

Kazakhstan's mining industry

Steppe by Steppe

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SEPTEMBER 2015

Introduction

Kazakhstan's mining industry is set to grow to \$30 billion by 2017



Mining and processing facilities at Kazphosphate's deposit in Karatau basin. Photo courtesy of Kazphosphate.

Kazakhstan, the largest land-locked country in the world and mostly covered by flat steppe, has a bright future ahead. Although, the economy relies heavily on oil and gas and has been hit with lower oil prices, it still grew by 4.3% in 2014. However, this is expected to slow to 1.5% in 2015 with a recovery happening in 2016 and 2017 according to the World Bank. In 2002, Kazakhstan was the first CIS country to be labeled investment-grade by a major credit rating agency. Its GDP currently stands at about \$200 billion making it the largest in Central Asia. Kazakhstan pursues a multi vector foreign policy approach meaning that it aims to develop friendly relations with all of the world's powers. China accounts for 22.7% of exports with Russia and Germany at 8% each. On January 1, 2015 the Treaty on the Eurasian Economic Union (EAEU) came into force. The Eurasian Economic Union has an integrated single market of 176 million people and a GDP of over \$4 trillion. The union introduces the free movement of goods, capital, services and people and provides for common transport, agriculture and energy policies. Kazakhstan also finalized negotiations to join the World Trade Organization (WTO) and has become a full-fledged member on July 27, 2015. In 2017, its capital, Astana, will host the International Exposition, EXPO 2017, helping to further increase the country's image on the world stage.

Kazakhstan has long been overlooked as a major mining destination, but with vast untapped riches, it seems destined to become the next mining hotspot. The mining and metals sector of Kazakhstan already contributes around 20% to its GDP and represents about 19% of overall exports. It is the fourth largest copper producer with

40 million metric tons (mt) in proven reserves and has the world's ninth largest proven gold reserves and the world's largest proven zinc deposits. Almost all gold mining companies and properties have been fully privatized in Kazakhstan. The country is estimated to contain 30% of the world's reserves of chrome, 25% of manganese, 10% of iron ore, 10% of copper and 13% of lead and zinc. Kazakhstan is also the largest producer of uranium as of 2009, and, in 2013, was responsible for 38% of global production. To top all this, Kazakhstan's substantial mineral resources include the world's largest vanadium, bismuth and fluorine deposits, and the country is also richly endowed with chromium, bauxite, coal, phosphate, titanium and tungsten.

Despite these prodigious resources, Kazakhstan has seen little exploration in the last 30 years, with the last large-scale exploration happening in the 1950s. The Soviet era data is still available and, although of excellent quality, it is not always complete. The government has recognized that Kazakhstan, already harnessing its oil and gas resources, can become a major mining destination that could rival countries such as Canada, Australia and Russia; however, new exploration projects and substantial changes to its mining laws as well as the investment environment are needed.

Overall, the lack of new exploration is the biggest problem facing Kazakhstan's mining industry. One recent announcement, however, may encourage others to enter the country. Rio Tinto and Kazgeology verbalized plans to invest \$6 million in the exploration of copper porphyry ore in the Korgantas area in the Karaganda province. While other mining majors have left Kazakhstan after encountering significant challenges,

Rio Tinto has decided to stay and continues to conduct exploration activities. If they are successful and the Kazakh government commits to further improve the investment climate for the mining industry, more international players can be expected to enter and re-enter the market, which is Kazakhstan's ultimate goal.

The Kazakh government has allocated close to \$1 billion to aid exploration before 2019 and is looking to develop mining laws similar to those found in Australia and Canada. Additionally, Kazakh national companies will invest another \$3.3 billion in geological exploration in areas with good potential. Tau-Ken Samruk, which consolidates all of the state-owned mining holdings with the goal of increasing efficiency and investment in exploration, will be responsible for much of this expenditure. Partnering with Tau-Ken opens doors to dealing directly with the government which can certainly help speed up a new entrant's approval process.

Although Russia has been Kazakhstan's main partner historically, China is currently the main off-take market for its mining exports, even though the recent minor slowdown in China is causing some uncertainty among Kazakh companies. "In 2014, the share of export to China was about 80% of the total volume. Today, this share has decreased to 64% and we see that the situation has changed in China mainly due to internal politics and external factors. In this light, we are looking for new off-take markets," said Bakhtiyar Krykpyshev, general director of Kazakhmys Corp.

Kazakhstan's mining industry is set to grow in value, reaching \$30 billion by 2017 already taking the declining commodity prices into account. Coal, copper and gold are expected to be the main drivers of

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Kazakhmys' assets include 10 mines, 5 processing plants, 2 copper-smelting facilities and 2 coal mines

Kazakhmys manages production processes from extraction to final product

Last year, Kazakhmys produced 295,200 mt of copper cathode and an equivalent of 2,946 kg in gold ingots

Kazakhmys is one of the largest silver producers in the world and produced 329 mt of refined silver last year

Kazakhmys owns electrical power stations serving production facilities and neighbouring regions

Kazakhmys currently employs 45,000 people



KAZAKHMYS IS THE LEADER
IN MINING AND ORE PROCESSING



Bakhtiyar Krykpyshev, general director, Kazakhmys Corp.

growth. Kazakhstan will need substantial foreign investment to make this a reality. Not only capital, but also the technology and technical know-how will be necessary to bring about these developments.

Inadequate infrastructure is another reason why Kazakhstan lags behind other mining destinations. The country is well developed in its urban centers, but as many new deposits are located in remote areas, a comprehensive infrastructure plan must be put in place. Transport routes, both road and rail, will be needed as well as sources of power and water.

As Kazakhstan prepares to undertake changes to its legislation, new explorers are expected to enter the country and in combination with its natural riches, Kazakhstan is on the road to great prosperity.

Market Structure

The state of the mining industry in Kazakhstan can be characterized as a privatized version of previously state-owned enterprises from the Soviet era. The main companies on the market are Kazzinc, now 70% owned by Glencore and 30% by Samruk-Kazyna, Kazakhstan's sovereign wealth fund; Kazakhmys Corp.; KAZ minerals; ERG, previously ENRC; and Kazatomprom, the national uranium mining company. These players, although still man-power intensive in their operations, have been continuously investing in their production processes to increase efficiency, particularly in light of the ongoing slump in world commodity prices. They are also restructuring to increase performance. "In 2014, we witnessed a restructuring, as a result of which Kazakhmys Corp. was split into two companies - a public company KAZ Minerals and a private company Corp. Kazakhmys. The biggest change brought about by this split is the projects that each company is working on. KAZ Minerals is now working on several projects in the east, and are also develop-

ing the Bozshakol and Aktogay deposits in Kazakhstan and Bozymchak in Kyrgyzstan. Corp. Kazakhmys is working on projects in Zhezkazgan, Balkhash and Karaganda regions. Zhezkazgan area is the most important one for the company as it accounts for 75% of the total volume of production. Restructuring of the company has not changed the quality of the work environment and HR approach. The main goal of Corp. Kazakhmys now is the increasing of profitability of non-core project and working on new projects," said Bakhtiyar Krykpyshev, general director of Kazakhmys Corp.

Similarly, ERG has undergone its own reorganization. "In terms of internal processes, the company is now going through a transformation. We adopted a different approach to corporate governance; currently a lot of attention is allocated to tactical strategy and operations management. Apart from that, the company moved away from one, two and five year planning. There is instead a special program developed in ERG which allows for modelling various market situations and measure the impact of fluctuations in commodity prices on the entire company's operations," said Azamat Bektybayev, ERG's vice president for production.

Besides these large players, there are a number of other significant companies present in the mining sector in Kazakhstan. Some of these include international names such as ArcelorMittal, Cameco and Rio Tinto, which is currently in the exploration stages. In addition to international players, there are a number of local Kazakh companies that have an equally important role to play. Some names in this category include Bogatyr Coal, Kazakhaltyn and Kazphosphate. In addition to this, just as in other mining jurisdictions, there are a number of exploration companies present. These include a mix of both domestic and international players such as Kazax Minerals, Orsu Metals, Frontier Mining, Altay Polymetals, EuroChem, but also established international players looking to set up their presence in Kazakhstan such as Iluka Resources of Australia and Kores, a Korean government-owned entity.

On the services and equipment supply side, Kazakhstan is continuing to attract new companies seeing good future prospects in the country. Already long-present in Kazakhstan, companies like Kazgiprotvetmet, Iskander, Gornoe Buro and Antal are complimented by the interest of other EPCM service companies like TOMS of Russia who are keen to expand within Kazakhstan's mining regions such as Karaganda. Kazakh companies, especially the smaller

players, are still rather concerned with price than quality when it comes to the equipment they use. This causes a continued interest in equipment from Russia and China, but a recent trend has shown that Western equipment suppliers, given the right flexibility in the financing solutions they provide, can count on Kazakhstan to be a significant source of business for them. These providers include Atlas Copco, Borusan Makina, AK Machinery, Tamoz Machinery, Sandvik amongst others. As the interest grows in using more efficient equipment that requires less maintenance and with significantly longer durability, Kazakhstan presents an interesting opportunity for international equipment suppliers not yet present in this country.

Mono-cities and Interconnectedness with Russia

As previously mentioned, mining in Kazakhstan is still labor intensive, but due to the low cost of labor, this fact has been changing only slowly. One remnant of its Soviet past has been the once prosperous small towns that today require significant investment. Mining deposits around the world are often found in remote sites and communities of miners and their families subsequently spring up around these locations. In Kazakhstan, the government wants to focus its search for minerals around single-industry cities, so-called mono-cities. Towns like Arkalyk are becoming uninhabitable due to depleting reserves of bauxite and the possibility of companies like ERG leaving the area. Roughly 1 billion mt of iron ore was discovered north of Arkalyk, in a town called Yesil, and now the state mining company Tau-Ken Samruk is looking to develop the deposit and possibly bring the 1,500 bauxite miners to the new location over a period of eight years, the time when bauxite is supposed to run out. In 2012, President Nazarbayev instructed the government to develop similar programs for the development of mono-cities elsewhere. A total of 27 towns were selected with a combined population of more than 500,000. The largest ones to participate are Temirtau, Balkhash and Zhezkazgan in Karaganda region, Ekibastuz in Pavlodar region, Rudniy in Kostanai region, Zhanaozen in Mangistau region. These towns will receive significant support and investment to help their economies. "There are 60 mono-cities in Kazakhstan, and support and promotion of these cities, as well as further development of mining facilities, has been one of the top priorities for the government of the past couple of years. The development of these cities relates directly



Albert Rau, vice minister, Ministry of Investment and Development of the Republic of Kazakhstan.

to the development of a competitive mining industry," said Albert Rau, the vice minister of Investment and Development.

The case of Temirtau, a center of coal mining in the Karaganda region, is explored more in depth in the coal section.

It is not only the government that is responsible for helping local people, but private companies can make a significant impact on the communities where they operate. "People are our greatest asset, and we realize that we have to invest not just into training of our staff, but also in improving the quality of their lives. Unlike most of the mining projects in the country, we employ only local people. So we do not have to fly-in and fly-out workers to do basic jobs. Our workers come from the nearby Terekty village. We invested \$34.5 million in electrification of the village, where we have constructed and reconstructed multiple power-supply facilities. We constructed more than 6,000 m² of accommodation for our future employees, as well as sports facilities, a canteen, a swimming pool, etc. The reconstruction of the school and kindergarten is still in progress. Various study groups and activities were organized and musical and sports equipment was purchased for the children. The works on redevelopment of the streets of the Terekty village are being carried out as well. Additionally, a regular water supply was implemented; garbage containers and garbage removal trucks were purchased for the removal of household waste. More new jobs for residents of the village and the surrounding area are constantly being created," said Ruslan Yun, chairman of the supervisory board of Altay Polymetals.

Russia's presence in Kazakhstan should not come as a surprise to anybody as Kazakhstan and Russia are long term partners dating back many decades. Furthermore, Kazakhstan looks to benefit tremendously from being a part of the Eurasian Economic Union along with Rus-

sia, Belarus, and Armenia, a region with a population of 176 million. In fact, a lot of Russian companies, bitten by sanctions imposed on Russia over its actions in Ukraine, are looking to Kazakhstan as a good place to expand or move their operations entirely. On the other hand, low oil prices have greatly contributed to the deteriorating value of the Russian ruble making Russian goods cheaper and thus ready to flood the Kazakh market. This has increased competition for Kazakh firms struggling to meet lower prices from abroad. The weak Russian ruble has also had some welcome benefits for Kazakh companies. "A positive factor for us is the current situation with the Russian ruble, which has helped us to decrease our cost of transportation and thus exports to European markets became more profitable," said Krykpyshev of Kazakhmys Corp.

Russian companies like RJC Group have had a very positive experience in Kazakhstan and plan on further expanding here. "In 2011, RJC participated in Minex Central Asia, where we were approached by Kazakhmys Exploration who offered us to work with them at several deposits. This allowed us to enter the Kazakh market. In order to optimize our operations and focus on further development of the local market, we

opened a representative office - TOO RJC Karaganda. Geological exploration has a great potential and it opens many opportunities for local and international companies. RJC aims to carve its niche in the sphere of servicing geological exploration projects in Kazakhstan," said Andrey Kharlashin, director of geology at RJC Group.

Kazakhstan's Soviet legacy in terms of mono-cities and its interconnectedness with Russia present a number of challenges for the advancing nation, which if exploited smartly can be turned into advantages.

Environmental Standards in Kazakhstan

"Subsoil users in Kazakhstan are subject to extensive environmental protection regulation. The Ministry of Environmental Protection of the Republic of Kazakhstan (MEP) is the principal State authority in the sphere of environmental protection. Among other things, it issues environmental permits and licenses and establishes the limits for environmental emissions. Individuals and legal entities that use the environment (e.g., subsoil users) are subject to State environmental control. MEP carries out such control by organizing State environmental inspections. Various aspects of business activities are subject to environmental requirements. For

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example, a positive State environmental expert evaluation must be obtained in relation to projects involving an environmental impact before such projects may begin. Enterprises engaged in environmentally hazardous business activities are subject to the mandatory requirement of obtaining environmental insurance covering potential damage as a result of environmental contamination," according to Baker & McKenzie.

Despite having detailed laws related to environmental protection, these standards are still behind other international mining jurisdictions. Kazakhstan's environmental laws are often poorly enforced and companies in the past have often been more focused on increasing profits rather than sustainable development. However, this trend is changing and companies, especially those with foreign shareholders, are becoming concerned with environmental protection and are often the champions of applying policies similar to their countries of origin; this is in turn spearheading efforts by the government to follow suit and get more serious about the environment. "We are not using any dump trucks, but instead our conveyor belts can move just like dump-trucks, which also reduces our capital costs. Metso has designed and produced the largest crushing unit (LT-200) specifically for Koktashal. This installation is safe for the environment and reduces carriage by truck at the open pit mine. The structures weigh about 800 mt, but nevertheless can be easily moved around the mine," said Yun, chairman of the supervisory board of Altay Polymetals.

Technological improvements introduced in a number of mines across Kazakhstan can add up to have a significant positive impact on the environment compared to using older technologies. These kinds of initiatives can lead to improved environmental standards across all industries in Kazakhstan.

Overhauling Kazakhstan's Subsoil Regulations

Kazakhstan's subsoil regulations continue to be a major impediment for the country's mining industry to grow and attract foreign investment. Although minor changes have already been implemented, the current regulations are still cumbersome and need upgrading. In 2014, lawmakers put forth an ambitious plan to bring Kazakhstan's subsoil regulations into line with other international mining jurisdictions. In consultation with law firms operating in Kazakhstan, this article will outline both the recent and proposed changes to the country's subsoil regulations.

In 2014, Kazakhstan's President Nazarbayev launched a program called "Ka-

zakhstan's Way – 2050: One Goal, One Interest, One Future" in which he described the mining sector as vital to the country's economy but lacking in foreign investment. Michael Wilson & Partners, a law firm operating in Kazakhstan, reports that a Joint Committee of the relevant Ministries prepared a draft Concept of the new Subsoil Use Code later that year. The expected timeline is: "the Concept will be approved by the Government of Kazakhstan by mid-2015, and the draft Subsoil Use Code (the "Code") itself will then be prepared and referred to the Parliament of Kazakhstan for further approval by 2016, so that the Code is in place and takes effect during 2016," according to Michael Wilson & Partners.

Some amendments to the existing subsoil laws were made in 2014, according to Michael Wilson & Partners: "The existing Law on Subsoil and Subsoil Use was amended in 2014, with effect from 2015 to implement new and to amend existing definitions, namely (but not limited to) mostly unexplored territories, and subsoil use rights associated therewith; auction procedures; sample subsoil use contracts; technological mineral formations and strategic resources. For example, mostly unexplored territories are defined as territories which have preliminarily valued forecast resources. The exploration rights for such territories are granted in a simplified manner. Auction regulations were introduced as simplified procedures to choose an investor with the highest signing bonus proposal provided that the same met all auction prequalifying obligations."

Some of the major changes have already been incorporated into the Concept, which include: "First Come, First Served" basis to apply for the right to explore, develop and mine currently vacant and unallocated territory (mostly unexplored); economic incentives: land and property tax exemption, the application of international accounting standards for tax purposes, no signing and commercial discovery bonuses, royalty exemptions, etc.; open access to all available geological data and information," according to Michael Wilson & Partners.

Most of the majors, like BHP Billiton and Vale, have come and gone, but Kazakhstan is working hard to lure them back along with smaller players such as Iluka Resources that have only recently ventured into Kazakhstan. "The development of a regulatory regime that is stable, transparent, and takes full advantage of the experience and expertise of companies with global reach, such as Iluka, represents an important step in attracting the type of foreign investment that the President and Prime Minister have pri-

oritized for Kazakhstan. Achieving the right policy and regulatory settings will help ensure the long term development of Kazakhstan's highly prospective minerals sector and Iluka looks forward to working with the government as it undertakes reform of the mining code," said Alison Morley, country manager of Iluka Resources in Kazakhstan.

There are, indeed, great expectations for the new Code, as highlighted by Albert Rau, the vice minister of Investment and Development: "The main new feature of the law is the simplified process of granting rights, based on the Australian method, for unexplored pieces of land (not more than two square kilometers per one block). We expect to see the first contracts based on this scheme in the second and third quarter of 2015 and to auction at least 100 areas in total this year. The law will also simplify access to geological data. We managed to dramatically decrease the time required to obtain such information from 240 days to one day. Moreover, we simplified the procedure for granting exploration contracts and small deposits to remove extra administrative barriers. Overall, the new law will increase transparency in decision-making and remove administrative barriers on all levels. These changes should boost the development of junior companies and simplify procedures for all mining companies."

However, the new Code alone will not act as a magic wand to reawaken Kazakhstan's mining sector. "Arguably, legal acts alone cannot produce a surge of exploration activity in Kazakhstan. Global commodity prices and new investments are major contributors towards stimulating the mining industry. If commodity prices are depressed and capital expenditures for a new mining projects are high, there will be little movement in the market. Harmonization of Kazakhstan's Mining Code will be of great benefit when there is an upturn in the mining market. When the upturn occurs, we anticipate investor interest predominantly from the Asian or Gulf regions," said Umid Aripdjanov, partner at Colibri Law. "A further change will be the creation of a financial and arbitration center in Astana. It is planned to invite 500 foreign English-speaking judges/arbitrators with English law governing the arbitration, giving investors more confidence to file a claim," added Aripdjanov.

As these changes are taking place, anticipation and great expectations are building among investors and, indeed, when the upturn in the global mining industry occurs, Kazakhstan should be well positioned to deal with higher demand for its mineral wealth.



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Key Minerals, Companies and Projects

Kazakhstan is in the top 10 countries for several major minerals



The recently acquired Voskhod Chrome has been breaking performance records in output and efficiency. Photo courtesy of Yildirim Group.

Kazakhstan has vast reserves of a wide range of minerals and metals. Virtually all elements of the periodic table are present in a country with a relatively small population. This section showcases some of them in greater detail as well as highlights new and exciting projects currently being undertaken.

Uranium

“Kazakhstan contains 12% of the world’s uranium resources and an expanding mining sector, producing about 22,830 mt in 2014, and planning for further increase before 2018. In 2009, it became the world’s leading uranium producer, with almost 28% of world production, then 33% in 2010, 36% in 2011, 36.5% in 2012, and 38% in 2013. Kazakhstan has a major plant making nuclear fuel pellets and aims eventually to sell value-added fuel rather than just uranium. Of its 17 mine projects, five are wholly owned by Kazatomprom and 12 are joint ventures with foreign equity holders, and some of these are producing under nominal capacity. In 2013, 9,402 mt uranium was attributable to Kazatomprom itself – 16% of world production, putting it slightly ahead of Cameco, Areva and ARMZ-Uranium One,” according to the World Nuclear Association.

Kazakhstan currently has no operational nuclear reactors after their only one in Aktau was decommissioned in 2001; however, the government plans to begin construction of two new plants in 2018. Besides Russia, Kazakhstan is also cooperating with the likes of Japan, China, India, and South Korea. China in particular presents an important export market as 55% of Kazakh uranium was exported there in 2014. International players, including Areva, Cameco, Toshiba and Uranium One, are also present and all are required to collaborate with Kazatomprom,

Kazakhstan’s national nuclear company, as Kazakhstan is very keen to increase its technological base. One major player in the uranium business in Kazakhstan is Betpak Dala (South Inkai, Akdala mines), a joint venture of Kazatomprom and Uranium One, which owns 70%. Betpak Dala extracted 13% of the total amount of uranium mined in Kazakhstan in 2014. “It was planned to produce 1,000 mt/y of uranium at the Akdala mine and 2,000 mt/y of uranium at the South Inkay mine. Since 2012, JV Betpak Dala LLP reached design capacity production and began to extract 3,000 mt/y of uranium. The Akdala mine was the first mine in the world which extracted in one year 1,000 mt of uranium by method of drill hole in-situ leach (ISL),” said Aleksander Uvarov, general director of Betpak Dala.

Overall, Kazakhstan is certainly looking to benefit from nuclear power plant construction happening globally and can further increase its market share as the number one producer of uranium.

Gold

Kazakhstan’s proven gold reserves are 2,300 mt as of last year. There are 325 gold deposits, of which 94 are in operation and 117 in exploration. Most reserves are found in Eastern Kazakhstan, Akmola, Karaganda, and Kostanai regions. The main companies operating in gold extraction are Kazzinc, Kazakhmys, Polymetal, Kazakhaltyn, Varvarinskoye, Altyntalmas Gold, Metal Trading and Maikainzoloto. Projected reserves are estimated as high as 9,000 mt. Already explored deposits in central and eastern Kazakhstan will require deeper drilling while there are potential deposits to be found in northern and southern regions according to Dr. Elvira Dzhanureyeva, head

of service for analysis of the mineral raw material sector and transparency of extractive industries of the Kazgeoinform National Center for Geological Information of the Ministry of Investment and Development.

There were 50.4 mt of gold produced in Kazakhstan in 2014. Approximately \$755.5 million was invested in gold mining last year of which \$35.6 million went towards exploration. Kazzinc represented the lion’s share of this with 33%, Altyntalmas with 15% and Kazakhaltyn and Vavarinskoye both at 11%. Projections for 2015 were expected to reach \$846.9 million of which \$40 million would go towards geological exploration. The Bozshakol mine currently being developed and scheduled to start operations in the last quarter of this year should also boost gold production as besides large deposits of copper, it also contains highly valuable by-products of gold. Gold is now becoming an important aspect for companies previously focused on other minerals.

Copper

Kazakhstan is currently behind other copper extracting countries like Chile, Australia, Peru and China in terms of exploring their reserves. On-balance, proven reserves last year were 39 million mt, mostly concentrated in East Kazakhstan and Karaganda. Kazakhmys controls about 72% of contracted copper reserves according to Dr. Dzhanureyeva. As mentioned above, KAZ Minerals is currently developing its Bozshakol copper mine, which is the largest single mine development in the CIS region by both scope and volume of production. The mine will nearly double KAZ Minerals’ current production levels and has a projected lifespan of 40 years. KAZ Mineral’s second proj-

ect, Aktogay, is also on track to begin production of its first oxide copper cathode in the fourth quarter of 2015.

Despite record low copper prices, companies about to go into production feel confident that their operations will still be profitable. "The unique technology used at Koktashal allows us to maintain profitability even at current copper prices. For the first time in the history of the mining industry not only in the CIS, but also in the world, a 100% cyclic-flow line system will be used in the development of the deposit by open-cut mining. There are several features that make Koktashal unique not just in Kazakhstan, but in the whole of the CIS region. First of all it is the low production cost compared to conventional methods, which allows us to save up to 50% on the cost of production," said Yun, chairman of the supervisory board of Altay Polymetals.

New entrants to the market are not yet in the production stage, but are actively involved in copper exploration. One such example, as previously mentioned, is Rio Tinto. Overall, \$1.15 billion is the forecast for 2015 in terms of investment in copper production, of which \$16.9 million will go towards exploration.

Tin

Tin is currently in short supply as the electronics industry in Japan and China consumes roughly 50% of the world tin supply. Consumption has been beating production for the past several years, as old mines close and reserves are becoming depleted. The latest numbers by the US Geological Survey estimate the world tin supply to be 4.8 million mt, which is a decline in reserves since 1990. This has pushed up the price of tin and new deposits and production capacities are badly needed.

One major development in Kazakhstan's and, for that matter, the world's tin market has been a company that is a shining example of how local businesses have successfully navigated Kazakhstan's business landscape and brought about thriving projects. Syrymbet, the exploration and soon-to-be production company of the Syrymbet tin deposit in northern Kazakhstan, controls the largest undeveloped tin deposits in the world. Tengiz Bolturuk, CEO of Syrymbet said: "In 2012, I was brought in to properly assess the resource, which we confirmed by infill drilling to be one of the largest undeveloped tin deposit in the world. We invested heavily and subcontracted to reputable companies in the mining world such as AMEC, AMC, SGS, ALS and Golder Associates. We will know the fixed numbers in mid-summer when the Pre-Feasibility Study is completed. At that point, we will know the exact amount of tin, copper, fluoride, and tungsten that are present and recoverable, and we will know the total amount and quality of each product we will be able to produce. The updated Joint Ore Reserves Committee (JORC) report will soon be released, and the mine design will be done by AMC. From there we will select the best economically and technically viable option and move on to the feasibility study, which will begin by the end of September 2015 and should be completed by February 2016. We hope to start preliminary mine stripping and plant construction in the middle of next year, and production by the end of 2017."

Syrymbet going into production will signify a much needed relief to the short supply of tin on the world markets.

Coal

Kazakhstan has enormous coal reserves with 37.5 billion mt of recoverable coal, the biggest in Central Asia and representing 3.8% of the world total. The country has more than 400 coal deposits of which a third are classified as brown coal or lignite deposits. Karaganda has traditionally been Kazakhstan's main coal produc-



INTERESTED IN PROSPERITY?



Syrymbet is the only tin polymetallic in Kazakhstan and largest not-yet-developed tin polymetallic deposit in the world. In addition to tin being a major element, 2015 JORC Mineral Resource Estimate Report also included copper, zinc, tungsten, fluorine and others. In addition to these elements Syrymbet ore contains over 70 other minerals.

The Syrymbet company plans to start onsite construction of metallurgical plant to produce tin and other associated elements once the Definitive Feasibility Study is completed in early 2016.



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Tengiz Bolturuk, CEO, Syrymbet.

ing region and to the northeast of it are the Ekibastuz coalfields, some of the largest in Kazakhstan. The other locations include Maykubinsky as well as Kushokinskoe, Borlinskoe, Shubarkol, Karazhyrinskoe fields and several other smaller deposits. Russia is the largest export market, followed by Ukraine. However, since independence, Kazakhstan's coal production has decreased by 35%. Some of the causes of this can be attributed to a poor safety record, but the more important issue is the lack of foreign investment in this sector.

Kazakhstan's largest coal producer, Bogatyr Coal, owned by the American company Access Industries Inc., produces about 35% of Kazakhstan's total coal output and develops northern Kazakhstan's Bogatyr and Severny coal fields. It is also Kazakhstan's largest exporter to Russia. This coal is mostly used in power plants in southern Russia. Production of coal in Kazakhstan is expected to reach 150 million mt/y by 2020 and Karaganda will play a crucial role. "Unfortunately, mining facilities do not operate at 100% capacity, which also means that we will be able to step up our production if necessary," said Nurmukhambet Abdibekov, governor of Karaganda region.

One of the biggest investors in Temirtau, a small mining town in Karaganda is ArcelorMittal and the company has a great interest in further development of this industry. "ArcelorMittal Temirtau initiated an extensive program to modernize its production processes and increase efficiency. Since the entire economy of Temirtau depends on this facility, this has a great positive effect on the well-being of the town and the region. In 2015, the company finalized reconstruction of the third blast furnace, and now the power of the furnace is 20% more than what it used to be before, which will allow the company to produce up to six million mt of steel a year," added Abdibekov.



Nurmukhambet Abdibekov, akim (governor), Karaganda Region.

Kazakhstan has enormous coal reserves and these can be used for both export and to power up the country's industrial base.

Phosphates

Kazakhstan is in the top 10 of countries with significant phosphate reserves. Kazakhstan's long history with phosphates dates back to the Soviet times when it was the center of production for the region. The main producer is Kazphosphate with an annual capacity of 120,000 mt/y. Most of the deposits are in the Karatau basin. Kazakh companies are also interested in making more value-added products and are slowly moving away from the dig-and-ship mentality. "Kazphosphate is looking to upgrade its processing capabilities in order to create a range of value-added products, which will allow us to export them to new markets," said Mukash Iskandirov, general director of Kazphosphate.

In 2013 Russia's EuroChem received a mining license to develop phosphate deposits in Zhambyl region which may affect Kazphosphate's dominant position in the market. "There are 45 explored phosphate deposits in the south of Kazakhstan; Kazphosphate is working on six of these deposits. EuroChem has a license for the development of two deposits. We are happy to see new players coming to Kazakhstan, because we understand that they improve the overall economic wealth of the country. We think that in the near future we will see more players from Russia and other countries entering the market," added Iskandirov.

EuroChem has ambitious plans in Kazakhstan. "We are developing mining of phosphate ores and we will continue the development and construction of the deposit until 2018 when we will reach our production capacity of 640,000 mt/y. Current development of the base for raw material will allow us to do so. We want to finish the first phase of the project by the end of 2015



Dmitry Valishev, general director, EuroChem-Karatau.

and begin production of phosphate rock. We are planning to finalise construction of the chemical plant by 2018 and begin production in 2019," said Dmitry Valishev, general director of EuroChem-Karatau.

Kazakhstan's considerable reserves of phosphate are attracting new investors leading to diversification of its market players.

Chromium and Manganese

Kazakhstan holds the world's second largest reserves of chromium behind South Africa and also has the third largest reserves of manganese. ERG is the main player in this market in Kazakhstan. "Kazchrome represents the ferroalloys division which comprises four mining objects and two metallurgic plants. Chrome ore extraction is carried out in '10 years of Kazakhstan's independence,' Molodezhnaya and Yuzhny mines. Manganese ore is extracted in Tur mine. At Aktobe ferroalloys plant we completed construction of the fourth smelting shop. The cost of construction is estimated to have been about \$850 million," said Azamat Bektybayev, ERG's vice president for production.

The 2013 acquisition of Voskhod Chrome, a chrome mine and processing plant in northwestern Kazakhstan, by Istanbul based Yildirim Group from Russian mining giant Mechel represents a significant development. "Voskhod Chrome's integration process into YILMADEN Holding was flawlessly executed, and the results have progressively improved almost every single month, with record-breaking performance in mine output, plant efficiency, machine uptime and finally sellable product output. Intense collaboration was achieved between Yildirim's mining team and the already existing mechanized mining contractor at Voskhod," said Alp Malazgirt, CEO of YILMADEN Holding. Yildirim's investment signifies an increased interest from investors outside the CIS and this trend is likely set to continue.

Exploration

Still underexplored, but slowly attracting important international players



Equipment used in the conduct of airborne geophysical surveys. Photo courtesy of KazGeotech.

The biggest problem that remains by far, as mentioned in the introduction, is the lack of exploration happening in Kazakhstan. One of the reasons for this was the imposed moratorium on new exploration in 2008 to prevent speculation with Kazakhstan's mineral properties. This has since been lifted, but new exploration remains weak.

As most of the current reserves are becoming depleted, Kazakhstan needs to urgently increase its exploration activity. One of the key developments in recent years has been the creation of Kazgeology, a state-owned company responsible for geological exploration in Kazakhstan. "Geological exploration remains one of the least developed sectors in Kazakhstan. The government and industry accept the fact that Kazakhstan is an under explored country. In the past 20 years, companies have been relying on Soviet geological information, which regardless of its high quality, is not enough to truly open the potential of the country. After the collapse of the Soviet Union, there was no exploration in the country, as companies were more interested in developing other industries and technologies. Luckily, now the situation has changed. First of all, the government created 'Kazgeology' - an organization responsible for geological exploration in the country. Secondly, a special state organization was created, and now the government also spends money on geological exploration. All of these changes make it easier for private enterprises to take part in geological exploration, and, at the same time, there is a realization that now these companies have the rights to those deposits that they are exploring," explained Nikolay Radostovets, chairman of the Association of Mining and Metallurgical Enterprises.

As mentioned before, one major company conducting exploration activities is Rio Tinto. "Our global strategy is to build local partnerships; this supports development of the local industry and we benefit from local knowledge. In some jurisdictions local joint ventures are mandatory by government legislation, a scenario with which we are comfortable. Our objective in Kazakhstan is to run a profitable mine that will give healthy investor return. In 2010, we commenced negotiations with Tau-Ken Samruk; after lengthy negotiations, in 2013 we stepped back from the opportunity as no viable commercial arrangement could be reached. After consultation with government officials, it was suggested we work with Kazgeology as their mandate mirrored our aspirations for the Kazakhstan project. Negotiations with Kazgeology have been concluded and an agreement signed for an exploration project in the Korgantas area, Karaganda province, central Kazakhstan. Discussions are on-going with Kazgeology for a further project in central Kazakhstan - Balkhash-Saryshagan. Once projects are agreed, we will be in a



Gary Hodgkinson, director Central Asia district, Rio Tinto.

position to commence grass-roots exploration," said Gary Hodgkinson, director of Central Asia district at Rio Tinto.

Iluka Resources, a Perth-based company, in possession of the largest global market share of zircon production and a major producer of high grade titanium dioxide, has also set its sights on Kazakhstan. Having only recently established a presence in the country, Iluka's new country manager, Alison Morley, has said: "Iluka has been engaging with Kazgeology since its very first visits to Kazakhstan in March 2013 and the relationship has developed substantially since that time. Kazakhstan is a new jurisdiction for Iluka, different from those where it has traditionally operated, so it is important that the company draw on credible, well-regarded sources of in-country expertise. Iluka has signed a number of memorandums of understanding with Kazgeology with the aim of benefitting from its considerable local knowledge and access to geological data. This relationship will also provide Kazgeology the opportunity to observe and learn from Iluka's highly experienced exploration and mining professionals in the field. In addition to Kazgeology, Iluka is expecting to sign agreements with Kazakhstan government agencies to facilitate on-ground exploration later this year."

In addition to Rio Tinto and Iluka Resources, Kores or Korea Resources Corp., a Korean government-owned company is another player interested in Kazakhstan's potential. The low level of exploration in Kazakhstan is certainly an ongoing issue, but as the government is keen on attracting foreign investors, the country may have a very different industry makeup 10 years down the road in terms of juniors and other exploration companies.



JOIN US REALIZING KHANTAU REGION'S POTENTIAL

Altay Polymetals is a limited liability company engaged in gold exploration in Khantau district of Zhambyl region. The exploration area is 276 sq. km. and is located 120 km from the town of Shu.

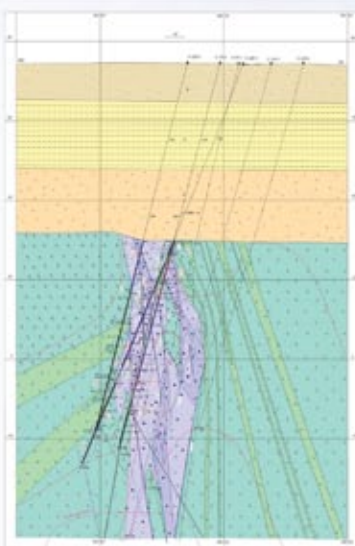
Discovery of Khantau mining region is an example of geological and geophysical methods used in combination to find gold deposits. Altay Polymetals has been successfully exploring this unique region for the past 6 years. Khantau deposit can be compared to such deposits as Nurkazgan (Kazakhstan), Sokolovsko-Sarbayskoe (Kazakhstan), Oyu Tolgoi (Mongolia), Kalmakyr (Uzbekistan) in terms of its size, geophysical and geochemical characteristics.

Khantau deposit is estimated to have a P2 forecasted resource:

Au- 600 t, Ag-5000 t, Cu-3,0 million tonnes and Fe-230 million tonnes. In C2 + P1 category Au - 408 t, Ag-1847t, Cu-1,3 million tonnes, Fe -113.3 million tonnes.

Based on the carried out drilling works, it is possible to confirm the high probability of the forecasted resources and possibly expect an increase in the resource estimation.

There is an opportunity to find unique polymetallic deposits of gold, copper, iron and other minerals.



Typical geological cut at the deposit



The view of Khantau area

Marmyr district, Sadoviy bulvar str. 1a, Almaty, Kazakhstan
+7 727 352 86 05 khantau@mail.ru

Services and Equipment Supply Chain

An already well serviced market with additional investment opportunities



Boomer 282 is a twin-boom hydraulic face drilling rig at work. Photo courtesy of Atlas Copco.

As Kazakhstan is looking to attract new international players to join the ranks of its main domestic players like Kazzinc, ERG, Kazakhmys Corp. and Kazatomprom, services and equipment suppliers are never far behind. Kazakhstan has also been moving away from the dig-and-ship mentality of the past to focus on more value-added goods. “Kazzinc is not only integrated, but is also a one-third custom smelting operation,” said Nick Popovic, chairman of the board of directors of Kazzinc Holdings.

Already boasting a presence of successful operation, local providers like Kazgiprotsvetmet, Vostokshahtostroy, Iskander and Vostok Prom Geo have a clear advantage in terms of being domestic which facilitates forming partnerships and knowing the local culture. However, these domestic companies must not feel too comfortable as tough international competition has not only already established itself in Kazakhstan, but further players are already eyeing the market as it could become the next destination with a mining boom.

As local companies are more skilled in the Kazakh customs, it may be a good idea for foreign players to partner with local ones in order to increase their chances of success in penetrating the market.

Equipment Supply

Kazakhstan's equipment supply market has been characterized by companies being more concerned with price rather than the quality and durability of the needed equipment. However a change is underway as companies are adopting Western methods of operating.

Today some of the main equipment providers are, indeed, Western. Some examples are Sandvik and Atlas Copco. “In 1997,

Sandvik entered the Kazakhstan market by acquiring Tamrock, one of the world leaders at the time in supply of equipment for mining operations whose office was established in Kazakhstan. Through this acquisition, Sandvik initially entered the mining sector in Kazakhstan with equipment for underground excavation although its current portfolio has extended to surface drilling, blasting, crushing, screening equipment and its support. Arguably, Kazakhstan has the fastest growing resource market in Asia and the former Soviet Union countries which is attracting Sandvik among others,” said Dmitry Vorozhtsov, general manager of Sandvik.

Atlas Copco has extensive experience in the Kazakh market and has introduced cutting edge technology to Kazakhstan. “In 2013, Atlas Copco expanded its product portfolio by acquiring MEYCO Equipment. Due to the downturn in mining activity, there will be some rationalization and changes to the product line. The MEYCO factory has been transferred to Sweden with the competence center remaining in Austria. Atlas Copco has sold a MEYCO Potenza to Tajikistan and also introduced this technology in Kazakhstan at Ust-Kamenogorsk,” said George Apostolopoulos, general manager of Atlas Copco.

There has been some concern over the entrance of Chinese equipment providers and their impact on the market in terms of increasing competition; however, this may be truer for other Central Asian nations rather than Kazakhstan. “Chinese competition in Kazakhstan has not impacted much on Atlas Copco's mining business, but has bitten and is dominant in Uzbekistan, the rationale being a historic relationship between China and Uzbekistan. Competition in Kazakhstan is of an international source,

i.e. Sandvik and Caterpillar. It is difficult to define precisely Atlas Copco's market share in Kazakhstan, there being many different sectors of equipment: for example, surface; underground; drilling consumables; and products Atlas Copco offers but its competitors do not, and vice versa. Sandvik, due to its longevity in the market, is ahead of Atlas Copco on underground equipment; but Atlas Copco is ahead of Sandvik for the surface sector and drilling consumables. Over the three sectors, Atlas Copco has a market share of 35%, plus or minus 3%. Atlas Copco's after-market support is a great aid for maintaining its client base and securing new clients,” said George Apostolopoulos, general manager of Atlas Copco.

As the needs of Kazakhstan's companies are changing, the desire for quality products is also rising and this presents a good growth potential for Western equipment providers looking to expand to new markets.

Transportation and Heavy Goods Equipment

In 2014, President Nazarbayev introduced “Nurly Zhol” (Bright Path), a new economic policy that envisions massive state investment in infrastructure over the next several years. This is in response to geopolitical challenges such as low oil prices and sanctions on Russia. The funds for the projects will originate from Kazakhstan's National Fund, similar to Norway's Petroleum Fund, created with the sole purpose of saving for a rainy day. The fund has so far accumulated \$76 billion from Kazakhstan's exports revenues. The infrastructure plan looks to develop transport networks and logistics infrastructure to connect the country's macro-regions through roads, railways and even airlines. The greatest focus will be given to

implementing major road projects: Western China – Western Europe; Astana – Almaty; Astana – Ust-Kamenogorsk; Astana – Ak-tobe – Atyrau; Almaty – Ust-Kamenogorsk and Karaganda – Zhezkazgan – Kyzylorda; Atyrau – Astrakhan. The government is also looking to explore opportunities to build or lease terminal facilities and dry ports and sea-ports in China, Iran, Russia and the European Union according to the Astana Times. More specifically for railways, The European Bank for Reconstruction and Development (EBRD) and a number of commercial banks are providing a syndicated financing package of \$300 million in support of a comprehensive modernisation and restructuring program of Kazakhstan Temir Zholy (KTZ), the country's rail operator, according to the Astana Times. In 2014, a railway connecting Kazakhstan, Turkmenistan and Iran was inaugurated opening up access to the Middle East and its ports in Iran for Kazakhstan and Turkmenistan. Iran and Turkmenistan, on the other hand, gain access to ports in China through railway connections leading through Kazakhstan. What has also received significant amounts of attention has been China's New Silk Road project which aims to connect China to Europe by reviving the ancient trading routes.

While Kazakhstan is undergoing a number of exciting changes on the infrastructure front, companies operating as heavy goods equipment providers in the country are also expanding and are likely to grow further in both number and size as the industry continues to develop. Transportation and heavy goods equipment providers in Kazakhstan include Tamoz Machinery, Liebherr, Volvo, Turkuaz Machinery, AK Machinery and others. One leader that stands out and has been present in Kazakhstan since 1999 is Borusan Makina, the representative of Caterpillar. "Borusan is a Caterpillar (CAT) dealer in Kazakhstan and Kyrgyzstan, and is part of a Turkish conglomerate for CAT operating in Turkey, Azerbaijan, Georgia, and the far east of Russia. Borusan is one of the biggest dealers of CAT in the CIS region. In 2011, we established a Components Rebuild Center (CRC) in Karaganda, and in 2013, we completed our equipment rebuild shop and further expansion is planned. Borusan enjoys over 50% market share in the mining sector for equipment supply within the model size with which we are in competition. We have an excellent customer portfolio for greenfield projects for varying commodities which allow for peaks and troughs," said Aman Shakenov, mining division director at Borusan Makina Kazakhstan. "Our market share of over 50% has re-

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Aman Shakenov, mining division director, Borusan Makina Kazakhstan.

remained constant between 2010 and 2015; we anticipate that it will stay at this figure for the next five years. Outside of Turkey, Kazakhstan is one of the most important investments for Borusan. One example is the expenditure of \$30 million for our components rebuild/equipment rebuild complex in Karaganda. Since 2010, delivery times for CAT mining equipment have improved due to the opening of two CAT facilities in Russia - Tosno, St. Petersburg and Novosibirsk. As these trucks come from within the Customs Union, they have a price advantage over our competitors. Delivery of equipment is enhanced by the excellent railway infrastructure in Kazakhstan," added Shakenov.

However, the sheer size of the country does present a challenge for a number of companies. One example is the Almaty-based distributor of chemical solutions, Chemie & Technology. The company offers acids and drill fluids used at all stages of production. "Underdeveloped infrastructure certainly poses several challenges for us, and mainly affects the time of delivery. In turn, this can have a negative effect on operations of the mining companies we work with. We always try to work efficiently, process all orders in record times and minimize lead times. Because of the cost of our products includes delivery costs, we make sure we deliver the product in very short time," said Maxat Bekov, executive director of Chemie & Technology.

As Kazakhstan aims to further upgrade its infrastructure and heavy goods equipment providers are expanding in the country, the mining sector certainly looks to benefit from improvements in both transportation infrastructure and wider service offerings from equipment providers.

Mining Software

Mining software is usually provided by foreign companies, although some local or Russian ones do play a part. Some of

the companies operating in the country are MICROMINE, RJC Group, Geovia (part of Dassault Systèmes), and GeoMineProject. It has been noted that international software providers should lower their prices for smaller Kazakh companies as they may find them somewhat out of their price range.

"The biggest issue related to the integration of new technologies and software in Kazakhstan is the poor awareness of these technologies among the older generation of specialists. At the same time, young specialists that have the skills to work with new technology do not have the experience of working at mine sites, thus they have no experience in integration of such technologies," explained Georgiy Freiman, chairman of the board of directors of GeoMineProject.

To address this problem, companies can become involved with education and training. "MICROMINE also works with local service companies and educational institutions where MICROMINE supplies solutions free-of-charge to benefit students studying geology of mining. For example: in the coming months, MICROMINE will be traveling to East Kazakhstan's technical college to instruct lecturers on its solutions. When a company purchases a MICROMINE solution and lacks in-house expertise, a training program is obligatory to maintain standards," said Arman Anapiyev, business development manager at MICROMINE.

International software providers not already in the country should keep Kazakhstan in mind as the country is well on its path to become the next mining hotspot.

Innovative Solutions

Despite the country finding itself in need of foreign investment both financial and technological, Kazakhstan's people are well educated and hungry to succeed. Since the Soviet times, the country has fallen behind in terms of innovation and creativity, but, nevertheless, pockets of local innovation continue to thrive. One example of locally researched and produced innovative solutions is the National Center on Complex Processing of Mineral Raw Material of the Republic of Kazakhstan. The Center is committed to helping the mining industry in Kazakhstan develop. They strive to cooperate with both local and international players and enjoy substantial success in providing their technology to their clients. "Our center unites academic and industrial institutes in the sphere of mining and mineral processing in Kazakhstan. It was considered that the Soviet organizations were not working efficiently in terms of industrial application of scientific developments and the role of



Abdurasul Zharmenov, general director, National Center on Complex Processing of Mineral Raw Material of the Republic of Kazakhstan.

our Center was to improve this situation, ensure scientific development, strengthen the scientific and technical potential of the country and thus aim for technological breakthroughs in Kazakhstan. At the beginning of the process, there was not enough capital to support all the scientific projects within the Center; similarly, our clients, both private and governmental organizations, also did not have the money to invest in our projects. Thus, we came up with an idea to also create production facilities within our Center to turn scientific ideas into actual products. Today, this aspect is one of our key competitive advantages, especially compared to other scientific organizations. Firstly, we are now acting as producers, and thus can create perfect solutions, and think of every single detail when it comes to developing new products. Secondly, we implemented dozens of projects, and developed innovative solutions in Kazakhstan which are now also being used across the world. Thanks to this we can now communicate better with our clients and we now speak the same 'language,'" said Abdurasul Zharmenov, general director of the National Center on Complex Processing of Mineral Raw Material of the Republic of Kazakhstan.

Another interesting provider of innovative services that has just recently entered the Kazakh market through a joint venture with Kazgeology is the Canadian company Geotech. The new venture, named KazGeotech, is a provider of geophysical airborne surveys and, despite being in the country for only about a year, is already greatly in demand by the most important companies. "The technology KazGeotech uses is patented by Geotech: ZTEM (Z-Tipper Axis Electromagnetic) system; and VTEM (Versatile Time Domain Electromagnetic) system. KazGeotech has recently introduced a fixed-wing aircraft survey for Rio Tinto in Kazakhstan," said Said Sultanov, director of KazGeotech.

Thrane Teknikk is yet another example of an innovative solutions provider, one that has had a long presence in Russia, but has only entered the Kazakh market fairly recently. "Thrane's portfolio has three main products: sensor based sorting for ore, fine screening and paste technology. Sensor based sorting for ore offers bigger capacity and considerable savings by sorting out waste rock before it enters the beneficiation plant. The next step in the beneficiation plant is milling - traditionally used with cyclones; however, this method generates low efficiency and Thrane has now introduced a fine screening concept to replace cyclones. The energy saved from the screening concept will give a 30% to 50% increase in capacity, or from a green perspective, liberate the energy for other uses," said Nils Thrane, the company's president.

Kazakh companies and institutes are themselves initiating improvements with a wide range of applications, notably in Kazakhstan's biggest industries such as oil and gas and, increasingly, mining.

Engineering, Laboratory and Consulting Services

There is a slow but steady trend among companies in Kazakhstan to use EPCM providers, which has not been the case historically. Local companies like KPSP are partnering with international ones that have extensive experience. These partnerships are crucial to help develop Western practices in Kazakhstan. "There are large companies that have access to the newest technology and have the capacity to invest. Shareholders of KPSP decided to bring the company to a new level and to begin collaboration with Fluor - a large international engineering firm. Fluor was happy to work with us and now we are working together on the TCO project. For us this is a very new format of work and we are very much looking to earn the respect of our American partners," said Abzal Akhmetzhanov, first deputy general director of KPSP.

Another area of expertise necessary to develop and grow the market is testing and laboratory services. SGS has a well established presence in Kazakhstan. "We may say that geochemical tests are in fashion, which is attributed to the active geological performance of local mining companies including junior companies funded by foreign enterprises. Though in terms of revenue and the bottom line performance, the trade inspections as well as technological inspections are more attractive," said Azer Mammadov, managing director of SGS Kazakhstan and Caspian Sub-region.



Azer Mammadov, managing director, SGS Kazakhstan and Caspian Sub-region.

SGS also offers the Belarus-Kazakhstan-Russia Customs Union conformity assurance certificate. This has proved a popular service, especially since the Eurasian Economic Union continues to have a positive impact on the whole of CIS. "The key advantage for our customers obtaining such certificates rests with overcoming technical barriers upon trade in the Eurasian Economic Union (Kazakhstan, Russia, Belarus, Kyrgyzstan and Armenia). The common rules and requirements practiced on the territory of the EEU allow use of these certificates in any EEU country without any additional authorization procedure. At the moment, not all requirements for this certification are being harmonized but intensive work is being conducted to form and set common requirements," added Mammadov.

Yet another step to help bring in outside investors to conduct exploration is the transition of Kazakhstan from its own GKZ to the JORC standard in line with the international community. "In December 2014, Kazakhstan accepted an analog of the Russian code for auditing, NAEN - 'Kazakhstan CRIRSCO'. The accepted code is an adapted version of JORC, which allows public audit as well as GKZ reports, but under condition that GKZ reports have the priority. Of course, this system will simplify work for a lot of companies, but at the same time we do hope that JORC is still going to enter the systems of mining companies in Kazakhstan very soon. Having two standards is excessive; moreover such a system complicates the understanding of the resource base among investors," said Freiman of GeoMineProject.

There are a number of consulting companies present in Kazakhstan that provide services ranging from exploration to mine closure. These companies are an important element in developing the industry and their presence and expertise in due diligence and other services is required by

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the international players looking to invest in Kazakhstan. Kazakh companies understand that adhering to international standards is of vital importance to show the world mining community that they can conform to its high standards. "SRK provides expert opinion and technical solutions based on internationally recognized best practice. If technical advice on local requirements is needed, SRK collaborates with local design institutes that are more specialized in meeting local design requirements. These local requirements differ significantly from international approaches, but we have become quite familiar with managing the two approaches in parallel, to minimize cost for the client and avoiding duplication of work where possible. A good example of this is in the field of geotechnical engineering. Precisely calculating the final safe pit slope for an open-pit project can result in a major saving of stripping costs," said Tony Thornton, general director of SRK Consulting.

Ruslan Sevostyanov, general director at Wardell Armstrong agrees: "The mine design and mineral resource estimation standards and methodologies currently used in the FSU were inherited from the Soviet era and, having originally been tailored to Soviet economic realities, and do not sufficiently cover the economic aspects of a mining project being developed in the modern economic environment. This has led to a situation when FSU companies seeking foreign investments have to significantly rework and amend their project designs to meet international standards. Therefore, our role in Kazakhstan as a consultant is mainly to use their geological, mining, metallurgical and environmental expertise to advise their clients on how to ensure international compliance of their businesses and meet the requirements of international investors."

A variety of service providers are already in the country assisting both producers and explorers, but as the industry continues to grow, others should continue to enter this already expanding sector.



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Professional and Financial Services

The limited options provided by the Kazakhstan Stock Exchange (KASE) have been of particular concern among investors in the country's mining industry. Historically, the KASE has been used as an instrument to offer shares by the government in larger companies. "We would normally become involved in financing at the Initial Public Offering (IPO) stage. Currently, there is little activity for us in this sphere. The Kazakhstan government is planning to make its Stock Exchange more effective by insisting that companies who list overseas and have their major assets in Kazakhstan list on the country's Stock Exchange, with the rationale being to add value to the Kazakhstan stock market," said Aaron Crouch, audit partner at Deloitte.

"The local market is still underdeveloped as the Kazakhstan Stock Exchange is still not in a position where it can accommodate startup companies, although the Exchange is looking at ways to accommodate this. Mid-tier mining companies are still struggling to raise local finance. The local banking system is not robust or experienced enough to provide bespoke financing packages for developing mining companies," said Tony Thornton, general director of SRK Consulting.

Kazakhstan boasts a very small, but thriving private equity market. Centurion Resource Group has actively pursued investors from abroad, especially the United States, to invest in projects in Kazakhstan. One of their investments was BAST's Maksut copper-nickel project, which was the first small cap equity company listed on the KASE. Investors have enjoyed a 40% return on their capital and the production at Maksut is expected to begin in the fall of 2015.

One way to acquire financing besides the KASE or commercial banks can be through the Eurasian Development Bank (EDB), founded by Russia and Kazakhstan in 2006 and now including many Central Asian nations as its members. "One of the bank's first projects was the development of the Zarechnoye Uranium Deposit, implemented by a joint venture between Russian and Kazakhstan entities. The EDB provided \$63 million to finance the project. Current production capacity of the mine is about 1,000 mt/y of uranium. Later in 2006, the EDB, in syndicate with two German banks - West LB and Bayerische Hypo- und Vereinsbank, opened a \$120 million credit facility to finance the development of the Voskhod chromium deposit in Aktyubinsk oblast. The EDB's share was \$60 million," said Galymzhan Tajiyakov, director of Project Finance Group at the Eurasian Development Bank.

The European Bank for Reconstruction and Development (EBRD) has invested roughly \$7 billion in the local economy. Half of these investments focused on the private sector including loans to mining projects. Some of the projects agreed to this year have been a 70 million euro loan to the first solar plant in Kazakhstan and a 42.5 million euro loan to upgrade Astana airport's infrastructure. This brings EBRD's investment in Kazakhstan to \$420 million in 2015 alone.

The lack of financing options should not put off international investors as these are bound to develop along with the industry. There are, of course, other issues that the government has the power to influence to help create a more accommodating business climate. These include stable tax regulations. "Action by the government for the further development of legislation to provide more guarantees on stability of legislation in respect of subsoil use and taxation in particular. The government should establish an absolute limit for the maximum tax burden for a mining company, which would provide for more assurance to investors that regardless of different interpretation of tax legislation there will be an absolute limit above which their investments will not be taxable," said Sergey Dementyev, audit partner at KPMG Kazakhstan and Central Asia. Changes like these would signal further improvements to the business climate and help boost investors' confidence.

Global Issues

Kazakhstan is no exception to problems affecting the industry worldwide



Sunset behind the pyramid portion of the Palace of Peace and Reconciliation in Astana. Photo by Lubo Novak.

There are a number of universal issues affecting mining companies nowadays. These range from low commodity prices to mining safety especially in less developed regions to finding well trained personnel. This section delves into greater detail covering two of these main problem areas currently facing the industry.

Mining Safety

This is a problematic area for Kazakhstan, which in the past has had a poor record with health and safety in the mining sector, especially coal. As previously mentioned, the mining sector in Kazakhstan is labor-intensive and this increases the chances of workers getting injured. Kazzinc is one important player that has been strongly committed to improving workers' safety at its facilities. "SafeWork is a corporate program which has been rolled out over the last two years in all of Glencore's assets. Historically, these assets have had their own safety policies and the SafeWork program is designed to unify safety policy in all aspects of the job, i.e. working at heights, electrical installations, with moving objects, etc. Any work fatalities at Kazzinc's operations will be brought to the attention of its entire workforce to improve training and prevent accidents from occurring again. The observation of the SafeWork policy is continuously monitored by Kazzinc and on-the-job safety training is constant," explained Nick Popovic, chairman of the board of directors of Kazzinc Holdings.

Despite a poor historical record, companies operating in Kazakhstan have come to adopt a zero tolerance approach to worker injuries and fatalities commonly found in Western countries. "In 2012, we identified a five year program to decrease

the number of accidents at our facilities. Every year, we invest significant amount of money to support this cause. This money is invested into modernisation of industries processes, creating of safe conditions, purchasing of the most innovative personal protective gear etc. Our goal is to improve all the indicators of industrial safety. We strive to achieve zero fatal accidents, and reduce work accidents by 40%. We are improving our medical help standards as well," said Krykpyshv of Kazakhmys.

It is not only the local producers that are apprehensive about mining safety, but increasingly foreign companies with various specializations have voiced their concerns. "Arguably, the Soviet influence has installed the thought process that unless rules and regulations are imposed by the government they have no importance. Government could be doing a lot more. It is still up to the individual companies to educate and train personnel to be health and safety conscious in the work place," said Apostolopoulos of Atlas Copco.



Rustam Khodzhaev, director, Geomark.

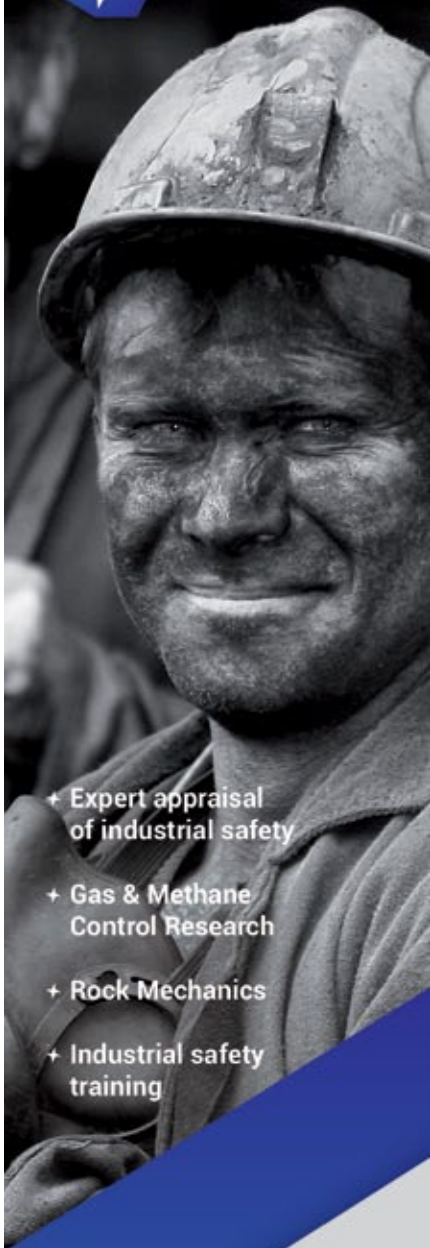
Geomark, a company from Karaganda, has a specific attention to industrial safety on mine sites. Rustam Khodzhaev, director of Geomark, said: "The government has been controlling industrial safety since our independence. The main piece of legislation promoting these requirements is the Law on Civil Protection. Until recently, the Ministry of Emergency Situations was dealing with issues associated with industrial safety. Now it is the Committee of Industrial Safety along with its regional subdivision belonging to the Ministry of Investment and Development."

Mining and industrial safety has been a problem in the past, but the country seeks to change this approach as the industry has been both privatized and welcomes private capital from abroad. This is yet another sign of a positive transformation.

Finding Talent

Globally, mining companies are experiencing a lack of qualified personnel and the same can be said of Kazakhstan. Various incentives and schemes must be implemented to encourage young people to study geology. "For a long time, it was not considered prestigious to work in the mining industry, which is why today there is a serious lack of specialists in this sector. The government understands how crucial it is to develop talent across many spheres - mining, processing and services. We work hard on changing the perception of the mining industry in Kazakhstan; we aim to show Kazakhs that working for a mining company is a prestigious career," said Radostovets of the Association of Mining and Metallurgical Enterprises.

"We certainly see a problem with finding the right talent, and indeed within the



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Alexandr Anchugin, general director, Kazzincmash.



Nick Popovic, chairman of the board of directors, Kazzinc Holdings.

Exploration and Mining Works Program 2015-2019, we emphasized the importance of staff issues, training, attracting young people to work in mining, improving the image of mining professions and increasing the competitive advantage of Kazakhstan on the international arena for engineering talent. In this regard, we work closely with the Ministry of Education and Science of the Republic of Kazakhstan. In the new school year, the ministry will start new master's programs in the fields of geology, hydrogeology and geophysics. We always try to attract students from mono-cities to these programs because they will be the ones who will come back to the mining towns and continue to work in the industry. Also in 2015, 60 specialists from Kazgeology will go through a training process at Rio Tinto, 10 employees will train with Geotech, and 16 employees will train with Iluka Resources," said Rau, the vice minister of Investment and Development.

One company with a long history in Kazakhstan and focused around Ridder, a mono-city, is Kazzincmash. It is not an easy task to bring in specialists from out of town and that is why training them locally is indeed very necessary. "There are many families where people have been working at our production plant for generations, and we highly support this tradition. We are always happy to see our employees bring their children and grandchildren to the factory. Thanks to the continuous modernization of our equipment and the technology that we use, we can offer more interesting positions to our employees," said Alexandr Anchugin, director of Kazzincmash.

Finding qualified personnel has been an ongoing problem for mining companies globally and Kazakhstan has been no exception, but as a new generation is entering the sector, their skills are more in line with international standards. With further training being provided, Kazakh companies and universities are addressing the issue head-on.

Conclusion

Kazakhstan is holding a number of events, such as the Astana Mining and Metallurgy Congress in June 2015, Mining World Central Asia in September 2015, and Minex Central Asia in April 2016 to increase its visibility on the world stage. To become a booming mining destination a lot of work remains to be done, ranging from legislative and regulatory framework to ensuring continued political stability in the foreseeable future as well as the development of infrastructure in the more remote regions. The Kazakh government is taking positive steps toward change and is working hard to present itself as an investment friendly destination. Once an upturn in the prices of commodities occurs hopefully in the not-too-distant future, Kazakhstan is looking to greatly benefit from an improved investment climate as a result of its government's hard work.

Once the Mining Code is finally implemented, Kazakhstan will only keep creating more opportunities and rewards at the same time. "Again, the legislation has not been approved and signed into law as yet so we are still in the waiting phase of this evolution process. However, in preparation for its enactment, we are seeing more and more interest in the country's potential with people coming to town for preliminary discussions. People assume that what is coming next is going to be an improvement and they are imagining what their presence here might look like. This is a positive trend for Kazakhstan," explained Terrance Powell, Almaty advisory board chairman of the Canadian Eurasia Russia Business Association. Kazakhstan is open for business and Kazakhs, for their part, are hoping the message is getting out there. It is of crucial importance to bring back the majors as well as the juniors. When the time is right, Kazakhstan will be ready to claim its rightful spot among the world's foremost mining jurisdictions.