

Mongolia: Issues in Energy and Environmental Planning

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1. Introduction

Population – 2.4 million people

Territory – 1.6 million square km

GDP per capita – 480 USD

GDP growth – 10.6% (2004)

Main export items – copper, gold, agricultural products, textile

Due to landlocked and remote location the development of infrastructure, roads, energy access and telecommunications, is vital.

- Main policy priority is to increase for private sector participation (PSP)
- Energy Law by adopted by Great Khural (Parliament) in 2001
- Energy Regulatory Authority (ERA)
- “Mongolia Integrated Power System” (MIPS)
- “Mongolia Sustainable Energy Sector Development Strategy Plan (2002-2010)”

- Recent Government Actions Undertaken in Energy Sector
 - Energy Law adopted in 2001
- Current Status of Restructuring
 - Unbundling
 - Corporatization
 - Commercialization
 - Privatization
- Independent Regulatory Body
- Main Result - Separation of Policy Implementation from Regulation, Regulation from Ownership

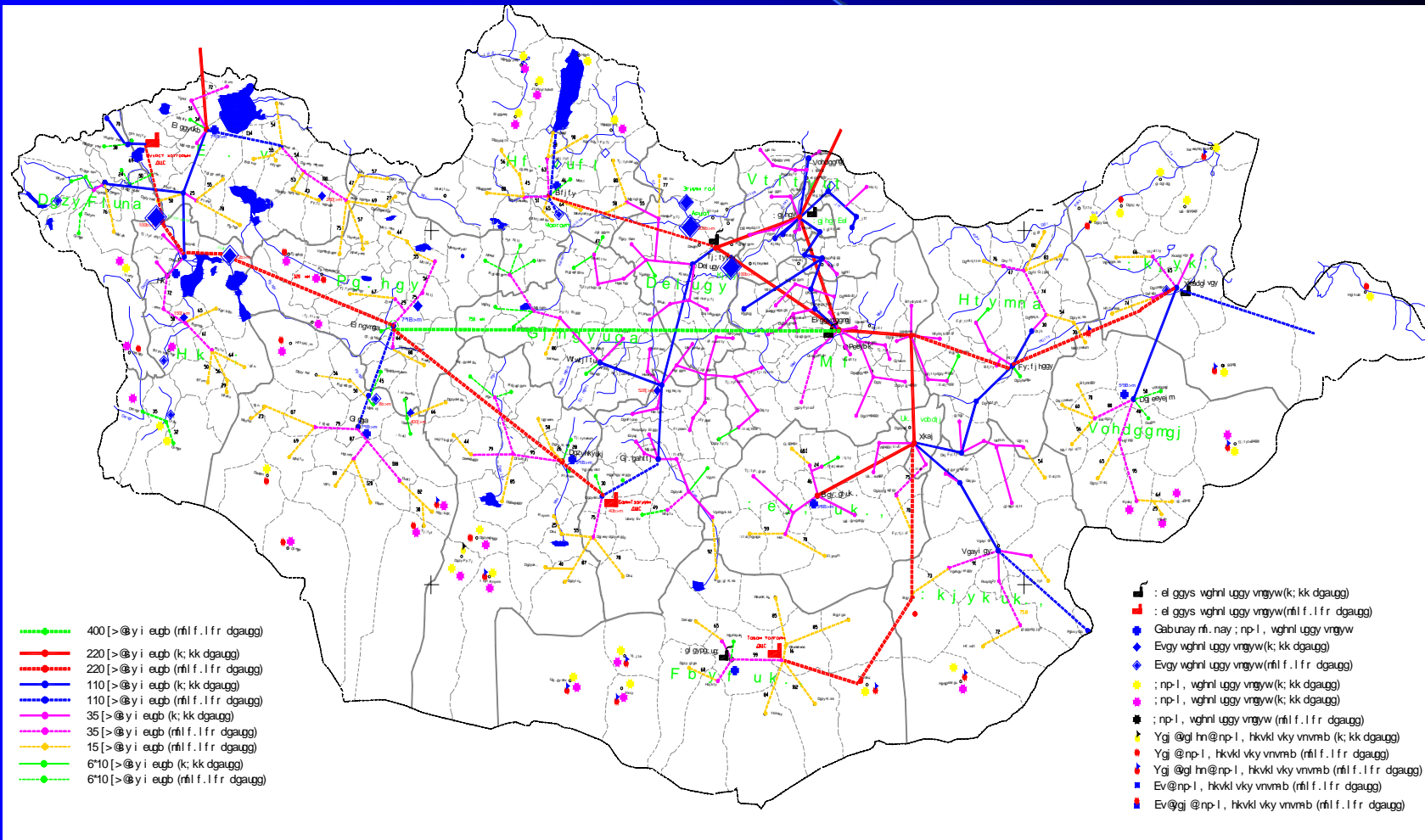
Creation of Independent Regulatory Body

- Energy Regulatory Authority (ERA)
 - Licensing
 - Tariff setting
 - Consumer Right Protection
 - Monitoring
- Main Result - Efficient Operators Could Enter the Market

Mongolia Integrated Power System (MIPS)

- to develop reliable and affordable energy supply
- to contribute to regional development
- to improve energy security

Mongolia Integrated Power System



C. MILLENNIUM ROAD



1	1	2	3	4	5
2653 km	1009 km	789 km	1261 km	1121 km	713 km

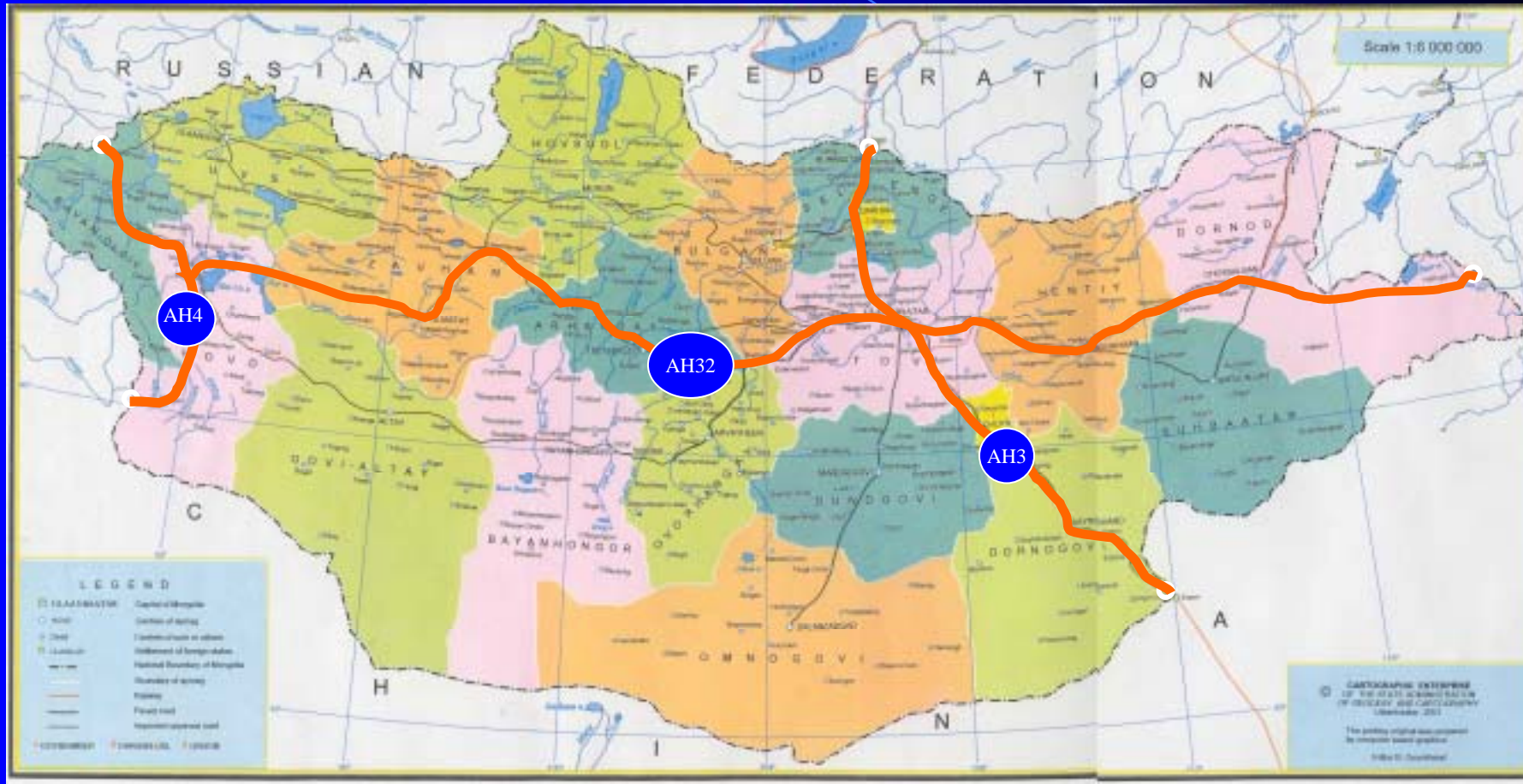
Total – 7546 km

D. ASIAN HIGHWAY

ASIAN HIGHWAY ROUTE MAP



ASIAN HIGHWAY IN MONGOLIA



AH32

2325km

AH3

1009 km

AH4

758 km

The Government Resolution #140 approved the “Mongolia Sustainable Energy Sector Development Strategy Plan (2002-2010)”

Main principles:

- Financial sustainability
- Restructuring
- Capacity building
- Energy access and affordability
- Energy conservation

- In 2003 the Government of Mongolia privatized Baganuur heat only boiler (HOB), Nalaikh HOB, Darkhan Selenge Electricity Distribution Network (DSEDN) Company, and “Sharyn Gol” coal mine.

2. CURRENT SITUATION WITH SUPPLY AND DEMAND

Mongolia's power sector - CES, EES, WES, diesel generators and heat only boilers (HOB) in off grid areas, aimag and soum centers.

- Total installed capacity 830 MW
- Transmission & distribution losses 25.0 %
- Peak load 540 MW
- Annual demand is reached 2.5 mln KWh.
- 7 combined heat and power plants (CHP),
- Transmission lines
 - 1000 km of 220 kV,
 - 2500 km of 110 kV,
 - 4000 km of 35 kV, and
 - 5 substations of 220 kV, over 150 substations of 35 kV, 110 kV in use.

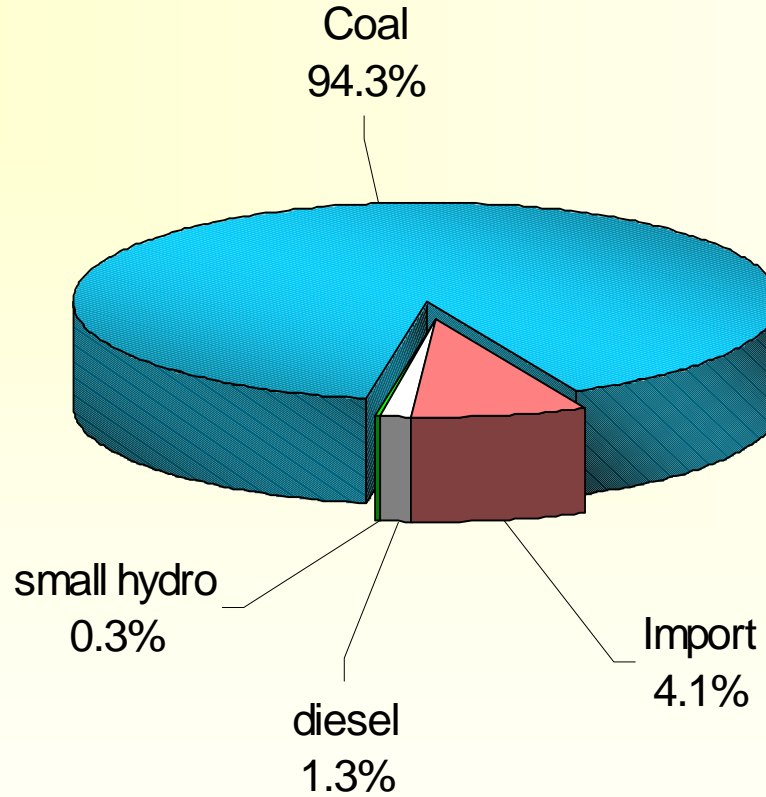
- The power sector in Mongolia supplies with electricity major towns and settlements, and 70 percent of total population;
- 30 per cent of population (3 aimag centers and more than 160 soums) is not connected to grid;
- Western three provinces connected by electricity transmission line to the Russian Federation and import electricity.

- According to the Energy Sector Master Plan, the demand is forecasted to increase at an annual average growth rate of 2.9 percent between 2001 and 2020.
- As of third quarter of 2004, the power demand has increased by 7 per cent, and an increased demand is due to increased mining production.
- The substantial increase in demand is expected in Southern Gobi, and this region is expected to have a large scale mining development in the region.
- In Southern Gobi region there are Tavantolgoi coal deposit, Oyu Tolgoi and Tsagaan Suvraga copper deposits.

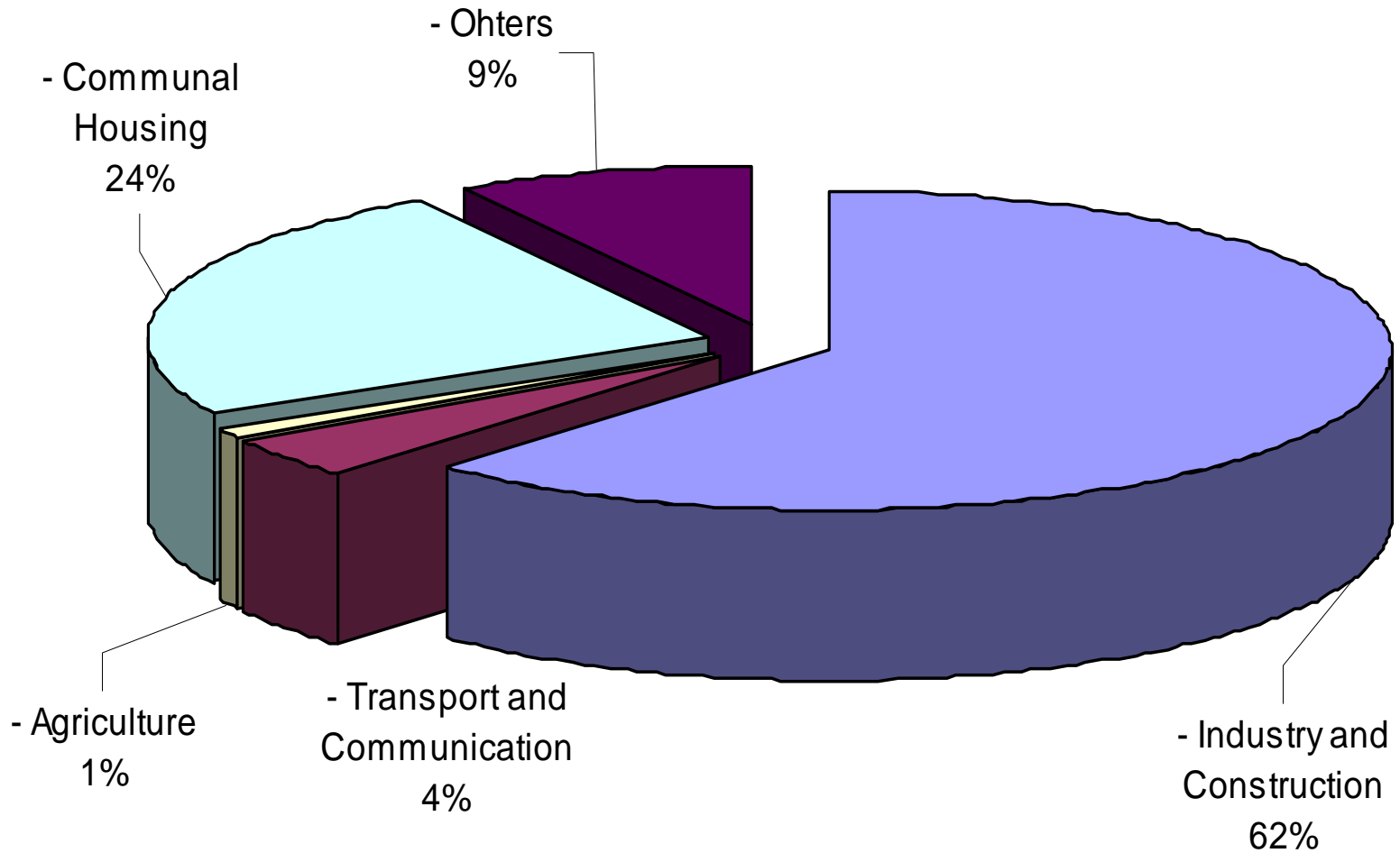
- Tavan tolgoi coal-mining district is located in the Ulaan Nuur Valley, Omnogovi aimag, about 540 km south Ulaanbaatar city.
- Four major coalfields have been defined within the Ulaan Nuur that correspond to district structural blocks. They are Tavan Tolgoi Coalfield, Ulaanhudag Coalfield, Eastern Coalfield, Bortolgoi Coalfield.
- An estimated 6.4 billion tons of geological coal resources have been defined in these coalfields, nearly 1.8 billion tons of coking coal and 4.6 billion of thermal coal

- The Oyu Tolgoi (“Turquoise Hill”) Porphyry Copper – Gold project is located in Southern Mongolia in 80 km from the border with China and 550 km south of Ulaanbaatar.
- Recent estimates show that the Turquoise Hill project contains an inferred resource of 2.6 billion tonnes grading 0.73% copper and 0.17 g/t gold, containing approximately 19.1 million tonnes (42.2 billion pounds) of copper and 14.4 million ounces of gold

Electricity generation by source 2003



ELECTRICITY DEMAND STRUCTURE



Oil

- In 1991, the Petroleum Law of Mongolia was ratified by the Parliament.
- Since then 151.8 million USD were invested to exploration of oil, and 689.4 thousand barrels of oil was exported.
- At this moment Mongolia doesn't have own refineries, and all petroleum products, such as gasoline, diesel, jet fuel etc., are imported.
- The total volume of import for 2003 was 436.3 thousand tons of petroleum products.

Liquefied Petroleum Gas (LPG)

- Import of Liquefied Petroleum Gas (LPG) from Russia since 1996
- Average Demand Growth of 40% per year
- 8 companies involved with the import & distribution of LPG
- Good potentials for LPG as a new fuel mix, as a relatively “clean” fuel compared to fossil fuel
- The Government of Mongolia launched a new program “Liquefied Petroleum Gas”
- Extension of LPG use for public use (auto transportation, heat supply, production and services).

Coal

Inferred coal reserves are roughly 150 billion tons, of which 20 percent is coking coal and 80 percent is lignite or steam coal.

- Proved coal reserves estimated at 20 billion tons.
- The reserves are located in 240 deposits and occurrences in 12 major coal basins in three regions, and approximately 25 percent of these deposits have been confirmed by geological survey.
- Currently, there are 32 coal mines operating, of which 13 have been re-established as joint stock companies and 12 are private companies.
- Mongolia exported 1.5 million tons of coal to China in 2004, and with the expansion of production at Tavantolgoi and Nariin Sukhait coal mines expected to increase very rapidly.

3. Energy Sector Restructuring & Regulatory Changes

- Recent Government Actions Undertaken in Energy Sector
 - Energy Law adopted in 2001
- Current Status of Restructuring
 - Unbundling
 - Corporatization
 - Commercialization
 - Privatization
- Main priorities for Regulator
 - Improve Efficiency
 - Introduce Competition on Generation Side
 - Privatization

The main duties of the Energy Regulatory Authority (ERA)

- issuing of operational licenses and monitor the compliance with the terms and conditions of licenses,
- review and set the energy tariffs and prices,
- keep an adequate balance between rights and interests of licensees and consumers,
- resolve disputes between licensees and consumers,
- support a fair competition in the energy sector.

- The Energy Regulatory Authority is governed by the Regulatory Board, which consists of three Regulators, appointed by the Prime Minister of Mongolia. The Regulators appointed for rotating terms, such as 2, 4 and 6 years, and the decisions made by the majority of votes.
- Since 2001 the ERA developed and approved the “Grid Code”, “Central Heating Supply Code”, “Business Rule between Licensees”, Business Rules between Suppliers and Consumers, Connection Rules, Tariff Methodology and other rules and regulations.
- Since 2004 the ERA is working to introduce the power market structure that would allow the development of a decentralized generation-commercialization market in the long term, with efficient regulations for generation, transmission and distribution activities. The ultimate goal is to introduce the power market structure and tariff design, which allows the economic cost recovery.

- Since 2002 the ERA is using the Single Buyer Model (SBM) to settle the energy and cash flow between licensees.
- The results:
 - Improve cash revenue for power plants and
 - Improve payments to coalmines and suppliers
 - Reduced the level offsets which was widely used previously.
- Other countries which practiced the SBM include Namibia, Armenia, Lithuania, Bulgaria, Hungary and several states in India.

Main features of the Mongolian energy system

- Coal fired combined heat and power (CHP) plants;
- Products - electricity and heat (hot water for central heating and steam);
- Due to few players, it is difficult to introduce competition;
- Main goal is to improve efficiency;
- The system is relatively small and its power plants differ in age, technology, capacity and cost structure;
- Electricity cannot be separated from heat, all generators being CHP's (combined heat and power), and electricity will subsidize heat and hot water for some time.

4. Potentials for Regional Energy Cooperation

- Mongolia has abundant resources of coal, hydro and other energy resources, which have to be developed, and the country needs investments, infrastructure development, and accelerate economic growth. Mongolia does have significant hydropower, solar and wind energy resources, which is an important field of potential future cooperation with other countries.

- By the year 2030 the world's total energy investment would need about \$16 trillion
- Electricity sector would dominate the demand accounting 60% of the total world energy investment.
- Nearly a third of \$16 trillion of energy investments will be needed for East Asia.

After 9/11 the global investment environment worsened; Investors became cautious in making long-term investment commitments especially in energy sector;

- Regional security
- Political and macro economical stability
- Regulatory environment
- Investment protection and promotion policy
- Country risks.

- Many projects were not realized due to political, energy security or cost constraints.
- Small local demand in Mongolia
- Legal and institutional environment for encouraging investments needs to be improved.
- Mostly bilateral cooperation between countries in North East Asia (NEA)
- Historical issues
- The solution through Mongolia offers most cost effective and direct solution from Russia to China, and further to Korean Peninsula.

- It is necessary to create an institutional framework on governmental level to promote regional projects, to build trust between nations in the region, to create an environment to bring investments to regional projects.
- The intergovernmental framework will “shave up” differences between legislation and structures, and guarantee the investment protection.

5. Issues in Energy & Environmental Planning

- Ministry of Fuel and Energy is responsible for energy planning, policy formulation, development and implementation;
- Energy Research & Development Center (former Fuel & Energy Authority (FEA)) is responsible implementation of state policy and projects in energy sector.

- **Functions of Ministry of Fuel and Energy:**
- - Policy development;
- - To monitor the economical and financial outputs of the energy sector;
- - To authorize to issue licenses to construct energy generation and transmission facilities and to commence energy generation and distribution;
- - To adopt and implement basic rules and regulation for energy generation, distribution and consumption;
- - To adopt policies and procedures that balance energy supply and demand;
- - To implement the State's supervision and control of the use of energy;
- To implement the Government's decision and resolutions

● Functions of Energy Research & Development Center:

- Provision of technical management of energy sector;
- - Financial, economic and supply planning;
- Local and international project implementation;
- - Human resource development and training;

● Environmental Planning

- Law on Environment Protection, 1995
- Law on Environmental Impact Evaluation, 1998
- Other Regulations

● Environmental Impact Assessment:

- Main indicators current of environmental status;
- Project (or technology) approach or solution;
- Project's possible and negative impacts on environment, and the ways of mitigation of impacts;
- The Project's negative impact coverage, estimates and research;
- Damage evaluation;
- Plan for environment protection;
- Monitoring & evaluation;
- Survey of local civilians, communities and authorities.

Thank you for your attention!