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MONGOLIA MINING 2024

Regulation – Economy – Production and Development – ESG
Third Neighbor – Skill Transfers – Planning and Logistics – Electrification

Dear Readers,

Global Business Reports is proud to introduce *Mongolia Mining 2024* report, our first comprehensive guide for the country. We were drawn to Mongolia less by what we knew and more by what we did not know. The information gap in a country holding one of the world's largest copper deposits is strung at its two opposite ends by stories that paint an overly positive and an overly negative picture. GBR set out to fill that gap with an objective overview of mining in Mongolia.

One story made it through the silence: The Oyu Tolgoi (OT) copper mine, a US$15 billion development by Rio Tinto (with the government of Mongolia as a minority shareholder) puts a pin on the global map for mining on the large territory enclosed between Russia and China. Following the discovery of the OT Mongolia became 'Minegolia', and a brief mining boom, that lasted between 2009 and 2013, was followed by a decade of quietude. Today, the country is trying to build a more resilient economy through mining, not by bringing back Minegolia, but by showing that Mongolia is mining and more. A new mining code, investment law and multiple transactions, all in the pipeline, are already instilling more equilibrium.

In the first part of the report, we look at Mongolia's recent mining history to better understand its present. We remark on the anti-mining sentiment born out of popular resistance to 'Minegolia', and how it influenced the policies that are blamed for almost killing the industry in 2013.

The second part explores the country's mining sector of today, where we interview producers, developers and explorers across three commodity classes. We begin with coal and provide an analysis of the sector's journey to greater transparency, sustainability and productivity. Copper and gold are the subject of the next article, and together they represent the country's biggest current opportunities. We then study battery minerals, which we anticipate will write Mongolia's mining future.

We conclude with a section on the service and supply chain sector, where the same high international standards as in top-tier jurisdictions prevail, and follow the same patterns of opportunities: Electrification, digitalization and ESG.

We would like to thank all of our interviewees in Ulaanbaatar for their contributions. We hope that this platform will bring the tight-knit mining community in Mongolia even closer and connect it with the rest of the world. Investors once came to Mongolia for its geology yet stumbled upon its legislative framework. How competitive Mongolia has become today, we will leave our readers to judge, hoping that this report provides them with the resources to make an informed assessment.

Alfonso Tejerina
Director and General Manager
GLOBAL BUSINESS REPORTS

MONGOLIA MINING 2024
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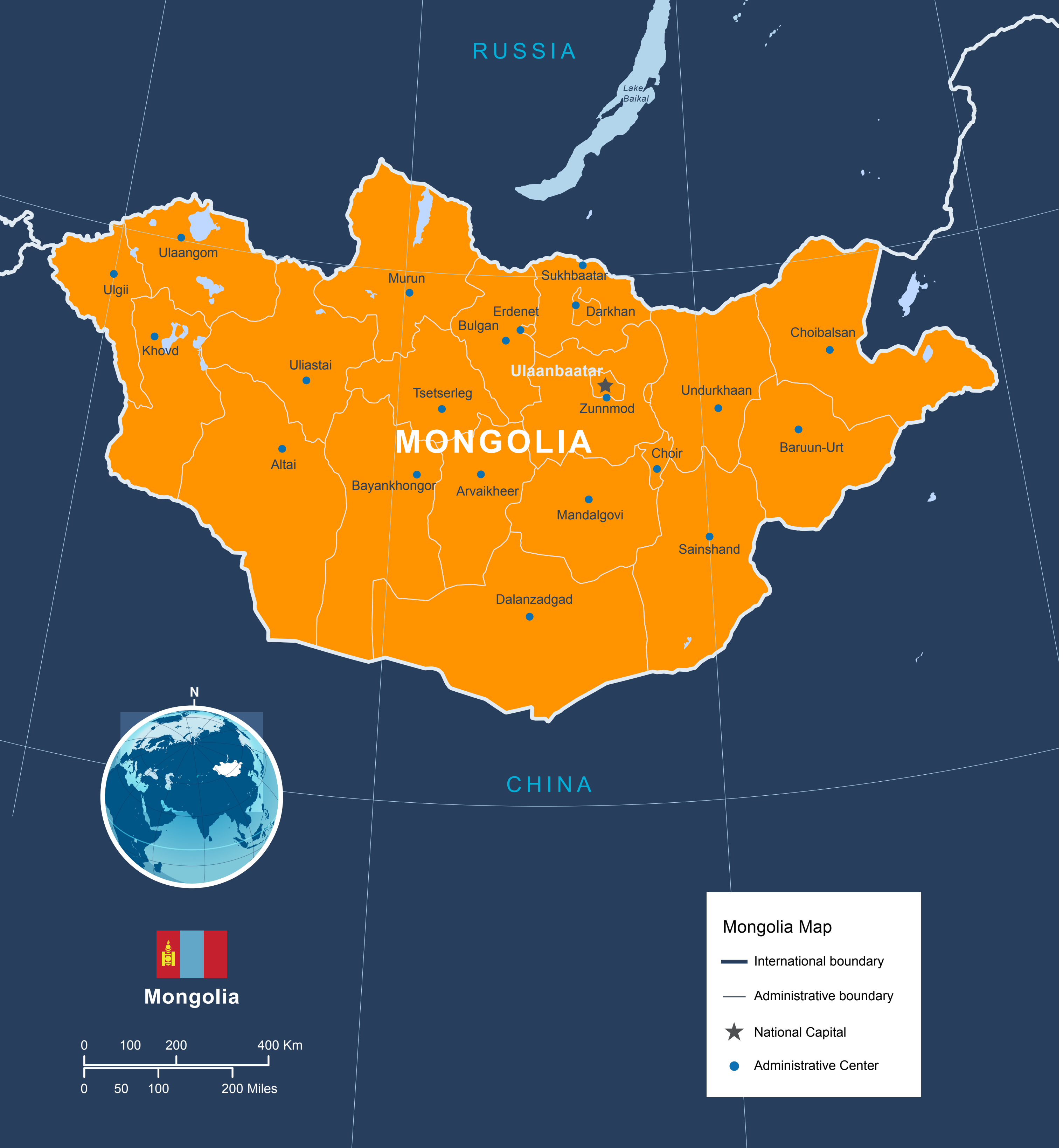


Introduction: The Investment Environment

Production and Exploration

Equipment, Technology and Services

Introduction: The Investment Environment

“

The importance of open and transparent partnerships is too often dismissed as a soft issue, yet it is foundational. Building a business at the scale of Oyu Tolgoi takes many years. I am hoping that future investments in the country will be delivered quicker and swifter.

”

Deirdré Lingenfelder
CEO
OYU TOLGOI

Image courtesy of Xanadu Mines

After a Rush and a Crash

What happened to 'Minegolia'?

The discovery of Oyu Tolgoi in 2001 changed Mongolia forever, and in more ways than the geologists at the site, headed by the since-turned-billionaire Robert Friedland, could have imagined when they first came across the large copper and gold deposit in the Gobi Desert. "Turquoise Hill," a literal translation of "Oyu Tolgoi," inspired by the color of the oxide copper, gave rise to 'Minegolia', the nickname that stuck for the best part of the mining boom years, until 2013.

At the turn of the century, Mongolia had just transitioned into a free-market economy following the fall of the USSR, and had more horses than cars (or people, for that matter). Most of its income came from nomadic herding across its vast lands. But it was the underbelly of the steppe that would drive its future forward. The US$1 billion economy had US$1 trillion in mineral resources. This huge potential was punctuated by the Oyu Tolgoi discovery. Even if at first, the news of the discovery went unnoticed because it was announced on the tragic day of 11th September 2001, over the years, finding one of the world's largest copper-gold deposits became an exploration sensation that would attract many others looking for the same thing.

What happened between 2006-2013 in Mongolia has been compared to the Californian Gold Rush in the 19th century or the Australian commodity boom in the 1930s. The formerly little-known Soviet satellite country became a magnet for miners and investors, many from Canada and Australia. The capital, Ulaanbaatar (UB), was abuzz with new people and new money, luxury stores, hotels, cars, and restaurants were springing up around the city. UB grew by 70%, becoming home to almost half of the country's population. Outside the hustle of the city, about 800 km drive through the steppe, 16,000 people were working at the OT site, once one of the least populated regions in the country; they were housed in traditional gers (or tents) equipped with modern facilities.

For the population, old and new, hope and caution were mixing in an intoxicating way. Rural people felt the traditional way of life threatened. For others, the opportunity was too good to miss. Friedland's Ivanhoe together with its new partner, Australian mining giant Rio Tinto, had already invested US$3 billion by the end of 2012, eventually spending a total of US$10 billion by 2020 to put the underground of the OT into production. Mongolia had become the fastest-growing economy in the world, and the IMF was projecting continued double-digit growth and the potential for the country to double its GDP within the decade. FDI inflows spiked, reaching a peak in 2011 at US$4.57 billion – 43% of the country's GDP, according to Macrotrends data. Mining already constituted a third of the country's GDP.

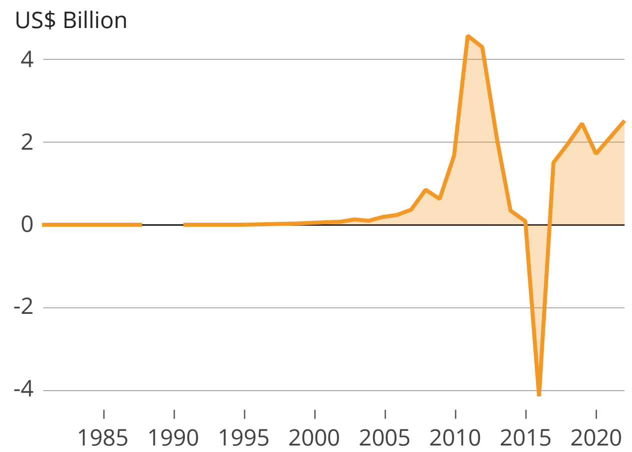
Other international players like Centerra Gold and big names like BHP joined the search for minerals, and 3,000 exploration licenses were active by 2012, according to the Economist. 'Minegolia' was born.

By 2014, everything changed. Most investors fled, Friedland included, leaving the OT with Rio Tinto. About half of the 12,000 expats that had been in Mongolia in 2012 were gone by 2015, according to Globe and Mail. FDI fell sharply, hitting a low of (minus) - US$4.16 billion in 2016. The following year, the economy hit rock bottom, its fiscal, sovereign, and banking sectors collapsed, and public debt ballooned. Mongolia was rescued by an IMF bailout, one of the largest in the organization's portfolio (in rapport to a country's GDP.)

Some blamed the commodity downcycle that affected the mining industry globally; others blamed the dispute with the OT, which entered a standoff with the government, sending a chilling effect to other investors. The unfriendly policies that the newly elected government passed to appease strong anti-mining sentiment expressed by the electorate scared investors. Or perhaps the young democracy simply fell victim to the resource curse or 'Dutch disease', when the blessings of resource wealth turn into a curse of spending-beyond-means, out-of-control inflation, and an eventual boom and bust.

No one speaks about 'Minegolia' anymore, even though the country derives 90% of its exports and 25% of its GDP from minerals. What Mongolians do talk about is redeeming the mistakes made in the past. After a rush and a crash, the industry shrunk considerably and faced multiple hurdles between 2017 and 2022: A pandemic, a recession, and the ripple impacts of sanctions on neighboring Russia. The country has adopted a more sober approach to mining, learning not to take investment for granted, while also understanding that Mongolia is much more than mining, and inherently much more than 'Minegolia'. Therefore, it must not solely depend on the industry.

FDI NET INFLOWS 1981-2022 (BALANCE OF PAYMENTS/BOP)
Source: The World Bank



In 2023, the stars have started to align again, with the OT's long-anticipated underground development finally complete and prepared for the ramp-up to over 500,000 t/y of copper, which would make it one of the world's largest mines, as was long promised. Record exports of coal have also strengthened the country's balance sheet, and a more pro-mining government elected in 2020 has worked to deliver a new mining code before the next elections this year.

The industry remains imbalanced, between three megamoth mines (OT and Erdenet for copper, and Erdenes Tavan Tolgoi for coal) and around 20 juniors looking at a basket of commodities, from coal, copper, and gold, to lithium, rare earths, and graphite. A large share of producing companies remain in the hands of the state, a trend that has only worsened in recent years. But there are also positive signs of new private players, especially in copper and gold, signing more transactions over the last two years. The next foreign-led multi-billion investment is also in the pipeline, this time in uranium, with Orano in talks with the Mongolian government for a final investment decision in Zuuvch Ovoo. That would make Mongolia into a diversified, four-mega-mines land.

In the following articles, we will take a closer look at what Mongolia is doing to get it right this time, by tackling anti-mining sentiment and nationalism, improving regulations, and reducing its dependencies on both its neighbors and mining itself. The following pages should explain in greater detail what happened to 'Minegolia'. ■

Image courtesy of Oyu Tolgoi

MONGOLIA AT A GLANCE

Source: IMF, data for 2023

CAPITAL
Ulaanbaatar

TERRITORIAL ORGANIZATION
21 provinces (aimags)

POLITICAL SYSTEM
Semi Presidential Multi-Party Democracy

NEXT ELECTIONS
2024 (Presidential)

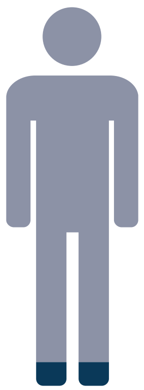
CURRENT PRESIDENT
Ukhnaagiin Khürelsükh

CURRENT PRIME MINISTER
Oyun-Erdene Luvsannamsrai

TRANSITION TO DEMOCRACY
1990

DEMOGRAPHIC DATA

Source: World Bank, UN, World Mining Congresss; World Population Review



POPULATION
3.35 MILLION

UNEMPLOYMENT
5.9%

MEDIAN AGE
26.7 years

PEOPLE LIVING IN ULAANBAATAR
1.7 million

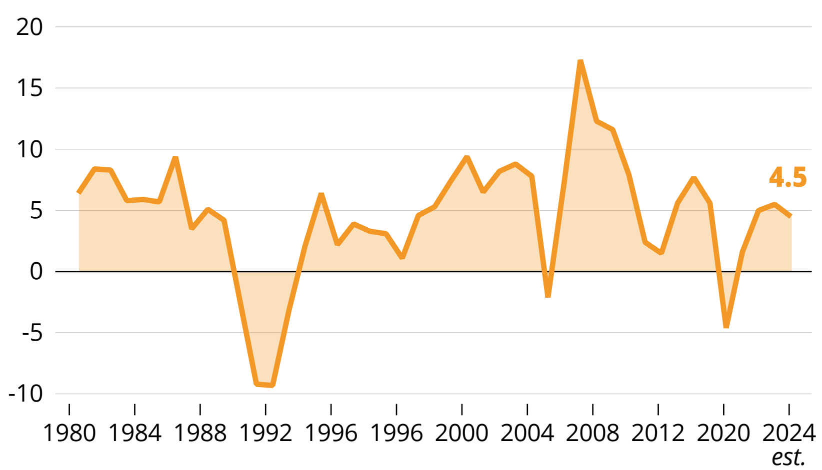
LITERACY RATE
99%

PEOPLE WORKING IN MINING
60,000

ECONOMY

Source: IMF, 2023

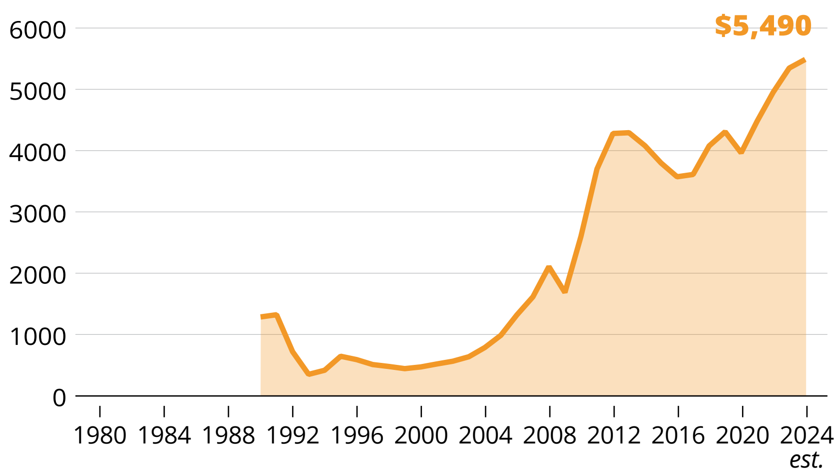
Real GDP growth (Annual percent change)



GDP PER CAPITA, CURRENT PRICES

Source: IMF, 2023

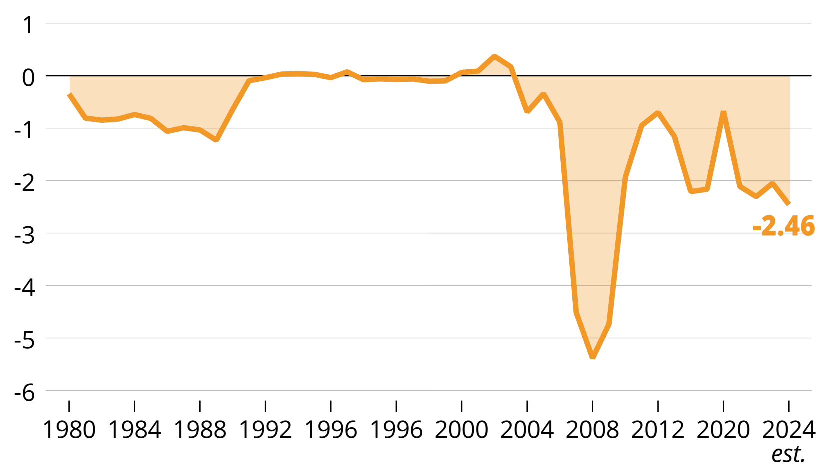
U.S. dollars per capita



CURRENT ACCOUNT BALANCE

Source: IMF, 2023

Billions of U.S. dollars



> "The main reform we are undertaking is the re-drafting of the Mineral Resources Law to facilitate the investment environment in the mineral sector and provide clarity."

Ganbaatar Jambal

Minister of Mining and Heavy Industry
GOVERNMENT OF MONGOLIA

What are the main policy reform priorities within the Ministry's agenda?
The main reform we are undertaking is the re-drafting of the Mineral Resources Law to facilitate the investment environment in the mineral sector and provide clarity. The current law dates from 2006, and has gone through over a hundred amendments, which have created overlaps and confusion, so it is high time this is redone. The redrafting process began in 2020, with the first draft approved in March this year, and a second one released for public review in October. 35% of the comments received in the first draft were reflected in the new draft.

The royalty currently paid has a base of 5%, and depending on the commodity prices, the percentage can increase dramatically. In the (drafted) law, the percentage will conform to international best practices. Within this framework, we are also addressing the issuance of mineral exploration licenses. In the last year, Mongolia started granting exploration licenses at a stable rate. We seek to stabilize the issuing of permits further and improve – as well as digitalize- the tender process for mineral permits.

The redrafted Mineral Resources Law is in its final stages of completion. We plan to submit the document to the Government of Mongolia in November and pass it on to the Parliament in December 2023.

Effective this June, the law on the Mining Commodity exchange has also been enacted, with the scope to overcome corruption, bribery, theft, but also bureaucracy by selling products through the exchange by mandating the participation of the state and state-owned enterprises. Private companies can participate on a voluntary basis. Mining companies in coal and copper have started trading on the exchange since the beginning of this year, and we are looking to extend this to fluorspar and iron in the future. Since implementing the Exchange, the selling price of coal has gone up. The goal is to have 30% of Mongolia's commodities traded on the Exchange as a starting point.

How do you seek to maintain the momentum in exports not only in coal but also copper?
Our main export item is coal. Mongolia had exported 35 million t/y of coking coal at best, but, this year, we are almost doubling this volume to 60 million t/y. While demand for thermal coal is inevitably phased down as the world rejects this form of fossil fuels in line with the energy transition, demand for coking coal is poised to stay strong.

Meanwhile, in copper, Oyu Tolgoi's (OT) underground mining will boost Mongolia's copper concentrate exports in the long run. We are exporting approximately 1.4 million t/y of copper concentrate with the potential to ramp up to 2-2.5 million t/y in the future. Besides the OT, other projects are moving towards mining. Zijin, one of the largest Chinese investors, financed the development of the Kharmagtai copper and gold project, operated by Xanadu Mines, while operations at the Tsagaan Suvarga mine are progressing according to plan, taking us closer to the goal of becoming the third largest copper producer in the world.

How do you tackle the negative perception of mining by parts of the Mongolian population?
In my view, the fact that money collected from mining is put into a national budget, disseminating that revenue as social care, rather than going back to the host communities, is part of the problem. We are proposing that 10 to 20% of royalty contributions go into local community development, but the law is yet to go through Parliament. One other point we have been working on is dispute resolution with communities by establishing an agency in seven regions in the country to act as a bridge.

How are you working to accelerate exploration, especially in critical metals like rare earths?
We are currently doing baseline studies, having signed a trilateral agreement with South Korea and the US to establish a Rare Metals Cooperation Center. Since many of the known targets were defined before the 1990s, there is ample scope for new surveys to reconfirm the mineral occurrences and be able to discover more critical battery metals.

Do you have a final message for international readers and potential investors?
I would like to reassure investors that Mongolia will have a stable state policy and the older patterns of sudden changes will be a thing of the past. ■

"We are open for our foreign and domestic investors to cooperate within the framework of the law in the direction of discovering Mongolia's vast mineral resources."

Bayarmandal. L,

Chairman
THE MINERAL RESOURCES AND PETROLEUM AUTHORITY OF MONGOLIA (MRPAM)

Please introduce the functions of MRPAM?
MRPAM is an implementing agency of Mongolian Government and it is been 27 years since its establishment. Our main objective is to support in framing development policies of geological, mining, and the oil sector and provide quick and fair services to investors and customers.

Also, we are responsible for implementing laws and regulations related with the licenses. We are in the process of renewing the system to transit from the Russian system to the Western system, and to digitalize it.

Could you share the recent changes and achievements of MRPAM?
In the "Vision 2050" policy document, it is stated that "Citizen-centered public services will be created based on electronic technology." In this context, the MRPAM is now in the process of transmitting e-governance in order to increase the mineral resources sector's efficiency, benefit, and productivity, and to make the services open, unbureaucratic, transparent, and accountable.

We have been receiving complaints related to the selection of exploration licenses quite often. The process of receiving exploration and mining reports and plans was notoriously bureaucratic. This issue has resolved, and in accordance with Recommendation No. 03 of the National Security Council of Mongolia, dated November 25, 2022, the mineral special licenses issuing process through a selection process has been developed into the electronic system www.tender.gov.mn in cooperation with the State Procurement Department. The entire selection process has been digitilized, and the licensing area became publicly announced from November 23, 2022. Being able to monitor the decision-making process of government institutions is a big advantage of providing information transparency. Furthermore, foreign investors do not necessarily need to come to Mongolia. They can access the information, participate and apply in the selection process online by paying the fee.

Thus, we are working to intensify the rare earth elements exploration and geological research, and increase mineral resources that will ensure economic growth in the medium and long term.

What are the main changes of the Minerals law? Which direction did you pay more attention to?
The Minerals Law is a big law. In order to strengthen transparent, open and responsible governance, the Ministry of Mining and Heavy Industry has developed policies for the sector in five main areas: Exploration, extraction, processing, sales and distribution. In this frame, we are working to submit the preliminary draft laws to the Parliament.

As there is a real need to change the law with the times, we prepared a draft of the revised Minerals law. Even though the current law is clear about exploration and exploitation, it is not clear about processing and mine closure. The revision included an open system at every stage from the prospecting to closure. In other words, we aimed to include comprehensively processing, mine closure, guarantee funds, labor safety, and local coordination in this revised draft.

How do you describe the development of the mineral and geology exploration sector in the 'Vision 2050' long-term policy document? What is MRPAM doing concerning its implementation?
In line with 'Vision 2050', the 'New Revival Policy' approved by the Government of Mongolia includes three goals and 11 measures to restore industrialization, and 13 projects and programs are being implemented in this context.

For example, mineral license digitalization, intensification of geological exploration in prospected areas of state protection and located near in border areas, Tavantolgoi coal concentration plant, construction of an industrial technology park based on Erdenet State owned company, production of cathode copper from oxidized ore, copper concentrate processing based on the Oyu Tolgoi deposit, and a ferrous metallurgical complex plant and oil refinery are all being implementing.

Do you have a final message?
Mongolia is a developing country. About 30 years have passed since the transition to a market economy. We have a lot of things that were improved and a lot of things we need to fix.

We are cooperating with the private sector and the public to develop responsible and green mining in line with global development. Since 2023, MRPAM has started branching out to more provinces so that we can coordinate more locally-driven activities and nurture mutual understanding. Our aim is to establish a branch in every province.

We would also like to express that we are open for our foreign and domestic investors to cooperate within the framework of the law in the direction of discovering Mongolia's vast mineral resources. ■

"Mongolia's mining sector is relatively young and has a lot of potential for exploration and extraction, so it is expected to become a major sector attracting foreign investment in the future."

Erdenetuya Ganbold

Executive Director
MONGOLIAN NATIONAL MINING ASSOCIATION

Could you give us a sense of the country's untapped mineral potential?
In our country, the mining industry is relatively young compared to other mining countries, with a history of just over 100 years. However, if we consider the last 30 years, we can observe a significant influx of investments from third countries, leading to the intensive development of the mining industry. Advanced technologies and leading international practices have been introduced into our mining industry through these investments, and the industry personnel have been trained at a high level. Furthermore, responsible mining practices and social license considerations have rapidly progressed from mere declarations to actionable measures in our industry.

Also, we have learned from our mistakes in the past and are working on relevant legal reforms to reduce future risks. The mining sector of our country is relatively young and has a lot of potential for mining exploration and extraction, so it is expected to become a major sector attracting foreign investment in the future.

What has prevented the further development of Mongolia's resources?
One of the major challenges confronting the mining industry in our country is the disparity in stakeholder understanding and the insufficient accessibility and transparency of information about the mining industry. As our association believes that the solution to these problems is responsible mining, we focused on localizing and promoting responsible mining within the industry. To achieve this objective, we have examined the experiences of associations in highly developed mining countries like Australia and Canada. Since 2018, we have developed the "Responsible Mining Codex" and introduced it to approximately 40 organizations within the mining sector. Additionally, we have established a memorandum of cooperation for joint implementation.

Responsible mining is viewed as the outcome of the accountable collaboration of all stakeholders involved in the mining industry, rather than being solely attributed to a single company. In line with this approach, the MNMA aims to enhance the knowledge and information of these stakeholders. To further this goal, the MNMA collaborates with civil society organizations and local administrative organizations to organize Responsible Mining Events across all regions of Mongolia.

What have been the most recent developments on the regulatory front?
One of the foremost concerns for investors in the mining industry is the stability of the legal environment. To attract investors, The Government of Mongolia is actively working on revising the Law on Investment and the Law on Minerals. Similarly, our association is diligently working on submitting proposals related to these law reforms.

Additionally, the MNMA actively participates in approximately 18 national committees, councils, and working groups appointed by the government on behalf of mining sector companies. Through these working groups, the MNMA effectively conveys the voices, suggestions, and recommendations of the private sector towards shaping government policies. Moreover, the association provides consulting services to companies in terms of legal requirements by compiling information on industry-specific laws and regulations.

What are the main agenda points at the Association for 2024-2025?
For the years 2024-2025, the MNMA has set its focus on several key priorities. These include improving foreign cooperation, supporting and attracting foreign and domestic investors, and adhering to the highest international practices within the industry.

Do you have a final message for our international audience?
People are the wealth of our country, not just our industry. Over the past 30 years, our mining industry has trained many internationally competitive personnel. In the future, we will continue to work proactively in training and developing skilled personnel. Also, compared to 30 years ago, there have been many positive social changes such as improved education and attitude of our citizens, increased public knowledge about the mining industry, and our country shares a border with the world's largest mining importing country, China. It is believed that the trade cooperation between the two countries has improved more and more in recent years, creating favorable conditions for the investment environment of our industry.

The Mongolian National Mining Association (MNMA) would like to extend a warm invitation for cooperation and support to all investors interested in the mining sector of our country. We are here to offer guidance and support to investors, ensuring understand and navigate the legal framework in Mongolia ■

Anti-Mining Sentiment and ESG

From hero to villain and back

Most mining executives agree that Robert Friedland was one of the best promoters of Mongolia. Huge crowds would gather to hear his talks at PDAC. “Friedland put a banner on Mongolia,” said Bayar Baatar, principal consultant at Baatar Consulting, based out of Toronto.

And yet, the talented speaker made a costly blunder when, addressing an investor audience, he failed to see he had another auditor, the Mongolian population: During a pitch in the US, Friedland made comments about the Mongolian mine being a ‘cash machine’, with 95% margins. He continued: "People near your mining project are a real nightmare (...) The nice thing about this, there's no people around, there's no NGOs.”

These comments, though pleasing to investors, reached the ears and stung the hearts of Mongolians. The speech became famous; Friedland turned into “toxic Bob,” a nickname already circulating in the media after an incident outside of Mongolia, and many locals can still recite the most incendiary parts of the speech.

This article is not about Friedland, because is the industry itself that briefly turned into the villain. Friedland proclaimed at the Mongolian Mining Week 2023 that the country had wasted a decade: The OT could have been built 10 years earlier had it not been for all the time spent on discussions – an allusion made to the disagreements between the project developers and the government. But the root of the delay goes deeper than the altercation itself, to the anti-mining feeling that was brewing in the country and which eventually escalated from sentiment to policy, with radical implications.

Descendants of one of the largest empires that ever was, Mongolians are a proud people and it is easy to see why Friedland’s speech offended them; they are also well-educated, with one of the highest literacy rates in the world (99%), and many have worked or studied abroad. At the same time, Mongolians have a unique relationship with land and nature, as one of the last large nomadic populations remaining. Although the numbers are dropping, 27% of households still earn a living from livestock herding, according to the International Herders Organization. Mining contradicts the traditional way of life, where the freedom of roaming without any fence and the respect for nature is most valued. The population in the Gobi worried about the impact of mining on the scarce water supply. People were already uneasy about the price to be paid for “Minegolia,” and Friedland’s words added wood to the fire, making Mongolians feel as if they were robbed of their resources.

Anti-mining feeling became a fever, with protests and disputes between local communities and mining companies erupting around the country. Its people were calling for Mongolia to gain more control of the OT mine. This was picked up by politicians, taking a nationalistic turn. In the 2012 elections, 25% of seats were won by politicians rallying against foreign mine ownership, and a resource nationalist was put in power as the minister of mining. A new law prohibiting mining and exploration close to waters led to the revocation of many mining licenses, including a key portion at the OT. Eventually, the government was asking for a bigger share of the OT, which sparked a huge dispute. In 2013, Rio Tinto reached a standoff with the government over the payment of royalties, which delayed the project by two years.

Today, backlash from the locals has eased, partly due to the industry itself carving a better name for itself, but also due to shifts in the Mongolian population, which is very young, with a median age of 27 years old, and more urban. If previous generations moved to Ulaanbaatar (UB) out of necessity but held very close ties to their native aimags (provinces), the new generation is born in UB, learns English, and sees opportunity in mining. In rural areas, local disputes are not uncommon, and voters tend to be more susceptible to populist anti-mining rhetoric. “More than half of Mongolia’s voters come from rural areas where a lack of adequate information and misleading discourses have made mining vastly unpopular. To appease the electorate, some leaders take a negative stance towards mining. In simple words, if they say, ‘mining is bad,’ it is likely they will get more votes,” commented Tsolmon Gonchig, CEO and co-founder of Trigteq, a consultancy and technology distributor in Ulaanbaatar.

Politically, the establishment seems aligned in its ambition to develop the industry. A clear sign of that was the participation of all relevant leaders at the Mongolia Mining Week in 2023. Ironically, after many years of not coming to Mongolia, in 2023 Friedland was awarded the Order of the Polar Star, the highest honor for a foreign citizen. Friedland finally received his credit and his hero status is restituted.

How to do better

At the core of the negative perception of the industry is that many people, especially those living in the countryside, did not directly see the benefits of mining. In a new draft of the mineral law, the government is looking to ensure that royalties go directly to the community level, rather than into the national budget. Minister of Mining and Heavy Industry Ganbaatar Jambal said the new mineral law proposes 10 to 20% of royalty contributions going into local community development. “Our view is that local communities in the vicinity of mining, at the province and *soum* (county) level, should benefit more compared to the rest of the population,” he said.

A good level of communication to manage expectations is also necessary. When they think of mining, people’s expectations are often influenced by the Erdenet copper mine and the city it gave rise to. Built during the Soviet times, Erdenet, the city, became the third largest in the country. But not all mining assets will have the same impact, or at least, not such a bluntly visible impact. For instance, Badrakh Energy, the local JV between French uranium company Orano and the Mongolian state-owned company Mon-Atom LLC, uses a chemical extraction technology to pump out the uranium. “Since we don’t dig holes or handle any ore, our technology can hardly be categorized as mining, leaving the landscape untouched from beginning to end. The drawback, if I may call it such, is that it is not visible like a standard open-pit operation may be, so the work we do cannot be noted from the outside. This is why we need to explain and re-explain what we do, with the help of the Mongolian authorities,” said Marc Meleard, the executive director of Badrakh.

By contrast, host communities tend to see the negative impacts of mining, especially on the environment. The occurrence of dzuds, a climate disaster characterized by summer droughts and freezing winters, leaves animals without enough pasture, killing millions of them every year. According to the UN, dzuds are happening more frequently in parts of Mongolia now. “Mongolia is more vulnerable compared to other countries to the impacts of climate change because of increased desertification, water scarcity, and extreme weather conditions, all of which can be worsened by climate change,” Edward Faber, senior country economist at the Asian Development Bank, told GBR.

70% of the Mongolian territory suffers from desertification, with multiple rivers and lakes drying up, according to the UN. Artisanal miners, known as “ninja” miners because of the green bowls they carry on their backs making them resemble the comic book characters Mutant Ninja Turtles, use cyanide and mercury, poisoning rivers. Communities also worry that the use of large amounts of water by formal mining companies will further deplete the country’s available water. Regulations to mitigate the impact of mining on water are in place (the Water Law, the Environmental Impact Assessment Law (EIA), and the Water Pol-

Image courtesy of Oyu Tolgoi

lution Fee Law), yet the coordination between the different regulatory bodies is sometimes missing, according to research by the German Development Institute, which noted, among others, insufficient quality control for EIAs, lack of transparency, rent-seeking behaviors hindering enforcement, and lack of financing constraining the effectiveness of inspections by lower-level public authorities.

Besides water, an equally pressing challenge is power. Positioned as the 'climate bank for Asia', the ADB has engaged in multiple projects to help Mongolia navigate the challenges emerging from climate change, but Faber thinks more is required on the government end to entice investment in the energy sector so that the country can meet its ambitions to reduce GHG emissions by 27.2% by 2030: "The government would like to see greater private participation in the energy sector, but to attract investors it would need to guarantee sufficient returns; that would entail that demand is high enough, which is challenging in a small market, but also require a stable regulatory environment and adequate tariffs. Right now, energy is subsidized so the sector would need to undergo some sort of reform and liberalization to draw in private investors. The ADB has financed a private solar project and there are many more opportunities for both solar and wind projects," said Faber.

Indeed, much more can be done. Euro Khan invested in the largest wind farm in the country, the Sainshand Wind Park, with a capacity of 55 MW, yet it has not been paid US$170 million owed by the government for the past five years of supplying green energy to the grid, an off-putting record for other companies looking to invest in the energy scene. Oliver Schnorr, Euro Khan's CEO, said the government did everything right from a legislative perspective, but it did not respect its contract. "The good news is that OT is taking a stronger stance on net zero and investigating the possibility of building a 250 – 300 MW combined wind and solar plant, and they are looking now for a JV partner. The fact that the elephant in the room is looking at this issue is a good sign already," said Schnorr.

Image by Oleh Slobodeniuk at iStock

Unsurprisingly, the biggest expectations falls on OT, which seeks to set an example. OT has over 400 social investment projects, spanning from education, healthcare and infrastructure to various other initiatives. In Khanbogd, the *soum* (district) close to the mine, these are run through an MoU between Oyu Tolgoi, the Ministry of Construction and Urban Development as an NGO fund (the Oyu Tolgoi Catalyst Fund for Khanbogd Development). "We appreciate that our community members and civil society organizations keep us on our toes. As one of the biggest businesses in the country, we are working to bring the biggest positive impact. We will be neighbors with our host communities for the next 100 years, which means we need solid foundations," said Deirdré Lingenfelder, the CEO of Oyu Tolgoi.

Throughout the years, OT has dealt with multiple community disputes. In 2013, a group of local herders filed a complaint concerning a river diversion that could impact their traditional livelihood, as well as the pasturelands and the water available. This resulted in a tripartite agreement between the government, the host community, and representatives from the company. "It takes time to build trust, yet it is very easy to lose it, so we make sure to proactively engage with the community on what is going well, and on what is not going well and needs improvement," said Lingenfelder, explaining the role of the tripartite council, where representatives meet regularly to have conversations on topics that matter. "Sometimes these discussions are difficult, but we believe that open and transparent dialogue is key to reaching alignment," she emphasized.

To mediate these difficult conversations, a neutral actor that sits in the middle of government, industry, and people, is required, according to Dagva Myagmarsuren, the CEO of QMC, a consultancy specialized in ESG matters and involved with 40% of the mining sector today. Most recently, QMC was part of the team that assessed the impact of the OT underground development on the local community. "Often, local people do not know whom to trust; they want to trust the miners, but conflicts of interest that have led them to lose that trust. They also want to trust politicians, but contradictions in the political messages leave them confused, leading to more mistrust. Needing to trust someone, they tend to trust QMC, which opens a door for dialogue between all stakeholders," Myagmarsuren said.

Once the OT mine reaches peak production in the next five years, the country's gross domestic product per capita will double to US$10,000, said Prime Minister Luvsannamsrain Oyun-Erdene, as reported by AFR. Because Mongolia is a small country, with only 3.3 million, developments like the OT have a widespread impact. With more developments of that scale, Mongolia could realize its early 2000s aspirations of turning into a Qatar-type of economy, with the risks that such trajectory entails. For that, it would need solid and inviting regulations, which we will discuss in the next article. ■

"QMC has been instrumental in shaping new legislation, bridging the divide between authorities and private investors by offering expertise in aligning projects with broader societal and environmental benefits."

Dagva Myagmarsuren

Founder and General Director
QUALIFIED MANAGEMENT CONSULTING (QMC)

Could you introduce QMC to our readers?

The early signs of the first-ever mining boom in the country became visible in the early 2000s, when I was lecturing at the Mongolian University of Science and Technology, doing part research, and part independent consulting with the main mining players. The industry was quickly changing, with more and more newcomers making their way to Mongolia. I sensed there was a need for more consultancy services to assist Australian and Canadian investors, so in 2011, my team and I established QMC – offering a hybrid of technical and management knowledge.

How have QMC's services grown since?

To start with, we focused more on the technical side, offering PFS and FS studies. As a lecturer and consultant, we assisted both government organizations and regulators in developing the guidelines for technical studies in line with international norms, while also helping the industry to comply with these, so we had a very critical bridging role that helped us grow as a business. However, by 2015, the landscape shifted as local communities grew skeptical of the mining sector. This skepticism hindered political support for mining ventures. Recognizing this critical gap, QMC expanded its services beyond the technical realm. We recognized the absence of a crucial dimension: the societal and environmental impact of mining projects. This led us to pioneer the development of mine closure plans, addressing the concerns of future generations and emphasizing the necessity of remediation and rehabilitation in our policy paper for mine closure provisions. Consequently, QMC has been instrumental in shaping new legislation, bridging the divide between authorities and private investors by offering expertise in aligning projects with broader societal and environmental benefits.

How is mining currently perceived by the population?

Anti-mining sentiment peaked around 2013, resulting in a halt in exploration licenses, followed by a wave of divestments. 10 years on, and these problems still exist. Investment has not come back, and negotiations with host communities remain difficult. At the core of it, our politicians are quite slow at making changes. For instance, the mine closure regulations we proposed are still not part of the official legislation, after failing to become law two times; now these provisions are in the draft of the new Minerals Law. The allocation of royalty contributions to local communities was put into law some time ago, but implementation lagged as politicians required more control of the budget distribution.

As the head of the Critical Minerals Association, could you share with us what are your main agenda items for the new organization?

Within the current mining sector, one big chunk is metallurgical coal, and the other big chunk is copper, with the remaining 10-15% of it being a mix of other metals, including gold. The energy transition risks putting about half of our industry at peril in the next few decades. Contradictorily, the country's Vision 2050 forsees the mining industry expanding up to four times its current value. So how are we to grow the industry from a base that is supposed to be phased out? The future lies in those critical minerals that we know exist in Mongolia, yet we have little visibility of their extent. In the last two years, we have seen a lot of international interest in collaborations for critical minerals. Our government says "yes" to these partnerships, but then, it stops there. Other countries have already developed their critical mineral policies, strategies, and lists. Mongolia does not have these. No one else can do these tasks other than Mongolians themselves, because, although the world believes in our geological potential, they do not believe in the role that Mongolia could play in the critical minerals supply chain considering its geographical and geopolitical position. We must take the first steps. The Critical Minerals Association looked at what other countries are doing and drafted a critical mineral framework and list, submitting these to the government. Like I said earlier, however, things move slowly. Yet, for critical minerals, the world is changing really fast. So the question remains: Are we going to be too late? We are ready to push our government to accelerate the legal framework before this opportunity passes us. ■

"Bridging essential expertise and specialties, BRP is expanding our network through international collaboration to bring knowledge, skills, and investment into the country."

Surakhbayar Galsan

Managing Director
BLACKROCK PARTNERS (BRP)

Could you introduce BlackRock Partners to our international audience?

BRP was incorporated in 2014 in Ulaanbaatar and became a diversified consultancy firm with focus on sustainable practices in agriculture, banking, energy, environment sectors and international development area, yet mining remains as our key area of expertise to date.

Is there a mandatory framework for GHG reporting for the mining industry in the country?

Mongolia has signed up to the Paris Agreement, committing to reduce its GHG emissions by 22.7% by 2030. However, at the industry level, there is no specific framework dictating emission reduction. The mining sector as a huge energy consumer, in some case energy producer, is amenable to some requirements included in the Nationally Determined Contribution (NDC) action plan. This integration in the energy sector should force the mining sector to reduce energy consumption or transition to alternative energy sources, whereas the government must look at low-emission pathways for the mining industry to streamline the development towards specific targets.

Could you tell us more about the investment regime in the mining sector in Mongolia?

Mongolia has an estimated 6,000 deposits of some 80 different minerals, including coal, copper, gold, iron ore, tungsten, molybdenum, phosphate, uranium, and oil. Recent discoveries and development of some of the great deposits of coal, gold, uranium, copper and REE, demonstrate that FDI interest in Mongolia is attractive. By 2023, there are about 2,900 active exploration and mining licenses and more than 20 countries are major players in Mongolian mining sector, namely China, Canada, Singapore, etc. The peak period of FDI in the sector was between 2005-2013. Mongolia's major exporting commodities are copper, gold, iron, coal and fluorspar, and the mining sector is the main driver of the economy. Mongolia is a signatory to the 1958 Convention on the Recognition and Enforcement of Foreign Arbitral Awards. Our country has close to 30 double taxation and investment protection agreements with its counterparts. Mongolia's jurisdiction is competitive at regional and international levels, and accepts, supports, and protects investment.

What do you make of the government's plans to pass a new Mineral Law?

The regulatory amendments shaped the mining industry in three stages since the Constitution in 1992– the first passed in 1994, the second in 1997, and the last (effective to this day) in 2006, along with other laws. The government is working on modernizing the laws in accordance with international standards and Constitutional amendments. Some people may have lost faith in Mongolia's ability to garner investment, lamenting that the exploration sector is almost neglected and only a few major players are left. All countries have issues, whether these are community, political, economic, or even security related. These are challenging paths to development, and BRP has no doubt that we will overcome those and raise Mongolia's profile as a competitive and sustainable investment destination. BRP is optimistic that Mongolia, with its immense geological potential, geographical location and legislative environment will be one of the best mining jurisdictions in the world, however beyond 2030. As Mongolia is still the one of important players in the critical minerals' era towards energy transition, the modernization will take crucial steps for better benefits for all the Mongolians, and the investors as well. Vision 2050, Mongolia's long-term development policy, and a new draft of Law on Investment and other related modernizations of the investment regime will also bring actions, steps and outputs for the mining sector, and its future development of sustainable mining practices.

What are your priorities for 2024 and beyond?

Impact investment deployment and sustainable mining practice are two of our top priorities with a dual focus on addressing challenges and creating positive change. Bridging essential expertise and specialties, BRP is expanding our network through international collaboration to bring knowledge, skills, and investment into the country. BRP will be supporting the organization of the 'Mongolia Mine Closure Forum' in July 2024, inviting local and foreign parties to discuss mine closure from legal, technical, and ESG perspectives. We also will be supporting the critical minerals development by collaborating with the Mongolian Critical Minerals Association and other key stakeholders in the sector. BRP sees itself as a leading firm domestically for driving the ESG and GHG Emission understanding and compliance in the country, and as a key catalyst for collaboration between multiple stakeholders. ■

"By using advanced geological tools and software, professionals get the space in their mind and in their job to be more strategic and scientific."

Tsolmon Gonchig

CEO and Co-Founder
TRIGTEQ

Could you introduce Trigteq?

We started Trigteq in 2013 in the US. While completing our studies in Colorado, four fellow Mongolian colleagues and I came up with the idea of bringing our skills together and opening a consultancy once we returned to Mongolia. Today we have a team of almost 50 people, and we are legally incorporated in the US, Mongolia, Kazakhstan and China.

Could you elaborate on the role that Trigteq plays?

Nowadays, the real need is to implement technologies in daily workflows to make the work more efficient, both timewise and cost-wise, but also to allow for greater professional development – instead of being tied to tedious manual tasks, people can grow their capabilities by making smart use of technology. This is what Trigteq is trying to do: besides traditional consulting, we introduce cutting-edge technologies to help our customers reach better results. By using advanced geological tools and software, professionals get the space in their mind and in their job to be more strategic and scientific.

Trigteq represents brands like Seequent for integrated subsurface software, Krux Analytics for drilling data collection and analysis, STRAYOS for AI and advanced image processing solutions, or Four Point for AI based use of satellite imagery solutions, among others. This year, we also signed an MoU with the German engineering and consulting group DMT to introduce their geotechnical risk management capabilities into Mongolia.

What is the general reception of the technologies brought in by Trigteq into the country?

Oyu Tolgoi (OT) has accelerated technology adoption in Mongolia, with many people carrying the knowledge and experience of best-in-class tech. The OT has helped create an invaluable workforce in Mongolia, for the benefit the entire mining sector.

What demand trends do you observe today in Mongolia?

Exploration has unfortunately been declining since 2009, when Mongolia stopped issuing exploration licenses. In 2017-18, the government granted about 1,000 more licenses, but these were not enough to allow the industry to grow. This gap in exploration is reflected in mining since all existent mines are the result of the previous exploration cycle (prior to 2009). Last year, some investments were made in critical minerals. As some countries seek to reduce their resource dependency on other countries, Mongolia will likely emerge as a strong contender for direct investment in minerals related to the energy transition.

What holds back the issuance of more exploration licenses?

More than half of Mongolia's voters come from rural areas, where a lack of adequate information and misleading discourses have made mining vastly unpopular. To appease the electorate, some leaders take a negative stance towards mining. Like other developing countries, Mongolia also struggles to allocate sufficient budgets to local development to reach everyone, so locals in deprived regions have a misguided impression of the industry, not seeing the direct benefits. The solution is to inform communities about mining to increase acceptance.

What are your main priorities in the coming years?

Our main priority is innovation. Innovation comes with free speech, free competition, access to plenty of information, and, crucially importantly, openness to innovation. Western innovation is world-leading because English-speaking countries literally speak with one another, collaborate, exchange results, and therefore reach the best solutions. We are engaging players from different anglophone nations, from the US to South Africa and beyond, to identify the best innovations and bring them into the mining sector in Mongolia. The other aspect is integration across multiple products and technologies. Companies are becoming bigger and are adopting more solutions, but they require further integration to make mines truly smarter. Trigteq does not aim to duplicate the things that work but focuses on the real gaps, where there is truly no solution in place.

Do you see scope for growth outside of Mongolia?

Yes, we have great potential to grow in Central Asia, where the mining industry also faces a technological gap. Trigteq has been working in China since 2021, introducing geological modeling and other software to two Chinese companies; also, in Kazakhstan, we just started working with a company in geological modeling, and we aim to add more technology in geotechnical, hydrology, and resource reporting. ■

Regulations

Why to catch flies with honey, not vinegar

Mongolia is preparing to submit to Parliament a newly drafted Mineral Law. For such an important milestone, the industry remains conspicuously nonchalant at the mention of these upcoming changes, probably because they feel they are a long way from being passed into law and an even longer way from becoming fully implemented. The country's regulatory environment could be described as simultaneously too slow and too fast. Much-needed changes fail to materialize quickly enough, while abrupt changes come so often that they are not taken seriously enough. Some think of the proposed new Mineral Law cynically, likely to be rushed in before election time this year, and then scrapped if a less mining-friendly government takes over.

The current mining regulations date to the 2006 Mineral Law, which suffered multiple, sometimes confusing and overlapping, amendments (over a hundred in number), according to Ganbaatar Jambal, Minister of Mining and Heavy Industry. The main points of the new draft address the most pressing concerns the industry faces: Improving the issuing of exploration licenses; a royalty system aligned with international practices; clearer community development allocations; and more transparency mechanisms. If passed, the law would mark a significant reform.

Mongolia's first pieces of legislation in the mining sector opened the door to foreign investment. "The 1993 Foreign Investment Law and the 1997 Minerals Law were attractive to investors and Centerra Gold was the first taste of big foreign investment in the minerals sector other than what the Russians had done with the likes of Erdenet Copper Mine under the old Soviet planned economy model," said James Liotta, partner at MahoneyLiotta Law Firm, a legal practice established in Ulaanbaatar in the late 1990s.

What followed next, however, undid the previous regulations: "As investments and discoveries in the minerals sector continued to grow, so did populism. This led to the enactment of the 2006 Minerals Law and Windfall Profits Tax Law, which were far less attractive to investors, and in 2012 the Strategic Entities Foreign Investment Law was enacted. Resource nationalism and creeping expropriation grew, along with international and local arbitration and litigation. The combined effect, along with other policy, administrative, and legislative missteps, triggered an about-face of the investment community. Since this time, and even with the enactment of the current Investment Law, we have seen a growing trend of state-owned participation, or dominance, in the minerals sector and little attention toward the free-market private sector-driven investment economy that led to Mongolia's economic boom," continued Liotta.

Two of the laws Liotta mentions were particularly far-reaching. First, the Strategic Entities Foreign Investment Law (SEFIL), now repealed, allowed the government to take over an asset deemed of strategic importance for the country, and it pertained to the state's participation in the mining sector. SEFIL controversially required companies to seek government or parliament approval over proposed transactions in 'strategic sectors', like mining.

The nationalistic impetus at the time was most obviously expressed when the government wanted to renegotiate the royalties paid and cost overruns with operator Rio Tinto just as Oyu Tolgoi was preparing to sell its first concentrate from the open pit. Rather than a negotiation, some of our interviewees called it "taking Rio Tinto hostage." Under the previous agreement, established in 2009, the government was to provide its 34% share of construction costs upfront, but would only get dividends once those costs were recouped, which meant that the country would effectively pay its share of construction costs by forgoing early dividend flows from the mine. Needless to say, the standoff spooked investors. "For good or bad, OT continues to symbolize the country's investment environment to the international community, so when the OT shut down operations in 2012, massive ripple effects spread across the industry," commented Brad Clarke, managing director at Sandvik, a global engineering company.

This event turned the country into what Shaukat Tapia, country manager at PwC Mongolia, calls a "hot big potato" for international investors. Rio Tinto finally resolved its disputes with the government in 2022; the underground mine, which was supposed to start a few years ago, was inaugurated in 2023 and, all going well, will provide copper and gold for at least another 50 years. For the resolution, Rio Tinto was the one who relented first, waving the US$2.4 billion debt owned by the government for the construction (34% of the US$6.93 billion expansion).

SEFIL came in conjunction with another law, popularly known as the "law with the long name" or LLP, and by its official name, The Law On Prohibiting Mineral Exploration And Extraction Near Water Sources, Protected Areas And Forests. As its name suggests, it prohibited mining close to riverbeds. Shaukat Tapia, country manager at PwC Mongolia, said: "The problem with this regulation was that it came with no warning, so many operators lost their licenses overnight. This move was perceived as anti-business not only by international players but also Mongolians."

Also, these two laws were at times used to cancel each other. According to the LLP, Mongolia's first large, publicly listed miner, Centerra Gold, could not develop the Gatsuurt gold mine, close to the Gatsuurt River, in the north of Ulaanbaatar. As a solution, the government declared it an asset of 'strategic importance', which meant it could have a 34% right to it, and SEFIL would no longer apply; as a national security asset, it was no longer beholden to environmental protection laws, according to an explanation by Forbes.

These two pieces of regulation shaped the country's mining industry to this day, leaving room for more state intervention in mining assets and leading to a dearth of exploration by revoking licenses. Sam Spring, the CEO of Kincora Copper, a copper developer in the South Gobi, said that over 40% of Mongolia's landmass was covered

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New Investment Law (Draft)

New Minerals Law (Draft)

Image courtesy of Mongolia Talent Network

Dunnaran Baasankhuu

Managing Partner
DUNNARAN + PARTNERS

Could you elaborate on Dunnaran + Partners' areas of expertise?
Our foundational expertise lies in minerals law, which distinguishes us from local law firms. However, the cyclical nature of the mining industry led us to diversify our legal practice. Since 2014, we have been advising clients on their employment and industrial relations matters, which has become one of our key practice areas today.

In addition, our expertise also encompasses investment and corporate law. We also assisted oil and gas players in the market successfully raising funds on LSE and ASX. Another area that differentiates us from other foreign investment law firms in Mongolia is that we do litigations. This would indicate that our firm provides clients with full legal services, except for tax and felony criminal matters.

How has the change in the employment law in 2022 impacted the minerals sector?
The change affected, among others, roster agreements, mandating two weeks on and two weeks off arrangements for mining companies. This shift has caused significant financial burdens and management-related regulatory challenges. Given Mongolia´s workforce deficiency, the country heavily relies on foreign workers for mining. Previously, companies commonly applied a 28-day on-site and 14-day off arrangement. The new 14-14 has forced companies to introduce additional shifts and employ more people. Bringing expats from around the world only to let them return after two weeks is, naturally, disruptive.

What are the areas of improvement in the legislative framework of the mining industry?
Mongolia has all necessary legislation on paper, but the challenge is their application and enforceability, mainly due to inconsistent interpretation and application of laws by government officials.

Do you have a final message?
Mongolia has significant untapped potential for minerals and is situated in a strategic location next to the world´s largest buyer market in terms of minerals. Mongolia faces its share of challenges like any other country, but those are not deal-breaker matters. These issues can be navigated and resolved in the hands of the right professional advisors. ■

James Liotta

Partner
MAHONEY LIOTTA LAW FIRM

Could you introduce MahoneyLiotta to our international audience?
MahoneyLiotta was established in Ulaanbaatar in 1997 as one of the first law firms comprised of Mongolian and international lawyers.

What do you make of the government's efforts to attract investors?
Unfortunately, the two main political parties in Mongolia tend to engage in big PR exercises without enough underpinning action. I think the key for any prospective investor is to talk with the private sector companies doing business in Mongolia, and not rely heavily on government PR.

The government should also define what it means by investment. When asked, there never seems to be an answer as to whether this means foreign investors incorporating and doing business in Mongolia, as was the case in the past, or more restricted to foreigners lending into Mongolia.

As noted above, the key to attract investors once again will be a legislative ecosystem that incentivizes and protects investment into the private sector, as well as a demonstrated period of successful implementation of, and adherence to, the laws conducive for investment. Overall, I am optimistic and encouraged by the government's pivot toward attracting investors once again. The investment and business community will do our best to help them to achieve that goal.

Do you have a final message to share with our readers?
As with any jurisdiction, investors need to do their due diligence before making decisions. I have seen too many people skipping this part because they were in a hurry to come here and get that contract, or because they think they know somebody who is connected and can get things done, or because they had a good meeting with a government official during a promotional conference. Mongolia is workable, the people are welcoming especially to Western businesses, and there is no doubt about the country's minerals potential. ■

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by exploration tenure when they took over the Bronze Fox project in 2011. Today, the land available for exploration dropped by 10 times, covering just 4% of the country's territory. During the boom, about 3,000 mining licenses were issued, according to the Economist. Many of these were scrapped during the period of clampdown on the industry. The government granted 1,000 more licenses in 2017-2018, according to Trigteq, and now the total number is reaching back to the boom levels, at 2,900, according to another local consultancy, BlackRock Partners (BRP). These are still not enough; the country holds 6,000 deposits of some 80 different minerals, said BRP.

Mongolia now wants investors to look again at its licenses, both by making the issuance process more transparent and digitalized and by issuing more licenses. Since last year, Mongolia started granting exploration licenses "at a stable rate," said Minister Ganbaatar. According to Sambuudorj Erdenebat, the CEO of Glogex Consulting, based out of Ulaanbaatar, the government is planning to release another 400 exploration licenses soon. Mongolia's open bidding system, created at the end of 2022, allows investors to check the licenses available in a much more transparent way.

Bayarmandal L., the chairman of the agency in charge of issuing licenses (the Mineral Resources and Petroleum Authority of Mongolia or MRPAM), admitted that the agency received complaints about the selection of exploration licenses quite often, because the previous process was slow and notoriously bureaucratic, but believes that the new system is much smoother: "Since 2022, mineral special licenses issuing process through a selection process has been developed into the electronic system www.tender.gov.mn in cooperation with the State Procurement Department. All the selection process has been completely digitalized, and the licensing area became publicly announced on November 23, 2022," he said.

The same progress cannot be said of the state's intervention in mining. Amongst one megamine (Oyu Tolgoi), a handful of listed developers (like Australian-listed Xanadu Mines and Aspire Mining, or Canadian-listed Erdene Resource Development), and developers and early producers (like Steppe Gold and MoEnCo), sit an unusually high number of state-owned enterprises or SOEs, including Erdenes Tavan Tolgoi (ETT) and Erdenet Mining Corporation (EMC), the operators of the country's top-three largest mines. Erdenes Mongol, the government's umbrella company that holds the stakes in 23 different legal entities across the mining value chain, accounts for 14% of the country's coal reserves, 65% of copper, 15% of fluorspar, and 55% of iron. In total, it contributes almost a third of the country's earnings, and two-thirds of the royalties paid back into the country, according to Erdenes Mongol's CEO, Narantsogt Sanjaa. 12 of the natural resource companies of Mongolia are SOEs, according to the National Bureau of National Research.

Bayar Baatar, principal consultant at Baatar Consulting, noted that it is unhealthy for the taxpayer to coincide with the tax receiver in a normally functioning free market economy. "I would say there is more state participation

Bayar Baatar

Principal Consultant
BAATAR CONSULTING

Mongolia has several state-owned enterprises in the mining sector. Has state participation increased in recent years?
There is more state participation today than it was 10 years ago but whether we should attribute this to the overall growth of the industry or increased nationalism, is a separate question. From a historical perspective during the centralized economy, on one hand, we had only state-owned mines (often in joint venture with a country from the Soviet Bloc) and the social welfare for the mines (such as schools for employee children and hospitals) were provided by the state in a form of municipalities built around a mine, such as Erdenet, Baganuur and Bor-Undur. In parallel, we also had uranium mines operated entirely by the former USSR in secrecy with no visible benefit to the locals. So, the population has a healthy demand for greater transparency and legacy desire for increased social benefits to locals from mining. Unfortunately, this legacy still keeps a sizable population warm to the idea of increased state participation in mining.

Why do you think the renewables sector hasn't developed more?
While Mongolia is blessed with 260 days of sun and 1.1TW wind potential, renewables does not provide a stable baseload at grid level. Investments in renewables are usually done with direct government subsidies and favorable Power Purchase Agreements at inflated rates compared to what's available on the market to make a business case. This is in direct contradiction with free market principles. However, there is ever increasing use of both solar and wind power by households in the countryside.

Do you have a final message?
I always ask, if you knew how big Sudbury would become, would you have invested in Sudbury? The same is true for Khanbogd, which has grown significantly, but it has much more room to grow.

I see the entire area surrounding OT developing like Sudbury or Timmins in Canada, becoming a service and supply hub for the mining industry, with mining schools, OEMs, and suppliers congregating. The fact that the OT is one of the largest block-caving operations in Eurasia drives a natural evolution for the Khanbogd to become a hub, with the OT at its epicenter, for the supply of technologies and services applicable to this world-scale mine. ■

Munkhbat Batmunkh,
CEO
MONGOLROSTSVETMET

“One area that requires further improvement in Mongolia is lawsuits and the judicial courts. The legal framework presents multiple challenges for foreign investors, as we learned from our own transition from Mongolian-Russian ownership to a state-owned entity.”

Baatar Uuganbayar
CEO
MURRAY MINING SERVICES

“Mongolia’s foreign investment reputation has been stained by stories of failed partnerships, but I believe that the past is beginning to be wiped up. The younger generation has a different mindset that is more influenced by Western ideas of transparency and ethics.”

today than10 years ago. Whether we can attribute this to the overall growth of the industry or to nationalism is a separate question,” he said.

An article published by the Mongolian National News Agency confirms that the number of state-owned enterprises (SOEs) has increased in the last five years by 2.8 times. This is across the board, not just in mining. Of the 98 companies owned by the state in different sectors, more than half operate unprofitably, notes the source. But the most profitable are the two mining giants, Erdenes Tavan Tolgoi (ETT) Coal Mine and the Erdenet Copper Mine. To nationalize Erdenet was a tumultuous journey. Erdenet, which means treasure in Mongolian, was a JV between Mongolia and Russia, but it was acquired in 2016 by a private company called Mongolia Mining Corp, backed by the largest commercial bank in the country (Trade and Development Bank or TDB). Just two years later, the government decreed by parliamentary resolution that the shares should belong to Mongolian nationals, and nationalized it, illegally, as a local court found. It remains to this day a national asset.

The gap between paper and practice

For more private players to invest in the country, Mongolia will have to provide a much clearer investment framework. For instance, Orano, which plans to invest US$1.6 billion in the Zuuvch Ovoo project, required tax stability over the project’s lifetime, expected to stretch over three decades. It would also need irregularities in the current laws to be sorted out since uranium mining is subject to both the Mineral Law and the Nuclear Energy Law. According to Marc Meleard, executive director at Badrakh Energy, the local JV between Orano and the government, Mongolia wants higher royalties from the project, which would entail a lower shareholding, currently set at 34%. The Mineral Law would have to be amended to clarify that uranium mining should only be governed by the Mineral Law.

Going back to the start of this article, a lot hinges on the new Mineral Law, and on the country following up on it. Mongolia has struggled in the past with implementation, as well as sudden changes and periods where nothing happens, especially before an election. Equally, on the regulatory side, approvals and permits tend to stall around these times. The different laws must communicate with each other well to create a well-thought-out and attractive legislative ecosystem. An attractive minerals law is insufficient without transparent dispute and tax resolution frameworks. “Many investors also worry about the lengthy, complex yet unorganized procedure of tax audits and tax disputes," said Sang Yong Cho, Partner at KPMG Mongolia. “The same ease of opening a business does not apply when closing a business or undergoing tax litigations. Foreign investors usually comment that the onerous bureaucratic and judicial process takes no less than 18-24 months," he added.

The problem, Yong Cho said, is a mismatch between the legislators’ preference for keeping domestic tax law simple and foreign investors’ need for more complex transactions. “When investors try to clarify uncertainties from tax offices or departments under the relevant ministry, it often takes months to hear back. Sometimes, they never get a reply."

Yong Cho, like others, sees Mongolia as a young democracy. Many of its laws, including its tax system, are only 30 years old and require further guidance before they can align with international practices, but progress has been made recently, including the 2017 Amendment to the Minerals Law that sought to increase transparency and improve the business environment, or the recent decision that Mongolia should follow the OECD transfer-pricing guidelines – there, however, regulations were again delayed so everyone is again in wait-and-watch mode.

The will to make the changes is there. The steps noted in this article, including a redrafting of the mineral law and a tender system aligned with international standards, point to that. Besides the Mineral Law, Mongolia has also redrafted its Investment Law, which stipulates more legal guarantees to investors. This law was developed within the country’s long-term Vision 2050 master plan. That same plan also outlines ambitions to diversify the economy beyond mining and beyond its two neighbors. So let’s delve into that in the next article. ■

“Looking ahead, there is a possibility that major mining projects may consider listing their shares on the Mongolian Stock Exchange.”

Altai Khangai

CEO
MONGOLIAN STOCK EXCHANGE (MSE)

Could you introduce the MSE?

The MSE was initially set up to catalyze the privatization of government-owned assets under the former communist regime. To realize this transfer, all citizens were granted vouchers that could be converted into shares. 475 such entities were brought into the exchange. Since 2011, the MSE has been in a strategic partnership with the London Stock Exchange, which has been a reference in terms of the rules and regulations that we adhere to, and that also shares the same trading (now electronic) platform.

Today, 185 companies and 2 investment funds are listed on the MSE; their total market capitalization was 10.3 trillion MNT (20% of the country’s GDP). Out of these, the finance and real estate sectors hold the highest market capitalization (6.7 trillion MNT), whereas the average market capitalization across the nine sectors we represent is around 1.1 trillion MNT.

The MSE registered strong growth between 2022 and 2023. What are your expectations for the next few years?

2022 and 2023 marked a remarkable turnover period, with our market capitalization increasing threefold. Any company’s initial public offering is only the starting point. As the market’s liquidity grows, companies and enterprises will increase the quantity of shares.

How did the IPO market perform this year?

We had sizeable IPOs from the finance and agriculture sector, with a total of 335.9 billion MNT raised between six companies that went public this year. Notably, Khan Bank raised 183.4 billion MNT from 29,345 investors, marking the largest IPO in the history of the exchange.

How could the MSE become a more attractive platform for international investors?

What Mongolia currently lacks is international, as well as local, institutional capital. To attract institutional investors, a pension reform is essential.

Secondly, we must put forward an attractive pipeline of products to bring in international investors. The MSE will be doing a roadshow at the main financial centers around the world, including Shanghai, Hong Kong, and London. If in 2011, 80% of our investors were international, today, it’s majority Mongolian.

Last year, the MSE was classified as a Frontier market by the FTSE global equity indices, which will also bring more international attention. In the future, we will continue to implement more steps to upgrade our status within the FTSE classification.

The mining sector plays a crucial role in Mongolia’s economy, serving as the primary source of our country’s exports. Mongolia is currently engaged in significant large-scale mining projects, which are operated by both joint-stock companies and state-owned companies. Notably, joint-stock companies have obtained capital from foreign stock exchanges and have subsequently established operations in Mongolia. It is important to note that these companies have not issued shares on the Mongolian Stock Exchange. Looking ahead, there is a possibility that major mining projects may consider listing their shares on the Mongolian Stock Exchange.

What is the key challenge that Mongolia’s economy must overcome?

It is anticipated that the economy will experience a surge in growth, surpassing 6% by 2024-2025, due to the rise in mining production. However, it is imperative to implement reforms that encourage economic diversification to maintain this growth and establish resilience against domestic, external, and climate-related disturbances. Also, I believe there is a case for the government to privatize more assets.

Could you explain to our audience the significance of the Mineral commodities exchange in Mongolia?

The Mongolian Stock Exchange has established a legal framework for trading in the mining product sector with the approval of the Mining Product Exchange Law. The trading of mining products on the stock exchange has facilitated the establishment of appropriate conditions for the accurate calculation of tax fees. This, in turn, will lead to an increase in revenue for the state budget, ensure the fulfillment of contractual obligations related to the supply of mining products, and mitigate risks for the parties involved in the trade. Consequently, a solid groundwork has been laid for a conducive investment environment. Furthermore, the settlements for exchange trading are conducted via Mongolian banking and financial institutions, resulting in an increase in foreign currency income, strength of exchange rates, and the creation of favorable conditions.

Since January this year, 9.4 million tons of coal and 272,2 thousand tons of iron ore concentrate traded on the Mongolian Stock Exchange with a total value of 4.3 trillion MNT. ■

"Our group is the largest player in the mining industry, engaged in exploration, mining, beneficiation, and refining of gold, silver, copper, coal, and other minerals."

Narantsogt Sanjaa

CEO
ERDENES MONGOL

Could you introduce Erdenes Mongol?
Erdenes Mongol LLC was established in 2007 as Mongolia's principal state-owned enterprise responsible for representing the government's ownership in matters involving strategically significant mineral deposits. Our company serves as the holding company for 30 different legal entities, which are grouped into Copper & Metals, Fuel & Energy, and Infrastructure & Logistics groups. Our group is the largest player in the mining industry, engaged in exploration, mining, beneficiation, and refining of gold, silver, copper, coal, and other minerals, and together we account for a substantial share of Mongolia's resource sector, holding 14% of the nation's recognized coal reserves, 65% of copper reserves, 15% of fluorspar reserves, 55% of iron reserves, and contributing around 30% of the country's total export earnings.

How has Erdenes Mongol performed in 2023 and what is your outlook for 2024?
In 2023, Erdenes Mongol LLC successfully implemented significant structural changes aimed at fortifying the governance structure of its subsidiaries and affiliates; these measures have already resulted in notable improvements in their economic efficiency. Consequently, major subsidiary companies of our group achieved historical results in terms of product processing volume and sales revenue in 2023.

For instance, Erdenet Mining Corporation SOE anticipates a notable 10% increase in processed ore volume and a 6.8% growth in sales for the year 2023 compared to the previous year.

In addition, we are striving to attract foreign investors and fostering mutually beneficial collaboration for upcoming projects and programs at the group level within the framework of our new strategic plan.

Looking ahead to 2024, Erdenes Mongol Group intends to develop industrial parks to create an industrial production chain by providing private sector companies that are engaged in activities of producing final goods from mineral resources to ensure the implementation of the government's New Revival Policy.

Much of Mongolia's territory remains under-explored. What is the exploration strategy undertaken by Erdenes Mongol?
Currently, our company holds 67 mining licenses and 17 exploration licenses. We also have a number of licenses for which the response is still pending. Erdenes Mongol Group does not have the resources to investigate all mineral reserve fields. As a result, we have begun the process of identifying essential minerals and we are pursuing a program of expanding investment and boosting exploration and research in the sector of critical minerals. With regards to exploration activities, we are focusing on increasing the reserves of existing exploration and exploitation fields through commissioning additional detailed exploratory studies in accordance with internationally accepted standards such as JORC standard. Foreign investors are always open to investing in and collaborating on these exploration and exploitation projects.

What should our international readers know about Mongolia?
Mongolia has abundant mineral resources, ranking among the top 10 in the world, and is home to over 80 different types of minerals. We aim to reduce the export of unprocessed raw minerals and further develop the mineral-processing industry. I would like readers and foreign investors to know that our country has numerous advantages in terms of abundant mineral resources with a geographical location close to major export markets, a skilled workforce, and a state policy to safeguard and assist potential investors. Numerous international investors have shown interest in Mongolia, however, we recognize that there are certain hurdles such as an unstable legal environment and inconsistent policies with regards to supporting investors. As a result, the Mongolian government is focusing heavily on making reforms to the investment law and enhancing its business climate.

What are some upcoming developments?
In our medium-term strategic plan, Erdenes Mongol Group intends to establish industrial plants to produce basic raw materials such as cathode copper, steel billets, lime, and coke, which are essential for the manufacturing of final products based on the resources of the group's large mining entities. Hence, the group will be able to generate opportunities for the private sector to create value by investing in the establishment of industrial parks and the provision of primary raw materials and infrastructure to their processing plants engaged in production of end-products. In this way, instead of conducting a single project, it will be feasible to construct a cluster in which the public and private sectors collaborate to completely utilize natural resources and generate final goods. Furthermore, Mongolia's mineral processing industry will be brought to the next level, and by increasing the value of our minerals, we will be able to give full benefits to our investors. ■

"We aim to collaborate more with various industries in Mongolia, including mining, and customize our flights to meet their needs."

Munkhtamir Batbayar

President & CEO
MIAT (MONGOLIAN AIRLINES)

Could you introduce MIAT to our international audience?
MIAT is a 100% state-owned entity that operates out of the Chinggis Khaan International Airport. Established in 1956, the airline began its international operations in 1992, and currently offers services to several key destinations across the globe, including Frankfurt, Istanbul, Seoul, Busan, Tokyo, Osaka, Beijing, Hong Kong, Guangzhou, Phuket, and Bangkok. Before the conflict between Russia and Ukraine, MIAT also operated flights to Moscow.

The pandemic hit the aviation industry hard. How did MIAT recover?
Getting back on our feet after the pandemic years of 2020-2022 was challenging. However, we managed to operate 3,200 flights in 2023, which is comparable to the pre-pandemic levels. Nonetheless, with a population of only 3.3 million people, Mongolia's market is small, which makes it challenging to achieve the required load for all flights.

Could you elaborate on MIAT's growth strategy and international expansion?
Our strategy for growth involves expanding our network by forming partnerships with different airlines. For example, we do not have direct flights to London, but we offer this connection through our partner airlines with a stopover. In August of 2023, the governments of Mongolia and the United States signed an "open skies" agreement, something we have been working on for the past two decades. Last year, we also welcomed our first Boeing 787 Dreamliner aircraft and are expecting a second one in the first quarter of this year. This will bring us closer to opening up flights to the US starting from 2024. Our goal for 2025 is to open up new destinations and offer direct flights to Vietnam, Singapore, and Australia.

Over the past few years, we have been focusing on developing the sixth freedom rights, which allows passengers to be transported between two nations by an airline of a third country, but via its home base, effectively turning Mongolia into a preferred transit hub. As a result of our efforts, we have tripled the number of our transit passengers since 2019. Additionally, foreign investment in the country's mining, renewable energy, and other sectors has increased international travel into Mongolia.

MIAT offers direct flights to the Oyu Tolgoi (OT) site. How important is the mining sector to the airline?
As part of our strategy, we aim to collaborate more with various industries in Mongolia, including mining, and customize our flights to meet their needs. Our collaboration with the OT mining site serves as a great example. Since 2015, we have provided around 30 flights per week to the OT site. During the pandemic, when we faced a severe cash flow crunch due to low demand, we negotiated an agreement with the CEO of OT for long-term discounted trips paid upfront. This helped us inject much-needed cash to pay for our employees and keep the business afloat. I previously worked for OT for six and a half years before joining MIAT, and I am confident that the mining sector can offer many opportunities to MIAT and the country itself.

As the aviation industry is becoming more regulated, how is MIAT approaching sustainability?
Our main strategy is to increase our fuel efficiency by acquiring less fuel-intensive aircraft and upgrading our existing fleet with software that can reduce fuel consumption. Additionally, we have introduced the paperless cockpit concept, which we are now expanding to our back office operations.

Mongolia initiated the 'Welcome to Mongolia' three-year campaign, which started in 2023. In your opinion, how could Mongolia attract more visitors to the country?
Logistics plays a vital role in enabling more people to visit Mongolia. To increase Mongolia's global presence, we need to make it convenient for people to come here, and that is where MIAT comes into play. Though we are not as big as Turkish Airlines or Emirates and cannot fly to everywhere, we can expand our network of partnerships to connect with every city in the world, making it easier for people to travel to Mongolia with just one to two stops. Mongolia is a unique country with a rich culture, beautiful nature, and business opportunities that the world needs to explore. By ensuring efficient logistics at an affordable price, we can attract more attention to our country. From 2023 to 2025, the Mongolian government launched the 'Welcome to Mongolia' campaign to make tourism one of the main pillars of the economy. ■

Mongolia's Economy

Diversification goes back in circles

A small economy with a small population, tucked between Siberia and the Gobi Desert, with a harsh climate that swings from -40 to +40 Celsius, has few options for economic growth. Agriculture is mostly limited to livestock and at the mercy of the weather; manufacturing and trading are limited by the remote location and the lack of exit ports; and the service sector is constricted by the lack of a substantial domestic market. Mining remains Mongolia's best shot, but relying too much on commodities holds perils too. On a good year, like 2023, mineral-export pushed GDP growth close to 6%. The opposite becomes true when commodity prices drop.

Mongolia is well aware of the risks of depending on mining alone. "It is anticipated that the economy will experience a surge in growth, surpassing 6% by 2024-2025, due to the rise in mining production. However, it is imperative to implement reforms that encourage economic diversification to maintain this growth and establish resilience against domestic, external, and climate-related disturbances," said Altai Khangai, the CEO of the Mongolian Stock Exchange (MSE).

The main options for economic diversification are agriculture, value-added manufacturing, power, and tourism. Before the development of mining, Mongolia was mostly an agrarian economy, and the general economic advice was to diversify away from agriculture and into other sectors like mining. Now, the tables have turned, with the difference being that Mongolia is advised to develop a more technologically driven, sustainable, and integrated agri sector. For instance, instead of selling cashmere, it could process the raw material into yarn, deriving more value. The same principle would apply in the minerals sector. Companies like Oyu Tolgoi are talking about eventually producing cathodes, rather than simply copper concentrates in the future. Erdenes Mongol, the main state-owned enterprise that holds a stake in 30 different mineral companies (exploration, mining, logistics), also said it wants to build more processing plants.

Mongolia's main opportunity outside of mining could be renewable power. The Asian Development Bank estimates that Mongolia could generate 5.45 terawatt-hours of clean wind and solar energy, which is about 62% of China's electricity generation in 2022, reported the Lowy Institute. "Mongolia's renewable resources are incredible. Mongolia is one of the sunniest locations; this, and the altitude, makes it ideal for photovoltaics," said Oliver Schnorr, the CEO of Euro Khan, a company that eventually chose wind to generate green power in Mongolia at its Sainshand Wind Park.

The constraints of developing large-scale renewables are political, suggested the authors at the Lowy Institute article: If Mongolia were to export its green energy to China, the most obvious candidate for the purchase, it would tap into a gap that currently Russia fills, as an exporter of energy to both China and Mongolia. The disruption could upset the relationship between Mongolia's only neighbors. China is building a US$12 billion solar project on its side of the Gobi. "China could build massive renewable plants in Mongolia, but Mongolia wants to guard its energy sovereignty as much as it can outside of China's influence. Even Oyu Tolgoi is currently powered by a company in Inner Mongolia (Inner Mongolia Power Corporation)," said Schnorr.

The development of hydropower plants would also bump into a geopolitical obstacle, according to Schnorr: "Hydropower projects are a bit more problematic because the important Orkhon River is feeding into the Selenge, and the Selenge flows into Russia, draining into Lake Baikal. Russia would be alert if Baikal Lake levels dropped as a consequence."

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Image courtesy of SRK Consulting Mongolia

"The Bank of Mongolia expects that the recent banking sector reforms will bolster banks' capital, improve governance, and enhance the performance of the domestic stock market."

Lkhagvasuren Byadran

Governor
BANK OF MONGOLIA

Could you provide an overview of Mongolia's monetary policy strategy and objectives?

As outlined in the Central Bank Law, our primary objective is to ensure the stability of the national currency, the tögrög. However, this statement is subject to two interpretations: either focusing on inflation or the exchange rate. The Bank of Mongolia explicitly states its objective as safeguarding the purchasing power of the tögrög, demonstrating a commitment to price stability measured by the Consumer Price Index. On the other hand, some stakeholders tend to lean towards emphasizing exchange rate stability. In our country, characterized by a small, open economy heavily dependent on commodity exports, maintaining a flexible exchange rate is crucial. It serves as a vital shock absorber in the economy. Consequently, the Bank of Mongolia's mandate is to stabilize inflation at 6% with a band of +/-2 percent over the medium term, as outlined in the Monetary Policy Guidelines for 2024, approved by the Parliament.

Could you comment on the efforts to tame inflation and the outlook on inflation/interest rates for 2024?

The year 2022 presented substantial challenges for numerous central banks, with a notable surge in inflation attributed to rising oil and food prices and supply chain disruptions stemming from geopolitical tensions in the aftermath of the pandemic. In response to these circumstances, the Bank of Mongolia implemented a series of five policy rate hikes throughout 2022. This resulted in a cumulative increase of 7 percentage points, elevating the rate from 6% to its current level of 13%.

Over the past few quarters, inflation has exhibited a moderate decline, reaching 7.9% in December 2023—a substantial reduction from the 16.9% recorded in June 2022. This decline can be attributed primarily to the decrease in import prices, facilitated by the easing of supply chain disruptions and the stabilization of the exchange rate, supported by an upswing in coal exports. Furthermore, the impact of a tighter monetary policy stance has become evident in the sluggish growth of imports and business loans throughout 2023.

How can Mongolia reduce/face macro risks as a commodity-driven economy?

Mongolia, being a resource-rich and landlocked country, faces potential spillovers from developments in its two neighboring nations, China and Russia. Furthermore, with the mining sector serving as the primary driver of our economy, coupled with limited buffers, our economic landscape becomes susceptible to external shocks. In light of these economic characteristics, it becomes imperative to manage our economy countercyclically. The establishment of buffers within economic sectors and among various agents plays a pivotal role in fortifying economic resilience against adverse conditions. Additionally, fostering economic diversification emerges as a crucial strategy to further enhance our economic resilience.

In this context, the Bank of Mongolia has successfully collaborated with commercial banks to strengthen priority sectors by increasing loan supplies. Notably, commercial banks, in collaboration with international financial organizations, are actively supporting the non-mining export sectors, particularly the wool and cashmere sectors. Additionally, the banking sector, spearheaded by the central bank, has played an active role in supporting the "Food Supply and Safety" national campaign, an initiative led by the President of Mongolia. Our engagement in green financing exemplifies a proactive approach toward addressing the challenges of climate change, showcasing our commitment to building a more resilient and sustainable future.

What is the expected outcome of recent reforms in the banking sector, including the compulsory public listing of the country's top five commercial banks?

The Mongolian banking system is at a crucial crossroads. Policy reforms have been crafted to tackle the barriers obstructing the effective advancement of the banking sector. The "Banking Sector Reform Program 2020-2023" covered the entire Mongolian banking sector, with the goal of fortifying banking institutions in the short to medium term.

As part of this ambitious reform program, the Bank of Mongolia has focused its efforts on reducing ownership concentration and improving the corporate governance of banks. This aims to foster a transparent and socially responsible banking system.

The transition of banks into joint-stock companies and the IPOs of systemically important banks (SIBs) have led to a rise in investment opportunities, expanded market participation, and the availability of highly liquid financial products. The Bank of Mongolia expects that these recent banking sector reforms will bolster banks' capital, improve governance, and enhance the performance of the domestic stock market.

The current two-tiered system, comprising the central bank and commercial banks, has navigated challenges and propelled the banking and financial markets forward. ■

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The careful courting of a third neighbor

The invisible fences around Mongolia's development are rooted in borders with only two neighbors, Russia and China. Mongolia is not only inescapably enclosed as a geography between the two, but it is also highly dependent on them. From Russia, Mongolia imports most of its critical fuel and energy; with China, on the other hand, Mongolia is bound through its exports, of which 90% are minerals and almost all go south to China. Landlocked, Mongolia also relies on its two neighbors logistically. Everything that reaches the Mongolian territory must go through Russia or China. Ever since international sanctions have been imposed on Russia, almost all cargo has been redirected through China. The sanctions have also deviated financial transactions, with most of Mongolia's foreign trade being facilitated by Russian banks. The consequences of this tight encirclement by the two countries are easy to gauge: Should Russia decide it will no longer export oil to Mongolia, or China that it will no longer buy Mongolia's copper and coal, Mongolia's economy would be decimated. Despite its vast territory, Mongolia feels squeezed between its two neighbors, and has been wriggling in a delicate balancing act between maintaining good neighborly relationships and forging new relationships with what it calls 'third neighbors'.

History taught the country about the risks of being bordered by two powerful nations. Mongolia was subjected to Chinese control as a province of China from the 17th to the 20th century, then, after a very short period of independence (1912-1919), Mongolia became a satellite state of the USSR, becoming the first Asian and second country in the world to adopt communism. Since its peaceful transition to democracy in 1990, Mongolia knew its freedom was fragile, so it must play both sides

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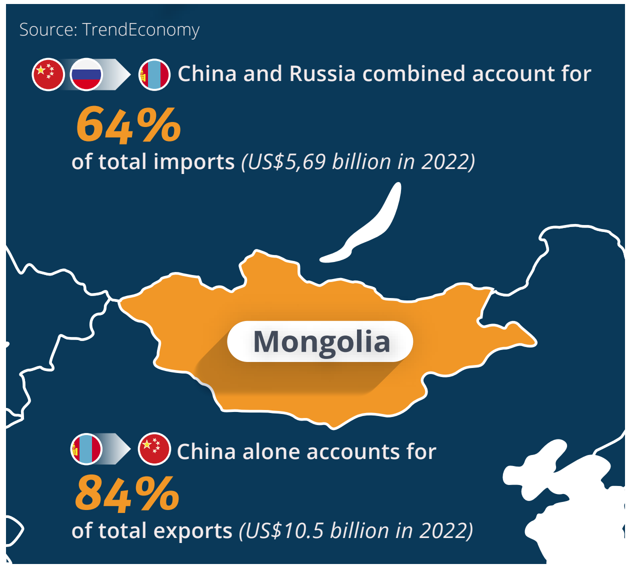

"Today, Moncement Building Materials supplies about 30- 45% of Mongolia's cement needs, and the country has become mostly self-sufficient."

Nasaa Munkhnasan Narmandakh

Chairwoman and CEO
MONPOLYMET GROUP

Could you introduce Monpolymet?

We are a diversified mining company with 30 years of experience in the industry. Our company is a second-generation, mother-daughter business, founded by my mother who is a senior geologist. Our journey began with a vision to not only excel in the mining industry but also to redefine it with a strong commitment to environmental stewardship and social responsibility. After working for the World Bank Group, I came back to Mongolia to start our cement manufacturing and concrete business. We then expanded into real estate and construction divisions. We have about 1,200 people who help keep our company's rank in the 100 companies in Mongolia. From a few female geologists who laid the groundwork for the Group three decades ago, Monpolymet remains a female-led organization, with mostly women C-suite executives.

Moncement Building Materials has become a leader in the cement industry. What role does the company play in the Mongolian construction scene?

Until recently, almost all of Mongolia's cement had been imported - we found a profound need for local production that would ensure both reliable supply and consistent quality. Realizing the importance of cement for our much-needed infrastructure development which I think is a basis for the country 's development, we established Moncement Building Materials in 2016. This venture was not just an expansion of our business portfolio; it was a strategic move towards self-reliance, reducing Mongolia's dependence on imported cement and boosting the national economy. We identified limestone deposits that could provide long-term sustainable raw material for our cement operation. Today, Moncement Building Materials supplies about 30-45% of Mongolia's cement needs, and the country has become mostly self-sufficient. This year, Mongolia registered a record-high surplus in its current account balance of payments, an indication that the country is exporting more than importing; we are glad to be contributing to our country's resilience by supplying foundational construction material to our construction and industrial development needs.

Monpolymet is a leader in technical rehabilitation. What role has ESG played in the company's evolution?

Over the years, we have invested significantly in restoring mined areas, reforestation, and biodiversity conservation. These efforts have not only helped in healing the landscapes but also in setting industry benchmarks for environmental responsibility. This came with a strong mission that my mother focused on delivering in parallel to sustainable mining and exploration practices. We carry out not just technical restoration but also biological rehabilitation to ensure a minimal footprint from mining activities.

ESG plays a big role in also how we choose our investors. For instance, our shareholder in our cement business, the European Bank for Reconstruction and Development (EBRD) shares a vision of environmental sustainability and technological innovation. The commitment from both investors to leverage environmentally friendly and sustainable technology has introduced our waste heat recovery system at Moncement plants. This new system creates electricity for the plant by utilizing the heat from the kilns therefore cutting power consumption by half while significantly reducing carbon emissions. Our plants also recycle most of the water used (dry technology plants) which has been a major innovation in Mongolia's heavy industry.

We have integrated sustainable practices from water conservation in our mining processes to the use of eco-friendly technologies in our manufacturing units. We are also actively engaged in community development. This includes creating job opportunities, supporting local infrastructure projects, and ensuring that the benefits of our operations extend to the communities we operate in.

How can Mongolia's economy become more resilient to commodity cycles?

Much of our growth as a country will hinge on infrastructure, and how we tie into sustainability. Thousands of trucks roam in our Gobi Desert destroying our grasslands without roads; the dust has sadly become a new normal which is unacceptable. With a sufficient infrastructure and the right set of coherent policies in place governing environmental rehabilitation and conservation, while enticing the right investment into diversifying sectors we can strengthen our economy.

Do you have a final message to share with the broader mining and investment community?

Monpolymet is committed to being a positive force for the country and raising new benchmarks. We have successfully navigated the complexities of the global market while maintaining our commitment to sustainable and responsible business practices. We believe that a company's worth is not just in its financial achievements but also in its contributions to ethical practices and sustainable development.

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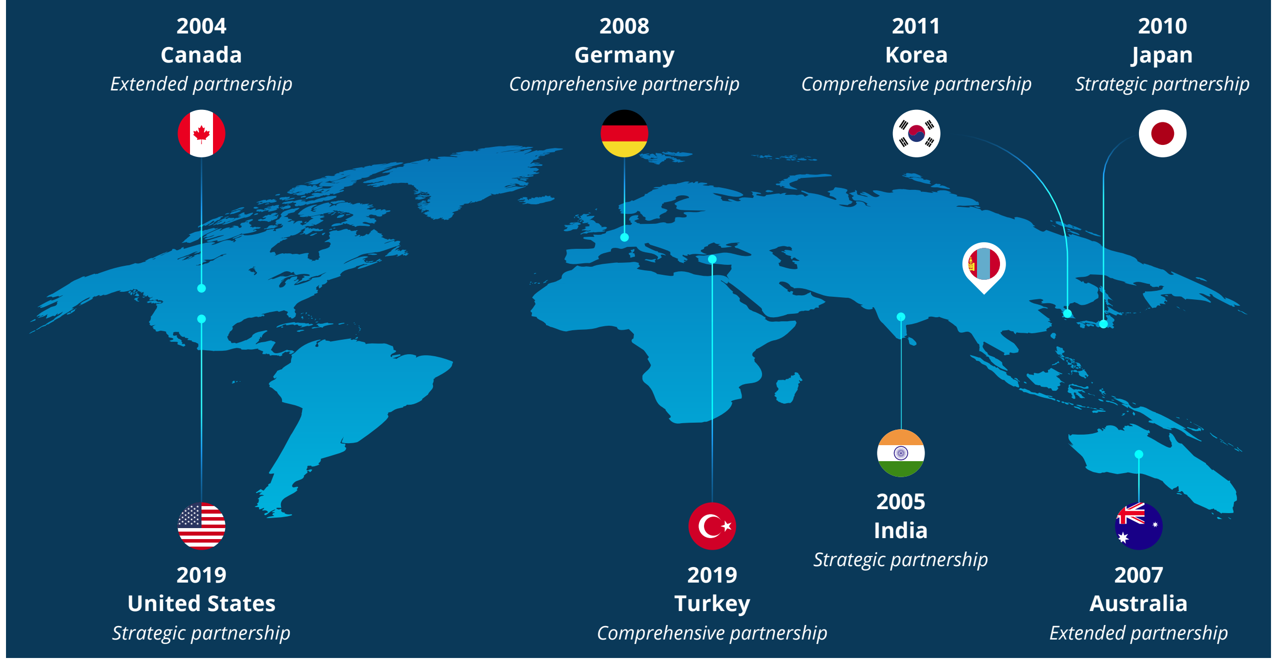
Mongolia's Third Neighbor Partners
Source: Ministry of Foreign Affairs of Mongolia



to protect itself. Recently, it was among one of only 34 countries that abstained from a non-binding UN peace resolution to demand Russia leave Ukraine and end the war. With Russia at war and less internationally available for cooperation, Mongolia has leaned more towards China, bolstering relationships on trade and infrastructure. The two neighbors have been working on the Power of Siberia 2, a proposed gas pipeline going from Russia to China via Mongolia. Mongolia's coking coal exports to China are growing. "Lately, China has been reducing imports from Australia, the US, Canada, or Africa, prioritizing closer nations – Mongolia and Russia," said Zolo Jargalsaikhan, executive director of the Mongolian Coal Association.

In parallel, Mongolia has also established "third neighbor" relations to counterbalance its overdependence on Russia and China. Eight third-country partners are prioritised: Japan, India, the US, Turkey, Germany, South Korea, Canada and Australia. The countries that exert the most cultural influence in Mongolia today appear to be Australia, especially through the connection of mining, Rio Tinto being an Aussie. The nickname of 'Mozzie', a Mongolian Aussie, has emerged to describe the growing number of Mongolians with Australian links. The most recent third neighbor on this list is the US, with which Mongolia signed the 'Economic Cooperation Roadmap' in August 2023. The US is particularly interested in the critical minerals supply chain. Likewise, a year earlier, Germany also looked to Mongolia as a potential future alternative supplier of critical minerals like copper and rare earths. France and South Korea show similar interests.

For the time being, mining remains the main source of FDI for Mongolia, just as China remains the biggest investor and main trading partner. Edward Faber, senior country economist at the Asian Development Bank, calls out a common bias: "When we think about investment, we too often see it from a Western perspective, of Western-led FDI, but Mongolia has tremendous advantages of being situated next to two very large trading partners and investors. It is crucial for the country to maintain solid relationships with its two neighbors. In terms of investment coming from further afield, distance plays a big factor, maybe more so than geopolitics." ■

Tulga Tsenddorj
Founder
PHOENIX DRILLING

"Mongolia is a small democracy nestled between two major autocracies. To maintain our democracy and economic growth, Mongolia must foster third-neighbor relationships with developed democracies. However, the subtle influences exerted by our powerful neighbors on everything from policymaking to civil society movements cannot be ignored."

"Mongolia's economy is narrowly dependent on the mineral sector and therefore more vulnerable to external shocks."

Edward Faber

Senior Country Economist
ASIAN DEVELOPMENT BANK (MONGOLIA RESIDENT MISSION)

Could you provide an overview of ADB's work in Mongolia?

ADB is the largest development financier in Mongolia. We have been here ever since Mongolia transitioned into an open economy. Our main goal is to provide financial support in the form of loans or grants, together with technical assistance to the government and to the private sector, to support development goals, including the public sector and health infrastructure, as well as connectivity, trade, capacity building and governance. We have been working closely with the Mongolian government to advance its reform agenda. For example, this year we provided a US$100 million loan for the country's fiscal, financial, and economic resilience, especially its resilience to shocks. Mongolia's economy is narrowly dependent on the mineral sector and therefore more vulnerable to external shocks. During 2022, we similarly provided US$100 million countercyclical support to help Mongolia overcome the twin shocks of the Russian invasion of Ukraine and the closure of the Chinese border due to Covid.

Could you elaborate on how ADB supports Mongolia's economic diversification and shock resilience?

On the one hand, we support the overall economic activity in the country through infrastructure developments (roads, ports, etc.) and public sector management activities (strengthening fiscal and financial reforms, etc.) to create an enabling ecosystem for diversification. It is important that Mongolia builds financial and fiscal buffers, available during downturn periods and external shocks, but also to use them to invest in other sectors and drive diversification. On the other hand, the ADB also has private sector operations, lending directly to businesses. For example, we provided loans for agribusinesses. We also financed multiple companies during the pandemic when cash became tight and the capacity of commercial banks was limited. Also under our private sector operations, a third type of borrower is financial institutions. We provided several loans to the banking sector to allow these banks to then fund SMEs, which tend to struggle the most with access to credit.

What are the specific priorities of the ADB under its current Country Partnership Strategy (CPS)?

ADB's support for Mongolia is guided by our four-year CPS, which coincides with the government cycle. The current CPS is called 'Laying Resilient Foundations for Inclusiveness and Sustainable Growth,' having been prepared in 2021 when the country was coming out of the pandemic. Under this framework, we committed to provide the government with US$421 million for the country's post-pandemic recovery. Most recently, we approved a US$150 loan for regional road development and maintenance (Phase 3) that supports paved road connections and incorporates climate adaptation and mitigation principles, focusing on connecting provincial centers in Western Mongolia. Also last year, we approved a facility called 'Aimags and Soums Green Regional Development Investment Program,' a project worth US$735 million to promote green territorial development and urban-rural linkages; to make regional hubs more attractive for businesses, especially agro businesses; to address urban migration challenges; and to help with livestock management given Mongolia's serious issues with over-grazing. Another loan we hope to approve soon is the 'border efficiency for sustainable trade,' which is set to upgrade facilities in at least three of Mongolia's border posts.

Could you explain Mongolia's climate change challenge and what can be done to navigate it?

Mongolia is more vulnerable compared to other countries to the impacts of climate change because of increased desertification, water scarcity, and extreme weather conditions, all of which can be worsened by climate change. Mongolia suffers from dzud – when severe weather conditions follow poor pasture conditions, and this can lead to the widespread death of livestock. Ulaanbaatar also faces major air quality challenges due to the burning of coal in Ger settlements around the city.

ADB has positioned itself as the climate bank for Asia. We want to help Mongolia navigate severe challenges that emerge from climate change, including desertification, through activities like rangeland management. For example, we had a project on improving air quality by supporting the government's transition from burning coal towards briquettes, which are less polluting.

How do you think Mongolia's positioning between Russia and China impacts its attractiveness?

Mongolia has tremendous advantages of being situated next to two very large trading partners and investors. It is crucial for the country to maintain solid relationships with its two neighbors. In terms of investment coming from further afield, distance plays a big factor, maybe more so than geopolitics. ■

Orkhon Onon

CEO
TRADE AND DEVELOPMENT BANK (TDB)

Could you introduce TDB to our international audience?

TDB is the longest-serving commercial bank in the country. We are the largest corporate bank (accounting for 40% of total corporate loans in the banking sector) and the leading international bank in Mongolia's banking industry. We work with more than 300 international banks and financial institutions on payment, settlement, trade finance, and others. TDB handles 32% of Mongolia's international remittance and 27% of trade finance transactions.

How has TDB performed in 2023?

Supported by the economic recovery led by mining and transportation sectors, net loan portfolio, and total deposits by customers of major banks have shown steady growth year-to-date. TDB experienced an increase in net profits 2023 compared to the previous years.

Can you tell us more about the bank's presence and strategy in the mining sector?

Indeed, we provided a US$60 million term loan to Steppe Gold to partially fund the construction and completion of the Phase 2 Expansion of the ATO Gold mine in the Dornod province of Mongolia. The project uses environmentally friendly heap-leaching and flotation methods for extraction. This sets this project apart from other gold projects in the country. We have been working with mining companies since the mid-nineties, financing alluvial gold mining in the country, now we are looking more at hard-rock gold mines that require more capital and provide a long-term perspective in terms of reserves and returns.

What are your priorities moving forward?

Our bank stands committed to a strategic vision that combines ambitious growth with a responsible and sustainable approach to banking. Our key priorities moving forward are digital transformation, as a newly listed company we are exploring opportunities for dual listing our stocks on international markets, and expansion into SME and retail banking business, while maintaining profitability and asset quality. As we embark on this journey of transformation and growth, we do so with a commitment to excellence, customer service, and shareholder value. ■

Norihiko Kato

CEO
GOLOMT BANK

Could you introduce Golomt Bank and its performance in recent years?

Golomt Bank is the third-largest commercial bank in Mongolia in total assets. Established in 1995, Golomt Bank grew mainly as a corporate bank, but in the last six years, we have diversified our business portfolio well across corporate, SME, retail and mortgages. As Mongolia's economy went through a deep recession in 2016, the country reverted to an IMF bailout that came with a lot of policy requirements. In 2017, an asset quality review (AQR) by the Bank of Mongolia identified problem loans that were not properly addressed. It took us almost five years to solve the problem assets issue and achieve a comprehensive balance sheet cleanup. We returned to profitability in 2022 and completed IPO on the Mongolian Stock Exchange. We started 2023 with robust capital and we are now ready to fulfill our growth story as one of the country's largest banks.

What is the ability of Mongolia's banking sector to finance large developments in mining, infrastructure, and energy?

The financial capacity of Mongolia's local commercial banks has improved significantly in recent years, but the size of each bank is still relatively small to serve large-scale projects which are usually better suited for foreign investors. Our banks can contribute more by financing the local supply chain and supporting local players to meet the requirements of their customers.

What are the main priorities at Golomt Bank for 2024?

One priority is digitalization. Golomt Bank is a leader in bringing new digital products, especially in the consumer and micro-SME space. Secondly, sustainability is another important priority on our agenda. We want to increase our green finance loans and develop stronger ESG risk management and practices. Finally, another area of focus is accountability as a listed company, not only in communicating with the market but also in promoting sustainability. ■

Sang Yong Cho

Partner
KPMG MONGOLIA

Could you introduce KPMG Mongolia?

KPMG Mongolia was established in 2012 as a JV between KPMG Korea and NIMM Audit LLC. We have grown to a team of 130 dedicated professionals, both locals and expats, and we are now ranked as the largest audit firm in the country and the best recruitment audit firm.

What have been the main demand trends for your services in recent years?

Before COVID-19, there were more requests for FDI-related due diligence, valuation, and M&A transaction work, but the pandemic and the Russian war have slowed these service requests. Now, we are seeing an uptick. In response to higher inflation and interest rates, more companies explore new financing sources with lower interest rates and look to optimize group management systems and increase efficiency. In mining, the demand for advisory services mostly came from foreign investors who wanted to enter the market.

Soon, we also anticipate more demand for ESG-centered advisory services as the industry transitions towards net-zero goals and the newly passed IFRS S1 and S2 standards guide companies towards a standardized sustainability reporting structure.

How competitive is Mongolia as an investment destination from a tax perspective?

The Mongolian tax system still requires development and clearer implementation guidance to align with international practices. In recent years, the Government of Mongolia has passed several laws and regulations, including Amendment to 2017 Minerals Law and the long-term developmental plan 'Vision 2050' to improve transparency and create a more attractive business environment. Although this is a good starting point, policymakers need to also focus on how these laws and policies are implemented. The only incentive available to foreign investors is tax stabilization to fix percentage rates of corporate tax, customs duty, VAT, and royalty for up to 27 years. We see a mismatch between the legislators' preference for keeping domestic tax law simple and foreign investors' need for more complex transactions. When investors try to clarify uncertainties from tax offices or departments it often takes months to hear back. ■

Shaukat Tapia

Country Managing Partner
PWC MONGOLIA

Could you give us an overview of PwC's work in Mongolia?

PwC Mongolia opened its office in Ulaanbaatar in September 2010 from a completely greenfield basis. At first, we were primarily focused on audit, but today we offer all service lines, including assurance, tax, and advisory. The PwC network's opening of a member firm in Mongolia was driven by the immense potential of the mining and extractive industries. Many investors were in town during the boom years, and to that extent we were straining to respond to the immense demand. That changed with the crash in 2012. We are now seeing recovery and the overall sentiment is one of cautious optimism.

The government is looking to update the current mineral and investment law. Could you unpack some of the main challenges that the current investment law presents?

The new investment law looks at scrapping the US$100,000 limit for investment, as well as rationalizing the legislation for the ownership of land for foreign companies and streamlining inspections. Whether the new mineral law will be enacted before elections next year is anyone's guess, but there is a lot of pressure from private businesses on the government to act quickly.

What are the main insights gathered from your most recent PwC 'CEO Survey' in Mongolia?

There was a general concern over macroeconomic and geopolitical risk, emanating from China's post-Covid repercussions and the war in Ukraine. While China represents 90% of Mongolia's exports, Russia has been a key source of imports. Previously, most goods, from foods to mining equipment, were imported either directly from China and Russia or from Europe through Russia via train. But with Russia under sanctions, and most multinational corporations exiting Russia, procuring these goods directly from Russia or from Europe by train due is not possible. Goods from Europe are being delivered by sea to China and then being brought into Mongolia by road or train putting a lot of pressure on costs and lead times. ■

Production and Exploration

“Mongolia has an estimated 6,000 deposits of some 80 different minerals, including coal, copper, gold, iron ore, tungsten, molybdenum, phosphate, uranium, and oil.”

Surakhbayar Galsan
Managing Director
BLACKROCK PARTNERS
(BRP)

Image courtesy of Oyu Tolgoi

Coal

Greater expectations

Mongolia's mining industry was born with coal more than 100 years ago. Even though copper, gold, uranium, and battery metals receive the most international attention today, the country's economy remains very much anchored in coal. Up to half of the country's total export proceeds come from coal; in 2023, Mongolia exported 60 million tons of coal to China, a record feat that helped it recover its foreign reserves and stabilize the foreign exchange rate.

With a third of the coal produced being high-quality metallurgical coal used in steel alloys that China is hungry for, there is no doubt about the long-term demand for Mongolia's coal. Nor are there questions over supply availability, with Mongolia sitting on approximately 34.6 billion t in proven reserves, according to the Mongolian Coal Association. There are, however, doubts about the industry's long-term accountability, financeability, and competitiveness. These, in turn, hinge on its ability to improve governance, productivity, and logistics.

The Mongolian coal industry is not only highly concentrated, with 15 companies responsible for over 95% of the coking coal output, but it also has a high degree of state ownership. The largest company, which alone accounted for half of 2023's exports and presides over one of the largest coking coal reserves in the world (estimated at 7 billion t), is the state-owned Erdenes Tavan Tolgoi (ETT). In 2022, ETT became the subject of a serious corruption case involving its CEO and other high-level officials accused of embezzling billions of dollars out of coal sales to China. Coal worth billions of Tugriks was smuggled out of the country. Thousands of Mongolians went to the streets in protest, their outcry directed not only at the ETT but at endemic corruption that plagued the country, especially in the coal industry. Mongolia scores poorly in the corruption perception index, placed as the 116 out of 180 countries most perceivably corrupt countries monitored by Transparency International.

17 people alleged to have taken part in the illegal misappropriations of coal were arrested after the scandal. As owners of ETT, the government was directly implicated and felt urged to take broader measures to both placate public outrage and prevent such large-scale thefts from repeating. A solution was found by decreeing that state-owned mining companies, beginning with the coal ones, must sell a percentage of the product via auctions on the Mongolian Stock Exchange (MSE). The contracts would apply to the coal exported through the Gashuunsukhait border post, the largest export point in the country, located next to the Chinese border.

The Mineral Commodities Exchange was established in early 2023, and, by November of the same year, 9.4 million tons of coal were traded, according to Altai Khangai, the CEO of the MSE. The new system is meant to increase transparency and reduce bureaucracy, as buyers and sellers can close spot, futures, options, and forwards contracts via an auction system, therefore reducing the occurrence of agreements behind closed doors. "The trading of mining products on the stock exchange has facilitated the establishment of appropriate conditions for the accurate calculation of tax fees. This, in turn, will lead to an increase in revenue for the state budget, ensure the fulfillment of contractual obligations related to the supply of mining products, and mitigate risks for the parties involved in the trade.

Main coal players:

Majority state-owned:

- ETT (Erdenes Tavan Tolgoi)
- Shivee Ovoo
- Baganuur JSC
- Tavan Tolgoi JSC

Publicly listed:

- MMC (Mongolian Mining Corp) (Hong Kong Stock Exchange: 0975)
- MEC (Mongolia Energy Corporation) (Hong Kong Stock Exchange: 0276)
- South Gobi Resources (CVE: SGQ; HGK: 1878)
- Aspire Mining (ASX: AKM)

Private:

- MAK (Mongolyn Alt)
- Terra Energy LLC
- Usukh Zoos LLC

Image by linegold at iStock

Dolgormaa Bukhbat
CEO
BODI INTERNATIONAL

"The Tavantolgoi Gashuunsukhait (TT-GS) railway construction mega project has a total mainline alignment of 233.6 km. The main purpose of the rail will be to transport export coal from the mine to China, hauling 30-50 million t/y of freight and increasing the export capacity of Mongolia."

Furthermore, the settlements for exchange trading are conducted via Mongolian banking and financial institutions, resulting in an increase in foreign currency income and strength of exchange rates," explained Khangai.

The compulsory trading on the MSE has also helped with royalty tax estimations, which are calculated based on the price of coal in China. Companies end up paying up to 30% in royalties instead of the standard rate of 5% because the final selling price in China reflects the sale price, transportation costs, and the profit margin added by the Chinese end-seller. The Mongolian Coal Association has been in dispute with the government for two years over the matter, and sees the MSE update as a good step, providing a more accurate reflection of the market value of coal. However, only 10% of exported coal falls within this category, leaving the rest of sales still reliant on a system that does not benefit the Mongolian companies, its people, or even the government, said Zoljargal Jargalsaikhan, executive director at the association: "When coking coal prices in China surged to US$400/t during the pandemic, transportation costs across the border from Mongolia to China, across a mere 30km line, reached US$300/t, with the transportation companies absorbing most of the profit."

The government has set a goal for 30% of Mongolia's commodities to be traded on the Exchange. This will extend to copper, iron, and fluorspar, starting with state-owned companies (SOEs). For now, private companies can participate on a voluntary basis. On the buyers' end, the auctioned coal remains available for only a number of buyers, typically those closest to the border (in North China), logistics preventing those further south from participating, explained Jargalsaikhan.

Since Mongolia's border with China stretches 4,677 km, one would think logistics would be easy enough to send things over the fence. Yet logistical deficiencies, including the insufficient development of railways, have constricted Mongolian capacities for years; the country can produce 100 million t/y of coal, yet for the past 10 years, it has produced between 40 and 60 million t/y, most of which had been trucked to China. Over the 239 km between the Tavan Tolgoi site to the Gashuunsukhait border crossing, traffic lines of up to 25 km made of 12,000 coal truck drivers can be found at a given time, wrote NPR, an American NGO. Drivers can wait even a week before crossing. Road accidents are also frequent, reported multiple media.

In the last few years, however, Mongolia has increased its railway capacity by 50%, adding 900 km to the network, said Jargalsaikhan. The most recent extension has been the Tavantolgoi Gashuunsukhait (TT-GS) Railway megaproject, connecting the ETT site to the Chinese border.

Bodi International was the EPC contractor for the megaproject. Dolgormaa Bukhbat, the CEO of Bodi International, told GBR that the railway will reduce coal transportation costs by 3.8 times, helping boost the country's overall export capacity, while increasing safety and reducing dust, soil, and air pollution associated with trucking. "Transport by rail is much more environmentally friendly and safer than by trucks, and the development of the railway also greatly contributes to the nation's socio-economic development as over 2,000 workers, most of which are expected to be local residents, will be employed on a long-term basis when the TT-GS railway operates at its full capacity," said Bukhbat.

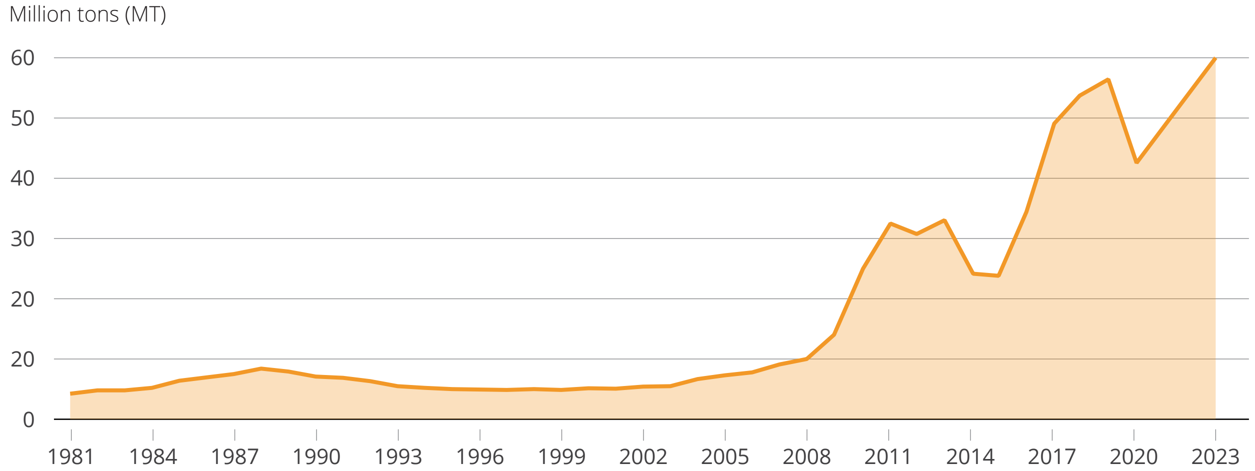
Besides the railway, ETT currently has 11 investment projects under its belt. These are primarily focused on increasing coal extraction through investments in new technology, a coal conveying system, building a coal handling and preparation plant, as well as a thermal power plant and transmission lines. So far, the company has spent US$1.8 billion out of a US$5.2 billion allocated budget. The country's first coking coal blending and storing facility is also underway at the Tavantolgoi Coal Terminal Stock project, promising to facilitate throughputs.

Munkhjargal Kh., the acting CEO who took over the helms at ETT following the scandal, has a banking and finance background, which he applies in his leadership. The new management, he said, managed to increase both coal sales and transportation levels by over 3.5% since taking over more than a year ago. Exploration efforts were also tripled during this period, he told GBR. ETT has only mined 2% of its current resource, with two out of six coal fields being currently in operation and one more in development at the feasibility stage. Munkhjargal is optimistic when he looks at demand, though he acknowledges that, with China being the main buyer, the industry is vulnerable to China's wants. Also, he admits: "As a state-owned entity, political risk is always a challenge, especially as cabinet changes often result in policy changes impacting our work. We expect the upcoming elections in 2024 to create some instability."

In the private coal sector, ASX-listed Aspire Mining has a different vision for the company, wanting to see itself become a reference point for responsible coal mining, comparable to what one would find in New South Wales or British Columbia where environments are as sensitive as Khuvsgul Aimag, a picturesque region in the north that locals call 'the Switzerland of Mongo-

MONGOLIA'S COAL PRODUCTION (1981-2023)

Source: CEIC Data; Mongolian Coal Association



lia' and which hosts Aspire's Ovoot coking coal. "The people living in Khuvsgul are concerned about the potential impact of coal mining on their environment. This is understandable given that public perceptions have been shaped by examples of negative impact from some irresponsible mine operators in Mongolia. The public has had little exposure to responsible min-ing operations," said Sam Bowles, Aspire's CEO.

After listening to the concerns of the locals, Aspire Mining updated its development plan, originally devised in 2012-2013, and decided to opt for a smaller operation, amenable to road haulage. "The Ovoot Early Development Plan (OEDP) forecasted an initially smaller scale mine and truck haulage across a road to be constructed that could also be used by the community. Following appointment of new management in 2019-20, the OEDP has been refined further to address remaining community concerns about environmental protection and local development," said Bowles.

A project with strong ESG credentials is also more likely to get funded. Global investors, including banks, are increasingly averse to financing coal. In Mongolia, the main commercial banks are also adopting a stronger environmental stance, with internal goals to increase their green finance portfolios. Golomt Bank, for instance, wants green loans to represent 5% of its portfolio by 2025, and 10% by 2030. That does not mean it will no longer finance coal: "Golomt Bank is supporting coal companies, while other international banks have stopped lending to coal-related businesses. In most developed countries, coal reserves have already been depleted so this may not be much of an issue, but in developing countries, it is not the case. There is a prevalent misconception that mining emits the most greenhouse gas (GHG), yet 80% of our exports go to China and the majority is actually coking coal, a raw material for steelmaking. That means, most of our coal is burnt in China, becoming part of China's GHG emission rather than Mongolia's, under the Paris Agreement definition. This is the same as Norway exporting oil, which is burnt in other parts of the world, whereas Norway remains one of the greenest countries."

The problem that coal projects face is that all coal is put in the same boat. Yet not all coal is the same. About a third of Mongolia's coal is coking coal, while the rest is thermal coal, mostly brown coal or lignite. Ovoot, for instance, has recently been proven to be an FM36 in Chinese standard, or 'fat' coal, which is quite scarce. Chinese producers mix this premium coal with lower-quality domestic coal to produce coke, used in steelmaking. "Recently, debt financing of coal projects has become challenging, however, there remain institutions with appetite to invest in coal projects. These are generally those that can distinguish between coking and thermal coals. Use of coking coal is the only commercially viable method to produce new steel, and steel is an essential material required to achieve the United Nations Sustainable Development Goals," said Bowles.

Both coking coal and thermal coal prices are expected to drop in 2024, though coking coal remains volatile because it depends on a narrow supply base. Various analysts also warn of shortages of coking coal in the early 2030s under a scenario whereby the steel industry decarbonizes slower than expected or demand grows. Mongolia is the fifth largest seaborne metallurgical coal supplier, after Australia, which leads by a large margin. However, given that Mongolia can realistically only supply to China, its main competitors are Australia, Indonesia and Mozambique. Ultimately, China has the power to decide whose coal it buys.

Mongolia exports most of its coal, keeping only 10 million t/y for domestic use, and exports 50-60 million t/y. The industry has also come under scrutiny in relation to high pollution levels, especially in the capital city, Ulaanbaatar, one of the most polluted cities in the world, with air pollution levels up to 27 times the level recommended by WHO. The colder it gets, the worse the air quality and the smog that forms above the city's otherwise sunny skylines. As part of a project funded by the Asian Development Bank, UB banned raw coal burning and replaced it with briquettes. ■

"Mongolia's coking coal exports reached a historic high in 2023, surpassing 60 million tons, all of which goes to China."

Zoljargal Zolo Jargalsaikhan

Executive Director
MONGOLIAN COAL ASSOCIATION

Could you give us a brief background on the Mongolian Coal Association?

The Association was created in 1998 after the country transitioned from a centralized planning economy to a market economy. Our task is to serve our members' lawful and common interests. Our 15 members account for about 95% of coking coal production, while other members also supply brown coal to the domestic power plants. The country's coal industry includes about 50 companies, but many are small-scale operations focused on local supply for the different provinces. The industry is currently entirely open-pit yet we anticipate that it will move underground in the next five to 10 years. With the transition into more sophisticated operations, we are also seeing a trend for the implementation of battery-powered equipment that helps improve efficiency and optimize costs.

What are Mongolia's domestic needs for coal?

Out of the total 40-50 million tons produced annually, Mongolia consumes 10 million tons, and the rest is exported. Of this, 8 million tons is used for power generation and the rest is burnt for households and industrial processes. Half of Ulaanbaatar's households rely on coal for direct household heating, which contributes to significant pollution. There are also plans to convert coal to gases, which would reduce emissions and mitigate the impact on health.

2023 was a record year for coal exports. Can you comment on the industry's performance and the competitiveness of Mongolian coal globally?

Mongolia's coking coal exports started in 2002 and reached a historic high in 2023, surpassing 60 million tons, all of which goes to China. During the first year of the pandemic, coking coal exports halved, whereas Australian' supply doubled. The following year, geopolitical tensions between Australia and China saw the former almost entirely halting exports to China, a gap that Russia filled. Meanwhile, Mongolia's exports were still half the usual volume. However, lately, China has been reducing imports from Australia, the US, Canada, and Africa, prioritizing closer nations – Mongolia and Russia.

But our competitiveness goes beyond geopolitics. Mongolia can theoretically produce 100 million t/y, but the border connecting points and customs clearance limit this capacity. Landlocked, Mongolia has limitations compared to other producing nations. Until not long ago, all coal was being trucked but recent railway developments have improved the outflow of coal.

Finally, Mongolia's competitiveness is decided by the buyer. There have been multiple high-level diplomatic engagements between China and Mongolia, resulting in cooperation trading agreements for extended periods.

What are the main concerns faced by your members today?

Operational challenges, like troubles with environmental protection organizations, are a common concern. The Association steps in on behalf of our members and requires the support of authorities. The other major concern is the royalty tax calculation, which is based on the price of coking coal in China – encompassing sales price plus transport costs plus the margin made by Chinese companies. Although the intended royalty rate should be 5%, companies end up paying up to 30% due to the disparity between sales prices and market prices. We are in the second year of a dispute with the government on this matter, and some changes have been made, such as estimating the royalty based on the price on the Mongolian Stock Exchange (MSE), for the coal traded on the MSE, but only 10% of all exported coal falls in this category, although this amount is being increased.

How did your members respond to the compulsory trading on the MSE?

This change was primarily driven by the expectation that it would bring clarity to royalty estimations, but also by a need for more transparency, following a serious scandal that occurred last year, when billions of tugrits were stolen from coal sales. Thousands of people protested.

Most companies believe that having coal traded on the stock exchange will provide a more accurate reflection of market value, but there are also disadvantages that both buyers and sellers have raised. They point to the fact that auctions may not be practical since only a small number of buyers, predominantly from near the border (in North China), can participate in auctions due to logistical constraints since they don't have facilities close to the border.

Moving forward, we expect the amount of coal traded on the MSE to grow, but, of course, there will continue to be direct long term trade contracts too, which have been already signed before introduction of MSE trade. ■

"ETT's long-term goal is to go beyond coal exports and become a key player in the coal value chain."

Munkhjargal Khuu

Acting CEO
ERDENES TAVAN TOLGOI (ETT)

Erdenes Tavan Tolgoi (ETT) is one of the major coking coal producers worldwide. Can you introduce the company?
ETT is the largest state-owned mining enterprise (SOE) and leading coal producer in Mongolia, and it has been in operation since 2010. The total resource base is estimated at 7 billion t as per an independent assessment conducted by Stantec, a US-based international consulting firm, in 2020. The Tavan Tolgoi mine, comprised of six coal fields, is located in the South Gobi region. Overall, the annual coal production fluctuates, but this year ETT produced 30.5 million tons, which represented about half of Mongolia's total coal exports this year. For 2024, we plan to maintain a minimum production rate of 30 million t/y and continue to invest heavily in infrastructure and value-adding projects to be able to ramp up outputs.

Can you elaborate on the investments planned by ETT?
ETT is actively advancing 11 projects which span three areas: 1) Increase coal extraction by investing in research and development and technology and introducing a low-cost coal conveyor system; (2) Boost coal production capacity by constructing a coal handling and preparation plant (CHPP), 450-MW thermal power plant, and so forth; and 3) Expand the rail transportation network, including the rail connection between Mongolia and China. The projects amount to a total capital expense of US$5.2 billion altogether, US$1.8 billion out of which was deployed as of September 2023.

What is the expected deadline to complete these projects?
The CHPP is 60% complete and scheduled to come into operation by May 2024. The Tavan Tolgoi-Gashuun Sukhait railway will be operational in early 2024 once rolling stock arrives. Meanwhile, we prepare to proceed with the rail connection, coal conveyor system, and power plant and as we anticipate, they will take about three years each once construction starts.

With 7 billion t of coal in the ground, what is the life of mine (LoM) of the Tavan Tolgoi resource at the current production rate?
So far ETT has extracted about 2% of the total coal resource. Two out of our six coal fields are currently in operation, with one more being in development in the feasibility study phase. We are now completing feasibility study for a 400-million tons coal mine, which is anticipated to have a LoM of 30 years. The remaining three fields are in development phases, while exploration continues to increase the resource base. There is no doubt that the ETT assets will be mined for decades.

What is your long-term view on the role of coal in the country's future?
Coking coal that ETT mines is of high quality and grade and much sought after in the market. The viability of ETT operations is tied to the performance of steel makers in the region, including China. The ETT long-term goal is to go beyond coal exports and become a key player in the coal value chain. While the CHPP will enable us to engage in the processing industry and supply coal products, such as gas and chemicals, the thermal power plant will consume coal for energy production in the local market.

What are the major challenges faced by ETT?
Since Mongolia is a landlocked country, one of the major challenges the company currently faces is logistics. The green energy transition has some impact on ETT business. Consistent government policy is the key to ETT success.

What is the vision of the ETT management and how do you ensure better transparency?
The current management has been instrumental in managing to our triple exploration, expand coal sales by 3.8%, and increase transportation volume by 3.5%. I combine and dedicate my background in banking and finance and the business experience I gained in mining to better the economic and social progress for both the company and the country. The outlook is positive with Chinese buyers and end-users in the market and ample opportunities for growth in the years to come. I am confident we can successfully deliver on all the projects and goals ETT has set as we prepare to enter the next stage of coal production through the processing industry and using clean coal technology. ■

"Aspire is committed to ensuring that our mine does not negatively impact the Khuvsgul environment, and will have positive impact on the local community."

Sam Bowles

CEO
ASPIRE MINING LIMITED

Could you introduce Aspire Mining?
Aspire is an ASX-listed company. Two-thirds of the company shares are held by strategic investors, including more than half by Mongolian citizens. It has been active in Mongolia since 2010, working on the discovery and development of coking coal projects. The company holds 100% of the Ovoot Coking Coal Project (OCCP), and 90% of the Nuurstei Coking Coal Project (NCCP), both located in Khuvsgul aimag in the northwest of Mongolia. Current focus is upon advancing the OCCP, which contains a large deposit of coal categorized as a 'fat' coking coal in China. This is a premium type of coking coal used to enable incorporation of lower grade and cheaper coals in the production of first-class coke. This coal is recognised similarly in Russian and other markets also.

Could you brief us on the updated development plan for Ovoot?
The original Pre-Feasibility Study completed on the OCCP forecast a very large mine, requiring high capital investment, including for railway development. Public concern regarding the large scale mine and railway delayed project development. In 2017-2018, the company re-strategized, with an 'Ovoot Early Development Plan' (OEDP) forecasting an initially smaller scale mine and truck haulage across a road to be constructed that could also be used by the community. Following appointment of new management in 2019-20, the OEDP has been refined further to address remaining community concerns about environmental protection and local development. The refined plan incorporates responsible practices that will benefit all stakeholders. Following completion of infill exploration drilling in Q4 2022, refinement of the JORC Coal Resource and Coal Reserve estimates are underway. An Independent Technical Report is expected to be released in the first half of 2024, to support raising finance for infrastructure construction.

Could you elaborate on the operational environment in Khuvsgul Aimag?
Adjacent to the OCCP is a small coal mine operated by Mogoin Gol JSC, a company listed on the Mongolian Stock Exchange. Operating since the early 1970s, this mine has recently been producing about 100,000 t/y. The people living in Khuvsgul are concerned about the potential impact of coal mining on their environment. This is understandable given that public perceptions have been shaped by examples of negative impact from some irresponsible mine operators in Mongolia. The public has had little exposure to responsible mining operations. Aspire is committed to ensuring that our mine does not negatively impact the Khuvsgul environment, and will have positive impact on the local community.

What's your financial strategy and how do you assess investment sentiment in coal mining?
Aspire is targeting debt financing to develop the OCCP, to avoid dilution of existing shareholders. Recently, debt financing of coal projects has become challenging, however, there remain institutions with appetite to invest in coal projects. These are generally those that can distinguish between coking and thermal coals.

What are the current demand-supply dynamics and how do these reflect on coal pricing?
Global economic stimulus efforts post-COVID have prompted infrastructure development, demand for steel, and thus coking coal. Strong prices have resulted. Mongolian coal export to China has grown, benefitting from diplomatic tension between China and Australia, and Mongolia now supplies more than half of all coking coal imported into China. Demand is also strong due to global supply constraints, which is related to lack of investment in developing production capacity. This presents opportunity for Mongolia and the OCCP.

What has been your experience of working in Mongolia?
I have enjoyed working in Mongolia the past 14 years. It is exciting to be working on projects bringing benefits and opportunities to so many people. It is important as a foreign investor to have a good local partner to navigate the challenges that rapid development presents. I feel sometimes that the international media picks up on issues affecting foreign investors in a one-sided manner. However, my experience has been that with the right team, Mongolia is a good place to do business.

What are Aspire Mining's main objectives for 2024?
2024 is an important year for Aspire. We now have the right plan and the right team to bring the OCCP into production. Tangible progress was made in 2023, and we are committed to delivering this project for the benefit of all stakeholders. We anticipate obtaining major approvals necessary to advance the OCCP, securing project financing, and commencing construction. ■

Copper and Gold

A pipeline of hope

Boroo Gold, Mongolia's first hard-rock gold mine and the country's first mining project financed by a foreign investor, has been recently bought by Steppe Gold, currently one of only a few gold producers in the country. Boroo was in production for 13 years before its former owner, Canadian company Centerra Gold, sold it, together with the Gatsuurt development property, to Singaporean-based OZD in 2018. While in production, Boroo poured 1.5 million oz of gold. Steppe has already produced over 100,000 oz from its Mongolian ATO project, and the acquisition would make Steppe the leading gold producer in the country.

This is only one among other promising news stories concerning the Mongolian copper-gold mining scene in the last two years, after more than a decade where not enough happened. Of course, the start of the Oyu Tolgoi (OT) underground development, which will propel the project to 500,000 t/y copper by 2028, is the most significant development in the last year. But besides this milestone, there are other important stories about Mongolia's polymetallic porphyries: Xanadu Mines, an Australian-listed developer, received US$35 million from Chinese giant Zijin Mining Group to fund the Kharmagtai copper-gold project to pre-feasibility study. Steppe itself was the recipient of a first-of-its-kind loan of US$150 million from Mongolia's largest bank, the Trade and Development Bank, to accelerate phase-2 underground expansion at its 2.4 million oz ATO gold mine. Next in line to start producing gold is Steppe's Canadian peer, Erdene Resource Development (ERD), also freshly financed with US$40 million by the Mongolian Mining Corporation (MMC).

For a country with two of the largest copper mines in the world, copper-gold OT and copper-molybdenum Erdenet, Mongolia plays a minuscule role in global copper supply, while in gold it is only the 37th gold producer in the world, according to the World Gold Council. Even though Mongolia has an estimated copper reserve of over 1 billion t, according to the National Bureau of Asian Research (NBR), only two of the country's mines are producing. It is unclear when Mongolia's third largest copper mine, the Tsaagaan Suvraga Copper-Molybdenum mine of Mongolyn Alt Corporation (MAK), will come into production.

A big chunk of Mongolia's copper is in the government's hands with the Erdenet Mine, the exclusive copper producer before the OT and with a capacity to produce over 400,000 t/y of copper. The country's gold, on the other hand, is mostly mined by artisanals. 'Ninja' miners and small-scale miners account for the largest part of the 19.4 t of gold that Mongolia produces yearly. Planet Gold Mongolia, a project led by the UN, estimates that between 40,000 to 60,000 people, a third of whom are women, are engaged in artisanal mining across 14 out of 21 provinces in Mongolia. This number represents about 12-20% of the labor force and is equal to the number of people employed in formal mining (60,000, according to the World Mining Congress).

The lack of exploration over the last decade explains why there are so few producers of copper and gold. According to Algirmaa Ikhbayar, CEO of Geosan, a local airborne geophysical company, between 2000 and 2012, US$300 million was circulated in the exploration sector alone. The current mines, few as they are, are the result of that previous cycle or stem from the exploration conducted by the Russians during the Soviet era.

The problem with having just one mega-project and very few explorers and developers is that it leaves Mongolia without global mid-tier miners, said Julien Lawrence, managing director of O2 Mining, a mining services company and operator of the Chuulut fluorspar mine. "The position I put to the government regularly is that, instead of relying on one big project, it should aim for 10 medium-size projects, with a pipeline of another 10 that are at the funded development stage. Out of 100 licenses issued, one can expect a single mine to develop, so the industry needs enough licenses to generate continuous supply and breed the opportunity for discovery and turning the discovery into development and eventually a mine."

Colin Moorhead, the CEO of Xanadu Mines, has a similar message to the government: "What I would say to the government is that without juniors to advance projects, they'll struggle to attract majors to invest billions."

No juniors, no majors, Moorhead said in a panel at a 121 Event and exemplified how companies like Zijin invested in Mongolia on the back of Xanadu, just as Ivanhoe Mines grew through Rio Tinto's intervention early on.

At an investment valued at US$15 billion that is finally moving towards full production, the OT might help to catalyze more exploration investment. The Central Asian Orogenic Belt that crosses Mongolia might be seeing another wave of exploration, so far discrete, as a handful

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Main copper players:
Producers:
• Erdenet Mining Corporation (EMC)
• Oyu Tolgoi
Developers and Explorers:
• Mongolyn Alt Corporation (MAK)
• Xanadu Mines (ASX: XAM)
• Kincora Copper (CVE: KCC; ASX: KCC)
• Gobi Venture
• Asian Battery Metals

Main gold players:
Producers:
• Steppe Gold (TSE: STGO)
• Boroo Gold (to be acquired by Steppe)
• Bayan Airag Exploration
• Naran Mandal
Developers and Explorers:
• Khan Altai (Max Group)
• Erdene Resource Development (ERD)
• Mandal Resource

Image courtesy of Steppe Gold

"As we ramp up the underground, Oyu Tolgoi will become an incredibly efficient operation, moving into the C1 cost curve in the next in the next 5-10 years."

Deirdré Lingenfelder

CEO
OYU TOLGOI (OT)

Oyu Tolgoi has been present in Mongolia for over two decades. Could you elaborate on the company's journey?

Oyu Tolgoi is a young company with a long future ahead. With the focus on the underground mega-project, it is easy to forget that Oyu Tolgoi has been mining on surface and delivering concentrate for 11 years. In March this year, we officially started the underground operation, which will eventually make Oyu Tolgoi one of the largest copper businesses globally.

With turning the corner from an open pit and underground project to an integrated copper business, it became timely to refresh our strategy with the overarching purpose of creating prosperity for the nation. In the new strategy, we look at four priority areas: people, partnerships, planet, and profit.

Production is set to triple. Can you walk us through it?

We have been producing around 170,000 t/y of concentrate at a copper ore grade of 0.4%. As we move and ramp-up underground, the grade increases to 1.24%. Between 2028 and 2036, we are looking to triple production to an average of 500,000 t/y of copper. Right now, about 10% of our concentrator feed comes from the underground, and this will steadily increase. By 2025, we should be able to become cash-flow positive.

Moving beyond Phase 1 (open pit) and Phase 2 (underground), we are looking at various growth options, such as the potential of a heap leaching operation to produce cathode. With copper demand poised to increase to 50 million t/y in the next decade, we want to make sure we are well-positioned to feed into this gap and take advantage of our privileged geographical position as we sit next door to the largest copper user, China.

Could you provide details on the financing for the project scale-up?

To get a business of the scale of Oyu Tolgoi up and running took about US$15 billion in investment from Rio Tinto. We have been partly paying back lenders by generating cashflow from the surface operation, but the reality is that paying the various lenders that are part of the loan agreement will take us into the 2030s. Once the debt is settled, we are committed to paying dividends to our two shareholders – Rio Tinto (66%) and the Government of Mongolia (34%). As we ramp up the underground, Oyu Tolgoi will become an incredibly efficient operation, moving into the C1 cost curve in the next 5-10 years.

Community relations have not always been easy in the country. How do you navigate this?

One of the closest communities, and about 45 km from Oyu Tolgoi, is Khanbogd. Engagement is essential. Oyu Tolgoi set up a tripartite council where local government representatives together with community and Oyu Tolgoi representatives meet regularly and have frank conversations on topics that matter to the community. Sometimes these discussions are difficult, but we believe that open and transparent dialogue is key to reaching alignment. It takes time to build trust, yet it is very easy to lose it, so we make sure to proactively engage with the community on what is going well, and on what is not going well and needs improvement.

We have over 400 social investment projects, spanning from education, healthcare, infrastructure to various other initiatives. We know that the expectations are high and will continuously increase, which is not unique to Mongolia.

What do you think of Mongolia as an operational base for mining?

I have worked across 20 countries during my career. What surprised me the most about Mongolians' was the extraordinary resilience, talent, and hunger for self-development at a level I had not seen before. I want to reiterate that people are one of the main competitive advantages we have and will be a key success factor for Oyu Tolgoi.

From a democratic and diplomatic perspective, Mongolia has always maintained strong relationships and has a highly functioning democracy. Mongolia has developed a third-neighbour policy, seeking to build strong ties beyond neighbouring countries, including Asia, Europe, Australia, the US and the UK.

Taking everything into account, it is possible to run a joint-venture business the size of Oyu Tolgoi in Mongolia. Is it a walk in the park? Definitely not. But I don't think any business of this scale is ever that. ■

"Kharmagtai is strongly positioned to become Mongolia's next large-scale copper mine, plus amongst only a handful of new global mines delivering copper within the next four years."

Colin Moorhead

Executive Chairman and Managing Director,
XANADU MINES

Can you explain the latest developments at Kharmagtai?

Following Kharmagtai PEA publication in 2022, we created a joint venture with Zijin Mining Group, comprising a US$35 million direct project investment to fund the PFS, as well as growth-focused discovery exploration. The PFS features both drilling, which has improved confidence in the resource, and metallurgical testwork for detailed process engineering, to determine optimum ore throughput and end-product specifications. Beyond that, we need to understand our people and infrastructure requirements, how we efficiently manage waste and tailings, as well as permitting.

The recently upgraded MRE is 1.3 billion t, containing 3.4 million tons copper and 8.5 million oz gold. Our 66.5 square km mining lease hosts a big system, comprising multiple porphyry events and accented by higher-grade components. It works on scale, good gold credits and low stripping ratio, so mining cost is relatively low and all in sustaining cost globally competitive. Our current base case concept is 50,000 t/y copper and 110,000 oz/y gold production for 30 years of open-pit mining.

Furthermore, the system remains open in all directions; as such, the full system extent is expected to evolve over time. Given encouraging deeper exploration drilling results, there is potential for future underground operations too.

What is Xanadu's three-horizon strategy?

Our initial strategy was to explore and define a solid MRE and create a base case PEA to attract a funding partner. We have ticked all the boxes. Now, our Horizon 1 is to deliver a high-quality PFS for Kharmagtai, leading to a conversation with Zijin regarding the next steps. Horizon 2 is to continue exploring; primarily at Kharmagtai, but also our 100% owned Red Mountain project, located to the east, near the town of Sainshand. Comparatively, it is at an earlier stage, but is a very attractive porphyry copper-gold system. We intend to recommence drilling soon. Horizon 3 is to build our portfolio in Mongolia, a largely unexplored country with significant geological potential. In this regard, we recently secured earn-in rights for up to 80% in Sant Tolgoi, a highly prospective magmatic copper and nickel sulphide project in Western Mongolia. Exploration is planned to start in March 2024. In summary, our 3 Horizon strategy aims to maximise share price performance during 2024, and potentially beyond.

How do you read current copper and gold fundamentals?

As world decarbonizes, copper demand will increase to address insufficient copper production in the pipeline to meet demand going forward. Currently, we are going through a slow period in the global economy, largely driven by adverse geopolitical events. Despite this, market expectations for copper concentrate supply tightness are lifting, as witnessed by the recent first price drop since 2021 for annual copper smelter fee negotiations.

Gold and copper tend to act as a natural hedge. Therefore, big copper deposits with elevated gold are very attractive. Kharmagtai will produce a very clean copper concentrate, with few impurities, but its strong gold content is attractive for smelters, which are currently competing for limited product supply.

What areas of improvement do you see in Mongolia to attract more mining investment?

Our experience operating in Mongolia has been very good. What I would say to the government is that without juniors to advance projects, they will struggle to attract majors to invest billions. The government recognizes the issues that make it difficult for junior companies to invest here and is working towards addressing these. This includes guaranteeing more certainty around the fiscal regime. The government is a young democracy, but I believe they recognize that to be globally competitive changes are necessary to attract investment.

What is the investment case for Xanadu Mines and Kharmagtai?

We are a great investment proposition; we have a large copper mine that we are shaping into the best it can be. Furthermore, unlike other juniors, our project funding has been secured. Our strategic partnership with Zijin provides funding certainty through to commercial production. Also, the project has no fatal flaws or ESG barriers. It can deliver production rather quickly; first concentrate production expected 4Q 2027. It is strongly positioned to become Mongolia's next large-scale copper mine, plus amongst only a handful of new global mines delivering copper within the next four years. ■

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Sambuudorj Erdenebat
CEO
GLOGEX CONSULTING

> Whereas in coal, the country has distinguished itself as a major player, in copper we continue to play a relatively marginal role despite hosting one of the most spectacular copper deposits. I believe copper will be a focal point for future exploration.

of private companies are currently raising funds internally before going public. The Belt is believed to be the highest-grade group of Paleozoic porphyry deposits currently known in the world, according to an article published in Science Direct (Porter, 2015). The south of the country has become a hotspot for copper exploration, inspired no doubt by the immense discovery of the OT as well as MAK's Tsaagaan Suvraga 240 million tons Cu-Mo. Gobi Venture, an early private explorer, came across copper, gold, lithium, fluorspar, molybdenum, and rare earths in the Gobi Desert at its Naran project, a copper-molybdenum porphyry deposit typical of the area. Two years ago, Xanadu also acquired a second project, Red Mountain, where it identified an attractive porphyry Cu-Au system, consolidating its position in the copper-gold porphyry Dornogovi district.

Just a few days ago, Xanadu entered a binding term sheet to add a third project to its portfolio, this time looking further west, with two licenses (Sant Tolgoi) in the Zavkhan province of Western Mongolia, a region known for copper-nickel (Cu-Ni systems). In that same area, junior private company Asian Battery Minerals identified Cu-Ni mineralization in the Gobi Altai province, a project that earned its place in the BHP Xplor program. This confirms a trend of copper explorers venturing into the west of the country, a region that has been active for gold.

Western Mongolia hosts the country's main gold projects, including Steppe's ATO, Boroo, and Gatsuurt projects, as well as Max Group's Khan Altai project, the biggest in the Western region. Also in Western Mongolia, more precisely in the Bayankhongor Province, sits ERD's Bayan Khundii gold deposit; 16 km away from Bayan Khundii, ERD secured a license for the Altan Nar exploration project in 2020.

While the south of the country benefits from a better-developed infrastructure, with available roads and power, the west will require more investment from the developers. Max Group, the group behind Khan Altai, is planning to build a coal-fired power plant in the region this year. This could be the largest such project in Western Mongolia, according to its executives. "The success of the Khan Altai project is pivotal for bringing modern infrastructure to this region, which, despite being connected to the Western power grid, faces capacity limitations. The company has ventured into developing both renewable energy and conventional power stations, although the latter faces financing challenges," commented Davaa-Ochir Dashbaatar, managing director of the Mining and Heavy Industry Division at Max Group.

Generally, however, exploration costs are low in the country, says Dashbaatar, echoed by other executives. They refer to a low-cost labor force, about five to eight times lower compared to Australia or Canada, but also to the conditions on the ground, where there is little vegetation, few clouds, and therefore fewer interruptions, except for the harsh winters, the only time when exploration stops (usually for a month or two). Production costs are also competitive, with the OT looking to move into the C1 cost curve in the next five years. The cost challenge comes in the ramp-up from open pit to underground, since most deposits grow in size and grade at depth. At the OT, the grade will increase from 0.4% in the open-pit to 1.24% in the underground. Gold projects present the same characteristic; Steppe has been mining from to the oxide to date, but the bulk of the resource is in the fresh rock, so its Phase 2 development will consist of an underground operation that will allow it to ramp up to over 100,000 oz/y. Similarly, 80% of Khan Altai's resource is in the sulfide, so its owners are also preparing for a Phase 2 development which will require a higher *capex*.

Almost all of the explorers and developers we talked to rely on debt, rather than equity. More than being a non-dilutive option, listed companies are also paying the costs of operating in a jurisdiction perceived as risky: "Mongolia is still a frontier market with associated investment risks. As a company primarily focused on Mongolia, our market cap is affected by the challenges that come with operating in this market. The talks between Mongolia's government and Rio Tinto about the Oyu Tolgoi project have had positive and challenging phases, impacting the performance of Mongolian mining shares. However, over the past decade, anti-mining sentiment has notably decreased," commented Bataa Tumur-Ochir, chairman and CEO of Steppe Gold.

Copper, and, often in association but not always, gold, remain Mongolia lowest-hanging fruit in the current climate. It was Rio Tinto's biggest bet, having invested in Mongolia more than anywhere else outside of its home base in Australia. Unlike coal, copper demand is there to stay, while gold has rarely disappointed as an investment option. Mongolia has a copper-gold advantage thanks to its geology, proven to deliver fabulously when properly studied, but also this is the commodity space where the country has the most dynamic sector and a pipeline of projects that should turn into mines in the next years. Mongolian operators need to seize the momentum and deliver quickly before the tide turns – as seen in the past, commodity cycles can have a devastating effect on a country so profoundly tied to its minerals sector. ■

> Nearly 10% of the state and local budget revenues and Mongolia's export revenues are generated by only Erdenet.

Yondon Gelen

General Director
ERDENET MINING CORPORATION (EMC)

Could you introduce EMC?

The Erdenetiin-Ovoo copper-molybdenum deposit was first discovered by MongolianCzechoslovakian geologists in 1963, and it was decided to establish a Mongolian and Russian Mining and Processing Joint Venture in 1973.

The first phase's annual ore processing capacity was 4 million t/y, and the first concentrate was shipped in 1978.

As of 2023, Erdenet Mining Corporation SOE (Erdenet) processes ore of 37.2 million t/y, producing and selling up to 600,000 t/y of copper and 6,000 t/y of molybdenum in concentrates to the international market.

As to the ownership status of Erdenet, it was a Mongolian-Russian Joint Venture until 2016, a Limited Liability Company with shares of the Mongolian state and private sector between 2016 and 2019, and now 100% Mongolian state-owned enterprise since 2019.

During 45 years of the operation, geological exploration works have been carried out, and in 2021, the resources were approved for the 4th time by JORC code. As a result, the lifespan of the mine is extended for another 60 years.

In the frame of social responsibility, Erdenet is implementing several programs related to employees' social issues, health, education, culture, sports, recreation, and environment protection.

What has the transition into a state company (SOE) in 2016 meant for the organization?

With the status of a state-owned enterprise, the contribution to the Mongolian budget and economy has increased significantly, and the non-ferrous metal industry based on Erdenet has been developed as a cluster that brings an opportunity to increase competitiveness and value.

Nearly 10% of the state and local budget revenues and Mongolia's export revenues are generated by only Erdenet. The understanding among the population was that mining is likely in conflict with the traditional nomadic lifestyle of Mongolians. The global pandemic was a challenge for Mongolia's economy, and the input of Erdenet in the economy of the country and benefits to the citizens made Mongolian people understand the importance of the mining industry.

Could you elaborate on the five-year development plan to 2025 and its main goals?

We have been intensifying the implementation of development projects to cut operational costs, to increase economic benefits and competitiveness, producing value added final products, and to keep in line with trends of the global mining development.

The construction of the Industrial and Technology Park, a major construction for the long-term sustainable development of Erdenet, is in full swing, and the construction of roads, railway lines, electricity supply, water supply for the industrial park is being successfully carried out.

The preparation works for construction of copper smelters is going on.

How can Mongolia become a more attractive investment destination?

My understanding is that the legal environment and tax policy should be consistent and internationally competitive to attract more investment.

The world-class deposits such as Erdenet and Oyu Tolgoi are in Mongolia. Investors should be allowed to discover more deposits. By improving the investment environment, I am sure that Mongolia will become an attractive country for investors in near future.

Erdenet celebrates 45 years since it was founded. What do you see as the biggest accomplishment of the company?

I think that the most valuable resource and achievement of Erdenet is professional human resources. In the meantime, we are implementing policies and programs to empower our human resources to apply artificial intelligence and green transition to a certain level for the implementation of advanced automated technologies that are environmentally friendly and economically efficient.

Erdenet has been operating successfully for 45 years, making a significant contribution to the social and economic development of Mongolia. It has also developed a responsible mining project, establishing Erdenet city with a population of 100,000 people, with a complete infrastructure, which makes it a unique model of mining.

Do you have a final message?

"Billion Trees" national movement initiated by the President of Mongolia was supported by Erdenet and planting 100 million trees program is being implemented. For that purpose Erdenet has built and commissioned for the first time in Mongolia Forest Genentic Center and the Center for Soil Biotechnology. Also, we initialized the construction of a Tree Nursery Complex with a fully automatic greenhouse having an annual producing capacity of 12 million seedlings..

I am confident that the accomplishment of the "Billion Trees" national movement will give an opportunity to Erdenet to have economic benefits, improve carbon credits by cutting greenhouse gas emissions, and increase product competitiveness. ■

"Kincora came to Mongolia because of the ability to find and build globally significant copper deposits - it is one of the last frontiers."

Sam Spring

CEO
KINCORA COPPER

Could you introduce Kincora Copper to our international audience?
Kincora was formed in 2011 on the back of the Bronze Fox project, which was originally discovered by Ivanhoe Mines. We acquired the eastern and then western portions of the Bronze Fox project. Shortly after we intercepted 1% copper equivalent across 37 m within a 1,000 m mineralised drill interval.

At this stage Oyu Tolgoi (OT) was advancing with the construction of the open pit and Mongolia was attracting significant attention from all major global copper companies.

Kincora's strategy has been to undertake the first modern district scale exploration of the Southern Gobi copper belt, and pursue an active project acquisition strategy, looking to make further globally significant discoveries.

Could you give us an update on your current portfolio?
One consistent criteria we have followed is to look for large copper porphyries, which is where Kincora's expertise lies, so we moved focus from Mongolia's world-class porphyry belt to Australia.

At the same time, we have been advancing the Mongolian assets in a very capital constrained manner. We think a larger pool of capital and focused management team from a new investor will be able to move these projects forward aggressively, really show and realise their globally significant potential.

Do you mind elaborating on the current resource identified, the grade, the geological disposition, and other elements that make the Bronze Fox interesting?
Bronze Fox showcases extensive mineralization from surface at three separate intrusions or systems. It is common for porphyry systems to have multiple clusters and deposits. For instance, OT has three main deposits across a 26 km mineralization footprint.

26,000 m of drilling at Bronze Fox has defined a large resource of over 400,000 t of contained copper and over 400,000 oz gold, at 0.2% cut-off grade (the same cut-off as Xanadu Mines' Kharmagtai project). These results are just for the open-pit potential. There is a separate very large exploration target adjacent to the resource, which is open in all directions.

To help put this into perspective there has been greater than 10 times the amount of metres drilled at Kharmagtai with Kharmagtai only hosting seven times the amount of copper to the resource at Bronze Fox. Only a small section of one of the three intrusive complexes has been defined at Bronze Fox (there is only one complex at Kharmagtai) and is owned 100% (Xanadu has a 38.25% effective interest).

What is the operational environment at Bronze Fox?
Excellent; we are a 10-hour drive (520 km) south of Mongolia's capital Ulaanbaatar, in the Southern Gobi copper belt that hosts OT, Kharmagtai and Tsagaan Suvarga (TS). Kincora has a year-long camp, which is along the road from OT to TS, parallel to the power lines, and near to the rail line that crosses through to Sainshand. With the coalfields not far away, OT's multi-generational reach and other new projects being developed, more infrastructure will come through.

In the Gobi, traditional gers are now connected to the rest of the world through satellites and solar panels, so you can see the juxtaposition between tradition and modernity.

With the slowdown in the Chinese economy, what is your outlook for copper sentiment?
The slower Chinese economy has weighted on copper prices coupled with the supply side at a near term peak of new capacity coming through from investments in the last commodity cycle. But that supply will start dissipating and there are not many new projects in the pipeline. If the world is to meet the 2030-2050 climate ambitions, we will be consuming as much copper in the next 20-30 years than the human race has consumed throughout its history. With the lead times becoming more and more difficult and the lack of new supply in the pipeline, I believe the medium and longer-term for copper is extremely attractive.

Do you have a final message?
Kincora came to Mongolia because of the ability to find and build globally significant copper deposits - it is one of the last frontiers. For advancing into production the timeline can be very fast, like we saw with OT into open pit production in just three years after having the agreement with the government. This is again becoming evident with open pit developments at TS and Kharmagtai. Bronze Fox is the most advanced next project in the district. ■

"Over the past five years, Max Group has grown significantly in the mining sector, notably with the successful development of the largest gold mine in Western Mongolia, Khan Altai."

Davaa-Ochir Dashbaatar

Managing Director of Mining and Heavy Industry Division
MAX GROUP

Can you introduce Max Group?
Max Group is one of Mongolia's largest conglomerates and we celebrated our 30th anniversary last year. Over the past five years, Max Group has grown significantly in the mining sector, notably with the successful development of the largest gold mine in Western Mongolia, Khan Altai, located in the Gobi Altai province. Production at Khan Altai started on January 23rd, 2023, holding crucial importance for this region characterized by a small, dispersed population, largely consisting of herders.

The success of the Khan Altai project is pivotal for bringing modern infrastructure to this region, which, despite being connected to the Western power grid, faces capacity limitations. Max Group is committed to providing sustainable and reliable power sources for the broader region. The company has ventured into developing both renewable energy and conventional power stations, although the latter faces financing challenges. Three years ago, Max Group underwent restructuring, resulting in the creation of two business clusters: one focusing on trading companies, including retail and hotels, and the other dedicated to mining and heavy industry.

Could you elaborate on the mining and heavy industry cluster?
The Khan Altai resource encompasses several major projects, with the current focus on operating phase one, focused on the oxide ore. In addition to Khan Altai, we are constructing a lime plant which is set to commence production in mid-2024. We have plans to supply this premium-quality lime to Oyu Tolgoi (OT). Adjacent to the Khan Altai resource, our Eren Budact copper project is progressing through the prefeasibility study, metallurgical tests, and economic assessments. Eren Budact is smaller compared to projects like OT and Erdenet, but it stands out because it has easy-to-process, oxide ore. In the same region, we have coking coal project, perfect for exports to China. To address the scarcity of power in the Western region, we plan to develop a coal-fired power plant, anticipated to start operations in 2024 and potentially become the largest such project in western Mongolia.

What is the current capacity of Khan Altai and its ultimate potential?
We are currently in phase one, operating 3 million t/y of ore processed through heap leaching. 20% of the resource sits in the oxide, while the remaining 80% is in the sulfide (underground). Based on our recent exploration results, we have discovered 150 – 200 million tons of ore. From that resource, the mineable source is estimated to be around 120-130 million tons, which grants up to 30 years of production.

Could you provide some details about the development of phase two at Khan Altai?
Phase two involves establishing a processing plant for sulfide ore, requiring substantial *capex* and sophisticated technology. The anticipated processing capacity in this phase is 6 million t/y of sulfide gold ore. Once the ore processed through flotation, the concentrate goes into oxidation. Following oxidation, the process will advance to the CIP stage, employing the renowned partition technology. We are currently immersed in the feasibility study and aim to finalize all technical solutions and detailed engineering by the end of this year. Earthwork will start in early 2025, with construction expected to extend until 2026.

What do you think could help Mongolia become more attractive to global investors?
Mongolia possesses a significant advantage due to its proximity to the world´s largest market. Exploration costs in Mongolia are also relatively low compared to other countries. The country´s unique conditions, such as limited vegetation and few clouds, allow for efficient interpretation of remote sensing data. Despite current concerns deterring foreign investors from coming to Mongolia, the government is actively working to clarify laws and protect foreign investors, learning from past mistakes.

Do you have a final message?
Max Group welcomes international investors to contribute to the development of Mongolia. We are carrying out important projects to develop the country. Notably, one of our holding companies, the largest road construction company in Mongolia, completed the first 127 km of paved road within 18 months under a concession agreement – a record in Mongolia's history. We invite both local and foreign companies engaged in projects in Western Mongolia to collaborate with us on the development of regional infrastructure projects in accordance with the state policy. ■

> As a Mongolian company with excellent access to the country, we offer a great head-start as a major investment vehicle into precious metals in Mongolia.

Bataa Tumur-Ochir

Chairman and CEO
STEPPE GOLD

Steppe Gold recently announced the acquisition of the Boroo Gold mine in Mongolia in an all-share transaction. Could you comment?
The Boroo Gold acquisition will establish Steppe Gold as Mongolia's largest and leading gold producer. On completion of the acquisition, our production is expected to triple over the next two years to 90,000 ounces per annum and 160,000 ounces by 2026, increasing our financial strength for the ATO Gold Mine Phase 2 Expansion and advancing our exploration portfolio. It also provides shareholders with improved optionality at our Tres Cruces gold project in Peru while maintaining our focus on growing our production profile in Mongolia.

Steppe Gold is now well-positioned to become a mid-tier gold producer and we are excited to work with the Boroo Singapore team to build a world-class company and national mining champion in our home country of Mongolia.

Steppe Gold has produced over 100,000 oz to date from its flagship ATO Gold Mine. What has been the company's evolution in the last two years?
We built ATO Gold Mine from project to production within two years. We reached the 100,000 oz production milestone, accumulated since April 2020 when we started commercial production. The short construction timeframe goes to show the world that it is possible to advance a gold project to production very quickly in Mongolia, even when completely unexpected events such as the pandemic interfere. Right now, we are moving the project into Phase 2 production, which is fully financed and leverages already established infrastructure and workforce.

What will Phase 2 Expansion entail?
ATO is a 2.5 million oz project (resources). Phase 1 consisted of the oxide project, with 100 Koz produced to date and another 65 Koz still to be produced over the next three years, not counting additional exploration to increase the oxide feed. However, the bulk of the resource sits in the fresh rock stage. Mining from the fresh rock will allow us to ramp up to over 100Koz/year AuEq (gold equivalent) for 12 years, from a reserve base of 1.3Moz.

With our landmark non-dilutive project financing of $150 million and our EPC contract in place, we are now accelerating the development of Phase 2 Expansion. The construction of a new flotation plant will start in May 2024 and is due to be completed within two years. We have had really high-grade results from the sulfide, strongly indicating that the mineralization continues at depth, and the current 14-year LOM could be extended.

The Phase 2 project was partly financed by the Trade and Development Bank (TDB), which marked the first time that a foreign-listed company received finances from a local bank, a reverse of the usual trend of international banks financing local projects.

Could you give us a sense of the exploration potential?
We recently made a new discovery (Mungu) at ATO, and we are considering expanding our exploration focus to cover the full extent of our license area since ATO only takes 300 ha out of 5,500 ha. From 2024 onwards, we plan to spend more on exploration work to identify new targets and grow our reserve base. We plan at least 10,000 meters of drilling on the project. Besides ATO, we have a second, early-stage project called Uudam Khundii, located in the West of the country, where we hope to be able to do a first drilling program in 2024.

Could you share some examples of your ESG initiatives?
Before even starting Steppe Gold, our chairman and I created a small fund to finance access to higher education; this initiative matured under Steppe Gold, and we now hold the largest scholarship and financial aid program for local students. So far, 1,600 local students from underprivileged backgrounds have benefited from our support.

Do you have a concluding message?
Mongolia has huge potential; only 3% of its territory is covered by exploration licenses and 1.2% by mining licenses, with just 10% of that currently in operation. Yet, the mining sector contributes 25% to its economy and 90% to exports. Mongolia is unlike any other mining jurisdiction in the world, strategically located next to the biggest commodity market, China.

Steppe Gold is focused on Mongolia, headquartered in the country, with almost 100% of our workforce being Mongolian nationals. We are proud of our strong social license and local support in our home country. As a Mongolian company with excellent access to the country, we offer a great head-start as a major investment vehicle into precious metals in Mongolia. ■

Lithium, Graphite and Rare Earths

Reaching for the moon?

"Stepping into the Gobi feels like stepping on the surface of the moon," this is how most people describe the cold Gobi Desert in southern Mongolia, home to most mines in the country. Others have compared it to Mars. In a recent encounter with Elon Musk, Mongolia's Prime Minister Oyun-Erdene Luvsannamsrai encouraged the Tesla billionaire to study the arid land as a casebook for Mars, given Musk's personal goals of eventually colonizing the red planet. They also talked about a potential joint research venture on the use of rare earths and other minerals needed in electric vehicles that Mongolia is believed to host. Both lines of conversation – going to Mars or extracting the earth's rare elements from the Gobi – somehow feel equally far-fetched.

Many questions – and theories – arise when it comes to Mongolia's battery metals potential. The Gobi is widely thought to hold lithium, graphite and rare earth elements (REE), among others. How much of these is not fully known. According to a 2009 estimation by the US Geological Survey, Mongolia should have 31 million tons of REE reserves, second only to China (44 million tons). Considering that Inner Mongolia, a Chinese autonomous territory, is the main global supplier of rare earths, with the Bayan Obo mine alone supplying up to 45% of the world's 17 REEs, even a non-geologist will be tempted to guess at similar characteristics for Outer Mongolia. On the graphite and lithium reserves, there were no official estimates we could find.

Out of Mongolia's 80 REE occurrences and more than 280 mineralizations, as counted by Germany's Federal Ministry for Economic Affairs and Climate Action (BMWK) in 2021, only three active explorers are looking at these, to our knowledge. One is Khotgor, which former Australian owner Parabellum Resources sold to Temarise in February 2024 for US$15 million. Located in the South Gobi, Khotgor is the only one, as far as we know, with a mineral resource estimate, completed earlier in 2023, which delineated a resource of 2 million tons with average NdPr grades of 20% REO. The other explorer actively advancing an early-stage light rare earths project is MNREC (Mongolian National Rare Earths Corporation) owned by the Trade and Development Bank (TDB). The Khalzan Buregtei project, in the far west of the country (Khovd province) was drilled back in 2012-2013 by its previous owners, an Australian company, and was taken over by TDB in 2015. The current owners completed another 20,000 m of drilling last year and expect to release a PFS in 2024.

Meanwhile, in lithium, one company carries the first-mover responsibility of proving Mongolia's potential. Canada-listed Ion Energy has two projects in the country, the clay evaporite Baavhai Uul and the more advanced Urgakh Naran, with the potential to be a brine asset. Ion is currently in discussions with an earn-in partner that could inject more cash into developing the asset. "We are no longer looking to bring in a public equity investor, due to the dilution risks, but instead, an investor that buys into the asset with the obligation to perform exploration over several years with the option to acquire the remaining equity. That would leave ION Energy with an NSR. These conversations are ongoing," said CEO Ali Haji.

Main exploration companies in the battery minerals space

Rare Earths:

- Temarise *(Khotgor project)*
- Mongolian National Rare Earths Corporation *(Khalzan Buregtei project)*

Lithium:

- Ion Energy *(Baavhai Uul and Urgakh Naran)* (CVE: ION)
- Sinomine Resources Group *(Tsagan Chuluut)*

Multiple:

- Gobi Venture *(Naran polymetallic mineralization that includes lithium and rare earths)*
- Asian Battery Minerals *(Tsagaan Ders, Khukh Tag graphite)*

In a more recent development, Chinese company Sinomine Resources Group has entered the lithium exploration scene in Mongolia through the acquisition of the Tsagan Chuluut project from local company Lithium Century for US$20 million. Though there is not enough data on the project, Sinomine told the Mongolian media that the project could contain reserves of 1.7 million tons lithium.

Two private junior companies are also looking at lithium on their respective licenses, but their focus on lithium is not exclusive: Gobi Venture has a multitude of metals to choose from at its Naran project in the Gobi area, among which it found an open lithium mineralization that the explorer plans to further investigate. Asian Battery Minerals has three different projects across commodities (lithium, graphite, copper-nickel) that it seeks to develop concomitantly. Its Tsagaan Ders lithium prospect in the Dundgobi region is early-stage, to be drilled later this year.

Asian Battery's most advanced project is the Khukh Tag graphite project, which the company says is only 24 months away from a final investment decision. Khukh Tag is not only the most advanced graphite project in the country but also the only one we know of. Its total mineral resource is at 12.2 million tons at 12.3% grade. Gan-Ochir Zunduisuren, managing director of Asian Battery Minerals, told GBR that 2024 will be an important year for Khukh Tag, with planned high-impact drilling and infill drilling; by the second half of the year, the company also wants to have tested the material for suitability in battery anodes.

Investors require more geology and less mystery

Besides these prospects-turned-projects by the dozen players in lithium, graphite, and REE, there are multiple other occurrences and deposits documented in the country that are currently stagnant. The German Federal Institute for Geosciences and Natural Resources together with Mongolia's Mineral Resource and Petroleum Authority (MRPAM) characterized two other carbonate-bearing deposits besides Khotgor (Mushgai Khudag and Lugiin Gol), as well as two more peralkaline deposits besides Khalzan Buregtei (Ulaan del and Tsagaan Chuluut), some of these being assessed as deposits of significant economic importance in previous studies. For lithium, Mongolia's regulator, MRPAM, informs of two current deposits; Khukh Del, which appears to be held by state-owned company Mongolrostsvetmet, and Munkhtiin Tsagaan Durvuljin, for which we could not find more information. Together, they amount to a total resource of 203,000 t, according to MRPAM.

The problem is that many other licenses are held by private owners who do not have the skill, the will, or the money to do anything with them. Based on anonymous comments from insiders published by Newsbase, these licenses are used as collaterals for loans and there is little cooperation with the government on them. Our sources told us similar things. "In other jurisdictions, explorers take up a license for a limited time, and, if proven un-prospective, they give it back and take up another area, whereas, in Mongolia, licenses have turned into precious commodities themselves, sometimes held on to by people that lack the technical acumen to monetize their value and that treat the license just like they would treat a real estate property," said Julien Lawrence, managing director of O2 Mining, shareholder and operator of the Chuulut fluorspar mine.

Without the explorers to study the grounds, the real potential of Mongolia's battery metals space remains limited to the broad-scale data that geologists have provided to date. However, that data also has many gaps. Most

Image courtesy of Kincora Copper

Khandmaa Sambuu
Executive Director
TRUE TRC (TTRC)

> "Mongolia has tapped into less than 1% of the identified mine deposits, showcasing the immense potential for expansion. TTRC has conducted in-depth studies in nine graphite deposits across Mongolia, leading to the identification of graphene from graphite."

existing targets today have been identified by Russian, Czech, Hungarian, and Polish geologists during socialist times, so the information is outdated. According to Geosan, a local airborne geophysics company, the government has conducted geological land surveys on a 1:200,000 scale across the entire territory, but only 40% of the land is covered by a more detailed 1:50,000 scale survey. Geosan itself provided airborne geophysical surveys over 20% of the country's surface. The government is keen to change this, and aims that, by 2025, the remaining territory should be scanned on a closer 1:25,000 scale map. Local companies like integrated geospatial solutions company Geomaster will be participating in that tender.

For more specific geophysical information, the government has brought in Xcalibur Multiphysics, a Spanish-based global leader in airborne and mapping geophysics: "Mongolia has had some traditional studies focused on surface geology in the mid-20th century, while some parts of the country have also been covered by airborne surveys, but the bulk of the data obtained would not meet what we call 'modern' industry standards. There is a gap in high-resolution magnetics and radiometric gravity data to get a picture of the subsurface potential," said Bart Anderson, COO APAC for Xcalibur.

Xcalibur will partner Geological Research Center of Mongolia and the Ministry of Mines and Heavy Industry to conduct a Helitem electromagnetic survey covering the south of the country, followed by a Falcon survey. "The quickest and most environmentally friendly way governments can fast-track their understanding of their country's natural capital is by mapping from the air. This has the lowest carbon and community impact while delivering the fastest results," Anderson told GBR.

A bout of international interest

The geological and geophysical data gathered is hoped to help entice further investment by lowering the risks. Already, multiple countries have shown gestures of interest in Mongolia's battery minerals space. Late last year, France signed a deal with Mongolia to explore a lithium-rich basin via the French Geological Study, also committing to investing over US$400,000. German chancellor Olaf Scholz also pledged to increase Germany's involvement in the development of Mongolia's critical minerals, especially copper and rare earths, back in 2022, but no further news has been heard since.

Rare earths have attracted the most attention, especially from the US and South Korea, which agreed with Mongolia to establish a Rare Metals Cooperation Center in Ulaanbaatar. South Korean telecommunications giant KT Corp signed an MoU with Mongolia to secure a stable supply of mineral resources, including REEs, and then signed another MoU with one of Mongolia's largest corporations, Monnis Group, to cooperate on REE mining. Unfortunately, except for the French US$400,000 investment, these gestures of interest and formal memorandums remain just that – gestures – and some fear they are made to simply unnerve China, which controls the battery minerals value chain, a control that poses a great threat to global demand.

Oliver Schnorr
CEO
EURO KHAN

> "Mongolia has rare earths, lithium, huge potential in renewable energy resources, and much more. This is the bright future that the hard-working people of Mongolia deserve, but few legislators are 'walking the walk' besides just 'talking the talk.'"

China seems unconcerned and is reassured by its power over battery minerals. In battery minerals supply chain speak, all roads lead to China, not just because China geographically bounds Mongolia's borders to the south, but also because it has most of the knowledge and technology of battery minerals production. The US itself, so eager to unfasten itself from China, sources most of its REEs, graphite, and lithium from China. The Americans are looking at Mongolia as an alternative supply partner, but also at South Africa, the DRC, or Mexico, countries where Jose W. Fernandez, the US Assistant Secretary of State for Economic Energy & Business Affairs, has pilgrimaged recently, as well as in Mongolia.

"The Mongolian government seems to encourage investors from the US, Japan and Korea to come to Mongolia and secure the supply chain outside of China, yet it fails to consider that if the material is being processed in China, the whole point of a resilient supply chain that is independent of China is defeated. Also, producing oxide or carbonate of high content reduces the overall mass of the product, whereas bulk concentrate is, of course, much more voluminous, and costlier to transport," said Purevtuvshin Tsooj, Project Leader at Mongolian National Rare Earths Corp (MNREC), the explorer advancing the Khalzan Buregtei project in Western Mongolia.

Better too early than too late

The obstacles to seeing a rare earths mining operation in Mongolia are many and needless to examine in detail. The development of battery minerals production in Mongolia would require the kind of investment environment, infrastructure, and specialist skills that Mongolia does not currently have. Investment coming in the form of offtake agreements would be unlikely for the early-stage projects, which is where most of Mongolia's assets are at now. The potential backlash on mining REEs, which contain radioactive waste, would likely be fiercer than it has been for copper and other metals. Even if Mongolia succeeds in developing its first mine in lithium, rare earths, or graphite, the material produced would likely be sent to China for processing.

Solutions around these challenges exist. For instance, MNREC is considering producing 90% purity mixed rare earths dioxide or carbonate, rather than concentrate, which would both increase the value of the final product and allow the material to be shipped or flown further away, less constrained by the logistics cost. A joint processing plant fed by similar carbonatite-hosted deposits, like Khotgor (Temarise), Mushgai Khudag, and Lugiin Gol in the South Gobi, could also be a potential solution down the line. For now, lithium appears to be the most promising stride in the battery space, contingent on Ion Energy's expected deal for an earn-in partner for Urgakh Naran.

To be part of the value chains of critical minerals, Mongolia has much work to do, from regulation to infrastructure and beyond. Or perhaps, it would take for China to do what the West fears it could – pressing the stop button on exports of critical minerals like REEs. Nevertheless, Mongolia should insist on looking at its battery prospects to stay relevant. "Within the current mining sector, one big chunk is metallurgical coal, and the other big chunk is copper, with the remaining 10-15% of it being a mix of other metals, including gold. The energy transition risks putting about half of our industry at peril in the next few decades. Contradictorily, the country's Vision 2050 sees the mining industry expanding up to four times its current value. So how are we to grow the industry from a base that is supposed to be phased out? The future lies in those critical minerals that we know exist in Mongolia, yet we have little visibility of their extent," summarized Dagva Myagmarsuren the CEO of QMC (Qualified Management Consulting).

In an evolutionary line, if coal represents Mongolia's beginning in mining, and copper and gold its most dynamic present, battery minerals could be its future, as distant as this may be now. The country has yet to develop a comprehensive critical mineral policy, strategy, and list. Dagva Myagmarsuren from the Critical Minerals Association said the Association drafted these documents and submitted them to the government. "Things move slowly, while the world is changing very fast for critical minerals. The question is, are we going to be too late?" he asked, mentioning other countries that are way ahead.

Before looking at mining the resources on Mars on the Moon, Mongolia has ready materials sleeping in the Gobi. Since the 'easy' resources have already been found in mature jurisdictions, investors are likely to take the risk and look at the least explored ones. Richard Bennett, executive chairman of London-listed Getech, which offers a geoscience knowledge platform (Globe), helps mining companies to answer "where in the world" questions, and it collaborated with Asian Battery Minerals in Mongolia. "Getech is particularly interested in people who are looking for new exploration areas. In the search for the best risk-reward ratio, companies will either go looking for low-hanging fruits in the more challenging jurisdictions or pursue more expensive resources in the tried-and-tested, less risky jurisdictions," said Bennett.

Mining for battery minerals in Mongolia will not be easy, but, to quote Robert Friedland, who himself quoted President John F. Kennedy: "We choose to go to the moon not because it's easy, but because it's hard." ■

"Our vision is to discover and develop world-class projects in Mongolia."

Bayartbileg Bayaraa

Co-Founder & CEO
GOBI VENTURE

Could you introduce Gobi Venture LLC?

Gobi Venture LLC is an explorer with a diverse portfolio, including copper, molybdenum, lithium, rare earth elements and gold. Our project, Naran, comprises two geologically distinct areas; a copper and molybdenum porphyry system, including an IOCG (Iron oxide copper gold) type segment, and a significant shear-hosted gold zone. This geological setting leads to polymetallic mineralization including copper, molybdenum, fluorspar, lithium, rare earths, and gold.

Our project is strategically located in the Southeastern Gobi, only 45 km from vital railway and electricity resources and a mere 200 km from the Chinese border, positioned within a geologically attractive district.

Our vision is to discover and develop world-class projects in Mongolia. Committed to the best interests of our stakeholders, we aim to distinguish ourselves through professional and management excellence, as well as by adhering to benchmark ESG standards.

In addition, despite being at an early stage, we plan to construct electricity infrastructure twinned with a solar power to align with our vision as a green and technologically advanced developer.

Could you provide an overview of the exploration work done to date on the Naran project?

We hold two licenses within our 5,325-hectare field; a mining license and an exploration license. Having acquired the field in 2020, we executed a successful test drilling campaign along with geo mapping and geophysics. The results confirmed ore enrichment with copper, fluorspar, lithium, and Rare Earths.

We then focused on validating the fluorspar reserve to assure our investment. In 2021-2022, we undertook 7,600 m of fluorspar resource drilling along with technological and economic studies, environmental impact assessment, and flotation plant design, as well as obtained necessary approvals from both government and local citizens. It has effectively positioned our project as a secure investment, mitigating potential exploration risks.

In 2023, we conducted an exploration campaign for near-surface copper, by testing down 150 m from the ground. The fieldwork involved 9,000 m of drilling, 6,000 m of trenching, and gradient Induced Polarization (IP) surveys at depths from 200 to 500 m. We are now assessing the 2023 exploration data.

What upside potential does the project hold?

The preliminary estimation reveals a near-surface copper resource of 50,000 t at 0.25% Cu within 200 m. It also indicates 40,000 t of molybdenum at 400-450 ppm Mo within the same depth. Additionally, a shallow Mo & Cu zone extending 3 km x 1.5 km, demagnetized, and capped by argillic and sericite, has emerged.

Moreover, three distinct gold zones were identified, including a shear-hosted quartz vein spanning 1.5 km at the surface with visible gold. The underground continuity of the vein over 500 m has been verified through test holes.

The fluorite resource comprises 550,000 t in fluorspar with a 25% content, and an additional 340,000 t of potential.

Furthermore, lithium resources total 120,000 t in LCE with a 0.2% Li2O grade. The mineralization is open to three sides and depth.

Remarkably, REE have been discovered in the same basin without dedicated exploration. The content of Total Rare Earth Oxide (TREO) ranges from 0.2% to 0.5%, with bastnasite identified as the REE-bearing mineral, known for its easier treatment.

Our exploration and resource estimations fully comply with JORC standards. The final report of the 2023 exploration campaign is expected by March 2024.

What are the main challenges you face as an early explorer in Mongolia?

Certainly, the challenges in Mongolia, including weak infrastructure, insufficient power resources, community misunderstandings in the sector, and regulatory inefficiencies, are evident.

What has determined Gobi Venture to establish its own technical laboratory?

We have established our technology laboratory to boost operational and budget efficiency, as well as to facilitate timely decision-making in our exploration activities.

Could you elaborate on your IPO strategy?

In 2021, we secured US$10 million in private funding. Our core investor, a prominent figure in Mongolia's copper production, brings us both financial and intellectual support. Looking ahead, we are seeking additional private placement funding for 2024 to complete exploration campaigns. Then, Gobi Venture envisions an IPO on the ASX in 2025. We believe that our de-risked project, coupled with its enormous potential, will present a captivating value proposition to investors.

Do you have a final message for our international readers?

Our vision is to be the leader by showcasing excellence, diligence, and enduring success in order to bring Mongolian mining potentials with the world. ■

"Mongolia has all the potential to become an important player in the critical mineral space. The country remains broadly underexplored for these materials."

Gan-Ochir Zunduisuren

Managing Director
ASIAN BATTERY MINERALS

Could you introduce Asian Battery Minerals?

Asian Battery Minerals is an Australian-based company with three critical minerals projects in Mongolia. These projects are the Oval nickel-copper (magmatic sulfide), Khukh Tag flake graphite and Tsagaan Ders lithium.

For the Oval Ni-Cu project, our company was selected to participate in the inaugural BHP Xplor program, a global accelerator program that targets innovative, early-stage mineral exploration companies. By the time of completion of the BHP Xplor program in June 2023, Asian Battery Minerals was able to discover a magmatic nickel sulphide system.

The Khukh Tag graphite project is possibly 24-30 months away from a final investment decision, as we progress into 2024 with detailed technical studies, including a scoping study. The Tsagaan Ders lithium project that is located in Dundgobi region is at an early stage, and we have completed sampling and mapping, and we plan to start a maiden drilling program in first half of 2024.

Could you provide more details about the Khukh Tag graphite project?

Khukh Tag currently has a total mineral resource of 12.2 million tons at 12.3% grade. The exploration upside is several times larger since we have only drilled a small part of the graphite containing outcrops within the license area. In 2024, we are going to carry out high-impact drilling at Khukh Tag to improve the grade and increase the resources. So far, the best drill hole was 17.8% TGC @47 meters, a single drill hole in what we call the North Zone. Besides advancing towards the scoping study through commercial studies and infill drilling, next year, we will also test for the suitability of the material to go into battery anodes, with results expected in second half of 2024.

How about your Oval nickel-copper project in western Mongolia?

We have completed phase 1 scout drilling program at the Oval project in May 2023; all drill holes encountered a mineralization (up to 200 m depth), and it has become evident that the ore body is open in most directions. Oval nickel-copper project is located in the Central Asian Orogenic Belt (CAOB) and has multiple targets identified for further drilling. We are very excited to carry out a further drilling in 2024 at Oval, as well as to continue with comprehensive regional geophysical studies.

What do you think of Mongolia's potential in the critical minerals space?

Being located next to the world's largest EV market (China) that is leader in each stage of battery and battery materials production value chain provides Mongolia with many opportunities. These include developing mineral projects to different levels of supply chain. This optionality of producing a product for up-to mid-stream markets gives a flexibility of addressing capital cost, generating cashflow and project finances for different mineral projects in Mongolia. This is very important for exploration companies to make their projects competitive regionally. We have clear transportation cost and environmental footprint advantages in comparison to jurisdictions located far from China and Asia-Pacific market.

I believe Mongolia has all the potential to become an important player in the critical mineral space. The country remains broadly underexplored for these materials.

To what extent do you believe the perception of Mongolia as a high-risk jurisdiction is justified?

In my experience, there are a lot of misconceptions about Mongolia. It is a well-established democracy with competitive fiscal and legal frameworks for investors, especially for battery minerals. I believe Mongolia has become quite mature mining jurisdiction. The key components for developing large projects - infrastructure, border capacity, human capital and mining sector policy are all improved vastly if you look at last 15 years of development. Overall change in permitting is very much in line with recent changes and developments in global mining industry.

Some may look at Mongolia as risky, but if you look a bit deeper into the facts, it is a well-established mining jurisdiction with over 30 million t/y of coal exports to China and large operations in iron ore, copper, molybdenum, tungsten, and fluorspar, as well as large players such as Rio Tinto, Orano and Zijin operating here.

Asian Battery Minerals operates its projects with a long term approach based on strong local technical and business knowledge. We have an in-country experienced board and very talented operational team that understands the legal, financial, and mining landscape of the country. ■

Ali Haji

CEO
ION ENERGY

Could you bring our readers up to date with the latest on your Mongolian assets?
We acquired the Baavhai Uul project in 2019, listing it the following year. In 2021, we acquired Urgakh Naran, in Dornogovi province, one of the best-developed areas for mining infrastructure in Mongolia. In 2021, we performed a few AG holes allowing us to see lithium content in the upper strata. In April 2022, we collected a brine sample on the surface at 918 mg/l – a world-class result. After setting up an exploration camp on site, we conducted a 100-line km of TEM geophysics, yielding 9.9 billion cubic meters at half an ohm cut-off.

What's next for Urgakh Naran?
Our next step is to arrive at a MRE. We are no longer looking to bring in a public equity investor, due to the dilution risks, but instead, an investor that buys into the asset with the obligation to perform exploration over several years with the option to acquire the remaining equity. That would leave ION Energy with an NSR. These conversations are ongoing. We aren't walking away from Mongolia, but giving the project an opportunity to be accelerated. It is also a liquidity or treasury opportunity for us, so we can redeploy the capital from Urgakh Naran to acquire additional lithium-containing assets across Mongolia.

What has been your experience as an explorer in Mongolia?
As a jurisdiction, there could be improved transparency. Often, the provincial government operates as a sovereign entity rather than in accord with the national interest. Otherwise, Mongolia has been forthcoming, consistent in its messaging, and ready to show the world it is open for business from all parts of the world. I believe Mongolia's openness will allow it to advance much more rapidly, as we have seen recently with Zijin's investment in Xanadu, China's first open investment in Mongolia.

Do you have a final message?
Being first movers in a jurisdiction has been an uphill battle, but even so, the fruits of our efforts are paying dividends in terms of exceptional grades, volumes, and upside potential. ■

Purevtuvshin Tsooj

Project Leader
MONGOLIAN NATIONAL RARE EARTHS CORP (MNREC)

Could you introduce MNREC and your flagship Khalzan Buregtei (KB) REE project?
The first exploration license on the project was issued in the early 2000s. About 10,000 m of diamond drilling (DD) were carried out in 2012-2013 by an Australian company who owned the project at the time. The KB project was put on the shelf until 2020 when the US started talking about the critical minerals supply chain again, and greater awareness about the importance of REE for the energy transition emerged. These trends created an uplift in market sentiment for REEs, with a preponderance of interest for REEs outside of China to wean off the country's dominance. Geopolitical tensions between the world's largest powers bring the REE space to an interesting juncture, so the KB project came into the spotlight. KB is a large development with extremely attractive economics, as our 2020 PEA suggested. The KB project is owned by the Trade and Development Bank (TDB), the largest bank in the country.

Could you elaborate on the existing work done at the KB and the characteristics of the project?
The KB ore body is of substantial size but low grade, but what makes the project attractive is the high content of heavy rare elements (dysprosium and terbium), which are valuable in magnets. This year we completed 20,000 m of DD, with samples sent to Perth for metallurgical testing. Due to be ready by mid-2024, the PFS has three primary purposes: to establish the resource with more confidence, determine the processing technology; and calculate the capital expenditure. Next year, we will commence the ESIA works, together with water study and power. We are considering a 100% renewable energy supply as a core component of the project.

What end markets do you target?
We aim to make a difference for the region by inaugurating Mongolia's first rare earths processing facility at the site. We we want to engage in hydrometallurgy to yield a mixed rare earth oxide or carbonate as a final product. We will target offtakes with OEMs looking for a green product, produced using renewable energy and using a modern and environmentally friendly dry tailings facility that recycles 100% of the water, stacking the waste into a solid form. ■

> "The target is to bring the Zuuvch Ovoo uranium project into production by 2028."

Marc Meleard

Executive Director
BADRAKH ENERGY

Badrakh Energy is a JV between Orano and the Mongolian state owned company Mon-Atom LLC. Could you introduce the company to our international audience?
Orano entered Mongolia in 1997, engaging in exploration for uranium, but it was in 2010 that we discovered the world-class Zuuvch Ovoo deposit, which has a reserve of 93,291 t. That same year, Orano performed the first pilot test for our in-situ recovery (ISR) technology. Previously, in 2002 we discovered Dulaan Uul deposit with 6,260 t of reserve. From 2021-2022, we completed the first full pilot test of our technology that goes all the way from extraction to final production. In total, Zuuvch Ovoo yielded 10 t of uranium out of the pilot test, proving the reliability of our ISR technology.

Could you comment on the significance of the recent protocol between Orano and the Government of Mongolia for the development of the Zuuvch Ovoo project?
The investment agreement is intended to provide stability and certainty over the project lifetime to ensure the project stability and its profitability, also to be able to forecast with accuracy our tax obligations in the next 3, 10, or 15 years, given that Zuuvch Ovoo is predicted to stay in production for 33 years or more.

Also, the agreement is necessary to settle the irregularities that we are currently subjected to by adhering to two different and inconsistent laws: the Mineral Law, and the Nuclear Energy Law. For instance, the government required higher royalties, which would mean a lower interest in the shares of the company, yet the Nuclear Energy Law stipulates at least 34% of shares must belong to the state. In the future, we expect the Minerals Law to be amended to mention that uranium mining will be governed by the Minerals Law only.

Could you walk us through what would come next?
The target is to bring the project into production by 2028; we have already begun engineering design works and we will then need to secure permitting, before launching into construction and proceeding to all the road, electrical, piping, camp infrastructure, and acid plant. Training is also an important part of the workflow. We signed an MoU with the main university in the region and we allocated a budget to train both professors and students from various institutions to build capacity in the ISR (in-situ recovery). The initial investment of the project will be in the range of US$450 million, but the full *capex* for the lifetime of the project nears US$1.6 billion, fully covered by Orano. The first tranche would be enough to bring us to a Phase 1 production, which would then be ramped up throughout the following four years to reach the nominal capacity of 2,500 t/y production. 1,600 people will be working on the site, half of which are directly under Badrakh Energy and the other half as subcontractors.

What have been the most important aspects of your ESG strategy?
Our proposed project has been well-received because we communicated in a simple yet detailed fashion. The drawback, if I may call it like this, of our technology, is that it is not visible like a standard open-pit operation may be, so the work we do cannot be noted from the outside.

As a uranium producer, we are in the decarbonization business, so our energy mix must also be consistent with decarbonization goals. We plan to co-generate 40% of our energy needs from the exothermic acid plant. For the remaining 60%, we can either draw from existing renewable energy, the Sainshand Wind Farm having the right capacity to meet our needs, but we would need to buy green certificates to offset emissions, or we could build our solar farm. Additionally, Badrakh Energy is was one of the first companies in Mongolia to sign the Responsible Mining Codex.

Do you have a final message?
Mongolia does not yet have a nuclear power plant, but the new business of uranium is an important step for the country because it brings new knowledge while serving a growing market, especially with many nuclear plants under construction in China. Nuclear power works in conjunction with renewables to feed a cleaner grid where neither solar nor wind can suffice. ■

Algirmaa Ikhbayar

CEO
GEOSAN

Can you provide an overview of the evolution of Geosan?

Geosan was founded in 1996 by my father Ikhbayar, who is a geologist. He worked as a senior geologist and then deputy director for Mongolia's largest geophysical expedition during the socialist period. He established Geosan as a ground geophysical survey company. Our first major project was in 1997 for BHP Billiton at the current Oyu Tolgoi (OT) site, for which we used magnetic equipment brought from Canada, the first of its kind in the country since the end of socialism. Subsequently, we expanded into other methods of geophysical surveys, including gravity, magnetic, borehole logging, and deep-penetrating geophysical surveys. In 2007, we expanded to airborne geophysical surveys, acquiring two brand new aircraft Cessna Grand Caravan 208B from the US and eventually venturing into aerial mapping. When the mining boom ended in 2012, we expanded into aviation, providing mining charters, ambulance services, and VIP charter flights for tourism.

Can you comment on the current data availability for exploration?

Government spending on exploration is on average around US$8 million per year. The new government policy aims to boost exploration funding and to re-conduct airborne geophysical surveys to enhance data availability. This initiative responds to the fact that the existing surveys were undertaken by a Mongolian and Russian joint expedition before the 1990's. Consequently, all exploration data is outdated, and we also lack digital data. There is a pressing need to redo surveys to obtain new digital data and to tackle Mongolia's vast expanses of unexplored land.

To give you an idea of the current government-level data for the country, the Mongolian government has conducted geological land surveys on a 1:200,000 scale covering 100% of Mongolian land. For the 1:50,000 scale geological survey, a total of 40% of Mongolian land has been covered.

Now, international companies like Xcalibur have been contracted to provide additional data, reflecting the government's serious commitment to exploration to attract foreign investments. ■

Munkhtogtokh Ts

Founder
GEOMASTER

Could you introduce Geomaster?

Founded in 1998, our journey began as a specialized geodetic and geophysics entity, primarily supporting the mining and exploration sectors across Mongolia. Notably, our enduring partnership with Oyu Tolgoi spans 22 years, reflecting our commitment to providing diverse geodetic services, from surveying to 3D scanning and aerial imagery. Collaborating with world-class miners such as Rio Tinto has empowered us to elevate our standards and adopt cutting-edge systems.

We now have a team of 56 permanent staff, and we consistently invest in up-skilling and training to keep up with the latest innovations.

Do you expect exploration to be revived in the coming years?

Looking ahead, we are optimistic about the revival of exploration in Mongolia. The government's initiatives to encourage exploration through airborne geophysics programs and policy reforms reflect a positive shift. This, coupled with a newfound commitment to investor protection, heralds a promising future.

What are your objectives for 2024 and beyond?

Mongolia is not fully mapped. Only 45% of Mongolia's territory is covered by a 1:25,000 scale map, but the government plans to cover the remaining 55% by 2025 to provide a first layer of understanding of the country's geological makeup to attract further investment. Geomaster plans to participate in the open tender for the large survey. Moreover, we want to also be a part of the bidding process for the next exploration projects, partnering with explorers coming into the country to provide geophysical studies and help them advance in identifying the best targets.

Do you have a final message for our international readers?

Mongolia beckons with untapped geological potential. We extend an invitation to foreign investors, assuring them of a conducive investment climate and the prospect of mutually beneficial collaborations. Mongolia's promise lies in its unexplored resources, awaiting the spark of investment for transformative growth and our company is fully ready to support you in smooth operation in Mongolia. ■

Bart Anderson

COO APAC
XCALIBUR MULTIPHYSICS

Could you elaborate on the work Xcalibur is doing in Mongolia?

We are partnering on a project with the Geological Research Center of Mongolia and the Ministry of Mines and Heavy Industry to run a Helitem electromagnetic survey covering the South of the country, where mines like the OT are located. Helitem is the most powerful deep-penetrating time-domain electromagnetics system for target discrimination and it has the lowest base frequency of the electromagnetic airborne surveys, essentially allowing us to see as deep as possible and at the highest possible resolution from up in the air. We will follow this up with a Falcon survey in early 2024. We are extremely enthusiastic about Mongolia, and the broader Central Asian region and we are ready to provide the highest quality service, which goes beyond the survey; the main value we offer is in the interpretation of the data and understanding of the earth.

Could you remind our international audience of Xcalibur's expertise and capabilities?

Using airborne technology and smart data, we responsibly map a country's natural capital, both on the surface and underground, to look for traditional and critical minerals, as well as other forms of natural capital, like water and energy resources, biodiversity, or agriculture. Our clients range from governments to explorers and scientific & environmental communities. From a country-mapping perspective, more countries, including Mongolia, realize that the energy transition is having a big impact on their economies and want to establish their place in newly created critical minerals supply chains. The quickest and most environmentally friendly way governments can fast-track their understanding of their country's natural capital is by mapping from the air – this has the lowest carbon and community impact while delivering the fastest results.

What are Xcalibur's main priorities for 2024?

In Mongolia, our key priority is to establish ourselves as a partner for the government and for major explorers in the country, offering our full suite of technologies. ■

Richard Bennett

Executive Chairman
GETECH

Could you introduce Getech?

Established initially as a spin-off from Leeds University, Getech has spent the last 30 years collecting, analysing and building a unique database of magnetic, gravity and geologic interpretation data covering the most recent 300 million years of the Earth's evolution. We have brought this data together in our proprietary Earth evolution digital twin called 'Globe'. Globe is an extensive cloud-based geoscience platform that delivers its content into an energy industry standard geographic information system, or 'GIS', to enable advanced visualisation and analytics.

Our proprietary geological, climatic and oceanographic data offer unique, actionable insights and understanding for locating natural resources in the subsurface. First used widely in the oil and gas sector, our data and insights are now being applied by a wider range of corporates looking to find new energy and mineral resources to help advance the energy transition. We feed our data into artificial intelligence and machine learning algorithms to identify where the appropriate conditions existed in the past to enable the formation and preservation of resources, and so find where else they may be located today.

What makes Getech a good investment?

Getech's valuation has come down in recent years, mirroring the trend in the oil and gas sector, since we were heavily focused on this sector. My goal is to increase our business from green industries, which could place us under the Green Economy Mark, which recognizes London-listed companies deriving half or more of their revenues from products contributing to the green economy.

Do you have a final message?

I really think Mongolia is a fantastic opportunity and we would be happy to do more work there. Apart from selling subscriptions to our products and delivering our expert services, we are also looking at selective asset participation. If done right, it has transformative value creation potential, which we can monetise at various stages. ■

Equipment, Technology and Services

> "Despite what people from outside of the country may think, Mongolia adheres to the latest technologies available globally."

Erdembayar Sukhee
Chief Representative
ABB MONGOLIA

Image courtesy of Oyu Tolgoi

Equipment and Technology Providers

Maturing in a realm of unpredictability

For all its remoteness, relatively limited market, and unsteady past, the Mongolian mining sector is very well-served by a good mix of local and international service, technology and equipment providers. Some of these were born at the height of the mining boom, when many big international firms rushed to Ulaanbaatar, while even more numerous local mom-and-pop businesses sprung up. In 2012, there were about 300 drilling companies in the country, most of which have since vanished. Other companies date back to the 1990s, as part of a first wave of local entrepreneurship and international courtship of the newly opened market following the demise of communism. Today's survivors share a hard-tested resilience, built out of navigating an environment where planning around demand, supply, and logistics seems to have been the hardest part.

The incongruencies of demand make planning difficult. The commodity downturn filtered out many contractors, engineers, legal firms, and all sorts of suppliers that came to the country during the boom years. Those who stayed had to reduce costs to the minimum by restructuring into leaner organizations, and clinging onto the few customers that kept them afloat. For example, SRK Consulting, a global engineering and consultancy group, only retained the geology and mineral resource estimation expertise in-country, while drawing from the wider SRK group for other disciplines. Local players like Minespec, a distributor of welding equipment and accessories founded in 2009, survived the market downturn thanks to its association with the Oyu Tolgoi (OT) mine.

Association with OT was a lifeboat for many big and small providers, which points to the fact that the demand challenge is not only cyclical, but also structural: The mining services industry was largely built and continues to levitate around the OT. The mine in the Gobi Desert has been the entry-point for most international companies coming to Mongolia and remains to this day either the largest or even the only customer for some suppliers. RJE Global, an Australian engineering and construction company, had worked for Rio Tinto at its two mines in Australia before being approached to work at the OT in 2015. For Normet, a leader in auxiliary underground equipment, the OT has been the only customer in the country, but also the second largest customer worldwide for the Finnish OEM. A contract with the OT has become a make-or-break condition for the many local suppliers. Among the 200 accredited geodetic survey providers in Mongolia, integrated geospatial solutions company Geomaster has managed to become a leader thanks to its continuous work with the OT, a partnership now in its 23rd year.

"If the OT caught a cold, we would catch pneumonia," said David Turnbull, managing director for Transwest Mongolia, the official distributor of Komatsu equipment in the country.

Transwest, which started its journey in Mongolia with a large contract for the OT in 2015, is one of many other equipment suppliers that has launched a strategy of diversification to better manage the risks of depending on a single major customer. OT remains a significant part of Transwest's business, but the company has also signed large deals with other companies, most recently with Mongolyn Alt (MAK) for a fleet size similar to that provided to the OT.

The issue with diversifying within the mining sector is the relatively small size of the market, with not enough projects to command large orders of equipment, construction, and other services, especially for more specialized players. The market becomes even smaller if we take out the state-owned enterprises (SOEs), which some providers prefer not to engage with. For instance, structural mechanical piping (SMP) contractor Saade Construction, founded in the late 1990s by Dishad Ali, refrains from

Image courtesy of Oyu Tolgoi

Koji Alexandre Suzuki
Director of Operations
SAADE CONSTRUCTION

"Mongolia's inherent unpredictability poses significant planning challenges, with elections causing substantial disruptions. Saade prioritizes comprehensive due diligence before project commitment, ensuring all requisite permits are secured beforehand, preempting potential hurdles in project progression."

participating in tenders with government entities: "Government tenders, governed by a preference for the lowest bid, stand incongruent with our quality-focused approach, prompting our strategic decision to abstain from participation," commented Ali.

Besides the limited market size and its concentration in the OT, other factors that cause demand instability is a market wired for the short-term: Mining customers think in short periods of time, between elections, contracts, and seasons. Elections cause periods of inaction, where permitting is delayed or not granted at all, resulting in project cancellations even after the project was awarded to a contractor. Contracts are also negotiated for short periods, requiring bidders to participate in repeated tenders and take risky loans without any guarantees. And, lastly, perhaps a symptom of the perpetual instability, decisions tend to be made last minute: "Every year, the winter ends, and customers make the order for drill rigs and other equipment, rather than doing it months in advance. Since we are looking at six to nine months lead times for most items, we can only sell if we have enough stock. On the other hand, keeping too many things in stock is also risky. For these reasons, the bigger companies in Mongolia tend to get bigger, and the smaller, to disappear. The business is capital-intensive and keeping all this inventory available for customers who don't plan ahead is not affordable for many," said Mark Gabel, the CEO of MSM Group, one of the top 30 largest corporations in the country.

In a small economy with a small mining industry, diversification across different sectors can be the best option. MSM, for example, has three distinct business lines in automotive, mining supply and beverages, even as 35% of its revenues continue to come from the OT: "People drink during good and bad times, while a mine owner will most likely also be our Dom Perignon customer and drive a Mercedes or a BYD, especially in Mongolia's small economy, where everyone knows everyone," said Gabel.

We can see this trend of diversifying from mining – a reflection of the economy itself – especially in the equipment suppliers sector. In recent years, Swedish engineering group Sandvik has begun selling into sectors that it had not sold since 2014. Minespec, a dealer of welding equipment from brands like ESAB, Hyundai, or Honeywell, has been involved with the Sunshine Oil and Gas refinery, an Indian-Mongolian JV investment of almost US$1 billion, while also looking out for other opportunities in methane gas with TMK Energy, and the uranium project developed by Badrakh Energy. Minespec is not only broadening its customer base to sectors outside of the minerals industry, but also diversifying its suppliers' list, including more South Korean and Chinese brands. According to Ganbaatar Chimeddorj, Minespec's founder, Chinese brands tend to be preferred by government-owned entities like the large Erdenet copper mine. The same strategy can be found at MSM Group, which traditionally partnered with Western brands like Terex, but now also offers Chinese ones like Sany.

Image courtesy of Mongolrostsvetmet

Chinese and even South Korean products make sense from a cost and logistics perspective. Mongolia's location, as a locked landbridge between Russia and China, is as advantageous for Chinese suppliers as it is disadvantageous for their Western competitors. According to Sandvik, logistics costs are about 15-20% higher compared to other locations served by the Swedish player. MSM estimates logistics make up for about 12% of the total cost of the product in the country, while the Asian Development Bank puts that figure higher, at 30%. Costs may be passed down to the customer, but delivery schedules remain the providers' responsibility. With the Russian border impacted by international sanctions, the main route to Mongolia is through China, especially through the nearest port, in Tianjin, which is often clogged. Our interviewees mentioned that there are 6,000 containers coming to Mongolia stuck at Tianjin on a consistent basis, with delays of up to three months.

Even after arriving in Mongolia, suppliers again need to cover thousands of kilometers between different mines. The typical supply geography in the country is that of a main office in the capital city of Ulaanbaatar and a secondary entity (usually a warehouse) in the South Gobi, near the OT and ETT mines, which again creates isolation when it comes to serving the more distant mines and exploration projects in the West or East of the country. For that reason, Titanobel (recently merged with Australian Dyno Nobel), entered Mongolia in 2019 with a different plan. Soyol-Erdene Tsegmid, the CEO of Titanobel Mongolia explained: "One of our main differentiators is our logistics setup. Our plant is in Nalaikh, which is about 40 km away from Ulaanbaatar. By having a plant in central Mongolia, we can serve mines across the country, whereas our competitors have built their production close to certain mining sites. From the beginning, we envisioned a diversified customer base, rather than plugging into one main customer; if you have five customers, building five plants becomes highly inefficient. From our centralized plant, we can transport non-explosive emulsions to mining sites and couple these emulsions with on-site charging trucks. We are now advancing this concept by building tank storage for explosives at our customers' bases."

Lastly, equipment supply and construction in Mongolia is also made complicated by the unusual climate conditions. Since it is a small market, OEMs will not produce specifically for Mongolia, while engineers and builders will need to tailor their solutions to accommodate for the harsh weather. Canadian companies, like Redpath - a leader in shaft sinking technology and which has worked at the OT for 20 years, are well accustomed to low temperatures. This can be an opportunity to differentiate through a highly customizable offer, as it is for MMD Sizers, a supplier of material processing equipment: "The significance of weather conditions cannot be understated, and our expertise, honed in the harsh climates of Canada and Inner Mongolia, equips us with the right tools to navigate extreme temperatures. We adeptly tailor our equipment to meet specific requirements, ensuring optimal performance of our machines even in the most challenging conditions," said Jonathan Cain, managing director at MMD Green Mining Solutions.

The first to feel the signs of an upturn or a downturn, the equipment and service providers sector in Mongolia has been created out of the immense opportunity opened in the early 2010s and thinned out by the many challenges the industry has gone through since. Today, the sector is solid, mature, and ready to grow again. Investments by established players and new ones are on the horizon. Local diversified company Mera Group is building a new ammonium nitrate plant with a capacity of 200,000 t/y to be completed this year, which will reduce the needs for imports from Russia and China, further localizing the explosives market. Monnis Group, another large local conglomerate and distributor of Liebherr equipment, has inaugurated a Company Rebuilt Center in Ulaanbaatar, where used Liebherr equipment will be reassembled into new products, again reducing the needs for imports.

Gantulga Enkhbold
Chief Operating Officer
KHAANZAA SERVICE (KHS)

"We have suppliers from different parts of the world such as Italy, the Czech Republic, and Turkey in Europe. In the Asian region, we maintain partnerships with Chinese and Taiwanese suppliers. Trucks are unable to transit through Russia, and shipping costs have risen considerably."

Transwest, which has been growing at around 20-25% yearly, is boosting its capital expenditure from US$4 million in 2023 to US$16 million this year, focusing on new equipment and infrastructure, as well as a new dedicated Transwest Training Institute, which will also boost in-country local skills capacity. Multiple equipment suppliers are investing in Khanbogd neighboring the OT mine, where a new hub is rapidly growing.

For those with a history in the country, navigating instability has become second nature, a rite of passage to reach maturity. For those looking for the first time at Mongolia, the main advice everybody seems to share is to take due diligence seriously and ideally find a good local partner. We will explore in the next article how local partnerships have been key to the development of a true centre of excellence and how these could be scaled up. ■

Jonathan Cain

Managing Director
MMD GREEN MINING SOLUTIONS (MAURITIUS)

“In the context of conducting business in Mongolia, knowledge dissemination has played a pivotal role.”

Could you introduce MMD Group to our international audience?
Established in 1978, MMD Group has evolved into a global engineering company, driven by the pioneering invention and patenting of the Twin Shaft MINERAL SIZERTM. This innovation has brought us to the forefront of the material processing equipment industry, where we continuously lead with groundbreaking products, such as the In-Pit Sizing and Conveying system, underscoring our unwavering commitment to innovation.

What are some of the challenges you face in Mongolia and how do you overcome them?
Mongolia, being a landlocked country with remote mine sites, inherently presents logistical challenges for both customers and suppliers. The strategic positioning of our two facilities in China enables us to offer exceptional support and stockholding to the region.

The significance of weather conditions cannot be understated, and our expertise, honed in the harsh climates of Canada and Inner Mongolia, equips us with the right tools to navigate extreme temperatures.

In the context of conducting business in Mongolia, knowledge dissemination has played a pivotal role. We have been actively involved in informing the market about the distinct advantages of our solutions over conventional crushing methods.

How does MMD Group differentiate itself in the market?
Our primary differentiator lies in the innovative technology, quality, and bespoke, tailored solutions embedded in our Sizer equipment. Sizers stand out from traditional crushing methods, employing bending, tension, and sheer forces to break material. This approach proves up to 10 times more efficient than alternative crushing methods, resulting in substantial savings in electrical power and overall operating costs.

Could you walk us through some of the innovations that MMD Group has recently introduced?
Two recent innovations that we have introduced to the market are the MMD Bulk Ore Sorting System and the Fully Mobile Surge Loader™. The Bulk Ore Sorter utilizes cutting-edge ore analyzer technology to differentiate between various grades of material at the bulk phase, as opposed to the conventional method performed later in the processing cycle. By executing this process closer to the mine, we separate and dispose of waste early, saving haulage and processing costs and making operations more cost-efficient and sustainable. This approach reduces water consumption, minimizes tailings volumes, and provides Semi-Autogenous Grinding (SAG) benefits, such as increased production capacity and reduced wear rates.

The Fully Mobile Surge Loader is a groundbreaking addition to the market, enhancing traditional truck-and-shovel operations to achieve up to 40% higher productivity. Functioning as a mobile storage bunker, the Surge Loader works along the mine face with the shovel moving continuously. The shovel deposits material into the Surge Loader without interruption until it progresses to the next stage. This continuous digging and dropping process enhances productivity, while the truck fleet receives material from the Surge loader at a safe distance. The smoother feed into the truck from the surge loader not only reduces impact loading and wear on the trucks, but also trucks are filled twice as quick compared to a traditional truck and shovel operations. Truck manoeuvres are also simpler and safer, by eliminating reversing the truck body into position for material drop-off. Notably, this technology is currently in use in a copper mine in the US.

Looking ahead, our objective is to integrate these two cutting-edge technologies—the Surge Loader and bulk ore sorting into the iFMSL (intelligent Fully Mobile Surge Loader). This advancement would provide all the productivity and efficiency benefits of the Surge Loader, but in addition, reliably assay material dumped into each truck. With the material composition in each truck known, operations can be more efficient by making informed decisions how material should be processed directly from the mine face, where material is more heterogeneous.

Do you have a final message?
MMD takes pride in being more than just a supplier; we are a dedicated partner, fostering strong and enduring relationships with a well-established repeat customer base. While the materials we handle are never the same twice, our robust processes, high standards, expert design, consultancy team, and global sales offices enable us to deliver tailored, bespoke solutions for each customer. The customer is the focal point of our solutions, guiding us from early concept through feasibility, installation, commissioning, and ongoing after-sales support. Our commitment extends to providing original equipment manufacturer (OEM) spares and on-the-ground expert services.

In essence, our final message is that we are a reliable partner—when we make a commitment, we deliver on it. From concept to completion, MMD is dedicated to fulfilling our promises and ensuring customer satisfaction. ■

Kamil Alyautdinov

Vice President, Minerals
METSO

Could you give us an overview of Metso's presence in Central Asia, and in Mongolia particularly?
Metso Central Asia consists of the “stan” countries, of which Kazakhstan and Uzbekistan are the largest from a mining perspective, together with Mongolia and Armenia. We have representative offices in Karaganda and Ulaanbaatar, and our headquarters office and central operations are in Almaty. Metso has been present in Mongolia since the early 1990s, being part of the copper mining journey of Erdenet, one of the largest copper mines to this day. Our Ulaanbaatar city-center office hosts five employees, but, this year, we plan to open a local support and warehouse center, operative 24/7, to be closer to our customers in the country.

What products and services within Metso's portfolio are the most important for the Mongolian market?
We mostly concentrate on mineral processing, aggregates, and refining, increasingly leaning more into green technologies with energy-saving differentiators, as well as lifecycle services to improve metrics from production rate to low cost of ownership, planning, and training. We see Mongolia showing strong appetite for green technologies.

Could you elaborate on the significance of the new warehouse center that Metso is to build in Mongolia?
Without access to a port, logistics in Mongolia can be challenging and therefore suppliers must have a robust presence to make sure products are available when the customer needs them in the quickest time. With the new support and warehouse, Metso will be able to manage better planning, shorter lead times to customers, and essentially be able to attend to our customers in the best possible way. Our goal, moving forward, is to continue investing in the country, fully dedicated to the demands of our customers, and, from this year, make available a team of service engineers and technical assistants that can perform site visits when required. Besides boosting our service offer, we are also increasing our portfolio, always ahead of the curve with new digital solutions and striving to be closer to our customers, brainstorming together with them on the best solutions. ■

Erdembayar Sukhee

Chief Representative
ABB MONGOLIA

Could you tell us more about ABB's innovative ABB Ability™ E-Mine Concept?
ABB has recently launched the ABB Ability™ eMine concept, an all-electric mine that could help the mining industry, globally responsible for 7% of GHG, to minimize its carbon footprint. Within the ABB Ability™ platform, we work with OEMs such as Komatsu, Hitachi, etc., to introduce solutions such as a trolley system for dump trucks. These innovations are being presented to Mongolian miners such as Oyu Tolgoi, Erdenet copper mine, and MAK.

What have been the adoption trends in terms of electrification in Mongolia?
Grid power costs in Mongolia are subsidized and therefore significantly lower than the cost of diesel, which indirectly drives the adoption of electrical equipment. We see a great interest in retrofitting trucks to switch to electric-powered ones. Despite what people may think, Mongolia adheres to the latest technologies available globally. Technology standards in mining are incredibly high.

Power supply is a challenge, especially for remotely located explorers and developers. How to overcome this challenge?
Junior companies tend to be in remote areas that lack grid connectivity, so they need to secure expensive diesel generators. If they don't generate their own power, they need to link to a transmission line at a long distance. That escalates project economics, becoming an obstacle in the mine development and financing; this infrastructure gap can even kill a project because it takes a large mineral resource to justify the construction of a dedicated power plant. Mongolia has been planning to build more power plants for many years now, yet little new generation has been brought online. A few private investors have built renewable capacity, but these are few and are not able to fully cope with peak load and high demand times. The country needs more power generation options, such as hydropower, wind, and solar energy with battery storage, to ensure a stable power supply for existing and future demand. ■

Mark Gabel

CEO
MSM GROUP

> Logistics make up for about 12% of the total cost of the product in Mongolia, above the average in most other markets.

MSM is one of the top 30 corporations in Mongolia. Could you introduce the Group?
MSM is celebrating 25 years of activity in Mongolia. Our diversification, with three major lines (automotive, industrial, and mining supply, and beverage distribution) has allowed us to successfully navigate commodity cyclicity. Currently, the automotive business accounts for 50% of our revenues, while mining supply is 40%, and beverage distribution is 10%, but one of the most profitable.

Could you detail the work MSM is doing with the Oyu Tolgoi (OT)?
Out of our US$170 million yearly revenue, OT accounts for about 35% of the business, being our largest customer. What helped us stand out in front of OT is our offer of fully electric-powered products, supplemented by technicians trained on high-voltage systems. In one of our most recent projects for the OT, we developed a 22-m road-train autonomous solution with a very small turning ratio. This solution does not exist anywhere else in the world, and it has been created specifically for the OT mine.

As someone who has lived in Mongolia and worked in Mongolia's distribution business for decades, how has the market changed over the years?
15 years ago, the customer preferred to do repairs and maintenance themselves. Today, whether it is a mining company or a construction company, they prefer to focus on their core business, with much more accountability being passed to the service provider. The market is also very open to the latest technologies, so, as suppliers, we must invest significantly in training and development. Something else specific to Mongolia is that good news travels fast, and bad news faster, so reputation is extremely important for continuous business.

What specific challenges do you face?
Keeping a balanced supply is tricky. Mongolia is a landlocked country, the border often clogs up. There are around 6,000 containers stuck at Tianjin port destined for Mongolia on a consistent basis. Goods get stuck at the border for three months at a time. More than that, interest rates in the local currency are at around 18%. So margins are eaten up when you need to take a loan to pay your suppliers, but can only recover that money three or four months later due to the logistics backlog. Then, you need to stock up to mitigate supply chain issues, and that costs more money since you need to make sure you have everything on the shelf. Logistics make up for about 12% of the total cost of the product in Mongolia, above the average in most other markets.

At the same time, on the demand side, we face the perpetual issue of last-minute decisions, specific to emerging and developing markets. Every year, the winter ends, and customers make the order for drill rigs and other equipment, rather than doing it months in advance. Since we are looking at six to nine months lead times for most items, we can only sell if we have enough stock. On the other hand, keeping too many things in stock is also risky. For these reasons, the bigger companies in Mongolia tend to get bigger, and the smaller, to disappear. The business is capital-intensive and keeping all this inventory available for customers who don't plan ahead is not affordable for many.

Do you have a final message for our international audience?
If mining continues to take off, Mongolia will not have enough technicians, operators, and skilled professionals, which opens more room for automation. MSM is already partnering with Indurad Xtonomy for the autonomous road trains at the OT, but also with RCT out of Australia to bring in remote-controlled dozers.

The lack of talent is a multi-folded issue. First, you have the older generations that were groomed under Russian influence and have an outdated mentality of leadership, and then the new generations that have traveled extensively, and need to be empowered rather than told what to do. The brain drain is serious. Every week, I sign a visa request for Mongolians going to work in Korea.

So, at MSM, we focus a lot on company culture and values to retain and attract the best talent. Conducting business ethically is at the core of our values; continuous improvement and commitment to excellence come next. We take a bottom-up approach, encouraging our employees to tell us how to do better, and delegating much of the decision-making. ■

Brad Clarke

Managing Director
SANDVIK MONGOLIA

How has Sandvik navigated Mongolia's mining cycles since being incorporated in 2006?
The OT continues to symbolize the country's investment environment to the international community, so when the OT shut down operations in 2012, massive ripple effects spread across the industry, including for Sandvik, since our business was deeply anchored in the OT. The 2013 legislative changes posed significant challenges for investors, and the exploration sector was affected the most. For that reason, the Mongolian industry struggled to fully capture the upcycle of 2016. Then, as commodity prices gathered momentum in 2019, the pandemic came, hitting the country severely. Naturally, investment from the OT and other players became more conservative. Today, the atmosphere is changing as people begin to overcome that nervousness about investing in Mongolia and realize that, instead of fighting over the same-size cake with larger companies that tend to take the bigger slice, we need to expand the cake for everyone to be happy. The way to grow that cake is through exploration.

Could you speak of the reception you see for Sandvik's technologies not just at the OT, but more broadly?
The industry, not only the OT, is starting to recognize how digitalization, data management, automation and semi-automation can really support their business objectives and that the upfront capital cost of a piece of equipment is only a minimal aspect of the purchasing criteria over the life of the equipment.

How do logistics in Mongolia compare to other parts of the world where Sandvik operates?
We are probably sitting at about 15 to 20% higher logistics costs compared to other locations where we deliver. Freight transport will continue to be a restriction for a while; as we speak, there is a 30-day delay at Tianjin port. From a Sandvik perspective, we have done really well in consistently supplying our customers. We invested in a South Gobi warehouse for higher inventories of loose parts, fast-moving parts and other components, and we have also reverted to air freight where necessary. ■

Darren Carter

General Manager*
EPIROC MONGOLIA

Until November 2023. New Epiroc Mongolia GM is Andrew Forster.

Could you give us a brief overview of Epiroc in Mongolia?
Since Epiroc Mongolia established more than 17 years ago, growth has been consistent. We are now seeing more activity across exploration, surface drilling, as well as underground drilling at the OT.

What role does Epiroc play in Mongolia in terms of introducing technology, especially at the OT?
One can run a mine with basic technology, but Oyu Tolgoi created a world-class, modern operation, and that really suits what we do at Epiroc. Epiroc is now moving to the second stage of automation or what we refer to as 'deep automation'. Our mission is to go beyond machine automation, to process automation, and eventually system integration. Providing a "Sixth Sense" – that extra sense, which is almost intangible because technology moves so quickly - is where Epiroc sees its future role.

How has the political environment impacted the mining sector in the country?
Mining is clearly as huge asset for Mongolia and has the capacity to deliver substantial economic growth in coming years, but the current legal framework has created some uncertainties. However, the government is now looking to create new laws to guarantee long-term stability. I am sure this will encourage sustainable growth to everyone's benefit.

Why is Epiroc opening a new company, MMEG, in South Gobi?
Epiroc is investing in a major workshop facility in Khanbogd during 2024, it will be a South Gobi registered company called Modern Mining Engineers Gobi (MMEG) in a bid to align with the government's vision to boost development in the South Gobi region.

Do you have a final message for our international readers?
Epiroc is heavily invested in Mongolia, we are here for the long term, and we believe Mongolia has a bright future. If the legal framework is right, there will be exceptional opportunities for exploration and mining development in the country. Mongolia has a highly educated, young, and energetic workforce. It is a peaceful and welcoming country and deserves positive attention. ■

> I see Green Chemistry becoming a one-stop-shop solution for everything chemicals-related.

Davaatseren Badamdorj

Founder & CEO
GREEN CHEMISTRY

Could you introduce Green Chemistry?
Founded in 2012, Green Chemistry was born at a time when the mining industry was booming and had limited professionals with expertise in chemistry and reagents, while Mongolia was importing approximately US$350 million worth of chemicals every year. I established Green Chemistry to respond to this unmet demand. Today, Green Chemistry imports three categories of chemicals: Technical grade (for mining); laboratory grade (for testing and R&D); and analytical grade (used in very specific research). As we observed the demand for laboratory equipment growing alongside that for chemicals, we also began importing all lab supplies, from pipets to analytical instruments like spectrometers.

Could you elaborate on your current business and the role Green Chemistry plays in the Mongolian mining space?
Green Chemistry has two business lines, one is chemicals, and the other is lab equipment. Finally, our third focus is on educating the market – spreading general information about everything chemical related to increase the overall knowledge in the Mongolian chemical market. We provide training, run workshops, and organize many large events to bring together industry professionals and exchange best practices on a yearly basis.

Green Chemistry counts an annual revenue of US$12 million. Out of the US$350 million chemicals market value in Mongolia, about US$150 million is explosives; another US$100 million is household chemicals; and the last US$100 million is chemicals used in mining and laboratories, which is the market we serve. Green Chemistry strives to be a dominant player within this space, and we are proud to have been growing our sales by 30% year-on-year.

We represent about 70 different world-renowned brands, such as Merck, Sigma Aldrich, Carl Roth for analytical-grade chemicals, as well as multiple Russian and Chinese principals for technical chemicals used in mining; as higher-volume chemicals, it makes sense these mining chemicals are imported from nearby locations.

How is Green Chemistry raising awareness of the concept of green chemistry, as its name implies?
The general misconception that most of the Mongolian population shares is that chemistry is dangerous and even poisonous. In the 2010s, the concept of green chemistry started taking root globally, so we picked up on it, driven by a vision to change the mentality in Mongolia and show the public that chemistry can be indeed green, eco-friendly, and safe. 'Safe chemistry is our future' became our motto, and we therefore reflected it in the name of the company.

We continue to remain a pioneer in the chemistry field, bringing the industry together through regular events and creating digital communities via our social platforms. For example, since 2013, we have organized 'Environmental safety of chemicals' training online, allowing over 1,000 participants to complete a certified training over the course of two-days per year. Four ministry's, fifteen government agencies, two universities, four NGOs, and four private companies participated in this year's event as lecturers.

We usually run about 10 different large events every year for our Mongolian chemical market. For example, our 'Green Chemistry-2023 state competition for theoretical and practical works in the field of chemistry' event, which is the first of its kind in Mongolia and 100% privately funded, gathers attendees from many different domains and it is available to anyone interested in chemistry. Besides, Green Chemistry is very active on social media, especially Facebook, and we are also working on our YouTube channel.

How is Green Chemistry positioned for 2024?
Every year, we note an increase in the total base, and, most importantly, we have been able to also take a larger share of the market, growing our position consistently. Our goal as a business is to continue on this trend, growing at no less than 30% (yearly revenue) in 2024 and beyond. To do so, we continue to professionalize our business, so that, when a client approaches us for a product, each one of our employees can provide a full professional service of consulting, training, warehousing, etc. I see Green Chemistry becoming a one-stop-shop solution for everything chemicals-related.

The second main objective for 2024 is to launch our new YouTube channel, which will feature exclusive interviews with experts in different fields on critical aspects like safety, for anyone to access. The website is also being updated to support multi-media, interactive content like blogs, where we can engage the broader chemicals community on issues that matter to all. ■

Filling the Gap in Supply

Insights from distributors, traders and logistics players

David Turnbull, Managing Director, Transwest (Mongolia)
– Distributor of Komatsu equipment

"In the coming years, the biggest challenge we have is the availability of human capital. Mongolia isn't developing its population effectively and quickly enough to meet changing global factors. Due to this TM has established our Transwest Training Institute."

Battsengel Sharav, Director, United Machinery
– Distributor of Astec Industries equipment

"We are in the process of supplying a multi-tool carrier for the underground mine development at OT, in addition to stationary boom breakers, an aggregate crusher, and a screener supplied to their rock quarry and concrete batch plant. A mine of the size of OT provides significant learning opportunities not only for its operators but also for many contractors and suppliers."

Odgerel Byamba, General Manager Operations, Arvidah Yuruul
– Logistics for specialized items

"We analyzed the details of the goods that are supplied through China and realized that the main problem for Mongolian logistics and transportation was the need to deal with chemicals and explosives, as well as oversized and overweight products imported by mining companies. We saw an opportunity to build our own logistics and transportation supply chain to provide more cost-effective, timely, and insured services to mining companies."

Pierre-Yves Rigaux, CEO, InterAsia Energy
– Trader of fuels and base metals

"InterAsia is a niche trader compared to global traders, focusing on copper cathodes, copper concentrates, and eventually other base metals such as zinc. In terms of our fuel business, InterAsia imports a significant volume of diesel into Mongolia from both Korea and China. Besides delivering fuel to mining customers, we offer financing and price management services."

Stevan Torossian, Director, TMS Mining
– Trader of mining equipment and spares

"TMS offers a service that regular traders can't provide. Mining companies purchase machines from different brands and often struggle to find reliable international suppliers that offer quality, service, and financing. Instead of focusing on one brand, TMS collaborates with major players, distributing their parts directly. This approach ensures quality, guarantees, and financial services for mines and end-users, preventing the market from being affected by illegal traders."

Service Providers

Size, sophistication and skills

Size and sophistication - these were two main qualities that allowed the Oyu Tolgoi project to singlehandedly create a world-class hub of technology and expertise in otherwise isolated Mongolia. Size, because the OT mine will be the fourth largest copper mine in the world once it reaches peak production by 2030; the scale of such development incentivized the arrival of global experts for a single client. Sophistication, because the OT is one of only 11 projects using block caving, making Mongolia a center of excellence for this mining method; the OT's underground, going down to 1.3 km, is crossed by 100,000 meters of tunnels, all equipped with sensors and cameras that allow for real-time monitors in a digital twin-like concept.

One of Rio Tinto's flagships and largest investments, the OT is, without doubt, a world-class project, the ideal ground for pioneering best-in-class technologies and methodologies, all the more extraordinary when it takes place in a country where modern mining is very young - uncoincidentally the same age as the OT itself. The OT has no predecessor in the country, but the availability of a highly qualified supply chain makes it possible for the OT to have many successors moving on. The OT's size and sophistication were essential to attract the most modern technology, equipment, and service providers, but it was the successful skills transfers realized between foreign and local companies that led to the development of a true local hub.

Unlike many other jurisdictions where GBR reports from, Mongolia's mining service and equipment sector is majority operated by locals. In less than two decades, Mongolians have acquired expertise in all areas of mining technology and service, from welding to electrics, structural mechanical works, technical reports, and the latest software applications.

Key to the development of strong mining expertise in the country has been the close interplay between international and local companies; if during the boom years, these collaborations had no time to take place or mature, the post-boom period taught foreign investors that due diligence and a strong local partner are the safest ways to go about Mongolia. Moreover, where former international companies collapsed, Mongolian ones emerged; for instance, foreign-owned AIDD (Australasian Independent Diamond Drilling), which had operated in Mongolia since 2004, ran into financial difficulties and was bought by its former country manager, Mongolian national Tulga Tsenddorj. Tsenddorj renamed and rebuilt AIDD into Phoenix Drilling in 2016. Dunnaran Baasankhuu also saw an opportunity when her former employer, Australian law firm MinterEllison, decided to exit Mongolia in 2022; Dunnaran took over and turned it into independent legal practice Dunnaran + Partners.

Joint ventures and partnerships have also become a staple mechanism for either entering the country or solidifying one's presence. Multinational explosives company Orica collaborates with local explosives producer Mera Group, together working for the OT. The latest explosives company that entered the market, Titanobel, formed a JV with one of the largest local groups, Max, while Redpath, a Canadian full-service underground contractor, created a JV with local Hasu Megawatt (the JV company is called Dayan Contract Mining). Engineering and construction company RJE Global found a local partner in MMS Engineering, an EPC contractor. Many other such examples can be found throughout the Mongolian mining supply scene.

As a result of these collaborations, skill transfers have been realized quite rapidly. Orica prides itself on 97% local employees and a government recognition as the "best technology introducer in the country." Redpath, also a contractor for OT under Dayan JV, has trained close to 500 people who are now part of OT. At the OT itself, 97% of the total workforce is local, and OT-trained engineers and other mining specialists go and work not only at other mining sites in Mongolia but also in other places in the world, taking "Mongolia to the world stage," as Deirdré Lingenfelder, the CEO of Oyu Tolgoi (OT) said, with bitter-sweet pride.

With a population of under 3.5 million, the raw numbers of available technicians, engineers and geologists are very small, and are shrinking further as more people leave the country. One in three Mongolians are saying that they plan to leave the country in the next three years, according to a survey conducted by recruitment and HR company Mongolia Talent Network. Different sources point out that only about 25 mechanical engineer graduates join the labor force every year. Mark Gabel, the CEO of MSM Group, told GBR that every week he signs visa requests for Mongolians going to South Korea.

The next level

As the OT is coming of age with the transition to underground mining, so is the suppliers' sector, so what comes next for this remote hub of expertise? Growth in the supply sector cannot come from a larger market base given the modest project pipeline, but it is poised to come from deepening the level of technology penetration, especially in the areas of electrification and automation, starting with OT and moving to the rest of the industry. With Rio Tinto planning to electrify its underground equipment by 2030,

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Image courtesy of Xcalibur

Petr Osvald

General Manager
SRK CONSULTING (MONGOLIA)

Which of SRK's services are most demanded or relevant in Mongolia?
Our most in-demand service is for independent technical reporting (ITR). Many Mongolians applied for or bought exploration licenses because they saw these as a potentially good wealth-creation asset, but, to attract foreign investment, the owners require a review of the exploration potential or, if there is a resource in place, they need to transfer the Mongolian standard resource into an internationally recognized reporting standard for Mineral Resources, for example, the guidelines of the JORC Code.

In addition to ITR-style work, exploration management and Mineral Resource estimation and reporting to the JORC Code guidelines are the other in demand services for us.

What are SRK's main objectives for 2024?
SRK is continuously building on the strong foundations we have established in Mongolia over the past 15 years, while also looking at opportunities to introduce innovative ways to capture data and carry out analysis and estimation work. At the same time, we are doing our best to create more local industry awareness and a better understanding of international reporting standards such as the JORC Code and what is required to attain those international reporting codes. ■

Simon Askey-Doran

General Manager – Business Development Advisory
RPM GLOBAL

What is RPMGlobal's main offer?
RPMGlobale supports clients with feasibility studies, M&A transactions and securing debt funding. We also offer a range of industry leading software solutions across the entire mining value chain to support operations throughout their life.

Could you tell us more about your work in Mongolia?
In Mongolia we find an interesting mix where Russian heritage meets a more open, modern Mongolia, carving its own identity. This allows for a very modern way of thinking with companies seeking our support with international reporting that will allow them to attract financing.

What have been some recent innovations at RPMGlobal?
Firstly investing in our internal consulting development to make sure we stay at the forefront of what we bring to our clients. The second is the connection between technology and advisory services. A recent example is our "Enterprise Optimization" framework, which applies advanced algorithms to support groups with multiple assets to evaluate *capex* spending and inform capital investment decisions.

The third is energy transition and decarbonization. A growing number of clients need to understand the carbon footprint of their mine and how it can be reduced. ■

Scott Hayne

Senior VP
REDPATH MINING

Could you start with an overview of Redpath's work in Mongolia?
2024 marks our 20th anniversary in Mongolia. We started at the exploration site at OT.

Later, we identified the need to create a JV with a local Mongolian company, Hasu Megawatt, and Dayan Contract Mining has been operating since 2015 as a true partnership. Currently, Dayan has close to 1,400 people working on-site at OT.

Redpath is known globally for its shaft-sinking expertise. Could you elaborate?
Redpath is globally acclaimed for setting benchmarks in shaft sinking through technological innovation and safety advancements. Our work on Shafts 1, 2, and 5 at OT introduced novel technologies, enhancing operational efficiency and safety, which have now become standard not only to Redpath, but the industry at large. A key innovation was our shaft communication system, tailored for the complexities of shaft sinking. It integrates remote, real-time camera systems and advanced controls, facilitating crucial real-time data transmission for our shaft-sinking control system.

What are Redpath's priorities moving forward?
Our commitment is to provide the highest standard of service, on time and on budget, whilst we continue to train and develop the Mongolian workforce for generations to come. ■

Gantulkhuur Bekhbat

CEO
MMS ENGINEERING

What key expertise does MMSE bring into the market?
MMSE's forte lies in the EPCM model, specializing in power electrical installation, assembly, and commissioning for mining infrastructure construction. Recently, the company has delved into underground mining power electrical fields, particularly within shafts 1, 2, and 3 at OT. Additionally, MMSE actively engages in electric and mechanical engineering endeavors and is deeply involved in renewable energy (RE) projects.

Can you elaborate on some of the group's recent projects?
MMSE's recent endeavors highlight its dedication to RE. With 12 solar installations completed, the company targets larger-scale solar projects (18MW to 20MW) in the southern Gobi region. Collaborations with MCSP for a 10MW solar plant and RJEM's 2.5MW solar plant in Western Mongolia showcase MMSE's expertise in the EPCM model and energy efficiency. Additionally, MMSE actively promotes green transportation, distributing IM brand EVs in Mongolia and setting up EV charging stations across Ulaanbaatar city in partnership with the governor's office and a prominent Chinese energy company.

Our forthcoming Sustainability Report 2023 will highlight our unwavering commitment to sustainable practices. ■

Dean Cook

Managing Director
RJE GLOBAL

Why and how did RJE Global expand to Mongolia?
RJE was part of some of the pioneering work that Rio Tinto did in autonomous mining systems at two large mines in Australia, so they approached us to come and help over at OT in 2015. We decided that the best way to de-risk the labor component was to partner up with a local company, which we found in MMS Engineering in 2018.

What areas of growth do you identify in Mongolia moving on?
We have buit a significant and capable workforce and excellent reputation. Therefore, we need to step out of that traditional OT big brother and go to other sites. We quoted several renewable energy projects for Mongolia, looking at BESS (Battery Energy Storage Systems). We did a preliminary offering for about 40 MW for OT, which is looking to build a large battery system for the mine, though the capacity they have in mind is likely much higher.

Do you have a final message?
Our aim is to expand our in-country technical capability through the introduction of innovative solutions and the world's best practice in the electrical power system sector. ■

Dolgormaa Bukhbat

CEO
BODI INTERNATIONAL

Can you introduce Bodi International to our international audience?
Bodi International is one of the biggest taxpayers in Mongolia. Our subsidiary companies' major projects contribute significantly to Mongolia's social and economic development, such as the Tavantolgoi-Gashuunsukhait (TT-GS) Railway construction project, the Tavantolgoi Coal Terminal Stock (TCTS) project, and the Buuruljuut coal mine and thermal power plant project with 300 MW installed capacity which is now under construction.

The TT-GS railway construction project is a mega project with a total mainline alignment of 233.6 km. This railway is a link between the Tavantolgoi Coking Coal Mine – the largest coking coal deposit in Mongolia - and the border with China.

Do you have a final message?
Bodi International is a leading Mongolian group company with 30 years of experience in the areas of banking, investment, rail and power infrastructure development, mining, and civil engineering. We are open to long-term cooperation with potential international investors, banking experts, mining explorers and developers, road and rail project owners, consultants, and contractors, not only in Mongolia but internationally. ■

Temuulen Lkhagvasuren

CEO
MONGOLIA TALENT NETWORK (MTN)

Could you introduce Mongolia Talent Network to our audience?

Mongolia Talent Network was founded in 2011 with the goal of finding the best talent for foreign companies entering Mongolia. As the company grew, it added PEO (professional employer organization) and orientation services on top of its traditional recruitment services, and recently we launched our HR tech platform. Our customer base is dominated by mining companies and mining suppliers, followed by banking, tech, as well as renewables.

Could you elaborate on the HR tech platform?

Mongolia Talent Network provides executive search, but we wanted to expand this service to a wider talent pool in the most efficient manner. While the upper-level and C-level executive search goes through our recruitment service, mid-level and entry-level roles are now systematized through the AI-enabled platform, allowing companies to find and reach the candidates faster. With the help of AI, our new HR platform Worki, we were able to match employers with the employees at based on qualifications and requirements.

Could you comment on the main dynamics in the labor market? How attractive is mining as a career?

There are two markets in Mongolia: mining and the rest. The mining sector pays an average of 20% higher salaries compared to any other industry, which makes it highly sought-after. Meanwhile, the rest of the marketplace is facing a scarcity of available talent. Although the pay in mining is much higher compared to the average in other sectors within Mongolia, it is still about five times below that of Australia. The skill level, however, is competitive with that of Australia and other leading mining jurisdictions. The arrival of mining houses like Rio Tinto or Centerra Gold helped create a highly well-trained workforce. In the longer run, finding blue-collar workers or C-level executives will not be an issue, but the real gap is in the mid-tier management – this is where the brain drain has manifested the most, as many experienced professionals choose to go to higher-paid countries. ■

Turbadrakh Batmunkh

CEO
PRISTINE BRIDGE RECRUITMENT CONSULTANCY (PBRC)

Given Mongolia's young and small population, what are the main dynamics in the labor market?

Many people speak about the brain drain in Mongolia, but I see that talented, young people desire to stay in the country. More and more businesses are changing their culture to attract and retain talent; they realize that too many young people are leaving and they cannot afford, nor wish, to bring in more expats to run their operations. All around the world, a subtle but potent revolution has been happening at the employer-employee relationship level, whereby employees realize their value, acknowledge they have options and need not stay at their job if it no longer suits them.

What was your experience of getting a start-up company up and running in Mongolia?

Mongolian SMEs have a lot of on their plate with navigating regulations. Our economy is mostly dominated by mining (28% of GDP) and infrastructure (58%), leaving very little room (and market share) for emerging SMEs. The other main obstacle is the scarcity of talent available; in an economy where innovative ideas abound, translating those ideas into reality requires the right expertise, and this was difficult even for us, as a recruiter, as we got started. Financing is also a major hurdle. With foreign investors hesitant in the country, the available capital is restricted to national investors.

Finally, could you comment on the current labor law?

The main issue lies not in the legal background, but political changes. Every four years, Mongolia experiences destabilizing changes. The upcoming elections again surface a wave of fresh ideas; for example, we heard about proposals that companies reaching 50 million MNT will be liable to increased taxation. I can only hope that new changes are indeed feasible and aligned with the 2050 Vision, working to make improvements in the country and attract more FDI. Sometimes, these changes are too abrupt; other times, much-needed change never seems to happen. ■

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technology suppliers in Mongolia are already presenting their best technologies for electric and more autonomous equipment.

Explosives company Orica introduced its I-kon electronic detonators at the OT, enhancing performance metrics and safety. Sandvik was selected as the "best supplier of automation" at the OT, implementing the AutoMine fleet system underground. Normet has also commissioned the first battery-powered machines underground at the OT and is ready to deploy the rest in 2024. MSM Group, one of the top 30 corporations in Mongolia, has developed a unique 22-meter road-train autonomous solution, specifically designed for the OT. Other companies see in the OT project the ideal adopter of the most cutting-edge solutions. For instance, Euro Khan is looking at green hydrogen as an alternative for OT's 24/7 long-haul trucks running to China.

Outside of OT, ABB is presenting its recently launched E-Mine (Ability) concept to the largest mine sites in Mongolia. Before an all-electric mine catches up in Mongolia, ABB is running smaller but impactful projects replacing fixed-speed motors with variable ones at the Erdenet copper mine, a change which can drive savings of up to 30%. There are general drivers for electrification that apply to Mongolia's context, including the inevitable transition from open-pit to underground mining. According to the Mongolian Coal Association, the coal industry, currently entirely open-pit, is likely to move underground in the next decade as craters get deeper and the overburden larger.

A more specific driver of electrification in Mongolia is the cost of electricity, which, subsidized, is more competitive compared to diesel costs. According to Ed (Erdembayar) Sukhee, chief representative of ABB Mongolia, this factor drives interest in retrofitting trucks to electric-powered ones. The lack of available mining personnel could also indirectly drive the need for more automation.

The main barrier to electrification, however, is the lack of grid connectivity in remote areas, especially for juniors and developers who need to rely on expensive diesel generators or take on the responsibility of linking to a transmission line sometimes 100 km away. "(This) escalates project economics and can even kill a project because it takes a large mineral resource to justify the construction of a dedicated power plant. Mongolia has been planning to build more power plants for many years now, yet little new generation has been brought online. A few private investors have built renewable capacity, but these are few and are not able to fully cope with peak load and high demand times," said Sukhee.

When it comes to digitalization, the industry is missing out, said Mandakhbat Sereenov, executive director at Orica, who believes a lot of copper, gold, coal, and other resources are wasted when they could be optimized through smart data. In general, the adoption of new technologies in Mongolia finds itself at the intersection of two mentalities: An older one, that retains some of the style of former Soviet protocols and thinking, and a younger one, avid for new technology and aligned with international trends.

For engineering and consulting companies the mentality shift and greater alignment to international standards is a growth pillar. More companies want to adhere to international reporting guidelines. For example, Mongolrostsvetmet, a state-owned producer of fluorspar, gold, and iron ore, is looking to restructure into a joint stock company by bringing

Image courtesy of Saade Construction

Tsolmon Gonchig
CEO and Co-Founder
TRIGTEQ

> We see great potential to grow in Central Asia, where the mining industry also faces a technological gap. We aim to add more technology in geotechnical, hydrology, and resource reporting.

in new foreign and/or domestic partners; for that, it needs to update its reporting standards to international guidelines: "Moving from dealing solely with Russia as a foreign investor to dealing with a plethora of other cultures and standards is certainly a learning curve for Mongolian companies. Historically, all of Mongolia's documentation and guidelines were in Russian and molded after the Russian standard. Yet, we realize today the necessity of switching to English and to the frameworks adopted by the West. For example, more companies today are adopting JORC standards for their resources. Moving forward, the entire reporting system needs to align with international rules," said Munkhbat Batmunkh, Mongolrostsvetmet's CEO.

According to Petr Osvald, general manager for SRK Consulting Mongolia, the most in-demand service for the company has been independent technical reporting, license owners requiring a review of the exploration potential and resource in place by transferring the Mongolian standard resource into an internationally recognized standard like JORC (Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves): "Compared to when I first started undertaking project work in Mongolia, these days Mongolian license holders recognize the importance and value of having their projects independently assessed against an international industry reporting standard. They want the financing to advance their projects."

International aspirations

With the OT moving into a more stable production phase from the underground, the need for construction-related work has decelerated, which could leave EPC companies and other service suppliers with underused capacity. A pattern noted is that more Mongolian-based local service companies are looking beyond the Mongolian borders for opportunities. For instance, True TRC (TTRC), a local laboratory analysis and testing company spun out of MAK, is internationally accredited so its studies hold validity in most countries around the world. Following a recent collaboration with German chemical company BASF, TTRC has bolstered capabilities in R&D research, and is looking to work with global brands across the world.

O2 Mining, a mining and construction service provider, has already worked on projects in the Philippines, Kazakhstan, China, Eswatini, and Australia, and is now launching deeper into the Australian mine repurposing space, where it wants to develop alternative uses for abandoned mines or mines approaching their end of life, which the company envisions transformed into new businesses, be these in precious and critical minerals, agriculture, or renewables. Saade Construction, a structural mechanical piping (SMP) contractor, also sees an opportunity in Australia, where it wants to establish a new entity called "Saade Force Australia". "Drawing from our successful model and rich experience cultivated in Mongolia, particularly our collaboration with Rio Tinto that acquainted us with Australian standards, this venture aims to replicate our proven strategies in a new setting," said Koji Alexandre Suzuki, director of operations at Saade Construction.

Start-ups are similarly looking more broadly at the regional opportunities, much sooner than the more well-established entities, as they are born into an era of remote work and borderless connectivity. Pristine Bridge Recruitment Consultancy (PBRC), a recruitment company created just at the end of 2022, has already taken over the Mongolian market, with 40 active clients at the time of the interview. Founder and CEO Turbadrakh Batmunkh now wants to bring the less conventional head-hunting-driven approach to Japan this year. Technical consultancy Glogex as well as consultancy and technology distributor TrigTeq are also spreading out to Central Asia.

Following this trend, Mongolia could emerge as a hub for mining-related services in Central Asia and, even in APAC. The know-how transfer, which flew from Australia into Mongolia via the OT and many engineering companies, is now interestingly being reversed back into Australia and other parts of Asia, drawing out of the knowledge and experience cultivated in Mongolia. Bayar Baatar, principal consultant at Canadian-based Baatar Consulting, compared Khanbogd, the area where the OT is based, to Sudbury. "The fact that the OT is one of the largest block-caving operations in Eurasia drives a natural evolution for the Khanbogd *soum* (county) to become a hub, with the OT at its epicenter, for the supply of technologies and services applicable to this world-scale mine. Moreover, OT is a new mine, so it is more open to new technologies right from the start to become a natural first-adopter," said Baatar.

Khanbogd has attracted increased investment, with large suppliers like Epiroc looking to strengthen their presence in the South to be closer to the OT. "I always ask, if you knew how big Sudbury would become, would you have invested in Sudbury? The same is true for Khanbogd, which has grown significantly, but it has much more room to grow," Baatar added. ■

Julien Lawrence

Managing Director
O2 MINING

> O2 Mining fits in the gaps between traditional consultants and contracted operators.

Could you introduce O2 Mining?

Founded in 2013, O2 Mining is a mining services company covering projects from early-stage exploration, all the way through development, financing, permitting, operations, and, ultimately, closure. We currently have a portfolio of projects, each at a different stage, including operating a fluorspar mine where O2 mining is also a shareholder, as well as study manager for a pre-feasibility study for Xanadu Mines' Kharmagtai copper-gold project. Outside of Mongolia, we have also done projects in the Philippines, Kazakhstan, China, Eswatini and Australia.

How do you differentiate as a preferred partner in the market?

It would be hard to find a comparable business to O2, particularly in Mongolia, offering the broad and integrated services we do. O2 Mining fits in the gaps between traditional consultants and contracted operators. O2 often works from the owners' perspective fulfilling many project development roles required by project stakeholders to make a project successful.

Could you elaborate on your work at the Chuulut fluorspar mine?

The Chuulut project has been licensed since 2003, with the former operators producing a metallurgical-grade non-processed product (metspar) used mostly as a flux in the steel industry. In 2017, O2 partnered with the original shareholder and a new shareholder executing an earn-in agreement into the project, taking a share position as well as the operating contract to run the mine and processing plant. We ended up demolishing the old processing plant and rebuilding it into a modern fit for purpose facility, producing acidspar (higher purity). We also handle the offtake of the product, essentially managing the entire cash flow from the operation through to marketing and sales into the hydrofluoric (HF) acid markets in China and elsewhere. Demand for fluorspar is growing, driven not only by uses in steelmaking but by higher demand for lithium-ion batteries. Demand for fluoride in the electrolyte sector is forecast to grow at 20+% in the next decade to fuel the EV revolution. Fluorspar is one of the under-studied critical minerals since the market is more niche. The annual global market for acidspar is approximately 8 million tons, and Chuulut has a production capacity of 35,000 tons of acidspar/year.

How could Mongolia boost its exploration sector?

There are few active explorers in Mongolia simply because there are not enough exploration licenses and the undeveloped licenses available to the market often have already been studied over various times. In other jurisdictions, explorers take up a license for a limited time, and, if proven un-prospective, they give it back and take up another area, whereas in Mongolia, licenses have turned into precious commodities themselves, sometimes held on to by people that lack the technical acumen to monetize their value and that treat the license just like they would treat a real estate property. Finding exploration capital is difficult in all countries; for an immature and moderate to high-risk environment like Mongolia, is even harder. If the country opened more licenses and let the process of taking up licenses and moving to new ones develop naturally based on the geological datasets available, Mongolia would see much more exploration. Right now, Mongolia has no global mid tier miners, only a very large player (Rio Tinto) and junior explorers. The position I put to the government regularly is that, instead of relying on one big project, it should aim for 10 medium-size projects, with a pipeline of another 10 that are at funded development stage. Out of 100 licenses issued, one can expect a single mine to develop, so the industry needs enough licenses to generate continuous supply and breed the opportunity for discovery.

Do you think the country is ready to finally open to international mining investment?

The Strategic Entities Foreign Investment Law introduced in 2012, which was later repealed, destroyed the booming mining sector that had taken root in the country. It has taken many years for Mongolia to regain the trust of investors, but I believe the interest is starting to come back, especially in the last two years. For O2 Mining, the markets have recently been as strong as I have seen them in the last six years, with a lot of interest in what we can do which has resulted in significant growth in our business. ■


LG


MS

> Our work has shown how a contracting company can be a part of the industry's sustainability journey, and how FDI can make a difference in a country like Mongolia, where mining is still young.

Luis Grijalva & Mandakhbat Sereenov

LG: Territory Manager / MS: Executive Director
ORICA

Could you give us an overview of Orica's evolution and the role it plays in Mongolia?
LG: With over 20 years of experience in the country, Orica is now a key partner for the Oyu Tolgoi (OT) underground and open-pit operations. Orica has also been at the forefront of implementing groundbreaking technology, including the introduction of electronic detonators for underground and open pit operations, and other advanced digital solutions. We have a team of 160 employees, an ammonium nitrate emulsion plant, and two strategic warehouses that can store the required raw materials and accessories, supporting our customers throughout the entire year.

MS: Orica is the only global explosives company with a true long term local footprint in Mongolia. We have ridden the ups and downs of the commodity cycles, our commitment never faltering, not even during the pandemic.

Orica was recognized by the government as one of the best tech suppliers. Could you give us an overview of the main technologies introduced and how is Orica contributing to local know-how transfer?
MS: The OT project is singular in terms of size and sophistication, not only in Mongolia, but also globally, so this project pushed the entire supply chain to evolve in unprecedented ways. The OT is one of only 11 operations in the world to use blockcaving, and Orica serves eight of these. Moreover, Orica is providing shaft sinking, a specialty blasting technique, to sink down to 1,300 m; also, the I-kon (electronic) detonators are intrinsically safer and more accurate, allowing mining operators to improve performance metrics on the shovel, and, most importantly, increase safety.

LG: Technology transfer is crucial for us. 97% of our employees are Mongolian, who are mentored and supported by our onsite highly skilled specialists and professionals from overseas. We also work closely with universities to exchange knowledge and information on the latest technologies and operational standards. We have conducted several blasting seminars, and in 2021 Orica was recognized by the government of Mongolia as the best technology introducer in the country, which relates to both the introduction of technology, but also the transfer of knowledge. Orica works in partnership with one of the largest local explosives companies, MERA, which is producing our boosters, after successfully realizing the technology transfer, which aligned with the Oyu Tolgoi's "made in Mongolia" strategy.

How is Orica's offer of digital technology growing?
MS: The mining industry is very much behind on what it could achieve because it continues to rely heavily on old technologies. A lot of copper, gold, coal, and other resources are wasted when they could be optimized through smart tech.

LG: Our digital solutions are now an integral part of Oyu Tolgi operations, technologies such as fragmentation analysis cameras mounted on shovels to optimize the blast for improved efficiency, productivity, and costs. We are also bringing technology that can reduce the carbon footprint by recycling waste oil to manufacture explosives. Another example would be our cyanide analyzers, which calculate with precision the amount of cyanide required in a blast, for a more economical and cleaner operation in gold mines.

What is Orica's social commitment?
LG: Orica is proud to be very active with our hosting communities, supporting the development of knowledge on science, sports, and the English language, something that I am personally very passionate about. We take our OT Ambassadors role very serious, and we have donated materials extensively to local secondary schools, witnessing increased engagement from students in different science subjects. Orica has the first female underground operator doing up holes in Mongolia's mining history, which shows how our incredibly well-trained personnel excels and breaks boundaries, in line with our values and philosophy.

Do you have a final message?
LG: Personally, living and working in Mongolia has been a dream come true and I am incredibly grateful for the opportunity to develop the national workforce and our next leaders in the country by sharing the knowledge built in my three decades of mining, across multiple continents.

MS: The country is adaptive, dynamic, and open to new technologies and trends, which makes it easier for us to develop a long-term strategy and presence. We are excited to bring new technologies to more mines in the country. ■

> In 2019, we established a JV between Titanobel and Max Group to develop explosive production and blasting services for Mongolia's mining sector.

Soyol-Erdene Tsegmid

CEO
TITANOBEL MONGOLIA

Titanobel Mongolia was established in 2019. Could you walk us through the beginnings of the company in the country?
We Mongolians think of Mongolia as a mining country, but, on the global map, we play a very small role. Mongolia is the 19th largest country by territory, and this vast land remains very little explored. Few world-class deposits have been discovered in recent years. During Mongolia's economic boom between 2009 and 2013, when GDP growth reached 17%, the likes of Rio Tinto or BHP were looking at the country's vast mineral potential, creating demand for support services like blasting. Maxam was initially contracted by Oyu Tolgoi for several years, and then Orica took over.

In 2018, I had a meeting with the CEO of Titanobel, Mr Frederic Mey. The mining industry had dwindled significantly since the boom years, and it was not easy to encourage foreign companies to invest in the sector. But in 2019, we established a JV between Titanobel and Max Group (where I was working) to develop explosive production and blasting services for Mongolia's mining sector.

As part of that development, we acquired Nitrosibir Mongolia, a small company with a well-established presence in the local explosives market, and we started design works for our emulsion explosives plant, but the pandemic and ensuing border restrictions prevented us from importing the plant modules, so we relied on the production from the Nitrosibir plant to maintain supply. Between 2020 and 2022, we built our human resource capabilities and, as soon as borders reopened at the end of last year, we commissioned the plant. This year, the plant came online in full production and we began work at Max Group's gold mining project (Khan Altai Resources) in Western Mongolia, capitalizing on the synergies with one of our parent companies. The global merger between Titanobel and Dyno Nobel last year also gave the Mongolian business a boost, marrying Titanobel's expertise with Dyno Nobel's explosives capabilities, since Dyno Nobel belongs to the largest ammonium nitrate producer in Australia (Incitec Pivot IPL).

What is Titanobel's growth strategy as the new player in the Mongolian market?
Our plant is in Nalaikh, which is about 40 km away from Ulaanbaatar, so by having a plant in central Mongolia, we can serve mines across the country, whereas our competitors have built their production close to certain mining sites. From our centralized plant, we can transport non-explosive emulsions to mining sites and couple these emulsions with onsite charging trucks. We are now advancing this concept by building tank storage for explosives at our customers' bases.

Could you elaborate on the technologies that differentiate Titanobel?
We have an opportunity to bring electronic detonators into Mongolia. Detonators are always the riskiest part of blasting because these are charged by engineers based on the bench; with one blast, hundreds or thousands of holes are charged in a sequence, so if something wrong happens with the connection, people on the ground are at risk. Electronic detonators are paving the way in terms of new blasting technologies since operators can remotely control the blast from a safe distance (500 meters).

How do you manage the supply chain of raw materials in Mongolia?
Mongolia is sandwiched between two big countries, which impacts us in many ways. The sanctions applied on Russia have curtailed the supply of raw materials, while the prolonged lockdown in China restricted port permissions making it difficult to transport explosives. Titanobel operates various routes to make our supply chain stable. We are now using air cargo to bring in detonators from Turkey to Mongolia, which, although more expensive, is the best solution to maintain a resilient inventory. We are also looking at a new lane through Kazakhstan, but the fact that we do not share a common border means we still need to briefly pass through either Russia or China. Then, from Australia, we are shipping into Tianjin port in China and then road hauling into Mongolia.

Do you have a final message for our international readers?
Mongolians think of Mongolia as a mining country, so my hope is that the rest of the world will also see Mongolia as an important mining player. For that, we need more exploration and discoveries. There are more deposits the size of the Oyu Tolgoi, we just need to find them. ■

A final word from contributors

Deirdré Lingenfelder, CEO, Oyu Tolgoi

"Taking everything into account, it is possible to run a joint-venture business the size of Oyu Tolgoi in Mongolia. Is it a walk in the park? Definitely not. But I don't think any business of this scale is ever that."

Julien Lawrence, Managing Director, O2 Mining

"It has taken many years for Mongolia to regain the trust of investors, but I believe the interest is starting to come back, especially in the last two years. Recently, all the relevant ministers in the cabinet, together with the President, attended and participated in the Mongolia Mining Week; this alone signalled to investors that the politicians are aligned in their support for mining development in the country."

Gan-Ochir Zunduisuren, Managing Director, Asian Battery Minerals

"In my experience, there is a lot of misconceptions about Mongolia. Since 1990's, the country has gone through a lot of changes in political, economic and environmental aspects, same as many other countries that had a similar socialist system. After these changes, I believe Mongolia has become quite a mature mining jurisdiction."

Sam Bowles, CEO, Aspire Mining

"It is important as a foreign investor to have a good local partner to navigate the challenges that rapid development presents. I feel sometimes that the international media picks up on issues affecting foreign investors in a one-sided manner. However, my experience has been that with the right team, Mongolia is a good place to do business."

Munkhbat Batmunkh, CEO, Mongolrostsvetmet

"Mongolia is a democratic island between two very influential nations. Our country stands testament to a highly resilient democracy and reflects geopolitical diversity. We extend open invitations to foreign investors and collaborations. We are looking forward to adapting, evolving, and ensuring mutually beneficial partnerships."

Image by tanukiphoto at iStock

INDUSTRY INSIGHTS

Soyol-Erdene Tsegmid, CEO, Titanobel

"We Mongolians think of Mongolia as a mining country, but, on the global map we play a very small role. My hope is that the rest of the world will also see Mongolia as an important mining player. For that, we need more exploration and discoveries."

Sang Yong Cho, Partner, KPMG Mongolia

"Mongolia can be challenging, especially in a politically sensitive sector like mining, but rich resources and improving legislative measures will have a powerful positive impact on the country, and on the local communities. We believe investors should look at investing in other sectors too, like energy, which is rapidly growing in line with the economy and population, as well as value-added manufacturing. They should remember the population treasures best the know-how transfer that foreigners realize."

James Liotta, Partner, MahoneyLiotta

"Like any developing jurisdiction, Mongolia has its difficulties, but it mustn't be impossible. By doing proper due diligence, investors can save themselves a lot of anguish and frustration. I've seen too many people skipping this part because they were in a hurry to come here and get that contract, so I would say, Mongolia is workable, the people are welcoming especially to Western businesses, and there is no doubt about the country's minerals potential but *do your due diligence*."

Munkhtamir Batbayar, President & CEO, MIAT (Mongolian Airlines)

"Mongolia is a unique country with rich culture, nature, and business opportunities that the world needs to explore. To increase Mongolia's global presence, we need to make it convenient for people to come here, and that is where MIAT comes into play."

Ganbaatar Jambal, Minister, Ministry of Mining and Heavy Industry

"I would like to reassure investors that Mongolia will have a stable state policy and the older patterns of sudden changes will be a thing of the past. Once a permit is granted, we promise to fully protect investors running exploration and mining operations. Thirdly, I would like to remind your readers that we border the largest commodities market. Mongolia is the shortest road to China's humongous market."

COMPANY DIRECTORY

Regulators	TMS Mining
Ministry of Mining and Heavy Industry	Transwest
The Mineral Resources and Petroleum Authority of Mongolia	United Machinery
Associations	**EPCs and other services**
Mongolian National Mining Association	Bodi International
Mongolian Coal Association	Euro Khan
Financial institutions	Khanzaa Services
Central Bank of Mongolia	MMS Engineering
Mongolia Stock Exchange	Monpolymet Group
Asian Development Bank	Murray Mining Services
Trade and Development Bank	Orica
Golomt Bank	Phoenix Drilling
Producers, developers and explorers	Redpath Mining
Asian Battery Minerals	RJE Global
Aspire Mining	RPM Global
Badrakh Energy	Saade Group
Erdenes Mongol	SRK Consulting
Erdenes Tavan Tolgoi (ETT)	Titanobel
Erdenet Mining Corporation (EMC)	**Consultancies and laboratories**
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Ion Energy	BlackRock Partners (BRP)
Kincora Copper	Dunnaran + Partners
Max Group	Geomaster
Mongolian Natioanal Rare Earths Corporation (MNREC)	Geosan
Mongolrostsvetmet	Getech
Oyu Tolgoi	Glogex
Steppe Gold	Green Chemistry
Xanadu Mines	KPMG
Equipment/Technology	MahoneyLiotta
ABB	Mongolia Talent Network
Arvidah Yuruul	Pristine Bridge Recruitment Consultancy (PBRC)
Epiroc	PwC
InterAsia	QMC Consulting
Metso	Trigteq
Minespec	TTRC
MMD Sizers	Xcalibur Multiphysics
MSM Group	**Other**
Normet	Mongolian Airlines (MIAT)
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Thank you!

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MINISTRY OF MINING AND HEAVY INDUSTRY
https://mmhi.gov.mn/en/

MONGOLIAN NATIONAL MINING ASSOCIATION
https://www.miningmongolia.mn/

MONGOLIAN COAL ASSOCIATION
https://mcoal.mn/en/home.html

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