

【Ex-post Monitoring of Completed ODA Loan Project】

Mongolia

“Baganuur and Shivee-Ovoo Coal Mine Development Project (1) (2)”

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1 . Project Description



Map of the Project Area

1.1 Project Objective

The project objective was to increase coal production capacity to meet coal demand in Mongolia and improve the quality of coal to satisfy the needs of power plants by revamping the Baganuur Coal Mine, the largest coal mine in the country, and expanding the Shivee-Ovoo Coal Mine, thereby contributing to economic development.

1.2 Outline of the Loan Agreement

Approved Amount/ Disbursed Amount	(1) Phase 1 5,827 million yen / 5,820 million yen (2) Phase 2 4,298 million yen / 4,218 million yen
Loan Agreement Signing Date/ Final Disbursement Date	(1) Phase 1 February 1997 / May 2002 (2) Phase 2 February 1998 / March 2005
Ex-Post Evaluation	FY 2006
Executing Agency	Baganuur Joint Stock Company (BJSC) • Shivee-Ovoo Joint Stock Company (SOJSC)
Main Contractor	(1) Montechmash JVC (Mongolia), Neyon Co. Ltd. (Mongolia), Burvodservice Co. Ltd. (Mongolia), Konoike Construction (Japan), Wagner Asia Equipment Co. Ltd. (Mongolia), Itochu Corporation (Japan), ECS International PTY Ltd, Bowral NSW (Australia) (JV)

	(2) Itochu Corporation (Japan), Konoike Construction Co., Ltd. (Japan), AGT Trade Co. Ltd. (Mongolia) (JV)
Consultant	(1) Taiheiyou Coal Mine (Japan) / The Institute of Energy Economics, Japan (JV) (2) Taiheiyou Coal Mine (Japan) / The Institute of Energy Economics, Japan (JV)

1.3 Background of Ex-post Monitoring

Although coal had been an important energy source in Mongolia, financial assistance from the former Soviet Union stopped after its collapse and the deterioration of coal mining/soil removing equipment stood out and production rate lowered at the time of appraisal. An increase in the production of high quality coal in order to stabilize living conditions and to support economic development was needed. The reality was, however, that insufficient coal production capability jeopardized the stable supply of electricity and heat as essential energy sources. In spite of the critical need to maintain and increase coal production capacity, the weakness of the private sector and the instability of the national economy made it difficult to implement coal mine development projects financed by private funds utilizing investment from overseas, etc. Therefore, coal mine development through public investment progressed and a loan from World Bank and Japanese Yen Loan financed the capital investment.

At the time of appraisal, it was deemed necessary to increase the production of the Baganuur Coal Mine from 3 million tons a year to 4 million tons a year and that of the Shivee-Ovoo Coal Mine from 0.3 million tons a year to 2 million tons a year in order to meet the expected increase in demand. However, due to the limitation of the fund, and the fact that procurement of excavating equipment required at the Shivee-Ovoo Coal Mine would take time, the project was divided into two phases. In Phase 1, the purchase and stockpiling of materials and equipment urgently needed for the revamping of the Baganuur Coal Mine and maintenance of the Shivee-Ovoo Coal Mine was planned and it increased the annual coal production of the Shivee-Ovoo Coal Mine to 1 million tons. In Phase 2, it procured the necessary materials and equipment with the target of increasing the annual coal production of the Shivee-Ovoo Coal Mine to 2 million tons.

Although project costs were almost as planned, the project period was much longer than planned (183% of planned period for Baganuur and 207% for Shivee-Ovoo) at the time of post evaluation of the project; therefore the post-evaluation judged the efficiency was moderate. Both coal mines prepared the coal handling plants (CHP) and mining equipment as planned and although actual annual coal production volume (total 4.01 million tons, 2005) did not reach the initially planned volume (6.00 million tons), it was close to the revised planned volume (revised to 4.20 million tons in 1998) because of stagnant coal demand. Thus, the effectiveness of the project was judged to be moderate. In addition, the both mining companies still had financial concerns and sustainability was

also judged to be moderate. In total, the result of post-evaluation was low. Furthermore, the post-evaluation recommended to the two mining companies to conduct greater effort in their management practices such as realization of increasing coal production volume and sales amount, expansion of sales channels and early recovery of accounts receivable.

Consequently, the Project became subject to Ex-Post Monitoring in order to review and verify the current conditions from the ex-post evaluation onwards. The Project was reviewed with distinct evaluation criteria, especially focused on sustainability, based on the results of the questionnaire survey and others and a conclusion was derived.

2. Outline of Survey

2.1 Survey Schedule

Survey Period: January 2012-October 2012

Field Survey Period: None

2.2 Constraints of Monitoring

Field survey was not conducted.

3. Monitoring Results

3.1 Effectiveness

3.1.1 Quantitative Effects

3.1.1.1 Indicators of Operation and Effects

(1) Operational Status of Procured Equipment

This project procured coal mining equipment and Coal Handling Plant (CHP), etc. The current operational status of equipment is shown as below:

(a) Baganuur Coal Mine

Table 1 Current Operational Status of Equipment at Baganuur Coal Mine

Equipment	Procured Number	Current Operational Number (2012)	Condition, comment, etc.
1. Coal Mining Equipment			
Bulldozer	17	10	Breakdown and worn out
Truck (40t)	10	5	Break down and worn out
Dump truck (90t)	20	8	Break down and worn out
Trailer	2	1	Worn out
Crane	3	2	Worn out
Other equipment	6	3	Worn out
2. Coal Handling Plant	2	2	Operational
3. Spare Parts	For 3 years		
4. Other related machines and equipment	4		

Note: Procured number includes the World Bank financed portion.

Source: BJSC

Among coal mining equipment, approximately half of the vehicles procured by this project are still currently operational (Table 1). Considering the statutory useful life, seven years, of coal mining vehicles in Japan, the vehicles are being sufficiently utilized. Two CHPs are also operational.

(b) Shivee-Ovoo Coal Mine

Table 2 Current Operational Status of Equipment at Shivee-Ovoo Coal Mine

Equipment	Procured Number	Current Operational Number (2012)	Condition, comment, etc.
1. Coal Mining Equipment			
Bulldozer	4	3	Worn out
Truck	16	16	Operational
Grader	2	2	Operational
Crane	1	1	Operational
Hydraulic excavator	2	2	Operational
Wheel Loader	1	1	Operational
Wheel Pusher	1	1	Operational
Road sprinkler	1	1	Operational
Rock drill	2	2	Operational
Loader (small)	1	1	Operational
Electric excavator	1	1	Operational
Excavator	1	1	Operational
Coal conveyor	1	1	Operational
Sprinkler truck	1	1	Operational
2. Drainage Treatment System	1	1	Operational
3. Coal Handling Plant	1	1	Operational
4. Other related machines and equipment and repair facilities (including installation of power transmission lines, etc.)	1	1	Operational
5. Spare Parts	For 3 years		

Source: SOJSC

Most of the equipment is operational. Specifically, the three out of four granted bulldozers and all 16 trucks are operational. The vehicles are being sufficiently utilized according to the statutory useful life of seven years mentioned above.

(2) Coal Production Volume and Sales Channels

Table 3 Major Production Indicators of Both Mines

Baganuur	Unit	1997 (Before Project)	2000	2001	2002	2003	2004	2005 (Ex-post Evaluation)	2006	2007	2008	2009	2010	2011
Coal Production	1,000t/yr.	2,972	3,069	2,874	3,093	3,046	2,711	2,811	2,761	2,741	3,000	3,007	3,395	3,253
CHP Handled Volume	1,000t/yr.			1,107	2,294	2,532	2,254	2,549	2,804	2,828	2,986	3,018	3,408	3,264
CHP Handled Rate	%			39%	74%	83%	83%	91%	102%	103%	100%	100%	100%	100%
Water Content Rate	%		34.0	34.7	35.1	35.0	34.1	35.2	35.5	35.4	35.6	36.9	37.1	37.4
Shivee-Ovoo	Unit	1997	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Coal Production	1,000t/yr.	222	603	857	932	941	1,309	1,254	1,304	1,379	1,478	1,418	1,671	1,578
CHP Handled Volume	1,000t/yr.			272	897	902	1,241	1,243	1,307	1,416	1,451	1,403	1,767	1,586
CHP Handled Rate	%			32%	96%	96%	95%	99%	100%	103%	98%	99%	106%	101%
Water Content Rate	%		47.1	47.1	46.9	45.8	45.4	41.8	42.2	42.1	42.0	42.0	42.1	42.7

Source: Both Mining Companies

Before the project, not only was coal production volume at both mines lowered due to outdated equipment and shortages of equipment, but the mines could not supply the quality and quantity of coal required by power plants. After the project, although coal production capacity increased, demand for coal did not increase enough to match the planned volume (Baganuur 4 million tons a year, Shivee-Ovoo 2 million tons a year) at appraisal and the planned volume was revised downward in 1998 (Baganuur 3 million tons a year, Shive-Ovoo 1.2 million tons a year). The coal production volumes of both coal mines reached the revised planned volumes (Table 3).

(a) Baganuur Coal Mine

The completion of this project increased the annual production capacity from 3 million tons to 4 million tons and the actual production volume in 2008 and after reached 3 million tons, which is the revised planned volume in 1998.

Baganuur Coal Mine supplies its coal to Mongolia Central Energy System which includes Ulan Bator Second to Fourth Coal-fired Power Plant, Erdenet Coal-fired Power Plant and Darkhan Coal-fired Power Plant in 2012.

(b) Shivee-Ovoo Coal Mine

The completion of this project increased the annual production capacity from 0.3 million tons to 2 million tons and the actual production volume in 2005 and after reached 1.2 million tons, which is the revised planned volume in 1998.

Shivee-Ovoo Coal Mine supplies its coal to Ulan Bator Fourth Coal-fired Power Plant and local users in 2012. In accordance with the increase of such demand, the annual production volume increased slightly and is maintaining at about 1.6 million tons annually.

Although the post-evaluation recommended management measures including expansion of sales channels, the both mine provide coal mainly to the power plants in Ulan Bator as mentioned above and there is a plan to provide coal to the Fifth Coal-fired Power Plant, which is planned to be constructed (described later), after it is completed.

(3) Handled Volume of CHP

Table 3 shows that processed volumes of CHP are increasing in both mines in line with the rate of increase in coal production. Recently, the process rate is close to 100%.

(4) Water Content of Coal

As the water content in coal increases, the calorific heating value at combustion is lowered leading to a lower coal price. Thus, the water content in coal is an important indicator for quality management. Table 3 shows the water content of Baganuur coal was 34.0% in 2000, before the

project, and increased to 37.4% in 2011. Baganuur Coal Mine has attempted to lower the water content by underground well and drainage, but it has not been effective. The water content is, however, within the appropriate range according the post evaluation report. Shivee-Ovoo coal contains more water than Baganuur coal in general. The water content of Shivee-Ovoo coal slightly decreased from 47.1% (2000, before Project) to 42.7% (2011), showing the effects of efforts such as thorough removal of groundwater and extension of drying time in the coal yard.

(5) Miniaturization of Coal Size

Before the project, Baganuur Coal Mine had the problem that it could not provide the size of coal required by power plants because of an outdated coal crusher. By using a new coal crusher procured by the project, the mine currently can provide coal sized 200mm or smaller and meets the Mongolian National Standard (BJSC).

3.1.1.2 Internal Rate of Return (IRR)

Appraisal and ex-post evaluation calculated Financial Internal Rate of Return (FIRR) by assuming new and renewed investment (inclusive of the co-finance portion by the World Bank and local currency portion for the investment cost), operational cost and tax cost, coal sales revenue as the benefit and project life as 20 years. Economic Internal Rate of Return (EIRR) excludes the tax from the cost item above. The following calculation is conducted based on similar items as above.

Table 4 Change of Internal Rates of Return

Coal Mine		At appraisal (1997)	At Ex-post Evaluation (2006)	At Ex-post Monitoring (2012)
Baganuur	FIRR	6.8%	5.8%	Negative
	EIRR	33.1%	29.8%	Negative
Shivee- Ovoo	FIRR	5.8%→5.2%	Negative	1.1%
	EIRR	15.2%→13.7%	4.3%	1.1%

Source: Ex-post Evaluation and Ex-post Monitoring

Note: Arrow symbol (→) expresses the change from Phase 1 to Phase 2 appraisal.

Because the coal price did not rise substantially, coal production volume was also significantly lower than supposed at the time of the appraisal, and operational cost was high, all IRRs resulted in low values.

3.1.2 Qualitative Effects

Because the ex-post evaluation did not measure qualitative effects especially, this Monitoring Survey does not compare those and will not indicate them as well.

The above facts show the further improvement of effectiveness in coal production volume and

CHP handling volume from the time of ex-post evaluation. On the other hand, the expression of effectiveness of water content in coal remains at a similar level as the time of ex-post evaluation.

3.2 Impact

Table 5 Change in the Number of Accidents and Cases of Illness at Both Mines

Baganuur	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Number of Accidents	15	3	4	2	0	0	1	1	0	2	1
Number of Fatal Accidents	1	0	0	0	0	0	0	1	0	2	0
Number of Pulmonary Disease Case	10	8	10	8	7	6	4	6	5	4	4

Shivee-Ovoo	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Number of Accidents	0	0	0	2	6	1	1	1	0	3	2
Number of Fatal Accidents	0	4	0	0	0	0	0	0	0	0	0
Number of Pulmonary Disease Case	1	0	0	2	1	1	0	2	1	1	0

Source: BJSC and SOJSC

3.2.1 Intended Impact

3.2.1.1 Reduction of Accidents

Baganuur Coal Mine had fatal accidents even after 2007 (Table 5). Shivee-Ovoo Coal Mine experienced its last fatal accident in 2002. Although some accidents occurred even after the project, the maximum number is limited to a low figure of two per year (Baganuur, 2010) after implementation of the project. New equipment introduced by the project contributed to the improvement of operational safety.

3.2.1.2 Reduction of Pulmonary Disease Cases

Compared with the year 2001, before the project, Baganuur saw a decrease in the number of pulmonary disease cases from four to six, after the project was implemented in 2006. Equipment newly introduced through this project contributed to the improved operational environment at Baganuur.

Shivee-Ovoo had zero to two pulmonary disease cases annually and this has not changed significantly between pre and post project.

3.2.1.3 Coal Consumption Volume at Power Plants and Coal Demand and Supply Trend

Ministry of Mineral Resources and Energy estimated that total coal demand would increase in power generation and export. Among them, thermal power plants in Ulan Bator occupy a large part of market demand for both mines and coal supply from both mines is increasing gradually.

In accordance with the increase of power demand, existing power plants cannot supply all the power demand and Fifth Combined Heat and Power Plant, a new power plant, is planned. The Power Plant was examined in a Feasibility Study (FS) supported by Technical Assistance (TA) of the Asian Development Bank (ADB) and the government recruited an Independent Power Producer (IPP) from the private sector. The government decided to progress with the construction of the power

plant through Government Decision Number 44 in February 2012. The second stage selection was conducted in May 2012 and a consortium of four companies, Sojitz (Japan), International Power GDF Suez (France), Posco Energy (South Korea) and NEWCOM (Mongolia) won the priority negotiation right in July 2012 (Sojitzu Press Release July 6, 2012). After the completion of the Power Plant, both mines are expected overall to supply coal to the Power Plant.

Production capacity of both mines is larger than current supply amount and both mines can produce more coal if demand increases. Ulan Bator experiences blackouts caused by failures at thermal power plants, but coal supply is sufficient. Thus, the project of both mines contributes to the stable supply of electricity.

3.2.2 Other Impacts

3.2.2.1 Impact on Natural Environment

In Mongolia, Natural Environment Protection Law in 1995 and Natural Environment Impact Assessment Law in 1998 (revised in 2001) provides the basic framework for natural environment measures. The former Law applies strict environmental measures such as reduction of environmental impact during coal mining and restoration of former surface mining sites. However, the latter Law does not target for the coal sector.

Both mining companies conduct environment measures based on Natural Environment Protection Law. BJSC tries to protect dust expansion by watering on the truck roads. The Mine also performs backfill and tree planting activities at former excavated sites since 1999. The backfill area reached 127.5ha in 2009 and 109.1ha of them was planted. SOJSC prepares Environmental Protection Plan annually and conducts environmental protection measures based on it. The Plan in 2010 had 17 programs of 12.80 million MNT included protection of dust expansion, monitoring of dust density and noise level, measurement of sulphur dioxide and nitrogen dioxide in the air, and tree planting in 3ha. SOJSC planted trees on 9.5 ha of former surface mining sites from 2003 to 2009.

By these facts, it is judged that the two mines are conducting sufficient mitigation measures as of now against negative effects on the natural environment.

3.2.2.2 Resettlement and Land Acquisition

This project introduced new equipment to existing coal mines and there were no issues related to resettlement of local residents and land acquisition.

3.2.2.3 Other Impact

None

By these facts, the positive impact from this project is continuously appearing through the stable supply of coal as an energy resource for power generation. In addition, because the number of

accidents and cases of pulmonary disease has been kept at a level as low as at the time of ex-post evaluation, it is judged that there is no distinct problem on impact.

3.3. Sustainability

3.3.1 Structural Aspect of Operation and Maintenance

At the time of appraisal, the Ministry of Infrastructure Development was the government body in charge of the project. It changed to Ministry of Infrastructure in 2002 and Ministry of Fuel and Energy in 2004. Finally, the current Ministry of Mineral Resources and Energy (MMRE) took charge of the project. Within the Ministry, the Fuel Policy Department is responsible for the project.

The operations and maintenance organization of Baganuur Coal Mine is Baganuur Joint Stock Company (BJSC), a joint-stock corporation of which 75% is owned by the government and 25% is owned by the private sector. The project implementation organization of Shivee-Ovoo Coal Mine is Shivee-Ovoo Joint Stock Company (SOJSC), a joint-stock corporation of which 90% is owned by the government and 10% is owned by the private sector. Both companies are listed on the Mongolian Stock Exchange.

A Mongolian law requires the government to own 51% or more of stock of mining companies and a working group of MMRE is considering to lower the government stock holding share in both joint companies to 51%, the minimum requirement by law according to MMRE's answers to the Questionnaire.

In April 2012, State Property Committee recruited an underwriter for new public offering of 60 billion MNT to reduce the government stock holding share in BJSC to 51%¹.

Thus the Government is progressing with reforms in the direction to reduce the stock holding share of both mines to 51% through the new public offering. The reform process of BJSC has already been decided and launched. On the other hand, the coal supply obligation and coal price decision process by the government has not changed.

3.3.2 Technical Aspect of Operation and Maintenance

Both mining companies regularly conduct examinations to measure the skill levels of staff. Current staffing at both mines is as follows:

BJSC has nine engineers and 1070 miners.

SOJSC has 95 engineers and 409 miners. They are classified as follows based on technical level:

Engineers: A grade 8, B grade 36, C grade 27, D grade 12, E grade 12.

Miners are classified as follows:

A grade 21, B grade 36, C grade 120, D grade 227, F grade 5.

(according to each company's answer to the questionnaire.)

Although there is not sufficient information on the technical level classification, each company

¹ businessweek.com Article on April 16, 2012.

has clear guidelines for technical standards of engineers and miners and implements these. Thus, the technical level specifications at each mine are judged to be kept at a level similar to that at the time of ex-post evaluation.

3.3.3 Financial Aspect of Operation and Maintenance

3.3.3.1 Outline of Financial Situation

(1) Baganuur Joint Stock Company

Table 6 Change in Profit and Loss of BJSC

Unit : 1,000MNT

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011
Sales Revenue	28,076,564	25,848,357	31,827,540	31,936,659	34,308,076	43,174,035	49,483,138	62,545,947	66,040,550
Cost of Sales	24,630,645	24,417,580	26,380,062	27,512,982	34,781,409	40,732,263	44,226,970	55,304,095	61,018,121
Other Cost	4,065,135	-4,332,013	5,928,564	4,955,416	-7,656,273	-8,634,641	-3,864,812	15,353,957	105,170
(Foreign Exchange Gain/Loss)	-4,831,623	-2,946,103	-8,937	-5,010	-210,415	-5,762,953	-8,537,161	9,847,714	-7,822
Pre-Tax Profit/Loss	619,216	-5,762,790	481,086	531,739	-7,182,940	-11,076,413	-9,120,980	8,112,105	-4,917,259
Tax	400,000	0	272,974	265,177	1,343	131	0	19,388	3,182
After Tax Profit/Loss	219,216	-5,762,790	208,112	266,562	-7,184,283	-11,076,544	-9,120,980	8,092,717	-4,920,441

Source: BJSC

According to Table 6, cost of sales is 90% or more of cost against revenue from the coal. In addition, there are other costs, inclusive of foreign exchange gain/loss due to yearly fluctuations of rates, which in turn causes After Tax Profit/Loss to fluctuate greatly as well.

In fiscal year 2010 and 2011, the After Tax Profit/Loss reached 8.09 billion MNT in black (profit) and 4.92 billion MNT in red (loss) respectively. As a breakdown of cost, profit/loss from fluctuation of foreign exchange rate² saw a profit of 9.85 billion MNT in 2010 causing After Tax Profit/Loss to be in the black, but the same profit/loss from foreign exchange rate saw a loss of 8 million MNT in 2011. Even excluding the loss caused by the foreign exchange, pre-tax profit/loss fluctuates between surplus in some years and deficit in others.

BJSC incurs annual maintenance costs of 4.10 million to 26.06 million MNT (based on the actual expenses from year 2003 to 2011).

(2) Shivee-Ovoo Joint Stock Company (SOJSC)

Table 7 Change in Profit and Loss of SOJSC

Unit: 1,000MNT

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Revenue	5,898,335	5,474,746	7,801,844	9,464,151	11,269,007	11,176,397	15,142,094	16,982,358	36,860,761	24,653,718
Sales Cost	5,148,076	5,921,729	7,766,420	10,290,983	10,813,256	10,476,728	13,586,193	14,614,953	21,799,030	25,374,378
Operating Cost	116,031	142,342	171,892	170,569	232,242	276,049	425,986	533,603	732,161	1,057,155
Other Cost	383,972	444,301	501,276	699,591		990,078	7,404,715	12,881,451	1,761,487	625,980
Before Tax Profit/ Loss	250,256	-1,033,626	-637,744	-1,696,992	223,509	-566,458	-6,274,800	-11,047,649	12,568,083	-2,403,795
Tax	5,464						42,860			
After Tax Profit/ Loss	244,792	-1,033,626	-637,744	-1,696,992	223,509	-566,458	-6,317,660	-11,047,649	12,568,083	-2,403,795

Source: SOJSC

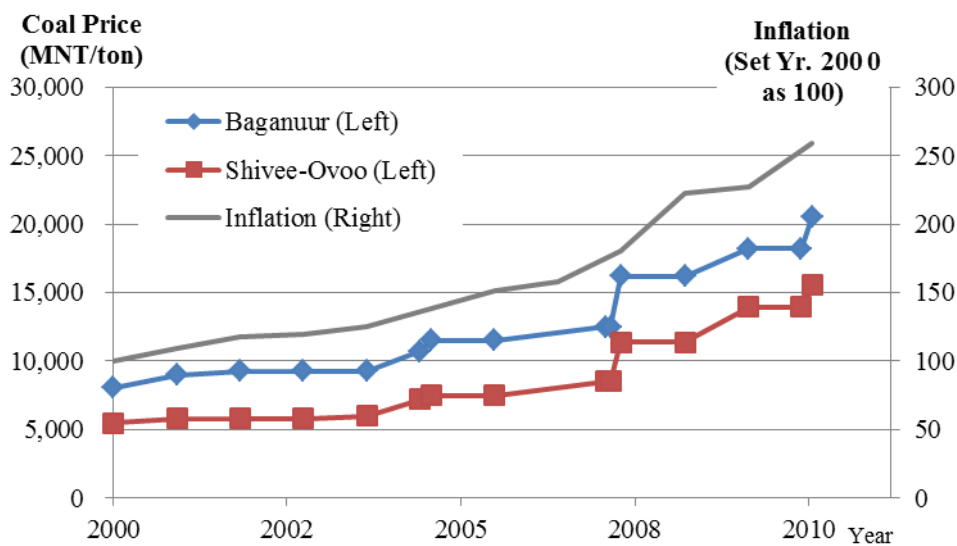
²There was no answer for the cause of foreign exchange profit and loss and its countermeasures from either company and so it is unknown.

According to Table 7, the operating cost is very high against revenue from coal sales. Especially the cost exceeds the revenue itself in fiscal year 2005 and 2011. In addition, ordinary cost (inclusive of foreign exchange profit and loss) and other cost are so high, that the final After Tax Profit/Loss is not as stable as that of BJSC.

SOJSC includes the maintenance cost in the sales cost and the actual maintenance cost is not clear.

Therefore, both companies have increasing sales revenue, but the cost, inclusive of foreign exchange loss is also rising. Consequently, this did not lead to improvement in profit/loss and financial stability. The necessary maintenance cost is, however, judged to be expended sufficiently.

3.3.3.2 Coal Price



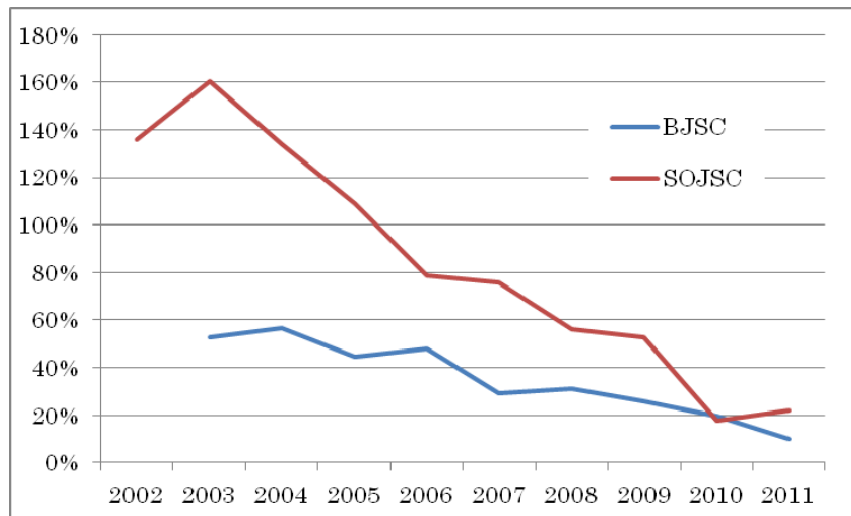
Source: Coal price; both companies. Inflation; IMF Economic Outlook

Figure 1 Change in Coal Price and Inflation

As shown in Figure 1, the coal price rose about 2.5 times over these ten years. Nonetheless, the price followed the inflation of the ten years (right axis, accumulated by the base year of 2000 as 100), and the actual coal price did not change if the influence of inflation is excluded. In addition, because the water content in coal was not significantly reduced, the coal calorie did not rise. Consequently, the coal price based on the calorie did not increase either.

Increase in coal production volume and coal price (however, coal price is almost proportional to inflation) from the time of ex-post evaluation led to increase in sales revenue of both companies. The coal price was assumed to be liberalized at the time of appraisal, but the pricing is still under the government decision process in 2012.

3.3.3.3 Accounts Receivable



Source: BJSC and SOJSC

Figure 2 Change in Accounts Receivable per Sales

Figure 2 shows the steady progress on collection of accounts receivable. Especially, BJSC, which had accounts receivable of 161% against sales in 2003, decreased the number to around 20% (equal to almost 2.5 months of sales) in 2011. These were made possible by the contract revision and collection efforts (answer from BJSC). This means that management efforts of both companies, such as early collection of accounts receivable, recommended by the ex-post evaluation has been steadily realized.

3.3.4 Current Status of Operation and Maintenance

Both mining companies are regularly conducting operation and maintenance of their respective coal mines. However, because years have passed since the purchase of equipment and some equipment has been used beyond the useful life, there have been many breakdowns and problems. Although equipment was to be updated as part of the investment, due to the remaining limited budget of the investment, the equipment renewal is not progressing for lack of sufficient funds. Although SOJSC prepares a list of equipment that will be needed in the near future, the fund procurement plan is unknown.

Even under such a situation, the production volume is maintained and increased. Thus, the situation of operation and maintenance is considered to be good at both mines.

Thus, it is confirmed that both mining companies properly secured operation and maintenance and there is no special problems with structure or technology. On the other hand, the high operating cost including operation and maintenance cost is leading to deterioration of After Tax Profit/Loss. Since there seems to be no budget to spare for new and renewed investment, some concerns remain in financial sustainability.

4. Conclusion, Recommendation and Lesson Learned

4.1 Conclusion

The results of this project saw significant increases in coal production volume and sales amount, and CHP volume from the time of post evaluation. The number of accidents and cases of pulmonary diseases also remain the same as the time of ex-post evaluation. Recommendations, such as a coal price increase (however, mostly proportional to inflation) and early collection of accounts receivable made by the ex-post evaluation were realized. Although the government continues to hold the major share of both companies, consideration to lower the stock holding share is underway and After Tax Profit/Loss was still in the red in some fiscal years. Therefore it cannot be concluded that the financial situation improved and some concerns remain with financial sustainability.

4.2 Recommendation

(MMRE)

The Ministry should show a longer term and more specific vision and perspective for introducing private involvement in the energy sector to achieve stable energy supply, etc.

Although the policy to liberalize coal prices was set at the time of appraisal, the coal price was set low and the financial situation of both mining companies did not improve. In case the government reduces its involvement in both companies by lowering the stock holding share, etc., then on the other hand, reform of coal prices (price itself and its decision mechanism) and liberalization of sales channels should also be advanced.

(BJSC and SOJSC)

Because the increase in coal production volume has not led to increase in after tax profit, the companies should progress with reduced production cost, negotiate to increase the coal price, and expand the sales channels in order to stabilize the management.

4.3 Lessons Learned

None.

Comparison of Planned and Actual Scope

Item	Planned	Actual
Baganuur Coal Mine		
1) Output		
1. Coal Mining Equipment		
Bulldozers, Trucks etc.	55	As planned
2. Coal Handling Plant (CHP)	2	Almost as planned (design changed)
3. Spare Parts	For 1.5years	As planned
4. Other related machines and equipment (testing equipment, etc.)	4	As planned
5. Consulting Service	36MM	58MM
2) Project Period	February 1997-December 1999 (2 years 11 months)	February 1997-May 2002 (5 years 4 months)
Shivee-Ovoo Coal Mine		
1) Output		
1. Coal Mining Equipment		
Bulldozers, Trucks etc.	35	As planned
2. Drainage Treatment System	1	As planned
3. Coal Handling Plant	1	Almost as planned (design changed)
4. Other related machines and equipment (repair facilities, installation of power transmission lines, etc.)	1	As planned
5. Spare Parts	For 3 years	As planned
6. Consulting Service	38MM	38MM
2) Project Period	February 1997-September 2001 (4years 8 months)	February 1997-March 2005 (8 yeras 2 months)
Both Mines		
3) Project Cost		
Foreign Currency	13,975 million yen	12,886 million yen
Local Currency	697 million yen	834 million yen
Total	14,672 million yen	13,720 million yen
ODA yen loan portion	10,125 million yen	10,039 million yen
Exchange Rate	1 yen = 4.83MNT	1 yen = 8.48 MNT