

*Carbon Finance Project Development
Workshop*

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Ulaanbaatar Hotel



“Carbon Market Potential in Mongolia”

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Climate change in Mongolia

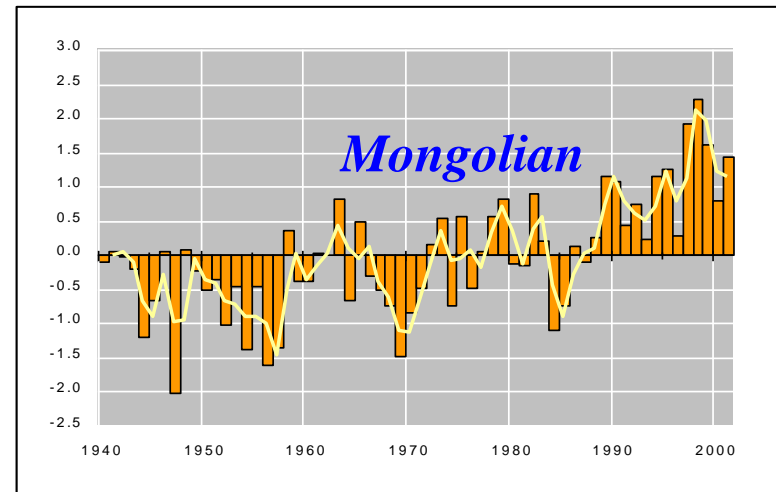
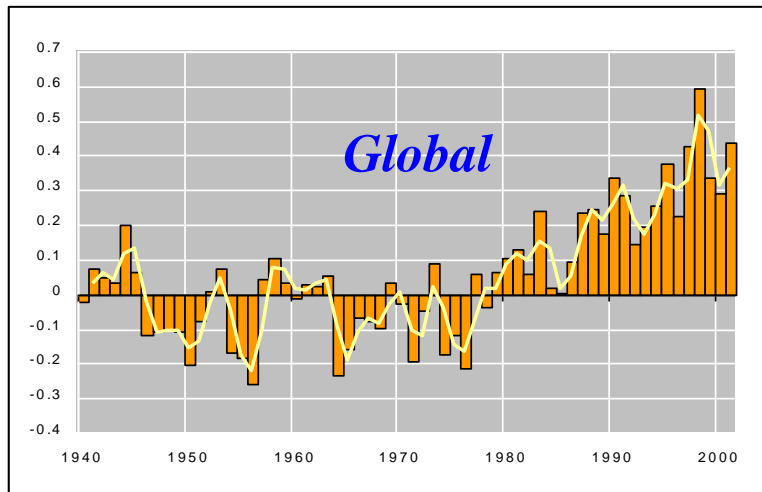
Climate Change in Mongolia

last 60 years

- annual air temperature increased by 1.56 0C on average
 - in the winter (3.61 0C) and
 - in the spring (1.40C - 1.5 0C).

Projections

- annual mean temperature will increase 1.80C– 2.80C by 2040 and 2.80C – 4.60C by 2070.





Climate change in Mongolia

The climate of Mongolia is characterized by:

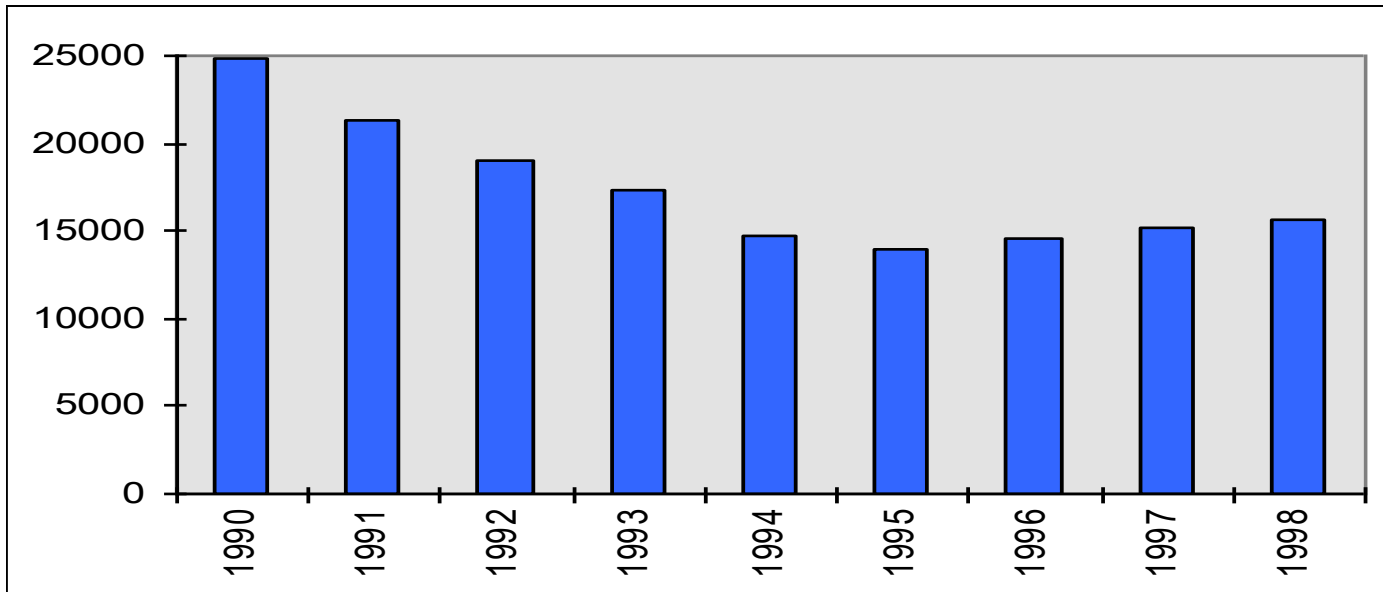
- long cold winter,
- short cool summer,
- low precipitation,
- high temperature variability and
- a relatively long duration of sunshine

Global warming will have a **significant impact on:**

- **natural resources** (water resources, natural rangeland, land use, snow cover, permafrost, etc.),
- **economy** (arable farming, livestock, etc.) and
- **society** (human health, living standards, etc.) in Mongolia.

Greenhouse gas emissions

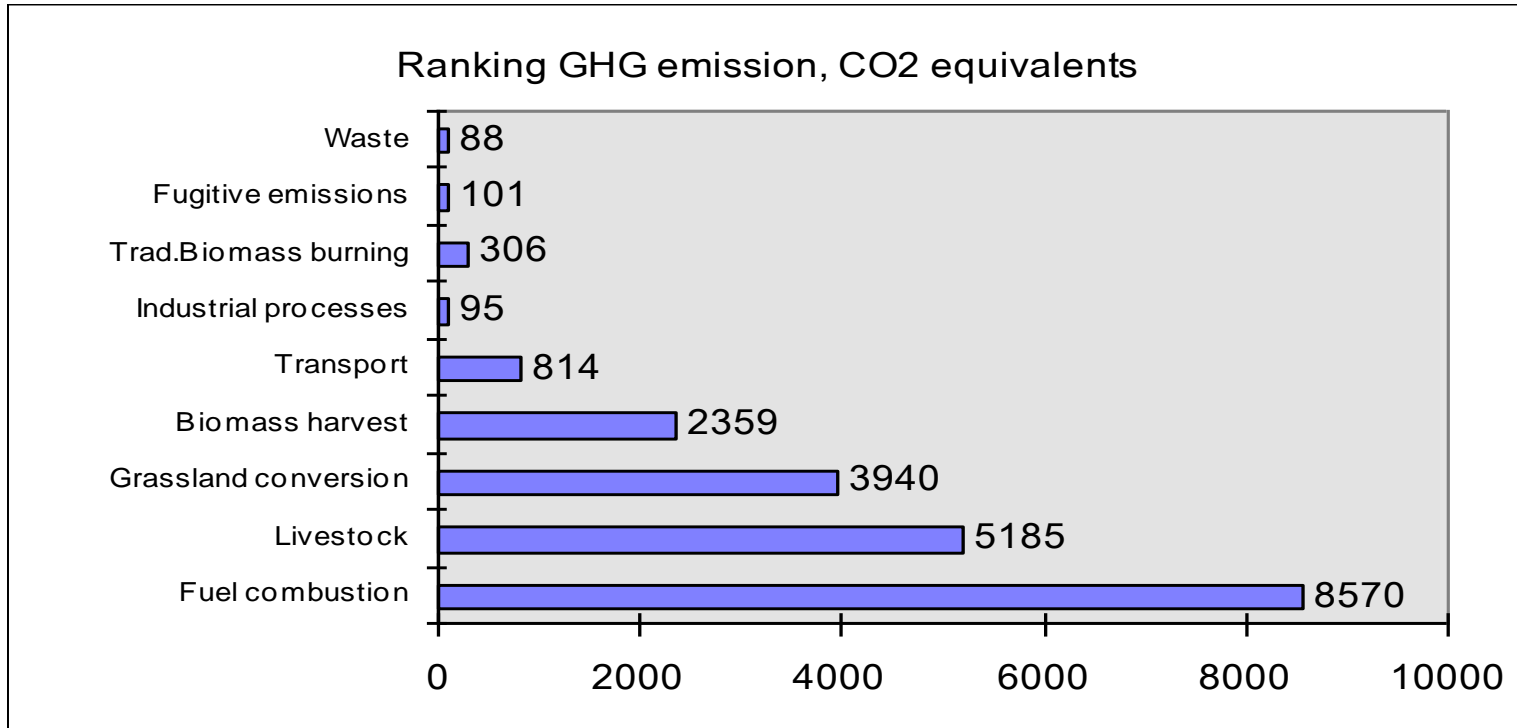
Total net emissions of GHGs in CO2 equivalents (1000 tons)



Emissions of carbon dioxide have decreased since 1990s, largely due to decreases in fossil fuel consumption as a result of the transition from a socialist economy to a market economy.

Greenhouse gas emissions

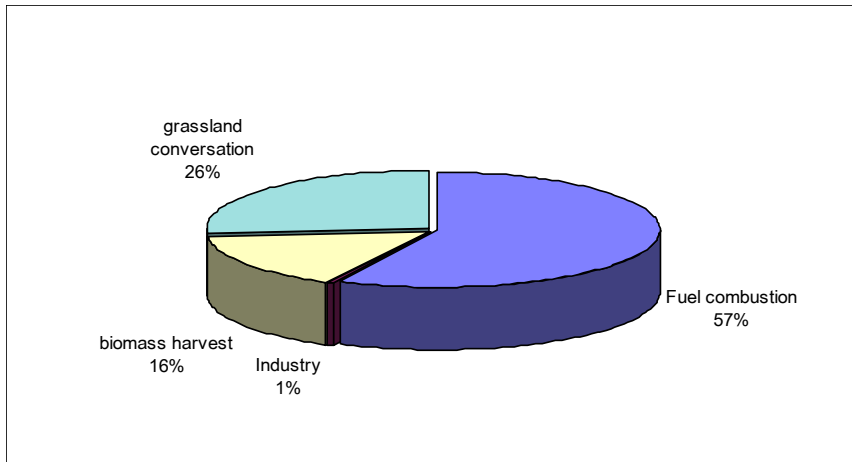
Ranking GHG emissions by source, 1994.



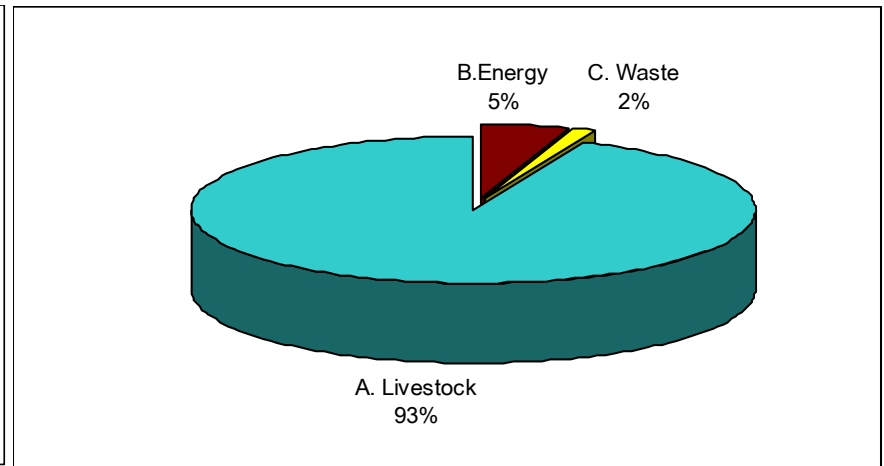
The biggest source of GHG in Mongolia is fuel combustion for generation of power and heat, followed by livestock herding and grassland conversion into croplands. The smallest source is the waste sector.

Greenhouse gas emissions

Carbon dioxide emissions by sector



Methane emissions by sector



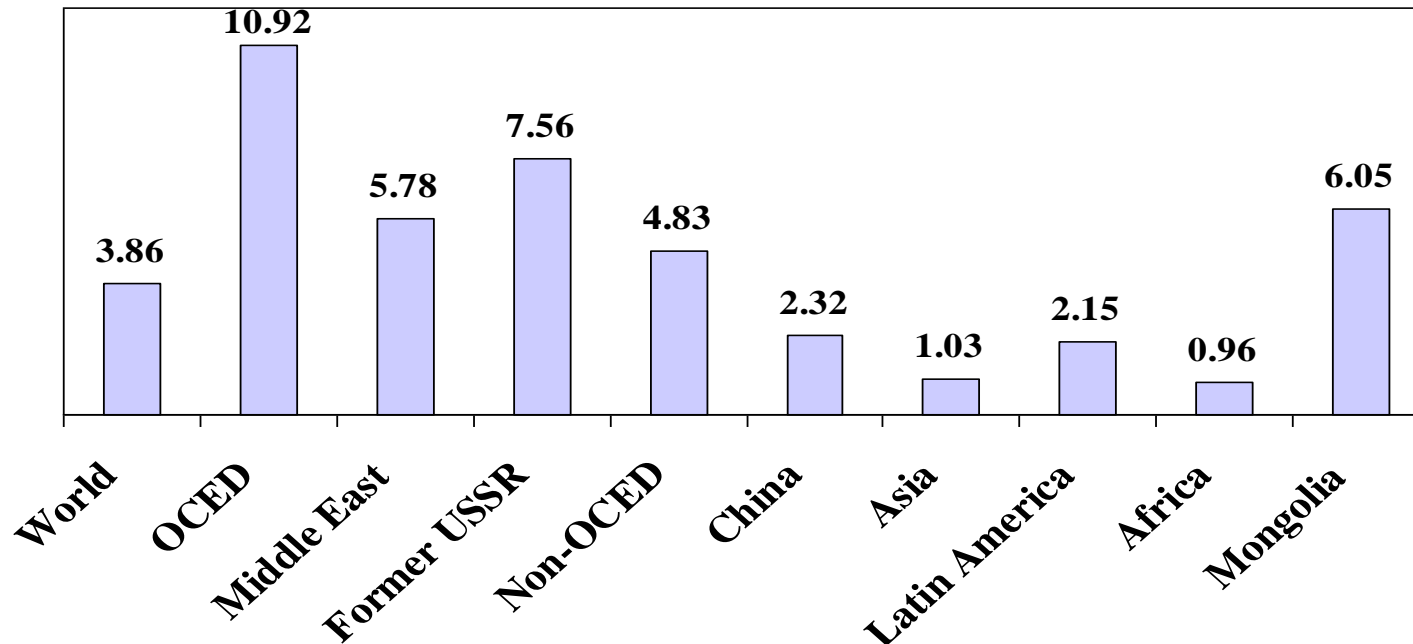
Emissions of carbon dioxide from fossil fuel combustion are the largest source of emissions in Mongolia accounting for about 60% of all emissions. The second large source is conversion of grasslands for cultivation (20-27%).

The largest single source of methane in Mongolia is livestock herding. This is due to the relatively large population of domestic animals in Mongolia. Emissions from this sector about 90-93% of total emission. In energy sector main sources are mining activities and biomass burning.

Per capita GHG emissions

Source: Key world Energy Statistics from the IEA, 2000

tons/person



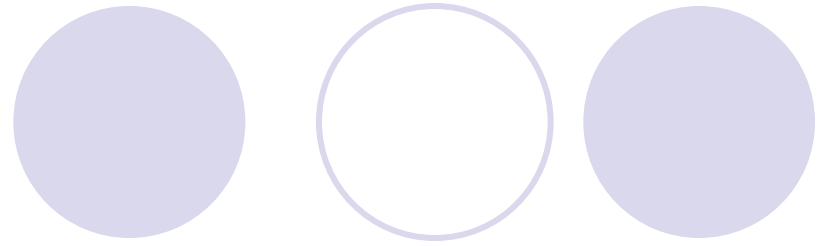
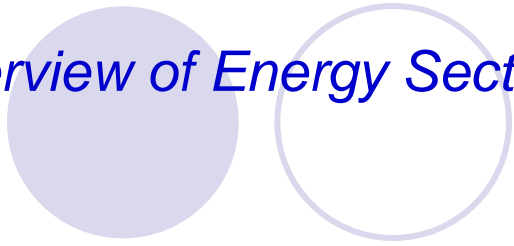
If compare with the other developed and developing countries, the total GHG emissions is small, but per capita and per GDP emissions is high. Mongolia's per capita emissions were 6.0 tons /person for 2000 , which is almost 2 times more than world average.

Overview of Energy Sector

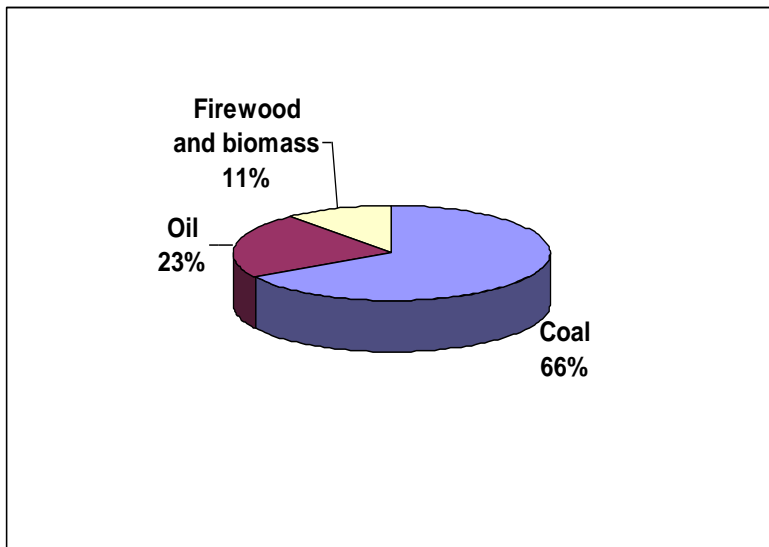
Primary Energy Demand by Source

	1990		1995		2000		2005	
	TOE	%	TOE	%	TOE	%	TOE	%
Coal	2423.0	69.8	1842.0	71.2	1856.0	70.5	1895.0	66.3
Oil	877.3	25.2	469.2	18.1	482.2	18.3	648.0	22.7
Hydro	0	0.0	0	0.0	0	0.0	0	0.0
Firewood and biomass	173.1	5.0	277.2	10.7	292.8	11.2	314.0	11.0
TOTAL	3473.4	100	2588.4	100	2631	100	2857	100

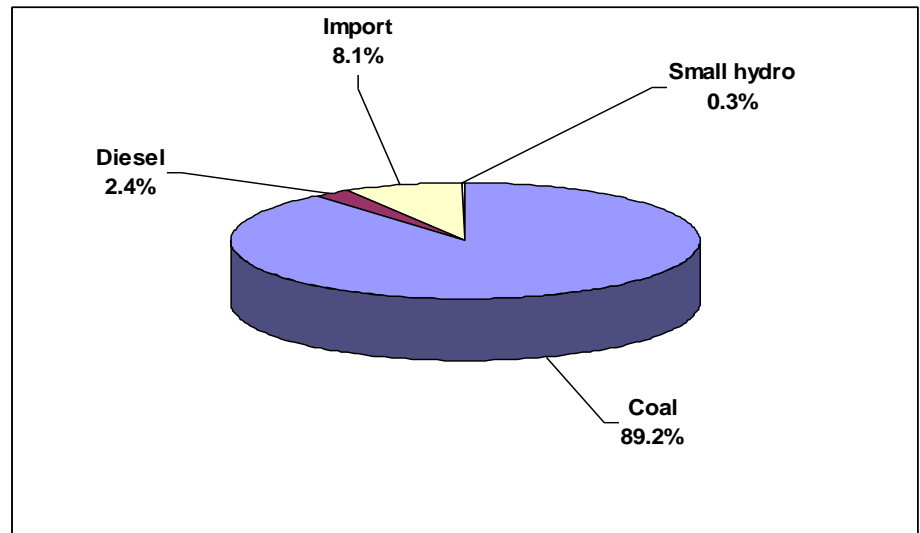
Overview of Energy Sector



Primary Energy demand by source



Electricity generation by source



Policy Guidelines & Programs

- Energy Law by Parliament in 2001 (enabled establishment of Energy Regulatory Authority)
- Renewable Energy Law” approved in 2007
- “Coal” Program
- “Mongolia Integrated Power System” (MIPS)
- “Mongolia Sustainable Energy Sector Development Strategy Plan (2002-2010)”
- Mongolia National Renewable Energy Program approved in June 2005
- Liquefied petroleum gas (LPG) Program

Greenhouse gas mitigation potential

Mitigation options

1. *Energy supply sector*

- **Increase Renewable options**
 - Hydro Power Plants
 - Wind farms
 - PV and solar heating
- **Efficiency improvement of Heating boilers**
 - Efficiency improvement of existing HOB,
 - Install boilers new design with high efficiency
 - Converting steam boilers into small capacity thermal power plant
- **Improvement of household stoves and furnaces**
 - Modernization of existing household stoves and furnaces
 - Implementation of new design household stoves and furnaces
 - Change of fuels for household stoves and furnaces
- **Improving of coal quality**
 - Coal briquette
 - Application of effective mining technology and facilities, including selective mining, dewatering system coal handling plant.

- **CHP improvement options**
 - Efficiency improvement
 - Reduction of internal use

Greenhouse gas mitigation potential

Mitigation options

2. Energy Demand Sector

- **District heating and built environment**
 - Building insulation improvements
 - Improvements of district heating system in buildings
 - Lighting efficiency improvements
- **Industry**
 - Good housekeeping
 - Motor efficiency improvements
 - Lighting efficiency improvements
 - Technology change (Dry process of cement industry and others)

Renewable energy CDM projects

Summary of Hydropower CDM projects in Mongolia

Name of project	Type of project	Expected CER, CO2e/yr	Project Situation	Host country and organization	CDM Project development participants
Taishir 11 MW Hydropower project	Small scale Hydropower project	29,600	Under Construction	Mongolia, Ministry of Fuel and Energy (MFE)	Energy Research and Development Center (ERDC) Mitsubishi UFJ Securities Co., Ltd.
Taishir 12 MW Hydropower project	Small scale Hydropower project	30,000	Construction is finished	Mongolia, MFE	ERDC/Mongolia Mitsubishi UFJ Securities Co., Ltd./ Japan
The 220 MW Egiin Gol Hydro power project	Hydropower project	192,500	Under starting of construction	Mongolia, MFE	ERDC/Mongolia Mitsubishi UFJ Securities Co., Ltd./ Japan

Renewable energy CDM projects

Location of the Hydropower CDM projects in Mongolia



CDM projects in Mongolia

Summary of Energy efficiency CDM projects in Mongolia

<i>Name of project</i>	<i>Type of project</i>	<i>Expected CER, CO2e/yr</i>	<i>Project Situation</i>	<i>Host country and organization</i>	<i>CDM Project development participants</i>
A retrofit programme for decentralised heating stations in Mongolia.	Small scale Energy efficiency project	11,904	The project has been partially carried out	Mongolia, Ministry of Mature and Environment	Mongol Zuukh XXI Ltd./MongoliaProkon Nord Energiesysteme GmbH, Leer/ Germany
Energy efficiency improvements carried out by an Energy Service Company (ESCO)1 in Ulaanbaatar, Mongolia to replace old boilers with new ones	Small scale Energy efficiency project	22,700	The project is under implementation. 10 inefficient boilers has been changed by energy efficient boilers	Mongolia, Any Service	Anu Service/ MongoliaMitsubishi UFJ Securities Co., Ltd./ Japan



Thank you for attention