

## 3.4 Energy (Electricity & Fuel)

### 3.4.1 Current Situation

Coal is the major source of energy in Mongolia, supplying 74% of the total primary energy supply in 1997, followed by oil (16%) and biomass (10%). Approximately three quarters of the coal is utilized for electricity and heat generation. Thus the electricity and heat sector consumes over 50% of the total primary energy supply in Mongolia. An estimated coal reserve exceeding 150 bn tons provides substantial room for growth, considering that current production is just 5 mn tons per year.

The electricity sector generated 2,720 mn kwh of electricity in 1997. This is down 23.8% from a peak of 3,568 mn kwh in 1989. The decline in final consumption of electricity fell more rapidly, by 32.7%, over the same time frame.<sup>4</sup> This fall in consumption is no doubt correlated to the 10.2% fall in GDP Mongolia has suffered since 1989. As a result, current capacity is expected to be capable of meeting demand well into the next decade. Mongolia, a rarity among developing countries, does not suffer from capacity constraints.

Coal resources are spread throughout the country, with major basins located in the east, central and southern areas. About two-thirds of the reserves are lignite with heat content of 3000-4000 kcal/kg. Although there are several areas of production, a small number of mines account for a large amount of production, with Baganuur mine alone accounting for 68% of the 1998 total (through September):

**Table 20. Coal Production by Mine: Jan-Sept 1998**

Coal Mine	Tons (000s)	% of total	Cumulative %
Baganuur	2,265.8	68.0%	68.0%
Sharyn gol	543.7	16.3%	84.3%
Shivee-ovoo	154.6	4.6%	88.9%
Aduunchuluun	148.7	4.5%	93.4%
Khangai	72.4	2.2%	95.6%
Others	148.2	4.4%	100%
Total	3,334.4	100%	100%

<sup>4</sup> The difference arises because the amount of electricity used within power stations and/or lost during transmission/distribution has grown over time.

The production capacities at Baganuur and Shivee-Ovoo are being expanded to 4 million tons and 2 million tons, respectively. On the other hand, the production of Sharyn Gol is expected to decline from 800 thousand tons in 1998 to 300 thousand tons by 2010 due to increases in production costs. The Ministry of Infrastructure Development (MOID) expects a phasing out of the mine beyond 2010. The GOM is planning to carry out a feasibility study to develop a new coal mine in Ulaan-Ovoo; its coal, which is of similar quality to that of Sharyn Gol, is expected to compensate for the decline in coal supply from Sharyn Gol in the northern industrial region. In any case, once the rehabilitation of Baganuur and Shivee-Ovoo are completed, the coal production capacity of Mongolia will exceed 7 million tons per year.

Each of the major coal mines enjoys a monopoly in its local market. Regulation is therefore needed to determine a price which yields a fair return to shareholders and does not take undue advantage of the company's monopolistic position.

**Table 21. Cost Structure of 15 Major Coal Mines in Mongolia**

Million Tog

	1997 ( actual)	%	1998(projection)	%
Revenue	23,866	100	28,910	100
Energy Cost	7,137	29.9	10,955	37.9
Spare Parts	3,605	15.1	5,958	20.6
Depreciation	4,905	20.6	7,159	24.8
Wages & Salaries	2,109	8.8	2,691	9.3
Interest	119	0.4	1,534	5.3
Other Expenses	2,887	12.1	5,901	20.4
Profit before Taxes	3,104	13.0	-5,288	-18.3
Taxes	1,072	4.5	1,355	4.7
Profit after taxes	2,032	8.5	-3,933	-13.6

Source: Coal Authority, Business Plan of 1998 for the share holding

The 15 major coal mines, taken as a group, achieved a profit/revenue rate of 8.5% in 1997. However, the industry was expected to incur losses in 1998 mainly due to deteriorating profitability at the Baganuur coal mine.

The power sector in Mongolia consists of three electricity grids under the control of the Energy Authority (EA), and small generating facilities owned by the State and run by local communities. The EA, in three detached segments – the Central Energy System (CES), the Western Energy System (WES) and the Eastern Energy System (EES) – accounted for 93% of electricity

generation and 80% of heat generation in Mongolia in 1997. In total, the EA is comprised of 12 power stations and seven distribution systems, with a total installed generation capacity of 806 MW (of which less than 574 MW is available, including 34 MW diesel stations for six aimag centers).

The largest segment of the EA is the CES, which supplies power and heat to Ulaanbaatar and six adjacent provinces (which include the industrial cities of Darkhan and Erdenet). The CES consists of five coal-fired co-generation plants. Imports from Russia are also used to meet fluctuations in demand because of the poor peaking capability of the existing power plants:

**Table 22. CES Peak Capacity**

CES	Peak demand 1999 est
Ulaanbaatar Power Plant No 2 (1961)	18 MW
Ulaanbaatar Power Plant No 3 (1968)	110 MW
Ulaanbaatar Power Plant No 4 (1983)	300 MW
Darkhan Power Plant	33 MW
Erdenet Power Plant (1987)	17 MW
Imports	46 MW
Total CES	524 MW

The CES, itself, uses 21.5% of the gross power it generates, while transmission and distribution losses account for over 18% of the gross. The result is that only 60% of the gross electricity generated by CES reaches consumers. Ulaanbaatar Power Plant No 4 (PP No. 4) is the backbone of the energy sector, generating 70% of electricity and 60% of heat supplied by EA, a quarter of final energy demand in Mongolia. Current rehabilitation work on four boilers at PP No. 4, scheduled for completion in 1999, will enhance its capacity to 350 MW. In addition, according to EA engineers, if the remaining four boilers are also refurbished, the generating capacity could be further improved to 400 MW. This would put total CES capacity at 580 MW:

**Table 23. CES capacities with refurbishing of Power Plant No.**

	Peak Demand	Annual Generating Capacity
CES current	480 MW	3,153.6 mn kwh
+ current refurbishing (1999)	530 MW	3,482.1 mn kwh
+ future refurbishing	580 MW	3,810.6 mn kwh

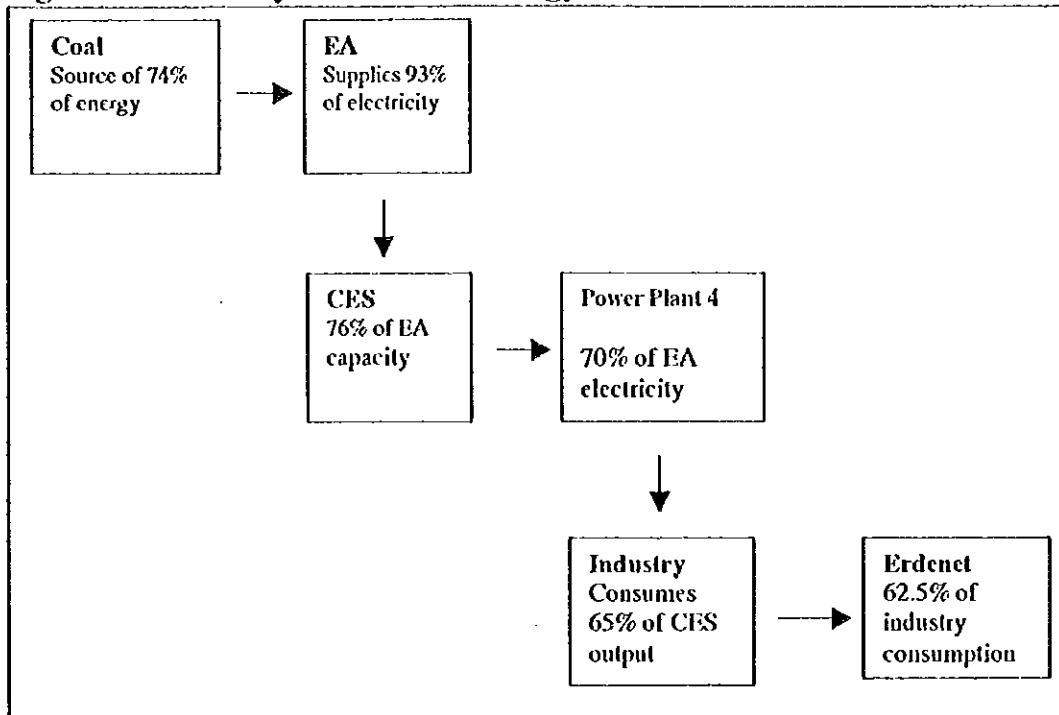
The primary consumer of electricity is industry, which consumed 65% of available CES electricity in 1997. The 90s have seen a dramatic fall in consumption:

**Table 24. Electricity Consumption by Sector**

	1989 (%) mn kwh	1997 (%) mn kwh	% change from 1989
Total Distributed	3,726	3,096	-16.9%
Generation	3,568	2,720	-23.8%
Imports	158	376	138%
Internal Use	566	608	7.4%
Losses in Trans & Distr	280	507	81.1%
Consumption	2,880 (100%)	1,939 (100%)	-32.7%
Industry	1,911 (66.4%)	1,264 (65.2%)	-33.9%
Transport / Communication	185 (6.4%)	78 (1.7%)	-57.8%
Agriculture	123 (4.3%)	33 (4.0%)	-73.2%
Communal Housing	370 (12.8%)	414 (21.4%)	11.9%
Others	291 (10.1%)	150 (7.7%)	-48.5%

Aside from communal housing, all sectors experienced significant drops in consumption between 1989 and 1997. Though not seen in the chart, consumption hit a trough in 1994 and has been slowly rising since. Industry consumption is dominated by Erdenet copper mine, which consumed 790.6 mn kwh in 1997, or 62.5% of industrial consumption. Due to its huge presence, the behavior of Erdenet is the most significant factor in overall electricity consumption trends. Unfortunately, a sluggish world price for copper has led to financial problems for Erdenet, which, in turn, has led to problems for the energy sector as a whole. Erdenet's inability to pay money it owed to the EA in October 1998 led to the EA's inability to pay for coal -- and a dangerously low coal stock at the EA's power stations. This crisis was eventually resolved with the assistance of \$2 bn in aid from the Japanese government. A similar crisis occurred in the following month.

**Figure 13. Primary links in the energy sector**



Mongolia was a small producer of oil until the 1960's. Oil fields have been found on the Chinese side of the Sino-Mongolian border. Indeed, oil was discovered in the Tamsag basin in east Mongolia in 1995. The Zuunbayan area is also considered to be promising. If large-scale oil fields are discovered, oil could provide momentum for the development of Mongolia's economy. However, this will take several years to evaluate.

### **3.4.2 Major Energy Issues**

The following list of factors are restraining development of the electricity sector:

#### **Poor financial condition and ineffective management**

The financial situation of the energy sector in general is poor. Weak management has prevented an improvement of conditions.

#### **The debt cycle and lack of financial sources**

As the energy sector is dominated by a limited number of major players. Difficulties at one link of the chain can quickly spread, causing a larger crisis. A debt clearing house should be established to clean up the current mess and prepare for the next crisis before it occurs.

Lack of financial resources has directly caused production difficulties at coal mines through the inability to purchase de-watering pumps and other necessary capital goods.

#### **Industry structure**

The Government, following IMF recommendations, is in the process of privatizing the energy sector. Most significant will be the eventual privatization of the EA itself. There are several issues that must be dealt with prior to privatization, such as poor accounting and a lack of transparency.

#### **Inefficient pricing policies**

Several factors contribute to poor pricing policies: a lack of meters, imperfect markets, imperfect information and cost recovery pricing all play a role.

#### **Cross-subsidies in pricing**

The tariff structure is inefficient in terms of forcing consumers to pay the full cost of their consumption (and thus make optimal consumption decisions). Specifically, the tariff structure subsidizes residential consumption at the expense of industrial consumption, and heat consumption at the expense of electricity consumption.

#### **Lack of reliable information concerning quality of coal**

The heat content of coal is not discernable by appearance. Smaller consumers, in particular, may not have the capabilities to test the heat content of their purchases and are, thus, susceptible to fluctuations in quality.

#### **Environmental concerns**

Due to its high dependence on coal and limited pollution prevention mechanisms, Mongolia's per capita greenhouse emissions are among the highest in the world. Household consumption of coal for heat during the long harsh winter produces severe air pollution in Ulaanbaatar for much of the year.

#### **Lack of rural electrification**

Extending electrical grids to Mongolia's vast, sparsely populated plains is prohibitively expensive. In the western and northern regions, there is neither economic justification nor technical possibility for connection with the central energy system.

#### **Meeting future demand**

Although current capacity is sufficient, planners should continue evaluating various energy options in order to cope with the expected increase in future energy demand.

### **3.4.3 Medium Term Energy Strategy for 2000-2002**

#### **Cost recovery and pricing**

Solving the debt chain problem is of urgent concern. Arrangements should be made so that Erdenet can pay its arrears to the EA, and that EA can make full payment to Bagannur Coal. A clearing house of inter-linked debts must be established.

Second, proper pricing policy and institutional set-up is needed. In general, pricing policies in which consumers face the full cost of consumption are desirable. Measures include:

- A regulatory framework to check the legitimacy of the pricing practice of energy-related concerns should be implemented.
- The tariff structure should move from a cost recovery basis to "fair" return.
- Metering systems should be installed where feasible
- Remove cross-subsidies such that consumers must face the full cost of consumption. Cross-subsidies do not promote efficient consumption and should be abolished.
- The expansion and renovation of Bagannur, and Shivee-Ovoo coal mines, financed by WB and OECF, is a priority. Creating competition to Bagannur mine can help in restraining monopolistic pricing (such as improving Shivee-Ovoo, Ulaan-voo mines).

#### **Restructure with an eye toward privatization**

Financial management improvements are a top priority issue.

In terms of improved accounting and transparency, the accounting system should be reviewed by a third-party auditing organization, with the results published.

As long as the GOM controls the system, productivity improvement yardsticks should be implemented. For example, a goal of 5% annual improvement in electricity delivered per worker. Currently, the GOM is in a dilemma as to how to implement privatization of the power sector. From the viewpoint of investors, the most profitable portion, namely Power Plant No. 4, should be privatized first. However, this option is not practical if both energy security and fund procurement are taken into account. Therefore, privatization should begin with the oldest and smallest station in UB, Power Plant No. 2. Only after the regulatory framework is firmly established, can PP4 be subjected to privatization through sale or contractual arrangement.

In addition, the privatization scheme should include a design for electricity purchase from third party suppliers.

### Development of generating facilities

Based on demand projections, aside from rehabilitation of existing plants, no new capacity is likely to be required for 6 or 7 years. A second rehabilitation phase at Ulaanbaatar PP 4 is the most cost efficient means of ensuring sufficient capacity for the capital region for the near future. Thus it would be wise from, a medium term perspective, to concentrate on the completion of on-going projects, and refrain from major investments except for the second phase of UB Power Plant No. 4. and rural electrification.

**Table 25. Peak Demand Forecast**

FA's Central Energy System Demand Forecast						
Year	High growth		Medium growth		Low growth	
	Peak (MW)	Consumption (M kwh)	Peak (MW)	Consumption (M kwh)	Peak (MW)	Consumption (M kwh)
2000	547.9	3021.5	534.9	2950.6	521.8	2879.7
2005	575.1	3171.4	555.2	3062.6	535.3	2953.7
2006	582.8	3214.0	560.4	3091.5	538.0	2969.0
2010	602.4	3322.4	574.7	3170.1	546.9	3017.8

Optimal strategies to meet long run demand will become clearer in the coming decade. But in the medium term, the Egiin Gol and Orhon projects will not be feasible. Keep the electricity import / export contract with Russia as an alternative energy source. Electricity from Russia could be an important countervailing power to monopolistic practices of the domestic power industry after privatization. However, it does not make economic sense if the average electricity import price exceeds the cost of alternatives such as Egiin Gol hydropower station, or production of electricity at Erdenet copper mine.

Three major projects currently under consideration may significantly change the face of future energy supply in Mongolia: (1) new oil development in the eastern part of the country, (2) the Trans-Siberia natural gas pipeline, and (3) a new high voltage electricity transmission line. Based upon the feasibility studies for these projects, a decision on the next step should be made by the middle of the next decade. This means that background preparation should begin now to be fully prepared. The government should not assume an optimistic outcome from these other projects and should therefore proceed, for now, as if the projects will not materialize. If cheap electricity does become available, Mongolia can postpone building new capacity until such time as it is needed. Construction of a combined cycle gas-fired power station could be an economically viable option if natural gas is available.

Assuming these options are not available, construction of a coal-fired power plant with an installed capacity of around 100 MW will be required during the second half of the next decade.



Preferably, the plant will be located in an area where the heat generated can also be utilized.

The Egiin Gol hydropower station could be an economically viable option - depending on future coal and electricity imports prices. The feasibility of the project should be checked periodically, taking into account changes in the costs of alternative energy sources.

After privatization and rehabilitation are completed, public investment should go toward rural electrification, including the active search for foreign grants. Alternative energy sources should also be considered for areas far from the current electricity grids. Research capabilities should be enhanced to assist in assessment of alternatives. Selection of projects should be prioritized starting with those that provide power at the least cost per person served.

#### **Improve information system concerning quality of coal**

MOID should require coal mines to disclose the quality of their products to their customers and regularly check the legitimacy and accuracy of data.

#### **Consider environmental concerns**

Introduction of more efficient stoves and bio-briquette coal should proceed as planned. Not only do these goods have a positive economic return for the buyer, there is also a positive externality for society.

## 3.5 Telecommunications

### 3.5.1 Current Situation

Since 1994, a series of sector reforms have been implemented based on the "Mongolian Government Telecommunication Sector Policy Statement, April 1994". In 1995, policymaking and implementation were separated based on the "Telecommunication Act of 1995" and the Communication Regulatory Commission (CRC) was established. The Information and Communication Division in the Ministry of Infrastructure Development (MoID) is in charge of policy making and the CRC sets the regulations.

The basic telecommunication service is a state monopoly. Investment decisions, network assets, and loan repayment obligations are in the hands of the state. The first phase of privatization, initiated in 1995, has been to contract-out basic service provision. Mongolia Telecom (MT) leases network assets from the Post and Telecommunication Authority (PTA) and provides basic telecommunication services to subscribers. Value added services are opened to private entry. Private operators run data communication, pagers, cable TV, and cellular networks.

As of the end of 1998, 89,000 telephone lines were in operation, a more than 30% increase from 1993. There are 42 telephone lines per 1000 people.

**Table 26. Telecommunications Service Data**

Items	1992	1993	1994	1995	1996	1997	1998
<b>Telephone Network</b>							
Main Telephone Lines in Operation	69,225	66,399	69,114	80,050	83,373	87,000	89,000
Telephone lines per 1000 people	30.5	28.6	29.2	34.5	36.0	38.0	42.0
% of lines connected to digital exchange	17.0	38.0	41.0	42.2	47.0	53.0	56.0
Waiting list for main lines	56,000	55,000	51,000	39,161	40,000	38,000	35,000
Public payphones	460	60	60	60	143	187	187
<b>Data Communication</b>							
Internet Users	150	340	500	1,200	2,000	3,600	4000
<b>Mobile Services</b>							
Cellular mobile phone subscribers	--	--	--	--	1,200	2,010	4000
Cellular subscribers per 100 inhabitants	--	--	--	--	0.05	0.08	1.016
<b>Paging Services</b>							
Radio paging subscribers	--	--	1,180	1,700	1,950	3,200	3500
<b>Cable TV</b>							
Households with Cable TV	--	1,500	5,000	12,000	18,000	23,000	25,000

In 1996, there were nine countries with a population density of less than 5 people per 1000 square kilometers. Telephone lines per 1000 people (TLPT) in the high-income countries exceeded 500, fell to around 50 in the medium-income countries and tended to be less than 5 in the low-income countries, except for Mongolia, which greatly surpassed comparable countries in terms of TLPT.

**Table 27. TLPT in Countries of Comparable Population Density (1996)**

Country	GNP per capita	GNP PPP per capita	Population Density	Population	TLPT
Units	\$	\$	P/1000 sq km	million	lines
Australia	20,090	19,870	2	18	519
Canada	19,020	21,380	3	30	602
Botswana	--	7,390	3	1	48
Gabon	3,950	6,300	4	1	32
Namibia	2,250	5,390	2	2	54
Mauritania	470	1,810	2	2	4
Mongolia	360	1,820	2	3	39
Central Africa	310	1,430	5	3	3
Chad	160	880	5	7	1

Source: World Development Indicators 1998, World Bank

Prior to 1998, policy emphasis was on upgrading and expansion of the basic telecommunication networks, financed mainly through ODA. In 1998, the MoID reformed telecommunication sector policy to give structural reform, especially the second phase of privatization, a higher priority than expansion investment. This policy change has been undertaken for various reasons:

Although service levels have exceeded that found in comparable countries, the debt burden from ODA loans has increased rapidly.

Investments in commercially profitable areas have mostly been.

The efficiency of the sector is low due to slow structural reform.

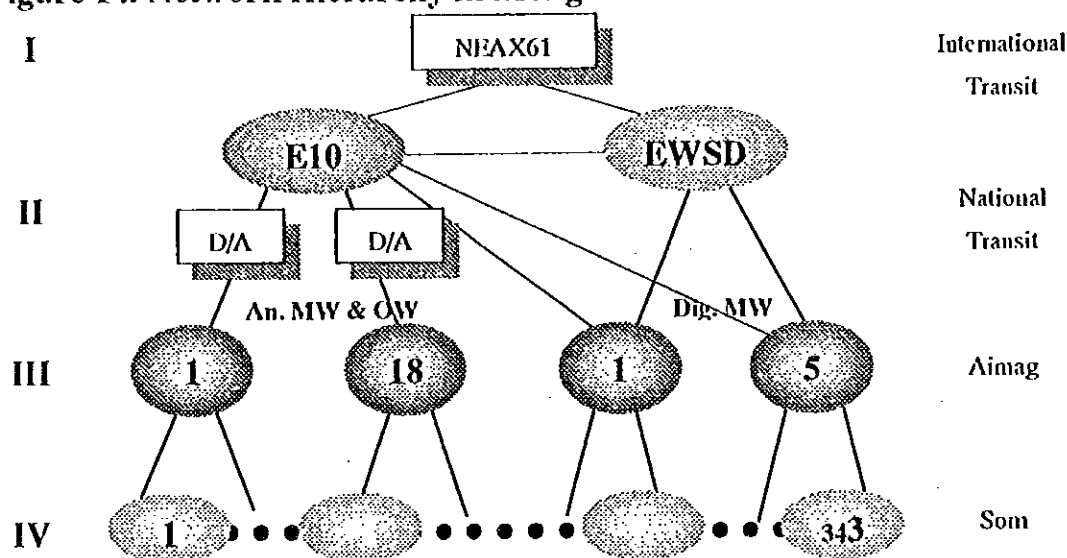
#### **Investment Policy: Postponed from Original Plan**

There are four hierarchies in the basic telecommunications network in Mongolia: international transit, national transit, aimag level networks and som level networks. Investment in international and national transit has already been implemented. In 1994, investments for a fully digital backbone transmission network, with digital switching, were scheduled down to all aimag centers by 2002. As of 1999, only 5 out of 21 aimag centers are connected digitally to the national transit EWSD.

This work has been divided into three separate projects: "Telecommunications Project-1", "Western Network Renovation", and "Eastern and Southern Network Renovation." Telecommunications Project-1 has almost finished its investment and digital trunk radio-transmission systems between Ulaanbaatar and Darkhan and between Ulaanbaatar and Erdenet have been installed. Project work on the western area started in 1998. Project work in the eastern and southern areas was postponed and is expected to start in 2000.

For the rural aimag level network, installment of VSAT land stations in rural aimag centers was selected over building a microwave transmission system. Thanks to rapid progress in satellite communication technology, required investment in VSAT land stations is much smaller than investment in a microwave transmission system. This change of the investment policy was incorporated in the Public Investment Program (PIP) as of June 1999.

Figure 14. Network Hierarchy in Mongolia



Since telecommunication sector reform was initiated in 1994, investment has increased rapidly. Investments in the state-owned basic telecommunication service have been increasingly financed by ODA loans. The share of the telecommunication sector in the disbursement of ODA financed PIP was only 1.5% in 1994. This increased to 15.2% in 1998. Private investments in value-added services have also increased.

Table 28. Disbursement of ODA Financed PIP

	(million US\$)						
	1993	1994	1995	1996	1997	1998	93-98
Telecom Sector	0.0	0.7	0.6	8.2	14.2	11.4	35.1
Total	27.5	48.1	89.2	85.8	111.5	75.2	437.3
Share of Telecom	0.0%	1.5%	0.7%	9.6%	12.7%	15.2%	8.0%

Source: Ministry of Finance

The telecommunication sector of Mongolia is now trying to shift away from ODA as a source of investment toward internally generated cash flow. This policy change is reflected in the shrunken share of ODA requests in the June 1999 Mongolian Assistance Group meeting, in which the telecommunication sector share of total ODA requests was 4% for the 1999-2002 period (as

opposed to 8% from 1993-1998 as shown above).

The telecommunication sector is inherently the most profitable within the infrastructure sector. Unlike the electricity, road, or railway sectors, the telecommunication sector has received domestic and foreign private sector investment. Of all infrastructure sectors, only the telecommunication sector contributes cash to the state budget. In 1998, the state owned telecommunication sector; MT and PTA, contributed 8,460 million togrog, 3.7% of total state revenue. The share of the communication sector in GDP was 1.4% in 1998.<sup>5</sup>

### **3.5.2 Major Telecommunications Issues**

#### **Halfway through structural reform**

The service level of the telecommunication sector seems to exceed that of comparable low population density low-income countries. However, structural reforms are far from complete. The experiences of other developing countries reveals that successful structural reform in the telecommunication sector has two common characteristics:

#### **Exploiting private initiative to improve efficiency**

Enhancing institutional capacity of the regulatory body in order to balance universal service obligations and the profitability of the monopolistic telecommunication enterprise

In general, privatization of basic telecommunication services must go through three phases: separation, reorganisation and stock sale (Privatization in the narrow sense).<sup>6</sup>

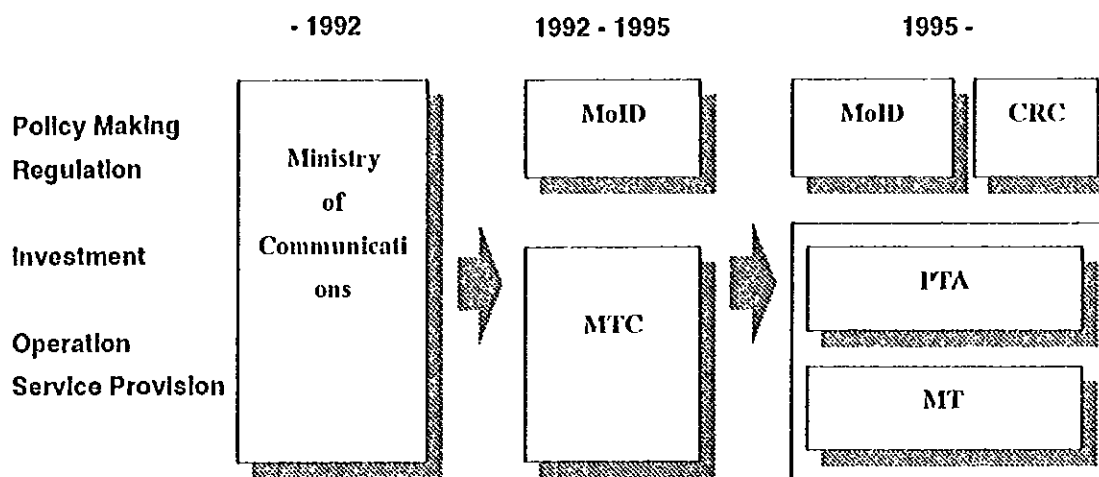
The Privatization of the telecommunication sector in Mongolia is currently in the separation phase. The Mongolian Telecommunication Company (MTC) was established in 1992 on the basis of the operational units of the former Ministry of Communications. This reform separated implementation from policy making. In 1995, the MTC was divided into the PTA and MT and the CRC was established as a regulatory authority. Currently MT provides the basic telecommunication service. The PTA owns network assets and invests in basic telecommunication service. This reform separated daily operation and service provision from investment decisions.

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<sup>5</sup> The communication sector consists of telecommunication and postal services.

<sup>6</sup> For the experience of the sector reform in developing countries, please refer to the "Implementing Reform in the Telecommunications Sector - Lessons from Experience -" Wellenius and Stern, The World Bank 1994.

**Figure 15. Separation Phase of Privatization**



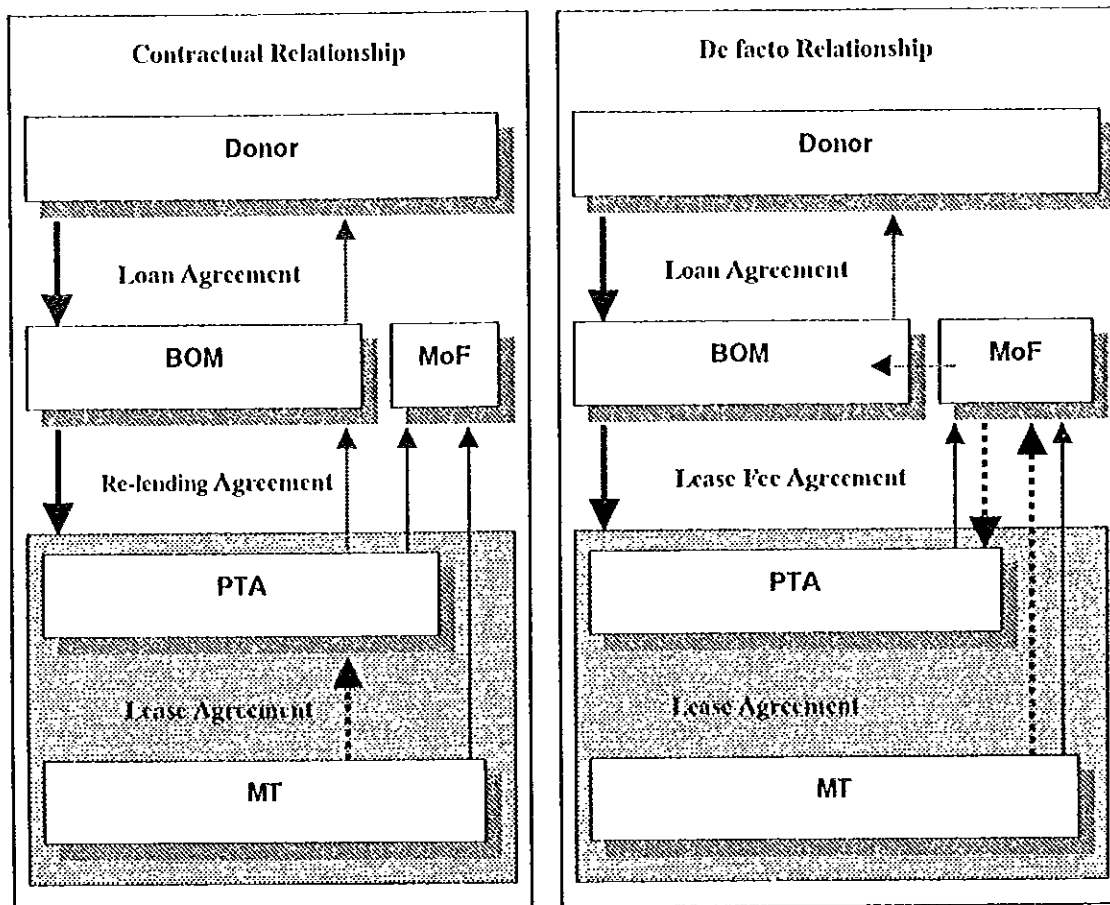
To make the state-owned telecommunication sector commercially viable, investment decisions and cash flow from operating activities must be considered together. However this separation of investment from daily operations has created the following issues:

- The telecommunication budget has not been separated from the state budget.
- If the state-owned telecommunication sector (PTA and MT) is evaluated as one consolidated commercial enterprise, its managerial efficiency is low due to bad management at PTA. This is an issue in the reorganization phase of the privatization process.

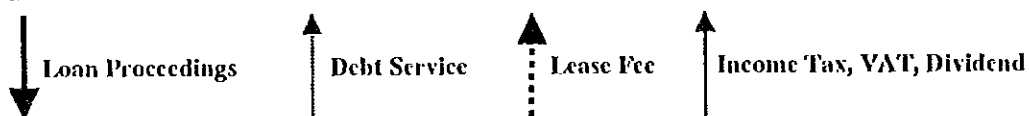
#### **Incomplete Separation from State Budget**

The basic telecommunication sector has not yet been separated financially from the state. Investment has been financed mainly through ODA loans, with most loan agreements being signed in 1994. In those loan agreements, the government is the borrower and the implementing agency is the MTC. Loan proceeds from donors were received by the Bank of Mongolia (BOM) and were then re-lent to the MTC. With the 1995 reforms, the PTA became the successor to the MTC and currently implements investment projects. In the re-lending agreement between the PTA and the BOM, the PTA assumes repayment obligations denominated in the same foreign currency as the original loan agreement between the donor and the BOM. In the re-lending agreement, the interest rate is higher and the repayment period is shorter than the original loan agreement. As shown in the left panel of the figure below, under the contractual scheme for ODA financed investment projects, the PTA should receive all leases fee from MT and the PTA should pay the interest and repay the principal to the BOM. The MoF is supposed to receive income tax, value-added tax and dividends from the PTA and MT.

**Figure 16. Financial Relationships in the Telecommunication Sector**



Legends of financial flows:



Since 1996, as investment has progressed in and between the three major cities of Ulaanbaatar, Erdenet and Darkhan, revenue and lease fee payments of MT have increased rapidly. Since 1997, the MoF has been receiving lease fees directly from MT. The PTA has been receiving a portion of lease fees from the MoF. In 1998, the PTA received less than 20% of lease fees paid by MT. In 1999, the MoF and the PTA negotiated the allocation of lease fees and signed a lease fee agreement in which the PTA receives 40% of lease fees paid by MT. The MoF is receiving not only income tax, VAT, and dividends, but also lease fees from the state-owned telecommunication sector. State-owned enterprise contributions to state budgets not based on tax legislation or financial contracts were common in the centrally planned era. This is a typical symptom of the delay of financial separation of state-owned enterprises from the state budget.

**Table 29. Investment, Revenue, Lease Fee and Tax of MT**

		1995	1996	1997	1998
ODA Financed Investment *	Million USD	0.6	10.9	16.2	11.4
Operating Revenue of MT	Million TG	7,462	10,453	17,436	18,975
Lease Fee Paid by MT	Million TG	964	2,516	3,985	4,918
Income Tax Paid by MT	Million TG	1,108	1,426	2,824	2,986
Net Income of MT	Million TG	957	1,456	3,630	2,947

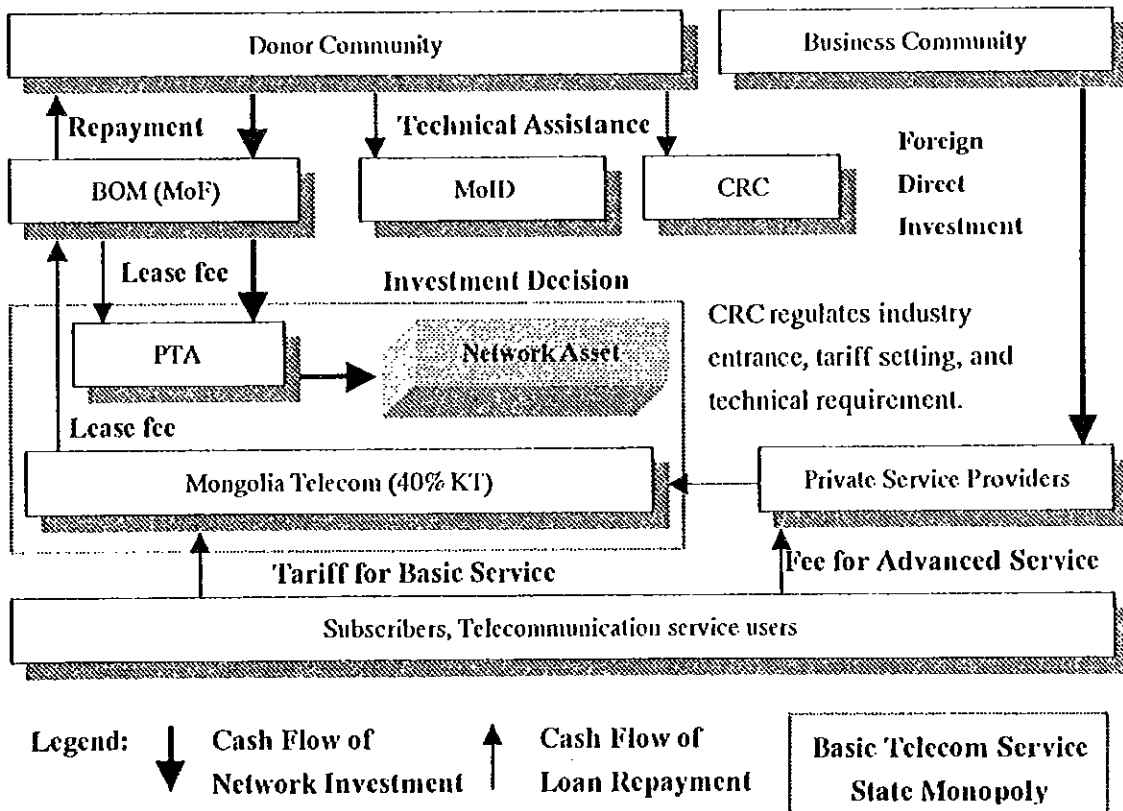
Source: MoF, MoER, MT \* ODA financed investment includes both loan and grant

**Overly-Optimistic Feasibility Studies**

The PTA implements network investment. However, the accounting system of the PTA is not as developed as that of MT. In the lease fee agreement between the MoF and the PTA, the amount the MoF receives in lease fees is more than three times the amount of repayment on re-lending due in 1999. In the re-lending contract, the PTA assumes the repayment obligation. However, it is quite natural that the PTA thinks that the lease fee paid to the MoF includes repayment.

The MoID has strong influence in the decision making process of investment. The person in charge of telecommunication investment in MoID does not have direct responsibility over ODA loan repayments. As a result, in the decision-making process of ODA financed investment, no single entity performs a prudent analysis of the repayment capacity of the sector.

**Figure 17. Current Governance Structure in the Telecommunication Sector**





The aforementioned separation of investment and daily operations and the diversion of lease fees by the MoF create disorder in the investment decision making process. Because of the sparse population, few investments in rural areas are commercially viable. However, the confusion of responsibility can result in overly optimistic investment feasibility studies down to the Som level. This soft budget constraint can hurt the future profitability of the basic telecommunication sector.

#### Tariff regulations are not well coordinated.

The government of Mongolia assumes immediate repayment obligations of ODA loans. However, the ultimate payers are the subscribers and users of telecommunication services in Mongolia. While ODA loans are denominated in foreign currencies, cash inflows from users are in togrog. The real growth rate of MT's revenues slowed to 2.6% in 1998 from 38.5% in 1997. Under the current regulatory scheme, increases in the telecommunication tariff are linked to inflation. However, fluctuations of the foreign exchange market and consumer prices are not always correlated. Tariff policy co-ordination between MT, MoF and CRC should be improved to assure the sound development of the basic telecommunication sector and repayment of ODA loans.

**Table 30. Revenue Growth of Mongolian Telecom**

	unit	1995	1996	1997	1998
Revenue of Mongolian Telecom	mil tg	7,462	10,453	17,436	18,975
CPI 1995 = 100		100.0	144.6	174.2	184.7
Annual Inflation Rate	%	53.1	44.6	20.5	6.0
Revenue in 1995 price	1000 tg	7,462	7,229	10,009	10,274
Real Growth of Revenue	%		-3.1	38.5	2.6
Average Exchange Rate	tg/US\$	446.96	547.21	790.95	837.36
Change in Exchange Rate	%		22.4	44.5	5.9
Revenue in US\$	1000\$	16,696	19,103	22,044	22,661
Growth of Revenue in \$	%		14.4	15.4	2.8

Source: Annual Report of Mongolian Telecom, Mongolian Statistical Yearbook

#### Negative profitability of rural service and cross-subsidies

International services are the most profitable under the current tariff scheme. Calls within and between big cities are also commercially viable. International service is scheduled to be open to private entry from 2002. The CRC and the Information and Communication division of the MoID will review this policy in 2001. One advantage of monopoly is the possibility of cross-subsidies within the telecommunication sector. Thus, rural service can be subsidized from the profits of international service. The decision on opening international service to private entry should be considered together with the universal service obligation of the state monopolistic enterprise.

### Low managerial efficiency of the basic telecommunication sector

If the state-owned basic telecommunication sector, i.e. the PTA and MT, is analyzed as one consolidated enterprise, managerial efficiency is low. The asset turnover ratio is an important indicator of managerial efficiency. MT receives most of the revenue in the basic telecommunication sector while the PTA possesses most of the assets. The overall asset turnover ratio can be calculated as revenue of MT / total assets of PTA. The asset turnover ratio in Mongolia decreased to 0.34 in 1998 from 0.36 in 1997. In developed countries, asset turnover ratios of basic telecommunication enterprises are generally greater than 0.5. As is the case with other developing countries, the basic telecommunication sector in Mongolia is saddled with heavy debt and is suffering from a low asset turnover.

**Table 31. Asset Turnover Ratio of Basic Telecommunications Enterprise**

Country	Company	FY*	unit	Revenue	Asset	ATR**
Japan	NTT	Mar-98	Bil Yen	9,450	15,123	0.62
USA	AT&T	Dec-97	Mil US\$	51,319	58,635	0.88
Germany	Deutsche Telekom	Dec-97	Mil DM	67,553	162,800	0.41
UK	British Telecommunications	Mar-98	Mil PD	15,640	23,285	0.67
Australia	Telstra	Jun-97	Mil AU\$	15,436	26,470	0.58
Malaysia	Telekom Malaysia	Dec-97	Mil ML\$	7,166	24,205	0.30
Indonesia	Telekomunikasi Indonesia	Dec-97	Bil RP	5,909	19,967	0.30
Philippine	PLDT	Dec-97	Bil Ps	35,709	194,435	0.18

Source: Daiwa Institute of Research Ltd. Note: \* Fiscal Year, \*\* Asset Turnover Ratio

### 3.5.3 Medium Term Telecommunication Strategy for 2000-2002

As explained, the telecommunication sector in Mongolia faces the following issues and constraints:

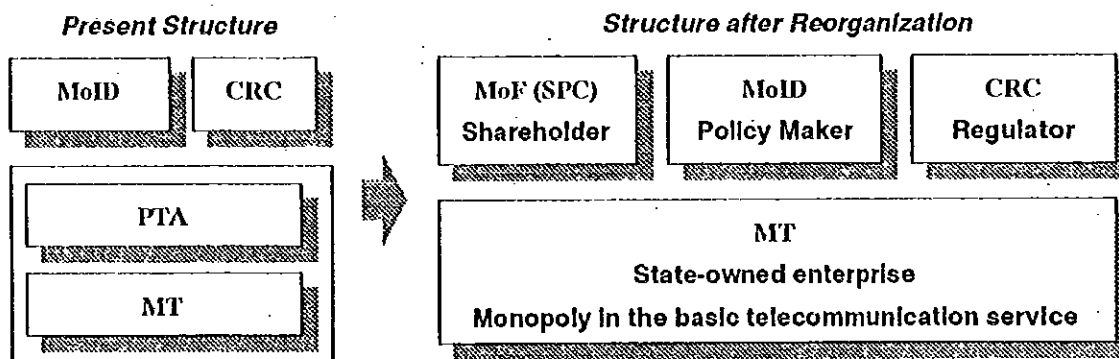
- The sector has not been separated from the state budget yet.
- Undefined lines of responsibility allow overly-optimistic feasibility studies.
- Managerial efficiency of the state-owned basic telecommunication sector needs improvement.
- Tariff Regulations are not well coordinated.
- Due to the low population density, rural service is rarely profitable.

In order to address these issues in line with the new policy of limiting new debt acquisition, the medium-term strategy of the telecommunication sector focuses on two aspects: privatization of the basic telecommunication sector and enhancement of regulation capacity.

### Restructuring the PTA and MT: Transfer of assets from the PTA to MT

Privatization of the basic telecommunication sector is now in the separation phase, consisting of operational separation and financial separation. Operational separation has been completed. Restructuring of PTA and MT facilitates financial separation. The basic aim of the restructuring is to transfer the assets and activities of the PTA to MT. After this reorganization, MT will become the single state-owned enterprise in the basic telecommunication sector. In this restructuring, assets of PTA will be re-evaluated and given to MT. In the balance sheet of MT, asset and shareholder's equity will increase by the same amount. The shareholder of the PTA, the State Property Committee (SPC) will receive newly issued shares of MT, which will be equivalent to the assets transferred to MT.

**Figure 18. Restructuring of the Telecommunication Sector**



The most critical factor for successful restructuring is political commitment. The other important determinant is an incentive scheme that allows active involvement of Korean Telecom (KT) after this reorganization. Currently KT holds 40% of MT's share. KT has been contributing greatly in many aspects of MT management, such as human resource development, technical operations and maintenance, accounting and bill collection. However, after this reorganization, KT's share in MT's equity will decrease to less than 10%, based on the reevaluation of the assets transferred. Without a well-designed incentive scheme, such as a royalty or stock-option program, KT will not participate actively in the management of the reorganized MT. Meanwhile, if the government of Mongolia allows active involvement of KT in the privatization process, sector reform will be accelerated greatly.

### Financial Separation from the State

After this reorganization, financial relations between the MoF and the basic telecommunication sector will be simplified. The MoF will receive income tax and value-added tax based on tax

legislation. The SPC will also receive dividends from MT as the single majority shareholder.

After the merger of PTA and MT, the lease fee agreement will be invalid, as there will be no lease in the basic telecommunication sector. Repayment obligations of re-lending will be taken over by MT from PTA. The BOM can negotiate an advance repayment agreement with MT on the re-lending.

#### **Improved Financial Discipline**

After financial separation from the state, the management of MT can not expect any direct subsidy from the state budget. In order to make itself financially self-sufficient, investment decisions must be made by the management of MT. The management of MT will study the feasibility of rural investment prudently. They will also scrutinize the risk and cost of financial methods when considering expansion. Internally generated cash flows are a less risky financing vehicle than ODA loans, which are exposed to exchange rate risk.

#### **Enhancement of regulation capacity: Improvement of Efficiency**

After MT is separated from the state financially, privatization comes next. Improving managerial efficiency of MT will be the first strategic objective. Because of political instability, a weak legal and regulatory framework and the small market size of the telecommunication sector, few telecommunication enterprises will be interested in buying a minority share of MT in the near future. Experience in sparsely populated high-income countries is that a de facto monopoly can be expected to continue for decades.<sup>7</sup> To establish a regulatory framework that assures managerial efficiency at MT is the job of the government. At present, experienced staff with technical and financial knowledge of the telecommunication sector are present, but scattered, in MoID and PTA. If those individuals are gathered at the CRC, it will greatly enhance its regulatory capacity. Also, the government can request technical assistance from the donor community to pursue the following goals.

- To establish policy for the telecommunication sector
- To enhance the regulatory capacity of the telecommunication sector
- To provide on the job training for the regulatory body
- To amend the legislative framework for the telecommunication sector

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<sup>7</sup> Please refer to "Telecommunications policies of less-population-density countries" Motohiro TSUCHIYA, March 1999. GLOCOM

### **Balancing the Rural Service and Profitability**

In terms of national integration, telecommunication service is more cost-effective than road, railway and aviation. If the government puts too heavy of a burden on MT through universal service obligations, it will destroy profitability and suffocate private initiative. To find the proper balance between universal service obligation and profitability of MT will be the center issue in regulatory decisions, such as tariff setting and opening up to private entry. Monopoly allows for rural service to be subsidized from international service, but also prolongs management inefficiency. In the medium-term, in Ulaanbaatar, several new small investments are feasible, especially value-added services. Competition with private companies in value-added services can improve the efficiency of monopolistic state-owned enterprises.

## **3.6 Transport**

### **3.6.1 Current Situation**

An extensive transport system is particularly vital for Mongolia, as it has no sea access and no navigable rivers. Creation of such a system, however, requires significant investment per person due to Mongolia's large size and low population density. Unfortunately, the transport sector is not yet sufficiently developed to meet the needs of economic growth and national integration. Mongolia in particular, with its vast territory and low population density, needs well-conceived planning and inter-sectoral policy co-ordination to maximize the economic benefits of transport investment.

Prior to 1991, transport sector development was somewhat skewed toward industrial railway linkages due to FSU & COMECON relations. Railways along the trade route were maintained relatively well and international freight tariffs were kept low. The road network was given lower priority. To this day, the paved road network covers just 1,680 kilometers.

The transport sector as a whole (railway, road and aviation) carried 4,381 million ton-kilometers of freight in 1991. By 1994, this number had fallen to 2,283 million ton-kilometers. Demand has rebounded somewhat, though it is still far below 1991 levels.

Over the years there has been a severe neglect of basic maintenance of transport infrastructure. This means that today extensive renovation/rehabilitation is needed as well as continued routine maintenance. The government is prioritizing investment to meet this need.

There has also been a general shift in emphasis away from railway investment toward road investment, with priority on rehabilitation and maintenance of existing infrastructure, particularly that needed to ensure energy sector development. The development emphasis on roads over other sectors, reflects changes in trade traffic flow, motorization trends, and Mongolia's national integration strategy, which the ADB has strongly supported with technical and financial assistance.

#### **Roads**

The Mongolian road network extends 49,250 km, of which 11,063 km are state road. Just 11.6% of state roads are paved. Although there has been a recent trend towards motorization in major cities, particularly in UB, road use is still limited to short-range transport for passengers and light load freight traffic. The only inter-city link with ADT 500 or more is A04 (UB-Darkhan-Sukhbaatar-Altanbulag). Other links extend from Ulaanbaatar (Lun, Erdenesant, Terelj, Baganuur,

Zuunmod). Links of ADT 200 or more are: A03, A06, A09, A17 and the border crossings of Zamyu-Uud and Altanbulag. Due to past neglect, a huge demand for road maintenance and upgrading exists.

The emphasis within the road sub-sector has been firstly on the North-South Trade corridor (Altanbulag-UB-Zamyn) and secondly on the northern Route (UB-Darkhan-Erdenet-Moron-Ulaangom-Tsagaannuur) - the "Asian Highway concept" as promoted by the ADB. Both of these projects focus more on industrial development than national integration. The North-South road in particular requires good route and financial planning in view of the long distance involved.

To meet national integration goals, a low-cost gravel road to western aimags (from Arvaiheer to Hovd and Ulaangom) has been proposed by the WB and there is an IDA Transport Rehabilitation Project - aimed at maintenance of the central-western region. To the extent that national integration is promoted, the WB gravel road is the project of choice. However, fiscal rectitude dictates that emphasis must be placed on maintenance rather than new construction.

### **Railway**

After a fall in freight traffic in the early 1990s, MTZ, a joint venture between Mongolian Railway and Russian Railway Corporation, is now recovering. Railway remains the most important mode of transport in the economy.

Railway accounted for 95.6% of all freight transport in 1998, hauling 2.82 billion ton-kilometers. Coal transport from Baganuur to UB, in particular, is large - typically accounting for one-fourth of freight revenues. Copper has been the second largest freight revenue earner. Petroleum products have been the primary import.

Freight charges typically account for 65-70% of total revenues, while passenger fares account for 25-30%. Trains carried 981 million person-kms in 1998 - 54.8% of the total for all modes of transport. There has been a decline in international transit demand due to the rise in popularity of competing routes. Domestic demand remains high and cross-border passenger demand is increasing. In terms of passenger revenue, in fact, nearly 50% is from international passengers.

Present profitability is far below expectations for a self-operating entity and insufficient for annual investment demand of Tog 7 -8 bn (required for rehabilitation and maintenance). It is, therefore necessary to raise tariffs further as well as reduce operating costs.

To function as a vital transport for both freight and passengers, railway facilities have to be adequately maintained through rehabilitation and renovation of existing capacity. While no new construction investment is required, rehabilitation is essential to improve safety and service. In addition, industrial development in sectors with heavy load traffic transport, such as coal to power stations and copper concentrate exports to Russia are greatly reliant on a well-functioning railway system and are also justified subject to financing constraints.

### **Aviation**

Overflight revenues have increased rapidly in recent years, resulting in a major source of funds for Civil Aviation Authority (CAA) operations. A revenue base of Tog 21 bn in 1997 (Tog 19 bn from the navigation fund), has allowed a high level of investment in the UB airport and the navigation control system in recent years. Overflight revenues are forecast to be at least Tog 15-16 bn per annum in the near future, which is adequate for aviation sub-sector development provided the navigation fund is allocated toward this use. However, there was a major transfer of funds from the CAA to the central government in 1999, which could cause financial problems.

The CAA plans to invest mainly in upgrading local airports - as most of the urgent investments have almost been completed. This policy is appropriate. Renovations of UB airport are now complete. Airport renovation at rural airports is under way using overflight revenues (the navigation fund).

In accordance with ADB and WB studies, and in line with the requirements for ICAO membership (joined in 1989), legal and institutional developments have been implemented. International air service now covers 24 countries and 40 airlines, including chartered flights. The CAA was established as an executing agency under the MOID in 1992 by separating MIAT into an independent air carrier. The major profitable services of MIAT are with Moscow, Beijing, Berlin, Seoul and Osaka. MIAT now has an A310 leasing contract with Lufthansa and Airbus Ltd.

Domestic air fares for Mongolian citizens have been kept low as social policy to integrate remote regions. The current tariff will be difficult to sustain even with cross-subsidies from international profits within MIAT. However, attempts to raise the tariff to a cost-recovery base have failed due to strong public opposition.

Despite the subsidized domestic tariffs, there is no government financial support for MIAT. On the other hand, a national flag carrier policy on MIAT's international air services provides protection against foreign air carriers – allowing MIAT to charge monopoly prices.



Privatization has been recommended by international organizations, but there has not been any major involvement by international investors to date.

### **3.6.2 Major Transport Issues**

#### **Lack of past investment**

To date, public investment in the transport sector has been relatively low, 0.8% of GDP during the initial transition period (1992-1994). Other developing and transition countries tend to have average ratios above 2% to 3% of GDP.<sup>5</sup> Despite the tremendous need for improved infrastructure, financial constraints continue to limit investment.

#### **Lack of project prioritization**

Currently the prioritization of projects within MOID is inadequate as there does not appear to be an organized plan. The tremendous size of investments in the transport sector makes careful prioritization essential. In addition, the importance of cost recovery calculations take on increased importance in a market economy -- yet there is a lack of human capacity in this regard. Evaluation of road projects are particularly difficult as the application of user fees is less direct than for rail or aviation projects.

#### **Investment linkages**

In the central planning era, transport investments were heavily biased toward those which had strong linkages to mining and manufacturing -- to the detriment of agriculture and tourism. Policies which benefit agriculture and tourism should therefore be stressed more than they otherwise would be.

#### **Improving port access**

Competition between external trade routes can lower costs, improve efficiency and provide better security should one route become temporarily unusable. Export routes to both Tianjin (China) and Vostochny (Russia) should be developed simultaneously for this purpose.

#### **Integration vs. Viability**

The social benefits of improved country integration must be balanced against the economic considerations of specific projects. This is an issue as to what degree national integration goals over-ride purely economic criteria. Such normative economic decisions can only be decided by

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<sup>5</sup> Data in this paragraph taken from WB sources

Mongolia itself. In the current setting of severe budget difficulties there is less flexibility to undertake projects with low economic rate of returns.

### **Improving management**

Management skills must be improved such that leaders can better assess market conditions and make optimal pricing and output decisions. Privatization and other measures can promote more efficient management in the transport sector. Tariff rates should eventually be set not by the government, but by independent providers of services. The state should, however, continue to subsidize essential services which would otherwise not be provided.

### **Tariff revision**

Revision of tariff systems such that full cost recovery is achieved will accelerate and improve privatization prospects, particularly urban transport and MIAT. A review of international tendering of projects is recommended to enhance job creation and technological transfer.

### **Issues specific to the road sub-sector**

Financing for routine maintenance and capital repair are to be secured by the Road Fund, however, the Fund is far from sufficient. At present, only a tiny fraction of the required routine maintenance is met. The World Bank estimates that approximately US\$12.5 mn has to be spent on routine maintenance per year.<sup>9</sup> In addition, deferred maintenance on paved roads is estimated to require about US\$12.3mn. The base of the Fund needs to be enlarged by increasing the petroleum tax, in order to secure maintenance funds and provide the domestic component required by most foreign loans. Although local construction companies are underdeveloped, Mongolia should not miss the opportunity to promote them through subcontracting arrangements and transparent local bidding systems.

Traffic congestion has begun to emerge in UB. Devising solutions to deal with future road congestion should be promoted today, while there is still time to plan. Aside from congestion, vehicle emissions have led to increased air pollution.

Privatization issues exist in the urban transport sector. However, there is little hope of self operating capacity until revenue problems, as well as replacement of outdated vehicles and equipment, are sorted out.

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<sup>9</sup> "Mongolia: Taming the Tyrannies of Distance and Isolation" World Bank Report No. 18242-MOG, May 25, 1999.

### **Issues specific to the railway sub-sector**

Despite the fall in demand in the mid-90s, MTZ has been able to remain profitable, with total profit being equal to 3.82% of revenues from transportation. The major issues are improved maintenance and financial performance, as well as restructuring. Full ownership of MTZ (by purchasing the Russian portion of equity after clearing debt) would pave the way for more strategic decisions and privatization.

About 50 years have passed since the construction of the existing railway facilities, and the facilities have deteriorated due to the harsh weather conditions. Replacement of vital railway assets, such as sleepers, locomotives, railcars, communication and control equipment is required. The establishment of disaster resistant structures for the railway line is urgently required in order to ensure safe and reliable transport. Replacement of railway sleepers is the first priority. In theory, MTZ, as an independent entity, should be responsible for arranging its own financing without resorting to public funds. However, to delay financing risks the railway system breaking down, which would have consequences far beyond MTZ alone. In these circumstances, use of public funds, through loans, is justified.

Restructuring within MTZ - including a review of branch lines and the loss-making eastern regional line is necessary. In general, MTZ should divest itself of activities not directly related to running a railway. A review of prices, profitability and loan repayment capacity is in order.

The feasibility of constructing bulk transfer facilities and petrol facilities at Zamin Uud needs to be examined.

### **Issues specific to the aviation sub-sector**

- There is heated argument as to the proper use of overflight revenues. The CAA insists that they should be spent on the promotion of the airport sector, while the government and Parliament state that the majority of revenues should be transferred to the government;
- The replacement of MIAT's old fleet of domestic-use airplanes. New investment is not feasible considering financial conditions.
- The privatization of MIAT. The government has recently announced its plan to privatize MIAT as part of the denationalization of large state-owned enterprises.
- Loss-making domestic air services. The regulated domestic tariff is held below cost for social reasons without government compensation;
- Construction and renovation of local airports.

Among the five issues, the most urgent one is the loss-making domestic air services. In 1998, MIAT incurred losses amounting to Tog2.6 bn from domestic flights, while it could earned a profit of Tog0.8 bn from international operations. MIAT is a self-operating state-enterprise. It has to raise necessary funds for its operations. With regard to this, the deregulation of domestic tariffs is required. Otherwise, a subsidy from the government has to be considered for domestic air services. As for the replacement of the fleet of domestic aircrafts, some form of government support will become necessary if MIAT is not able to raise funds.

### **3.6.3 Medium Term Transport Strategy for 2000-2002**

Continuing difficulties in public finance and a limited borrowing capacity, as detailed in the ESAF, is limiting sector development. In the near term, restraint on new investment is required and emphasis should be placed on on-going projects and rehabilitation/ maintenance. As a general rule, investment in the UB metropolitan road sub-sector is the most cost effective. Any new projects should have a direct link to policy objectives, such as industrial development, tourism promotion, or national integration. The latter of these may justify continued subsidization (air fares, etc.), depending on the degree to which the government wishes to pursue its national integration policy.

More efficient management of executing agencies and sub-sector companies is required through market-based tariff setting and employing the cost-recovery principle. In the longer term, a more competitive environment in the transport sector can be sought through privatization and market-based tariff setting.

Strengthened economic ties with neighboring countries, especially Far-east Russia and Mainland China, and international development projects, such as the Natural Gas Pipeline network project, will have a direct impact on future transport demand. Policy should be flexible to adapt to the changing environment.

#### **Roads**

As mentioned, priority has to be given to maintenance and rehabilitation with all new construction being postponed – aside from on-going sections of A04 (UB-Darkhan-Altanbulag) and A10 (Darkhan-Erdenet-Bulgan). To assist in maintenance and rehabilitation funding, the Road Fund should be enlarged through higher user charges (including petroleum taxes). Promotion of domestic road construction companies should be included in the government's development strategy in order to improve the technology and human resource capabilities of the domestic companies.

Establish a road construction promotion scheme with a private equipment leasing company, enterprise promotion fund, etc. Give strong weight to the domestic component review on international tenders.

Over the medium term, extension of a high-grade gravel road to distant regions is desirable.

### **Railway**

Sufficient demand exists for reasonable profitability of MTZ with a market-based tariff over the medium-term. An emphasis on rehabilitation and renovation of existing facilities, with minimum new investment is called for. Restructuring of outdated management practices should simultaneously be pursued along with withdrawal from loss-making regional lines.

Outsourcing of operations should be pursued more aggressively. Activities within SOEs, ranging from wood processing, to medical services (hospital) and apartment accommodations, which are not required for railway operations should be privatized to the extent possible. Full 100% nationalization (full Mongolian ownership) of management is required to allow for independent decision-making. Efficient operations depend on a solution to accumulated liabilities to the Russian counterpart. Full 100% nationalization followed by privatization is the ultimate goal. Defining a clearly outlined privatization schedule would greatly assist in smooth privatization.

From a long-term perspective, freight mode shares will decline for most products, other than heavy load traffic, after completion of the North-South road network (Atanbulag-UB-Zamyn Uud). However, rail will be a major transport sub-sector for Natural Gas Pipeline construction. Passenger mode shares will also decline from 50% to 35% (WB estimates).

### **Aviation**

Subsidized access to UB from distant regions to compensate for the underdevelopment of the road network should continue over the medium-term. However, it is also necessary that domestic air tariffs eventually be adjusted to a cost recovery basis with an eye toward eventual privatization of MIAT. Thus, a review of domestic air service policies, to set minimum access requirement guidelines, is in order. The domestic tariff subsidy scheme should be formalized for one sample case by targeting distant regions from UB (more than a one day trip by road). The tariff should initially be set to recover half of the current cost-gap (cost-tariff) and then revised to a cost-recovery basis within 10 years.

To ensure the sustainable operations of the CAA, transparent rules are needed to clarify how

overflight revenues should be allocated to the central government budget and to limit excess transfers of earmarked tax/ revenues to the central budget. Roughly one-half of overflight revenues should be reserved for CAA operations and capital investment projects. The rest should be reserved for tariff subsidies and other policies, such as leasing support for MIAT. The justification for this is national integration needs. Funds could also be transferred to the central government budget for urgent use.

The international airport tax should be increased to provide greater funding to the navigation fund, and, in turn to local airports for maintenance.

Over the medium term, MIAT's domestic air fleet should be renovated with transparent subsidies. This is necessary considering the present financial capacity of MIAT and loss-making domestic air services.

The government should promote international competition in international services for tourism promotion. Over the longer term, there is a trend toward open skies among Asian airlines, which will result in increasing air routes across Mongolian airdromes. As the road network grows, it will gradually provide a substitute for domestic air services. Eventually it is hoped that all domestic tariffs will be deregulated.

### 3.7 Social Development (Health, Education, Poverty Alleviation)

#### 3.7.A Health Sector

##### 3.7.A1 Current Health Situation

Prior to 1990, the Mongolian health system was modelled after the Soviet system. Service delivery, human resources and infrastructure were centrally planned, and the success was measured by the number of doctors, nurses and hospital beds. This resulted in a highly centralized and hospital-based curative care system with excessive facilities, over-specialization and over-staffing. A relatively large share of the population was hospitalized each year and stayed for longer periods than in other countries.

**Table 32. Major Indicators of Health**

	GNP per capita in 1996 (US\$)	Health expenditure per capita in 1990-95 (US\$)	Hospital beds per 1,000 population 1994	Physicians per 1,000 population 1994	Infant Mortality Rate in 1996 (%)	Maternal Mortality Rate in 1990-96 (%)
Mongolia	360	158	11.5	2.7	53	65
Cambodia	300	18	2.1	0.1	105	900
Lao PDR	400	8	2.6	0.2	101	650

Source: World Development Indicators 1998

The decade of the 1990s has, however, seen a major transformation in the health sector. Along with the collapse of subsidies, non-communicable and chronic diseases have increased.

**Table 33. Expenditure in and Assistance to the Health Sector**

	Total Expenditures, in Tog(bn)	as percentage of GDP (%)	as percentage of Government budget (%)	Assistance, in Tog(mn)	Assistance received as percentage of total expenditure (%)
1990	0.56	5.4	9.3	5.6	0.9
1995	16.90	4.4	11.3	2925.0	17.3
1998	32.30	3.6	10.9	3000.0	9.0

Source: Ministry of Health and Social Welfare

A National Health Policy was adopted in July 1997 aiming to improve the efficiency and effectiveness of health services. The Government is now committed to a fundamental overhaul of the health care system, emphasizing an improvement in financial resource mobilization.

- Preventive medicine has been adopted as a fundamental strategy;
- Cost recovery mechanisms have started, and budget subsidies for health insurance were reduced in 1998 (to 50% of the sector funding). Health expenditure, however, still accounts

for 10.9 % of overall government expenditure, while representing only 3.6 % of GDP;

- Community based programs for essential medicines (drug revolving funds) have shown positive results;
- The first example of a hospital privatization was the Bayanzurkh District Hospital, which was partially privatized in 1997. The hospital is still owned by the state, but the state has a management contract with the hospital management board. The Health Insurance Fund (HIF) implements a prospective method of funding to this hospital through contractual arrangements. Therefore, the hospital has started rationalizing both staffing and other resource inputs for each of its department.

### **3.7.A2 Major Health Issues**

#### **HIF reform**

The recently established insurance mechanism is an important achievement, but it has been based on retrospective funding (reimbursement) which can lead to disincentives for cost containment and expenditure control. The difficulties in managing HIF have hindered a streamlining of the health financing system and the overall sector reform.

Funding from the Government is normally behind schedule, and causes management difficulties in the insurance fund. The retrospective funding method to health institutions was shifted in January 1999 to a prospective method; however, it is confined to hospitals located in Ulaanbaatar, due to limited funds in HIF caused by slow budget transfers. The capitation<sup>10</sup> which was introduced at the same time has created an effective means of expenditure control.

#### **Narrow basis of premium payment**

The present basis of payment for the health insurance is extremely narrow. The Health Insurance scheme now covers nearly 91% of the total population in Mongolia (about 2.3 million people), but only about 700,000 people are obliged to pay premiums. Of the remainder, about 1.5 million people are classified either as vulnerable population or military personnel, both of which are entitled to free medical care, the cost being covered by the state budget. As a result, about 63% of total revenues (including the voluntary insurance portion) is generated by the former category of the population, but the much larger latter category account for the expenditure of over 60% of total revenues.

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<sup>10</sup> *Capitation* - A method of reimbursement under which a provider is paid a fixed amount per person regardless of the amount of services rendered.



### **Employment of User Charges**

Due to a joint ordinance between the Minister of Health and Social Welfare and the Minister of Finance, enacted in January 1999, various tests (e.g. examinations through X-ray, ultra-sound, CT scans, angiocardiography, etc.) are now chargeable services in all hospitals. Exemption from payment for these services, however, is granted to certain categories of people, such as patients referred from the hospital's catchment area, residents in some aimags in Gobi, and certain groups of government officials.

### **Limited accountability in hospital management**

Despite the reform objective of efficient resource mobilization, accountability of hospitals in Mongolia remains poor, in terms of both the content of insurance claims and the unit costs of services. Moreover, a comprehensive map of financial resources already allocated in the health sector, or to be allocated to specific classifications of health care services, does not exist. These shortcomings have hindered a coherent realignment of health resources, including privatization.

### **Lack of adoption of Preventive Health Care**

The concept of PHC has not been absorbed by health professionals, particularly at the local level. In fact, chronic illnesses such as cardio-vascular disease, cancer, hypertension, etc. are growing and entail costly medical services. To contain health care costs, the importance of PHC cannot be overemphasized. Mongolia has seen only a slight swing from curative care to PHC and preventive intervention.

### **Social Security and Pension Fund Reform**

The Pension Fund is the largest component of the social insurance system with a "pay-as-you-go" system. There are several problems with the pension system. First, it is not self-financing. Second, contribution arrears to the Fund remain large. Third, the base for pension contributions is narrow relative to the coverage of pension recipients. After the 1995 reform, the average replacement rate increased from 20% to about 39% by 1997. The government has developed a reform plan by introducing a notionally defined individual account scheme, which is designed to establish a closer link between contributions and benefits, offer a better mechanism to control pension costs, and lay a basis for the transition to a partially-funded system.

### **3.7.A3 Medium Term Health Sector Strategy for 2000-2002**

#### **Promote preventive health care**

Much more effort is required to disseminate and promote PHC so as to improve the level of health of the population overall and adjust health expenditure.

#### **Continue rationalization**

Progress in rationalizing health facilities and health personnel is still slow. Further efforts are required. Military hospitals should not be exempted from rationalization.

#### **Improve premium collection**

Premiums paid to the Health Insurance Fund cover only 60% of its expenditure, reflecting poor premium collection and the lack of effective expenditure control. The proportion obligated to pay premiums needs to be increased.

#### **Improve management of health insurance system**

Capitation has recently been introduced into the Mongolian health financing system. This can generate more incentives to provide care in a more efficient way, both technically and in terms of cost effectiveness. To manage the health insurance system more efficiently, the Prospective Payment System (PPS)<sup>11</sup> should be introduced more widely. Under PPS, hospitals are reimbursed a fixed amount determined through an insurance arrangement. When prospectively set, global budgets<sup>12</sup> can be very effective in containing costs.

The MOHSW should focus on strengthening the financial management capacity of health professionals. The reinforcement of this capacity at the local level is a crucial issue, given the recent decentralization of the Mongolian health sector.

#### **User charges**

Wider employment of user charges in general is needed. The ordinance enacted this year enables various medical test services to be chargeable in accordance with a fixed fees list. However, certain categories of people are granted exemption, including some groups of government officials.

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<sup>11</sup> *Prospective Payment System (PPS)* - The method of hospital reimbursement phased in under which hospitals are reimbursed a fixed amount determined at an insurance arrangement.

<sup>12</sup> *Global Budget* - global budget is a payment mechanism whereby an organization, group of providers, or a provider receives a total budget for a defined period of time. A global budget can be used solely for funding. It can be simply be the sum of capitation payments for all of the individuals for which an mechanism accepts responsibility.

To establish a fair market-based economy, government leaders should not be granted privileges. The diverting of subsidies should be terminated.

#### **Improve accountability**

The accountability of hospitals needs to be strengthened, together with clarifying cost structure of service provision. The MOHSW should set up a financial information system to enhance collection, analysis, and dissemination of financial data, to increase cost transparency, and to improve coherence between financial data, health indicators and the health insurance system.

#### **Assess grant aid before accepting**

Medical equipment, particularly of an advanced type, can require considerable operational costs. Therefore, the feasibility of installing new advanced capital assets, even provided from grant aid, should be critically examined.

#### **Reform pension system**

To promote reform in the pension system, the government has to start establishing notionally defined individual accounts in the near future. The government should also fully understand the paramount importance of these objectives: [i] to create a closer link between paid contributions and benefit accruals in order to improve the incentives for compliance by existing contributors and increase voluntary participation of the self-employed; [ii] to improve the benefit structure for controlling future pension costs; and [iii] to create a basis for transition to a partially funded system.

### **3.7.B Education Sector**

#### **3.7.B1 Current Situation**

Prior to transition, Mongolia boasted a strong educational system based on free access for all. The system achieved an adult literacy rate of 96.5% (1989 census). In addition, the general secondary school crude enrolment rate was 94.9% (99.0% of males and 91.1% of females) and that for higher educational institutions was 22.5% (24.9% of males and 19.8% of females).<sup>13</sup> Of students enrolled in primary school, 90.6% reached the fifth grade.<sup>14</sup> These achievements are particularly impressive considering the large number of nomadic herding families. An effective boarding

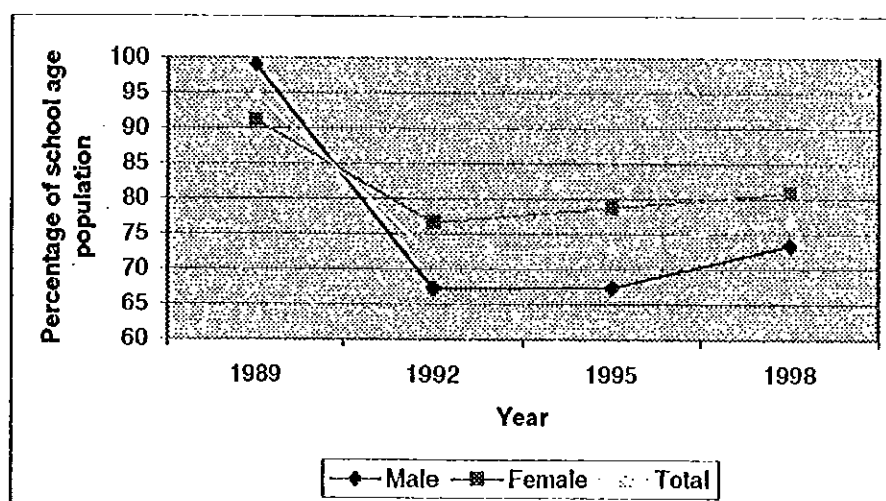
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<sup>13</sup> General secondary school covers ages 8 to 17. The source of this data is the UNDP's "Living Standards Measurement Survey 1998" (LSMS)

<sup>14</sup> National statistical office

school system enabled rural children to attain the same level of education as their urban counterparts. This system, and the school system in general, however, were dependent on large external subsidies from the Soviet Union – which collapsed in 1990. With the cut in subsidies, the system was no longer sustainable and necessarily faced contraction. The statistics reveal the dramatic decline in educational opportunities. The adult literacy rate today is estimated to have fallen to around 87% and school enrolment rates remain 20% lower than earlier. By 1998, the percentage of kids reaching the fifth grade had fallen to 77.3%.

**Figure 19. General Secondary School Enrolment Rates**



Source: UNDP, LSMS

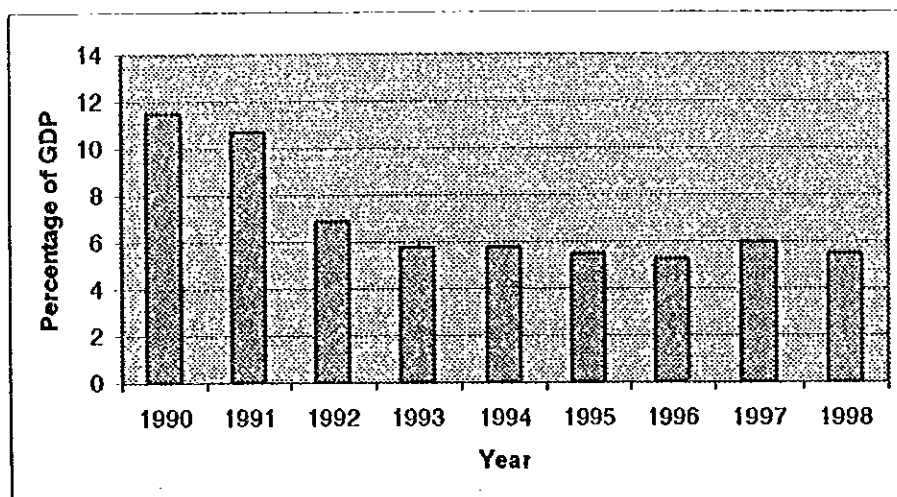
Similar to secondary school enrolment, higher institution enrolment also plunged upon transition. From 22.5% in 1989, enrolment rates fell to 12.5% by 1992. However, since that time the rate has increased and stood at 26.4% in 1998 – roughly 4% higher than the pre-transition rate. Private institutions have blossomed in accordance with the introduction of tuition requirements at centers of higher education (primary and secondary school remain tuition free) and as citizens feel increased incentive to equip themselves with the skills necessary to thrive in a market economy. The number of private institutes and colleges has risen from 41 in 1995-96 to 71 in 1998-99 (the number of primary and secondary schools has dropped from 664 to 630 over the same period). Thus, it is clear that the brunt of the damage to the system has been concentrated at the lower levels of education and a sizeable share of the generation currently growing up is receiving no education at all.

A number of factors have contributed to declining primary and secondary enrolment rates:

### Decline in government provision

Education's share of total public expenditures has declined consistently from 11.5% in 1990 to 5.5% in 1998. It is estimated that real public expenditure on education fell by 69% over the period 1990-1992.<sup>15</sup>

**Figure 20. Public Education Expenditures**



Source: Mongolia National Statistics Office

The falling budget has led to a decrease in critical services, such as heating and dormitory availability, which has made attending school increasingly difficult, if not impossible. This is particularly true for those that live far from urban centers. Enrolment of boarders in 1992 was half the 1989 level.<sup>16</sup> The collapse of the boarding system has resulted in many rural children no longer having the opportunity to get an education.

### Rise in costs borne by the family

Educational costs have increasingly been passed on to parents, who often do not have the ability to pay. These include food, boarding, books and tuition for kindergarten. The 1998 LSMS found that the national average share of total non-food expenditure spent on education rose from 6.07% in 1995 to 15.4% in 1998. Presumably costs were even lower before 1995.

### Higher opportunity costs

The privatization of livestock and the subsequent increase in livestock herding families has

<sup>15</sup> Sheila Smith: "Poverty and the Transition to a Market Economy in Mongolia", ed. - Keith Griffin. Page 63.

increased the opportunity cost of schooling – which has forced some children, particularly males, out of school (the dropout rate of male children from herder households is twice that from non-agricultural households). Females now attend school more than males, as seen in the enrolment graph above. Even in urban areas, the general decline in living standards has forced more kids to work rather than attend school.

With the transition to a market economy, a mismatch between the technical education and vocational training structure developed for a command economy and the needs of a market economy has emerged. In the earlier system, all enterprises were state-owned and a central planning agency could accurately predict the types of jobs for which training would be required. With the move to a market economy there is a need to change the vocational education system so that it responds to market demand. This requires the involvement of a broader range of interests, including education authorities, employers, labor unions, parents and students themselves.

Education policy was outlined in the GOM's, "Medium-Term Economic and Social Development Strategy, 1999-2002," released in June 1999. The major education policy measures included:

"Greater attention to the development of non-formal education, distance learning programs and to the completion of ongoing rationalization and productivity measures." Attempts to rationalize staff requirements have been partially successful. In 1998-99, nearly 400 teachers willingly left their jobs in exchange for compensation. The financial savings were offset by the hiring of 700 additional non-teacher employees, however, including 378 doorkeepers, 190 stokers and 113 electricians.

Improving management and creating a more decentralized system. This includes revamping the organizational structure of MOSTEC and the education-related departments in local governments.

Promoting private sector provision of education services: under a WB program, one of the largest universities has been privatized on the condition that the facilities remain state property and the management be entrusted to a private entity.

### **3.7.B2 Major Education Issues**

The educational system has been thrown into disarray with the transition to a market economy. Equipping all citizens with the basic tools necessary to succeed and contribute positively to

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<sup>16</sup> Ibid., page 66.

society is a fundamental obligation of government. This is particularly true in a period of transition to a system in which individuals must take greater responsibility for their own lives. However, precisely at the time that education should be emphasized, it has, in effect, been de-emphasized.

According to 1992 data, although 84.4% of all students were at the basic and general secondary education level, these schools consumed just 55% of the educational budget. On the other hand, 16% of funds were spent on the 0.4% of students enrolled in higher education. The resulting per student spending ratio was 6.37:1 (higher:basic/general education).

**Table 34. Distribution of Educational Expenditures in 1992**

School level	Percentage of all Government Expenditure (%)	Percentage of all students (%)	Government Expenditure per student (Tog)
Kindergarten	21.0	12.9	5,094
Basic / General	55.0	84.4	2,035
Vocational	7.0	2.3	9,333
Higher	16.0	0.4	12,954
Total	100.0	100.0	

Source: Cited in "Poverty and the Transition to a Market Economy in Mongolia", ed. - Keith Griffin, from GoM data)

By 1998, the situation had become slightly more balanced, but a 3:1 ratio remains. The per student spending figures would be more unbalanced were it not for the high number of primary and secondary school drop-outs in recent years.

**Table 35. Distribution of Educational Expenditures in 1998**

School level	Percentage of all Government Expenditure (%)	Percentage of all students (%)	Government Expenditure per student (Tog)
Kindergarten	22.0	12.8	137,000
Basic / General	59.1	77.2	61,000
Vocational	0.3	2.0	148,000
Higher	18.5	8.0	185,000

Source: Information and Statistic Division, MOSTEC

The social return on human development expenditures has been shown to be quite high – especially at the base of the pyramid (primary education and primary health). This is, however, not always readily apparent to government administrators. The return to investment in a child's education is both nebulous and delayed. There is a natural bias against investing in projects that display these characteristics. It takes a generation before investing in a child today will produce any returns to society – and even then the return can not be quantified. Basic education has lost the competition for limited government resources – the percentage decline in education expenditures

between 1990 and 1992 was larger than the decline in either GDP or total public expenditure.<sup>17</sup> This is an unfortunate precedent for many reasons:

- To the extent that basic education costs are borne by the family, poverty becomes endemic and social inequality grows over time.
- Rather than contribute to society, the uneducated are more likely to be a drain on society - either by becoming dependent on state welfare, or through an increased likelihood of entering into crime. A country's greatest asset is its people and education is fundamental to enhancing economic growth.
- Promoting education is an effective way to promote gender equality and increase social cohesion.

### **3.7.B3 Medium Term Education Strategy for 2000-2002**

As the domestic budgetary constraints are not likely to relax significantly in the foreseeable future, the medium term strategy should center on the following concepts:

#### **Reduce budgetary pressures**

Reducing redundant personnel and unneeded schools can help reduce budgetary pressures. At the higher education level, strengthening the cost recovery system is needed such that these institutions become self-financing. If higher education (including TEVT institutes) are self-financed, resources are freed up for primary education. Eliminating privileges for those not deemed to be vulnerable would reduce budgets.

Recently there has been increased migration to the cities, resulting in a shortage of primary schools in some urban areas. Some schools are running on multiple shifts due to lack of seats. However, from a country-wide perspective, the school system suffers from excess school capacity and staffing, given current budget restrictions.

#### **Re-prioritize the education budget to emphasize primary education**

As has been stated, investment in basic education is an effective anti-poverty measure and improves economic growth potential. As students move toward higher education, however, the benefits accrue more and more to the individual (through higher future income potential) as opposed to society in general. Thus, higher education students should bear a larger burden of their educational costs. In fact, however, as seen in the tables above, spending on higher education

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<sup>17</sup> Total public expenditure fell by 58% in real terms, while the allocation to education fell by 69%.



students has greatly exceeded spending on primary and secondary students (on a per student basis).

A reallocation is needed to emphasize primary education at the expense of higher education. This is true both because the social returns to primary education are higher and because alternative funding is more readily available for higher education.

Improving the quality of basic education through training for teachers and higher salaries to reward the more capable teachers is needed, although, again, this is difficult to implement in a budgetary crisis. MOSTEC estimated that 9.1% of primary and secondary teachers did not have appropriate credentials as of 1998. The situation in rural aimags is particularly bad, with over 18% of teachers being “non-professional” in some aimags.

#### **Exploit distance learning opportunities**

As the cost of maintaining boarding schools has become prohibitive in many districts, distance learning programs can allow students to keep up with their studies without facing high boarding school costs. The National Center for Non-Formal Education collected data from aimags in the spring of 1999 which reveals there are at least 20,000 people being served by current programs. These efforts must be extended.

#### **Increase involvement at the local level**

Local communities must play a larger role in the school system to compensate for the lack of national funds. Alternative funding sources for boarding schools and other programs are needed.

#### **Use foreign aid, particularly grants, extensively**

Health and education are two areas that can attract foreign assistance relatively easily. The GOM should make full use of this assistance. However, assistance must be used wisely and responsibly – if for no other reason than to ensure a continued aid flow. Thus, even grant assistance must be judged based on technical appropriateness and financial sustainability rather than blindly accepted.

Granted funds can be used to:

- Renovate facilities: most educational facilities are more than 20 years old.
- Develop curriculum / produce textbooks and other materials
- Train teachers
- Purchase needed equipment

#### **Match vocational training courses with market demand**

Matching vocational training with market demands – as the National Council on Policy Co-

ordination is currently addressing. A labor market assessment is needed so that appropriate courses may be offered. A second issue in the TEVT system is the dilapidated state of facilities, which is estimated to be 23 years old on average.

### **3.7.C Poverty Alleviation**

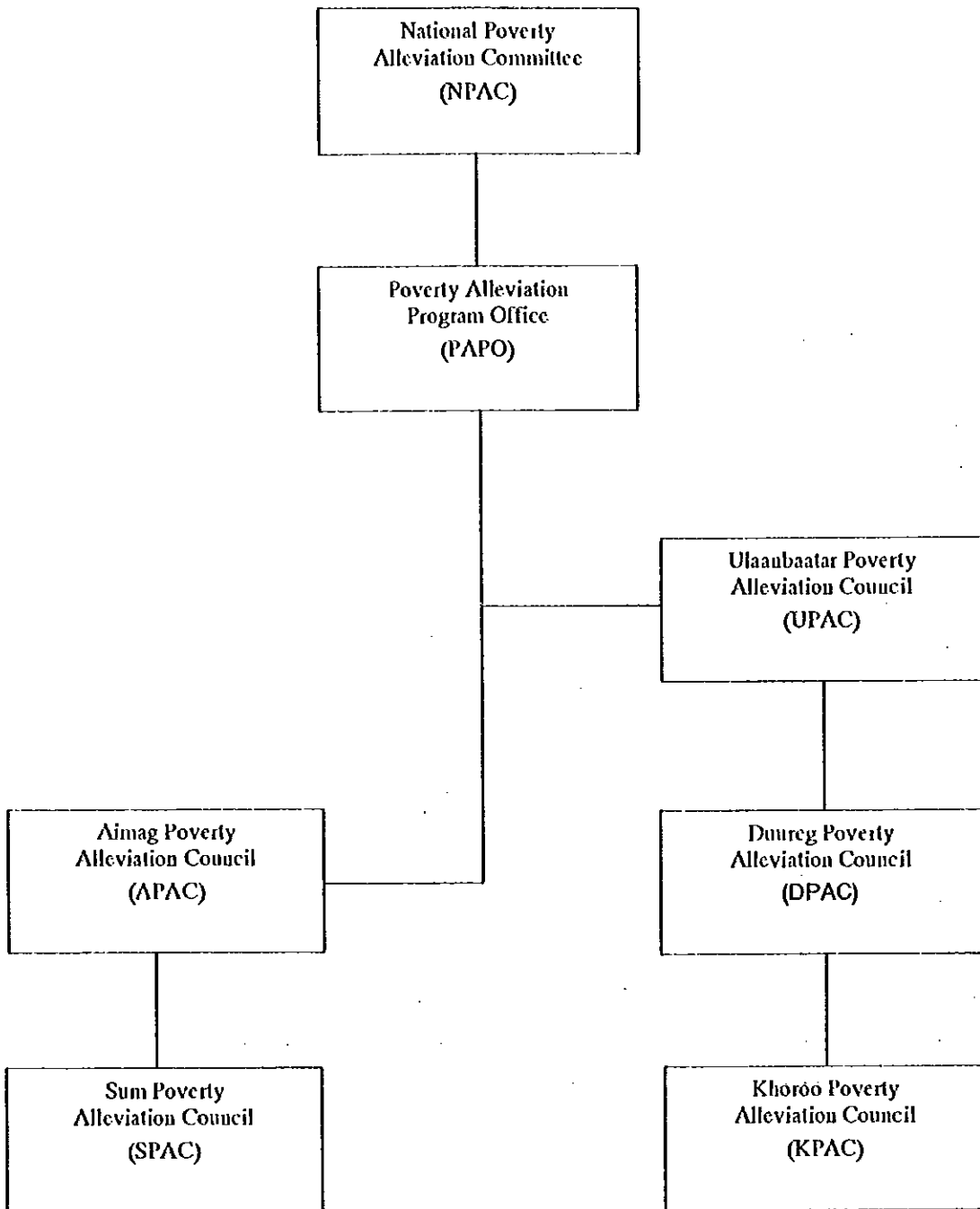
#### **3.7.C1 Current Situation**

Transition to a market economy together with unfavorable external factors has aggravated hardships for the vulnerable group of the population. To address increasing poverty, the Government introduced a six-year multi-sectoral National Poverty Alleviation Program with financial support from the World Bank, ADB, UNDP and bilateral donors. The Program was launched in 1995, and revised in September 1997. US\$7.0mn has been disbursed out of the pledged US\$ 15.3mn as of June 1999.

The main objective of the Program is to reverse the trends of increasing human deprivation and human capital erosion on a sustainable basis. The Program, thus, focuses not only on income poverty, but also on the overall human development. Its six major components are as follows:

1. Poverty Alleviation through Economic Growth and Employment Promotion
2. Protection of Human Capital through improved delivery of education and health services
3. Alleviation of Women's Poverty
4. Strengthening the Social Safety Net through targeted assistance for the income of poor who cannot benefit from new employment opportunities in the short term
5. Alleviate rural poverty especially among the herders
6. Development of suitable institutional structures for organizing, implementing, and administrating the program activities

**Figure 21. Institutional Framework**



NAPC activities can be classified into two categories: priority activities that are directly related to poverty alleviation and auxiliary and supporting activities. The activities of the first category are divided into thematic groups under appropriate sub-funds of the Poverty Alleviation Fund (PAF), out of which their implementation is financed.

### **3.7.C2 Major Poverty Alleviation Issues**

Reviews and evaluations conducted by major donors have confirmed improvements made not only in the living conditions of a large number of poor people, but also in their sense of self-reliance and individual initiatives. Along with employment and income-generating opportunities, has come the renovation of schools, school dormitories, hospitals and maternal rest homes. Together with the overall progress toward poverty alleviation, the NPAP has also helped to strengthen management capacity and efficiency of program operators across the country.

Income-generating projects have created permanent jobs for 14,956 poor people, who were previously unemployed. 16,708 people have also found temporary employment through public works projects, which benefited 174,136 people.

The NPAP has paid special attention to the alleviation of women's poverty through NGO facilitation, women-only income generation projects, and single female-headed household project. As a result, a higher proportion of women has benefited from income-generating projects than men.

Other programs, such as 'increased access to rural health services and reduction in maternal and infant mortality,' improved quality of and access to pre-school education, improved skills and employment of the disabled, etc. have also shown visible impacts.

### **3.7.C3 Medium Term Poverty Alleviation Strategy for 2000-2002**

The ongoing program has showed enormous positive outcomes, however, this type of intervention needs to include more components to support local and community-based mechanisms, such as for newly borne voluntary organizations, savings mobilization and business training.

After the completion of the present program, the multi-sectoral National Poverty Alleviation Program should be continued in a form of the second phase. More considerations need to given to effective components to support community-based mechanisms.

In spite of the many positive impacts created by PAP, the following should be reinforced to generate further achievements.

#### **Mobilizing domestic resources**

The central and aimag governments have to find ways of raising domestic resources for this

purpose. It is not an easy task, given the present economic environment, however, some aimags have succeeded in making allocations from their budgets - which serves as a good examples for other aimags to follow.

#### **Timely preparations for a monthly disbursement target**

Disbursements for PAF projects require timely preparations by the PAC secretariats. Targeted soums and Khorooos have to be selected and training to be carried out for income generation, projects to be carefully selected and sent to PAPO, operations staff to coordinate well with MIS, and appraise closely the projects before disbursement of funds. These activities should be execute promptly and accurately to meet the monthly disbursement target.

#### **Strengthening a mechanism for savings mobilization**

Savings mobilization has not been adequately bolstered and integrated into the IGF mechanism. PAPO has the expertise to develop an appropriate institutional mechanism. The NGOs and community activities need to be called upon to play an active role in savings mobilization as trainers and facilitators.

#### **Rural Education / Training**

Based on a training brochure developed by PAPO, Sums have received training for 'small business management.' However, a further training is required, with emphasis on marketing techniques, book keeping, costing, etc. The training needs to be well tailored for all soums and Khorooos, with a high income-generating projects.

## **3.8 Environment**

### **3.8.1 Current Situation**

Since the introduction of economic liberalization, Mongolia has undergone fundamental change in social and industrial structure which is having a deep impact on the environment. Almost half of the more than one million hectares (ha) of arable land have been eroded, with soil fertility decreasing by an estimated 20 percent. About one third of the 128 million ha of pasture have been overgrazed and about 5 million ha in the desert zone have been threatened by moving sands. The water level has fallen significantly in more than 300 lakes, rivers, streams and springs, causing, in some cases total dryness. Urbanization has led to increasing air and water pollution – threatening the health of all citizens. These changes highlight the need for a sustainable resource consumption strategy that harmonizes human activities with the environment.

Since 1990 more than 20 natural environment projects have been implemented jointly with donor countries and international organizations to meet the challenge. The current Mongolian environmental strategy is based on the National Environment Action Plan (NEAP) of 1995, which is supported by the World Bank. The plan aims to improve

- environmental protection and recovery;
- natural resource management;
- protection of bio-diversity;
- natural disaster response planning.

### **3.8.2 Major Environment Issues**

The environmental and natural resource issues faced by Mongolia are delineated in the following chart:

- 1) Land degradation (1-4 below)
- 2) Natural disaster planning (5),
- 3) Environmental degradation from mining and petroleum extraction (6),
- 4) Water resource pollution and depletion of water bodies (7-9),
- 5) Solid waste disposal (10),
- 6) Air pollution (11),
- 7) Loss of bio-diversity (12)
- 8) Environmental policy and technical capacity (13-15)

**Table 36. Environmental Issues**

No	Issue	Current Situation
1	Pastureland Degradation / Soil Erosion	The natural ecosystem of Mongolia is fragile and highly susceptible to degradation by human activities. <ul style="list-style-type: none"> <li>- Overgrazing is the most prominent cause of land degradation. Grazing pressure is greatest, and growing, close to urban centers where there has been a substantial increase in livestock.</li> <li>- Lack of rural roads results in vehicles traveling across the grasslands causing damage to pasturelands.</li> <li>- Clearing of brush for firewood results in greater run off.</li> <li>- Up to 93% of the sown area is prone to wind erosion.</li> </ul>
2	De-forestation	It is estimated that 1.5 to 2.0 million cubic meters of timber have been cut during the past 20 years. Officially, 10 - 14 thousand ha of forest are harvested annually for industrial production and export, while only 5 thousand ha are reforested. In the past 20 years only 9 - 15% of logged areas have been replanted. In the 1 <sup>st</sup> quarter of 1999 Mongolia imposed a duty on the export of sawn wood.
3	Desertification / Draughts	Droughts and the number of days with dust storms are on the rise. The edge of the southern arid region is moving northward at a rate of 500 meters per year.
4	Moving Sands	The area covered by sand increased by 8.7% (38,000 ha) between 1941 and 1990. In the last 20 years over 100 winter camps, 53 shelters/fences and 70 watering points/wells have been encroached by moving sands in Khukhmorit Sum, Gobi-Altai Aimag. Each year 4-6 thousand tons of saxaul are cut for fire-wood which intensifies moving sands.
5	Poor Natural disaster relief planning	Blizzards, Floods, Dust Storms, Fires Natural disasters cause great damage to infrastructure, livestock, agriculture and human life. Little exists in the way of disaster relief.
6	Mining industry externalities	At present over 200 mining sites are in use. Environmental degradation from mining is severe in the surrounding areas.
7	Drinking Water Quality	Water resources have become scarcer and are of poorer quality in the south, western and eastern provinces. Falling water levels have increased the salt content of water.
8	Water Pollution / Waste Water	The sources of water pollution in Mongolia are industrial discharges, domestic effluents, and run-off in urban and agricultural areas. The treatment rate of total waste water was less than 50% in 1998. While most cities have treatment plants, many are inadequate and over half are not functioning properly. Waste water in rural areas is often discharged into the environment without treatment.
9	Water Resource Depletion	Urbanization, the development of more intensive agriculture, industry and power generation have vastly increased the demands on the country's water resources. Cutting of forests, combined with the increasing use of surface water and climatic factors have caused a reduction in average river flows.
10	Poor Solid Waste disposal	In Ulaanbaatar less than 70% of solid waste generated is collected. This is disposed in open dump sites on the outskirts and buried. There is much less waste collection in the Ger areas. Although up to 80% of the waste contents are potentially recyclable, only paper is recycled. A waste management plan is needed.
11	Air Pollution	Ulaanbaatar's Ger population (48% of UB population) uses wood and coal fuel stoves for cooking and heating. Burning these materials emits toxic substances. Coal-fired boilers, thermal power plants, and the increasing number of motor vehicles (typically with minimal or no emission control) also contribute. Daily concentrations of sulfur dioxide, iron nitrogen dioxide, carbon monoxide, and dust often exceed safe levels, especially in winter.

12	Endangered Species / loss of bio-diversity (Flora and Fauna)	Some 20% of hunting violations are related rare animals. The animals most immediately in danger are deer, musk-deer, black-tailed gazelles, argali sheep, ibex, wild ass, forest sable, and snowcocks. Currently 10.9% of the territory (17.1 million hectares) are protected (12 strict protected areas, 7 national parks, 13 nature reserves, and 6 natural / cultural heritage sights). The total protected area is to be increased to 15% of the territory by 2000, 20% by 2010, and 30% by 2020.
13	Weak Environmental Policy	Environmental regulations are lax and inconsistently enforced. A coherent set of policies needs to be implemented, explained to the private sector and subsequently enforced.
14	Lack of Ecological Education / Public Participation	Environmental public awareness, NGO cooperation and public participation in environmental problems are very limited. Support for NGOs engaged in environmental monitoring, education and awareness is needed. Unfortunately public funding for education is in decline.
15	Lack of Technical skill and equipment	MONE lacks experts in environmental problems in addition to lacking the necessary equipment to accurately measure the degree of the pollution problems.  Alternative, non-polluting energy sources that can be implemented on a cost effective basis are needed. Solar and wind energy technology has been introduced, but due to high costs and poor maintenance, implementation has not been successful.

### 3.8.3 Medium Term Environment Strategy for 2000 - 2002

The medium term strategy should focus on the following:

- Preventing pasture land degradation
- Protecting human health and security
- Improving natural disaster planning and relief efforts
- Stopping the advance of environmental pollution
- Improving environmental policy and enforcement
- Stopping the loss of bio-diversity
- Introducing ecologically clean technologies
- Increasing social consciousness

A national budget for the environment does not exist. In addition, the application of environmental economics is lacking. The lack of funds available for environmental protection must be increased if substantial progress is to be made. The environmental budget accounts for under 1% of GDP (0.5% in 1998). Just 10% of this budget is distributed to rural governments. With such a small budget, it is obviously difficult to enforce environmental regulations. In addition, the budget depends on grants for 67.6% of CA projects and 88.9% of TA projects. As aid money is dependent on foreign contributors, it is not a stable source on which to build a government program. The government must further develop domestic financing sources.

In 1998, domestic sources, in the form of timber licenses, land use taxes, hunting licenses, and water use rights, generated Tog 5.1 bn in revenues. However, just one-third of this amount was



directed toward environmental protection. A larger share of revenues should be directed at the environmental problem. In addition, financing schemes based on economic incentives should be considered, such as: the polluter pay principle, the user pay principle (UPP), an environment tax (on cars, tourism), and CO2 emission rights. Finally the base of funding should be enlarged through better tax collection (for example, on illegal hunting) and taxing new sources. This is all the more true as the environmental budget also has to deal with the growing burden of pollution in the UB area.

Human resource capacity and management practices need improvement at all levels. MONE itself must improve its technical skill, and this knowledge must be passed on to the public. Equipment needed to accurately measure pollution levels are in short supply, limiting the ability of analysts to understand the degree and trends of the problems in question. Environmental education is just beginning in Mongolia. Unfortunately public funding for education is in decline. Initiatives by NGOs to run environmental education programs and encouraging public participation in law enforcement should be supported by the government.

Revision of the 1995 Mongolian National Environmental Action Plan. An essential task of the NEAP is to set up environmental policy, activities and to plan financial resources and budget for their implementation. For a start, environmental policy is rather ad hoc, with no firm theoretical foundation. This is in part due to the fact that the government had little experience with environmental protection policy during the command economy era. Thus, capacity to produce a cohesive environmental policy is low. The government should avail themselves to international help to overcome this deficiency. In general, stricter environmental regulations are needed along with more comprehensive enforcement of existing policies. Environmental impact assessments must become the norm and should be taken seriously.

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L.Battsengel	<i>Road Transportation Department</i>	D.Orhon Specialist
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D.Rentsendorj Transport	G.Bathuu Director	B.Binye Chief, Food and Agricultural Division
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D. Otgonsuren Industry	O.Tserenjav Officer, Strategic Planning and Integrating Policy Department	B. Bat-Ochir Mineral Resources Authority
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