



Ministry of Energy,
Mongolia

introducing

Renewable Energy Development of Mongolia

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Presentation contents



Renewable energy – environmentally friendly 





Country report



Location, territory, and population

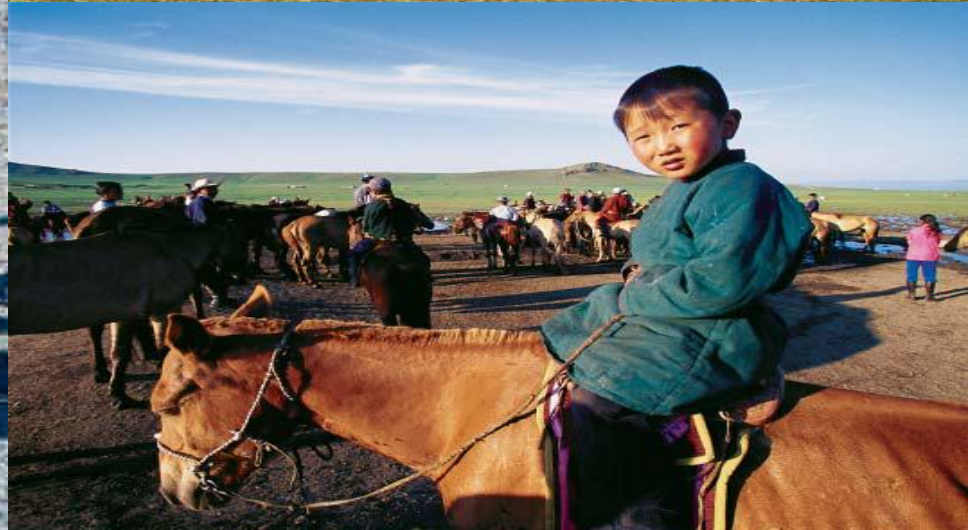
Mongolian land and blue sky



Mongolia lies at heart of Asia



Nomadic way of life in country

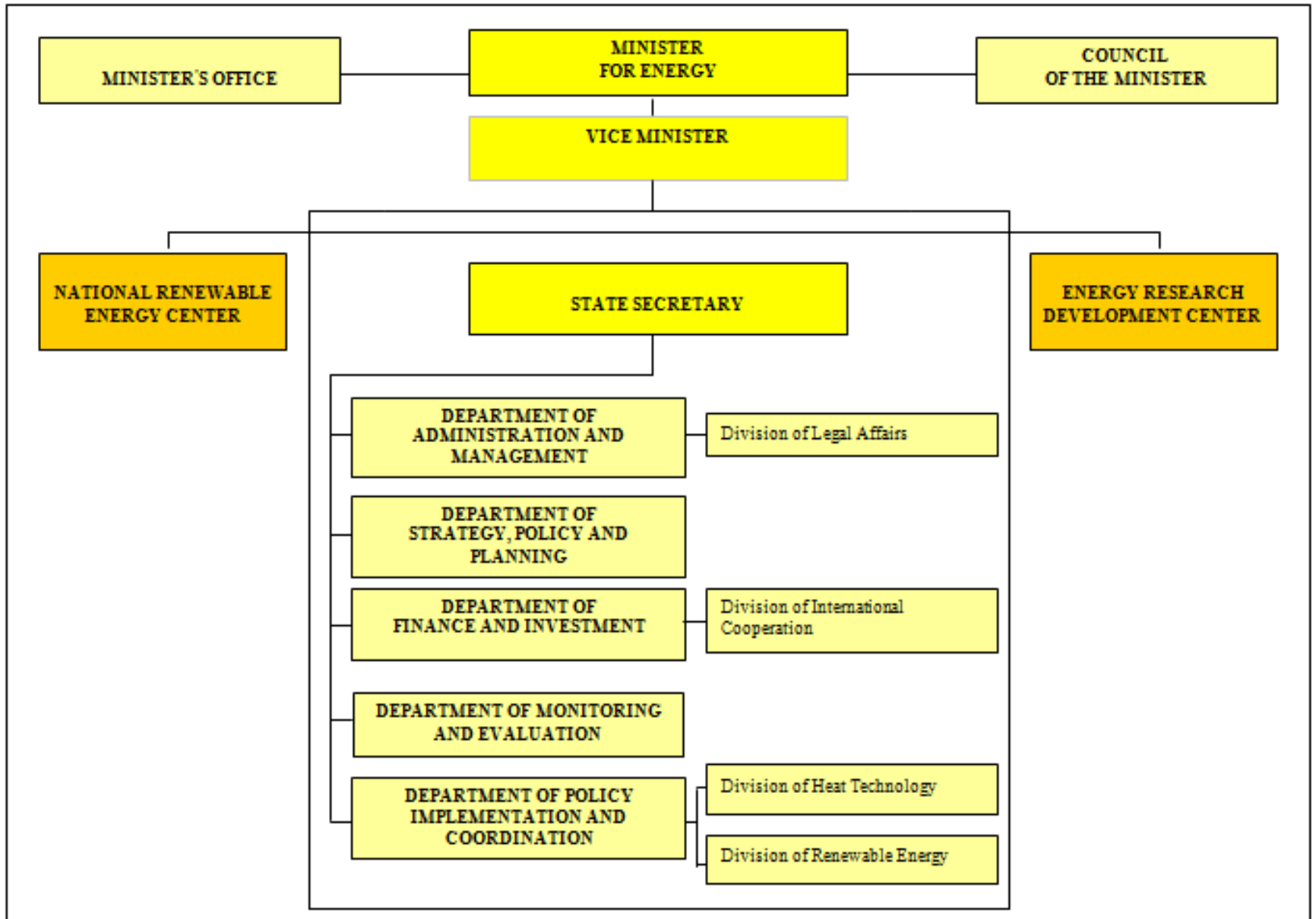


Brief information



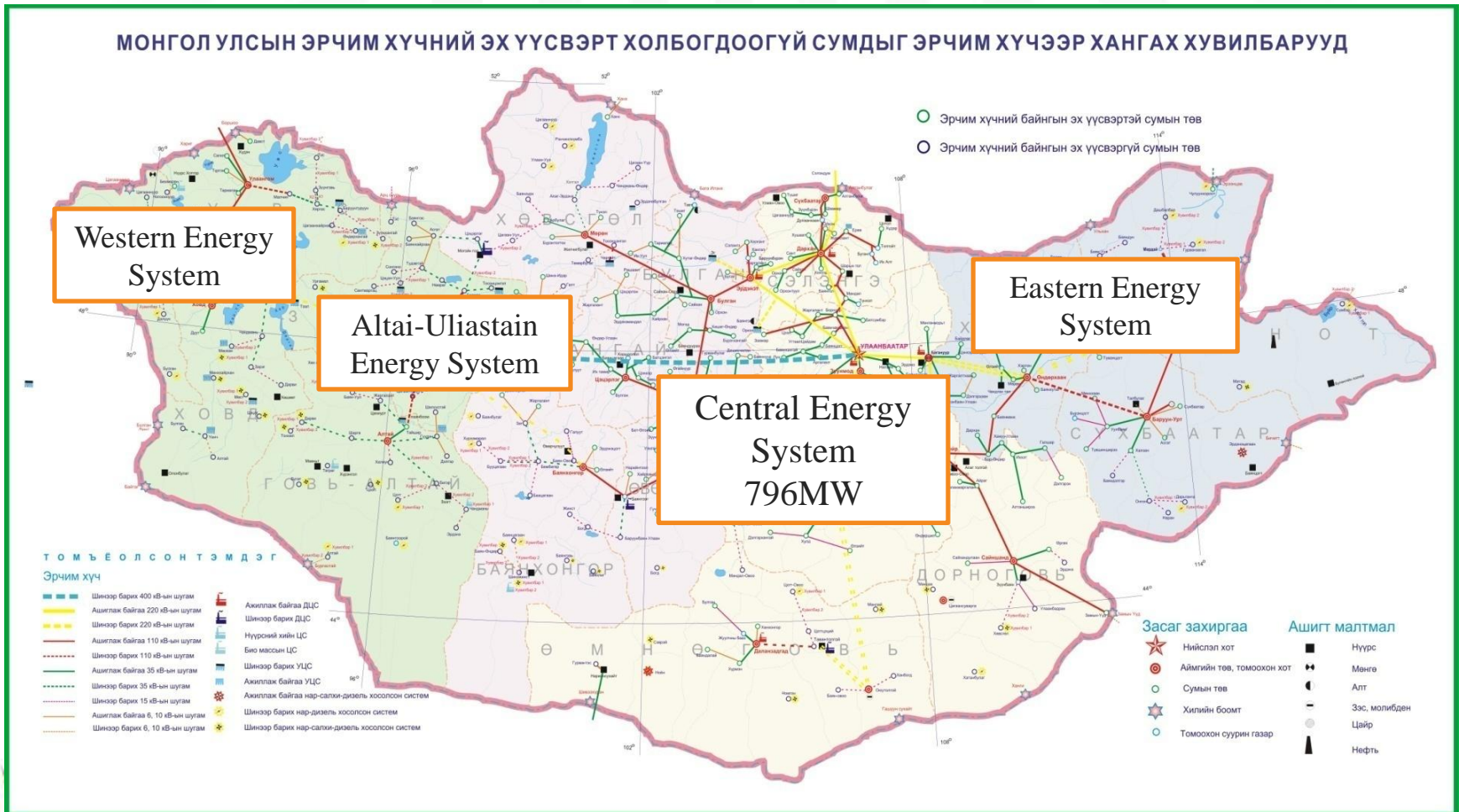
- Territory: 1.564 million km²
- Population: 2.8 million
- Capital city: Ulaanbaatar (approx. 1.0 million 35.6%)
- Ambient temperature: between -33°C (-50°C) and +23°C (+35.8°C)
- Provincial towns: 335 (318 connected to grid)
- GDP per capita: 4,743 \$ (2012 IMF source)

ORGANIZATION CHART OF THE MINISTRY OF ENERGY
MONGOLIA

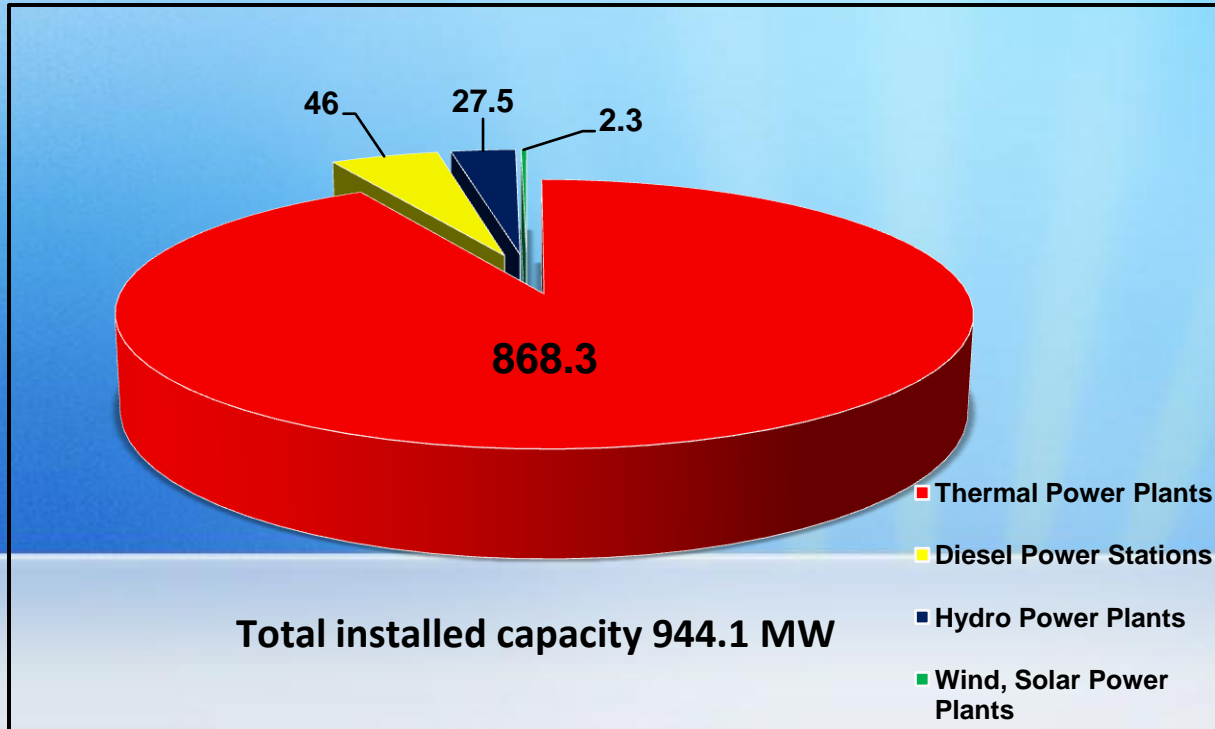


Overview of energy consumption

МОНГОЛ УЛСЫН ЭРЧИМ ХҮЧНИЙ ЭХ ҮҮСВЭРТ ХОЛБОГДООГҮЙ СУМДЫГ ЭРЧИМ ХҮЧЭЭР ХАНГАХ ХУВИЛБАРУУД



The electricity supply of Mongolia is currently based on coal and demand is growing...



Expected annual growth:

- The domestic demand is expected to grow at least with an annual rate of 5%
- But the overall demand (and supply) is expected to grow much faster (14%).

Due to recent intensive activities in mining sector, in near future Mongolia should become a large producer and exporter of electricity... and a large emitter of GHG

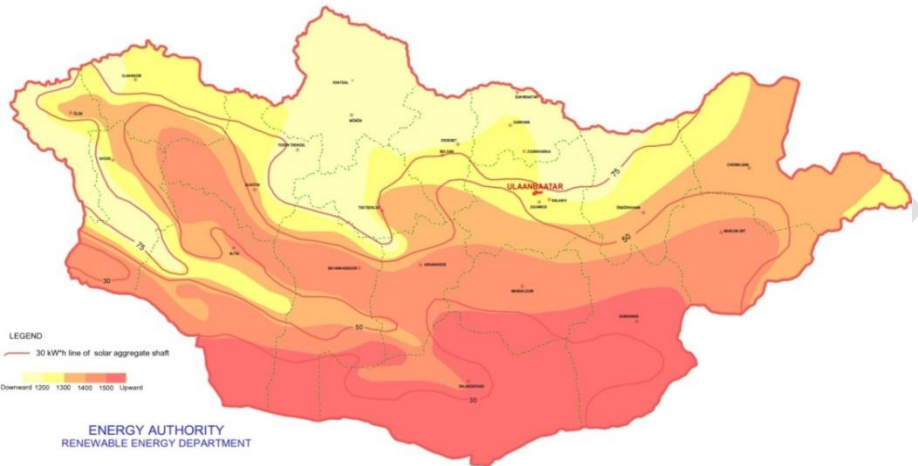


Renewable energy resources

Solar, wind, geothermal and water resources

Solar and wind energy resources

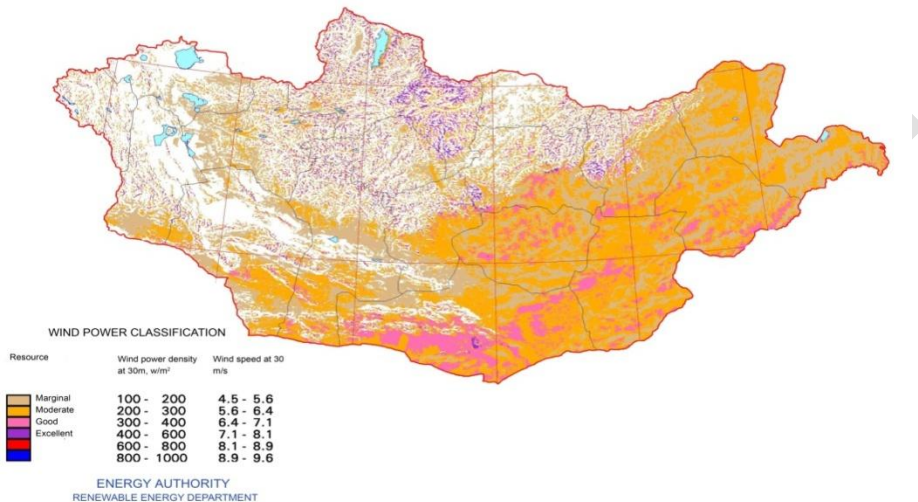
SOLAR ENERGY RESOURCE OF MONGOLIA



270 - 300 clear days & 2250 - 3300 sunshine hours per year.

17 % more than 1600 kWh/m²/a,
 25 % 1400-1600 kWh/m²/a,
 51 % 1200-1400 kWh/m²/a,
 7 % less than 1200 kWh/m²/a,

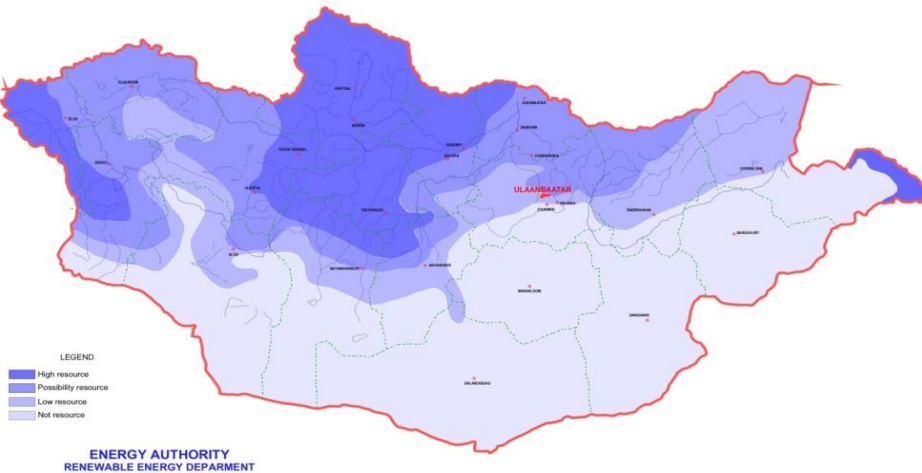
WIND ENERGY RESOURCE OF MONGOLIA



Gobi regions of the country are considered high wind power resources and its resources are 836.8 billion kWh and usable time is 3.5-4.6 thousand hours per year.

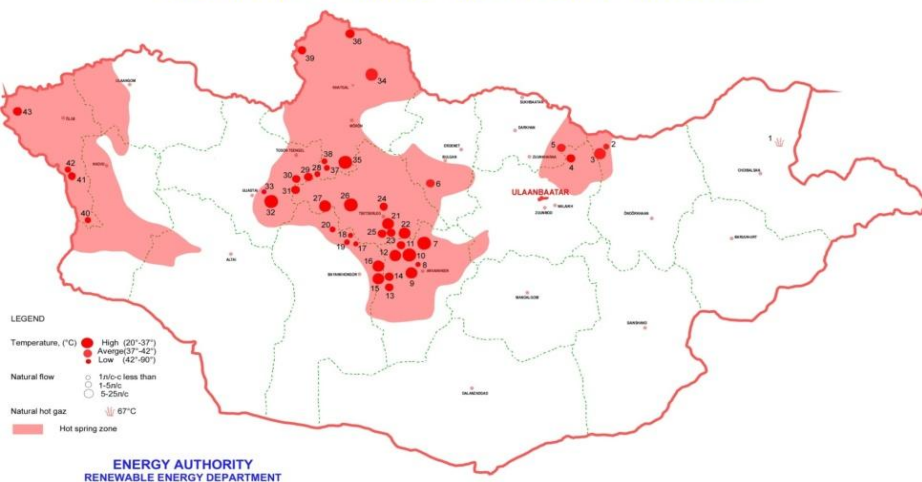
Hydro and geothermal energy resources

HYDRO ENERGY RESOURCE OF MONGOLIA



Capacity of hydropower resources of Mongolia is 6417.7 MW and the country is able to produce 56.2 billion kWh electricity annually.

GEOHERMAL ENERGY RESOURCE OF MONGOLIA



There are over 40 indications of geothermal manifestations on the territory of Mongolia



Policy and Development

National program, renewable energy law and fund



Policy and Strategy

- » “100,000 solar house” National Program (2000 – 2012)
 - » Phase-I: Foundation - Laying (2000 year)
 - » Phase II : Commercialization (2001-2005 years)
 - » Phase III: Extension -Completion (2006-2012 years)
- » National Renewable Energy Program (2005 – 2020)
- » Renewable Energy Law 2007



“100,000 Solar House” National Program

Phase-I (Activity):

October 1999 - Program was approved by the Government

2000 - Preparation for the implementation

2001-2002 - 1000 Solar Home Systems (SHS)

Phase-II

2003 -2004 - more than 30,000 SHS

Phase- III (Target) :

2006-2007 - more than 40, 000 SHS

2011-2012 - more than 30, 000 SHS (total SHS - 100,000)



National Renewable Energy Program

- » ... maintains following targets for renewable energy development in the country:
 - » To increase the share of renewable energy in the total energy supply to 20 – 25 % by 2020
 - » To decrease in overall energy losses by 10 % by 2020

Renewable Energy Law of Mongolia

(approved by the Parliament in 2007)

- Feed-in tariffs (FIT) for renewable power sources

	Hydro			Wind	Solar
	up to 0.5 MW	from 0.5 to 2 MW	from 2 to 5 MW		
Grid-connected	0.045 - 0.06	0.045 - 0.06	0.045 - 0.06	0.08 - 0.095	0.15 - 0.18
Stand alone	0.08 - 0.10	0.05 - 0.06	0.045 - 0.05	0.10 - 0.15	0.2 - 0.3

Prices are given in USD per kWh

Promotes, incentives and supports the production of energy from renewable sources by regulating generation, transmission, and pricing of green energy.

Some **successful installed and operated** renewable energy projects

Financed by government and donor countries.

Mandakh Soum of Dornogobi Aimag 80 kW Wind Hybrid Systems

Hybrid systems installed: 80kW Wind Turbine (8 pcs * 10kW wind turbine, BBWC EXCEL R-240 type, Bergey, China). Inverter 100kVA, CPTT-180KVA type, China). Battery 1000Ah (2V) * 360 pcs (Shandong, China). Rectifier 3x380, 60kW, GDF-60KW, China



Bayantsagaan Soum of Bayankhongor Aimag 150 kW Solar-Wind Hybrid Systems

Hybrid systems installed: 120kW Wind Turbines (12pcs * 10kW, BWC Excel-R type, Beijing Bergey Wind Power Co.) and 30kW Solar System (PV module 180 pcs * 160W, 165W, 170W; Trina Solar). Inverter: 2 pcs * 60kVA), MTP-416F type, "Leonics" Co., Ltd. Battery 1000Ah (2V) * 360 pcs. Solar control box SCP-240120 type, "Leonics" Co., Ltd.



Bugat Soum of Gobi-Altai Aimag 140 kW Solar System

Hybrid systems installed: 140kW Solar System (PV module 570 pcs * 175W; Trina Solar). Two inverters consisted of 60kVA & 100kVA, Tailand “Leonics” Co., Ltd. Battery 1000Ah (2V) * 600 pcs (GFM type). Charge controller – 4 pieces, SCP-240120 type, “Leonics” Co., Ltd.







For Additional Information:
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THANK YOU.



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