



Mongolia: Energy Storage Option for Accelerating Renewable Energy Penetration

Project Name	Energy Storage Option for Accelerating Renewable Energy Penetration		
Project Number	51282-001		
Country / Economy	Mongolia		
Project Status	Closed		
Project Type / Modality of Assistance	Technical Assistance		
Source of Funding / Amount	TA 9569-MON: Energy Storage Option for Accelerating Renewable Energy Penetration		
	Republic of Korea e-Asia and Knowledge Partnership Fund		US\$ 500,000.00
Strategic Agendas	Environmentally sustainable growth Inclusive economic growth		
Drivers of Change	Governance and capacity development Knowledge solutions Partnerships		
Sector / Subsector	Energy / Energy utility services		
Gender	No gender elements		
Description	<p>The knowledge and support technical assistance (TA) will accelerate renewable energy penetration in the Central Energy System (CES) in Mongolia through (i) assessment of current status and future projection of CES, (ii) identification of innovative energy storage technologies, and (iii) assessment of their market potential and development of energy storage deployment strategy.</p> <p>The TA is included in the Mongolia: Country Operation Business Plan (2018 -2020). The propose TA is fully aligned with the Country Partnership Strategy (2017- 2020) priority on improving natural resource management and broadening climate change response to support the government's priorities on the Mongolia Sustainable Development Vision 2030. The TA will also support the strategic priorities of the Asian Development Bank's (ADB) Midterm Review of Strategy 2020 to mitigate climate change and promote environmental sustainability.</p>		
Project Rationale and Linkage to Country/Regional Strategy	<p>Energy security and sustainable development are the two major challenges in Mongolia. Accelerating renewable energy penetration by increasing both the share of renewables in the energy mix and their capacity factors is vital for Mongolia to develop sustainable energy infrastructure and achieve energy independence. Currently the energy system of Mongolia is largely dependent on coal, and combined heat and power plants (CHPs) are the major energy supply for both power and heating. Mongolia lacks access to moderately priced liquid fuels and natural gas, which are mainly imported from Russia. Current energy capacity is not sufficient to meet the power demand during peak hours, and all fast ramping requirements and spinning reserve for frequency regulation and supply shortage are from the Russian grid connected to CES. It is observed that the import energy price from Russia has increased significantly in the past and the trend will continue.</p> <p>The current energy capacity development cannot meet increasing demand without additional investment. Considering demographic and economic development, heat demand deficit in Ulaanbaatar is expected to grow from 44 gigacalorie per hour (Gcal/hr) in 2014 to 749 Gcal/hr in 2025 at an average annual growth rate of 32.3%. Power demand is expected to grow at 133 megawatt (MW) per annum from 697 MW in 2012 to 3,161 MW in 2030.</p> <p>To address the widening supply-demand gap and to strengthen energy independence in a sustainable manner, the Government of Mongolia has brought forward a series of policies to increase the share of renewables in the energy mix. The State Policy on Energy 2015- 2030 approved by the parliament in 2015, intends to achieve energy independence and increase renewable energy share to 20% of total installed capacity in 2023 and 30% in 2030. To meet such a mid- and long-term target, renewable energy capacity will be required to reach up to 633 MW and 1,085 MW by 2023 and 2030, respectively. However, since CES has no spinning reserve, it can absorb up to 220- 250 MW of solar photovoltaic and 125 -175 MW of wind power capacity at 20% curtailment rate even with CHPs' operating load following mode. In future, the power system alone will not be able to integrate all proposed capacity of renewables. This results in great uncertainty and variability in the supply-demand balance unless flexibility, such as energy storage, is introduced in the power system.</p> <p>The energy storage technologies can offer a great level of flexibility at both temporal and spatial scales for integration of electricity and heat systems. They are identified to be valuable in most energy systems, with or without high levels of variable renewable generation, to (i) improve efficiency of the energy system, (ii) help to integrate higher levels of variable renewable resources, (iii) increase energy access, and (iv) improve electricity grid stability, flexibility, reliability and resilience. The TA will identify technically feasible and financially viable energy storage technologies within the Mongolian energy system and develop viable commercial solutions for scaling up their deployment.</p>		
Impact	Renewable energy capacity increased		
Project Outcome			
Description of Outcome		Readiness for investments in energy-storage technologies increased	
Progress Toward Outcome		The final report was completed in June 2020	
Implementation Progress			
Description of Project Outputs		Status and supply-demand projection of electricity and heat in the CES assessed Technically feasible energy-storage technologies identified Market potential for energy storage assessed Energy-storage deployment strategy developed	
Status of Implementation Progress (Outputs, Activities, and Issues)		(i) Mobilization has been completed. (ii) Inception report has been submitted and approved. (iii) Interim report has been submitted and approved. (iv) Study tour in Japan (11-14 May 2019) and interim workshop (21 May 2019) were completed. (v) Draft final report has been submitted and cleared. (vi) Final report was completed in June 2020. (vi) TA completion date has been extended from 31 March 2020 to 30 September 2020. (vii) The TA has utilized 92% of its total TA resources.	
Geographical Location		Nation-wide	

Summary of Environmental and Social Aspects	
Environmental Aspects	
Involuntary Resettlement	
Indigenous Peoples	
Stakeholder Communication, Participation, and Consultation	
During Project Design	The mission will finalize MOU with local government. - Completed.
During Project Implementation	The interim workshop and study tour (Japan) were completed on 21 May 2019, and 11-14 May 2019, respectively. The final report was completed in June 2020. ADB has been in constant communication with the Ministry of Energy to support the approval of the First Utility Scale Energy Storage Project (Loan 3874, approved on 22 April 2020) for \$100 million.
Business Opportunities	
Consulting Services	ADB will administer the technical assistance. ADB's Energy Division, East Asia Department will select, administer, supervise consulting firm's outputs for the TA, and evaluate the consulting firm. The implementation arrangements are summarized in the table. ADB will engage the consultants following the ADB Procurement Policy (2017, as amended from time to time) and its associated project administration instructions and/or staff instructions.
Responsible ADB Officer	Sakai, Atsumasa
Responsible ADB Department	East Asia Department
Responsible ADB Division	EASI
Executing Agencies	Ministry of Energy Government Building 14, Khan-Uul District Chinggis Avenue, 3-r khoroo Ulaanbaatar, 17060 Mongolia
Timetable	
Concept Clearance	07 May 2018
Fact Finding	-
MRM	-
Approval	21 Aug 2018
Last Review Mission	-
Last PDS Update	07 Sep 2020

TA 9569-MON

Milestones					
Approval	Signing Date	Effectivity Date	Closing		
			Original	Revised	Actual
21 Aug 2018	20 Sep 2018	20 Sep 2018	31 Jan 2020	30 Sep 2020	29 Dec 2020

Financing Plan/TA Utilization						Cumulative Disbursements		
ADB	Cofinancing	Counterpart				Total	Date	Amount
		Gov	Beneficiaries	Project Sponsor	Others			
0.00	500,000.00	0.00	0.00	0.00	0.00	500,000.00	17 Jun 2022	484,603.27

Project Page	https://www.adb.org/projects/51282-001/main
Request for Information	http://www.adb.org/forms/request-information-form?subject=51282-001
Date Generated	05 June 2023

ADB provides the information contained in this project data sheet (PDS) solely as a resource for its users without any form of assurance. Whilst ADB tries to provide high quality content, the information are provided "as is" without warranty of any kind, either express or implied, including without limitation warranties of merchantability, fitness for a particular purpose, and non-infringement. ADB specifically does not make any warranties or representations as to the accuracy or completeness of any such information.