaries	Project Sponsor	Others			
0.00	300,000.00	0.00	0.00	0.00	0.00	300,000.00	14 Nov 2014	210,567.82

Project Page <https://www.adb.org/projects/48363-001/main>

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