Mongolia: Strategy for Northeast Asia Power System Interconnection

Project Name	Strategy for Northeast Asia Power System Interconnection
Project Number	48030-001
Country / Economy	Mongolia
Project Status	Closed
Project Type / Modality of Assistance	Technical Assistance
Source of Funding / Amount	TA 9001-MON: Strategy for Northeast Asia Power System Interconnection Climate Change Fund — US$ 750,000.00 Republic of Korea e-Asia and Knowledge Partnership Fund — US$ 500,000.00 People's Republic of China Poverty Reduction and Regional Cooperation Fund — US$ 500,000.00
Strategic Agendas	Environmentally sustainable growth Inclusive economic growth Regional integration
Drivers of Change	Knowledge solutions Partnerships
Sector / Subsector	Energy /
Gender	No gender elements
Description	The proposed policy and advisory technical assistance will prepare a strategy for Northeast Asia Power System interconnection using Mongolia's abundant renewable energy.
Project Rationale and Linkage to Country/Regional Strategy	The power sector is the single largest source of greenhouse gas emissions in Northeast Asia. A low-carbon transformation is needed to lessen reliance on fossil fuels and reduce the carbon footprint. The region as a whole has sufficient renewable sources to meet demand, but the limited connectivity of power systems among countries poses a major challenge. Each jurisdiction has unique power utility ownership, tariff policies, market design and regulations, and other institutional frameworks that are not well coordinated or harmonized, which inhibits interconnection. Despite abundant energy sources many jurisdictions in Northeast Asia suffer from energy shortages or meet their energy needs at a high cost, resulting in high electricity prices for consumers, and burdening economic activities. Power systems that are well interconnected would improve system flexibility and efficiency and allow system optimization, provide more reliable and affordable electricity to consumers, enhance economic activities, and improve the competitiveness of economies. This has been demonstrated by a number of other successful interconnected regional power systems (e.g., in the Greater Mekong Subregion). At present there is no such interconnected power market in Northeast Asia, even though it is home to some of the world's largest and most prosperous economies. Mongolia is in a unique position to spur economic growth by developing its vast energy resources to meet the power demands of its more prosperous neighbors through power exports. However, in the absence of an interconnected power system, Mongolia lacks access to large neighboring markets, and thus to investment in its energy resources and power system development. There is a need to undertake a comprehensive analysis and chart out a clear strategy for Mongolia for power system interconnections in Northeast Asia. Mongolia has tremendous renewable energy potential, especially wind and solar. The wind and solar power potential are estimated to be equivalent to 2,600 gigawatts of installed capacity, or 5,457 terawatt-hours of annual power generation (equivalent to 27% of global electricity consumption in 2014). If one-third of this wind and solar potential was exploited, Mongolia could supply about 25% of combined annual electricity demand of the PRC, Japan, and the Republic of Korea. Using abundant and diversified resources, Mongolia could serve as a core power supplier to neighboring countries, while improving power security and driving sustainable prosperity. Power system interconnection would be an ideal and comprehensive solution to reduce power system carbon emissions in Northeast Asia. The power system interconnection by low-loss, high-voltage direct current transmission lines would allow transmission of electricity from Mongolia to demand centers in neighboring countries. However, the existing transmission line infrastructure in Mongolia is decrepit and requires significant investment for high-voltage direct current transmission lines; Mongolia cannot afford this investment on its own, and will have to leverage investments from multilateral development banks emerging climate financing mechanism and private sector participation. A prerequisite to integration is a comprehensive study that can address these challenges, provide plausible costbenefit scenarios, and demonstrate benefit sharing across countries. A thorough assessment would enable a regionally planned investment to be developed and priority projects to be identified. Given the sensitive geopolitical situation in Northeast Asia, a bottom-up approach that engages nongovernmental institutions and the private sector is preferable. The TA is aligned with ADB's Energy Policy in its promotion of renewable energy development and regional power sector integration, and (ii) the Strategy for Regional Cooperation in the Sector of CAREC.
Impact	Carbon footprints of the power system in Northeast Asia reduced. Power system in Northeast Asia optimized. Stakeholders' agreement on the Northeast Asia power system interconnection (NAPSI) plan reached.

Project Outcome	
Description of Outcome	A strategy and an action plan road map for the NAPSI prepared utilizing Mongolia's vast energy resources
Progress Toward Outcome	The major findings of the draft final report include (i) estimated annual profit of power interconnection in northeast Asian countries; (ii) identification of the power transmission corridor and the best province in Mongolia (Dornogovi, Dundgovi, Govisumber, Ovorhangay, and Umnugovi) for renewable energy development (wind and solar); and (iii) Mongolia being identified as the best country for renewable energy investment among the Northeast Asian countries and is rich in renewable energy resources with lower land cost.
Implementation Progress	
Description of Project Outputs	Power systems and markets in the Northeast Asian countries assessed Power system interconnection projects prioritized and investment plan developed Knowledge sharing and consensus building for the NAPSI implemented A regional knowledge and investment platform for the NAPSI initiated Mongolia''s renewable energy capacity expansion plan to export clean electricity analyzed

Status of Implementation Progress (Outputs, Activities, and Issues)	The TA started with a kick-off meeting held in Ulaanbaatar, Mongolia in June 2017 with potential stakeholders invited to become part of the steering committee to establish the Northeast Asian Power System Interconnection. Meetings, networking, and workshops with potential stakeholders continued and the consulting team progressed very well in achieving the TA results and engaged more organizations to take part in forming the NAPSI SC. The interim workshop was held in Gwangju, Korea in November 2017 which was co-organized and sponsored by the Korea Electric Power Corporation and the Green Technology Center. The latest SC meeting and international workshop held in Tokyo, Japan on 8 March 2018 was co-sponsored/organized by the International Renewable Energy Institute which drew the attention of the Japanese stakeholders to be open and take part in this initiative. The event was well attended with participants coming from the PRC (State Grid Corporation of China; Global Energy Interconnection Development and Cooperation Organization); Japan (Renewable Energy Institute; Tokyo Electric Power company; Ministry of Energy, Industry, and Trade; Institute of Energy Economics); and Mongolia (Ministry of Energy; National Transmission Company). The resource persons presented the developments and initiatives of power interconnection among northeast Asian neighboring countries drawing lessons learned from European nations. The fourth steering committee meeting was held in Beijing in October 2018 which presented the potential technologies for expansion and analysis of benefits for interconnection. The fifth steering committee meeting was held in Ulaanbaatar on 28 February 2019, which presented the findings on enabling environment for power trade, and the promotion of coordinated regional planning and investment. A stakeholders' meeting was held on 1 March 2019 which was opened by President Battulga, stressing the importance of exploiting Mongolia's renewable energy for Northeast Asia's regional use. The President requested ADB to continue supporting the establishment of an organization body to promote NAPSI initiatives. The final workshop was held in Seoul, Republic of Korea in 24 October 2019 which was co-sponsored by the governments of the Republic of Korea and Mongolia, UNESCAP, and various Korean agencies (KEPCO and KEA). GEIDCO, Rosetti, Renewable Energy Institute were also present in the workshop. TA's findings and way forward for NAPSI were presented which include: (i) economic viability of 1,400 GW solar and wind power in MON (Gobi Desert) for export purposes, (ii) requirement of sequential investments on a bilateral basis, (iii) priorities to interconnections between PRC and Korea, and between MON and PRC, (iv) two-track approaches on the levels of governments and corporate utilities, and (v) proposal for an interim secretariat towards institutional coordination among stakeholders. The TA's completion date was extended until 15 November 2020 to support ongoing activities including (i) policy dialogue between the parties to finalize and revise the MOUs, (ii) key design and arrangements of high priority investment projects, and (iii) framework-building of the NAPSI secretariat functions in collaboration with UNESCAP and GEIDCO.
Geographical Location	Nation-wide, Mongolia

Summary of Environmental and Social Aspects

Environmental Aspects	
Involuntary Resettlement	
Indigenous Peoples	

Stakeholder Communication, Participation, and Consultation

During Project Design	Following the first regional conference on the power system interconnection held in November 2012, non-governmental organizations and research institutes requested ADB support to conduct analytical studies to prepare a road map for power interconnection in the Northeast Asia sub-region, and raise awareness and build consensus on the importance of power interconnection for greater engagement of non-governmental organization, research institutes, and private sector in the sub-region. The Government of Mongolia and other stakeholders in the subregion have expressed strong support in this endeavor. ADB is exploring partnerships with some institutions, like the Korea Electric Power Corporation, Soft Bank, and Hanns Seidel Foundation.
During Project Implementation	The TA will be monitored through (i) consultant progress reports, and (ii) ADB TA review missions. Quarterly consultation meetings will be organized for inception, interim, and draft final outputs with all concerned officials from the government, development partners, nongovernment organizations, and private sector invited to disseminate findings and receive comments. In August 2018, participated and presented the TA's findings in the Asia Super Grid in Northeast Asia session for Asia Pacific Forum on Renewable Energy held in Ulaanbaatar, Mongolia. In April 2019, a meeting among ADB, UNESCAP and Government of Mongolia representatives (Ambassador of Mongolia to Kingdom of Thailand and Special Advisor to the President) was held in Bangkok, Thailand to organize policy dialogues in international conferences: (i) UB Dialogue in UB (4-6 June 2019), (ii) Eastern Economic Forum in Vladivostok, Sep 2019 The representatives from the Ministry of Energy in Mongolia participated in the World Energy Congress in Dubai in September 2019 to promote, showcase, and obtain support and/or consensus on the initiatives of the Northeast Asia Power System Interconnection (NAPSI) through interaction with various stakeholders including think tanks, academia, utility companies, business groups, and most importantly at the ministerial level. The NAPSI initiative aims to establish a regional platform by exporting the vast renewable energy potential of Mongolia to neighboring countries in the Northeast Asian region.

Business Opportunities

Consulting Services	The TA will require the following consulting services to achieve projects outputs: (I) outputs 1 and 2 will require 14.2 person-months of consulting services (3 international consultants for 14.2 person-months), while output 3 will require 42.8 person-months of consulting services (5 international consultants for 12.8 person-months and 5 national consultants for 30 person-months); and (ii) outputs 4 and 5 will require 25 person-months of consulting services (3 international consultants for 15 person-months and 1 national consultant for 10 person-months). Consultants for outputs 1, 2, and 3 will be engaged through a firm using quality- and cost-based selection (90:10) method with full technical proposal. Consultants for 4 and 5 will be engaged using individual consultant selection in accordance with the Guidelines on the Use of Consultants (2013, as amended from time to time) of ADB. In addition to the individual consultants, an international policy advisor was engaged to help the Mongolian government and its working group conduct policy and technical dialogues to promote the Northeast Asia Power System Interconnection (NAPSI) initiative and specifically assist the Mongolia's government, the TA executing agency and implementing agency in liaising and establishing networks with governments, power/energy utility companies and other stakeholders in the People's Republic of China, Japan, Korea, Russia, and Mongolia; provide advise frameworks of regional cooperation, foreign investments; assist prepare any policy statements, roadmaps, and action plans; the team in data collection for relevant study; undertake coordination work for ADB, governments, utilities, ADB, international organizations (e.g., UNESCAP), and the project team; manage and organize workshops and conferences.
Procurement	Procurement of equipment will follow shopping method in accordance ADB's Procurement Guidelines (2015, as amended from time to time). The equipment used by the consultants during TA implementation will be turned over to the executing agency upon completion of the TA.

Responsible ADB Officer	Cowlin, Shannon C.
Responsible ADB Department	East Asia Department
Responsible ADB Division	EASI, East Asia Department
Executing Agencies	Ministry of Energy

Timetable

Concept Clearance	24 Apr 2015
Fact Finding	21 Sep 2015 to 25 Sep 2015
MRM	-
Approval	27 Nov 2015
Last Review Mission	-
Last PDS Update	07 Sep 2020

TA 9001-MON

Milestones					
Approval	Signing Date	Effectivity Date	Closing		
			Original	Revised	Actual
27 Nov 2015	26 Jan 2016	26 Jan 2016	15 Feb 2018	15 Nov 2020	19 Jan 2021

Financing Plan/TA Utilization							Cumulative Disbursements	
ADB	Cofinancing	Counterpart				Total	Date	Amount
		Gov	Beneficiaries	Project Sponsor	Others			
750,000.00	1,000,000.00	0.00	0.00	0.00	0.00	1,750,000.00	07 Jul 2022	1,580,917.71

Project Page	https://www.adb.org//projects/48030-001/main
Request for Information	http://www.adb.org/forms/request-information-form?subject=48030-001
Date Generated	02 March 2024