GOVERNMENT OF MONGOLIA

MINISTRY OF ENERGY

ENERGY SECTOR OF MONGOLIA, COUNTRY REPORT

BALDORJ Myagmarsuren
Officer of the Policy and Planning Department

GOVERNMENT OF MONGOLIA
MINISTRY OF ENERGY

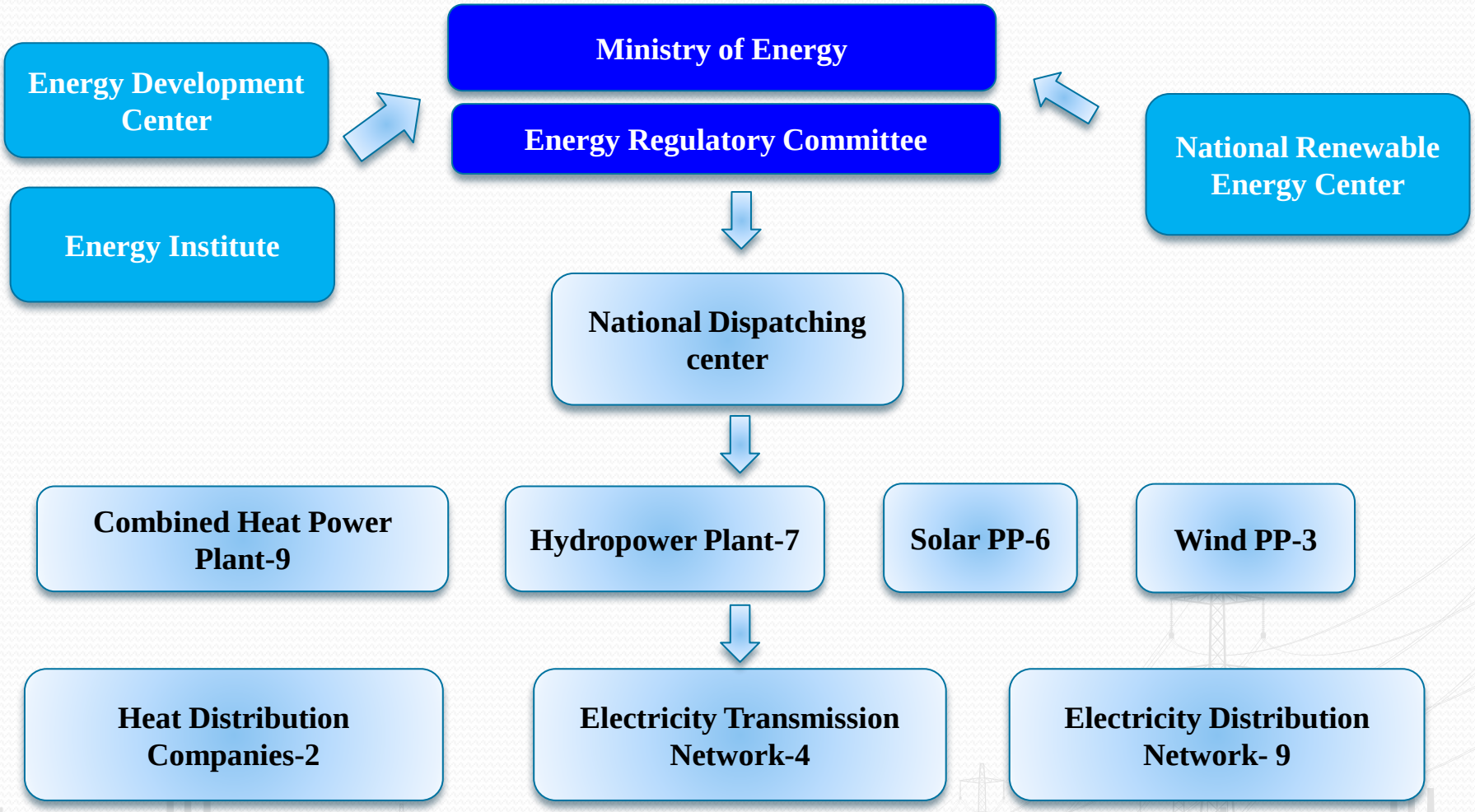
CONTENT

- **General information /**Economic indicators, Country profile/
- **Reserves of Energy Mineral Resources**
- **Energy Policy and Measures**
- **Reserves of Energy**
- **Greenhouse gas emission**
- **Energy tariffs**

GENERAL INFORMATION

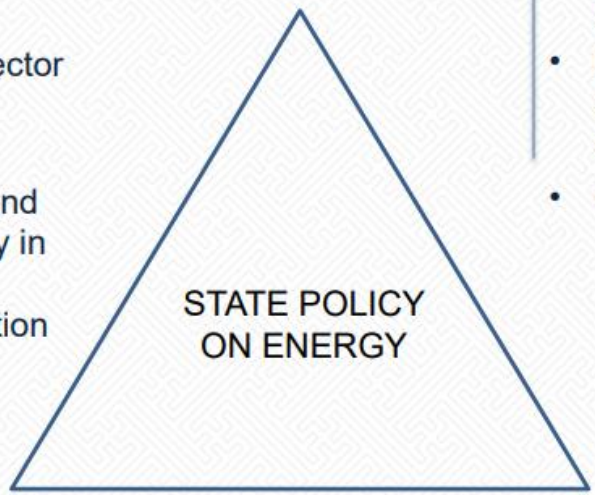
- Area: 1.564 million square km2
- Population: 3,385,614.0 (2022)
- Government Type: Parliamentary republic
- Capital city: Ulaanbaatar
- GDP:14.0 billion USD (Dec 2020)
- GDP per capita: 4,378.53 USD (Dec 2020)
- Inflation: 7.1
- Exports: 9.2 billion USD
- Imports: 6.8 billion USD
- Min. temp: -33˚ C (-50˚ C)
- Max. temp: +23˚ C (+35.8˚ C)

KEY INSTITUTIONS AND STATE OWNED ENERGY COMPANY



POLICY OF ENERGY OF MONGOLIA

PRIORITY AREAS AND STRATEGIC GOALS



SAFETY

- Ensure energy safety and reliable supply
- Develop mutually beneficial cooperation with regional countries
- Develop a human resource

EFFICIENCY

- Transfer the state dominated energy sector into private based competitive market
- Support innovation and advanced technology in energy sector, and implement conservation policy

ENVIRONMENT

- Increase the production share of renewables and reduce negative environmental impact from traditional power generation and greenhouse gas

GOVERNMENT OF MONGOLIA
MINISTRY OF ENERGY

POLICY OF ENERGY OF MONGOLIA

long-term development policy

Mongolia's long-term development policy

Vision-2050

THE NEW RECOVERY POLICY

Medium-term development policy

- **Development target program**
- **Five-Year Development Guidelines for Mongolia**
- **Five-year guidelines for province, capital city and city development**

Short-term development policy

- **ACTION PLAN OF GOVERNMENT**
- **Governor's action plan**
- **Annual national development plan**
- **Budget**

THE NEW RECOVERY POLICY

THE PURPOSE OF NEW RECOVERY POLICY

Reduce the negative impact of the coronavirus infection pandemic on the economy

Promptly address development barriers and expanding economic foundation

Effectively implementing the “Vision-2050” long-term development policy of Mongolia

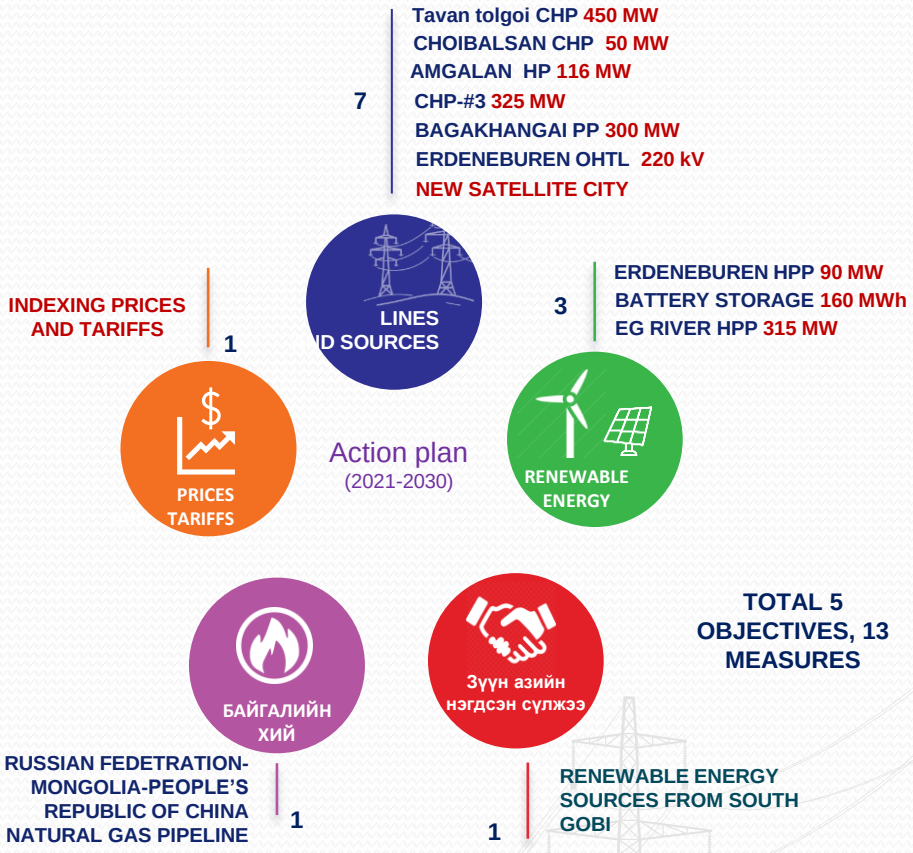
- RECOVERY OF BORDER PORT
- ENERGY RECOVERY
- INDUSTRIAL RECOVERY
- URBAN AND RURAL RECOVERY
- RECOVERY THROUGH GREEN DEVELOPMEN
- RECOVERY OF THE PUBLIC PRODUCTIVITY

RESOLUTION OF PARLIAMENT OF MONGOLIA No 106 of 2021

ENERGY RECOVERY

THE PURPOSE OF ENERGY RECOVERY

- New energy sources and transmission and distribution networks shall be established and their existing capacity shall be enhanced, and the reliability of energy production and supply shall be improved.
- Renewable energy facilities shall be developed in an appropriate ratio where the water facilities and stored resource stations shall be built for ensuring the reliability and stability of the integrated energy system.
- In certain phases, the energy sector shall be transferred into an independent financial and economic system.
- Actions shall be taken to ensure the preparation of the high voltage aerial transmission lines and substations for connecting to the renewable energy source and network within the Northeast Asian integrated energy grid.
- The construction of a natural gas pipeline from the Russian Federation to the People's Republic of China through the territory of Mongolia shall be boosted.



GOVERNMENT OF MONGOLIA
MINISTRY OF ENERGY

ENERGY DEVELOPMENT PROJECTS

FOR 22 DEVELOPMENT PROJECTS, TOTAL REQUIREMENT INVESTMENT **14.9 TRILLION MNT**.

6 CAPACITY EXPANSION PROJECTS OF CHPS

CHP-3 325 MW
CHP-2 100 MW
CHOIBALSAN CHP 50 MW
AMGALAN TP 116 MW (100 Gcal/h)
CHP-4 boiler 500 ton/h
GAS SOURCES 219 MW (185 Gcal/h)

TOTAL: 4,233.0 BILLION

5 PROJECTS TO BUILD NEW ENERGY SOURCES

Tavantolgoi CHP 450 MW
ERDENEBUREN HPP 90 MW
EG RIVER HPP 315 MW /Research/
BAGAKHANGAI PP 300 MW
BAGANUUR CHP 400 МВт

TOTAL: 9,128.8 BILLION

7 POWER SUBSTATION, DISTRIBUTION AND TRANSMISSION GRIDS PROJECTS

ERDENEBUREN-MYANGAD-ULIASTAI 468 km
TAVANTOLGOI CHP-OYUTOLGOI 167 km
SAINSHAND-TSAGAANSUVARGA 204 km
BAGANUUR-CHINGIS-CHOIBALSAN 518 km
BAGANUUR-CHOIR 188 km
MANDALGOBI-ARVAIKHEER 287 km
BAGANUUR-NALAIKH-ULAANBAATAR 130 km

TOTAL: 1,280.7 BILLION

4 ENVIRONMENTALLY FRIENDLY POWER PROJECTS BASED ON SCIENCE AND ADVANCED TECHNOLOGIES

NUCLEAR ENERGY
HYDROGEN
LNG
RENEWABLE ENERGY,
solar 35 MW, Wind 15 MW

TOTAL: 329.1 BILLION

CURRENT SITUATION OF THE MONGOLIAN ENERGY SCTOR

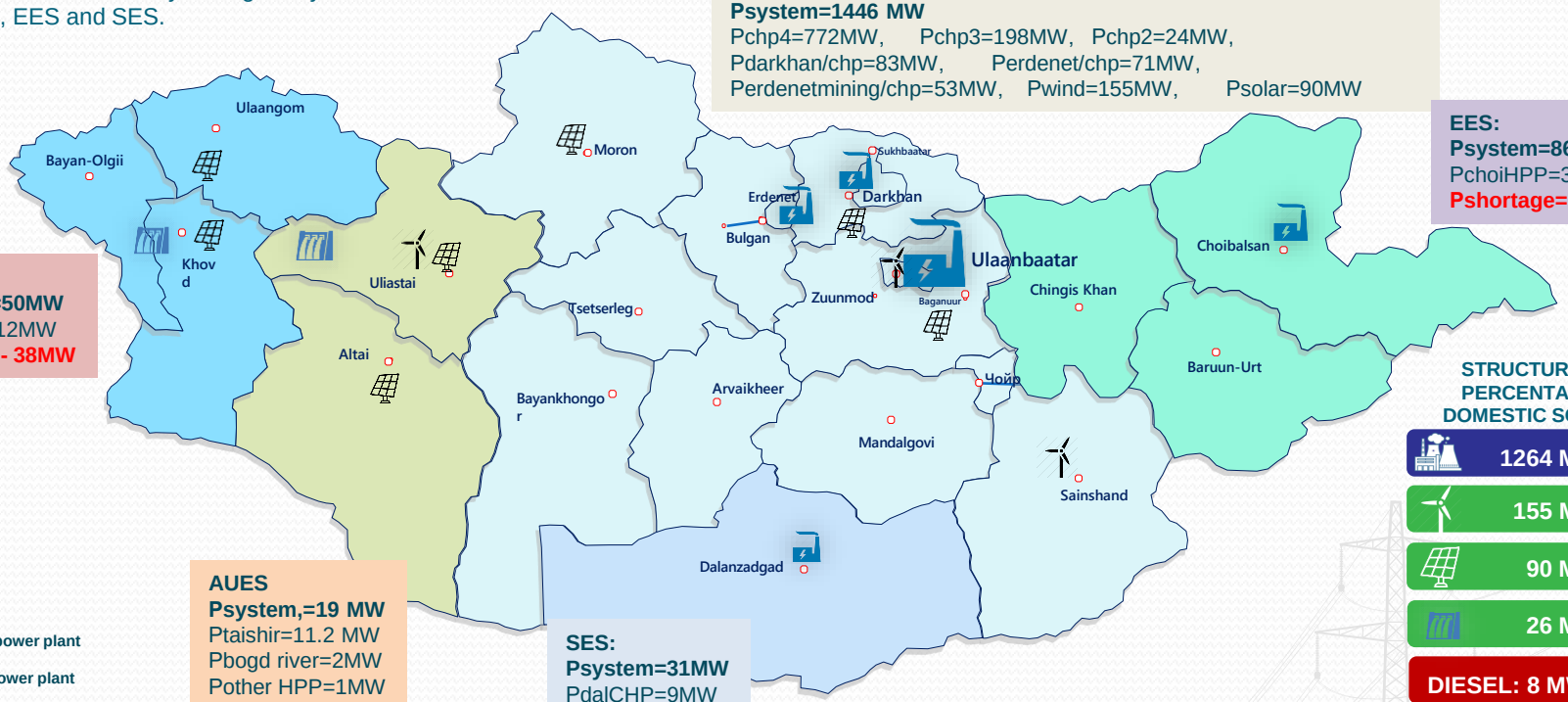
5 ENERGY SYSTEMS IN MONGOLIA

In Mongolia, 330 soums, towns and capital cities are supplied with electricity through 5 systems: CES, WES, AUES, EES and SES.

Central Energy System:
Psystem=1446 MW
Pchp4=772MW, Pchp3=198MW, Pchp2=24MW,
Pdarkhan/chp=83MW, Perdenet/chp=71MW,
Perdenetmining/chp=53MW, Pwind=155MW, Psolar=90MW

EES:
Psystem=86 MW
PchoiHPP=36 MW
Pshortage= - 50 MW

WES:
Psystem=50MW
Pdurgun=12MW
Pimport= - 38MW



AUES
Psystem,=19 MW
Ptaishir=11.2 MW
Pbogd river=2MW
Pother HPP=1MW
Pdiesel=4MW
Psolar=0.25MW

SES:
Psystem=31MW
PdalCHP=9MW
Phspp=18MW
Pdiesel=4MW

Solar power plant
Wind power plant
Hydro power plant
Thermal power plant

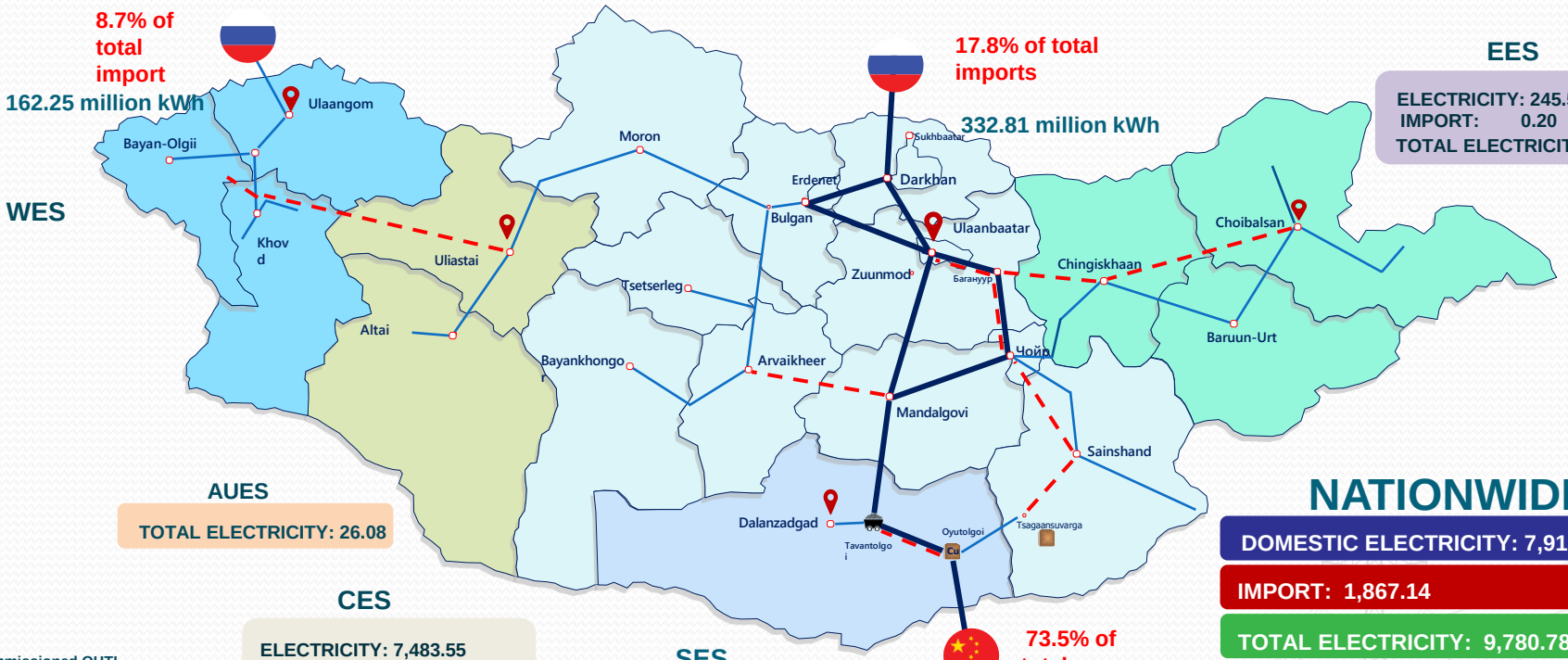
STRUCTURE AND PERCENTAGE OF DOMESTIC SOURCES

	1264 MW, 81,9%
	155 MW, 10,0%
	90 MW 5,8%
	26 MW, 1,7%
	DIESEL: 8 MW, 0,6%
	TOTAL 1544 MW

GOVERNMENT OF MONGOLIA
MINISTRY OF ENERGY

CURRENT SITUATION OF THE MONGOLIAN ENERGY SECTOR

NATIONAL ENERGY PRODUCTION AND IMPORT IN 2021, / million kWh /



WES

AUES

TOTAL ELECTRICITY: 26.08

CES

ELECTRICITY: 7,483.55
IMPORT: 332.81
TOTAL ELECTRICITY: 7,816.36

SES

ELECTRICITY: 58.42
IMPORT: 162.26
TOTAL ELECTRICITY: 220.68

EES

ELECTRICITY: 245.59
IMPORT: 0.20
TOTAL ELECTRICITY: 245.79

In commissioned OHTL
220 kV OHTL
110 kV OHTL

Planned OHL
220 kV OHTL

NATIONWIDE:

DOMESTIC ELECTRICITY: 7,913.65
IMPORT: 1,867.14
TOTAL ELECTRICITY: 9,780.78
PERCENTAGE OF IMPORTED ELECTRICITY 19.1%

Million kWh

GOVERNMENT OF MONGOLIA
MINISTRY OF ENERGY

BIGGEST RENEWABLE ENERGY PLANTS IN MONGOLIA

"Salkhit" WPP
Installed capacity-50 MW
2013 year

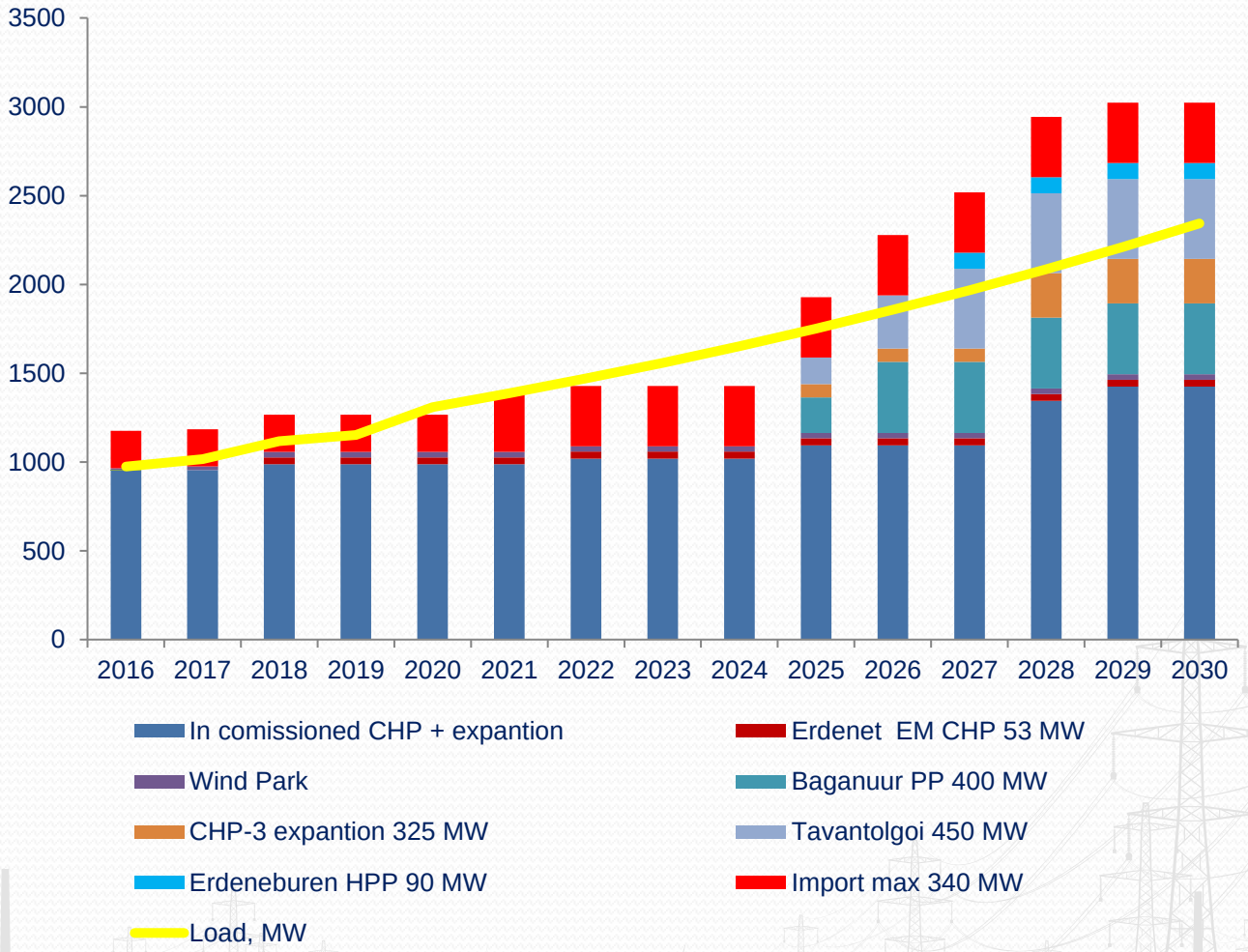
"Tsetsii" WPP
Installed capacity-50 MW
2017 year

"Nar" SPP
Installed capacity-10 MW
2016 year

"Monnaran" SPP
Installed capacity-10 MW
2017 year

SYSTEM ELECTRICITY BALANCE

SYSTEM ELECTRICITY BALANCE, until 2030



GOVERNMENT OF MONGOLIA
MINISTRY OF ENERGY

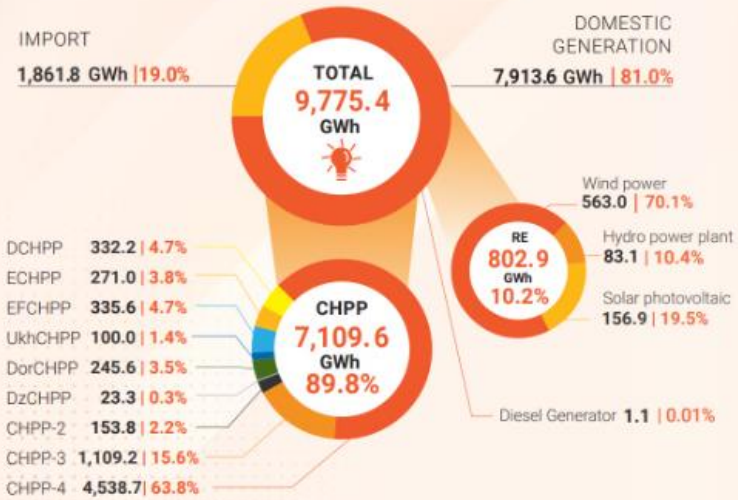
STATISTIC OF ELECTRICITY AND HEAD ENERGY

ELECTRICITY GENERATION

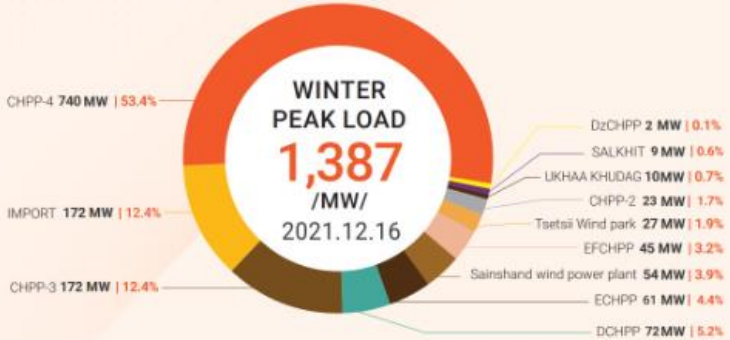
GWh

Generation set	2017	2018	2019	2020	2021
Combined heat and power plants	5,826.9	6,152.4	6,346.6	6,493.6	7,109.6
Diesel stations	3.7	3.7	3.0	2.7	1.1
Solar photovoltaics	19.7	51.5	109.0	108.9	156.9
Hydro power plants	84.5	78.2	85.4	83.3	83.1
Wind power plants	154.4	339.0	459.3	457.2	563.0
Total generation	**6,089.1**	**6,624.8**	**7,003.3**	**7,145.7**	**7,913.6**
Import	**1,522.5**	**1,683.6**	**1,715.8**	**1,705.6**	**1,861.8**

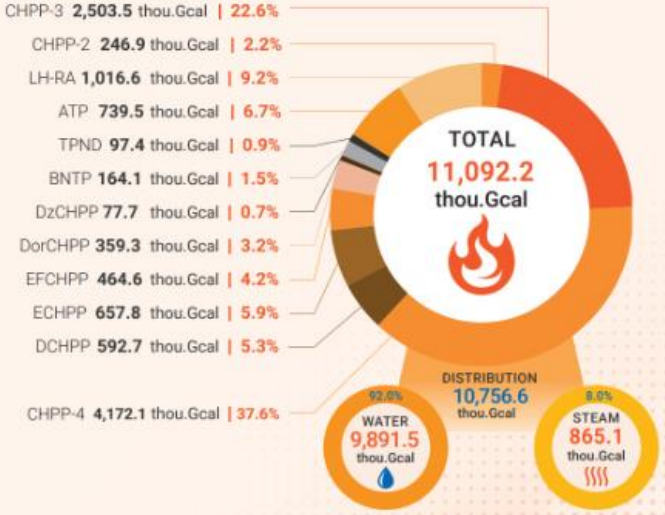
GENERATION STRUCTURE AND IMPORTS



CONTRIBUTION OF CHPPs TO THE PEAK LOAD OF IPG



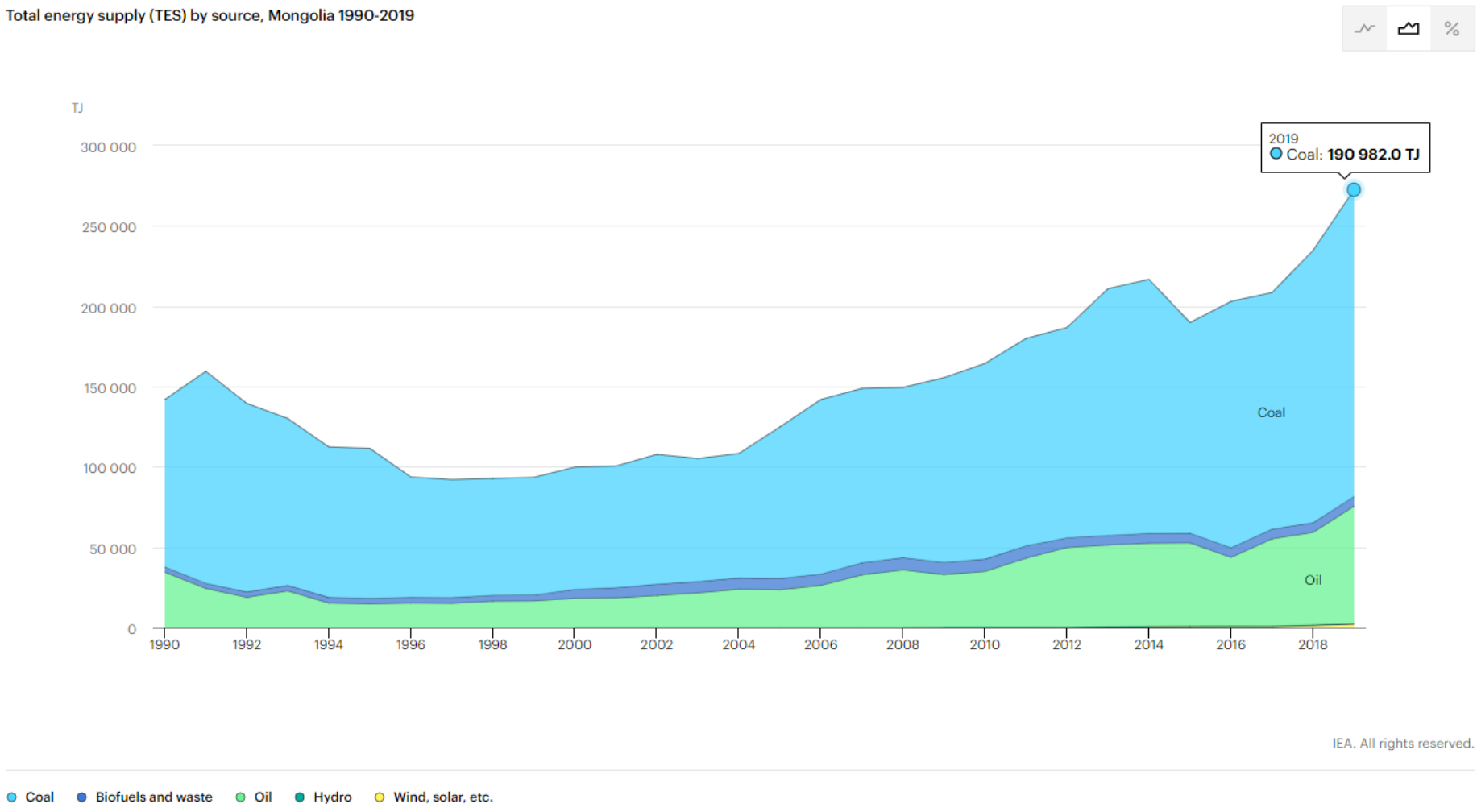
HEAT GENERATION BY PLANTS



Source: Energy regulatory commission 2021

GOVERNMENT OF MONGOLIA
MINISTRY OF ENERGY

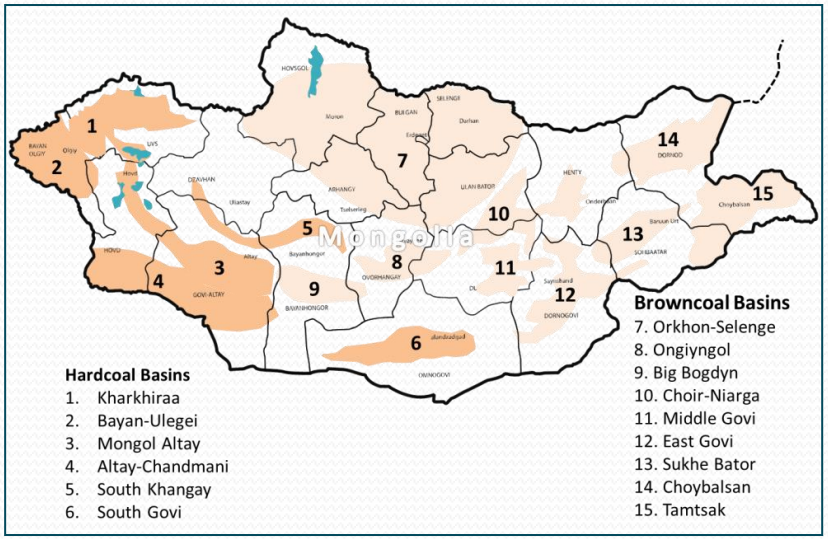
TOTAL ENERGY SUPPLY BY SOURCE



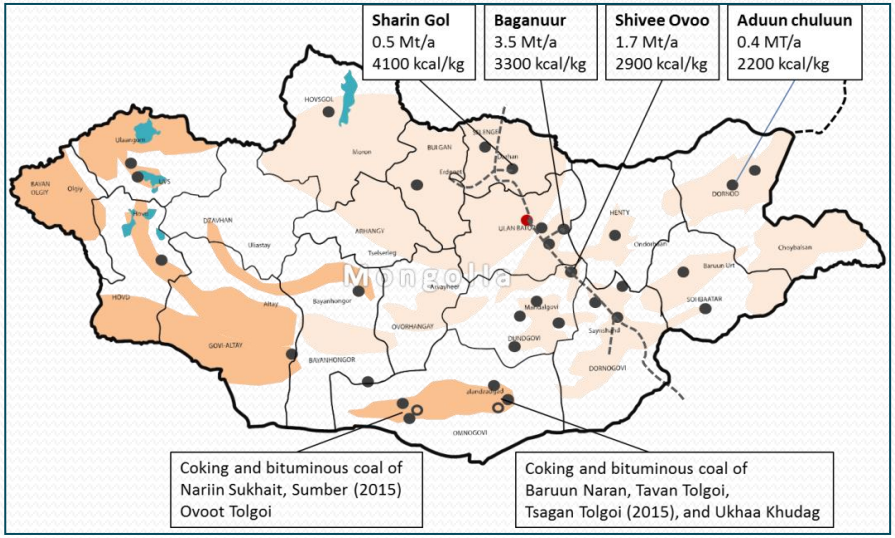
RESERVES OF ENERGY MINERAL RESOURCES

COAL

Coal Basins



Key Mines



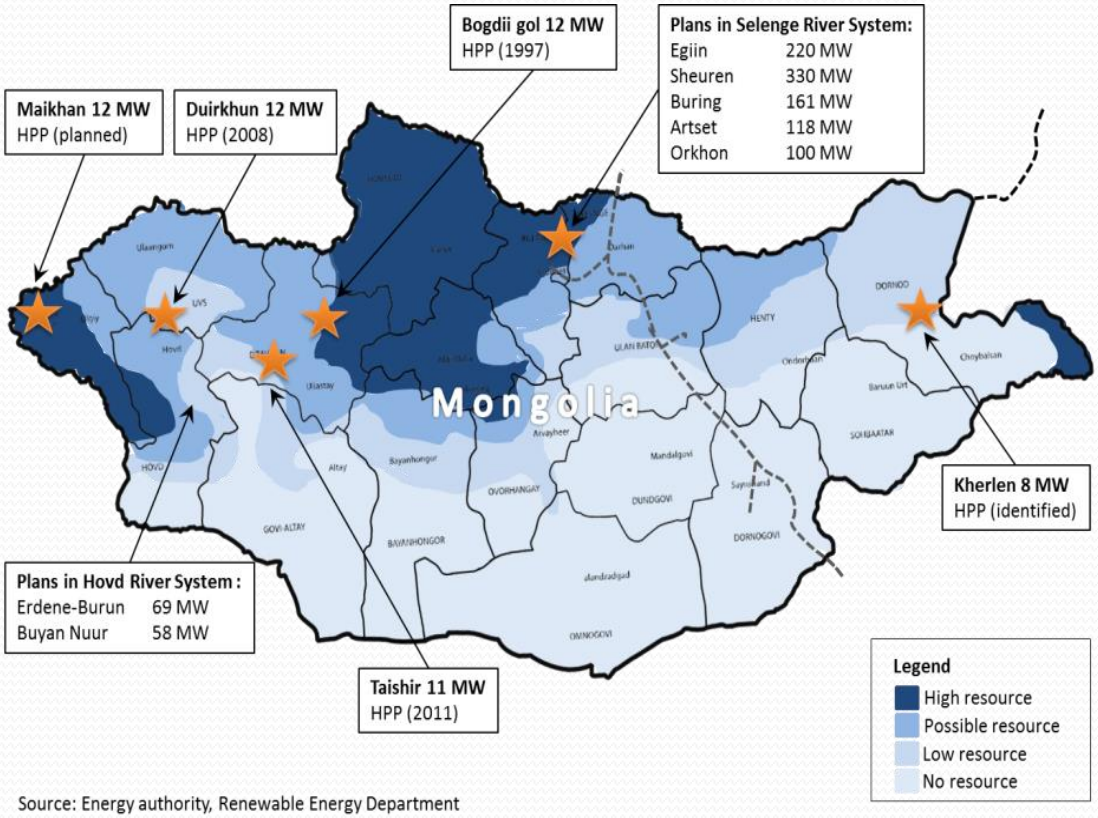
- Estimated total resources ~ 173 billion ton in 15 coal basins
- Over 370 identified occurrence in 85 deposits
- Proven Reserves 12 billion ton, of which 2 billion is coking coal
- Around 1/3 in Gobi Region
- Around 1/3 in Eastern Region

- Mines in Gobi area are for export /18 million in 2013/
  - Nariin Sulhait
  - Tavan tolgoi
- Mines in other region are for power production and household heating /12 million in 2013/
  - Baganuur, Shivee-Ovoo, Shariin Gol, Aduunchuluun etc.,

RESOURCES OF RENEWABLES

Rich resources of Solar, Wind and Hydro in Mongolia:

- **Solar:** 270-300 sunny days in a year, 4.3-4.7 kWh/meter or higher per day
- **Wind:** 10 % of the total land area can be classified as excellent for utility scale applications, Power density 400-600 W/m^2, the resource could potentially supply over 1100 GW of installed capacity.
- **Hydro:** Theoretical potential 6.2 GW, more than 1 GW of these ahs been identified



Source: Energy authority, Renewable Energy Department

GREENHOUSE GAS EMISSIONS

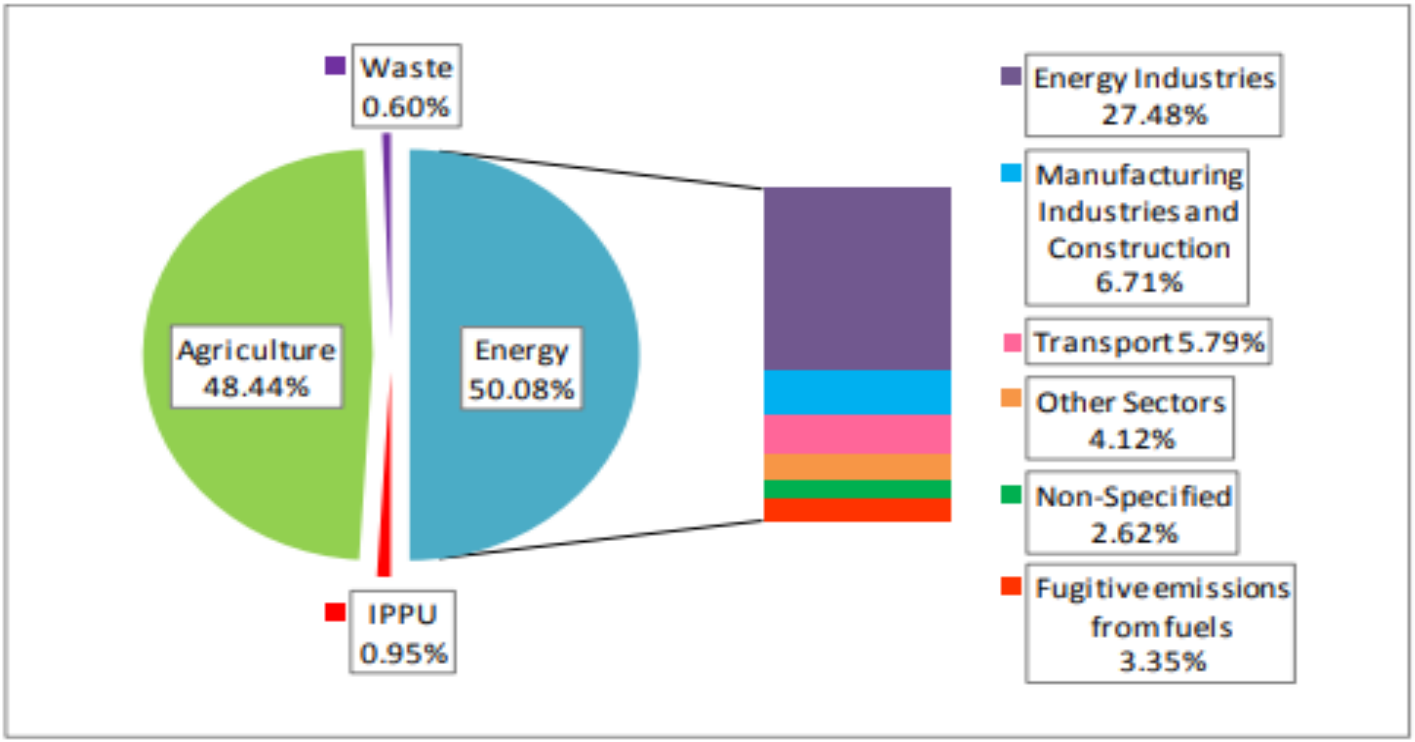


Figure 3-1: The share of each sector in total GHG emissions of Mongolia (excl. LULUCF), 2014

GHG emissions in 2014 from the energy sector were 17,267.79 Gg CO2e accounting for 50.08% of total national emissions. The second highest sharing of the total emission were from the Agriculture sector with 16,726.98 Gg CO2e accounting for 48.51%. Emissions from IPPU and Waste sector contributed 328.1 Gg CO2e (0.95%) and 159.91 Gg CO2e (0.46%) respectively to the national total in 2014

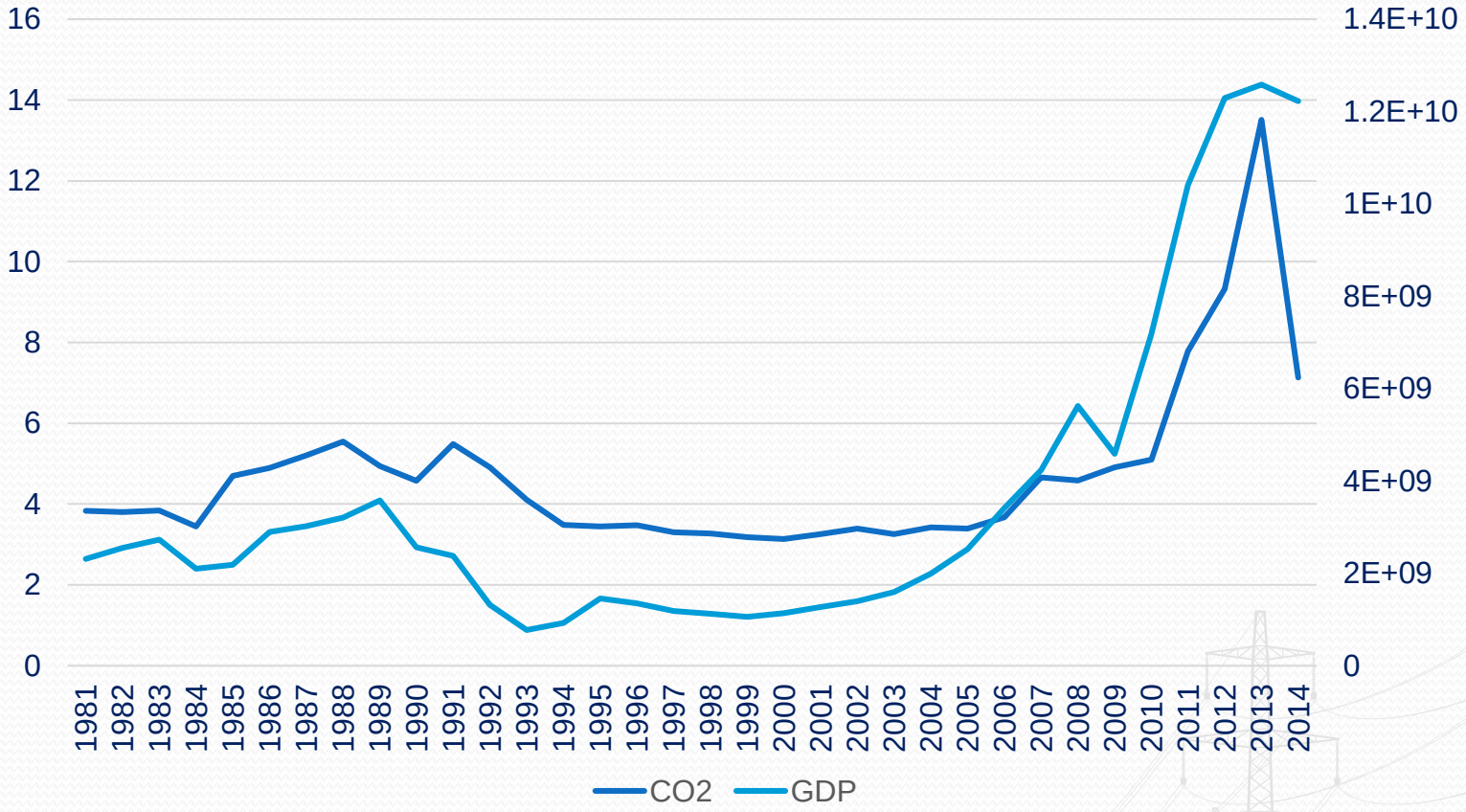
GOVERNMENT OF MONGOLIA
MINISTRY OF ENERGY

GREENHOUSE GAS EMISSIONS

Categories	Emissions	1990	1995	2000	2005	2010	2014
Energy industries	Gg	5,209.46	5,374.38	5,126.45	6,201.15	7,110.12	9,474.70
	%	46.97	60.25	68.09	63.68	53.75	54.87
Manufacturing Industries and Construction	Gg	2,535.38	1,792.04	571.47	716.3	1,888.93	2,313.48
	%	22.86	20.09	7.59	7.36	14.28	13.40
Transport	Gg	1,439.66	771.75	935.12	1,108.73	1,400.58	1,997.25
	%	12.98	8.65	12.42	11.39	10.59	11.57
Other Sectors	Gg	1,164.36	468.85	646.36	1,221.03	1,690.48	1,422.37
	%	10.50	5.26	8.59	12.54	12.78	8.24
Non-Specified	Gg	611.38	421.83	148.07	333.48	456.93	903.37
	%	5.51	4.73	1.97	3.42	3.45	5.23
Fugitive emissions from fuels	Gg	130.91	91.8	101.42	157.6	680.31	1,156.62
	%	1.18	1.03	1.35	1.62	5.14	6.70
Total	Gg	11,091.15	8,920.65	7,528.89	9,738.29	13,227.35	17,267.79
	%	100.00	100.00	100.00	100.00	100.00	100.00

GOVERNMENT OF MONGOLIA
MINISTRY OF ENERGY

GREENHOUSE EMISSIONS AND GDP



ELECTRICITY TARIFF FOR RESIDENTIAL

Electricity tariff for residential

№	Classification	Unit	Tariff
1	***Simple meter***		
a	Monthly consumption under 150 kWh	USA $/ kWh	0.043
b	Monthly consumption about 151 kWh	USA $/ kWh	0.049
2	***Time use of meter /2 parts/***		
a	Shoulder /06.00 am~21.00 pm/	USA $/ kWh	0.048
b	Off peak / 21.00 pm~ 06.00 am /	USA $/ kWh	0.035

Remark: Daytime, evening and nighttime tariff will apply duration of the meter hours.

GOVERNMENT OF MONGOLIA
MINISTRY OF ENERGY

TARIFF FOR INDUSRIAL ELECTRICITY CONSUMPTION

The tariff (VAT excluded) for industrial electricity shall be determined depending on the its classification of units of indicators as follows:

№	Classification	Unit	Tariff
1	***Mining industries***		
	These : Coal mining exploration and cultivation		
	Oil and gas mining exploration and cultivation		
	Iron Mining exploration and cultivation		
	Other mining exploration and cultivation		
1.1	Simple meter	USA $/ kWh	0.065
1.2	Time use of meter /3 parts/		
a	Shoulder (06.00 am ~17.00 pm)	USA $/ kWh	0.065
b	Peak(17.00 pm ~ 22.00 pm)	USA $/ kWh	0.011
c	Off peak (22.00 pm~06.00 am)	USA $/ kWh	0.032

GOVERNMENT OF MONGOLIA
MINISTRY OF ENERGY

THANK YOU
FOR YOUR ATTENTION

Website: http://www.energy.gov.mn/