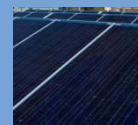




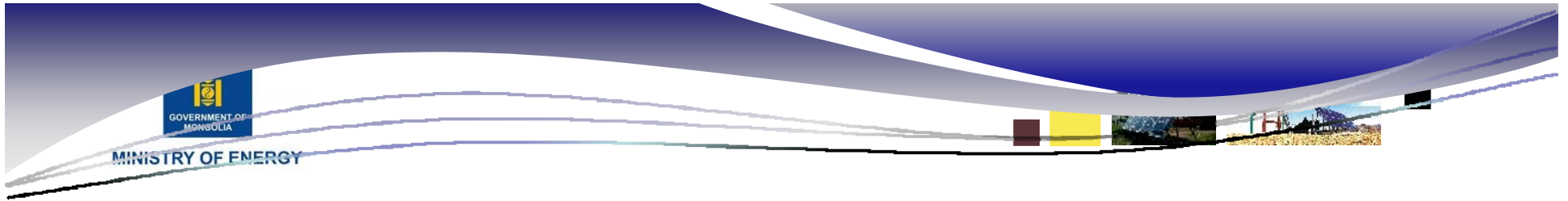
GOVERNMENT OF
MONGOLIA

MINISTRY OF ENERGY



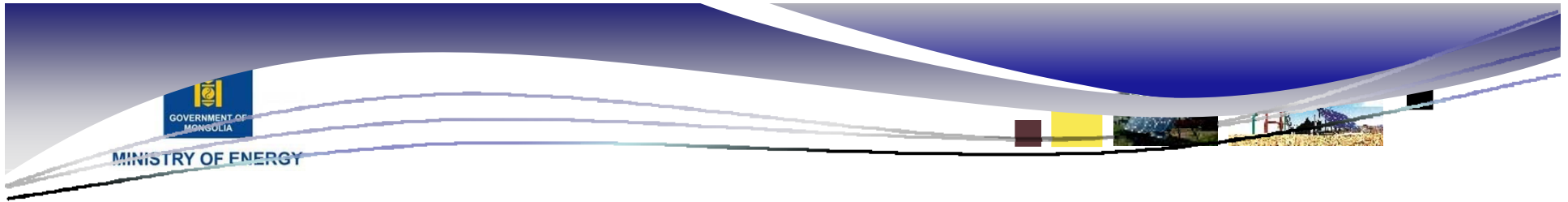
Workshop on Low Carbon Technologies 3, December 2013

Renewable Energy Policy of Mongolia



Overview

- Sustainable Energy For All – 2012
- Renewable electricity and power capacity
- Policy support for renewable energy
- Renewable energy resources and Use
- International cooperation on Renewable energy
- National Renewable Energy Program
- Conclusion and Remarks



Sustainable Energy For All - 2012

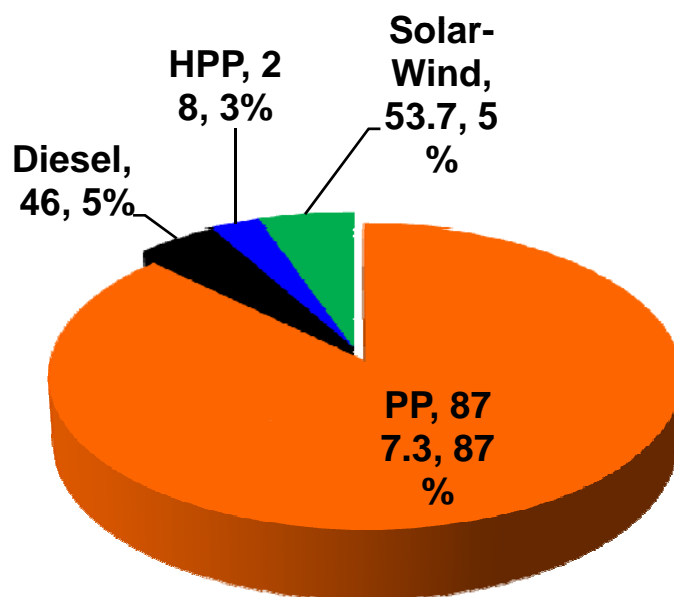
■ SG's goal and objectives:

- ✓ Universal access to modern energy services.
- ✓ Doubling the rate of improvement in energy efficiency.
- ✓ **Doubling the share of renewable energy.**

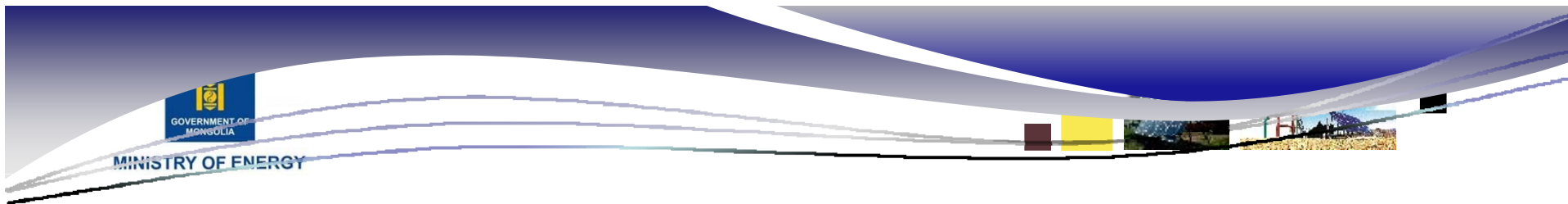


Installed capacity of renewable power in 2013

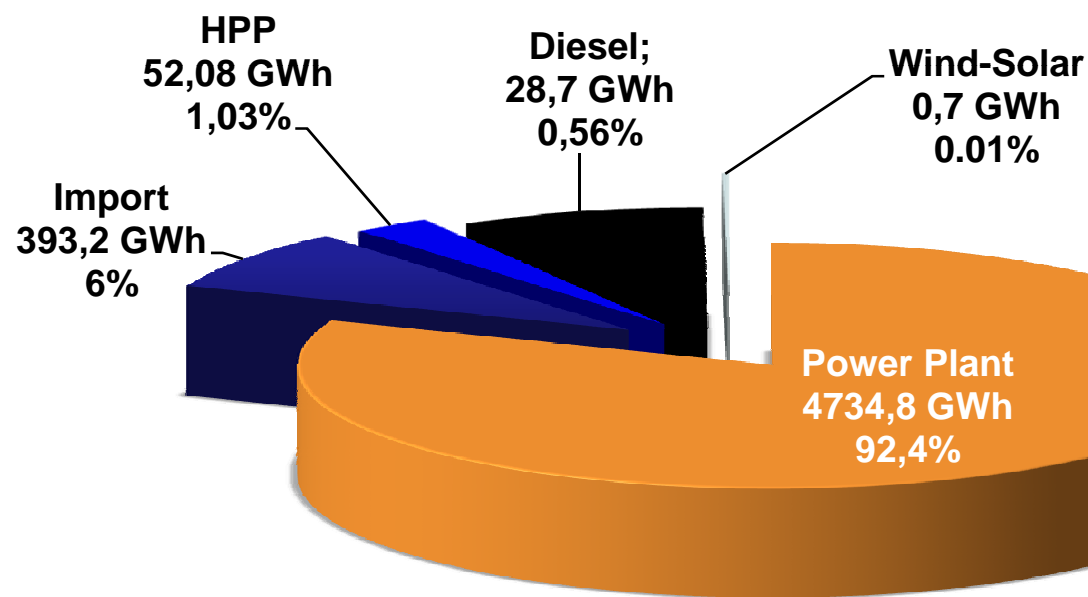
Power capacity 955 MW

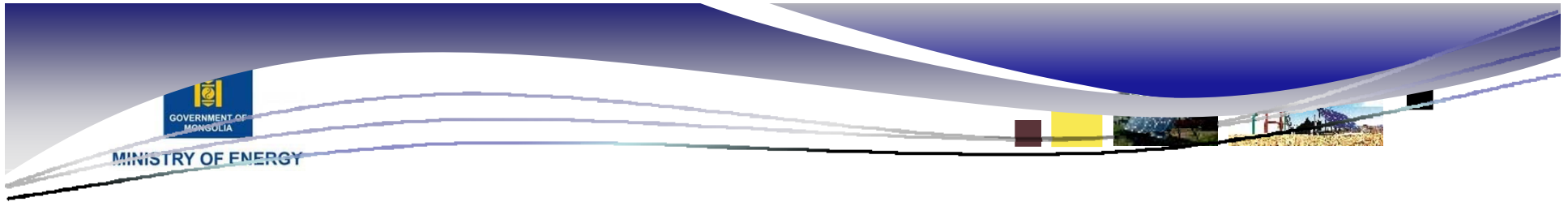


Power Plant	Capacity	Share
Thermal PPs	877.3 MW	87 %
Renewable power	81.7 MW	8 %



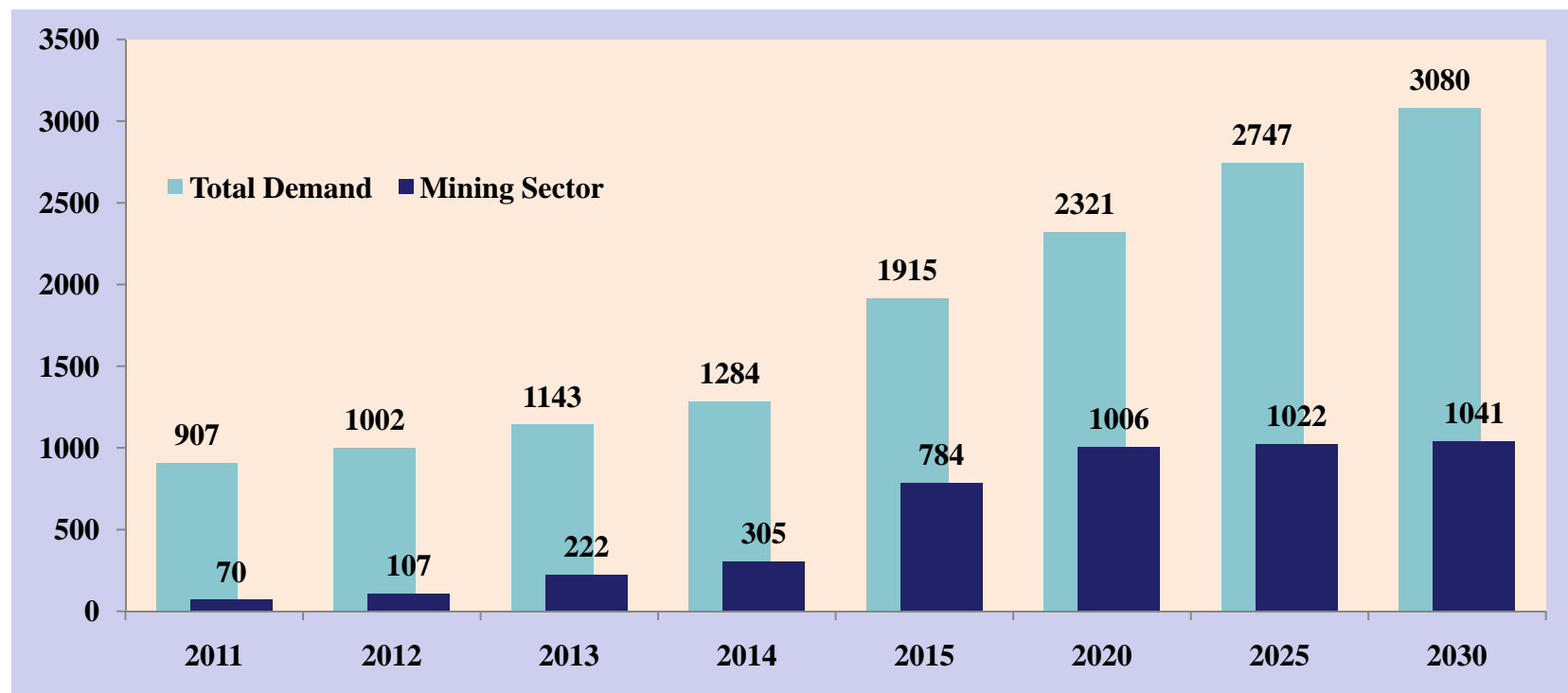
Renewable electricity generation in 2012

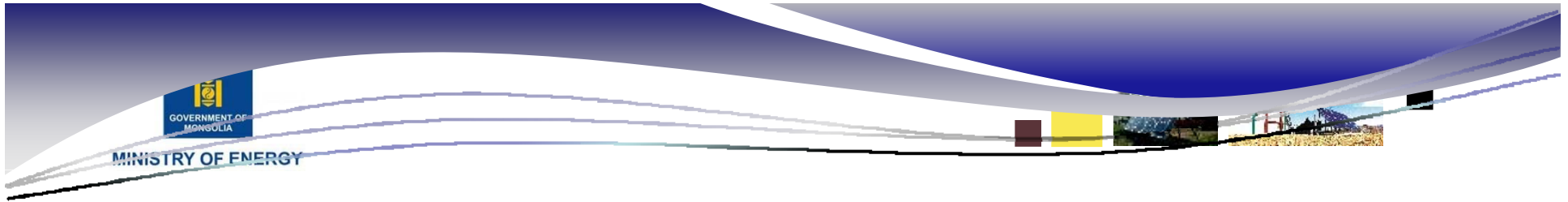




Energy demand (MW) – Source: EA 2012

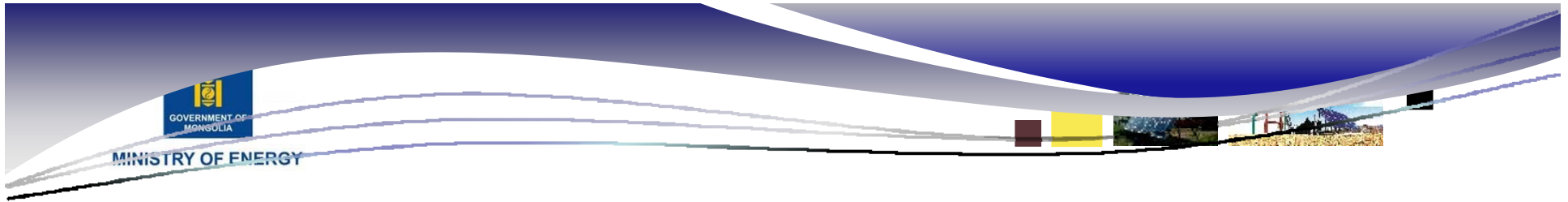
Due to recent intensive activities in mining sector, in near future Mongolia should become a large producer and exporter of electricity





Policy support for renewable energy

- **Parliament approved following strategic documents.**
 - “National Renewable energy program” in June 2005 to promote and extend renewable energy development in Mongolia. Program shall be implemented in two stages /2005-2020/.
 - “Renewable Energy Law” in January 2007 to regulate generation and supply of energy utilizing renewable energy sources.
 - Millennium development goal, the strategy should be implemented 2008 -2021
 - Government program /2012 – 2016/
- **Government resolution no. 158 by October 6, 1999.**
 - “100000 solar home” national program in 1999 to supply nomadic family by solar home system. The program had implemented during 2000 – 2010.



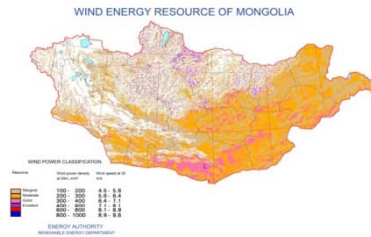
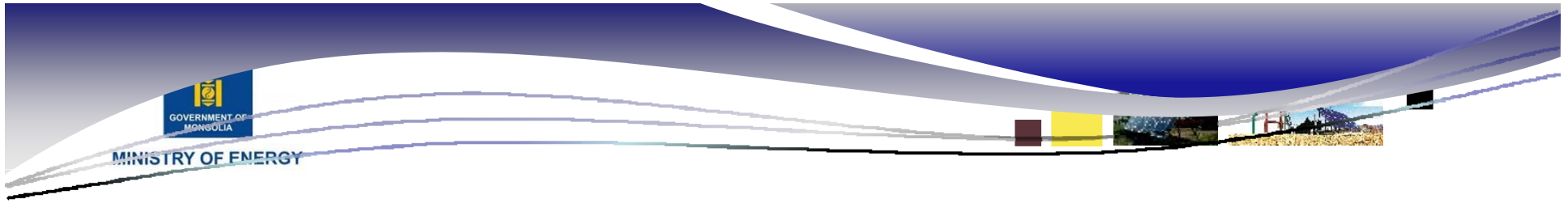
Renewable energy Act

Purpose: Promotes and supports the production of energy from renewable sources by regulating electricity pricing or green energy.

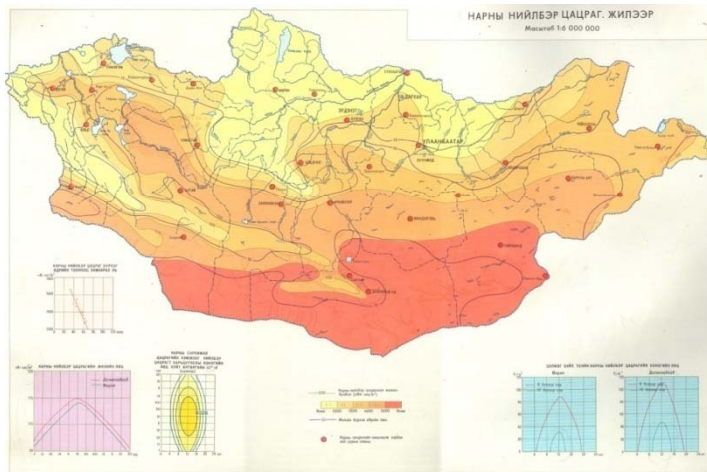
■ Feed-in tariffs (FIT) for renewable power sources

		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					

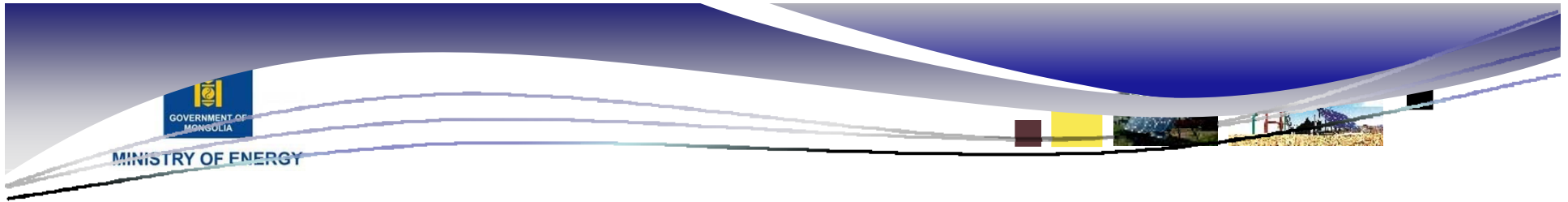
- FIT deference between Grid connected or Off grid system
- FIT is stabile for 10 years (2007 – 2017)
- Renewable energy fund



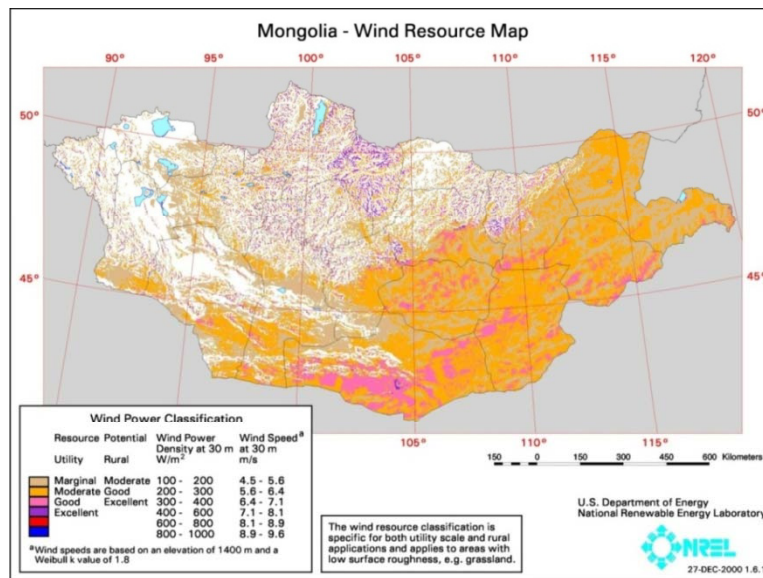
Solar energy resources



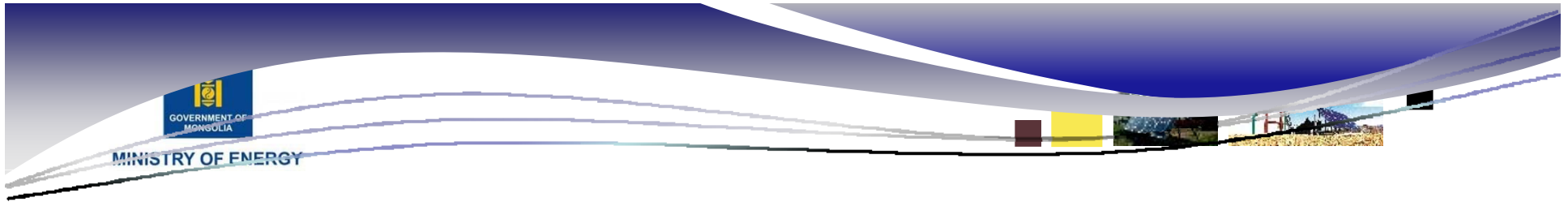
- About 270-300 sunny days per year with an average sunlight duration of 2,250-3,300 hours are available in most of the territories of Mongolia.
- Annual average amount of solar energy is 1,400 kWh/m² with solar intensity of 4.3-4.7 kWh/m² per day.
- Annual solar radiation capacity of Mongolia equivalent to $2.2 \cdot 10^{12}$ MW.



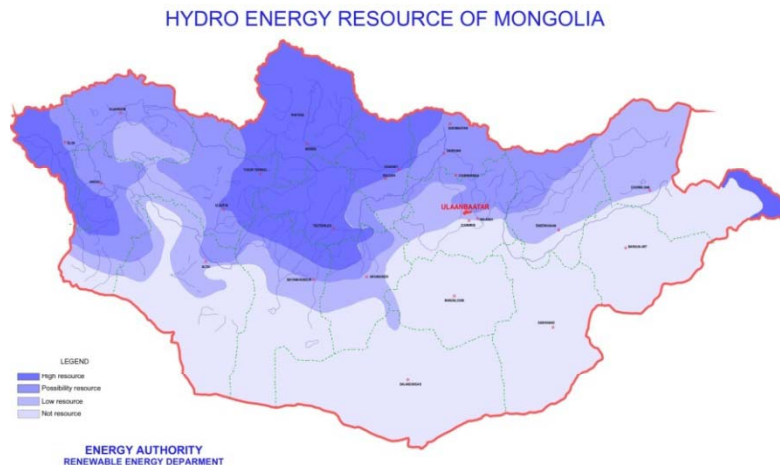
Wind energy resources



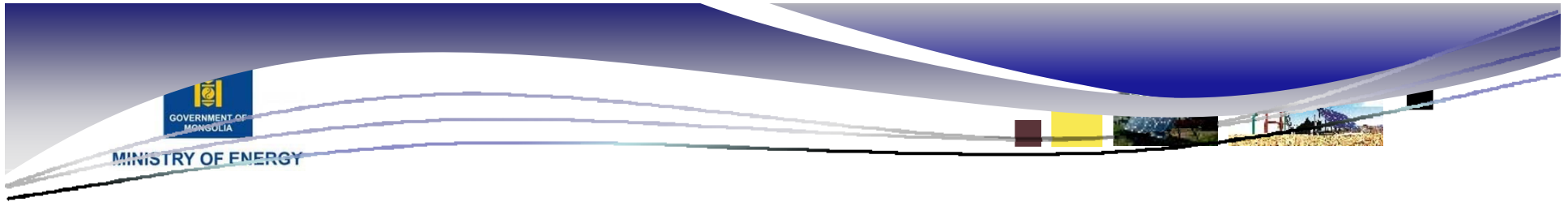
- Mongolia has potential to be a major wind power producer.
- Mongolia has enormous wind power resources;
- Good-to-excellent wind resources equivalent to **1,100 GW** of wind electric potential.



Hydropower resources

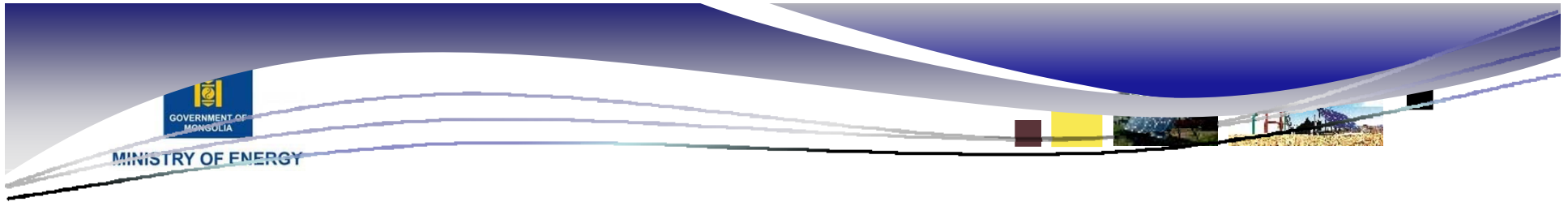


- There are 3800 small and big streams and rivers in Mongolia
- Available power could be 6417.7 megawatts
- There will deliver 56.2 billion kWh of electric energy in a year.



Renewable energy Use

- First IPP project 50MW Salkhit wind power plant operated under PPA
- 102,190 Solar home systems used over the Mongolia
- Built and operated 11MW Taishir & 12MW Durgun HPP (more than 11 small scale HPP)
- PV-Wind-Diesel hybrid systems were built in 13 remote areas
- Ground source heat pump and solar vacuum collector installed in UB areas
- More than 100 small scale projects were used (communication, street lighting, water pumping, cooking, powered by radio relay system)



International cooperation

■ GIZ

- Renewable energy I, II, III
- Energy efficiency

■ IRENA

- RRA
- Global Wind & Solar Atlas

■ NEDO

- Demo project off grid 200kW PV plant

■ JICA

- Master plan for RE /2000-2015/
- Demo project grid connected PV plant

■ ADB

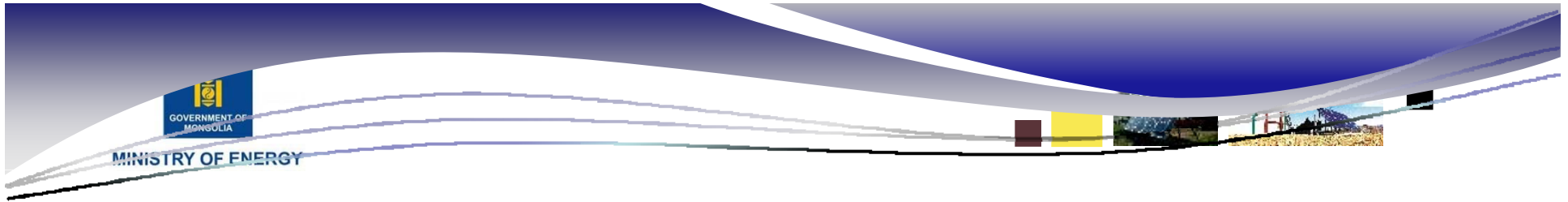
- Renewable energy for Small town & Rural areas
- Master plan for rural power supply by RE
- Solar thermal district heating

■ TACIS

- FS of RE for rural areas
- Demo project up to 5 kW solar-wind system

■ WB

- Distributed 25000 SHS



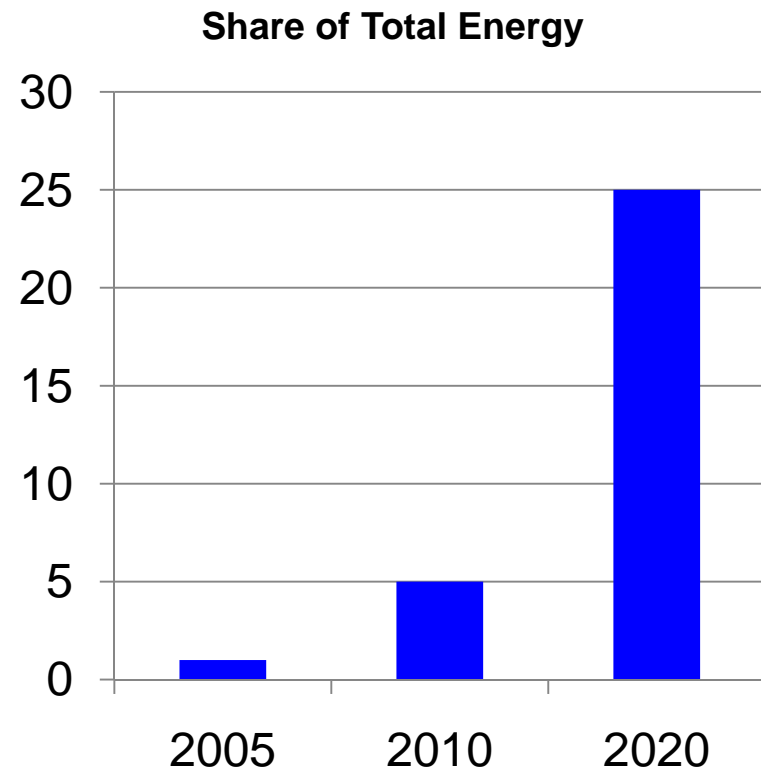
Mongolian Parliament approved NREP

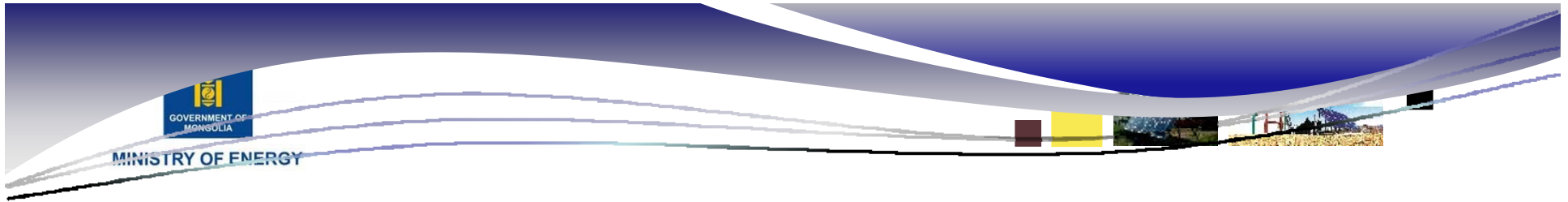
According to the “National Renewable energy program (2005-2020)”

the Government of Mongolia has set the target to increase the share of Renewable energy in total energy supply and reach:

- 3-5% share by the year 2010
- 20-25% share by the year 2020

which implies that an increased use of renewable energy systems will be an important contribution





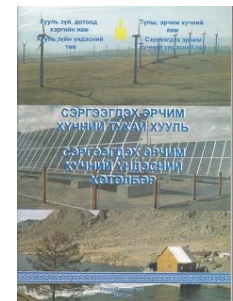
National renewable energy program & Updates

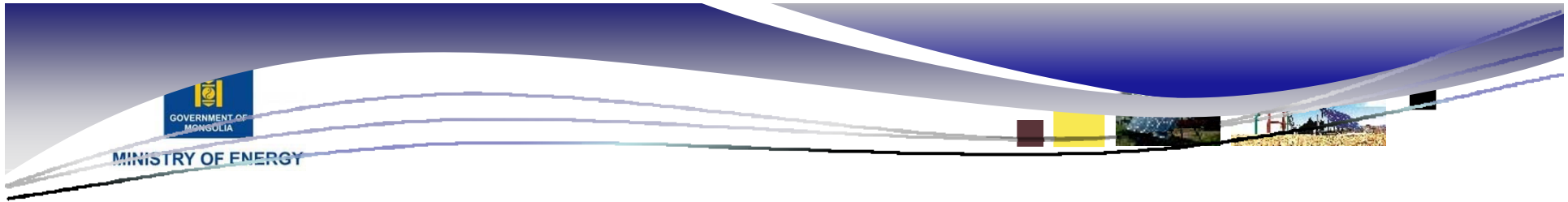
■ Purpose of the Program:

- To create conditions for ensuring ecological balance,
- For sustainable social and economic development through increasing percentage of renewable energy in the energy supply of Mongolia,
- Improving structure of energy supply,
- Widely using renewable energy in providing power to rural areas.

■ National program for renewable energy has been implemented in two stages:

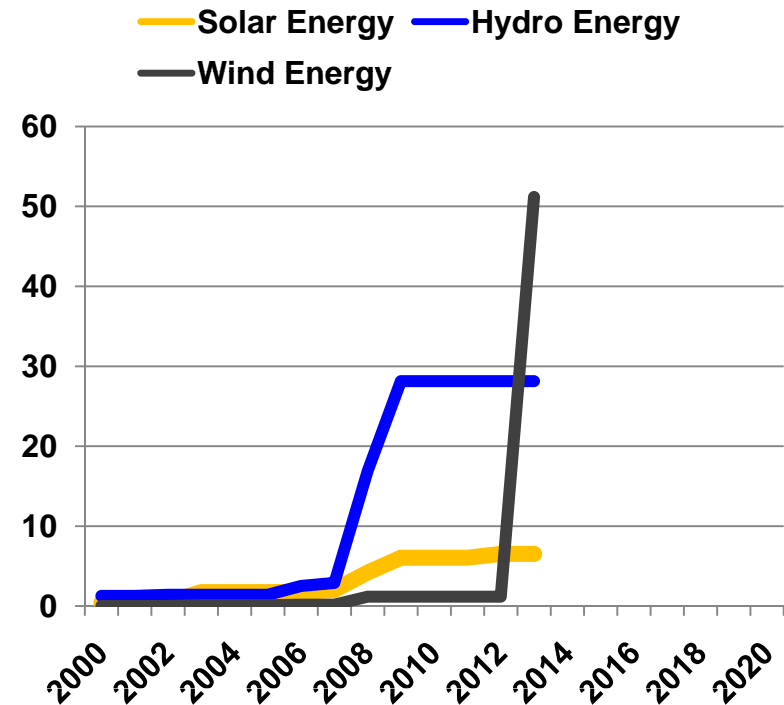
- First stage for 2005-2010 /near term/
- Second stage for 2011-2020 /mid term/

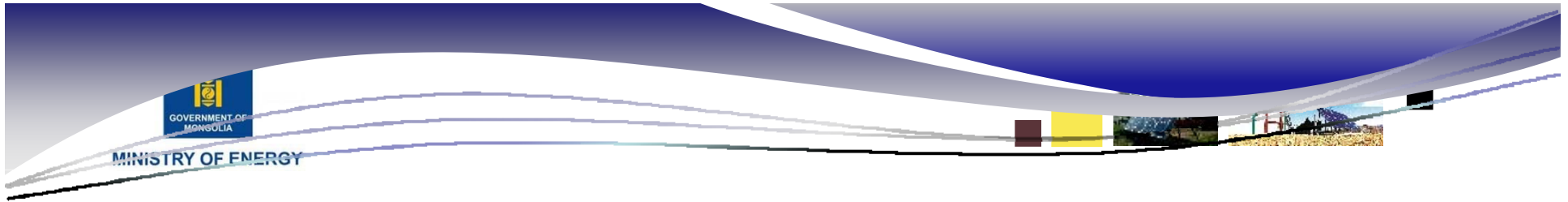




Implemented near term objectives /2005-2010/

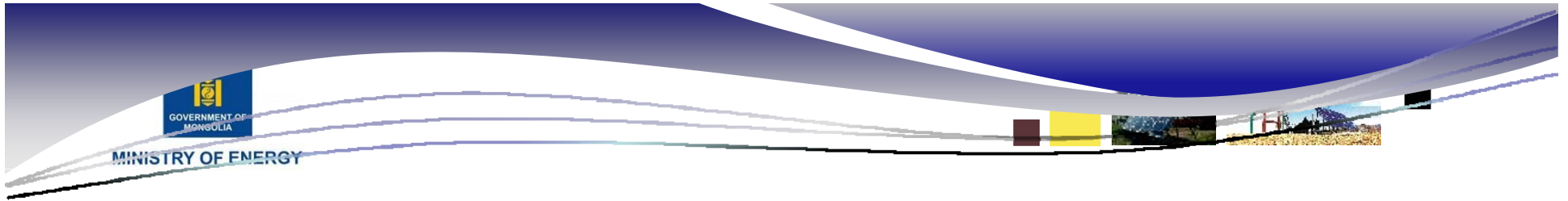
1. Installed Durgun and Taishir HPP;
2. To launch construction Orkhon HPP with 100 MW capacity in the Central Region;
3. Implemented the "100,000 Solar home" national program;
4. Provided and electrified 8 soum centres remotely located from the centralized power grids by wind-solar- diesel hybrid systems, and to 5 soum centers using solar-diesel hybrid systems;
5. Carried out feasibility studies of HPP construction for electrification of selected 16 soum centers;
6. Conducted detailed survey of medium sized wind parks in sites with high wind energy potentials.





Conclusion and remarks

1. To increase the production and consumption percentage share of renewable energy in total energy installation to reach 15 – 20% by 2020 and 25 – 30 % by 2030;
2. To increase the efficiency of power generation through the cooperation with universities and institutes on introductions of economical usage of renewable energy power energy;
3. Detailed resource assessment of renewables
4. Build and launch cascade HPP in central region of Mongolia with installed capacity more than 100MW
5. Construct wind and solar PV power plant in location with good to excellent wind and solar energy resource
6. Support renewable energy with tax initiatives and soft loans /100000 rooftop PV system/
7. Activate renewable energy fund
8. Improve and adopt renewable energy technology standards and codes
9. Establish Fault ride through system in energy system
10. Deliver SHS with capacity at least 100Wp to all rural households which are remotely located



Thank you for your attention

Getting in Contact

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