

MINING SECTOR BACKGROUND BRIEF

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Mining Sector Background Brief

September 2006

Executive Summary

Key Opportunities

- Opportunities exist in tendering or negotiating for thousands of proven deposits that are currently not being exploited.
- Additional opportunities are found in the ongoing privatization programs of the Central Asian countries' mining sectors.
- Numerous opportunities exist for the exploration of new deposits in all of the CAREC countries.
- Business opportunities in the mining sector are available to equipment and technology suppliers, because much of the equipment in use in the mining sectors of the CAREC countries is old and worn out.
- Advanced environmental technology is also needed throughout the region as more of the countries continue to strengthen their environmental protection requirements for mining activities.

Major Impediments

- The legislative frameworks for mining are a major impediment to further investment in the sector. Nearly all of the countries in the region still need to bring their mining legislation up to international standards.
- The high taxes in most of the countries deter new investment and might even cause an exodus of existing mining firms if international commodity prices continue to fall. Mining royalties are also high in some of the countries, which will certainly hinder investments in mines that have resources that are more difficult and costly to extract.
- The state continues to play a major productive role in the mining sector in much of Central Asia while at the same time handing down regulations and implementing the legislation. This conflict of interest creates an unlevel playing field for private investors.
- A limited amount of the region's geological data is in electronic format. Most of what exists is still on paper and difficult to access.
- State-owned enterprises (SOEs) with control over key natural resources have been privatized only slowly or partially.
- The limited scope and poor condition of infrastructure in the CAREC region deters investment or requires additional costs to be borne by mining investors.

Possible Recommendations

- The legal and regulatory frameworks for mining need to be reformed and brought closer to international standards. Mongolia has made the most progress in this area and can serve as a useful model or reference point by which the other Central Asian countries can gauge themselves.
- There is a need to separate the regulatory and production roles of government in the mining sector. The governments should focus more on their regulatory functions and setting up a proper environment that enables business to flourish.
- The governments should give more attention to small-scale mines and not just large ones. Smaller mining projects often have significant local and regional economic impact.
- In light of the limited exploration of minerals conducted in Central Asia and the dearth of information compiled in electronic format, a recommendation is made to fund a

CAREC-wide “pre-competitive geoscience survey program” to establish the region as a first choice exploration destination in the globally competitive exploration industry.

I. THE MINING SECTOR IN CONTEXT

The Central Asia Regional Economic Cooperation (CAREC) community – comprising Afghanistan, Azerbaijan, Mongolia, Kazakhstan, Kyrgyz Republic, Tajikistan, Uzbekistan, and the western Chinese province of Xinjiang Uygur – has great potential to develop economic activity along ancient trade routes, but it must overcome several innate disadvantages and adjust to modern global business practices.

The CAREC countries cover a vast land area of over 7.3 million square kilometers and have a combined economy of around US\$123 billion. With a total population of 89 million people, the CAREC region's population density averages only 12.2 people per square kilometer. The gross domestic product (GDP) per capita in 2005 varied widely in the region but averaged over US\$1,140 (see Table 1). Central Asia's landlocked position and harsh terrain has not helped to facilitate modern trade and investment. Transport costs tend to be high into and out of the region because of crossing multiple land borders; shipping goods by sea is not a direct option. However, the CAREC countries can work together to lower the barriers and costs of moving goods and people across the region through formal cooperation programs. Once progress is made in intra-regional movements of resources, goods, and people across the region, Central Asia can maximize its position to exploit trade and investment opportunities with South Asia, East Asia, West Asia, and Europe.

Table 1. GDP and GDP Per Capita of the Silk Road Economies, 2005

Country/province	GDP (\$ billion)^a	GDP \$ per capita
Afghanistan	7.17	303.81
Azerbaijan	12.56	1,497.46
Kazakhstan	56.09	3,703.14
Kyrgyz Republic	2.44	473.38
Mongolia	1.88	736.27
Tajikistan	2.32	357.39
Uzbekistan	13.66	513.92
Xinjiang Uygur	26.57 ^b	1,355.6
Region	122.69	1,140.24

Sources: ^a World Bank Development Indicators Online; ^b converted from 2004 data in www.china.org.cn

The newly independent Central Asian countries, landlocked, generally with small markets, jigsaw puzzle-like borders, far from major external markets, and with fledgling governing institutions and policies to administer their territories, initially suffered severe economic contractions as they made their transition from command economies, but the region is gradually moving towards a more integrated and liberalized set of economies. The business/investment legal and regulatory frameworks of the CAREC countries are still evolving, public institutions are still adjusting to their new roles of providing services and good governance, and certain types of human resource skills such as modern management can be in short supply.

Yet brimming with natural resources such as petroleum, natural gas, hydro-energy, minerals, and agricultural goods, the region contains numerous potentially lucrative, untapped investment opportunities, not least in the mining sector. In fact, Central Asia is Asia's most dynamic up-and-coming economic growth area. In 2004, Central Asia had Asia's highest regional GDP growth rate of 10.4%, with East Asia in second place with only 7.8% growth.¹ Central Asia's achievement was boosted by the rapid growth of China's overall economy,

¹ ADB, Asian Development Outlook, Manila: ADB, 2005.

bountiful natural resources, progress in the transition from command to market-based economies, and growing intra and inter-regional linkages.

Table 2. Annual GDP Growth Rates (%)

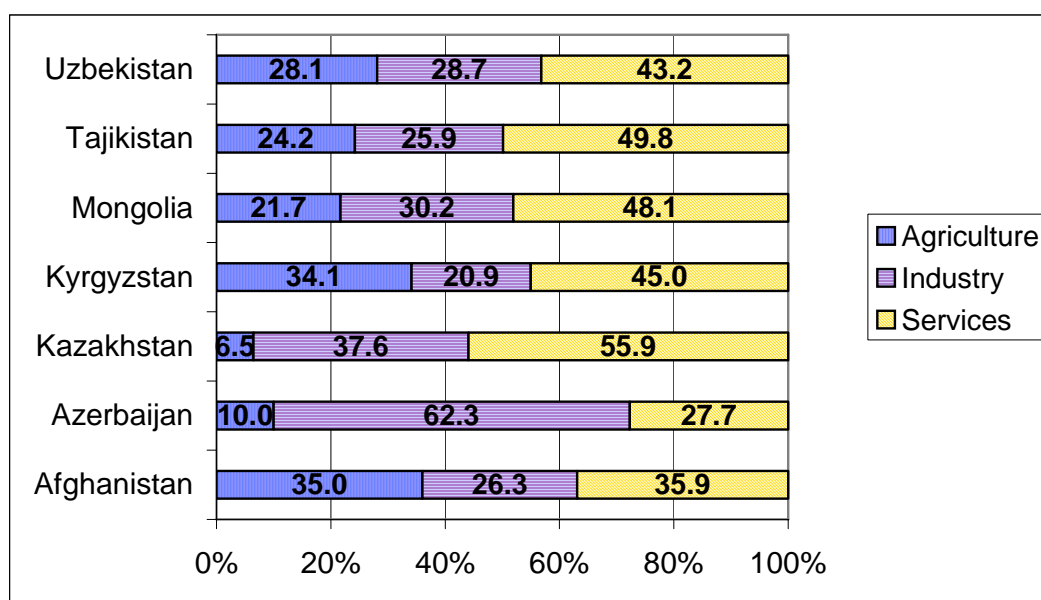
Country/province	2001	2002	2003	2004	2005
Afghanistan	n.a.	n.a.	15.7	8.0	13.8
Azerbaijan	9.9	10.6	11.2	10.2	26.2
Kazakhstan	13.5	9.8	9.3	9.4	9.4
Kyrgyz Rep.	5.3	-0.02	7.0	7.1	-0.6
Mongolia	1.0	4.0	5.6	10.7	6.2
Tajikistan	10.2	9.1	10.2	10.6	7.5
Uzbekistan	4.2	4.0	4.2	7.7	7.0
Xinjiang Uygur ^a	n.a.	n.a.	n.a.	11.1	n.a.

Note: n.a. = data not available

Sources: World Bank World Development Indicators Online; ^a www.china.org.cn

The economies in the CAREC countries are somewhat varied in terms of specific industries that they specialize in, but at a more aggregate level services are becoming more significant as a percentage of GDP throughout the region. Figures 1 and 2 show the GDP composition for each of the CAREC members.

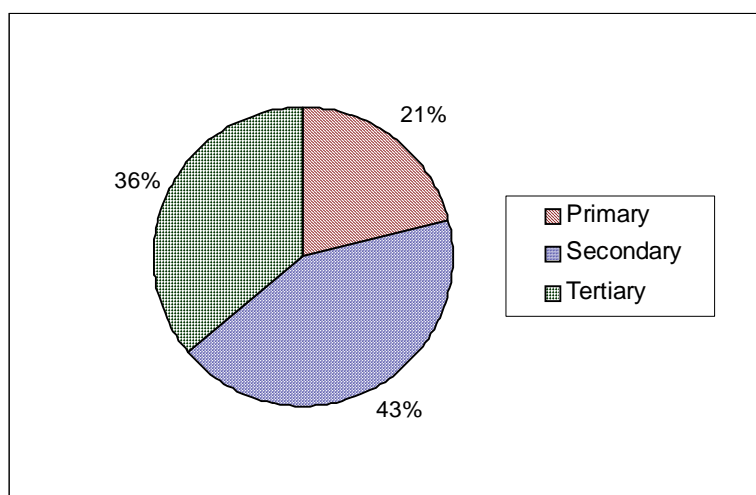
Figure 1. GDP Composition by Sector in Central Asian Countries, 2005



Note: Afghanistan data is for 2004.

Source: Based on data from ADB, *Key Indicators 2006* (Manila: ADB, 2006)

Figure 2. GDP Composition of Xinjiang Uygur Province, 2000



Note: Primary industries here refers to agriculture, forestry, fisheries, animal husbandry.

Source: Jin Fengjun and Qian Jinkai, *A Social and Economic Atlas of Western China* (China Intercontinental Press, 2003)

II. MINING SECTOR FEATURES AND ENDOWMENTS

Mining is a potentially lucrative sector for foreign investors in the CAREC region.² The variety and size of reserves of metallic and non-metallic minerals found in the region is a geologist's dream. The CAREC countries hold some of the world's largest shares of several minerals. In order to take full advantage of these assets, the governments have updated their respective mining laws over the years to attract greater levels of investment. Also, privatization continues to progress in mining, and the region's governments are making more use of joint ventures with foreign partners.

As can be expected, the mineral endowments are not spread evenly around the region. Mineral deposits are often to be found in geographically remote, often mountainous, areas so infrastructure issues are important. The region has some large mines that function on a world scale. These are of structural importance to the economies of those countries so endowed. However, many countries in the region have a large number of smaller mines that are extracting a wide range of minerals, and also most countries still have large exploration potential. Dating from the early Soviet era, the Kyrgyz Republic, Uzbekistan, Mongolia, Tajikistan, and Kazakhstan have long-established mining industries with the mapping and surveying resources associated with that.

Afghanistan's non-oil and natural gas mineral resources consist of base and precious metals, construction materials, gemstones, and coal. It is estimated that Afghanistan has 70 million tons of coal reserves. The Aynak deposit south of Kabul is a world-class copper resource with about 240 million tons that is only now being prepared for competitive tendering. Also of significance is the Hajigak iron deposit, which is one of the largest in the region with 110 million tons. Building and construction material deposits in Afghanistan consist mainly of limestone, marble, sand, gravel and clay. Afghanistan has ornamental

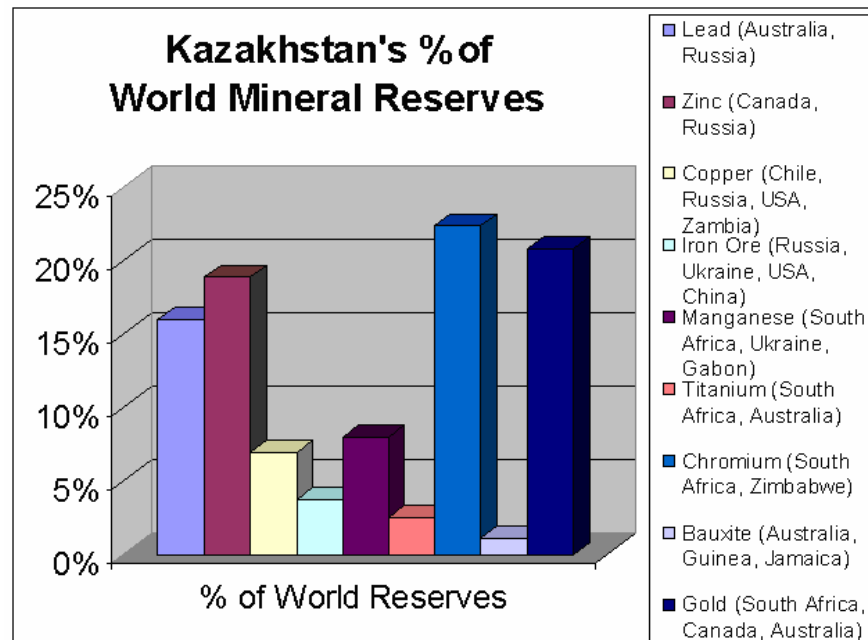
² For the purposes of this background brief, the mining sector excludes petroleum and natural gas, which are covered in the energy background brief.

stones such as lapis lazuli, onyx, and marble, while it also has quality gems that include emeralds, aquamarines, rubies, spinels, and tourmaline.

Azerbaijan has reserves of iron ore, gold, aluminum, zinc ore, copper, molybdenum ore, rock salt, gypsum, limestone, bitumen, clay, and marble. The country also has several deposits of pure copper, the largest of which is the Karadag, in western Azerbaijan, with reserves of about 320,000 tons.

Kazakhstan is well endowed with coal, chromium, copper, zinc, lead, bauxite, manganese, chrome, gold, iron ore, and titanium. It has the 7th largest copper reserves in the world, and 3rd largest uranium reserves in the world. Moreover, Kazakhstan holds one-quarter of the world's chromium and gold deposits, and over 15% of the lead and zinc reserves. Figure 3 shows the percentage shares of Kazakhstan's world mineral reserves. More than 85 chemical elements can be found among the metallic mineral resources of Kazakhstan.

Figure 3. Kazakhstan's Shares of World Mineral Reserves



Note: Countries listed in parentheses after each mineral are other world leaders.

Source: US-Kazakhstan Business Association, http://www.uskba.net/about_mining.htm

The Kyrgyz Republic is most noted for its gold reserves. It accounts for 40% of all industrial output in the country and 25% of GDP, and gold accounts for approximately one-third of all exports. There are over 30 commercially significant or near significant gold deposits, and hundreds more smaller deposits. The country has many other key minerals, which are listed in Table 3.

Table 3. Selected Kyrgyz Republic Mineral Resources

Mineral	Unit	Number of deposits	Confirmed reserves
Fuel and energy resources			
Coal	'000 tons	49	1,316,918
Precious metals			
Bed rock gold	tons	24	348
Placer gold	tons	24	5.9
Silver	tons	12	326
Base and rare metals			
Mercury	tons	4	40,335
Antimony	tons	7	265,444
Tin	tons	2	209,221
Tungsten	tons	2	124,943
Copper	tons	7	140,500
Lead	tons	3	27,400
Zinc	tons	2	17,600
Rare earth	tons	1	51,500
Molybdenum	tons	1	2,410
Non-ore raw materials			
Fluorspar	'000 tons	4	2,279
Gypsum	'000 tons	9	37,031
Rock salt	'000 tons	8	32,191
Construction materials			
Clay	'000 m3	65	262,078
Sand-gravel aggregate	'000 m3	86	474,322
Lime stones	'000 tons	8	51,217
Building stone	'000 m3	25	98,679
Sands	'000 m3	6	65,773

Source: Project Implementation Unit, Grant for Building Capacity in Governance and Revenue Streams Management in Natural Resources (IDF Grant No. TF053432), "Mining Industry as a Source of Economic Growth in Kyrgyzstan," 2005

Mining is Mongolia's principal economic activity, accounting for over 45% of the country's industrial output, over 50% of its foreign exchange earnings, and employing over 17,000 people. The country is rich in coal, copper, gold, uranium, iron ore, wolfram, molybdenum, phosphate and several others. There are over 6,000 deposits of about 80 minerals. Currently over 3,000 exploration and mining licenses have been issued, covering over 20% of Mongolia's land area. There are several copper deposits that are considered the largest in Asia and in the world, including Erdenet, Ouy Tolgoi and Shivee Tolgoi. Mongolia produces 4% of the world's copper and is the fifth largest producer of fluorspar in the world. There are over 60 known fluorite deposits and over 300 prospects located principally in the central and eastern parts of the country. Mongolia's potential reserves of coal are approximately 125 billion metric tons. Many of these reserves have been proven, but they remain undeveloped due to a lack of infrastructure. One example is the huge Tavantolgoi deposit in the Gobi Desert, which contains over 5,000 million metric tons of coking and steam coal, but lies more than 400 kilometers from the nearest railway. Also, there are 170 construction grade material deposits such as granite and marble. Mongolia has 0.5% of the world market share in gold production.

Tajikistan has an abundance of mineral wealth but its mountainous terrain has prevented thorough exploration of the country's full potential. Tajikistan's deposits of antimony, mercury, lead, zinc, silver and rock salt are among the largest in the Commonwealth of

Independent States. Tajikistan's Tadaz aluminum smelter is the world's third largest with a 517,000-ton capacity. Unsurprisingly aluminum is Tajikistan's largest commodity export, and non-ferrous metallurgy accounts for almost half of all industrial output. Mining activities occur for over 70 types of deposits including gold, silver, tungsten, coal, iron, lead, tin, and other minerals. Over 400 industrial deposits have been identified for metallic and non-metallic minerals. However, Tajikistan's distant location from world markets and major transport arteries will result in transport and infrastructure development costs being factors in mineral development feasibility.

Over 2,700 mineral deposits and a variety of 100 different natural resources have been discovered in Uzbekistan. Currently 940 mineral deposits are being exploited, including 165 oil, gas and condensate; 3 coal; 46 noble metals; 36 nonferrous, rare and reactive metals; 17 crude ore; 9 ore and chemical deposits; 21 semi-precious stones; and 495 building materials. Metals are Uzbekistan's second largest export, and the mining industry is particularly strong in gold, uranium, and coal. The country has estimated gold deposits of 5,000 tons in the Tien Shan Gold Belt, mainly in the Muruntau Mine in the Kyzylkum desert, which is the single largest gold deposit in the world, but gold ore is extracted from ten other mines as well. Uzbekistan is the world's fifth-largest producer of uranium, and all of its production is exported. National explored coal reserves amount to 1.9 billion tons. Coal is being produced at three deposits. One-third of the coal mined is the highly valued anthracite coal. In addition to these minerals, Uzbekistan has silver, tungsten, zinc, wolfram, lead, sulfuric acid, feldspar, cadmium, molybdenum concentrate, kaolin, and other precious metals.

Xinjiang Uygur Province is endowed with large deposits of coal, iron, and copper.

III. MINING SECTOR PERFORMANCE

The region's mining industry has suffered from the collapse of the Soviet Union as capital allocations and operating subsidies abruptly ceased. Key markets also evaporated, in some cases overnight. However, there is a global market in metals and other minerals, and the region's mining industries have adjusted to finding new buyers for their products. Processing plants are often old and in much need of modernization. Infrastructure has also proved hard to maintain without external support. Hence attracting foreign investment to the mining industry has been a high priority in all parts of Central Asia.

Production in Afghanistan's mining sector plummeted due to war and chronic neglect. Much of the recent production has occurred through unlicensed operations and smuggling, but otherwise the mineral resources remain intact. There are 11 main coal mines in the country. Overall coal production in the country is declining, and represents only 20-25% of levels reached during the 1970s. The current production is slightly more than half of the levels reached in the 1980s, when about 200,000 tons were produced at state-owned mines. This is because virtually all the equipment of the mines has worn out, reducing the operations to rudimentary manual mining activities.

World Bank estimates for Afghanistan's mining sector in 2004 are shown in Table 4.

Table 4. Production in Afghanistan's Mining Sector, 2004

Commodity	Volume	Value (\$ million)
Coal	140,000 tons	10
Quarries	2.7 million m ³	32
Sand	500,000 m ³	15
Gemstones	unknown	3

Source: World Bank, Transitional Islamic State of Afghanistan Mining as a Source of Growth, Report No. 28231-AF, March 2004.

In Azerbaijan, the mining sector accounts for 1% of GDP. Production figures of selected minerals for the past five years are shown in Table 5.

Table 5. Azerbaijan Selected Mineral Production, 2001-05

Commodity	2001	2002	2003	2004	2005
Gravel, road metal, pebble, flint ('000 tons)	n.a.	415.7	685.7	537.7	503
Construction sand ('000 tons)	n.a.	428.2	516.6	684.1	641.5
Salt (tons)	3,734	5,380	7,645	9,234	10,319
Iron ore ^a ('000 MT)	5	0	3	19	8

Sources: The State Statistical Committee of Azerbaijan Republic/Azerbaijan in Figures 2006/ http://www.azstat.org/publications/azfigures/2006/en/012.shtml#t12_6; ^a ADB Key Indicators 2006

In Kazakhstan, the mining sector accounts for 30% of export earnings and 16% of GDP. Like many of the Central Asian countries, production in the mining sector dropped sharply following independence. Overall output in the mining sector rose by 3.2% in 2005. From 2003-2005 base metals accounted for 18% of total exports.

Table 6. Metals Production in Kazakhstan, 2005

Mineral	'000 tons	% change, year on year
Lead	31	93.3
Copper	418.8	94.1
Zinc	356.9	112.7
Iron ore	19,445	95.8
Gold (kg)	9,788	102.2
Silver (kg)	812,069	114.8
Aluminum	721,900	102.8
Steel	4,451	82.9

Source: Embassy of the Republic of Kazakhstan in Great Britain and Northern Ireland, <http://www.kazakhstanembassy.org.uk/cgi-bin/index/68>

Mining in the Kyrgyz Republic has seen its share of GDP fluctuate since 2000 between 5.9 and 13.8%. The sector has become extremely significant to the country's exports since the late 1990s, now accounting for over 40% of all exports (see Table 7).

Table 7. Economic Contribution of Mining Industry in Kyrgyz Republic

Indicator	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Share in GDP, %	1.5	1.1	5.6	6.6	7.7	12.9	13.8	5.9	8.2	10.0
Share in exports, %	13.8	10.9	30.8	40.2	40.5	39.0	47.6	33.9	45.1	41.1

Source: Project Implementation Unit, Grant for Building Capacity in Governance and Revenue Streams Management in Natural Resources (IDF Grant No. TF053432), "Mining Industry as a Source of Economic Growth in Kyrgyzstan," 2005

Production figures in 2004 for key minerals are presented in Table 8.

Table 8. Kyrgyz Republic production of minerals in 2004

Minerals	Unit	Production volume
Coal	tons	495,000
Bed rock gold	kg	21,999
Placer gold	kg	12.6
Artisanal gold	kg	250
Silver	kg	11,700
Mercury	tons	459.2
Fluorspar	tons	3,038.1
Gypsum	tons	14,000
Cement materials	tons	87,000
Limestone	tons	445,050

Source: Project Implementation Unit, Grant for Building Capacity in Governance and Revenue Streams Management in Natural Resources (IDF Grant No. TF053432), "Mining Industry as a Source of Economic Growth in Kyrgyzstan," 2005

Mongolia's mining sector accounted for 18% of GDP in 2005, 65.5% of industrial output, and 75.8% of exports. As seen in Figures 4-7, gold and coal production have been rising, but fluorspar and molybdenum are on the decline. Copper production except for copper cathode has remained fairly steady since 2000 (see Table 9).

Figure 4. Mongolia Gold Production, 2000-05

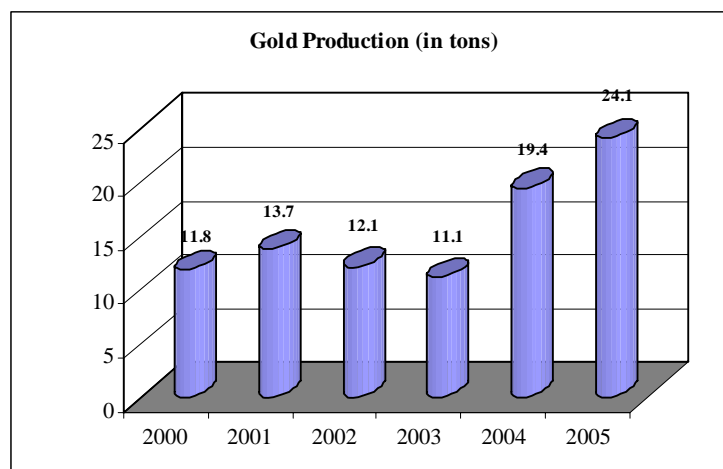


Figure 5. Mongolia Molybdenum Production, 2000-05

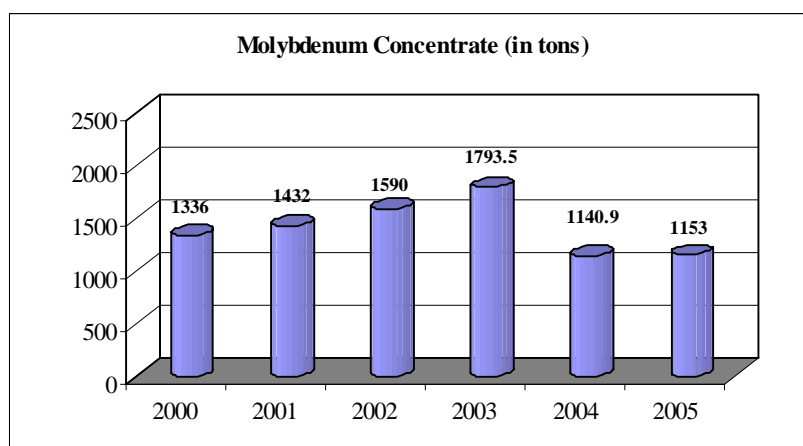


Figure 6. Mongolia Fluorspar Production, 2000-05

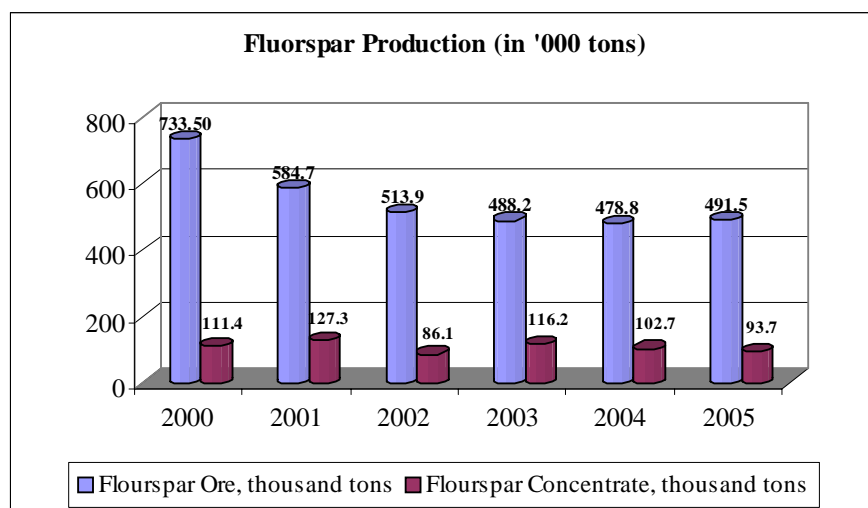


Figure 7. Mongolia Coal Production, 2000-05

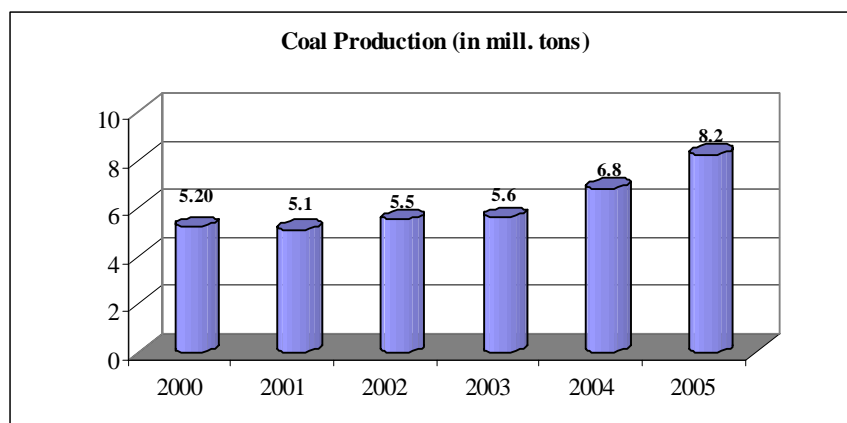


Table 9. Mongolia Mineral Production 2000-04

	2000	2001	2002	2003	2004
Copper, molybdenum ore (mill. ton)	23.1	25.3	25.7	27.0	27.2
Copper in concentration ('000 ton)	125.2	133.5	131.7	130.3	130.0
Copper cathode (tons)	641. 4	1,476.0	1,500.0	1,544.0	2,376.0
Tungsten concentration (68 %) (tons)	76.0	93.0	51.0	17.0	70.0

Source: Mineral Resources and Petroleum Authority of Mongolia,
<http://www.mrpam.gov.mn/index.php?cid=66&>

Despite a wealth of minerals, Tajikistan's mining sector contributes only a small share to GDP. The mountainous terrain and lack of infrastructure has made the known deposits difficult to access. Most of the mining operations are limited to a few gold mines. Exports of non-precious metals made rapid progress between 1998 and 2001 before slowing down in 2002 (see Table 10).

Table 10. Tajikistan's Exports of Non-precious Metals (tons)

1998	1999	2000	2001	2002	2003
17.5	240.2	312.8	436.6	399.9	401.3

Source: Jamshed Rahmonberdiev, Tajikistan: "Mining Opportunities and Investment Outlook," US and Foreign Commercial Service and US Department of State, 2005; original source cited: 2004 Annual Book: State Statistics Committee, Dushanbe.

Uzbekistan is the world's seventh-largest gold producer and holds the fourth-largest reserves in the world. Uzbekistan produces on average approximately 80 tons of gold annually. The mining of gold and other metals is Uzbekistan's second most important export item after cotton. Gold is also Uzbekistan's second most important foreign exchange earner at 22%. For other key minerals, about 2,200 tons of uranium, 80,000 tons of copper, 31,000 tons of zinc, 150,000 tons of silver, and 18,000 tons of lead, tungsten, bismuth and molybdenum are produced annually. Uzbekistan also produces about 4 metric tons of coal per year.

Uzbekistan has over \$1.3 billion of contracted foreign investment in the mining sector for 14 mining and prospecting projects, with \$265 million of this total already realized.

The region offers good opportunities for foreign investment, both in increasing yields from existing mines and establishing new ones on existing deposits, and in exploring for new deposits. However, the region does not presently offer a uniform investment environment, either in terms of regulatory framework and governance conditions or in terms of infrastructure, so investor expectations need to be tempered according to the specific circumstances surrounding a potential investment opportunity.

IV. LEGAL AND REGULATORY ENVIRONMENT

The Central Asian countries have made progress with numerous legal reforms since the early 1990s, such as new commercial legislation and tax codes, but the legislative and regulatory frameworks in these countries are still evolving and prone to change in response to new circumstances and attempts to create more favorable business conditions. Despite improved the business environment, the implementation and enforcement of the legal and regulatory frameworks and the governing institutions upholding them have not always kept pace. Bureaucratic red tape for businesses has been reduced and continues to be addressed through regional trade facilitation programs, bilateral agreements, and unilateral simplification of procedures, but obstacles and delays are still common and increase transaction costs for firms. Gradual improvements are being made in areas such as investor protection, corporate governance standards, and in company, securities, and bankruptcy laws, but as a whole Central Asia does not measure up to the standards in the new members of the European Union or the Baltic States.

Under Afghanistan's 2004 Constitution, minerals and other subterranean resources are the property of the State, and state-owned mining companies operate the mines. However, Afghanistan is currently in the process of revamping its regulatory framework to enable private sector-led investment in the mining sector, as none of the state-owned mining enterprises is operating on a commercial basis.

In Azerbaijan, between 1999-2001 a new Tax Code, Civil and Civil Procedure Codes, Customs Code, Labor Code, Law on Banks, and other vital elements of the business framework were promulgated. The 1992 Law on the Protection of Foreign Investments is still in effect, but a new draft Law on Investment Activities is under consideration as of earlier in 2006. Taxes have been gradually reduced. The value added tax (VAT) rate was reduced from 28% to 18%, and starting at the beginning of 2006 the corporate tax rate went down to 22%.

In the Kyrgyz Republic, the legal regime for mining contains several laws, such as the Mining Law of 1996, the Law on Precious Metals, and the Law on Agreements on Production Sharing (giving the state a share of the profits of the company in the form of the product). The legal and regulatory framework for mining entails strict state rights over natural resources. The state has the right to determine mineral resources production, the provision of raw materials, and standards for geological studies.

The Law on Subsoil Use (1992) codifies a licensing system that entails negotiations. The revised tax code for mining (under consideration by Parliament in 2005) left tax rates up to negotiations as well.

The state can impose standards on investors for extraction and processing of minerals in order to meet environmental standards and to reduce excessive loss of minerals. Export restrictions are in place on precious metals and hydrocarbons, while the National Bank is given priority rights to purchase precious metals. The export of precious metals requires a license, but the right to a license is not guaranteed when an investor makes the investment.

Royalty rates in the Kyrgyz Republic can be as high as 12% of sales on some minerals.

The State Agency for Geology and Mineral Resources is the regulatory agency for mining in the Kyrgyz Republic. It conducts geological studies of the subsoil; administers the state subsoil fund; seeks investors for mining and geological studies; ensures subsoil protection; and prepares proposals for mining and geology.

The Minerals Law of Mongolia, passed in 1997, has greatly improved the legal environment for investors by clearly defining legal rules, simplifying the licensing process and reducing royalty and exploration fees (and is considered by some in the industry to be one of the best laws of its kind in the world.) Foreign mining investors receive preferential tax treatment and there are no barriers to repatriation of wealth generated. Stability agreements are designed to provide a stable tax structure for foreign mining investors, and they offer potential mining investors an extra level of assurance and certainty in regard to their major capital investments. Tax exemptions and credits are also allowed for a period of 10 years (with a subsequent 50 percent tax relief for the following five years) for all mining and oil operations, except precious metals which are subject to a 7.5 percent (placer) and 2.5 percent (hard rock) royalty tax on production. Similar tax exemptions are allowed for essential infrastructure associated with mining operations. The agency responsible for implementing mining laws is the Mineral Resources Authority of Mongolia (MRAM).

Uzbekistan's mining sector is dominated by state-owned mining companies, and monopolies exist for the mining of some minerals. Private investment is allowed, however, and this has taken the form of joint ventures with the state. The State Committee for Geology and Mineral Resources (Goskomgeologia) oversees the mining industry in Uzbekistan. It also plays the lead role in conducting exploration for new mineral deposits.

At the beginning of 2004, the government of Uzbekistan increased royalty tax rates on from 2.8% to 5% for mined gold, from 7% to 8% for mined silver, and from 7.9% to 8.1% for mined copper. The tax rate is 1% for lead, zinc and molybdenum, and 8% for tungsten. The increases were made in line with the 2004 tax policy, which sought to increase the contribution of taxes to the country's total budget.

Xinjiang Uygur Province is also making adjustments in response to the new economic realities in the global marketplace. At the moment its business legal and regulatory framework is not as ready for the requirements of international business as compared to China's eastern provinces, but the local economic policies and regulations are in line with national economic reforms, Beijing's "Great Western Development Strategy" (2000), its "Go West" campaign, and other western development plans and policies.

Potential investors need to bear in mind that the business legal and regulatory frameworks in the CAREC region are rather young and have not fully broken away from the legacy of the past. Gaps exist in legislation, changes will occur in the legal and regulatory frameworks, gray areas persist in interpreting laws and regulations, and all of this is part of the region's re-emergence into the modern world economy. As with any transitional economy or region, the investment opportunities can be extremely rewarding, but they often come with some uncertainty about the legal underpinnings.

V. GOVERNMENT POLICIES AND STRATEGIES

The CAREC countries have recognized the crucial role that foreign investment plays in the mining sector, but investment flows are not as great as they should be. A few key changes, such as liberalizing the tax regime and creating a licensing system meeting international standards can have wide ranging beneficial effects.

In Afghanistan, the government's five-year strategy for mining focuses on restructuring the Ministry of Mining and building its capacity to function as a policy-maker and regulator, along with facilitating private sector involvement in mining. The strategy also aims to increase the efficiency, transparency, and competitiveness of the sector. With assistance from the World Bank, the government plans to introduce the "Extractive Industries Transparency Initiative," which is a set of principles intended to improve governance by openly publishing company

payments and government revenues from oil, gas, and mining. The government will also establish an International Advisory Council to assist in screening and evaluating proposed contracts for natural resource development.

Kazakhstan began privatizing its mining sector in 1994, and by mid-1998 nearly all of the state-owned mining companies were privatized. Current efforts in the mining sector focus on strengthening the legal code related to mining, improving the process by which exploration licenses are granted, and streamlining how environmental permits are obtained.

The government of Kazakhstan has prepared the *Strategy of Industrial and Innovation Development* for 2003-2015. The strategy intends to enable the economy to diversify from a raw material producer to a processing economy. It also focuses on developing science-related and high-tech industries and stimulating the application of scientific research to industry. The science and high-tech industries are will revolve around particular basic industries, notably oil and gas sector, mining, agricultural, and construction. In order to achieve the strategy's goals, a number of special institutions were established, such as the Investment Fund (with charter capital of US\$150 million), Innovation Fund (US\$20 million), and the Export and Investment Insurance Corporation (US\$50 million). These institutions will invest in high value-added productions and support scientific research and development.

The Tajikistan government aims to expand the mining sector, diversify mining practices, and develop existing mines. Measures to achieve these aims have mainly entailed simplifying procedures for obtaining exploration and mining permits.

The Uzbekistan government is implementing a program to update the country's coal sector by modernizing production facilities. The program is a response to the coal industry's decline since independence. Up until 2010, Uzbekistan plans to invest US\$254 million in coal. About 90% will be spent on upgrading the Angren mine to raise annual output to 7.8 million tons in 2010. The government aims to have a coal surplus for export in the future.

VI. IMPEDIMENTS TO INVESTMENTS AND CONDUCTING BUSINESS

The impediments to investments and conducting business in the mining industry in Central Asia generally pertain to seven main areas: mining legislation, mining taxation, state institutions, database management systems, land management systems, limited privatization, and infrastructure. Most countries with mining industries in the region have problems in many of these areas, which have to be overcome if they are to attract significant amounts of foreign direct investment into the sector.

A. Mining Legislation

The legislative frameworks for mining are a key impediment to further investment in the sector. Nearly all of the countries in the region still need to bring their mining legislation up to international standards. To give one example, in the Kyrgyz Republic foreign investment in mining has been lacking, and shortcomings in Kyrgyz legislation, in particular the complicated procedure of granting mineral rights based on negotiations, is usually cited as a major factor. Under market conditions this considerably complicates the functioning of mining companies. There needs to be reform of access and granting of mineral rights, so that licenses are granted on a "first come first served" basis, which is international standard.

The Law on Subsoil Use allows private ownership, but this contradicts the country's constitution that specifies only state/public ownership of subsoil. Specialized working laws – e.g., on subsoil, on coal, on agreements on production sharing – contradict one another. There are legislative obstacles to export the products of mining companies. An entirely new

Mining Code is required that will change existing specialized laws and bring greater clarity and consistency to the sector. The new code needs to envisage a reduction in unjustified interference of state authorities in subsoil users' work.

In Mongolia, where the Minerals Law is considered to be at international standards, inconsistencies among laws and their implementation are a problem, particularly in cases where recent changes are made to one law, but conflict with others. While certain facets of the legislation are concise, clear and competitive by world standards, there are numerous related laws (e.g., taxation, land use, and the environment) and some of these are ambiguous. For example, there are ten different laws that deal with the subject of taxation and at least eight laws referring to various aspects of the environment. Previously licenses were issued by the MRRM without local authority involvement. However, the Licensing Law that became effective in January 2002 changed this and now requires that the governors approve the granting of both exploration and mining licenses with respect to properties within their jurisdictions. This has increased the processing time from 20 to 50 days and has opened up more opportunities for corruption.

B. Mining Taxation

The tax regimes in some of the Central Asian countries pose an impediment to foreign investment. The high taxes in most of the countries deter new investment and might even cause an exodus of existing mining firms if international commodity prices continue to fall. Mining royalties are also high in some of the countries, which will certainly hinder investments in mines that have resources that are more difficult and costly to extract.

Other problems found in the region include the inability to amortize main assets over the life of the mine, as in the Kyrgyz Republic. In Mongolia, distortions are created by the tax structure with lower tax rates for smaller companies. This encourages numerous subsidiaries, complicates management structures, causes inefficiency, and reduces transparency.

Predictability is an important principle governing regulatory and tax frameworks for foreign investors. In Mongolia, tax must be paid in advance, which is not suitable for mineral companies because fluctuations in commodity prices mean that these firms are not always able to predict their operating conditions each year. Also, in May 2006 Mongolia approved a new "windfall tax" which would impose taxes starting at 68 percent when the price of gold reached \$500 an ounce and copper touched \$2,600 a metric ton. Since gold has been trading above that since December 2005 and while copper last traded at that level in September 2004 the new tax could be collected retrospectively. Clearly the new law has not been properly thought out and foreign companies mining gold and copper in the country have put investment plans on hold until the issue is resolved.

C. Inadequate Institutions

Government institutions in Central Asia, including ministries and agencies interfacing with the business community, are still generally oriented towards command and control practices of governing and administration as opposed to a more service orientation that would facilitate the conduct of business. This has several implications. First, it creates bureaucratic delays in processing of applications, licenses, permits, and other documentation required by investors. Second, Central Asian government institutions rarely collect data, process it in formats for commercial use, and make it widely available to the public. The private sector is perceived more as an opportunity for corruption or as something to be controlled as opposed to a partner in development.

More specifically related to the mining sector is the problem of conflicting roles within government institutions, namely that of regulator and producer. The state continues to play a major productive role in the mining sector in much of Central Asia while at the same time handing down regulations and implementing the legislation. This conflict of interest creates an unlevel playing field for private investors, who in some cases are explicitly disadvantaged with higher tax rates than state-owned mining companies. A clear separation of the roles of regulator and producer is needed throughout the region.

D. Database Management Systems

In many of the countries in the region there is a need to create earth and environmental science database management systems. A limited amount of the region's geological data is in electronic format. Most of what exists is still on paper and difficult to access. This limits the attractiveness of a country's mining sector to potential investors. Geological information needs to be systematized in electronic databases that are connected to global information systems (GIS). Also, the management of mining information needs to be more transparent. Information is often not publicly available.

E. Land Management Systems

Another impediment to foreign investment in mining in Central Asia is absence of or weak mining title registries and land management systems. Whilst there are some international mining companies that are prepared to undertake certain exploration or mining activities without full legal title, in many more it presents an insurmountable obstacle to them raising project finance.

F. Limited Privatization

Much of the privatization in the region in the 1990s entailed mass privatization of small enterprises, opening opportunities for individual entrepreneurs in trade and services. Currently, privatization in Central Asia is focusing more on the medium and large state-owned enterprises, such as infrastructure and public utilities. However, progress in privatizing the medium to larger SOEs has been slower owing to their higher levels of complexity but also because of a lack of political will. In particular, SOEs with control over key natural resources and which are still considered important sources of state revenue have been privatized only slowly or partially, and this includes mining enterprises.

G. Infrastructure

Central Asia is very large and far-flung, and mining operations are often conducted in geographically remote areas. Yet essential inputs must be delivered to the site and the commodity mined successfully must then be transported to its next point of processing or sale. The prevalence and condition of infrastructure is thus crucial to mining project feasibility. Given the generally limited scope and poor condition of infrastructure in the CAREC region, what part of new infrastructure cost needs to be born by the project investors and how much by the state?

The infrastructure networks across the region are in a state of flux. The Central Asian countries previously had a unified infrastructure system under the Soviet Union, which for the most part served its intended purposes well, and that was to move inputs around the specialized areas for processing and production and eventually supply Russia with its necessary resources and goods. However, following independence, these infrastructure networks fell into disrepair due largely to a lack of financing and proved less strategically oriented for the new realities of establishing a globally competitive export economy. Thus, while a foundation for infrastructure networks already exists throughout much of Central

Asia, the existing infrastructure is in need of rehabilitation, integration, and expansion. Due to government financing constraints across the region, investors essentially have to bear many of these costs in addition to developing the mineral deposit.

VII. INVESTMENT OPPORTUNITIES

Although foreign mining investors face many challenges in the region associated with the physical environment and infrastructure, as well as legal and regulatory frameworks and standards of governance, they cannot fail to be impressed by the region's mineral endowment and potential. Simply the level and variety of mineral resources make Central Asia a potentially lucrative investment location.

Opportunities clearly exist in tendering or negotiating for proven deposits that are currently not being exploited, and there are plenty of them in the region. For instance, in Uzbekistan, only about 45% of the proven deposits are currently being exploited, while in Mongolia many of the massive proven deposits of coal are idle due to the lack of infrastructure around some of the reserves.

In Tajikistan and the Kyrgyz Republic, opportunities exist for diversifying the mining industry, which currently focuses heavily on gold. Plenty of other minerals exist in these countries but are not being fully exploited.

Additional opportunities are found in the ongoing privatization programs of the Central Asian countries' mining sectors. Perhaps the biggest opportunity is in Afghanistan. Afghanistan's mining sector is preparing to privatize several of the SOEs and grant access to mineral rights to private investors, which essentially will open up an entirely new source of raw materials for mining companies. It was noted earlier that the government of Afghanistan is about to offer a world class copper mine for international tender. Other key opportunities in the country should follow soon.

Although thousands of mineral deposits have already been identified in Central Asia, these represent only a small amount of actual chartered territory. Numerous opportunities exist for the exploration of new deposits in all of the CAREC countries. Many of the known deposits in the region were discovered decades ago, and in light of new technology and geological surveying techniques, even previously surveyed areas may be worth re-visiting.

Business opportunities in the mining sector are also available to equipment and technology suppliers. Much of the equipment in use in the mining sectors of the CAREC countries is old and worn out, and thus new, more efficient technology is needed. This is particularly true among the SOEs involved in extracting minerals. Advanced environmental technology is also needed throughout the region as more of the countries continue to strengthen their environmental protection requirements for mining activities.

More business opportunities should be opening up as the Central Asia countries begin to move gradually towards higher value-added activities. Kazakhstan, for example, has an explicit strategy to develop high technology and high value industries around base industries such as mining. Policies and strategies such as these will generate more business opportunities if they are properly implemented and supported with programs for skills development and improvements in regulatory procedures for establishing and operating a business.

VIII. RECOMMENDATIONS

The mining sector in Central Asia presents vast opportunities for investors, but the realization of these opportunities will require improvements in the legal frameworks and administration/management of the sector by the Central Asian governments.

One of the more obvious recommendations is to reform the legal and regulatory frameworks for mining and bring them closer to international standards. Mongolia has made the most progress in this area and can serve as a useful model or reference point by which the others can gauge themselves. The current mining and supporting laws in the region are perhaps the second largest obstacle to attracting more foreign investment; second only to public sector control of mineral deposits.

Clearly there is a need to separate the regulatory and production roles of government in the mining sector. SOE dominance over key natural resources severely restricts private investment, which is typically far more efficient in extraction and processing. SOE participation in mining almost universally means that certain privileges will be bestowed upon the SOE, giving it an unfair advantage over private competitors. The legacy of the past command economy is still evident in Central Asia, and the governments are reluctant to give up their productive role even as they move towards a market economy. A major reason for this reluctance is the direct revenue generated by SOEs, both for the state and for the managers and employees. The loss of revenue to the state can be more than made up for through licenses, concessions, and taxes from the private sector, while skilled managers and employees should be able to find jobs in the private sector as more firms enter the sector. The governments should focus more on their regulatory functions and setting up a proper environment that enables business to flourish but at the same time ensure that adequate institutions and measures are in place to maintain a competitive playing field.

A third recommendation is for the governments to give more attention to small-scale mines and not just large ones. Governments need to facilitate the approval of smaller mining projects, which often have significant local and regional economic impact even though they do not capture the same attention as the world-class mines. The conditions and requirements for large-scale mining and small-scale mining are not the same, and this needs to be reflected even in the legal and regulatory framework. The governments must bear in mind that small to medium-size companies comprise a critical share of a country's total investment and employment.

Fourth, in light of the limited exploration of minerals conducted in Central Asia and the dearth of information compiled in electronic format, a recommendation is made to fund a major CAREC-wide "pre-competitive geoscience survey program" to stimulate Greenfield explorations. Such a program, possibly supported by the Asian Development Bank, the European Bank for Reconstruction and Development, and the World Bank, would send a clear and strong message that the CAREC members are dedicated to providing a high level of geoscientific information that would help the region be seen as a first choice exploration destination in the globally competitive exploration industry.