ENERGY SECTOR CURRENT STATUS, RECENT DEVELOPMENTS AND ENERGY POLICIES IN MONGOLIA

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I. INTRODUCTION

In this Special Report, Oyunchimeg, Tuya, Zorigt, Sukhbaatar and Bayarkhuu describe the current status and recent trends and challenges in Mongolia’s energy sector, and describe projections by

other groups of Mongolia's energy future with respect to both meeting its growing domestic needs and becoming a major exporter of energy. Mongolia's energy policies and discussions with nations in the region regarding infrastructure for energy sharing are also summarized.

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A summary of this report follows. A downloadable PDF file of the full report is here.

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Banner image: South Gobi Tsetsii Wind Farm, photo by Oyunchimeg Ch.

II. NAPSNET SPECIAL REPORT BY OYUNCHIMEG CH, TUYA N, ZORIGT D, SUKHBAATAR TS, BAYARKHUU CH

ENERGY SECTOR CURRENT STATUS, RECENT DEVELOPMENTS AND ENERGY POLICIES IN MONGOLIA

REPORT OF THE MONGOLIA WORKING GROUP TO THE NAUTILUS INSTITUTE REGIONAL ENERGY SECURITY (RES) PROJECT

SEPTEMBER 8, 2020

Summary

In Mongolia, total primary energy supplies continue to be dominated by coal, and electricity generation is largely from coal-fired power plants, particularly combined heat and power plants. In 2018, 93% of all electricity was produced by thermal power plants, and 98% of all district heat was provided by coal-fired systems. Mongolia's renewable energy resources, including wind, solar, geothermal, and hydro, are estimated to be able to provide as much as 2,600 GW of electricity, far exceeding Mongolia's current generation capacity of about 1 GW. The Gobi Desert in particular has tremendous renewable energy potential and has favorable climatic and weather conditions to allow the effective use of wind and solar resources. Mongolia has modest oil reserves, but exports crude oil and imports oil products, as it lacks refining capacity.

Although Mongolia has abundant resources to produce electricity, it currently lacks sufficient generation capacity to meet its needs, and thus imports power from Russia and China. Power is

imported across the northern border to compensate for shortfalls of electricity in the northern central area during winter peak periods. Also, in order to meet the electricity demand of the Oyu Tolgoi copper mine in the south, electricity is imported from China. As a result, Mongolia has been heavily dependent on electricity imports in recent years.

To ensure the reliability and stability of the energy sector, currently operating thermal power plants, district heating plants, and transmission and distribution networks are prioritized for investment, and expansion of capacity, technical and technological rehabilitation and upgrades are ongoing step by step in the energy sector. Also, development of renewable energy sources with limited capacities for domestic use is underway, and the share of renewable generation is increasing slowly from year to year. Local air pollution from power and heating plants located in urban areas, as well as from direct use of heating fuels by households, is a significant concern to be addressed by energy policy.

The government of Mongolia has set targets to increase the share of generation capacity from renewable energy sources to 20% by 2023 and 30% by 2030, and to build export-oriented power plants. The goal of these policies is that Mongolia will become an energy exporting country in the future by utilizing its rich renewable energy resources with efficient and environmentally-friendly technologies while establishing mutually beneficial cooperation with neighboring and regional countries.

8. Conclusions

8.1 Key Energy Issues for Mongolia

The key issues in the energy sector in Mongolia involve economic, social, environmental, financing, governance/regulatory and regional dimensions.

Economic Issues

The priority in the energy sector remains expanding the existing electricity generation capacity and building new heat and power generators to meet the growing demand in industry, primarily in the mining subsector, and ensuring reliable and cost-effective access to energy in the commercial, residential and transportation sectors, notably in rural areas and urban outskirts.

In the medium-term, the energy sector, along with the transportation sector, should contribute to improved connectivity between different regions of Mongolia. Improving transport and energy services will help to develop the productive sectors of the economy, diversify the sources of economic growth, and build the basis for stronger regional linkages for Mongolia so the country is able to harness the benefits of broader regional interconnectivity.

Expansion and access efforts in the energy subsectors should include:

- Expanding existing capacity and conducting renovation work at existing power and thermal plants, as well as major coal mines
- Building new power generating plants particularly in Southern Mongolia
- Diversification of energy sources (increasing solar, wind and hydro)
- Using energy-efficient and modern technologies in energy system such as system stabilizers and energy storage
- Expansion and renovation of power sub-stations and overhead transmission lines to increase capacity and reduce transmission losses

- Building an integrated power grid by connecting (and strengthening connections between) the existing regional energy systems
- Oil exploration
- **Encouraging energy efficiency** and energy conservation, including through regulatory mechanisms
- Building energy and other infrastructure aimed at unlocking the development potential of productive sectors of the economy to diversify away from mining

Social Issues

The use of coal-fired cooking and heating stoves in the Ulaanbaatar districts inhabited by low-income migrant dwellers constitutes a major cause of air pollution in the city (and, increasingly, in aimag centers) and thus presents a major health hazard. Improving electricity and heat supply to these districts and ensuring equitable access to energy services remains an important social issue.

Equally, better electricity supply—including off-grid supply—to low-load localities scattered around the country to support the livelihoods of rural residents, reduce rural migration to urban centers, and support regional development and economic diversification, notably through developing local agribusiness and tourism, should help promote economic activity, create jobs, and reduce poverty. Increased use of renewable energy for these purposes should lessen dependence on the external power supply and increase energy security.

Environmental Issues

Reducing air pollution and carbon dioxide emissions from fossil fuels combustion and mitigating their impacts remains a major issue to be addressed. Currently, coal accounts for almost 70% of the greenhouse gas emissions. Achieving the government target of increasing the share of renewables in the energy mix to 30 per cent by 2030 should alleviate this problem.

Financing

More private sector investment and public-private partnership financing schemes in the energy sector should be encouraged, especially in the electricity transmission and distribution sectors and in the renewable electricity generation. Private business is likely to be more effective in providing better technology and efficiency in the provision of services than the public sector.

The IFI will remain an important source of both resources and expertise for Mongolia in the face of the scarcity of public funds and the need for capacity development.

The government may also have to look at the further sustainability of continued subsidizing of residential electricity and heat consumers via higher tariffs applied to industrial and commercial consumers.

Policy/Regulatory/Governance

The discussions initiated by the Ministry of Energy on developing an Energy Sector Master Plan for Mongolia should help identify the gaps in the energy sector infrastructure and in human capital that constrain the achievement of the country’s sustainable development goals, identify and prioritize key technical, technological and investment needs, assess the benefits and risks of specific projects, and develop frameworks for risk reduction and practical implementation. World Bank representatives have attended the first seminar on the proposed Plan held in November 2018.

Regional Cooperation

In the years ahead, maximizing Mongolia's renewable energy potential to make it a provider of electricity for a potential cross-border energy grid linking Northeast Asian countries (sometimes referred to as the Asian Super Grid), and using the country's location between Russia and China to potentially serve as a transit route for a power transmission line and a gas pipeline connecting these two countries are seen as important goals to pursue.

These are seen not only as economically attractive projects with spin-off effects on local economy but also as a demonstration of Mongolia's willingness to contribute complementarily to, and participate in, regional economic integration.

8. 2 Mongolia's Approach to Regional Energy Sharing

In the prospective regional energy sharing arrangements, Mongolia sees itself primarily as exporter of electricity generated by solar and wind resources of the Gobi Desert and as the shortest transit route of gas pipelines and electricity transmission lines from Russia to China and onwards.

8.3 Key Issues and Constraints in Regional Energy Sharing from Mongolia's Perspective

There are at least three key constraints that make regional energy cooperation a challenging endeavor**:** the amount of the investment needed/the costs associated with implementing ambitious cross-country projects, the security situation in Northeast Asia, where nuclear issues and great power rivalry (including in the area of energy supply) darken the horizons, and the need to harmonize complex non-physical aspects of cooperation such as national rules and regulations in tariffs, prices, transit rules, border procedures etc.

Although said to be technically feasible, the concept of the Asian Super Grid remains a politically challenging project since the level of trust among its potential participants is such that few governments could be expected to fully commit to its implementation and to thus depend on neighbors for the crucial issue of provision of power.

The outstanding issue of denuclearization on the Korean peninsula, the growing major power rivalry in the region, including competition for markets for energy exports, make energy-sharing a remote possibility. However, this should not prevent the region's expert and professional community from continuing to explore and propose possible options and viable frameworks for regional energy cooperation, and working to shape the debate on the best ways to proceed.

8. 4 Next Steps in Mongolia Energy Analysis

Next steps in Mongolia Energy Analysis for LEAP will include further data collection and detailed quantitative development of a future BAU pathway, followed by detailed quantitative development of other future pathways focused on Mongolia (such as coal-based exports, or conversion to electric heating based on renewables and storage), and future pathways based on energy cooperation (large-scale exports of power from renewable energy sources).

8.5 Next Steps in Analysis of Regional Energy Sharing Possibilities from Mongolia's Point of View

In accordance with the "Midterm action program implementing State Policy on Energy" approved by Government of Mongolia on the 24th of October,2018, the following main measures are planned to be taken towards expanding energy cooperation with neighboring and regional countries:

- Establish long-term agreement on energy trade with neighboring countries
- Cooperate with neighbors to develop energy transit infrastructure within the Initiative to create an economic corridor between Russia and China through Mongolia,
- Support the Asian Super Grid international initiative and export-oriented energy projects

In addition, the following next steps shall be considered from the Mongolian side for Regional Energy Sharing.

- To coordinate with other country working groups for sharing of information and knowledge among all relevant initiatives for power interconnection in North-East Asia;
- To carry out joint scientific, research and planning work;
- To enhance the legal environment for investors, and keep the enhanced environment sustainable;
- To have a clear policy for governmentally and politically for foreign investors;
- To develop infrastructure in border areas—including railways, roads, and the capacity of customs checkpoints; and
- Strengthening cooperation mechanisms for power interconnection in North-East Asia.

III. NAUTILUS INVITES YOUR RESPONSE

The Nautilus Asia Peace and Security Network invites your responses to this report. Please send responses to: nautilus@nautilus.org. Responses will be considered for redistribution to the network only if they include the author's name, affiliation, and explicit consent.

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