Ulaanbaatar City Heating Supply
Current Status and Future Trends

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Ulaanbaatar is the capital city of Mongolia. It has a total area of 470,444 hectares and a built-up area of 10,244 hectares. It is the coldest capital in the world, with the highest winter temperature reaching -40°C. The heating season lasts for 8 months, starting from 15 September and ending on 15 May. The population of Mongolia is estimated to be around 2.7 million, with 1.1 million residing in the capital city of Ulaanbaatar. In Ulaanbaatar, approximately 40% of the population live in apartments, while 60% live in ger areas. The cost of total household energy consumption is predominantly spent on heating, with the remaining 40% for electricity.
Energy Production of Mongolia

Total Consumption - 1047.55 MW

- Diesel Generator: 46.00 MW
- Hydropower Plant: 27.75 MW
- Renewable Energy: 3.70 MW
- Termo-Power Plant: 835.7 MW
- Imported Energy: 134.4 MW

<table>
<thead>
<tr>
<th>Production</th>
<th>State wise /MW/</th>
<th>Ulaanbaatar /MW/</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel Generator</td>
<td>46.00</td>
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Central Heating System of the City

- 3 Termo-Power Plants
- Transfer stations with capacity of 220/110 KÂ
- Transfer stations with capacity of 35/6, 35/10 KB
- Distributor Stations with capacity of 10, 6KÂ
Resources of Heating Supply

3 Termo Power Plants with total capacity of 1849.04 MW provide energy for over 4200 buildings

1093 Heat only Boilers provide 24.824 MW energy to over 1500 facilities

Common household stoves provide 46.1MW for 145 000 Households

Capacity of TermoPower Plants

<table>
<thead>
<tr>
<th>Termo-power Station</th>
<th>Capacity /MW/</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPP № 4</td>
<td>1090.4</td>
</tr>
<tr>
<td>TPP № 3</td>
<td>535.92</td>
</tr>
<tr>
<td>TPP №2</td>
<td>32.48</td>
</tr>
</tbody>
</table>

Heating Supply Composition

- Household Stoves: 7%
- Heat only Boilers: 13%
- TermoPower Plants: 80%
5.9 Million ton per year

[Image: Coal]

Wood

178.0 thousand ton per year for 145000 households use

[Image: Briquette]

92.3 thousand ton per year

[Image: Gas]

for household use

### Constituents of total fuel
- 96% Coal
- 3% Wood
- 1% Briquette

### Energy Supply Constituents
- 80% Common Household Stoves
- 13% Heat only Boilers
- 7% TermoPower Plants

### Coal Consumption
- 66% Household Stoves
- 21% Heat Only Boilers
- 13% TermoPower Plants

Gas for household use
Trends in UB Energy Consumption Growth

Electricity

Heating

2015: 482

2020: 702

2025: 986

2030: 1328

2030: 2295.64
Challenges for Energy Sector

- Introduction of advanced coal modification technology for environment friendly fuel production in order to reduce winter air pollution in Ulaanbaatar city
- Outdated and deteriorated heating lines and facilities need to be changed and maintained
- Increased energy demand due to population growth need expansion of the existing capacity
- Increase energy efficiency of heating supply system
- Introduction of new advanced technologies
- Installation of heat meters for the consumers
- Research and Development for additional and alternative energy resources

### Aging of facilities of central heating system
- 26%: 89.9 km - up to 20 years
- 31%: 121.1 km - 20-30 years
- 43%: Up to 40 years 74.9 km

### Aging of 0.4, 6-10 kV electricity lines
- 17%: 20 years
- 22%: 30 years
- 40%: 40 years
- 21%: 50 years
Planned Actions

- Local heating centers to be established in peri-urban areas where central heating system hasn’t reached yet
- Redevelopment of informal settlement areas
- New Termo-Power Plant construction in order to meet increased energy demand
- Upgrading of the central heating system through expansion and maintenance of the existing engineering network
- Technology renovation for reduction of energy loss of the engineering network
- Control population growth of the city through improvement of the suburb and remote area energy supply
Projects in Energy Sector of Mongolia (1990-2010)

Total number of projects completed and on-going: 67
Total budget of the projects: 575.3 Million USD
  from which loan: 347.9 Million USD
  Grant aid: 227.4 Million USD

Successful Projects:

• Reduction of energy loss in the distribution network
  23,400,000 USD (Loan) from 2004
• Energy Efficiency Project
  1,875,000 EU from 2008
• Thermal-technical rehabilitation of panel building
  200,000 USD 2007
Thank you for your attention!