



MONGOLIA'S PRIVATE SECTOR LED RENEWABLE ENERGY PROGRAMME

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ACTION AREA: Mitigation

FOCUS AREA: Financing

COUNTRY: Mongolia

SECTORS

INVOLVED: Energy

TIMEFRAME: 2017 - 2027

CASE SUMMARY: Mongolia has committed to supply 30% of the country's energy through renewable energy by 2030 as part of its NDC targets. However, financial barriers such as high interest rates and prohibitively short tenors have limited renewable energy investments. As a result, renewable energy projects were more expensive to realise than coal-fired power plants.

The development of a 10MW solar photovoltaic (PV) farm located in the Sumber Soum area of Mongolia has been jointly implemented by the XacBank and the Mongolian project developer ESB Solar Energy, following the Green Climate Fund's (GCF) approval in late 2017. GCF supported the solar power plant project through a long-term concessional loan, co-financed by domestic sources, including project developers. The project started feeding into Mongolia's main electricity grid in the first quarter of 2019.

The project is forecasted to generate 15,395 megawatt hours (MWh) of electricity each year and thus reduce greenhouse gas (GHG) emissions by 12,270 tonnes of carbon dioxide equivalent (tCO₂eq) annually. Moreover, the solar plant comes with significant environmental and social co-benefits. It is projected to save 170,000,000 litres of water, which would otherwise have been required by a coal-fired generator. This project is a boon for the worsening air quality conditions of the Mongolian capital Ulaanbaatar, which has been plagued with problems of air pollution for many years.

This solar farm has paved the way for increased private sector participation, which will ease the financing of future renewable energy projects. It plays a pivotal role in forging a new market in large-scale solar energy driven by the country's domestic private sector. It has already demonstrated the effectiveness of devising customised international climate finance products to suit the specific needs of national projects, taking into account the country's economic situation and thus leading to successful implementation.

This case study is an example of good practice due to its potential for replicability across other regions and countries, its strong political buy-in and the alignment with a number of Sustainable Development Goals.





BACKGROUND: ————— Mongolia is a landlocked, sparsely populated country in East Asia with a population of only a little over 3 million inhabitants. Although Mongolia's historical contribution to the current level of GHG emissions is small, the annual per capita GHG emissions of 14.5 tCO₂eq (as of 2013) are relatively high compared to other countries, and are almost three times the world average (4.996 tCO₂eq per capita as of 2013) (Green Climate Fund, 2017). As part of Mongolia's Intended Nationally Determined Contributions (INDC), the country aims to supply 20% renewable energy by 2020, and 30% by 2030. These targets have also been anchored in law by the Mongolian Parliament as part of the national Green Development Policy, adopted in 2014.

To meet the increasing demand for electricity, reduce the country's heavy reliance on coal and improve energy security, Mongolia is committed to promote renewable energy (RE) development. Mongolia's wide flatlands and abundant access to solar energy (270-300 sunny days per year) offer great potential to increase the use of solar and wind power (about 1,100 GW potential) (American Chamber of Commerce, 2016).

The energy sector in Mongolia is dominated by state-owned suppliers. The Government of Mongolia (GoM) appeared to be making headway in its plan to increase the national proportion of RE by introducing the Renewable Energy Law of Mongolia in 2007, which offered an attractive feed-in-tariff for different renewable sources. It also revised the Concession Law in 2010 to promote the participation from the private sector. The Energy Law (2001) of Mongolia has been so far revised multiple times to facilitate the development of its energy sector. These amendments aim to increase private sector participation, business development and investments in the energy sector. In line with the legislation, the government also approved a number of RE development programmes, such as the Programme on Integrated Energy System of Mongolia, the National Renewable Energy Programme and the Comprehensive Policy on National Development. Altogether, these programmes contain concrete short-term and long-term strategies for the development of the energy sector. Under these programmes, RE project developers enjoy various incentives such as tax exemptions (from the 15.5% custom tax and VAT and from the 10% Corporate Income Tax).

Despite the country's abundant renewable energy sources, economic conditions in Mongolia limit the funding of large-scale project development. To tackle the economic instability and maintain the external balance, the country's central bank, the Bank of Mongolia (BoM), runs a flexible exchange rate policy with occasional interventions. Currently the policy interest rate is at 11%, which leads to extremely attractive deposit savings rates. However, the rate consequently also leads to very expensive loan rates with very short tenors. These conditions discourage investments in RE projects.

As a developing country that strives to fulfil fundamental development needs, Mongolia requires financial capacity to implement its plans. While the GoM is proactively taking steps to address these resource gaps and achieve its ambitious plan to increase the national proportion of renewable energy, effectively meeting its climate and energy targets will also require contributions from the private sector and developed nations.

Against this backdrop, XacBank, one of Mongolia's largest commercial banks, has established an investment partnership with the GCF to forge a new market in large-scale solar energy driven by the country's domestic private sector in the capital to meet the electricity demand and tackle the air pollution crisis. XacBank was the first commercial bank to successfully fund a utility-size solar plant. The 10MW solar photovoltaic (PV) solar farm, located in the Sumber Soum area of

Mongolia's eastern Govisumber province, was connected to the grid in January 2019. The plant, which has the capacity to generate 17.1 million Kilowatt hours (kWh) of electricity per year, was constructed in about six months. With the support of GCF's concessional loans (with competitive rates and longer tenures), XacBank was able to offer attractive loans in order for RE projects to materialise. GCF's funding has the potential to significantly contribute in increasing the share of private sector involvement in RE projects to consequently stimulate market competition.

ACTIVITIES: ————— • **FINANCING THE SOLAR POWER PROJECT:** The Sumber solar power plant was built with a total investment of USD 17.6 million. 49% of the total amount (i.e. USD 8.7 million) was made available through a long-term, concessional loan by the GCF to the XacBank. The remaining 51% of the investment amount was pitched in by the project developer, raised through equity.

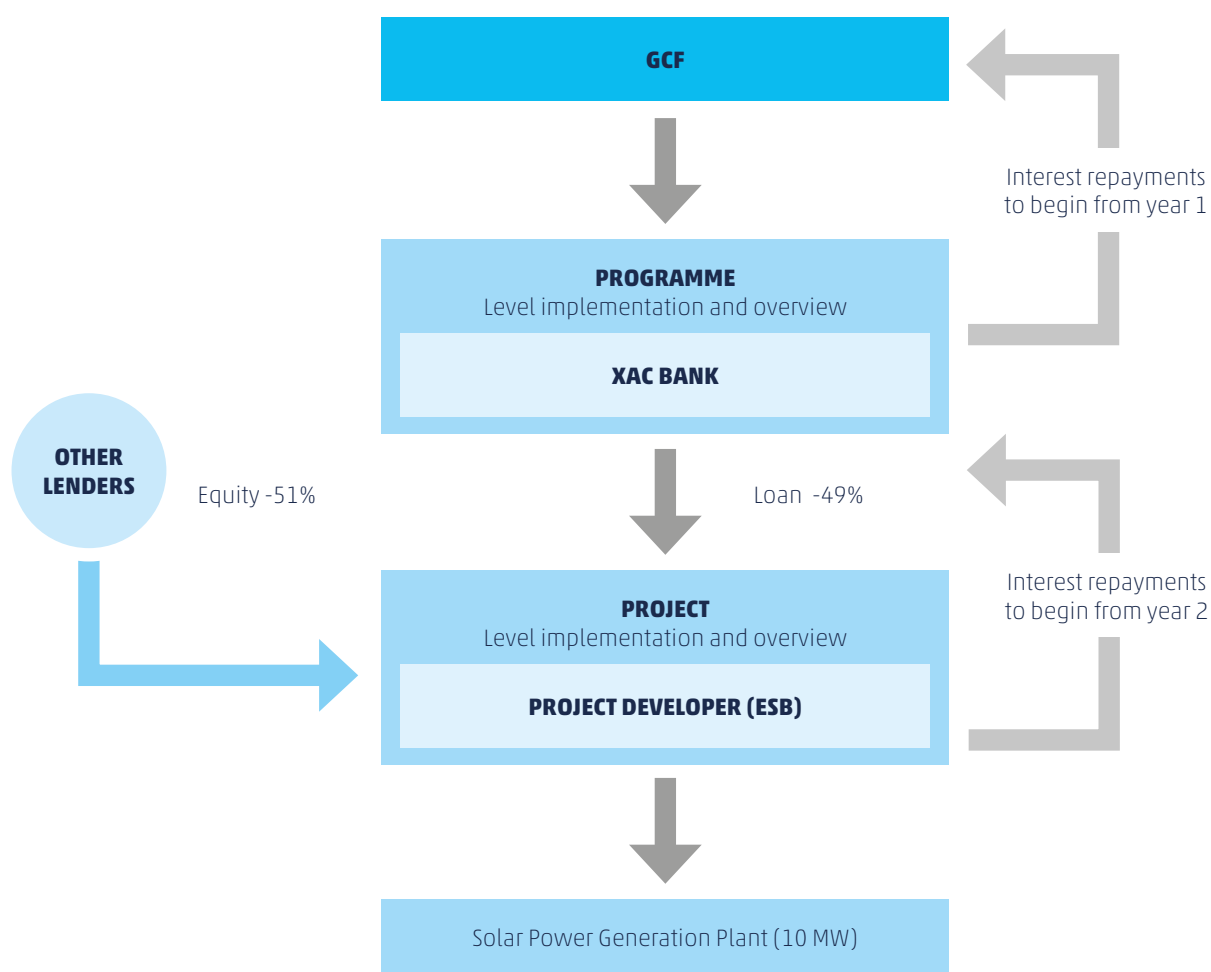


Figure 1: Overview of the financial mechanism of the project (Figure created by case study authors)



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- **TRANSFERRING FINANCIAL BENEFITS TO PROJECT DEVELOPERS:** XacBank and GoM took several measures to simplify the financing of solar projects. For instance, XacBank offers loans with a 10-year term, with a one-year full grace period for interest payments and an 18 months grace period for principle payments. The grace periods are meant to not overburden project developers with debt payments in the initial stages of implementation. XacBank acts as a financial intermediary between the GCF and project developers by disbursing the long-term, concessional loan of USD 8.7 million provided by GCF. Essentially, the scheme offers long-term stability, lowers risk and thus generates investments in renewable energy.

Another important aspect lies in the choice of currency. XacBank disburses loans in the currency of the client's income. Because the GoM set the feed-in-tariffs in Mongolia in USD (not Mongolian MNT), the developers' revenue stream is in USD, granting them access to loans in USD. This minimises currency exchange risks and allows for cheaper debt, as neither the GCF nor XaBank bears the currency exchange costs.

- **CREATING AN ENABLING ENVIRONMENT:** In addition to low-cost long-term financing, XacBank enabled a favourable environment for project implementation and a more efficient use of funds by providing training and technical support:
 - Technical support: The project disseminated technical knowledge amongst project developers to support the solar PV project. This is an important stepping stone to scale up RE projects in the future
 - Consumer awareness: For the local population of Ulaanbaatar, XacBank ensured increased consumer awareness on the necessity and potential of renewable energy. This worked well in increasing acceptance for the solar project. Even in the long run, this acceptance will boost private sector interest and investment because consumer demand for such projects will rise.

INSTITUTIONS

INVOLVED:

- **XACBANK:** XacBank became Mongolia's first commercial bank to fund the completion of a utility-size solar plant. Under GCF's investment partnership in Mongolia, XacBank was the nodal body financing the project. XacBank oversees and implements the overall programme. XacBank also oversees the project level implementation entrusted with ESB.
- **ESB SOLAR ENERGY:** ESB is the project developer in charge of developing and operating the Sumber solar plant. ESB pitched in 51 % of the total investment amount. The remaining 49 % of the total investment amount was made available through GCF funding to XacBank.

COOPERATION

WITH:

- **MINISTRY OF ENVIRONMENT AND TOURISM, GOVERNMENT OF MONGOLIA:** The Sumber solar power project was proposed to the GCF by XacBank (an accredited entity to the GCF) with support from Mongolia's GCF National Designated Authority i.e. the Ministry of Environment as part of the Ministry of Environment and Tourism.
- **SANKOU SEIKI CO.:** The Japanese firm Sankou Seiki Co. Ltd. Inc has provided most of the technological input in the construction of the solar power plant. The firm also assisted in the assembly of 31,000 solar panels while providing technical assistance.

FINANCE: ————— The Sumer solar power plant project was built with the total investment of approximately USD 17.6 million, with financial support from the Green Climate Fund (GCF) through a long-term, concessional loan of USD 8.7 million (Green Climate Fund, 2019). The remaining balance amount was co-financed by domestic sources, including private sector developers.

IMPACT OF

- ACTIVITIES:** —————
- **REDUCTION OF GREENHOUSE GAS EMISSIONS:** The solar plant is forecasted to reduce greenhouse gas emissions by 12,270 tons annually, which will contribute significantly to Mongolia's efforts to achieve and upgrade its emissions reduction targets (Green Climate Fund, 2019).
 - **MEET INCREASING ELECTRICITY DEMAND THROUGH RE:** The Sumer plant is forecasted to provide Mongolia with 20 % of its solar power and is expected to account for five % of the country's total RE mix, generating 15,395 MWh of electricity every year (Green Climate Fund, 2019). It is furthermore expected to supply electricity to an estimated 20,000 households based on the average monthly electricity consumption of a household at 150-200 kWh (Green Climate Fund, 2017).
 - **HEALTH AND ENVIRONMENTAL CO-BENEFITS:** The widespread use of coal in Mongolia's factories and homes led the United Nations Children's Fund (UNICEF) to declare an 'air pollution crisis' in the country in 2018 (Green Climate Fund, 2019). The solar power plant, located near the Mongolian capital of Ulaanbaatar, is expected to bring a much needed and desirable change to ease the city's high-carbon strains, thus offering health benefits to its citizens. Additionally, the solar power plant is estimated to save approximately 4.3 billion litres of water, which would otherwise have been required by a coal-fired generator for a total duration of 25 years. This is a strong environmental benefit in an increasingly water-constrained country.

WHY IS IT

- GOOD PRACTICE:** —————
- **REPLICABILITY:** Current Mongolian renewable energy projects have been unable to scale up to more than 50MW primarily due to financing constraints. Renewable energy financing typically requires long term financing with high quality materials and expertise, which means that the projects are more expensive than short-term solutions or traditional coal-fired power plants. Scalability is possible but the finance to enable it was not available. The commissioning of Mongolia's first utility-scale solar plant funded by a commercial bank serves as a model to show how the local private sector can expand renewable markets. As a first in its Renewable Energy Programme (REP), XacBank successfully pioneered private sector investment through this solar power programme. It has shown how low-cost long-term funding can be availed to take up projects to build RE capacity. The REP offers opportunities to replicate to other renewable energy projects (i.e. wind) and to scale up the bank's programme nationwide for an improved energy supply system.
 - **POLITICAL BUY-IN:** Although Mongolia's national government had already developed climate policies, the continued support to set the appropriate conducive environment of planning and innovation was also paramount in the Sumer Suva solar power plants commissioning. Existing government policies such as the Green Development Policy and the Comprehensive Policy on National Development provided the necessary support and government backing for the programme.
 - **ALIGNMENT WITH SUSTAINABLE DEVELOPMENT GOALS:** In addition to meeting the country's NDC target of increasing the share of renewable energy as a proportion of total energy consumption to 30% by 2030, this project has also been successful in making progress on some key SDGs. Some of the SDGs achieved through this project are listed in Table 1.



| THEMATIC AREA | SUSTAINABLE DEVELOPMENT GOALS | |
|------------------------------------|-------------------------------|--------|
| Reduced Water Consumption | SDG 6 | SDG 17 |
| Improved Health | SDG 3 | |
| Reduced GHG emissions | SDG 13 | |
| Access to Green Energy | SDG 7, SDG 13 | |
| Sustainable cities and communities | SDG 11 | |

Table 1: Alignment of SDG goals with Renewable Energy Programme (based on authors' own assessment)

Apart from improving access to green energy – and reduced GHG reductions in the capital of Mongolia as a result – the project has led to significant social and environmental impacts as mentioned earlier. Health conditions are likely to improve because of reduced dependence on fossil fuels for heating. Similarly, water resources will be saved and optimised, leading to a more sustainable growth in the national capital.

SUCCESS FACTORS:

- **NEXUS BETWEEN GOVERNMENT, PRIVATE AND FINANCIAL SECTOR:** In this case three inter-linkages exist. First, the private sector took the initiative and pushed for a green economy, which is directly linked to one of the most significant indicators of the country's NDC. Second, the government's existing policies such as the Green Development Policy and the Comprehensive Policy on National Development were favourable to such an initiative, as the policy linked to the Central Energy System and was developed in collaboration with the Mongolian Ministry of Environment and Tourism. Lastly, the entire initiative, which would have suffered largely without affordable, long-term finance, was made available by the efforts of the commercial bank, XacBank, along with GCF support. The Mongolian private sector brought in its expertise to achieve nationally determined mitigation goals.
- **INNOVATIVE FINANCE CATERED TO SPECIFIC NEEDS:** The financial model of the entire programme is catered to the specific project needs against the financial conditions prevalent in the country. The terms of the loan were tailored to fit the nuances of Mongolia's financial context. A long-term loan at a subsidised interest rate is difficult to raise in Mongolia given the economic and financial context. Accessing funding from GCF was possible due to the government's participation. A successful blend of prioritising national goals and pioneering private sector investment in renewable energy are particularly noteworthy in this case study. Additionally, the project developer raises equity finance on its own, which adds an effective layer of accountability to the entire financial model. The concessional loan from GCF was a crucial factor in enabling ESB in raising finance from other sources. This would not have been possible otherwise. Investor trust in the project was enhanced due to GCF support.

OVERCOMING BARRIERS / CHALLENGES:

WHAT WERE THE MAIN BARRIERS / CHALLENGES TO DELIVERY?

FINANCIAL:

RE projects require long-term investment horizons. However, the persistently high interest rates in Mongolia along with short loan periods make local lending for utility-scale solar power unfeasible. Interest rates for loans offered by banks and financial institutions in Mongolia were very high, with loans on short duration, coupled with a lack of low-interest rate RE loan programmes.

TECHNOLOGICAL:

Small- and medium-sized enterprises (SMEs) represent 90 % of the Mongolian economy. Most national SMEs use outdated, inefficient equipment impeding the implementation of renewable energy projects. Further, before the Sumber solar power project, Mongolia had only one solar power plant. Thus, the country lacks technical knowledge.

ECONOMIC:

The energy sector was dominated by state-owned suppliers due to which there was no competition in the market. Besides, the capacity of private sector actors remained limited.

INFORMATIONAL:

The Renewable Energy Law of Mongolia stipulates, on the one hand, that the system is obligated to receive the energy supplied by RE generators. On the other hand, the system dispatcher has the right to dispatch and consequently may refuse such energy. The matter of obligating to compensate for curtailed energy is managed by stipulations of the Power Purchase Agreements (PPAs). This leads to the potential for unfair and inequitable treatment of RE generators.

HOW WERE THESE BARRIERS / CHALLENGES OVERCOME?

GCF's concessional loan was essential in facilitating a solar power project of this size in Mongolia.

The construction of the Sumber solar power plant was largely boosted by the GCF's ability to reduce the large financial entry barrier for initial renewable investment. The GCF loan alleviated the financial risk through a long-term, concessional loan of USD 8.7 million.

The Japanese firm Sankou Seiki Co. Ltd. Inc provided technological input in the construction of the Suva solar power plant. The firm assisted in the construction and also in the assembly of the plant's 31,000 solar panels.

XacBank, in its role as programme head, undertook technical capacity building of local technicians to increase available technical support for this solar or other RE projects in the future.

GCF's concessional lending in Mongolia tailors its financial support to empower the country's private sector to take the lead in driving low-emission businesses that generate revenue while reducing emissions.

The innovative financing model has the potential to significantly contribute to increasing the share of private sector involvement in the energy sector.

The financing model intends to increase transparency in two ways: first, XacBank overviews and monitors the programme implementation (i.e. overall functioning, reporting and verification). Second, in the long run, the programme proposes to develop suitable criteria for a regulatory framework which can improve the transparency for all RE stakeholders.



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- LESSONS LEARNED:** ———
- **CUSTOMISE FINANCE AS PER NEEDS:** For making the project a success and the most of funds borrowed/ received as a grant, it is important to have a specific and specialised focus of the project. The case of very high interest rates over time is peculiar to Mongolia's financial sector. Although the solar power project had very high potential, the project was unfeasible due to a lack of funding options. This reflected a mismatch between the government's NDC commitments and the actual implementation ability to meet those commitments. For replicability, an important learning is to customise the financial model to the situation at hand.
 - **ENSURE GOVERNMENT SUPPORT TO ENABLE PRIVATE SECTOR ACTION:** Allowing the private sector to take the lead while being backed with government support is essential for the long-term success of utility-scale RE projects. Mongolian policies, a crucial NDC indicator and ministerial support were embedded in the programme design of XacBank for the solar power plant. While pioneering private involvement in the renewable energy sector and paving the way for increased private sector participation, the project would not have been possible without the buy-in of the government.

HOW TO REPLICATE

- THIS PRACTICE:** —————
- **EMBED PRIVATE PROJECTS IN EXISTING POLICY FRAMEWORKS:** Identifying areas where the private sector can contribute to meeting national priorities through projects is crucial to maximise impact. A thorough assessment of key development needs (such as reduced GHG emissions or health co-benefits) and barriers in meeting those needs is a prerequisite. Accordingly, project details can be developed to effectively address the challenges.
 - **CREATE A ROBUST IMPLEMENTATION PLAN:** As in this case, there was a clear two-level implementation plan – one at the macro level overviewing the programme and the other at the micro level overviewing project-specific activities. This helps accounting for all stages of the project and accordingly allot responsibilities to the relevant parties. National level support, as in this case from the Ministry of Environment and Tourism, further strengthens this framework through ensuring a robust check-and-balance system. Having a clear implementation plan with well-defined roles and responsibilities before the start of the project helps in assigning accountability and ensuring transparency.
 - **ENGAGE AND LEAD FROM THE PRIVATE FRONT:** The entrepreneurial spirit of local businesses based in developing countries can drive climate finance. The XacBank in Mongolia stands testimony to this. The commissioning of this solar plant will serve as an exemplary case to highlight how the local private sector can expand renewable markets – not only in Mongolia (Green Climate Fund, 2019).

CONTACT FOR

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FURTHER KEY

- RESOURCES:** —————
- Green Climate Fund (2017). Funding Proposal. FP 046: Renewable Energy Program #1 – Solar. Available at: https://www.greenclimate.fund/documents/20182/574760/Funding_Proposal_-_FP046_-_XacBank_LLC._-_Mongolia.pdf/dd828555-bd41-44be-b7e8-67794f57bf76
 - Green Climate Fund (2019). GCF helps XacBank become first Mongolian bank to finance large-scale solar. Available at: <https://www.greenclimate.fund/news/gcf-helps-xacbank-become-first-mongolian-bank-to-finance-large-scale-solar>

WEBSITE: ————— Xac Bank on the Renewable Energy Programme: <https://www.xacbank.mn/page/esms-on-renewable-energy-programme-solar?lang=en>

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- REFERENCES:** —————
- American Chamber of Commerce (2016). Position Paper on the Renewable Energy Sector in Mongolia. Available at: http://www.amcham.mn/wp-content/uploads/2016/06/AmChams_Position-Paper_Renewable-Energy.pdf
 - Petrova, V. (2019). GCF, XacBank fund 10-MW solar project in Mongolia. Renewables now. Available at: <https://renewablesnow.com/news/gcf-xacbank-fund-10-mw-solar-project-in-mongolia-641038/>
 - Ryan, C. (2019). GCF, XacBank help finance 10MW PV project in Mongolia. PV Tech. Available at: <https://www.pv-tech.org/news/gcf-xacbank-help-finance-10mw-pv-project-in-mongolia>



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