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Mountains of Gold

**Kumtor Gold Mine
in Kyrgyz Republic**

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CEE Bankwatch Network

PO Box 123

1450 Budapest, Hungary

URL: <http://www.bankwatch.org>

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List of Abbreviations

CIS	Commonwealth of Independent States
EIA	Environmental Impact Assessment
EBRD	European Bank for Reconstruction and Development
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
JICA	Japan International Cooperation Agency
IFC	International Financial Corporation
IFIs	International Financial Institutions
KOC	Kumtor Operating Company
MEP	Ministry of Environment
MIGA	Multilateral Investment Guarantee Agency
NGO	Non Governmental Organization
OECD	Organization for Economic Co-operation and Development
OPIC	The US Overseas Private Investment Corporation
PC	Permissible Concentration
SP	Suspended Particles
TRC	Total Reclamation Cost
USSR	Union of Soviet Socialist Republics
WB	World Bank

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Executive Summary

Since the collapse of the communist regime, Kyrgyz Republic has been facing economic decline and urgent need for modern technology and know-how. The country had to identify such economic sectors that were capable of earning foreign currency, providing profitable production domestically and assisting in solving unemployment. According to the recommendations of the World Bank and other International Financial Institutions (IFIs), the mining was considered to have a great potential to boost economic development.

The World Bank prepared recommendations on restructuring the mining sector, aiming to improve its efficiency, increase capital flows, improve balance of payments, and increase local employment. Similarly, the Kyrgyz Government assumed that gold deposits exploration would generate hard currency for the country because of the high demand for gold on the international market.

However, it seems that, neither the IFIs nor the Kyrgyz Government, took into account all the risks associated with the mining industry. The real sizes and limits of the deposits as well as ore quality very often differ from the original expectations. There may be unanticipated costs in waste management, transport and mine infrastructure. In addition, the markets and commodity prices for mineral products are unstable, including the gold price.

Moreover, mining industry is one of the most environmentally harmful sectors as it reduces natural resources, produces massive quantities of waste and consumes huge amounts of energy. Using heavy machinery, ex-mining sites, tailings and toxic substances in the mining process, are just some of the problems that country has to face in calculating the total cost of the mining operation.

In spite of all the risks associated with the mining industry, IFIs and Kyrgyz Government decided to start with gold extraction in Kumtor gold mine, one of the largest western-managed mine in former Soviet Union. Although the lending organizations promised that the Kumtor project would bring economic benefits to the country, the cyanide spill

accident, which took place in May 1998, showed the weaknesses of the environmental management system of the Kumtor Operating Company. Moreover, the Government's own interests in the company, as the main shareholder, lead to vagueness in monitoring the company's performances.

The existing IFIs environmental policies have proved to be inefficient in the ongoing monitoring of the lending projects. In Kyrgyz Republic, the IFIs have failed to develop successful cooperation with the public and constructive dialogue with NGOs.

1 Introduction

“As long as continued growth in economic output implies continued growth in material inputs to and waste outputs from the economy, there is little hope of limiting the impacts of human activity on the natural environment” (Matthews et al., 2000)

Cumulative environmental impacts and poor performance in reaching sustainability goals create many uncertainties about the positive role of the mining industry in economic development. The role of International Financial Institutions (IFIs) in promotion of the mining industry also casts doubts on the effectiveness of their involvement from the sustainable development standpoint. Particularly, when they themselves give rise to significant environmental problems, as most of their environmental policies, procedures and guidelines are full of ambiguities and contradictions.

After the collapse of the Soviet Union, the economy of Kyrgyz Republic experienced a rapid decline. The state-run mining industry was nearly shut down. And yet, the country abounded with natural resources. That fact made it reasonable to believe that the mining sector could be considered as one of the ways to boost the economy. IFIs such as the World Bank (WB) and the European Bank for Reconstruction and Development (EBRD), committed themselves to rehabilitation of the mining sector of the Kyrgyz Republic by supporting the privatization effort of the government and providing guarantees to various multinational mining corporations. The recent environmental problems caused by the Canadian Multinational Company operating in Kyrgyz Republic and supported by the WB Group, Cameco, questioned the viability of mining sector promotion, particularly from the environmental security perspective.

This paper evaluates the viability of mining industry promotion in Kyrgyz Republic. The role of the World Bank Group will be discussed as one of the key international actors in the country's development. To illustrate the mining industry environmental performance, the Kumtor Operating Company's operations will be described.

2 Mining Sector in Kyrgyz Republic

2.1 Economic Aspects of the Mining Industry

The collapse of the Soviet Union left Kyrgyz Republic with little foundation for economic development. The backward technologies, inappropriate management skills, cash flow problems and limited access to world markets, among other factors, hindered the process of the economic and social stabilization of the country. As a result, the Gross Domestic Product (GDP) of Kyrgyz Republic fell by ten percent in 1991, by 16.5 percent in 1993 and by more than 20 percent in 1994. The industrial sector suffered from a sharp decline in output, with an annual drop of roughly 25 percent in the period of 1992-1994 (OECD 1998). While there was an urgent need for modern technology and know-how, domestic investment remained extremely low (OECD 1998).

Taking into account the existing economic conditions, the country (especially from the balance-of-payments view) was in need of identifying economic sectors that were capable of earning foreign currency, providing profitable production domestically and assistance in solving unemployment. According to the recommendations of various development agencies, including the World Bank and EBRD, the mining and metallurgical industry was considered to have great potential for promoting economic development in Kyrgyz Republic. In fact, the geology of Kyrgyz Republic may support the proposition that the mining sector is the key industry for the country's economic development. There are over 400 deposits of precious and semi-precious stones and 44 kinds of gem quality stones.

Although Kyrgyz Republic is rich in mineral resources such as mercury, antimony, copper, and tin, these are not sufficiently competitive on the world market. However, the country has several thousand gold deposits, and their exploitation may generate hard currency for the country. The demand for gold on the international market seems to make the Kyrgyz mines very attractive to foreign investors. Accordingly, government officials have optimistically declared that the prioritization of the sector

would result in Kyrgyzstan becoming the economic center of Central Asia (Supplement of Mining Journal 1999). They have assumed that the country would benefit from mining sector development as it used to in the past. However, this assumption is questionable, as will be discussed in subchapter 2.3.

Moreover, the Japan International Cooperation Agency (JICA) (1999) stated that by promoting the mining industry, Kyrgyz Republic would have the following benefits:

- Access to well-established international markets and industrial outpost earns hard currency.
- The development of mining industry stimulates improvement in other sectors of national economy.
- Mining promotion is a driving factor in development of local industries.

The JICA experts (1999) also stated that Kyrgyz gold mines would be attractive to international investors, particularly because gold mining would require the least investment and produce the largest profit.

Nowadays, gold has already attracted considerable investment into the mining sector. The bulk of Foreign Direct Investment (FDI) is concentrated in two big industrial projects, the Kumtor and Jeroy gold mining operations that accounted for more than two thirds of FDI received by the country in 1998 (about 66 percent) (OECD 1998). According to statistical data, in 1999 mining represented about 21 percent of the GDP, out of which gold accounts for around seven percent (TEIU 2000). In Appendix 1 readers can find a general description of the gold mines currently being considered as the “key players” in the new investment strategy. The reason for this is the fact that these mines guarantee superior rates of return to foreign investors, despite the risks of operating in the country. Kyrgyz Republic hopes to yield foreign currency to balance-of-payment support.

	Project Name	Project Goals	Company Name	Estimate of Project Cost (USD million)	Payback Period (years)
1	Kumtor Gold project	Development of mining industry	Joint Stock Company “Kyrgyzaltyn & Canadian Comeco Corporation	452	10
2	Goldmining project “Jeroy”	Development of mining industry	Joint Stock Company “Kyrgyzaltyn” - “Norox” (the partnership between Normandy Mining of Australia and UK-based Oxus Resources	75,6	10
3	Goldmining project “Taldy-Bulak Levober ejny”	Development of mining industry	Taldy-Bulak Mining Corporation & Malaysian Mining Corporation	45	7
	Total			1,254	

Data source: Kyrgyz Republic Development Gateway. (KDG) 2001. Investment Statistics. [on-line] URL: http://www.kyrgyzinvest.org/en/economy/invest_stats.htm [cited 30 October 2001]

2.2. Mining Industry and the World Bank

According to the World Bank (1994), a country willing to attract private investors in the mining sector needs to develop policies in four key areas. First, establish sound mining and investment codes with clear rules and guarantees regarding exploration and mining rights. Second, governments must assure companies that they will have the right to mine following successful exploration, and that they will be permitted to transfer or trade exploration or mining licenses subject to explicit criteria. Third, governments need to enact fiscal regimes that are competitive with and comparable to those in other mining countries. Finally, governmental institutions, which supervise and regulate the sector, should be capable of performing their duties in a professional, fair, and transparent manner.

In 1994, the World Bank was one of the first international development agencies that prepared recommendations on restructuring the mining sector in Kyrgyz Republic. These recommendations laid the foundation for the preparation of the Mining Sector Improvement Policy paper and Action Plan that aimed to improve the efficiency of the mining sector (see Appendix 2). The closure of unprofitable combines, restructure of the mining sector and privatization of the industry were some of the elements of the new policy paper. As a result of its implementation the country would increase capital inflows, improve balance of payments and increase local employment. Hence, it would also enable foreign investors to exploit Kyrgyz Republic's natural resources for their own benefits.

The latest WB Mining Sector Report was unavailable at the time of writing this paper. However, an attempt was undertaken to analyze whether the policies, aiming to improve the economic situation had the desired positive results and addressed the remaining problems.

There were some positive changes that reduced the financial burden on the mining industry mainly due to the closure of unprofitable combines as well as reduction of the administrative personnel involved in the sector (Annex 2). However, these incentives have only resulted in some rationalization of different branches of the industry, and have not

promoted long-term economic stabilization of the sector as a whole. Moreover, little was done to solve environmental problems related to the old tailing dumps and to improve overall environmental performance of the industry.

There is still a huge problem with the overall management of the industry due to the absence of a centralized management body that could develop strategy and monitor the sector's development. Mismanagement and corruption are other factors hindering the industry's development. Though the lack of financial resources remains a central issue in the improvement of the sector, the misuse of existing funds and financial resources are still a crucial feature of the mining sector.

Despite the fact that Kyrgyz Republic has some large gold deposits that might capture the attention of private investors, the country has yet to establish the proper environment to attract and keep investment within the country. Moreover, Kyrgyz Republic should also be able to make a balanced decision between economic development and environmental protection. Until now the country has not had a specific policy for the mining industry that would address the questions of sustainable development, including those related to the environment.

2.3. Environmental Aspects of the Mining Sector

According to the National Report on Environment (MEPKR 1999), the mining and metallurgy sectors are considered to be the main sources of air and water pollution in Kyrgyz Republic, along with a small contribution from the agricultural, construction and transport sectors. This sector expects to meet the cost of on-going pollution control and site rehabilitation after production activities are terminated. In 1995 the area of land directly damaged by mining activities comprised 3 000 hectares (MEPKR 1995). Tailing dumps are another big environmental concern of the mining sector. They contain about 100 million m³ of waste, including two million m³ of radioactive waste (MEPKR 1995). According to Torgoev et. al. (1999), occupying a territory of more than 195 thousand

m², the tailing dumps significantly affect the local environment not only during its exploitation period, but even after they have been closed. Very often, problems arise due to the damage of the dikes and rubbing prisms, water and wind erosion or insufficient leak-proofing and breakdowns of the drainage systems.

It is known that, compared to other industries, a specific feature of the mining industry is that it severely affects the local environment, causing long-term intensive technogenic impacts by means of geological exploration, mining and processing activities. According to Torgoev et al. (1999), the following are the natural and technogenic processes and extreme situations caused by the mining activities in Kyrgyz Republic:

- Generation and accumulation of a great amount of mining waste (tailing ponds, slagheaps) located in areas prone to dangerous natural disasters, such as earthquakes, tectonic active zones and landslides. Moreover, they are maintained in poor condition and may cause environmental accidents.
- Movement of earth, deformation and settlement of earth surface due to underground mining and open pit mines.
- Accidents at the underground and open pit mining sites due to the geodynamic processes on the local and regional levels.
- Cryogenic physico-geological processes at the mine sites situated at high altitudes (thermosetting phenomenon and salt outcrop), glacier destruction that, in its turn, may lead to glacier pulsation, landslides and over-flooding of glacier lakes.

Unfortunately, most of the Kyrgyz mines during their lifecycle neglect the particularities of the mountains' ecosystems. The mines affect the quality of atmosphere, hydrosphere, and biosphere. Such carelessness of mining practices very often lead to unprecedented environmental and social outcomes.

According to Aitmatov et al. (1997), the more complicated the geological and mountain setting of the mining sites, the greater their impacts on the environment. Due to exhaustion of former mining sites situated in much more favorable locations, there is a world tendency towards moving

mining sites to resource deposits which are located in more difficult geographical settings to operate in. These mines became more capital intensive, because they need additional sophisticated approaches, such as well-developed local and supportive infrastructure. In turn, such activities aiming to increase the mine's infrastructure and scale of its operation can dramatically increase the negative impact on the environment. In Kyrgyz Republic, such sites with extreme natural conditions include the following mines: Kumtor, Solton-Sary and Djeruj (at an altitude of more than 3 500 m above the sea level).

According to Torgoev (1999) it is doubtful that a new environmentally sound technology will be developed in the near future, due to the slow rate of scientific and technological progress. Therefore, it is hard to believe that the mining industry would perform in a more environmentally friendly manner in the near future as a result of the application of up-graded treatment facilities or improved waste utilization practices. Kyrgyz Republic is already facing difficulties with the existing environmental issues, inherited from its past mining activities. Keeping this aspect of the matter in mind, the question about the viability of mining industry promotion should be asked by those forcing its development as a key factor of economic stability. It is also debatable whether the country is ready to bear the future externality costs generated by the newly opened mines.

2.4 Conclusion

It is well known that mining is a risky business and it is far from being sustainable. This particular industry is believed to be one of the most environmentally harmful sectors as it reduces raw natural resources, produces massive quantities of waste and consumes huge amounts of energy. Utilizing heavy machinery, ex-mining sites, tailings and applying toxic substances in the mining process are just a few of the problems faced by the country in calculating the total cost of mining operation.

The real sizes and limits of the deposits, as well as ore quality, can be different from the original expectations of the company and other interested parties, such as country government or lending institutions. There may be unanticipated costs associated with waste management, transportation, and mine infrastructure. Moreover, the markets and commodity prices for mineral products are unstable, including the price of gold. All these factors may create some uncertainties in predicting the future profitability of mines and bring about additional financial pressures on companies and other main stakeholders involved in mine processing. Taking into account that the mining industry is capital intensive, very often the companies have to rely upon the investors, because they do not have the internal capacity to generate the capital required for developing a mine. And if the mine processing does not generate enough revenue to pay investors back, a company may become insolvent and the country's government can find itself in deep debt that in turn will undermine the country's economic development. Very often, the government is the only one bearing the costs associated with mine reclamation.

With that in mind, it should be questioned whether Kyrgyz Republic is ready to pay such a price as environmental degradation and putting itself into debt dependency. In a rush to exploit local resources to create economic opportunities, there is a concern that the total and long-term costs of mining operations are not being included into the calculations of future economic benefits. What is more, it is feared that the government and the local community would cover the hidden costs, such as clean up of tailings and remediation for toxic materials that are frequently seen after the termination of the mining operation. Another crucial point is the safety of the local community located in the same neighborhood as the mine sites. In addition, it is likely that the social safety nets and severance packages may not be built into the overall cost benefit calculations. For instance, the Kyrgyz government has already experienced the outcomes of such "miscalculation." It had to make special efforts to support local people of such mining settlements as Mailu-Suu, Sumsar, Shekaftar, Ak-Tuz, Min-Kush, Kan, Kok-Yangak, and Sulukta as a result of the closing of the mines that once fed them (Torgoev et. al. 1999). It can be

also asserted that the domination of the state-owned and state-run company “Kyrgyzaltin” in all mining related investments contributes to the overall instability of the mining sector.

In some situations, even if the government included these costs into the sale or lease of land and exploitation of mines, many companies might find the investment less attractive when performing their profitability analysis. This would cause a barrier to the entry of FDI into the country. Unfortunately, a deeper investigation is difficult to perform, especially when the country is depressed by adverse economic conditions and there is a certain level of secrecy existing around the sector that makes difficult to obtain useful documents. Access to such documents as the Government Strategic Paper on mining industry promotion, the World Bank Mining Sector 2001 Review would provide more comprehensible information. And yet, based on the available information it is doubtful that Kyrgyz Republic has incorporated all these costs into the investment strategy.

Despite the possible disadvantages of the mining sector development, there is only one argument in favor of the further promotion of the mining sector, and that is its high economic profile. Very often the World Bank and other publicly funded financial institutions are willing to support and promote the resource extraction industry as a form of development. Accordingly, they declared that liberalization and the release of market forces are missing parts of future industry development. These notions are incorporated in the WB mining sector report as an instrument of boosting the economic stability of the country. In 1980, the World Bank developed so-called credit conditions or policy based lending as a part of their sectoral adjustment policy, aiming to boost economic growth in various countries (Mosley et. al. 1991). High growth, as the guarantee of the continuing creditworthiness of the borrowing countries, was considered by the WB Group as an ultimate goal in promoting the mining industry, despite its negative implications.

However, some internationally recognized organizations, such as the Mineral Policy Center, doubt the feasibility of the further development

of the mining sector. For instance, the Center (1998) was concerned about whether governments were subsidizing those “forms of economic development that were not only non-sustainable from the environmental and social perspectives, but were also dead-end economically” due to oversupply and low metal prices. Furthermore, in light of the bargaining context, it can be asserted that a country with weak bargaining strength (economic crisis, problems with balance-of-payments) will most likely accept conditional loans, even if they are unhappy with some of the conditions. As Mosley et. al. (1991) states, conditions for policy reform tend to be disproportionately loaded on countries that need balance-of-payment support money. These countries, however, might not be the ones requiring policy reform.

Whilst we are on the subject, it would be worth mentioning the World Bank’s own research findings on its development efforts. According to this study, despite rapid economic growth, the distribution of the benefits of that growth remained unsatisfactory (Mosley et. al. 1991). Additionally, the poverty of one billion people could be ascribed to economic stagnation and very low productivity.

Hence, there is a reason to believe that Kyrgyz Republic may experience similar problems because it receives WB rehabilitation loans for the mining sector, accompanied by certain credit conditions. It is important that the Kyrgyz government makes deeper analysis and takes into account the total costs associated with mining industry development to insure that the cost side of their cost benefit analysis continues to give a green light to foreign direct investment. In addition, any international development organizations, including the WB Group, should be called by the country’s government and Non-Governmental Organizations (NGOs) to undertake a thorough study to assure that their recommendations also incorporate these costs.

3 Overview of the Kumtor Operating Company

3.1 Project Description

In December 1992, on behalf of the Kyrgyz Government, Kyrgyzalтын State Concern and Canadian Cameco Corporation signed the Master Agreement (PKR 1992) on joint development of the Kumtor deposit. The Master Agreement is based on the Law on Concessions and Foreign Concession Enterprises (1992) and the Law on Foreign Investments of the Kyrgyz Republic (1991) and will expire after ten years of commercial production. The year by year project development history is shown in Table 2.

Table 2 Kumtor project development history

Years	Development
1920s	History of intermittent exploration in the Kumtor area began
1978	Deposit discovered during a Kyrgyz geology geophysical expedition
1979-1988	Surface and underground exploration carried out
1989	USSR ministry of geology publishes results of detailed exploration of the Kumtor gold deposit
1991	USSR dissolved
1991	Kyrgyz Republic declares independence
1992	Cameco geologists travel to the CIS in search of promising uranium deposits
1992	Initial agreements signed by Kyrgyz Republic and Cameco giving Cameco exclusive right to assess the Kumtor deposit

1994	Final agreements and feasibility study approved and construction began
1995	Initial financial package completed and approved
1996	Construction completed
1997	Commercial production achieved
1998	Operation achieved production milestone of one million ounces

Data source: Cameco Corporation. 2001. Cameco Corporation: Gold-kumtor. [On-line]

URL: <http://www.cameco.com/operations/gold/kumtor/history.php>

The project is owned by the Government of the Kyrgyz Republic (two thirds) via the state gold mining entity, State Concern Kyrgyzaltyn, and by Cameco Gold Inc. (one third), which is a subsidiary of Cameco Corporation (PKR 1992). According to the Master Agreement (PKR 1992) the development of the deposit was commissioned with the affiliation of the Kumtor Operating Company (KOC) registered in Kyrgyz Republic as a wholly owned subsidiary of Cameco. During 1993-1994, the project Feasibility Study was prepared by Kilborn Western Inc. (Saskatoon, Canada), according to which the estimated capital cost of the project was in the amount of USD 360 million (Homeniuk 1997).

Homeniuk (1997), the president of the Cameco Corporation, in his presentation, stated that the construction of the mine and its supportive infrastructure was completed ahead of schedule, at a capital of USD 452 million (he left the company in 1998). This cost was 25 percent above the feasibility calculation, mainly due to the additional costs associated with legal requirements and the transportation of personnel and materials.

3.2 Location of the Project

The Kumtor Gold Project is located in the Tien-Shan Mountains of the Kyrgyz Republic at an altitude of around 4 000 m, in a zone of permafrost and active glaciers (KOC 2000). The average annual temperature is about -5°C and the average annual precipitation is 323 mm. The main access to the mining site is by the Barskaun – Karasai road, including a new road along the Arabel River. (See Appendix 3.)

The project is considered not only one of the Kyrgyz Republic’s largest mining operations, but also the largest western-managed mine in the former Soviet Union (Supplement of Mining Journal 1999).

3.3 Participation of International Financial Institutions

Financial Institutions provided about USD 355 million in the form of equity and shareholder loans to develop the Kumtor mine (EBRD 1995). Gunther Vowinckel, director of the Natural Resources department of the EBRD, said that: “Given the large size of the project relative to the size of the Kyrgyz economy, these loans will have a significant impact on the government’s foreign currency revenue and local employment. The project will demonstrate to the international community the viability of mining projects in the Central Asian region, and will help Kyrgyz Republic acquire the technology and management skills to further develop its non-ferrous mining industry.” (EBRD 1995).

Table 3 Participation of International Financial Institutions

	Name of institutions	USD million
1	European Bank for Reconstruction and Development (EBRD)	40 - loan
2	International Finance Corporation (IFC)	40 - loan

3	Multilateral Investment Guarantee Agency (MIGA)	45 - for political risk insurance
4	The U.S. Overseas Private Investment Corporation (OPIC)	192 (through Chase Manhattan Bank) - for political insurance
5	European Bank for Reconstruction and Development (EBRD)	38 - to upgrade electricity infrastructure
6	Total	355

Data source: EBRD 1995

In turn, the Government of Kyrgyz Republic has granted the Kumtor Operating Company a tax concession until the end of 2002. According to the Master Agreement (1992), the KOC was freed of paying taxes except for the value added tax, road, and royalty taxes. The Kyrgyz Republic also took a loan of USD 38 million from the EBRD for electricity network improvements which aimed to supply the mine site with electricity.

3.4 Project Contribution to Economic and Social Development of the Country

As far as the economic contribution of the project is concerned, it was declared that the Kumtor project would bring Kyrgyz Republic high revenues and social benefits. According to KOC (2000b) more than 1 500 people are directly employed by the company, whereas some 900 are residents of the Issyk-Kul region (the location of the mine). The company makes several efforts to purchase goods and services in Kyrgyz Republic to provide indirect benefits to the local economy.

Despite the fact that the project seems to be of benefit the local social and economic development in the short run, it is still debatable whether the country will receive long-term benefits. Indeed, at the end of 1999, the total external debt of the Kyrgyz Republic was estimated at USD 1,7 billion, while about USD 300 million was owed to commercial creditors on account of the Kumtor gold project (EDIMF&WB 2001). The gold

extracted by the mine is mainly going to pay this debt only after 2003 when, in fact, the production and exports will gradually decline. Furthermore, the environmental risks and impacts considered below would also undermine the economic benefits of the project.

3.5 Possible Environmental Impacts of the Project

A comprehensive Environmental Impact Assessment (EIA) of the projected activities and an environmental audit of previous exploration were required to meet EBRD procedures as the project was subsumed to A/1 category under EBRD environmental screening categories. Despite the fact that the EIA of the project was carried out in order to define the least environmentally dangerous production scheme with maximum profit, as well as to develop effective tools of decreasing negative environmental impacts, its accuracy can be queried. In addition, it must be mentioned that unsatisfactory public consultation was carried out during the EIA process.

As the Kumtor project consists of facilities with a high potential for geo-ecological risks, such as quarry, slug-heap, tailing ponds, and effluent treatment facility, Torgoev and Aitmatov (1999) asserted that the long-term potential environmental impacts as a result of geo-ecological changes were not considered in the project-planning phase. Furthermore, they emphasized such significant geo-ecological risks as climate change, tectonic conditions, and exhaustion of water and glaciers resources that are currently taking place and can increase the negative consequences for the environment caused by the mining operation.

Despite the considerable depth of permafrost (up to 250 meters) and the high altitude of the mine site (4 000 meters), the effects of global warming might be considerable due to the strong solar radiation (more than 25 kkal/sm²) causing significant soil heating. According to Torgoev and Aitmatov (1999) the overall impact of climate change can be grouped in the following way:

- The climate warming process can cause melting of the sub soil laying on the bottom of the tailing ponds not only after it would be sealed, but also during its exploitation, because the tailing ponds

accumulate great heat due to the constant input of pulp operation.

- Connate existence of both defrostation and frost zones, transformation of their configuration and the feature of thermo-physical interaction may lead to temperature deformation inside the dam and the tailing ponds.
- Frozen subsoil and tailings in permafrost regions may change its physical, mechanical, and geo-technical properties during natural melting process. These transformations can result in its swelling, congelifraction, thermokarst, and soil flow.

In addition, dust pollution can be also considered as one of the negative factors affecting the environment. The level of dust at the Kumtor mining site gets up to 500 kg and contains suspended particles (SP) of 20 microns in size against the existing standards of the permissible concentration of SP in the atmosphere, which is 0.5 mg/m³ (Torgoev and Aitmatov 1999).

Among other cryogenic phenomena, the collapse of the quarries' walls in the permafrost zone is one of the dangerous trends that might cause massive destruction. Glacier pulsation in the Tien-Shan Mountains has not caused any significant damage yet. However, taking into account that the quarry and slagheaps of the Kumtor mine are located under the glaciers, ice landslides can occur any time and cause massive destruction.

Due to changes in the type of ore encountered after mining operations began, Kumtor Operating Company found that even very low cyanide concentrations interfered with the gold recovery process. To that end, approvals were sought and received to allow the company to use fresh water rather than recycled water, as in the feasibility study. A complete water balance was done to determine the effect of fresh water use on the Kumtor River and Petrov Lake but this technology change increases the environmental risks associated with the mine.

3.5.1 Mine Decommissioning and Reclamation

Special attention should be paid to the question of mine decommissioning and reclamation. Mining is an inherently unsustainable activity because once mineral resources are excavated they are not reproduced. And yet, if we apply the concept of sustainability to the mining sector it is important to ensure that the mine return the land to its previous ecological productivity and guarantee that the site is fully closed and remediated. The key is to have a sustainable funding mechanism that will provide opportunities for proper future environmental monitoring and create post-mining options for communities. During the decommissioning and reclamation process the government and the funding institutions have to develop appropriate binding policies that will encourage mining companies to follow their reclamation and closure plans. Furthermore, they also have to create forms of securities, which will guarantee that liabilities associated with the mining companies will not fall on the public.

According to the Master Agreement (PKR 1992), reclamation and decommissioning of the Kumtor mine should be done in accordance with the Land Code of Kyrgyz Republic (ZKRRK 2001). When the mine is closed, the open pit will fill with groundwater, surface runoff and ice from the Lysyi Glacier. During decommissioning of surface facilities, the pit will be used for disposal of demolition waste. The waste rock dumps will not be rehabilitated because it is believed that there would be no long-term acid rock drainage (KOC 2000a). A summary of decommissioning and re-vegetation plans is provided in Appendix 8.

Regarding the environmental monitoring activities, they will be carried out in two phases. During the first phase (the first three years), monitoring will be on a continuous basis until tailing discharge meets the defined objectives. During the second phase (the next three years) waste rock seepage, the site area runoff, and the seepage from the tailings basin will be monitored to ensure that site runoff quality is meeting the requirements. According to KOC (2000a) the total reclamation cost (the net cost of decommissioning and reclamation) is to be used as the basis for calculating the total cost to be deposited in the Reserve, which is the trust fund dedicated to the payment of the Total Reclamation Cost

(TRC) of the Kumtor Mine. The TRC plan was estimated at USD 5,4 million in 1999 (KOC 2000a). Appendix 8.

Although the company was obligated to develop a plan for reclamation and decommissioning of the mine site following the termination of mining activities, there is no clear delineation of the roles and the responsibilities of the various parties including the mining company, the government, and the lending institutions. In addition, it is difficult to determine whether the fund of USD 5,4 million is an adequate sum of money, how it was calculated and whether it will be available by the time the mine closes, or who is going to be responsible for managing the Reserve Fund. Moreover, the issue of transparency becomes evident; particularly when IFC rejected disclosing the whole decommission and reclamation plan for the Kumtor mine, as was requested by Kyrgyz NGOs.

4 The Cyanide Spill

4.1 The Accident

Despite the fact that the company recognizes environmental management and environmental protection as its highest priorities, a series of accidents caused by the mine demonstrate the weakness of the existing company's environmental performance.

On May 20, 1998, at 12.15 p.m. at a point 78 kilometers from the mine site and eight km from Barskaun village (population 7 000), a truck rolled over on the road adjacent to a bridge over the Barskaun River. The driver of the truck lost control on a curve, causing a container with sodium cyanide packages to fall down into the river.

The container was damaged and seven of the cyanide packages inside were punctured, mainly due to breaking as the container deformed. An estimated 1 762-kg of sodium cyanide, and 935 kg cyanide were lost into the river. The truck driver suffered a broken arm and leg (MMSL 1998). The scheme of the accident is shown in the Appendix 4.

The cyanide concentration in the water at the place of the accident was 1590, whereas the country permissible concentration (PC) of cyanide in water is 0,035 mg/l. When the container was taken out of the river, the concentration sharply decreased and reached the level of 10 PC, and by May 21 it declined to the permissible level (OCEI 2000). According to the report of the Kumtor Operating Company laboratory, the cyanide concentration in Issyk-Kul Lake near the mouth of Barskaun River reached 0.36 mg/l that comprised 7.2 of PC (MMSL 1998). The analysis of the soil samples taken from the bridge revealed that the concentration of cyanide in soil increased the PC more than 77 times the cyanide level for North Kyrgyz Republic (0,06 mg/kg) and comprised 4,6 mg/kg (OCEI 2000).

4.2 The Consequences for the Local Population

According to Moldogazieva (1999), from the period of May 16-20, 1998, over eight thousand people appealed for medical help, but only 2 577 of them were found poisoned. 850 people were hospitalized. By June 16, four patients died and two were poisoned with hydra cyanic acid, others died of acute complications of chronic diseases, caused by the cyanide.

In fact, the Ministry of Health of the Kyrgyz Republic (MHKR) also admitted that the death of two people was due to cyanide exposure, while 2 577 people suffered from the accident (OCEI 2000). However, the international expert committee of the Mining and Mineral Sciences Laboratories, which prepared a special report on the impact of the cyanide spill at Barskaun, has doubted the Ministry of Health findings (MMSL 1998). They reported that the majority of these cases were misdiagnosed and that a great number of them was not due to cyanide exposure (MMSL 1998). The MMSL experts used the routes of cyanide exposure, such as air, water, soil, and food exposures as arguments to support their findings.

Furthermore, the international expert committee stated that the cyanide concentration (in air $-7,3 \text{ mg/m}^3$; in soil $-1,0 \text{ mg/kg}$ below the Canadian guideline, which is 29 mg/kg) in the villages Barskaun and Tamga were found to be too low to support any cases of cyanide exposure (MMSL 1998). As for the dead river fishes, which were found near the accident site, the committee stated that the fishes died due to their high biological sensitivity, which is 1000 times more sensitive than people (MMSL 1998).

According to the analysis of the medical data done by the same committee, the increase in the number of the people appealing for medical help depended on the following factors (OCEI 2000):

- Lack of information about the cyanide effects on human health as well as its clinical symptoms among the medical specialists. In fact, this situation resulted in overtaking the severity of people's health conditions.

- There was inaccuracy in diagnosing people, sometimes people believed to be poisoned with cyanide whereas it was intensification of the chronic diseases or acute pathology of organs.
- Often, mothers whose children suffered from cyanide exposure were also registered and their medical records were opened. While they did not have any clinical symptoms of cyanide exposure, they automatically were considered as victims of the accident. This practice also contributed into the number of the cases.

The international committee also questioned the accuracy of the official statistical data related to the cyanide exposures (MMSL 1998). They believed that “stress resulting from the spill and the host of different pre-existing conditions” led to the most of the misdiagnoses. The possibility of receiving compensation may also have caused a registration rate increase (MMSL 1998).

Although the committee’s arguments appeared to be reasonable, they failed to consider the impact of cyanide-related compounds on people’s health. In fact, sodium hypochlorine, which is poisonous itself, was used to break down the cyanide and led to the formation of cyanate and cyanogen chloride (OCEI 2000). According to a case study of the cyanide spill accident in Kyrgyz Republic, conducted by Doctor Robert Moran (1998), cyanogen chloride is a cyanide-related compound that is toxic to aquatic organisms and, as a heavy gas, it has spread out through the villages and caused throat and eye irritation in mine workers. He also came to the conclusion that “these compounds, together with the presence of gaseous ammonia” may affect the health of the local people.

Since the analytical techniques used to detect existing cyanide were applied only to the free cyanide form, it failed to report metal-cyanide complexes, or toxic cyanide breakdown products (cyanates, thiocyanates, cyanogen), or concentrations of ammonia and chloramine (Moran 1998). Therefore, it can be concluded that these compounds may also contribute into the negative impact on the health of the population.

4.3 The Spill Effects on the Environment

Cyanide spill impacts on the environment were less severe compared to the impacts on the local population. However, this can be true only in the short-term. As the cyanide compounds were not examined, it is questionable that there weren't any negative implications for the local environment in a long run.

According to the report prepared by the Ministry of Environment, there was no significant damage to the environment (OCEI 2000) (Table 4). No free cyanide concentrations in the soil reached the level at which the serious harm to the environment may occur (MMSL 1998). In a few cases, low cyanide concentrations in the soil had an adverse impact on earthworms and other soil invertebrates, as well as on the growth of radishes, lettuce and bush beans.

Fish are good biological markers of detecting cyanide contamination of water. Thus, if the fish did not leave their habitation after exposure, then there is no danger for other living forms in this impoundment. Of particular relevance to the Barskaun River, the fish died due to cyanide exposure (1,5-mg/kg). Small fish, including trout, collected in Braskaun Bay had 0,45 mg/kg cyanide (MMLS 1998). However, later on, there was no evidence of fish death, evidence that the cyanide level in the river had dramatically decreased and, therefore, the local inhabitants were out of danger.

Table 4 Area of contaminated lands

	Type of contaminated land	Total (in hectares)
1	Irrigation land	40
2	Individual Plot	1.8
3	Ditches net	120
4	Diverted channels	30

Data source: OCEI 2000.

4.4 Company Response

Based on the company report concerning the cyanide spill, within minutes of notification, emergency response teams and environmental and safety personnel, as well as doctors and nurses, left for the accident site (KOC 1998a). To break down the cyanide, the use of sodium hypochlorite was authorised. Later, contaminated soil samples were delivered to the company site.

Although the company had taken all measures defined in the Emergency Response Plan, they were charged with the delay in notification of the local authority about the accident. In fact, local people and local authorities were informed about the spill only five hours later. People were still using the contaminated water for about three hours after the accident took place (OCEI 2000).

In an article, “Kumtor washes off all traces,” published in daily newspaper *Vechernij Bishkek*, July 21 1998, Kuzmin reported that the company failed to notify the Ministry of Environmental Protection (MEP) about its own application of sodium hypochlorite as a cyanide antidote. As a result, the MEP authorized the use of sodium hypochlorite, which led to the formation of other toxic chemicals, such as cyanogen chlorine and cyanate.

As the company was liable for the environmental and health damage, it was obliged to pay compensation in accordance with The Law on Environmental Protection of the Kyrgyz Republic (1999), Chapter 10, Article 54. The total damage was estimated in the amount of USD 4 663 914, out of which the company paid only USD 2 951 152 (see Appendix 5) (TGKR 1998).

One aspect of the accident is the condition of roads and bridges for safe transport. According to the Kyrgyz parliamentary commission investigating the spill, the management of the Kumtor Gold Mine has not repaired the bridges leading to the mining site, which were built 20 years before the accident and are not intended for cargoes exceeding 13 tons. The company's trucks regularly transport 40 tons of cargoes across such bridges. (Radi Free Europe Newswire vol. 2, no. 139, part I, 23 July 1998). The reconstruction of the bridge at the location of the accident happened after the spill.

4.5 International Financial Institutions and the Cyanid Spill Accident

It is well known that one of the mission areas of international lending institutions, such as the WB Group and EBRD, is to promote environmentally sound and sustainable development. Such institutions also require the borrower to carry out an EIA for future operations. Furthermore, according to their environmental assessment policy, the public must have free access to any type of environmental information that “is essential for the effective implementation and sustainability of the projects” (BIC 1999). Moreover, according to the Bank Information Center (1999) these institutions also require that “the borrower provide relevant information prior to consultations with affected people and NGOs.”

From the policy missions of the WB Group and EBRD and the way they were operating in Kyrgyz Republic, it is evident that there is a big gap between the mission statement and its actual implementation. According to Natalia Ablova, director of the Bureau for Human Rights, NGOs were critical of these International Financial Institutions for not releasing information on the emergency response plan for the Kumtor Operating Company (KOC) upon request. She also said: “the lack of full transparency creates distrust among the local population. First, it was Cameco and its daughter company, KOC, that lost their credibility in our eyes. Today it’s the international agencies, such as EBRD and World Bank Group’s IFC, funded by the western public, who have the power to change things, yet continue to hide behind bureaucracy” (Bergman 2000). IFC refused to organize an independent environmental audit (Bergman 2000). KOC’s Emergency Response Plan was partially released and became recently available for the public, only because of heavy pressure from local NGOs, such as the Bureau for Human Rights, Tree of Life, INTERBILIM, NGO Coalition and others.

Despite the fact that there is an Independent Inspection Panel within the World Bank, which aims to establish public accountability and openness, and is empowered to receive and investigate requests for scrutiny from people affected by the WB projects, it has little ability to influence over all policy of the WB. According to Shihata (2000), the Panel’s role in examination compliance with operational policies is downplayed, even if its

role in dealing with actual or potential harm to local populations and assessing remedial measures is emphasized. Moreover, he also stated that the reason for such practices is the “perceived attitude of the Bank’s Board,” not the choice of the Inspection Panel itself. On the whole, the Board has authority to interrupt or to reconfirm any Resolution issued by the Inspection Panel.

In the cases of IFC and MIGA, the Ombudsman Committee created to investigate and respond to conflicts “relating to the staff implementation of the Banks’ operating rules and procedures and administrative practices” is required to respect the confidentiality of sensitive business information. Even though the committee would develop constructive recommendations they would be non-binding and be made publicly available (Shihata 2000).

4.6 Conclusion

Although the lending organizations promised that the Kumtor project would promote economic development of the Kyrgyz Republic and demonstrate to the international community the possibility of mining operations in Central Asia, the cyanide spill accident which took place in May 1998 showed the following:

- The weakness of the environmental management system of the Kumtor Operating Company. Beyond the cyanide spill of May 1998, two other chemicals spills took place in July 1998 and January 2000. The 1998 spill released 70 liters of nitric acid. Meanwhile the same causes which led to the cyanide accident in 1998 caused the spill of 1,5 tonnes of ammonium nitrate in 2000 (Bergman 2000). Despite the fact that the company recognizes environmental management and has an Emergency Release Plan, its environmental performance leaves much to be desired. In fact, KOC has constantly experienced problems with chemical transportation.
- The government’s own interests in the company (as the main shareholder) lead to vagueness in monitoring the company’s performances. Moreover, it tries to impede NGO activities geared

toward campaigning to ensure the environmentally sound performance of the company.

- Despite the existing environmental policies within the IFIs, these proved to be inefficient in the ongoing monitoring of lending projects. Thus, their stated favor of public participation at the very beginning of project development (appraisal stage) and subsequent cooperation in regulating the borrowers' environmental performance is in big contrast with the actual implementation of these policies. In Kyrgyz Republic these IFIs have the veneer of successful cooperation with the public rather than actually building constructive dialogue with local NGOs.

5 Sustainability and the Mining Industry

The Kyrgyz government has made several commitments to sustainable development that can be achieved by the improvement of economic, social and environmental conditions. Nevertheless, it is difficult to assert whether the government has any policy on sustainable mining industry development or ground rules for sustainable operations of the sector. There are, however, general principles addressing mining sustainability that can be used to evaluate the mining industry's performance in Kyrgyz Republic. These principles are articulated in scholarly literature (Green 2001), industry publications (PWHC 2001), international conventions (UNSD 2000) and national laws (TLEP 1999).

Overall, sustainable development “is development that meets the needs of the current generation without compromising the ability of future generations to meet their own needs” (WCED 1987). It seems challenging to apply this concept in regard to the mining industry, since the continuing mining of non-renewable resources will result in depletion of the resource and as a consequence future generations may not be able to meet their needs. Furthermore, as Green (2001) pointed out, the future economic activity of future generations would not be undermined by the shortages in non-renewables, but rather future generations would suffer from the burden of the cumulative environmental impacts caused by extraction, processing, manufacturing, usage, and disposal.

Very often governments and industry refer to sustainable development in a mining context as the following (Green 2001):

- All mining operations (extracting, producing, recycling, etc.) should be done in the most efficient, competitive, and environmentally responsible manner.
- Respecting the needs and values of all resources users, and considering those needs and values in government decision-making.
- Maintaining the quality of life and the environment for present and future generations.
- Assuring the involvement and participation of stakeholders, individuals, and communities in decision-making.

There is little incentive in these principles to reduce the current level of extraction and consumption of minerals, producing a heavy burden on the environment. Overall, such approaches to mining sustainability show that governments and industry do not recognize that economies must be restrained by the limits of the environment.

It is also necessary to draw a line between economic growth and development because these two terms are usually used interchangeably. Economic growth is mainly about a quantitative increase in the physical aspect of the economy, while economic development implies a qualitative improvement in structure, design and composition (Green 2001). From the sustainable point of view continued economic growth is undesirable, because it leads to intensification of the depletion of natural resources, creates pollution, and thus, should not be a target in promoting any industries.

Although there may have been attempts by the Kyrgyz government to plan a policy for long-term sustainability of the mining sector; it has become apparent that a number of factors were either overlooked or disregarded by the government, particularly environmental and social sustainability. Therefore, it can be concluded that neither the present performance of the mining industry in Kyrgyz Republic nor the basic course of its promotion can be considered as notions toward sustainable development. This may have been a result of economic pressures, inexperience and poor planning by the Kyrgyz government or over-reaching by international parties to the industry.

Furthermore, it is worth restating that giving emphasis to economic growth by investing in the private sector does not necessarily result in sustainable development. Economic growth may bring profits for a company, and it may create some jobs, but that is not sufficient for fostering development and contributing to human “well-being/prospects” for sustainability. Very often, many international agencies promote the mining industry, only because it generates economic growth. They hardly recognize the importance of reaching sustainability within the industry.

On the whole, in endorsing the mining and metals industry, the Kyrgyz government has to put emphasis on qualitative, rather than quantitative improvement of the mining industry’s performance, by creating incen-

tives and disincentives for responsible action. In addition, as D’Esposito (2000) stated, the government must enact provisions for mining on public or state-controlled lands and require full public disclosure, remove subsidies for extraction, and mandate full reclamation and full cost bonding for clean up of mine sites. As a result, the government would be able to make the first step toward creating more or less sustainable industry.

5.1 Sustainability and the Kumtor Mine

Information on company sustainability was not available at the time of this writing. Nevertheless, the author tried to evaluate the Kumtor mine’s performance based on the sustainability principles used in Canada (Appendix 6). The assumption was also made that the company is in accordance with the following definition of the sustainable development: “Sustainable development is to make good business decisions which consider the social, environmental and economic factors ensuring [the company’s] long term survival” (PWHC 2001).

In light of this definition, it seems that the Kumtor Operating Company made good business decisions that promoted the long term sustainability of the Cameco Corporation. In 2001, the gain of Cameco’s share in the Kumtor mine was USD 8 million.

5.1.1 Acceptable Legacy

According to Green (2001), a mine can be considered sustainable if it is developed in such a way that the future generations would not bear the cost associated with ecological restoration, ongoing treatment and decontamination of site discharges.

In 1999, Concor Pacific and SENES Consultants completed the decommissioning/reclamation plan for the Kumtor Mine (KOC 2000a). The plan was submitted to the agency lenders and had to serve as a guarantee for the local community and the government that the mine would not leave any undesirable and “harmful” legacy (Appendix 7). Indeed, the Kumtor project includes such facilities as open-pit mining, milling, cyanide leaching, and tailing impoundment. In addition, there are supple-

mentary facilities, such as site access roads, electricity infrastructure, fuel and chemical storage areas, a work camp, and water facilities. All of these facilities can affect the well being of the future generation if the company does not properly decommission and close them.

In the best-case scenario of successful closure and decommissioning, there will still be an ongoing risk for future generations – the cost related to the provision of continuing treatment of the mining site. This can be true if the geologic/geographic particularities of the mine site, such as permafrost zone, ice caves and climate change will be taken into account. Moreover, we must also admit our limited ability to predict how the mountain ecosystem will react to such human intervention as mining activities as well as how much disturbance this ecosystem can tolerate. Therefore, the cost of on-going monitoring of a past mining site can be another risk factor.

5.1.2 Contribution to Local Economic Development

The company's local employment and purchasing practices are similar to those used by its parent Canadian Company, Comeco. Kumtor Operating Company directly employs more than 1 500 people and indirectly employs hundreds more through short-term contracts and through jobs in the goods and services industry. In 1999, the total country benefits of the Kumtor mine amounted to USD 27 649 992 (KOC 2000b). Generally speaking, the KOC provided an opportunity for new businesses to become established. For some local service-oriented businesses, the company created a temporary business environment (within the life span of the mining project) with greater than usual demand and high incomes.

As Green (2001) asserted, new businesses in small communities usually need between five to ten years to go through the initial conception (dream and birth stages), to become economically sustainable. As mining production is likely to last for twenty years or more, it is apparent that local residents and entrepreneurs will have sufficient long-term security to make long-term investments resulting in diversification. High mine wages and mine spending are also likely to increase local wage expectations that in it turn will lead to an increase in income disparity.

In the case of the Kumtor mine, there is a danger that after the mine is closed the local community will be left with few opportunities for future economic development. Rather, they will face the high risk of future environmental distraction. In addition, as the investment was not made to maintain the long-term flow of goods and services, the local community is highly dependent on the mine presence in the region, and there may be a time when the local people would leave the region for the new places where the new gold mines would be opened.

6 Conclusions and Recommendations

It is reasonable to assert that countries or regions which are rich in mineral resources, would have an easier time developing their economies. Green (2001) states that experience often suggests the reverse, something known as the resource curse thesis: “It widely believed that natural mineral resources are desirable. However, it seems that this ‘natural asset’ can distort the economy to such a degree that the benefit actually becomes a curse” (Auty 1993).

Despite the Kyrgyz Republic being in great need of FDI to reach economic stability and to improve the living standards of the population, there is concern whether the promotion of the mining industry is an acceptable tool. It should also be asked whether the extracted gold contributes to human well-being as well as whether the mining operation decreases its impacts on ecosystem.

According to Young (2000) current holdings of 57 000 tons would satisfy human needs for over 120 years, so no new gold would need to be mined for 12-15 years. Having in mind that the World Bank and other IFIs are promoting sustainable development that is not only social, but also environmental development, it is unclear why these institutions are still promoting gold mining as one of the cures for economic hardship. Especially when, on the one hand, there is no additional need for gold and, on the other, the mining activities distress the environment.

In the Kyrgyz context, an attempt to repair the macro economy by promoting mining industry may affect local communities. The people of Kyrgyz Republic may suffer from misconduct at the mining sites, new tailings and open pits. The final result will occur when the mining operation withdraws, leaving the communities which relied upon it for survival.

Following the case study, it is inevitable that the mining company will do harm to the environment. Although the Kumtor Operating Company has developed an Environmental Management System, there is still room for misconduct at different stages of its operations, that lead to environmental impacts of varying degrees. Moreover, there is a likeli-

hood that the mine will be a source of constant risk to the environment even after its closure.

Recommendations

The following recommendations were developed based on the findings:

- It is unlikely that the Kyrgyz Government will disregard the notion of developing the mining industry. Therefore, the government must ensure that it takes environmental matters seriously as part of the country development strategy. There are existing models (in Canada or in the US), which can be useful to look at as possible examples; nevertheless the country has to stick to its own priorities.
- A deeper analysis of mining sustainability development should be undertaken, including the calculation of the total costs associated with the mining industry.
- The government must pass provisions for mining on public or state-controlled lands and clearly state the principles of distribution of the expense burden upon the environment.
- The government must clearly define the framework and responsibilities for mine decommissioning and reclamation.

List of References

- Aitmatov, I., Torgoev, I., Aleshi, U. 1997. *Geoecologicheskie problemy v gornopromyshlennom komplekse Kyrgyz Republica*. [Geoecological problems in mining industry of Kyrgyz Republic.]. Nauki i Noveye Technologii, 1: 129-137.
- Auty, R. M. 1993. *Sustaining Development in Mineral Economies: The Resource Curse Thesis. in Mining and sustainability: the case of the Tulsequah Chief Mine*. 2001. Interim Report prepared by Green T. for the Environmental Mining Council of British Columbia, Canada. n.p.
- Bank Information Center. (BIC). 1999. *Toolkits for activities*. Issue 1. Washington DC: BIC.
- Bergman, A. 2000. *Molchanie zolotoj gory*. [The silence of the gold mountain]. Vechernij Bishkek. March 10, 2000.
- Cameco Corporation. 2001. Cameco Corporation: Gold –Kumtor. [on-line] URL: <http://www.cameco.com/operations/gold/kumtor/history.php>
- D’Esposito, S. 2000. *Is mining sustainable?* The Corporate Ethics Monitor. V. 12, I. 4, July-August Canada: Ethics Canada Limited
- European Bank for Reconstruction and Development. (EBRD). 1995. *EBRD loans to help develop gold deposits Kyrgyz Republic*. Press Release. July 7, 1995
- European department of the IMF and the department of Europe and Central Asia Region of the World Bank. (EDIMF&WB). 2001. *International Monetary Fund and World Bank: Armenia, Georgia, Kyrgyz Republic, Moldova, and Tajikistan: external and fiscal sustainability background paper*. February, 6, 2001. n.p.
- Green, T. 2001. *Mining and sustainability: the case of the Tulsequah Chief Mine*. Interim Report prepared for the Environmental Mining Council of British Columbia, Canada. n.p.

- Homeniuk, L. 1997. *The Kumtor Case History. Keys to Successful Operating in the Kyrgyz Republic*. Paper presented at the conference on “Northern Miner’s Mining in Russia and CIS”, October 28, 1997, Toronto: n. p.
- Japan International Cooperation Agency (JICA). 1999. *Master plan on study on promotion of mining industry in Kyrgyz Republic*. Final report. Bishkek:MINDECO.
- Kumtor Operating Company. (KOC). 1998a. *Preliminary Statement of Circumstances Surrounding May 20, 1998 Incident*. Bishkek: KOC.
- _____, 1998b. Press Release, June 4, 1998.
- Kumtor Operating Company. (KOC). 2000a. *Environmental Annual Report 1999 Kumtor Gold Project*. N.p.: Kumtor Operating Company
- Kumtor Operating Company. (KOC). 2000b. *Kumtor Project Review*. KOC. n.p. [On-line] URL: <http://www.cameco.com/operations/gold/kumtor/pdf/kumtor.pdf> [cited October 30, 2001]
- Kyrgyz Republic Development Gateway. (KDG) 2001. *Investment Statistics*. [on-line] URL: http://www.kyrgyzinvest.org/en/economy/invest_stats.htm [cited October 30, 2001]
- Matthews, E., Christof, A., Bringezu, S, et al. 2000. *The weight of nations: material outflows from industrial economies*. World Resources Institute, Washington, DC
- Mining and Mineral Sciences Laboratories. (MMSL). 1998. *The International Scientific Commission’s Assessment of the Impact of the Cyanide Spill at Barskaun, Kyrgyz Republic. May, 20, 1998*. Report MMSL 98-039 (CR).n.p.: MMSL.
- Mineral Policy Center. (MPC). 1998. *Mining Report Card: Placer Dome*. Washington: MPC.
- Mining and Mineral Sciences Laboratories. (MMSL). 1998. *The International Scientific Commission’s Assessment of the Impact of the Cyanide Spill at Barskaun, Kyrgyz Republic. May, 20, 1998*. Report MMSL 98-039 (CR).n.p.: MMSL.

- Ministry of Environmental Protection of Kyrgyz Republic. (MEPKR).1995. *National Environmental Action Plan*. Turkey: Detay-Kamex Ltd.
-
- _____. (MEPKR). 1999. *Natsionalnyi Doklad o Sostoyanii Okruzhayushей Sredy* [National Report on Environment]. Bishkek: MERKR.
- Moldogazieva K. 1999. *Evaluation of the consequences of cyanide accident in Barskoon village in Kyrgyz Republic on people's health*. [Comparative study of the health of the population in Barskoon before and just after cyanides accident]. Bishkek: n.p..
- Moran, R. 1998. *Cyanide uncertainties. Observations on the chemistry, toxicity, and analysis of cyanide in mining-related waters*. Mineral Policy Center Issue Paper, 1;12.
- Mosley, P., Harrigan, J., Toye, J. 1991. *Aid and Power, The World Bank and Policy-based lending. Analysis and policy proposals*. Volume 1. London: Routledge.
- Obshchestvennyj Center Ecologicheskoi Informatzii. (OCEI). 2000. *Ecologicheskij Informatzionnyj Buletēn*. [Ecological Information Bulletin]. Bishkek: OCEI.
- Organization for Economic Co-operation and Development (OECD). 1998. *Investment guide for the Kyrgyz Republic*. Paris: Organization for economic co-operation and development.
- Price Water House Coopers. (PWHC) 2001. *Mining & Minerals Sustainability Survey 2001*. PWHC
- Postanovlenie Kyrgyzskoi Respubliki. (PKR). [Order of Kyrgyz Republic]. 1992. *Generalnoe soglasenie meĭdu Pravitelstvom Kyrgyzskoi Respublikoi i Canadskoi Cameco Corporation* [Master Agreement between the Government of the Kyrgyz Republic and the Canadian Cameco Corporation] [on-line] URL: <http://www.lexinfosys.de/lexinfosys/lexE.htm> [cited November 19, 2001]
- Supplement of Mining Journal. 1999. *Golden targets along the Great Silk Road*. London: Mineral Journal LTD.

- Shihata F. I. Ibrahim. 2000. *The World Bank: Inspection Panel: in practice*. Oxford: Oxford University Press.
- The Economist Intelligence Unit. (TEIU). 2000. *Country profile 2000: Kyrgyz Republic/Tajikistan*. London: The Economist Intelligence Unit
- The Law on Environment Protection of the Kyrgyz Republic*. (TLEP). 1999. no. 53. Bishkek:
- The Government of Kyrgyz Republic. (TGKR). 1998. *Postanovlenie Pravitelstva Kyrgyzskoj Respubliki ob itogakh raboty spetsialnoj pravitelstvennoj komissii po rassledovaniu prichin vozniknoveniya avarii v Dzety-Oguzskom raione, opredelenie ekologicheskogo i ekonomicheskogo usherba* [Enactment of the government on the results of the special government commission on the investigation of the causes of the accident in Dzety-Oguzskom district, assessment of economic and environmental damages]. no. 629. September 29, 1998
- Torgoev, I., Aleshin, U., Moldobaev, B. 1999. *Geoekologicheskaya bezopasnost i risk prirodno-technogenykh katastrof na territorii Kyrgyz Republica* [Assessment of man -caused disasters risks on the territory of Kyrgyz Republic. Methods and Ways of risk reduction.]. Bishkek: JEKA, Ltd.
- Torgoev, I., Aitmatov, I. 1999. *Vozmozhnye geoekologicheskie posledstviya zolotodobychi v usloviyakh vysokogorya*. Ekologicheskij Doklad. [Possible geo-ecological consequences of gold mining in uplands.Environmental report.]. Bishkek: n.p.
- Zakon ob inostrannykh investitsiyakh Kyrgyz Republic*. 1991. [The Law on foreign investments of the Kyrgyz Republic].
- Zakon o kontzessiyakh i inostrannykh kontzessionnykh predpriyatiyakh*. 1992. [The Law on concessions and foreign concession enterprises of the Kyrgyz Republic].
- Zemelnyj Kodeks Respubliki Kyrgyz Republic*. (ZKRK). 2001. [Land Code of the Republic of Kyrgyzstan]
- Young, J. 2000. *Gold: at what price?* Washington DC: Mineral Policy Center

- United Nations Division for Sustainable Development. (UNSD). 2000. *Agenda 2001*. Geneva: UNSD
- World Bank. (WB). 1994. *Kyrgyz Republic. Mining Sector Review. Report No. 13024-KG*. [on-line] URL: <http://www.worldbank.org/kg> [cited November 16, 2001]
- World Commission on Environment and Development. (WCED). 1987. *Our Common Future*. Oxford: Oxford University Press

Appendix 1

World Bank Recommendations

I Mineral Sector Policies and Strategies

Problem Statement

The government should formulate a clear vision of its policies or development strategy in respect to the sector. Key policy questions such as the role of the State in production activities, level and manner of taxation, creation and roles of government oversight institutions, instruments for conferring exploration and exploitation rights, among other policy questions, need to be discussed and decided.

Proposed Solutions

Prepare a clear statement by the government of policies and principles in respect to the sector. The policy and principle statements will be used subsequently to prepare the necessary legal texts.

II Review and Revise Minerals Legislation

Problem Statement

The Law on Sub-Soil Resources as well as other legislation pertaining to the mining sector does not reflect clear government policies nor is it in line with international best practices. Deficiencies such as security of tenure, clarity in issuance of mining titles, delineation of national and provincial responsibilities, valuation of mineral deposits, among other items, need to be clarified in this legislation.

Proposed Solutions

Revise the Law on Sub-soil Resources, prepare implementing regulations and a model investment agreement that are in line with international best practices

III Privatization of Existing Operations

Problem Statement

In an attempt to further rationalize management of the existing mining operations as well as to coordinate the development of new deposits, the government is considering extending the mandate of Kyrgyzaltin to create a formal holding company. This holding company would own shares in the constituent mining enterprises. Experience in other countries has demonstrated that management and operation of different commodity production units by centralized state owned companies often results in substantial losses to the central treasury through subsidies and other preferential treatment.

Proposed Solutions

Some production facilities appear to have a relatively good competitive position in international markets. After appropriate study, this could be restructured, separated from Kyrgyzaltin and run autonomously, ideally through a well-designed and executed privatization program. Other units that are characterized by poor market prospects and economies should be given to closure and arrangements made for the labor and social consequences.

IV Public Administration of Mining Sector

Problem Statement

The government institutions presently in charge of supervising the mining sector lack clear mandates and are unsure of how to administer the sector. In particular, the role of the government as regulator and supervisor of the sector instead of producer of minerals commodities is not sufficiently clear.

Proposed Solutions

A new focal point for mining should be created within the government under which would exist distinct departments in charge of various aspects of sector management.

V Environment

Problem Statement

The government is aware that it has inherited some severe toxic waste disposal problems, particularly in respect of uranium tailings located in seismically unstable areas, close to populated areas, or in localities with tourist potential. In addition, adequate environmental standards and legislation are lacking and the government institutions in charge of environmental control lack the capacity and equipment to protect the environment

Appendix 2

Analysis of Current Problems

I Review and Revise Minerals Legislation

WB Proposed Solutions in 1994

Revise the Law on Sub-soil Resources, prepare implementing regulations and a model investment agreement that are in line with international best practices.

Actual Implementation (1994-1999)

Information was not available.

Current Problems

The spheres of interference of state bodies for the control of licensing, mineral resources use, and reserve approval are various and wide. The priority of the state to be the first to purchase gold and other mineral raw materials and requirement that the state should be notified of such deals in advance restricts purchase and sale on the market.

II Privatization of Existing Operations

Proposed Solutions

Some production facilities appear to have a relatively good competitive position in international markets. After appropriate study, this could be restructured, separated from Kyrgyzaltin and run autonomously, ideally through a well-designed and executed privatization program. Other units that are characterized by poor market prospects and economies should be given to closure and arrangements made for the labor and social consequences.

Actual Implementation

Within the Privatization and Enterprise Sectors Adjustment Credit of the WB, 28 enterprises having great debts were reorganized and restructured.

Current Problems

The current situation with the plants is very difficult due to the following factors: the markets are reduced, metal prices have dropped, deposit grades are declining, power supply tariffs are increasing. Over-production forms dead stock, and the current assets are not sufficient to operate the activities efficiently. Most of the enterprises do not have medium and long-term perspective plans.

III Public Administration of Mining Sector

Proposed Solutions

A new focal point for mining should be created within the government under which would exist distinct departments in charge of various aspects of sector management.

Actual Implementation

Some simplification of structure has been accomplished and the number of staff has been reduced. However, these were only cutbacks in scales and sizes.

Current Problems

There is no official body in charge of the planning of mining policy projects, or for defining the responsibility for working out and coordinating with different organizations related to the sector. Openness of information is not systematized, causing administrative disbelief and irrationality.

IV Environment

Proposed Solutions

Steps should be taken to clean-up the uranium tailings and toxic waste dump sites; measures should be stepped up at existing facilities (antimony, mercury, uranium) to ensure that these comply with environmental safety and health standards. The government should pass legislation; establish standards, and organize properly equipped supervisory agencies.

Actual Implementation

Nothing much has happened to improve the situation.

Current Problems

Due to budget scarcities, the real work on monitoring tailing dumps is not performed.

The laboratory monitoring equipment and sampling devices used by the subdivisions of the Ministry of Environment are out-dated, deteriorated and are not appropriate for monitoring and environment control.

V Local Investment in Mining

Proposed Solutions

The Law on Sub-Soil resources must be clarified as to mine title functions, government monopoly control of gold extraction through Kyrgyzaltin should be abolished, the Central Bank should pay world market prices for all gold purchased, and government institutions should content themselves to supervise, but not intervene directly in operations. Funds could be mobilized locally supplemented by funding from donor sources.

Actual Implementation

In 1997 “Kyrgyzaltin” personnel was reduced by 30 percent. Despite this cutback, its structure and the roles remained the same as when it was created.

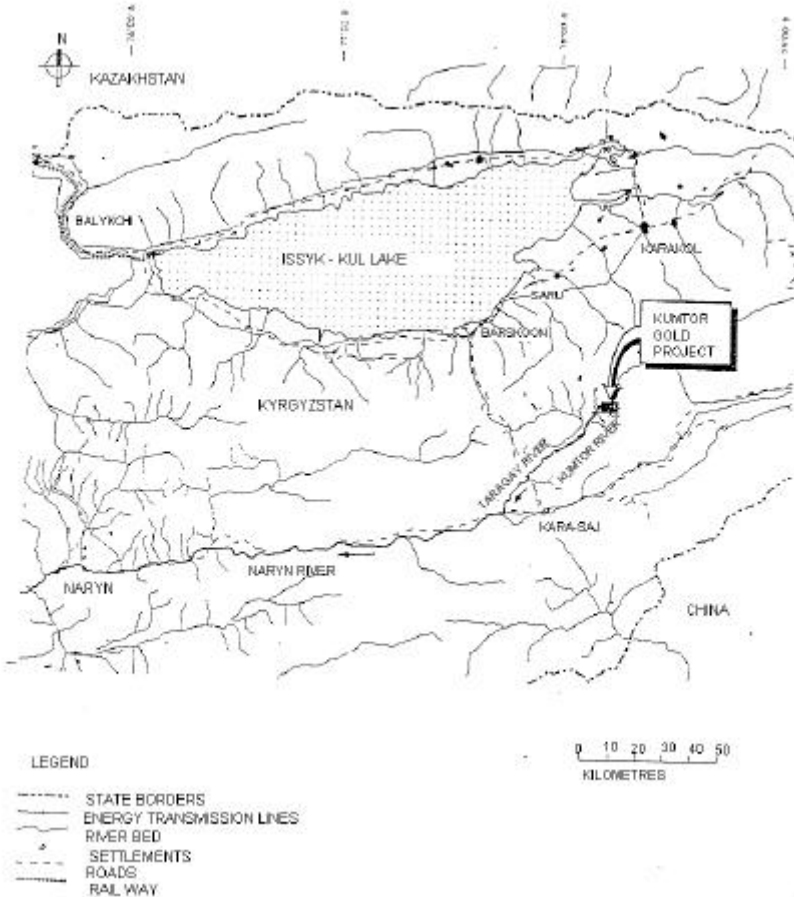
Current Problems

The problems have existed since 1994

Data source: Japan International Cooperation Agency (JICA). 1999. Master plan on study on promotion of mining industry in Kyrgyz Republic. Final report. Bishkek:MINDECO.

Appendix 3

Location of the Kumtor Gold Mine

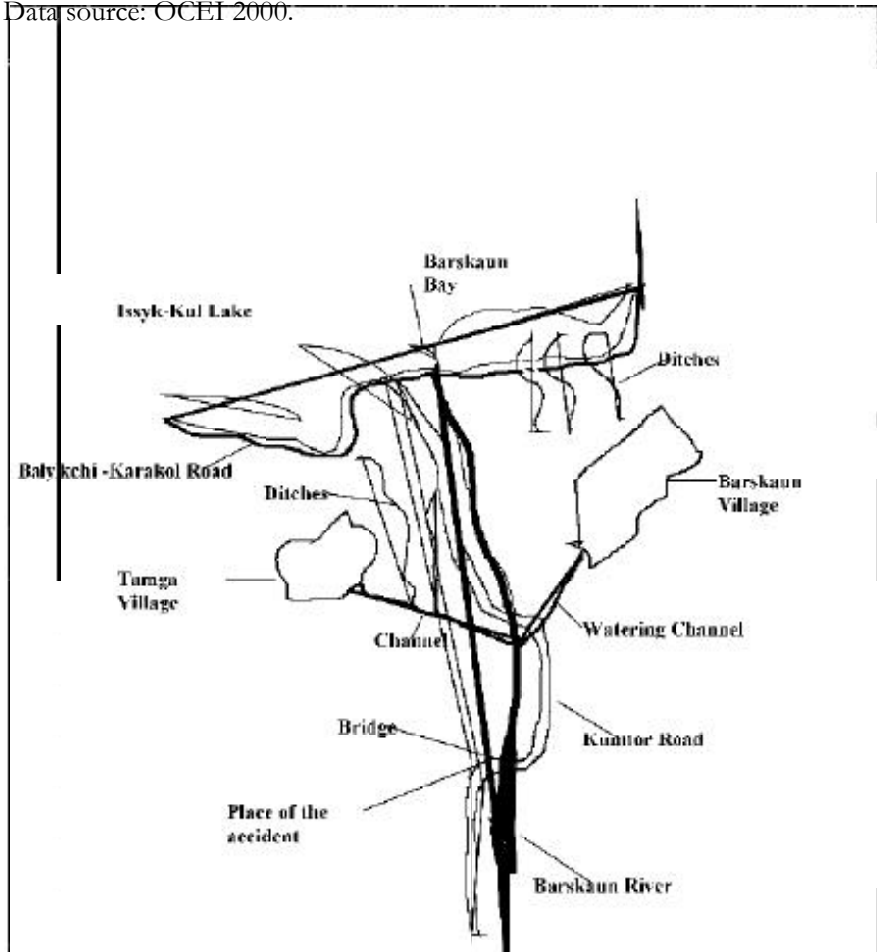


Data Source: Torgoev 1999

Appendix 4

Scheme of the Accident Site

Data source: OCEI 2000.



Appendix 5

Assesment of the Cyanide Spill Damage to the Local Population and the Environment

	Title of organization	Total damage cost (USD)	Paid by the KOC 1998 (USD)	Amount outstanding (USD)	Comments
1	Medical Institutions	607 032	484 499	122 533	Drug and treatment costs, food expenditure for patients
2	Ministry of Emergency Situation and Civil Defense	19 000	0	19 100	
3	State Veterinary Department	17 630	0	17 630	
4	Ministry of Internal Affairs	94 207	0	94 207	
5	Ministry of National Security	58 740	0	58 740	
6	Bishkek City Municipality	16 519	16 134	385	

Mountains of Gold

7	Ministry of Transport and Communication	106 628	78 848	27 780	Transport expenditure on population on evacuation
8	Ministry of Environmental Protection	1 402 579	38 876	1 363 703	Arable lands - USD 270 005; Helath resorts and sanatoriums - USD 579 994; fish stock question USD 513 703; environmental monitoring - USD 38 877
9	Issyk-Kul region, Djety-Ogyzskij district	2 176 040	2 167 356	8 684	Health resorts and sanatoriums - USD 981 942; roads, ditches and bridges maintenance - USD 712 447; private reimbursement - USD 481 651

10	Experts cost (environ- mental monitoring)	165439	165 439	0	
	Total	4 663 914	2 951 152	1 712 762	

Data source: TGKR. 1998.

Appendix 6

Principles of Sustainability Assessment in Mining

	Principles of sustainability assesment in mining	Comments
1	Meeting the needs of the present generation without compromising the ability of future generation to meet their own needs	The mine can and will be developed in such a way that there is low risk that future generations will be burdened by the need to undertake ecological restoration, or by the need to provide ongoing treatment and decontamination of site discharges.
2	Acceptable legacy	The mineral will be extracted, refined, and processed in such a way that the producer is responsible for mitigating, compensating, or offsetting the mine's known social and environmental costs. The mine clearly be financially viable to reduce the risk of premature abandonment, to ensure rehabilitation is carried out, to enable the owner to redress unanticipated impacts, and to avoid externalizing environment and social costs.
3	Full Cost	The mine provides local and regional economic benefits that contribute to the long-term viability of the local and regional economies and facilitates a shift to sustainable economic activities. In particular assets and resources that currently allow local populations to meet basic needs or that could make an important contribution to long-term local economic activity are not degraded.

4	Contribution to economic development	The mine provides local and regional economic benefits that contribute to the long-term viability of the local and regional economies and facilities a shift to sustainable economic activities. In particular assets and resources that currently allow local populations to meet basic needs or that could make an important contribution to long-term local economic activity are not degraded.
5	Equity	Sustainable development requires equity between and within generations. Those who are to be most affected by a development should have the right to a significant portion of the benefit. Because deposits that are mined will no longer be available to future generations, compensating mechanisms are required to spread benefits across generations.
6	Permission of local communities	Sustainable development requires effective participation in decision-making by local communities, and the precautionary principle puts a duty of care or onus of proof on those who propose change. If permission is obtained, it suggests that those who will be affected by the project are satisfied with mitigation and compensation measures.

7	Respect for ecological limits, maintenance of ecological limits, maintenance of ecological integrity and landscape requirements	The mine does not result in impairment of ecosystem process, or result in significant loss of ecosystem goods or ecosystem services, either at local, regional or global scales. In particular, the mine and associated infrastructure should fit within the landscape as determined in an ecosystem-based management planning approach so as to not impede the protection and viability of sensitive ecosystem components, representative habitats. The primary focus must be on maintaining ecological integrity while allowing only compatible human uses and development.
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Data source: Green 2001

Appendix 7

Summary of Decommissioning and Re-Vegetation Plans

Mine Facility	Area	Decommissioning Plan	Re-vegetatin
Open pit		Allow to fill with ground water surface runoff and ice	Not planned
Waste Rock Dumps	230 ha	Leave as is	Natural plant succession
Low Grade and Ore stockpiles	12 ha	Process until depleted dispose of contaminated material in open pit and / or spread cover of waste rock	Natural plant succession
Tailings Basing	253 ha	Contour to slope to north and east by controlling tailings placement, cover with 2 m of till, construct drainage ditches, treat effluent until it meets water quality requirements, construct spillway to Kumtor River, stabilize water diversions	Re-vegetate for erosion control
Tailings Dam	32 ha exposed	Construct for long-term stability, exposed areas to be re-vegetated for stability, protect from overtopping with spillway	Re-vegetate for erosion control
Tailings Pipeline and Road	20 ha	Bury line in open pit and grade roadway to blend into existing contours	Re-vegetate for erosion control

Mountains of Gold

Industrial Waste Disposal Area	Included in Basin Area	Cover with tailings to grade as tailings are deposited, then place 2 m till cover	Re-vegetate for erosion control
Effluent Treatment Facility	22 ha	Remove equipment and buildings, cover sludge in treatment ponds with 2 m of till, fill in seepage collection ditch	Natural plant succession
Construction Dump Site		Has been covered with till and contoured as part of progressive decommissioning	Re-vegetate first to test large scale reclamation plans
Borrow Areas	Not available	Grade for stability	Natural plant succession
Surface Facilities	38 ha (lower) 2 ha (upper)	Salvage buildings where practical, demolish remaining building. Salvage equipment where practical. Dispose of waste in open pit. Cover concrete foundations with till or waste rock. Any areas of contamination will also be disposed of in open pit	Natural plant succession. Re-vegetate for erosion control as necessary

Surface Infra-structure	30 ha for roads	Site roads not required for monitoring will be left to de-grade naturally although culverts will be removed and original drainage re-established. On-site power lines, pipelines, fences, etc. will be removed and salvaged or disposed into open pit. Airstrip and helicopter pad will be left in place. Fuel tanks, liner cover material and liners from fuel stored sites to be disposed in open pit.	Natural plant succession. Re-vegetate for erosion control as necessary
Power Line and Access Road		Will be left in place, however cost assumes power line will be removed.	Natural plant succession. Re-vegetate for erosion control as necessary

Data Source: KOC 2000a

Appendix 8

The Total Decommissioning Costs

Item	Cost (USD)
Capital Cost	
Trainings Management Area and Effluent Treatment Plant	7 922 000
Open Pit, Waste Rock and Stockpile Areas	168 000
Surface Facilities	3 686 000
Engineering Fees	1 178 000
Estimating Allowance	1 178 000
Total Capital Cost	14 132 000
Salvage Value	14 927 000
Net Capital Cost	-795 000
Operating Cost	
Interim Post-closure Water Treatment	1 028 000
Care and Maintenance	992 000
Re-vegetation	3 650 000
Monitoring	300 000
Estimating Allowance	261 000
Total Operating Cost	6 2331 000
Total Capital and oOperating Cost (Net of Salvage Value)	5 436 000

Appendix 9

Chronology of the Kumtor Gold Mine According to Media Sources

7 July 1995 CANADIANS SIGN GOLD DEAL IN KYRGYZSTAN.

On 7 July, Canada's Cameco Corp. signed an agreement to develop the Kumtor gold field in eastern Kyrgyzstan near the Chinese border, according to Reuters. Cameco is working with a syndicate of seven banks investing USD 360 million to mine for gold in what is estimated as the eighth largest gold field in the world. Cameco will own one-third of the joint venture and the Kyrgyz company, Kyrgyzaltyn, two-thirds. The joint venture, the Kumtor Gold Company, is scheduled to make its first gold extraction in 1997; before that, a million tons of glacier ice must be removed from the area. The target figures for extraction are 12,4 tons in 1997 and 15,5 tons in later years. — Bruce Pannier, OMRI, Inc.

31 January 1996 CAMECO WILL INVEST USD 160 MILLION IN KYRGYZSTAN THIS YEAR.

Canada's Cameco plans to invest USD 160 million in the Kumtor gold field in 1996, Kumtor Operating Company President Len Homenyuk told the Russian media on 30 January. In 1995 Cameco invested USD 215 million in the project, which is Kyrgyzstan's largest. The project is expected to yield 15 metric tons of gold annually, worth about USD 200 million. Production is scheduled to begin in 1997. — Bruce Pannier

6 March 1997 KYRGYZ PLANT TO REFINER KUMTOR GOLD.

Jalgap Kazakbayev, director of the Kara-Balta state mining company, and Leonard Homenyuk, president of Kumtor Operating Company, have signed an agreement whereby gold extracted at Kumtor will be refined at the Kara-Balta complex, RFE/RL reported on 5 March. KOC is a joint venture between the Kyrgyz government and the Canadian company CAMECO. Some 12 tons of gold are expected to be refined at Kara-Balta this year. There are believed to be 500 metric tons of gold at the Kumtor site. Earlier reports that gold would be refined

abroad led to an outcry from opposition groups in Kyrgyzstan. —
Naryn Idinov

20 November 1997 KYRGYZ GOLD PROJECT AHEAD OF SCHEDULE

Kyrgyzstan's largest joint venture, the Kumtor gold mine, announced on 17 November that it has exceeded its goal of producing 12,7 tons of gold this year, according to RFE/RL correspondents. So far this year, 13,2 tons of gold have been produced. Cameco corporation of Canada and Kyrgyzaltyn, who are partners in the project, expect production to reach 20 tons annually by the end of the century. The gold mine began operations this year. BP

6 February 1998 KYRGYZSTAN THIRD IN GOLD PRODUCTION

Kyrgyzstan ranks third among the Commonwealth of Independent States (CIS) in gold production, following Russia and Uzbekistan. But, the politics associated with gold has led to a state of confusion over this perceived blessing of national wealth.

16 April 1998 KYRGYZ OFFICIAL WANTS INDEPENDENT AUDIT OF GOLD INDUSTRY

Mamat Aibalaev, the head of Kyrgyzstan's parliamentary commission on corruption in the gold industry, told RFE/RL correspondents in Bishkek on 15 April that the government should ask a foreign company to conduct an audit of the industry. A four-member parliamentary commission requested information on the gold industry from the Kumtor joint venture in February but has only just received it. The Kumtor facility had far exceeded its budget in January, while Apas Jumagulov's sudden resignation as premier in March followed media reports alleging that Jumagulov was involved in illegal sales of Kyrgyz gold through a company in Austria. BP

21 May 1998 CANADIAN FIRM SAYS CYANIDE SPILLED IN THE KYRGYASTAN RIVER

REUTERS: Canada's Cameco Corp., the world's largest uranium producer, said Thursday that a traffic accident near the company's Kumtor gold mine in Kyrgyzstan in Central Asia had resulted in a spill of cyanide into a nearby river.

Cameco said in a press release that the accident occurred after a truck

containing 20 one-ton packages of granular sodium cyanide crashed into the Barskon River en route to the Kumtor mine.

The truck and its cargo were removed from the river within six hours of the accident, but not before one of the packages ruptured, spilling some of its contents into the river. “The source of the spill has been contained and monitoring of the river continues in order to assess the environmental impact of the incident,” Cameco said.

“At this time, the impact is believed to be negligible,” the company added.

22 May 1998 IS ISSIK-KUL CONTAMINATED FOLLOWING TRUCK ACCIDENT?

A truck carrying 20 tons of sodium cyanide drove into the Barskoon River near the Issik-Kul lake, which is Kyrgyzstan’s biggest tourist attraction, RFE/RL correspondents and ITAR-TASS reported on 20 May. Reports vary as to the extent of the damage to the environment. A spokeswoman for President Askar Akayev said there were no “environmental consequences.” But “Komsomolskaya Pravda” on 22 May reported that eight tons of sodium cyanide spilled into the river. Independent ecological experts told RFE/RL correspondents in Bishkek that the Kumtor gold mining operation, located in the mountains not far from Issik-Kul, refused to allow them to the site. BP

25 May 1998 MEDIA REPORTS SUGGEST OTHERWISE

Both ITAR-TASS and RFE/RL correspondents report that dead fish and cattle have been found near the scene of the accident. They also say that residents of the area have been warned against drinking unboiled water or swimming in the river or lake. Minister of Ecology Kulubek Bokonbayev told RFE/RL correspondents that since the 20 May accident, some 250 residents of the Issik-Kul region have sought medical help. Issik-Kul is a major tourist attraction in Central Asia. BP

27 May 1998 MORE PEOPLE TAKEN ILL AFTER KYRGYZ CHEMICAL SPILL

One week after a truck from the Kumtor gold mining company spilled sodium cyanide into the Barskoon River in eastern Kyrgyzstan, 475 people have become sick and sought medical treatment, Interfax reported. Of those, 68 have been kept in the hospital. Officials from the

Kyrgyz government and the Kumtor company continue to say that the effects from the spill will be negligible. BP

28 May 1998 KYRGYZ PREMIER COMMENTS ON ISSIK-KUL DISASTER

Kubanychbek Jumaliev held a press conference in Bishkek on 28 May to report on the consequences to date of the sodium cyanide spill into the Barskoon River, RFE/RL correspondents reported. Jumaliev said more than 1 000 residents of the southern Issik-Kul area have sought medical treatment and at least 93 have been kept in the hospital. Two people have died, while eight are in a serious condition and have been moved by helicopter to better facilities in Bishkek, he noted. The previous day, Deputy Premier Boris Silayev said the Kumtor Mining Company was irresponsible in its handling of the situation, pointing to the company's failure to inform the Kyrgyz government or local residents for several hours after the spill. A team of experts from the World Health Organization is due to inspect the scene of the incident on 28 May. BP

1 June 1998 KUMTOR HEADS VISIT TO DISASTER SITE

The heads of the Kumtor gold mining project on 29 May visited residents of the area in which one of the company's trucks overturned and spilled nearly two tons of cyanide into the water supply, RFE/RL correspondents reported. Dastan Sarygulov and Gerhardt Glatteis said the company will pay for all medical costs of the more than 1 000 people affected by the spill and will install a water system to villages on the south shore of Lake Issyk-Kul. The residents have demanded that there be no further shipments of sodium cyanide along the lake's southern road. ITAR-TASS reported on 29 May that on the lake's northern shore, where tourist facilities are located, more than half the reservations for the summer season have been cancelled following reports of cyanide in Issyk-Kul. BP

3 June 1998 WOMAN DIES FROM CYANIDE POISONING IN KYRGYZSTAN...

A woman on 3 June died in a hospital in the eastern town of Karakol from cyanide poisoning, RFE/RL correspondents reported. She is the

first person to die as a result of the spill last month of 1,7 tons of sodium cyanide into the Barskoon River, which flows into the southern part of Lake Issyk-Kul.

Michel Bernard, president of CAMECO Corp., told a press conference in the Kyrgyz capital Bishkek that reporting of the incident was exaggerated. He said that what he called “well-respected experts” had concluded that the spill will not present environmental hazards to the residents of the area or to the lake.

5 June 1998 EVACUATION OF BARSKOON BEGINS

Kyrgyz Deputy Prime Minister Boris Silayev on 4 June announced that 3 500 residents of the Barskoon area on the southern shore of Lake Issyk-Kul will be evacuated to the northern shore, RFE/RL correspondents reported. Residents of the southern shore are demanding the Kumtor gold mining operation, which is responsible for the spill, be shut down. Concerns have also been raised about the storage of 2 000 tons of sodium cyanide in the town of Balykchy, on the western shore of Issyk-Kul. Despite mounting evidence of a major environmental disaster, government officials continue to say it is safe to swim in the lake. BP

9 June 1998 ANOTHER DEATH LINKED TO ISSYK-KUL SPILL?

Doctors say that, according to preliminary findings, the death of a 71-year-old man from the Issyk-Kul area on 6 June was from sodium cyanide poisoning following the spill last month, RFE/RL correspondents reported. An autopsy is currently being performed in Bishkek. Meanwhile, Interfax reported on 9 June that 40 people assisting in the clean up of the area have been taken ill and brought back to the capital, for treatment. Meanwhile, the department head of the Kumtor gold mining venture, which is being held responsible for the spill, told RFE/RL correspondents on 8 June that Kumtor president Gerhardt Glattis has resigned and will be replaced by one of his predecessors, Len Homeniuk. BP

10 June 1998 EVACUATION OF BARSKOON AREA COMPLETED

Kyrgyz Minister of Health Care Naken Kasiev told a press conference in Bishkek on 9 June that the evacuation of the Barskoon area has been completed, RFE/RL correspondents reported. Kasiev said the authorities have temporarily relocated 4 800 people to the northern

shore of the lake and that 5 349 people from the affected area have sought medical help. BP

11 June 1998 KYRGYZ PRESIDENT SAYS NO MORE DANGER FROM TOXIC SPILL...

Askar Akayev said on 10 June there are no longer any dangers posed by spill of sodium cyanide near Lake Issyk-Kul, Interfax and RFE/RL correspondents reported. According to Akayev, who was speaking in Astana, Kazakhstan, “the lake is alive and well and is looking forward to tourists.” He added that Issyk-Kul is “absolutely not contaminated” as the chemical “dissolves into harmless components” when mixed with water. The same day, officials from the Kumtor gold mining project told a news conference in Bishkek that experts from Canada’s Department of Foreign Affairs and the World Health Organization have reached the same conclusion. BP

...BUT LIABILITY FOR DAMAGES NOW AT ISSUE

At same the news conference, the new president of Kumtor, Len Homeniuk, and the head of Kyrgyzstan’s state gold company, Dastan Sarygulov, admitted that the spill of sodium cyanide was Kumtor’s fault and that the company was negligent in forming the population of the area as to the possible danger, RFE/RL correspondents reported. However, opinions differ over who should pay for the cleanup and compensate residents of the area. Kyrgyz officials, including Akayev, say the Canadian company that is a partner in the joint venture, CAMECO Corp., will pay all compensation. CAMECO officials, however, say that since the company has only a one-third share in the project, it will pay only one-third of the costs. BP

16 July 1998 SITUATION SOUTH OF ISSIK-KUL MAY BE WORSE THAN EARLIER REPORTED

While the effects of the 20 May sodium cyanide spill into the Barskoon River are reported to have been dealt with, new questions are arising about the clean-up process, RFE/RL’s Kyrgyz Service reported on 15 July. Two weeks after the spill, chloride was first used in the cleanup. Though chloride is typically used in such situations, it must be applied immediately. Reports from hospitals in the area say some local residents have developed a rash, possibly related to the chloride. More-

over, independent experts from the U.S. were unable to reach the Kumtor gold mine, which is held responsible for the spill, to inspect conditions there. The experts were informed that the plane assigned them by the government was unable to fly owing to technical reasons. BP

21 July 1998 INTERVIEW ON BARSKOON ACCIDENT.

The Vecherni Bishkek daily carries an interview with Viktor Grinenko, Deputy Minister of Health Care and Chief Sanitary Inspector of Kyrgyzstan, in its today's edition. Grinenko says the rescuers of the Kumtor Operating Company (KOC), worked the soil and the water on the accident site by calcium hypo chlorite in extended volume on 21 May, one day after the accident. So, people and the soil has been poisoned with calcium hypochlorite now. According to Grinenko, the KOC did not co-ordinate its action with the Health Ministry.

22 July 1998 DRIVER IN KYRGYZ CYANIDE SPILL CHARGED

The driver of the truck that spilled sodium cyanide into the Barskoon River on 20 May has been charged with violating rules for transporting chemicals, Interfax reported on 22 July. He faces a maximum of ten years in prison if found guilty. All other drivers who transported that chemical the same day as the accident have been fired. The Kyrgyz parliamentary commission investigating the spill reports that the management of the Kumtor Gold Mining project has not repaired bridges leading to the mining site, which were built 20 years ago and are not intended for cargoes exceeding 13 tons. The company's trucks regularly transport 40-ton cargoes across such bridges. BP

23 July 1998 ANOTHER CHEMICAL SPILL IN KYRGYZSTAN

A tanker truck belonging to the Kumtor Mining Company spilled some 70 litres of nitric acid along the road from Tokmak (outside Bishkek) to Issyk Kul, on 22 July, ITAR-TASS reported. A statement from Kyrgyzstan's Ministry of Emergencies claims there is no environmental damage. A truck belonging to the same company spilled 1,7 tons of sodium cyanide in late May. BP

6 August 1998 FOREIGN EXPERTS DENIED ACCESS TO INFORMATION ON KYRGYZ CHEMICAL SPILL

Two foreign toxicologists invited by the management of Kyrgyzstan's

Kumtor Mining company to examine findings on the consequences of the 20 May chemical spill have been denied access to that information, RFE/RL correspondents reported on 5 August. The Kyrgyz Health Care Ministry said that the U.S.'s Allen Holl and Russia's Yurii Ostapenko do not have authorization from the World Health Organization to investigate the effects of the incident, in which 1.7 tons of sodium cyanide spilled into the Barskoon River. Kyrgyz Deputy Minister of Health Care Viktor Grinenko said that without such authorization, the two toxicologists are not allowed to talk with people who were hospitalised following the spill. Grinenko added that the information gathered on the accident is now in the hands of the National Security Ministry, which has begun its own investigation. BP

7 October 1998 KYRGYZ GOVERNMENT RELEASES INITIAL ESTIMATE OF ISSYK KUL DAMAGE

Deputy Prime Minister Boris Silayev has said that according to a preliminary estimate, the damage caused by the sodium cyanide spill earlier this year in the southern area of Issyk Kul totals 91 million som (about USD four million), Interfax reported on 7 October. Silayev, who heads the government commission investigating the damage to the area, said the estimate does not include agricultural losses. An RFE/RL journalist who visited the village most affected by the spill, Barskoon, found that while a medical centre has been set up there, residents have not received compensation for their losses and humanitarian aid to the village amounted to one notebook, one pen, and five pieces of candy per inhabitant. BP

16 December 1998 ANOTHER CYANIDE INCIDENT IN KYRGYZSTAN...

The Kyrgyz authorities have ended their search for a canister containing 70 litres of cyanide, after finding the missing container outside a hospital in the city of Naryn, RFE/RL correspondents reported. The canister, which belonged to a company working on the Makmal gold mine in Naryn Oblast, was part of a shipment of 56 tons of cyanide from China. The contents of the container had been spilled onto the hospital courtyard.

WHILE DIAGNOSIS CENTER TO OPEN AT SITE OF EARLIER CYANIDE SPILL

The Kumtor Gold Mining Company announced in Bishkek on 15 December that it will open a diagnosis and monitoring centre in the village of Barskoon, on the southern shore of Issik Kul, RFE/RL correspondents reported. The company will pay all construction expenses and finance the centre for the first year. BP

15 January 1999 KYRGYZSTAN INTENSIFIES CONTROL OVER DANGEROUS CHEMICALS

The Ministry for Emergency Situations is to assume control over the transportation of poisonous chemicals on the territory of Kyrgyzstan, RFE/RL's Bishkek bureau reported on 14 January, quoting Deputy Minister Tilekbay Kyshtobaev. The Interior Ministry had previously been responsible for that task. Kyshtobaev said that an average of 16 tons of poisonous chemicals are imported daily from China. Four people died and some 5,000 were hospitalised last summer after the Canadian Kumtor Operating Company spilled 2 tons of sodium cyanide near Barskoon village in the region of Issyk-Kul. LF

20 January 1999 SETTLEMENT REACHED IN KYRGYZ CYANIDE SPILL

The Canadian company Cameco has agreed to pay USD 4,6 million to the government of Kyrgyzstan for damages incurred as a result of the spill of 20 tons of sodium cyanide into a tributary of Lake Issyk-Kul in May, 1998, AP reported. Several subsequent deaths in the area were attributed to environmental pollution resulting from the spillage (see "RFE/RL Newswire," 15 June 1998). LF

12 March 1999 ...WHILE GOLD PRODUCTION DWINDLING

Kyrgyzstan's biggest gold company, Kyrgyzaltyn, said gold production dropped in the first two months of 1999, Interfax reported on 11 March. The company noted an 8,3 percent drop, compared with the same period last year. The major reason is a decrease in production at the country's largest mining project, Kumtor. The Kumtor Gold Company, in which Canada's Cameco Corp. is a partner, reported a 9,4 percent decline in production in January-February. Kumtor produced 19,2 tons of gold in 1998, up 25 percent on the previous year. Kyrgyzaltyn reported it produced 21,311 tons of gold last year. BP

30 March 1999 DEATH TOLL IN KYRGYZ CHEMICAL SPILL HIGHER THAN REPORTED?

Parliamentary deputy Jypar Jeksheev, who is chairman of the Democratic Movement of Kyrgyzstan, said in Bishkek on 26 March that some 80 people have died as a direct consequence of the spill of sodium cyanide into the Barskoon River in May 1998, RFE/RL's Bishkek bureau reported. Jeksheev added that neither the Kyrgyzaltyn state gold company nor the Canadian Kumtor Operating Company, one of whose lorries caused the accident, has kept its promises to pay compensation for all damage resulting from the spill. LF

14 May 1999 KYRGYZ PROTEST EMBEZZLEMENT OF DISASTER RELIEF FUNDS

Residents of Kyrgyzstan's Issyk-Kul region blocked roads leading to the Kumtor gold mine from 4-8 May and destroyed two trucks belonging to the Kumtor Operating Company that is exploiting the deposit, RFE/RL's Bishkek bureau reported on 13 May. The picketers were protesting the disappearance of some 780 000 soms (USD 22 000) allocated by the Kumtor Operating Company as compensation for victims of the spill of toxic chemicals into the Barskoon River in May 1998. That accident was caused by a truck owned by the company. Five police and two picketers were hospitalised in clashes when police tried to disperse the picketers, 34 of whom were detained. Other demonstrators then took three local officials hostage and released them only during the night of 9-10 May after their fellow protestors had been freed. Criminal proceedings have been brought against one of the local officials accused of embezzling the relief funds. LF

21 May 1999 KYRGYZSTAN COMMEMORATES 1998 ECOLOGICAL DISASTER

Some 1 000 residents of the village of Barskoon held a meeting on 20 May to mark the first anniversary of the accident in which a lorry belonging to the Canadian-owned Kumtor Operating Company spilled toxic chemicals into the Barskoon river, which flows into Lake Issyk-Kul, RFE/RL's Bishkek bureau reported. No local or national officials attended the ceremony. But at a session of the Karakol regional assembly the same day, the chairman of the regional commis-

sion on the aftermath of the accident announced that Kumtor has promised an other USD 7 000 in compensation for thousands of villagers affected by the toxic spill. Victims of the spill took local officials hostage earlier this month to protest the alleged embezzlement of earlier funds Kumtor had paid in compensation. LF

MEETING ON BARSKOON ACCIDENT IN BISHKEK.

Parliament deputy Jypar Jeksheev said at a news conference in Bishkek on 21 May that the conciliatory agreement between the Kyrgyz Government and the Canadian Cameco corporation signed in New York last January should be cancelled. He also said that the Kyrgyz Government and the Kumtor Operating Company (KOC), a daughter company of Cameco, should pay all compensations promised to the victims of the chemical accident in Barskoon a year ago. The first anniversary of the accident was marked in Kyrgyzstan on 20 May with meetings and demonstrations. Residents of the Barskoon, Tamga, Tosor and other villages held several demonstrations earlier this month to demand payment of all compensation, and accusing local authorities of corruption.

24 May 1999 KYRGYZ PARLIAMENTARY DEPUTY WANTS NEW COMPENSATION AGREEMENT

Speaking at a news conference in Bishkek on 21 May, Jypar Jaksheev argued that the January 1999 agreement concluded by the Kyrgyz government and the Kumtor Operating Company on compensation for victims of the May 1998 ecological disaster in Kyrgyzstan's Issyk-Kul region should be revoked, RFE/RL's Bishkek bureau reported. Four people died and thousands suffered from poisoning after a Kumtor-owned lorry spilled toxic chemicals into a local river. Jeksheev accused the Kyrgyz government and the Canadian company Cameco, which owns Kumtor, of failing to pay the promised compensation. LF

25 May 1999 DEATH TOLL IN KYRGYZ ECOLOGICAL DISASTER HIGHER THAN ORIGINALLY REPORTED?

Jengish Jylkybaeva, a physician at the National Hospital in Bishkek, told RFE/RL last week that she recently visited Barskoon, the site of the spill of toxic chemicals in May 1998.

Jylkylbaeva said that local records indicate that 22 people have died in the village over the past year, compared with a total of 40 deaths in the preceding four years. In two cases, the cause of death was given as cyanide poisoning. The Kyrgyz authorities say that only four people died as a result of the disaster. Speaking at a press conference in Bishkek on 24 May, First Deputy Premier Silaev defended as “adequate” the compensation agreement signed in January 1999 by the Kyrgyz government and the Canadian Cameco Corporation, whose Kumtor subsidiary was responsible for the spill of chemicals. Parliamentary deputy Jypar Jeksheev argued last week that USD 3 million was insufficient to compensate all victims (see “RFE/RL Newsline,” 24 May 1999). LF

2 July 1999 VILLAGERS DEMAND COMPENSATION FOR SPILL.

It was reported by an RL correspondent in Yssyk-Koel oblast that inhabitants from Tosor and Tamga villages of Jety Oegyez rajon continue blocking the Barskon-Kumtor road leading to the gold mines. Inhabitants of Tosor and Tamga villages started their action on 26 June. They are demanding to be fully compensated for the losses caused by last year’s cyanide spill. They also want to meet with the head of the government commission on mitigating the consequences of the spill, Vice-Prime Minister Boris Silajev in person. Kumtor Operating Company’s (KOC) Foreign Relations officer Tynara Shajdyldajeva confirmed that for four days the lorries were prevented from reaching the mining site, causing very many difficulties. She also maintained that the villagers had no claims to the KOC.

12 October 1999 IMPACT OF GOLD PROJECT ON ENVIRONMENT EXAMINED.

An official from the Kumtor gold project told an RFE/RL correspondent in Bishkek on 11 October that an independent British organization will examine the impact of the project on the ecological situation in Kyrgyzstan. The action is financed by the European Bank for Reconstruction and Development (EBRD) and the British “Flora and Fauna International” has won an international tender on it. The EBRD will allocate USD 190 000 to finance it.

30 November 1999 CANADIAN COMPANY WILL PAY MORE TAXES.

Manager of the KOC Tynara Shaiyldaeva announced in Bishkek today that the KOC and the Kyrgyz government had agreed that the KOC will pay to Kyrgyz state budget about USD six million soon. It is a part of the taxes, from which the company had become free before. The agreement has been reached after a long and heated discussion.

21 January 2000 NEW CHEMICAL ACCIDENT AT THE Kumtor GOLD MINE.

According to the Ministry of Emergencies, on the morning of 20 January a truck with chemicals overturned on a bridge along the road between Barskoon village and the mountainous Kumtor gold mine. About 1 500 kilograms of ammonium nitrate were spilled. The truck belonged to the Canadian Kumtor Operating Company which develops the mine. KOC workers collected all the spilled chemicals the same day. Emergency Ministry experts began to examine soil on the site and water of Barskoon River on 21 January.

5 February 2000 ECOLOGISTS CRITICIZE CANADIAN COMPANY.

Statements by representatives of several ecological and human rights organizations were released in Bishkek on 4 February. They call for an independent audit of the Canadian Kumtor Operating Company's (KOC) development of the Kumtor gold mine in Kyrgyzstan. They also call upon the World Bank's International Financial Corporation and the Canadian Cameco Corporation, owner of the KOC, to release an emergency response plan for the mine. According to them, the three chemical spills that happened at Kumtor in less than a two-year period is dangerous for the ecology of Kyrgyzstan.

5 April 2000 GOLD PRODUCTION IN TROUBLE.

Deputy Minister of Industry and Foreign Trade Arzymat Sulaimanov announced in Bishkek on 31 March that Kyrgyzstan produced 610 000 ounces of gold (about 17 tons) in 1999 and would produce 648 800 ounces this year. However, according to Sulaimanov, gold output in January 2000 was by 3 000 ounces less than planned.

18 September 2001 KUMTOR GOLD COMPANY PRODUCES 90 TONNES OF GOLD IN FIVE YEARS

The Kumtor Gold Company has produced around 89,2 tons of gold since it started developing the Kumtor deposit in 1996, PR manager at Kumtor Operating Company, which represents Canada in the venture, Tynara Shaldaeva, told Interfax.

21 September 2000 KUMTOR RESERVES MAY RUN OUT IN 2007

The reserves of the Kumtor gold deposit, the largest in Kyrgyzstan, could run out by 2007, if the Kumtor Gold Company keeps up its current rate of production. Over the past three years more gold is being produced at Kumtor than envisaged in the feasibility study, director of the Kyrgyz state geology and mineral resources agency, Sheyshenaly Murzagazyev, told Interfax. The company produced 16 tons of gold in 1997, 21,6 tons in 1998 and 22,5 tons in 1999, he said. It is in the state's interests for the deposit to work as long as predicted in the feasibility study, he said.

The mining sector was considered to have a great potential for boosting economic development in Kyrgyz Republic after the collapse of the Soviet Union. Both International Financial Institutions and the Kyrgyz Government assumed that gold exploration would bring economic benefits to the country's declining economy. However, the use of heavy machinery, ex-mining sites, tailings and toxic substances in the mining process are just some of the problems that a country has to face in calculating the total cost of a mining operation. The Kumtorgold mines showed again all the weaknesses and risks associated with the mining sector. This study points out the weaknesses of the environmental management system and vague monitoring of the company's performance. In Kyrgyz Republic, environmental policies of the IFIs have proven to be inefficient in the ongoing monitoring of lending projects.