



# Mini-grids – Mongolia’s call for innovative solutions

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Thematic Track- Track 4 : Innovative and Resilient Renewable Energy

Session Topic: Session 4.4: Evolution of the mini grid.

Date and Time: Thursday, 15 June at 11:00 am – 12:30 pm Manila time



## MONGOLIA CONTEXT

- In Mongolia, 98 out of 100 households have access to electricity (WB, 2020).
- Abundant in solar and wind resources yet energy sector is based on fossil fuels
- The country has energy demand growing 5-6% a year
- USAID is supporting Mongolia to build a cleaner and more sustainable energy sector





# EVOLUTION OF SOLAR PV TECHNOLOGIES IN MONGOLIA: SOLAR ROOFTOPS

2000-2010

- Government's '100000 solar gers' initiative to improve rural electrification. 5MW solar PVs helped herder families have power access. Governments of China and Japan, and the World Bank helped to have bulk procurement at a discounted price. Markets and jobs created.

2007-2010

- World Bank and the Government of India supported to implement 18 projects (off-grid) solar and wind power plants with capacity from 60-200kW in several aimags (many lessons learned to accelerate the development)

2020 -2023

- Private companies such as Civil Aviation Authority, Mobicom, MMS Engineering 40-600kW solar PV systems
- Public organizations like the Energy Regulatory Commission and the national universities (16-30kW)



## PV MINI-GRIDS & INTERESTS ARE GROWING

- Reduce the energy load of the grid and carbon footprint of the energy sector.
- Can be less expensive to build and maintain a stable energy system (no need long and expensive transmission lines).
- Can be adequate access to sufficient clean electricity for heating and reduce air pollution in urban areas.







## PV MINI-GRIDS & INTERESTS ARE GROWING

- Can improve energy reliability. In 2022, Mongolian average energy customer experienced 15.3 hours, or 920.9 minutes, of power interruptions. 33-42% of the outages in the distribution network system were caused by cable line damage, and 28-33% by overhead line damage.
- Can improve self-sufficiency, and energy efficiency. Recently the GoM increased energy tariff by 14%, even higher (28%) for mining companies. This tariff increase is triggering private firms to invest more in micro-grids and to save energy purchased from the grid.





## LOCAL REGULATION & GREEN LOANS

- “Regulation of relations concerning supply of electricity generated by consumer's renewable energy power source to the distribution grid” was approved in August 2020.
- Local commercial banks issue loans to promote solar rooftops and household mini-grids, but very limited and not affordable.





# PV MINI-GRIDS & PUBLIC EDUCATIONAL FACILITIES IN ULAANBAATAR



- USAID completed Pre-feasibility study at Kindergarten No.111 and School No.107 in Songinokhairkhan district of Ulaanbaatar city.
- PFS concluded that it is technically feasible, yet financially challenging (business models) to pilot micro-grid technologies.
- Number of direct beneficiaries are 2177 students and 128 teachers.

Photo by Mongolian Renewables Industries Association



## LIMITATIONS TO ADDRESS



Photo by Green Solar Energy LLC

- Government controlled low energy tariff
- Net metering payment arrangements- steps to get connection permits to the grid are still challenging and time-consuming for many interested households and businesses
- Consumers' limited awareness
- Need for innovative financial mechanisms and economic incentives





## MAIN DIRECTIONS

- Energy efficiency and renewable energy are the two main pillars to enable successful energy transition.
- Viable business models designed to introduce and scale-up the use of modern technologies: solar PV, storage and smart meters.
- Innovative financial mechanisms, inclusive of economic incentives
- Always aim the long-term benefits: reduced urban air pollution and better health and economy





## USAID'S MEG ACTIVITY SUPPORTING MINI-GRIDS

- USAID's MEG Activity is investigating potentials to pilot/scale innovative energy actions, and co-generation (clean power and heating)
- Increase bankability of clean energy projects, via improving regulatory environment /permitting/ and access to innovative financial mechanisms and market tariff
- Capacity building on business models and clean energy technologies for public and private sector leaders.
- Engaging public through 'Energize Mongolia' media campaign to promoting the energy sector transition.



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