ADB ASIAN DEVELOPMENT BANK

Mongolia: Strategy for Northeast Asia Power System Interconnection

Project Name	Strategy for Northeast Asia Power System Interconnection
Project Number	48030-001
Country	Mongolia
Project Status	Active
Project Type / Modality of Assistance	Technical Assistance
Source of Funding / Amount	**TA 9001-MON: Strategy for Northeast Asia Power System Interconnection** Canadian Cooperation Fund on Climate Change — US$ 750,000.00 People's Republic of China Regional Cooperation and Poverty Reduction Fund — US$ 500,000.00 Republic of Korea e-Asia and Knowledge Partnership Fund — US$ 500,000.00
Strategic Agendas	Environmentally sustainable growth Inclusive economic growth Regional integration
Drivers of Change	Knowledge solutions Partnerships
Sector / Subsector	**Energy** - Electricity transmission and distribution
Gender Equity and Mainstreaming	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 cost_benefit 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	not yet due.
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)	not yet due not yet due not yet due will be undertaken once consultants are on board not yet due
Geographical Location	

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.

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.
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 Staff

Responsible ADB Officer	Oi, Teruhisa
Responsible ADB Department	East Asia Department
Responsible ADB Division	Energy Division, EARD
Executing Agencies	*Ministry of Energy* *Government Building 14, Khan-Uul District* *Chinggis Avenue, 3-r khoroo* *Ulaanbaatar, 17060 Mongolia*

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	15 Mar 2017

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 Aug 2019	-

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	27 Nov 2015	2,166.72

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