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SAUDI ARABIA MINING 2025



Vision 2030 - Mining Super Region - Production and Development
Exploration and Tenders - Consultancy - Technology - Services

A Critical Part of Mining's Growth in Saudi Arabia and the Region



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Dear Readers,

The Future Minerals Forum (FMF) held its first edition in January 2022 in Riyadh aiming to serve as a global forum for mining leaders in the context of the energy transition. Despite being a new event, it was far from modest, even compared to other well-established gatherings in the Americas, Africa or Australia – its scale and the presence of top authorities and executives suggest it is already shaping the annual agenda of mining-related conversations worldwide.

The FMF is not an isolated initiative for Saudi Arabia; it is closely linked to the country's bigger transformation plan. Indeed, a central theme of this publication is Vision 2030 and how it has shaped the mining sector. Launched in 2016, this blueprint drastically redefined Saudi Arabia's reality and economic diversification efforts. It is a framework where mining has become a key catalyst for achieving the country's ambitious goals, as it is poised to become the Kingdom's third economic pillar.

One of the key differentiators of Saudi Arabia's mining industry is the government's strong commitment to developing the sector. Reforms already in place and those still in progress, together with joint venture opportunities and licensing rounds for untapped districts with high mineral potential, are redefining the country's positioning within the global mining industry at remarkable speed, as the country attracts major players with the best industry standards.

It is in this context that we are proud to present the inaugural *Saudi Arabia Mining* special edition, produced by Global Business Reports in strategic partnership with the Future Minerals Forum.

We would like to extend our gratitude to the authorities, interviewees and companies across the value chain for their valuable contributions, allowing us to deliver the most comprehensive analysis so far of the mining industry in Saudi Arabia and the wider region. We hope that you enjoy the read, and that you have a very productive Future Minerals Forum in Riyadh.



Alfonso Tejerina
 Director and General Manager
 Global Business Reports



Saudi Arabia

- International Boundary
- Province Boundary
- National Capital
- Province Capital



0 100 200 300 Kilometers
0 100 200 300 Miles

Saudi Arabia Mining 2025

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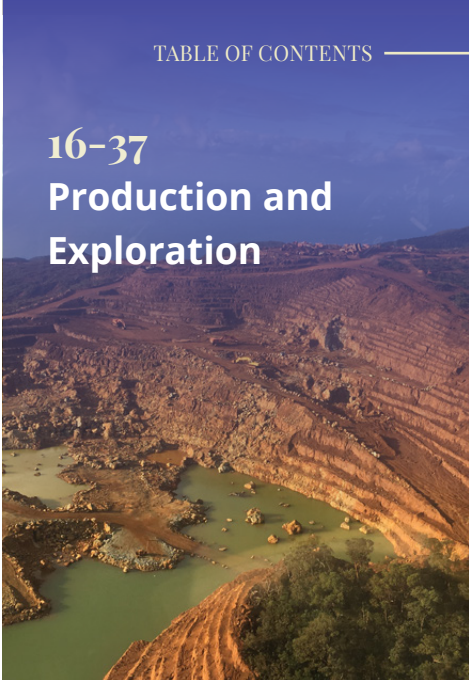
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INTRODUCTION TO SAUDI ARABIA

“

We are the voice of the so-called ‘Super Region’ that plays a key role in the global mineral supply chain. While it is a focal point, our work is inclusive, aiming to bring all stakeholders together to drive the industry forward.

”

Ali M. Al Mutairi
Executive Director
FUTURE MINERALS FORUM

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Image courtesy of NEOM at Unsplash



Image courtesy of Anton Balazh at Adobe Stock

Vision 2030

The blueprint that puts mining at the forefront

The truth is, while in this story, mining in the The Kingdom of Saudi Arabia (KSA) is the key subject, the plot and theme are all about Vision 2030, the unifying force and thread that runs through every interview, every conversation, and every insight shared by more than 60 executives that we met with while researching this report.

But what exactly is Vision 2030, and why does it matter so much? In essence, Vision 2030 is a social and economic blueprint proposed in 2016 by Crown Prince Mohammed bin Salman bin Abdulaziz Al Saud with a clear purpose: to diversify KSA's economy and open the country up to the world. This ambitious plan is unfolding in phases, and one of its key goals is to position the mining sector as the third pillar of KSA's industrial economy, after oil & gas and petrochemicals.

What exactly was the wake-up call that set this vision into motion? For much of its modern history, Saudi Arabia's economy has been—and continues to be—heavily reliant on oil. However, depending so heavily on a single commodity presents challenges, especially when the cyclical nature of commodity markets causes volatility. Without going into the causes, from 2014 to 2016, oil prices collapsed. After peaking at US\$107.95 per barrel on June 20, 2014, prices plummeted to US\$44.08 per barrel by January 28, 2015. In

2016, according to a World Bank report, oil accounted for more than 80% of KSA's government revenues. Just think about how that price drop would have affected this revenue.

With these factors in mind, Vision 2030 started to take shape. The question was not whether KSA could keep relying on oil but whether it could actually thrive without it. The search for new pillars of economic strength began—and mining was placed at the forefront of that vision.

The third pillar of the economy

At its core, Vision 2030 rests on three pillars, each with its own KPIs: a Vibrant Society, a Thriving Economy, and an Ambitious Nation. All three shape the country's aspirations at different levels, but we will focus on the "Thriving Economy" pillar, which encapsulates the mining industry — our scope.

On the economic front, KSA's ambition is to diversify government revenue streams by raising non-oil revenue to US\$267 billion by 2030 from US\$43 billion today, increasing women's participation in the workforce to 40%, and raising local participation in the oil and gas sector from 40% to 75%. But what about mining?

Vision 2030's goals expect the mining sector's GDP contribution to grow from US\$17 billion in 2015 to US\$75 billion. Estimations are not only for economic contribution. In

terms of mineral endowment, the Kingdom's estimated value of mineral reserves has increased by 88% from SAR 5 billion (around US\$1.33 billion) in 2015 to SAR 9.4 trillion (US\$2.5 trillion) by 2023.

So far, those are expectations, but what are the real advancements? According to the latest governmental figures, the mining and metallurgical industries have experienced substantial growth since 2015, with their GDP contribution increasing by 88% to SAR 120 billion (US\$31.96 billion) in 2023. Investments in the sector now total SAR 170 billion (US\$45.27 billion), and mining licenses have surged by 554, with 1,465 licenses anticipated by the end of 2024.

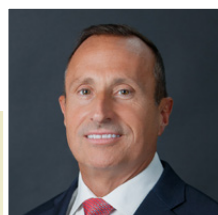
The Kingdom's advancements in this sector may have gone unnoticed, however, projects like NEOM—a flagship of Saudi Arabia's mega-projects—are impossible to ignore. Spanning 26,500 km² and powered entirely by renewable energy, NEOM is best known for THE LINE, a 170-km long city. This, and other mega-projects (14 in total, including Qiddiya and Red Sea Global), will have a significant impact on the mining industry. They are expected to multiply the demand for metals and minerals, and even with operations running at full capacity, KSA will face challenges in meeting this demand.

Vision 2030 is one of the most comprehensive and well-thought-out plans out there. The level of commitment behind it, especially in terms of how it is translated into the

mining sector, is something you just do not see in other mining regions right now. As Graham Dallas, head of business development EMEA at the Toronto Stock Exchange & TSX Venture Exchange, said: "Seeing such an important country evolve at this speed is exciting. It feels like they are navigating a unique moment in history; it is refreshing to see a major new player fully em-

bracing this reality. The more people adopt this mindset, the better for the global economy, especially with the growing demands of the energy transition."

Can KSA build up an industry based on the buzz it has created? In the upcoming articles, we will detail everything the Kingdom has already done—and continues to do—to make Vision 2030 a reality. ■



Bob Wilt
CEO
MA'ADEN



We see immense potential in the Saudi mining sector. With an estimated \$2.5 trillion in mineral resources to uncover and develop, the upside here is huge.





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SAUDI ARABIA AT A GLANCE

CAPITAL CITY
Riyadh

POLITICAL SYSTEM
Monarchy

CURRENT KING
King Salman bin Abdulaziz Al Saud

CURRENT PRIME MINISTER
Prince Mohammed bin Salman bin Abdulaziz Al Saud

NOMINAL GDP (US\$), 2023
1.07 trillion

GROSS INVESTMENT (% OF GDP), 2023
27.2%

GROSS NATIONAL SAVINGS (% OF GDP), 2023
32%

Sources: IMF (2023), World Bank (2023); Vision 2030 Annual Report 2023; Saudi Census (2022)

DEMOGRAPHIC DATA

POPULATION
32.82
MILLION

UNEMPLOYMENT RATE
7.7%

MEDIAN AGE 2022
29

LITERACY RATE, 2020
98%



Sources: IMF (2023), World Bank (2023); Vision 2030 Annual Report 2023; Saudi Census (2022)

CURRENT ACCOUNT BALANCE
3.2% OF GDP
2023

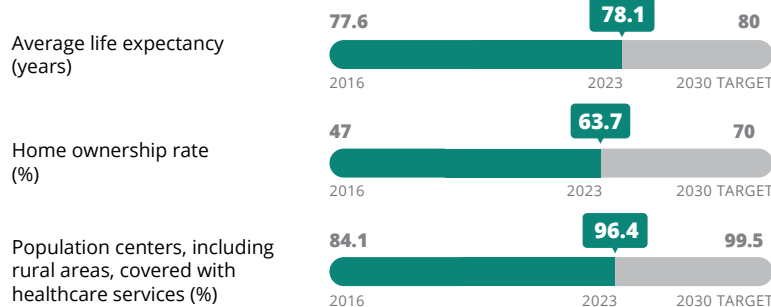
INFLATION RATE, OCTOBER 2024
1.9%

GDP PER CAPITA, CURRENT PRICES (THOUSANDS OF US\$)
32.88

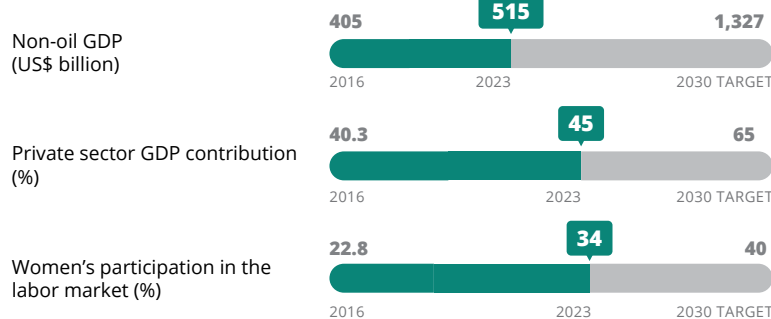
Sources: IMF (2023); General Authority for Statistics (2024)

VISION 2030 GOALS

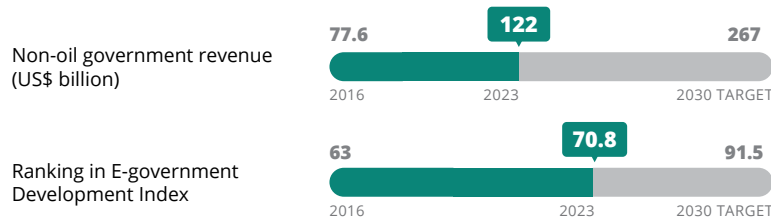
"VIBRANT SOCIETY"



"THRIVING ECONOMY"

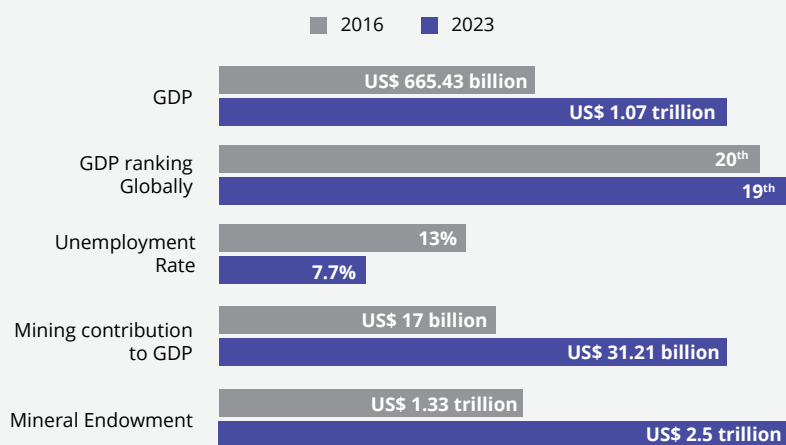


"AN AMBITIOUS NATION"



Source: Vision 2030 Annual Report 2023

SAUDI ARABIA: A GROWTH SNAPSHOT



Source: Vision 2030 Annual Report 2023; Ministry of Industry and Mineral Resources (2024); IMF (2023)



Ali M. Al Mutairi

Executive Director
FUTURE MINERALS FORUM

“ Together, we have created what is now the leading global platform for mining and mineral value chains. ”

How does the Future Minerals Forum (FMF) support the development of the mineral value chain?

The FMF is a global, inclusive gathering for the mineral industry held in Riyadh to shape the future of minerals. It is not just one event but a series of activities and discussions covering the entire mineral value chain throughout the year, from exploration to recycling and everything in between. The focus is on creating resilient, responsible mineral value chains that benefit the community, the environment and the economy.

The FMF's cornerstone is the Ministerial Roundtable, where government leaders set the direction and tone for the whole event and year. This is followed by a two-day conference where mineral industry and government leaders engage in deep discussions.

Can you elaborate on the Ministerial Roundtable's role and impact on global mineral policies?

The Ministerial Roundtable 2025 (MRT) will bring together about 100 country representatives and 40 from international bilateral and multilateral organizations. It is an ongoing dialogue, with actions that carry on through the year. The MRT started in 2022 with 32 countries and six organizations, sparking meaningful conversations. By 2023, that grew to 63 countries and 21 organizations; the main takeaway was clear: we needed to take action. In 2024, we turned the discussions from the previous year into real plans and initiatives led by the FMF team. A working group led by the FMF, made up of different governments and organizations, has been working since 2023 on developing a draft framework, which we plan to present in 2025 for global adoption and action.

We are also working on creating centers of excellence, which will connect experts worldwide. Some countries are ahead in tech and know-how, while others are not as advanced. The idea is to bring together people from around the world so they can share knowledge and build much needed capacity. Additionally, sustainability and traceability are key, with efforts around setting priorities for responsible supply.

What are some of the main goals and additions for FMF's 2025 edition?

The motto of the FMF 2025 is "Global Leadership Through Action" and we are expecting some exciting

growth for the conference. In 2022, we had about 4,000 attendees; by 2024, that number jumped to 14,000. For 2025, we are aiming for around 20,000. We have big new additions for 2025. One is the "Knowledge Exchange", part of our effort to be more inclusive. We will also be hosting the International Geological Survey meeting, where we expect around 40 to 50 geological survey institutions from across the globe to attend. Additionally, there will be a meeting focused on Centers of Excellence, focusing on capacity development across the Super Region. Lastly, we are introducing a series of Leadership Roundtables, where groups of international Ministers and CEOs sit together to tackle a tough issue on mineral supply and recommend solutions for implementation.

We will introduce something new called the "Investment Stream", aiming to make Riyadh the go-to place for anyone wanting to connect with the top players in the minerals industry. This is where representatives from Saudi Arabia will have a chance to speak directly to investors and present the opportunities available in their country. The idea is to make the conference more interactive and practical, not just about sitting through presentations.

What would be your message for GBR's audience and attendees of the FMF 2025?

Countries own the mineral resources, and companies need governments' permission to extract them. But governments face big challenges that cannot be tackled alone. They need help from big investors and corporations. Of course, both need clear standards and regulations to guide their work. At the FMF, we care deeply about sustainability and environmental, social, and community impact. We want to bring everyone together to tackle the challenges in the industry and create solutions that benefit communities, governments, businesses and the environment.

I am proud to be part of the team that has been building this from the ground up since 2022. Together, we have created what is now the leading global platform for mining and mineral value chains, and we are really proud of that. We will keep pushing forward, staying innovative, and making sure we do not repeat ourselves, whether in the program or our offerings. ■



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 Steele Li Vice Chairman and Chief Investment Officer, CMOC Group	 Catherine Raw Chief Development Officer, BHP	 Robert Friedland Founder, Ivanhoe Mines, Ivanhoe Electric and I-Pulse	 Jonathan Price President and CEO, Teck Resources	 Mark Cutifani Chairman, Vale Base Metals	 Joe Kaeser Chairman of the Supervisory Board, Siemens Energy & Daimler Truck	 Bill Oplinger President and Chief Executive Officer, Alcoa Corporation, Pittsburgh, United States	 George Q. Fang Vice Chairman, Executive Vice President, Huayou Cobalt Co.

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The Capital of the "Super Region"

Image courtesy of Mohammed at Adobe Stock

Reshaping the mining agenda

How will Saudi Arabia, the Middle East, and the broader region shape the mining industry over the next decade? Traditionally, from a commodity perspective, the region has been a synonym for oil and gas rather than mining. However, KSA is reshaping this perception.

The Middle East is a complex region that includes different socio-political and economic realities, however, a new concept has emerged in the mining industry over the last few years—a concept that could very well steer the course of the energy transition: the "Super Region," encompassing Africa, the Middle East, and Central and South Asia.

The term was coined by the consulting firm Wood Mackenzie and introduced in a whitepaper presented at the Future Minerals Forum in 2024, which highlights that approximately US\$400 billion in CapEx by 2030 will be needed for mining across the critical minerals value chain to solve the supply deficit and keep global temperature rise within the 1.5°C threshold above pre-industrial levels. To meet this target, this new "Super Region" must work on four factors: resources, capital, demand, and capabilities. Interestingly, the temperature target aligns neatly with Saudi Arabia's Vision 2030 and the four factors Wood Mackenzie identifies seem to echo many of the points of Vision 2030 itself.

What role will KSA play in this emerging Super Region? Darío Castellanos, general manager for the Middle East at Xcalibur Multiphysics, stated: "Saudi Arabia has the potential to become a major player, not just in regional mining but globally, especially when it comes to materials needed for the energy transition. The country could take the lead in mining acquisitions with its financial strength. Beyond dominating its territory, Saudi Arabia could also play a big role in developing mining resources in other regions."

Indeed, there are many points that serve as an advantage for the region and Saudi Arabia in particular. First and foremost, the Kingdom is strategically located at the heart of this region. Beyond the benefits of low operating costs, abundant energy resources, and a skilled young workforce (KSA has a population of around 32 million, and 63% of the population is less than 30 years old), Saudi Arabia also enjoys exceptional connectivity. More than 60% of the world's markets are

accessible within just eight hours by air and five days by sea. While the recent disruptions in global supply chain logistics have highlighted vulnerabilities, Saudi Arabia's central location and robust infrastructure continue to position it as a critical hub for trade and commerce.

KSA is by far the largest economy in the GCC, and only two countries within the broader region have a higher GDP than Saudi Arabia (US\$1.07 trillion in 2023): India, with a GDP of US\$3.55 trillion, and Turkey, which stands at US\$1.108 trillion.

"The GCC has a lot to offer, but Saudi Arabia is where the spotlight really is now. With limited opportunities in

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the rest of the GCC except for the UAE, KSA is the only place where the most ambitious projects are happening. Over the next two to three years, the country plans to invest at least US\$100 billion in various sectors in its broader strategy to reduce reliance on oil and diversify its economy," commented Dip Kishore, board member, ECOM member & advisor to CMD development projects & metals & minerals at Larsen & Toubro.

The second point is that the region, particularly Saudi Arabia, remains vastly underexplored. If you want to find an Easter egg, you have to go where your siblings did not already search. This is precisely the opportunity that Saudi Arabia offers with an untapped potential value estimated at US\$2.5 trillion. "For years, companies focused on other jurisdictions because, as a junior, you are going to explore an area where you believe there is potential for a significant discovery and where everything is in place to support that work—such as security of tenure, good baseline geodata for the license areas, and economic and financial security," said Antony Benham regional director at MSA Arabia.

Benham is right. The trillion-dollar mineral potential referenced earlier is a recent estimate officially confirmed by the Saudi government in 2023. This came as part of different initiatives, including programs with the Saudi Geological Survey aimed at catching up with more mature jurisdictions in terms of mapping the Kingdom's

geological resources and, at the same time, attracting new investors.

Finally, there is the crucial advantage of neutrality. As global superpowers are divided between the West and the East, who is left in the middle? By maintaining a neutrality policy, Saudi Arabia has become a magnet for investors from around the globe, offering a stable, balanced environment in which to do business. As Boris Eykher, co-founder and CEO of Open Mineral, summarized: "They hold a neutral position, balancing ties with the Global South, the West, and China, which is crucial in the trade as impartiality matters. Despite being a desert, the Gulf is genuinely an oasis of capital, opportunities, and a natural trading hub."

Saudi Arabia—and more specifically, the annual Future Minerals Forum (FMF) in Riyadh—are positioning Saudi Arabia to set the tone for the conversation in the years to come, with both the private sector and different governments shaping the dialogue moving forward: "We are the voice of the so-called 'Super Region', a concept that unites Africa, the Middle East, Central Asia, and South Asia, regions that play key roles in the global mineral supply chain. While the Super Region is a focal point, our work is inclusive, aiming to bring all senior leaders, suppliers, customers, and stakeholders together to drive the industry forward," concluded Ali M. Al Mutairi, executive director for the Future Minerals Forum. ■



Abdullah bin Moftar Al-Shamrani

CEO
SAUDI GEOLOGICAL SURVEY (SGS)

The Saudi Geological Survey celebrated its 25th anniversary in October 2024. What is its mission?

The Saudi Geological Survey (SGS) was established in 1999 with the primary role in discovering natural resources other than natural gas and oil—like minerals, water and renewable energy. SGS is also in charge of monitoring geohazards, including earthquakes, volcanoes, flooding and all other geological risks. Lastly, we are tasked with monitoring the hydrogeology and chemistry of the Zamzam Well in the Holy City of Makkah, to ensure a sustainable supply of its water at standard levels.

How much of the Arabian Shield has the SGS surveyed so far?

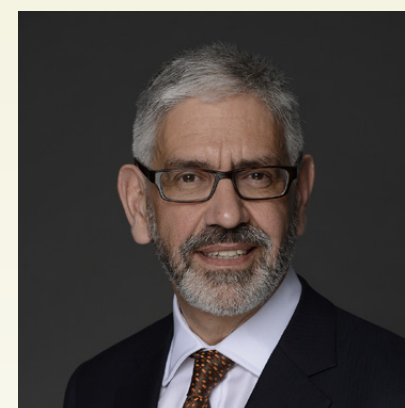
The Arabian Shield covers an area of approximately 630,000 square kilometers, and we have successfully mapped about 85% of the Shield through our recent geological initiatives and acceleration programs. We operate a fleet of 10 airplanes specialized in airborne geophysical surveys, data of which will be integrated with over 85,000 collected stream sediment samples to evaluate mineral resources within the Arabian Shield. The Minister of Industry and Mineral Resources has announced that the estimated value of these resources in the Kingdom of Saudi Arabia is US\$2.5 trillion.

What are the next steps once you have collected the data?

After collecting data, the next step is to analyze and integrate it into our National Geological Database (NGD). Currently, 60% of the total surveyed area of the Arabian Shield has been uploaded to this platform. What sets this platform apart is its investor-friendly approach and the fact that it is unlimited download and free of charge. Over the past three years, it has attracted more than 90,000 visitors, and our geological database is now ranked third in the world.

What are SGS' specific goals for the first months of 2025?

This next phase involves conducting regional surveys to deepen our understanding of key strategic areas. ■



Graham Dallas

Head of Business Development, Europe, Middle East and Africa
TORONTO STOCK EXCHANGE AND TSX VENTURE EXCHANGE

How does the TMX perceive Saudi Arabia's (KSA) interest in mining?

KSA is positioning mining as the third pillar of its industrial economy. Their commitment is extensive; they have also become significant investors, such as their stake in Vale Base Metals, directly impacting the Canadian mining sector. Additionally, KSA understands that building a successful mining sector requires more than geology and funding; it needs human capital. They have started working closely with Canadian companies to develop the expertise and skills needed to grow their mining operations from the ground up. While they already have producers like Ma'aden in place, there is still massive potential for development across the Arabian Shield, and they see Canada as a key partner for talent.

Are we witnessing an unprecedented boom unlike anything seen in other mining regions?

KSA has started the journey with clear intent and strong investments to make mining work. They have promising geology, but establishing a new mining hub is difficult. Inertia is a real challenge. It is not like many miners are waiting for new projects, as most are already tied to existing portfolios. However, interest is growing, and momentum is building through events like the FMF. It is only a matter of time before more exploration geologists, mining engineers, equipment suppliers and educators get involved in KSA's mining sector.

In what ways does KSA's transformation stand out compared to other nations' development?

Seeing such an important country evolve at this speed is exciting. It feels like they are navigating a unique moment in history; it is refreshing to see a major new player fully embracing this reality. The more people adopt this mindset, the better for the global economy, especially with the growing demands of the energy transition. ■

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Data as at December 31, 2022. Mining capital raised from 2018-2022. Source: TSX/TSXV Market Intelligence Group and S&P Global Market Intelligence.

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PRODUCTION AND EXPLORATION

“

You should seriously consider Saudi Arabia. There is huge, untapped geological potential, a fundamental mining sector reform program, and an unrivaled mining code with incentives probably not found elsewhere in the world.

”

Michael Bradley
CEO
GREYRIDGE EXPLORATION

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Image courtesy of Ginger Sofreco



Image courtesy of Tesmec

Mining Production

First Phase: Sweeping economic and structural reforms

Just to quickly recap what has been discussed so far, at its core, Vision 2030 is a 15-year blueprint—divided into three phases of five years, that rests on three pillars: a Vibrant Society, a Thriving Economy, and an Ambitious Nation. The first phase introduced key economic and structural reforms to lay the foundation for national transformation and set the stage for a diversified economy. The National Industrial Development and Logistics Program (NIDLP), launched in early 2019, was one of the most crucial steps in this journey towards a more diversified economy.

The NIDLP is like an ingenious umbrella, working as a catalyzer and enabler of the growth and diversification of the economy under the “Thriving Economy” pillar. The NIDLP integrates four key sectors: industry, mining, en-

ergy, and logistics into a cohesive strategy to maximize impact. Let us think about it and its logic: mining brings resources to the surface; the industry gives them form, transforms them, and gives them value; energy fuels the entire process; and finally, logistics ensures these products reach global—and national—markets.

In 2019 there were already echoes about mining becoming the third pillar of Saudi Arabia’s economy, alongside oil and petrochemicals. Yet, mining was still grouped with other energy-related industries, limiting its potential. The solution was clear: mining needed to stand on its own.

On August 30, 2019, the Ministry of Energy, Industry and Mineral Resources was split into two entities. The Ministry of Energy retained its focus, while the new Ministry of Industry and Mineral Resources was born. Bandar Ibrahim Alkhorayef was then appointed as its Minister, signaling a new emphasis on a sector poised to become the third pillar of the country’s industrial economy. By the end of 2019, KSA had a clear vision of what it wanted to be, and its leaders were both shaping and assembling the puzzle pieces to make this vision fit.

The roadmap was defined with step-by-step strategies to build a diversified economy and a robust framework emphasizing the synergies between sectors to achieve the nation’s ambitions. However, one piece was missing in this puzzle: a robust legislative framework.

From the perspective of a private mining company, geology is just one piece of the puzzle. Without support from the government and society, mining cannot happen. As Alan Davies, CEO of Moxico Resources, a company advancing the Khnaiguiyah project close to construction, explained: “We are not entirely jurisdiction agnostic – a robust local legal framework and promising geology must go hand in hand.”

The old mining law dated back to 2005, and did not fit the purpose of a fast-paced industry. For Ayman Badirah, CEO of Masharef Advanced Company, a local consultancy and service company, this was an impediment to the evolution of the sector: “Before Vision 2030, Saudi Arabia’s focus was predominantly on oil & gas, with mining largely overlooked despite its significant potential. Over the years, the government has made strides in improving policies and guidelines, significantly easing international investors’ participation process. Previously, unclear regulations created barriers for investment, but today, Saudi Arabia boasts robust regulations aligned with international standards.”

Recognizing the lack of new mechanisms to drive modern investments to unlock mining’s potential, KSA introduced the Mining Investment Law, approved by the Council of Ministers in June 2020 and entering into force on December 20 of the same year. Among the changes, the new law created a framework to develop and update a National Geological Database in coordination with the Saudi Geological Survey (SGS), an online repository that centralized geological, topographical and exploration data to provide investors with easy access to relevant information and to encourage exploration. The law also established the region’s first “Mining Fund,” a financial instrument to ensure the sectors’ growth, addressing the challenges of such a capital-intensive industry, especially at the beginning of the lifecycle.

The reforms extended to licenses. The New Law maintained the three-tier classification of minerals, now labeled as Class A (metallic minerals, precious and semi-precious stones), Class B (non-metallic and industrial minerals), and Class C (construction

materials), but introduced some updates. For instance, exploration licenses could now be granted for 15 years in 5-year terms, a significant increase compared to the previous 10-year limit.

Grahame Nelson, partner and head of the KSA office at Al Tamimi & Company, the largest law firm in the Middle East, commented that by opening an office in Al Khobar in 2017—the “energy bastion” of KSA—they saw an opportunity to grow in energy and mining law. He also provided GBR with some interesting insights on the country’s evolution: “The government has introduced a new mining law with many of the features embedded in the mining laws of other countries with a lot of mining activity and is now actively encouraging investment in the sector. However, while the regulatory framework is robust and the Ministry of Industry and Mineral Resources is keen to grow the sector, so far there does not appear to have been substantial foreign investment in the sector,” said Nelson, to which he added: “Since the new mining law came into play, things have been moving more quickly, but there is definitely much more potential.”

Second phase: What is there, and how can it be harnessed?

Vision 2030’s first phase, which ran from 2016 to 2020, set the foundation for the work that is currently underway. The second phase, which will conclude in 2025, focuses on launching new programs. As Nelson pointed out, Saudi Arabia needs to attract investors and facilitate business growth in the mining sector.

One of these initiatives, which began even before the second phase in 2019, is the Taadeen Platform, launched alongside the previously mentioned NIDLP. The platform’s goal is to streamline mining investment procedures by connecting them with digital and electronic systems.

According to a document published by Taadeen, KSA’s geology can be classified into two main areas: the western province, dominated by the Arabian Shield, and the eastern province. Investors are primarily focused on the Arabian Shield, which forms the eastern part of the larger Arabi-

an-Nubian Shield (ANS), split by the Red Sea and that extends into Africa. The Arabian Shield is, from a geological point of view, complex, making it prospective for a wide range of minerals, and, as noted by the platform, both provinces contain a “plethora of minerals crucial for global industries,” including precious and base metals, bauxite, and uranium.

Saudi Arabia increased its mineral endowment estimation in 2023 to SAR 9.4 trillion (US\$2.5 trillion). Additionally, the sector generated over US\$410 million in revenue in 2023. This 88% increase in Saudi Arabia’s mineral endowment was made possible through the efforts of a consortium consisting of the Saudi Geological Survey (SGS) and various international and local private and governmental entities, along with their geological survey program, which now covers more than 85% of the Arabian Shield.

According to the government, within this US\$2.5 trillion endowment, phosphate is the most valuable resource, with a gross in-situ value of SAR 4,669 billion. Iron and limestone deposits collectively have a value of SAR 1,295 billion, followed by gold, with a value of SAR 1,114 billion. Copper comes next, with an estimated value of SAR 512 billion, followed by zinc at SAR 322 billion, niobium at SAR 315 billion, and rare earth elements (REEs) at SAR 238 billion. Other minerals include bauxite (SAR 80 billion), silica (SAR 15 billion), and silver and uranium (SAR 10 billion each).

Breaking down Saudi Arabia’s mining market

It is said that mining in the Arabian Shield dates back 5,000 years to the era of King Solomon at Mahd Ad Dhahab (Cradle of Gold), a mine currently owned by the Saudi Arabian Mining Company (Ma’aden). Today, several gold mines are in operation, with more expected to come online in the coming years, along with additional mines extracting other commodities. The history and mineral wealth are rich, yet the Saudi mining industry remains consolidated. In fact, the production sector is primarily dominated by three companies: Ma’aden, Saudi Gold Refinery, and Al Masane Al Kobra Mining Company (AMAK).

KSA Mining Industry – 2023 Production Overview	
Ma’aden	
Gold: 406,912 oz	Fertilizer: 5.9 million mt
Copper: 64,450 mt	Ammonia: 3.2 million mt
Alumina: 1.8 million mt	
Saudi Gold Refinery	
Gold: 65,000 oz	
AMAK	
Gold: 26,352 oz	Copper: 19,515 mt
Silver: 75,509 oz	Zinc: 45,700 mt

Source: Ma’aden Annual Report (2023); AMAK Annual Report (2023); GBR

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Bob Wilt

CEO
MA'ADEN



Starting as a single gold mine, we are now a global leader in phosphate production, a regional leader in aluminium, and we are on the precipice of becoming a globally significant gold miner.



How has Ma'aden grown since 1997, and what are the key highlights for 2024-2025?

Since 1997, Ma'aden has grown into the Middle East's largest multi-commodity mining company, playing a key role in Saudi Arabia's Vision 2030. Starting as a single gold mine, we are now a global leader in phosphate production, a regional leader in aluminium, and we are on the precipice of becoming a globally significant gold miner.

Our 2024-2025 priorities include advancing Ma'aden's regional and global footprint with a bold growth strategy to transform mining into the third pillar of the Saudi economy. This strategy emphasizes technology, innovation and operational excellence to drive efficiency and productivity. Our focus is also on expanding exploration to increase our resource base so we can scale organically, while also exploring strategically aligned opportunities for inorganic growth.

Key projects include the Phosphate 3 project which is set to boost phosphate production by 50%, strengthening Ma'aden's position as the world's second-largest exporter of phosphate fertilizers. Additionally, Mansourah-Massarrah project is ramping up to effectively double gold production.

What is Ma'aden's vision for establishing Saudi Arabia as a global mining hub, and how do partnerships and joint ventures contribute to this goal?

Sitting between Asia, Europe and Africa, Saudi Arabia's geographic centrality means that Ma'aden is exceptionally well placed to play a major role in global minerals supply chains. We have world class seaborne transport links both to Europe through the Red Sea and to Asia from the Gulf, while also being central to the high growth potential Middle East and North African markets.

Major partnerships and joint ventures with world-class companies have supported us in transforming Ma'aden into a globally significant mining company. Our partnership with Mosaic – one of the world's leading phosphate and potash companies – supported us to develop our phosphates business, and our partnership with global aluminium heavyweight Alcoa has provided us with the technical capability and experience to transform our aluminium business into a regional leader.

Now our joint venture with Barrick Gold at the Jabal Sayid underground copper mine is enabling us to gain the expertise in copper mining. In the exploration field, our partnership with Ivanhoe Electric is providing us with world leading exploration technology that will up-tech and upskill our exploration function.

What are the key growth areas in Saudi Arabia's mining sector, and how is Ma'aden leading them?

With an estimated US\$2.5 trillion in mineral resources to uncover and develop, the upside is huge.

Ma'aden is set for substantial growth with US\$56 billion in CapEx until 2040, totalling US\$69 billion if we include sustainability and ESG. The objective is to achieve 10x EBIT-DA growth by 2040, and to have firmly established mining as the third pillar of the economy and Ma'aden as one of the world's leading mining and minerals companies.

The exploration program we are undertaking in the previously underexplored Arabian Shield is the largest of its kind anywhere in the world, with over 23,000 km² of granted licenses and over 75,000 km² more under application. It is already producing results with significant gold resource potential identified along a 100 km strike from the existing Mansourah-Massarrah gold mine.

Can you elaborate on how the partnership with Hexagon is driving innovation at the Mansourah-Massarrah mine?

The partnership we announced with Hexagon to build the region's first digital mine capabilities at our flagship Mansourah-Massarrah gold project speaks to our ambition, but we are using IoT, digital twin and cutting edge technologies across our operations to enhance safety and efficiency.

How is Ma'aden aligning Saudi mining with global sustainability standards?

We are committed to achieving carbon neutrality by 2050, and to reduce scope one and two greenhouse gas emissions by 37% by 2030 and 60% by 2040. In 2022, we achieved a year-on-year reduction of 24% and 20%, respectively, reducing electricity consumption and increasing the share of renewable energy.

We are also pioneering new game-changing sustainable technologies in our operations - such as a new patent for CO₂ capture from phosphogypsum calcination.

What message do you have for the Future Minerals Forum delegates and Global Business Reports readers?

Ma'aden remains committed to being a regional and global leader in sustainable mining, fostering partnerships, and contributing to the Kingdom's diversification goals. Together, we can redefine the future of mining and leave a lasting positive impact on our communities and the planet. ■

<< 19

Ma'aden stands as the national "Titan", leading in gold production and other minerals such as copper, phosphate, bauxite and aluminum. Formed as a Saudi joint stock company in March 1997 to facilitate the development of the Kingdom's industry, the Saudi government still retains 50% of its shares while the remaining 50% is listed in the Saudi Stock Market known as Tadawul. Since its inception, Ma'aden has made different joint ventures and partnerships to accommodate its business units into five "Strategic Business Units", as the company called them: Gold and Base Metals, Phosphate, Industrial Minerals, Aluminium, and Exploration. In contrast, AMAK, the first private mining company in the industry, was founded in 2008, and Saudi Gold Refinery was established around 10 years ago.

Precious metals and base metals

Ma'aden Base Metals and New Minerals Company (BMNM) is a wholly owned subsidiary of Ma'aden, focused on base metals and copper, which it refers to as the "new minerals." BMNM operates seven gold mines—Ad Duwayhi, Al Amar, Bulghah, Sukhaybarat, As Suq, Mahd Ad Dhahab, and Mansourah-Massarrah—as well as a copper mine, Jabal Sayid. The copper mine is part of a joint venture with Barrick Gold under Ma'aden Barrick Gold Copper Company (MBCC).

If the Mahd Ad Dhahab mine is the oldest gem in the collection, then Mansourah-Massarrah and Jabal Sayid are the newest additions. In July 2019, Ma'aden awarded a SAR 2.27

billion (approximately US\$606 million) EPC contract to a consortium between Metso Outotec (now Metso) and Larsen & Toubro to develop the Mansourah-Massarrah gold mine. Final plant commissioning was completed by the end of 2023, with commercial operations having started in January 2024.

According to Ma'aden's annual report, Mansourah-Massarrah is set to become the largest gold mine in the country, processing 4 million tons of ore per year (t/y) and producing an average of 250,000 oz/y. Even though the mine is not yet at full capacity, its impact is already noticeable: by the end of 2023, it accounted for 36% of total gold output, contributing 146,000 oz to BMNM's total production of 407,000 oz. "Today, Mansourah-Massarrah is a flagship project in Saudi Arabia," commented Dip Kishore, board member, ECOM member & advisor to CMD development projects & metals & minerals at Larsen & Toubro, who also added: "Saudi Arabia fosters an environment for large-scale projects. For example, even with the challenges of the COVID-19 pandemic, Ma'aden's Mansourah-Massarrah gold project was seamlessly executed and completed as per the client's timelines."

For its part, Jabal Sayid is an underground copper mine developed by MBCC (the JV between Ma'aden and Barrick Gold). It started production in 2016 and, in 2023, produced 130 million pounds (lb) of copper.

While Ma'aden stands as the giant of Saudi Arabia's mining industry, incorporating cutting-edge technology, the private sector has also been actively developing the Kingdom's



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non-oil natural resources. According to Geoff Day, CEO of AMAK, the company has been a pioneer in this space: "AMAK was established in 2008 as Saudi Arabia's first private-sector mining company, pioneering the development of the Kingdom's non-oil natural resources. We began operations at the Al Masane site, marking the first commercial mining project in the country to integrate base and precious metal production. Since then, AMAK has grown steadily, combining traditional mining practices with advanced technologies to enhance efficiency and output."

AMAK began commercial production of copper and zinc concentrates in 2012 from the underground Al Masane mine (ALM), which consists of three main zones: Saadah, Al-Houra, and Moyeath. The Al Masane copper and zinc operation is complemented by the Guyan gold mine, an open-pit mine that started operations in late 2020. Guyan has an annual throughput capacity of 400,000 t and produced 21,009 oz of gold in 2023.

One of AMAK's recent develop-

ments is the expansion of ALM, which includes the growth of the Moyeath orebody: "Developing the Moyeath orebody has presented AMAK with complex underground mining challenges, including intricate geological conditions and the need for specialized processing techniques. To address these, we have leveraged advanced mining technologies and constructed a cutting-edge processing plant. This facility adds 400,000 t/y of ore processing capacity, contributing to an 80% annual production increase in zinc concentrate and 40% in copper concentrate," added Day.

Aluminum and phosphate, a vertically integrated industry

Aluminum production in KSA is the perfect example of a vertically integrated business where Ma'aden, once again, shows off its size. The core is the Al Ba'itha mine, an open-pit operation with the capacity to produce 4 million t/y of bauxite. This raw material is transported to the Ras Al Khair Industrial City, for refining and smelting.

The operation was initially established in 2009 as a joint venture between Ma'aden and Alcoa, creating a fully integrated mining and aluminum complex with two entities: Ma'aden Bauxite and Alumina Company (MBAC) for bauxite mining and alumina refining and Ma'aden Aluminium Company (MAC) for smelting and casting.

Consulting and engineering firm Hatch has worked in this integrated facility by providing what they call "multi-cell jacketed pipe-heater technology". Roy Dabbous, regional manager Middle East at the company, shed some light on the process: "Refining bauxite into alumina involves a vital stage called digestion. Hatch's Tube digestion allows conventional shell and tube heat exchangers to be replaced by jacketed pipe heaters, which allows for a greater range of the bauxite feedstock. This technology also simplifies the digestion plant with only a single stream flowsheet used for the refinery."

In September 2024, Alcoa announced it would sell its 25.1% stake in the joint venture.

Similar to aluminum, phosphate has a vertically integrated business model in Saudi Arabia. Ma'aden mines phosphate at the Al Jalamid and Al Khabra sites, which produce approximately 10 million and 12 million t/y of phosphate ore, respectively. Ore from Al Jalamid is transported 1,200 km to Ras Al Khair for processing into phosphate fertilizer. Meanwhile, ore from Al Khabra is processed into phosphate concentrate at the Wa'ad Al Shamal industrial city.

In the phosphate segment, Ma'aden's Phosphate 3 shines. Described as the industry's "jackpot" for its scale and value by Mehmetcan Akyüz, founder and managing director of Tomarok Engineering, it represents a significant milestone for the sector. In 2023, Ma'aden made its investment decision for Phase 1 of the project and awarded EPCM services to Worley and JESA International. This first phase will add 1.5 million t/y of phosphate capacity by 2026, increasing the current capacity from 6 million to 7.5 million t/y. Phase 2, expected to be completed by 2029, will boost production by another 1.5 million t/y, bringing the total capacity to 9 million t/y of phosphate products. ■



Jonathan Cordero

CEO
SAUDI GOLD REFINERY (SGR)



Since the Kingdom approved its new mining code in 2020, SGR has put a big focus on exploration to make the most of these new opportunities.



As the new CEO of Saudi Gold Refinery, would you introduce yourself and the company to our audience?

After 14 years in the mining industry, I have worn many hats, from starting as a strategy consultant to spending 12 years in corporate development with major mining companies. During that time, I led regional expansion programs and worked with over 30 governments to discuss market entries. In 2021, my path led me to Saudi Arabia, where I helped build a portfolio of exploration licenses. More recently, in November 2024, I joined Saudi Gold Refinery (SGR), a privately owned company backed by the Al-Othaim family.

SGR's portfolio includes an operating gold mine, Hamda, which started about 10 years ago and produces around 65,000 oz/y. We also have two projects in pre-feasibility, 14 active exploration licenses, and 200 more in the application process. Since the Kingdom approved its new mining code in 2020, SGR has put a big focus on exploration to make the most of these new opportunities, and we are building global partnerships to push forward with joint exploration projects.

How does your integrated model benefit both your mining operations and jewelry business?

Right now, we are a pure gold producer with an integrated business model that connects our mining operations to our jewelry business. The licenses we have applied for indicate geological potential for polymetallic minerals, including copper, zinc, lead and silver.

Our mining approach is more agile than the traditional Western model. Instead of lengthy studies and waiting 15 years from discovery to production, we focus on identifying the first 200,000 ounces of resources and moving quickly into production. Such flexibility allows us to adapt our processes based on metallurgy. We refine the gold to a three-ninth purity standard in our own refinery and then sell it either directly to customers or through our jewelry business.

Where are the assets of Saudi Gold Refinery located?

Our exploration portfolio spans the entire Kingdom. Our operation site, Hamda, is about a two-hour drive from Abha, a city often nicknamed the 'Switzerland of Saudi Arabia'. Hamda serves as a vital part of our operations, reflecting the rich resources and beauty of the

region. Meanwhile, our HQ and main facilities, including the refinery, jewelry factory and lab, are all in Riyadh. This central location allows us to efficiently manage operations and maintain strong connectivity between our exploration, production and end-product processes.

Are there plans to develop any new mid-scale mines in the future?

We are extending the life of the Hamda mine another three years, which will increase production capacity to approximately 2,200 kilograms per year. We will do this by developing satellite pits nearby and by working on 14 exploration licenses. While it is too early to make definitive claims, we aim to establish a few mid-scale mines. Our current capital projects include building a new crusher plant, upgrading our fleet, and expanding our data science and AI teams to improve remote sensing capabilities.

What aspects of the Saudi mining context make it beneficial for you to maintain a vertically integrated business model?

The vertically integrated model sets us apart by keeping the core process in-house. KSA's service sector still lacks the depth and quality needed for outsourcing, so we have developed our own geophysics department, remote sensing AI team, lab, and drill rigs, capable of handling up to 500,000 meters annually, with plans to double that. Nevertheless, despite this independence, I recognize that mining is a team sport; hence our global partnerships for our exploration portfolio.

What is your final message for GBR's international audience?

We are the second-largest producer in Saudi Arabia, focused on sustainable growth and ramping up production to strengthen our position. We want to grow, but it is not about being first but responsibly developing new mines and ensuring steady progress. By increasing our footprint in KSA, we aim to build a lasting presence and contribute to the local mining ecosystem while aligning with the Kingdom's long-term vision for the industry. Mining is a team sport, and we actively invite everyone to join the Kingdom of Saudi Arabia's growing mining sector and Saudi Gold Refinery to collaborate and make meaningful contributions to this journey. ■

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Geoff Day

CEO

AL MASANE AL KOBRA MINING COMPANY (AMAK)

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Identifying new exploration targets to secure a robust pipeline of mineral resources, and the launch of a new exploration drilling company are pillars of AMAK's growth plan.

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Can you share a brief overview of AMAK's history, operations, and its role in advancing KSA's mining industry?

AMAK was established in 2008 as Saudi Arabia's first private-sector mining company, pioneering the development of the Kingdom's non-oil natural resources. We began operations at the Al Masane site, marking the first commercial mining project in the country to integrate base and precious metal production. Since then, AMAK has grown steadily, combining traditional mining practices with advanced technologies to enhance efficiency and output.

Significant milestones include the diversification of its mineral portfolio, the commissioning of the Guyan gold mine in 2021, and ongoing development of the Moyeath orebody. These achievements underscore our ability to adapt to industry challenges, expand our production capabilities, and align with Saudi Vision 2030's objective to establish the Kingdom as a global mining hub. Today, AMAK's innovative approach and strategic investments continue to position it as a key driver of Saudi Arabia's burgeoning mining sector.

What challenges has AMAK faced in the Moyeath orebody expansion?

Developing the Moyeath orebody has presented AMAK with complex underground mining challenges, including intricate geological conditions and the need for specialized processing techniques. To address these, we have leveraged advanced mining technologies and constructed a cutting-edge processing plant. This facility adds 400,000 t/y of ore processing capacity, contributing to an 80% annual production increase in zinc concentrate and 40% in copper concentrate.

With this addition, AMAK now produces 30-40,000 t/y of copper concentrate, 60-80,000 t/y of zinc concentrate, 30-40,000 oz/y of gold doré, and 40-50,000 oz/y of silver doré. Zinc and copper concentrates also include approximately 10,000 oz/y of gold and 450-500,000 oz/y of silver, reflecting the company's ability to generate significant value from its assets with optimal operational efficiency.

What are the key elements of AMAK's strategic growth plan?

In September 2024, we announced a comprehensive growth plan focused on expanding existing opportunities and exploring new ventures that promise to deliver substantial value for our shareholders. With 21 exploration tenements covering >1,400 km², we remain open to all options for assessing the full potential of our exploration assets, whether that be internally resourced exploration, or strategic part-

nerships with other explorers who bring specific skills and expertise to any given exploration target. An example of this innovative approach is our recent announcement of an exploration partnership with Power Metal Resources for nickel exploration in AMAK's Qatan exploration area.

Identifying new exploration targets to secure a robust pipeline of mineral resources for the future, and the launch of a new exploration drilling company are pillars of AMAK's growth plan. The new drilling entity will focus on supporting AMAK's expansive exploration activities focused on bolstering our overall growth trajectory, as well as providing high quality exploration drilling services to other explorers seeking to leverage the substantial support and incentives on offer by the Kingdom.

Vision 2030 places high emphasis on sustainability. How is AMAK integrating ESG practices into its mining operations and expansions?

We recognize the importance of sustainability and the integration of Environmental, Social and Governance practices as cornerstones of our operations. To this end, we have implemented environmentally responsible mining techniques, such as reducing waste and energy conservation. Socially, AMAK engages with local communities through job creation, training programs, and support for local businesses. Governance practices are also a priority, with AMAK adhering to stringent regulatory standards and transparent business operations. These initiatives align with Vision 2030's emphasis on sustainability and ensure AMAK's contribution to the Kingdom's economic development is both responsible and forward-looking.

What message would you like to share with GBR's international audience about AMAK's alignment with Vision 2030?

As Saudi Arabia works toward its Vision 2030 goals, AMAK stands as a prime example of how the mining sector can drive economic diversification and global competitiveness. Through strategic partnerships, technological innovation and sustainable practices, we are not only enhancing our operations but also contributing to the broader transformation of the Kingdom's economy. AMAK's commitment to excellence, innovation and sustainability positions us as a leader in the region's mining industry. With a clear vision for growth and a robust strategy for achieving it, we are well-poised to play a pivotal role in Saudi Arabia's journey toward becoming a global mining hub. ■



Fawaz M. Al Fawaz

CEO

TASNEE

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Tasnee has invested over US\$2 billion in developing the titanium value chain in Saudi Arabia, which we believe will be a game-changer for the Kingdom.

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Could you please provide a brief overview of Tasnee's business units?

Tasnee operates through three strategic business units: Petrochemicals, Metallurgy and Downstream. Our Petrochemical is the core line of business and covers products such as polyethylene, polypropylene and acrylic products. Downstream focuses on products such as plastic pipes and pallets, packaging, agri-films, lead and car batteries. The Metallurgy is all about the titanium value chain with investment in one of the world's leading titanium dioxide producers (Tronox) and operating two major facilities, one in Jazan producing chloride titanium slag for the titanium industry and high-purity pig iron, and the second facility in Yanbu, which produces titanium sponge. The titanium sponge facility produces around 10% of the global titanium sponge capacity.

How does Tasnee add value to Saudi Arabia's mining landscape under Vision 2030?

The Metallurgy strategic business unit is managed through our subsidiary AMIC. AMIC is strategic in providing the building blocks for the titanium value chain and supporting Saudi Vision 2030. Tasnee has invested over US\$2 billion in developing the titanium value chain in Saudi Arabia, which we believe will be a game-changer for the Kingdom.

We are working on bringing advanced technologies, creating new capabilities, and helping build the local knowledge and expertise required for the titanium sector. It is a very significant step forward towards establishing a fully integrated titanium value chain in the Kingdom.

How does Tasnee support the Kingdom's shift from oil and gas?

The titanium industry diversifies the Kingdom's industrial base beyond oil and gas into sectors like mining and minerals and specialized manufacturing. While it is capital intensive, we believe it is crucial for the Kingdom's long-term growth and diversification of the industrial base. The governmental support is critical to accomplish the integrated titanium value chain. The real opportunity in titanium lies in building a complete and integrated value chain, from mining to manufacturing, including forging and melting. We are already exporting titanium sponge to the US, but to unlock its full potential, we need to move further into titanium downstream businesses and partner with major OEMs like Boeing and Airbus.

Additionally, Tasnee is engaged in manufacturing a blend of downstream products through its Downstream

strategic business unit which diversifies Tasnee's portfolio and supports the diversification of Saudi economy beyond oil and gas.

We also work closely with global investors to bring the required technologies and technical expertise as well as training opportunities for the Saudis. Tasnee sent over 70 Saudi engineers to Japan to train with Toho, and over 60 Saudi technicians went to South Africa for training with Tronox. Such hands-on experience is critical to developing the skills we need locally and for the Kingdom of Saudi Arabia to become a global leader in this strategic industry.

With Vision 2030 emphasizing sustainability, how does Tasnee embrace it?

We have prioritized aligning our operations with Saudi Vision 2030, focusing on reducing our environmental impact and working towards decarbonization. We have set a clear goal to become carbon-free by 2060, which aligns with the Kingdom's broader objectives. This includes increasing energy efficiency, reducing waste, and shifting towards renewable energy like wind and solar.

One of our major initiatives is a comprehensive decarbonization plan. We have already seen some positive results, like a 4% reduction in emissions in 2023 and the first half of 2024. We are also working on better waste management, capturing and recycling chemical waste to turn it into something valuable rather than just discarding it.

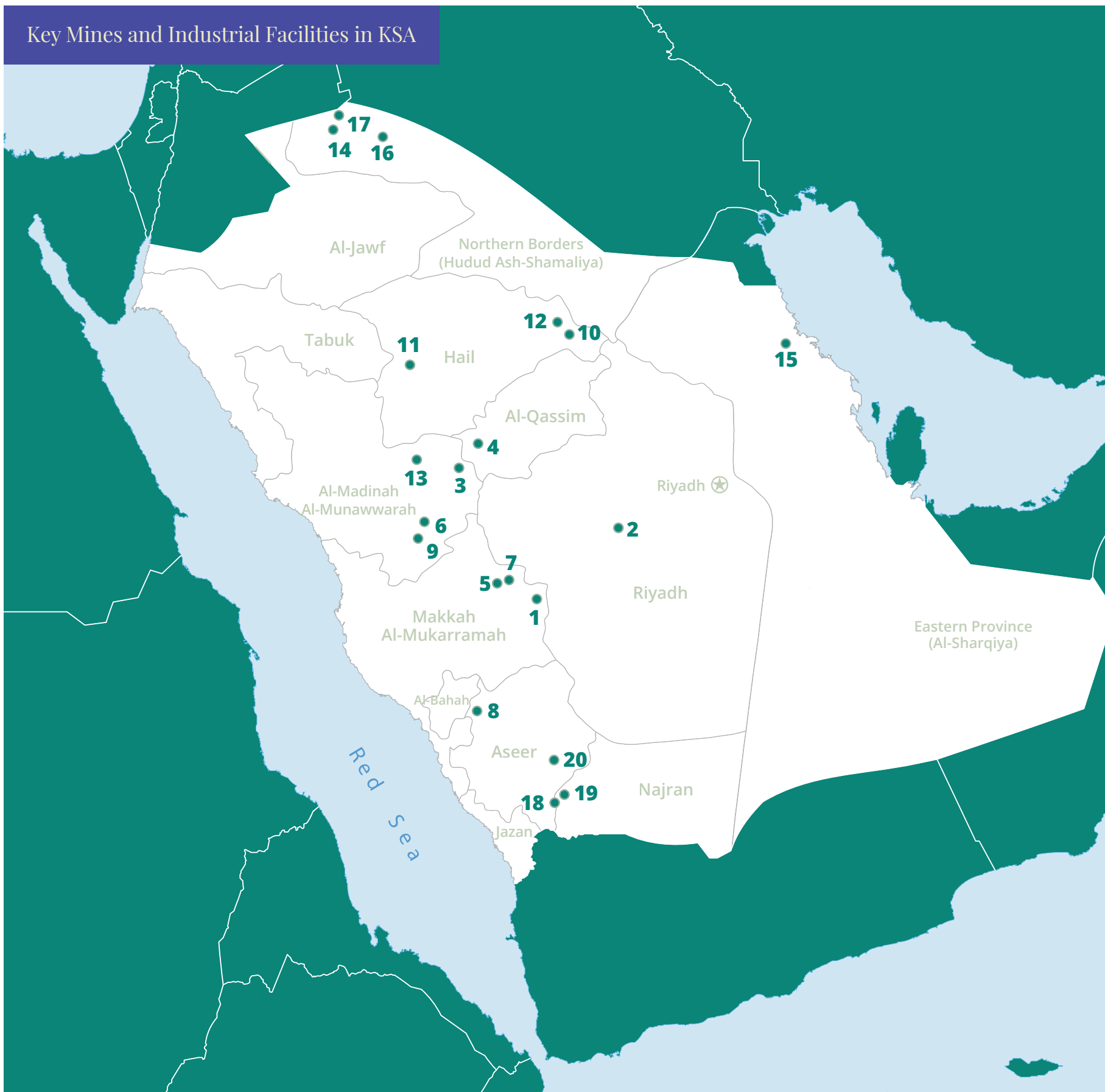
We also maintain a significant focus on the health, safety and development of our employees, ensuring they have the proper training and conducive environment to grow. We are committed to working with our suppliers and customers to spread sustainable practices throughout our entire supply chain.

Do you have a final message for GBR's audience?

Our main focus is on operational excellence and driving growth, particularly in petrochemicals while strengthening the integrated titanium value chain in Saudi Arabia. With key facilities like the ilmenite titanium smelter complex in Jazan and titanium sponge plant in Yanbu, Tasnee is ideally positioned to attract international players with their technologies, best practices and investment to contribute towards the diversification of the Saudi economy in conformity with Saudi Vision 2030.

The geographically strategic stable location, world-class infrastructure, and investor-friendly policies of the Kingdom present immense opportunities for foreign and local investments. ■

Key Mines and Industrial Facilities in KSA



MA'ADEN		
1	Ad Duwayhi mine	Gold
2	Al Amar mine	Gold
3	Bulghah mine	Gold
4	Sukhaybarat mine	Gold
5	As Suq mine	Gold
6	Mahd Ad Dhahab mine	Gold
7	Mansourah-Massarah mine	Gold
8	Al Hajar mine*	-
9	Jabal Sayid copper mine	Copper
10	Al Ba'itha bauxite mine	Aluminum
11	Al Ghazalah mine	High grade magnesite ore
12	Az Zabirah bauxite and kaolin mine	Low grade bauxite and kaolin clay
13	Al Madinah Al Munawwarah magnesite calcination plant	Caustic calcined magnesia and dead burned magnesia
14	Wa'ad Al Shamal Industrial City	Phosphate
15	Ras Al Khair Industrial City	Phosphate
16	Al Jalamid phosphate mine	Phosphate
17	Al Khabra phosphate mine	Phosphate
AMAK		
18	Al Masane mine	Copper, Zinc, Silver, Gold
19	Guyan gold mine	Gold
SAUDI GOLD REFINERY		
20	Hamda gold mine	Gold

*closed in 2015

Sources: Ma'aden; Saudi Gold Refinery; AMAK; Mindat

Development, Exploration and Trading

Honey to the bees

In 2006, a small junior mining company with a market cap of AU\$15 million (around US\$9.7 million) was able to raise US\$350 million in equity markets and later be acquired for US\$1.35 billion by Equinox Minerals, which was subsequently acquired by Barrick Gold. This gave the mining giant complete control over Jabal Sayid, the now-operating copper mine under the joint venture with Ma'aden (Ma'aden Barrick Copper Company).

That is how Inés Scotland, executive chair of Metal Bank, shared the story of Citadel Resources, that small junior. "It is easy to look at the result, but the journey involved countless steps and extensive groundwork over five years," she said.

Before diving into the past, it is better to start by mentioning that Inés Scotland, along with the team that advanced the Jabal Sayid project, is re-entering Saudi Arabia with a new strategy after applying for and winning an exploration license for the Wadi Al Junah site in Aseer, which contains copper, zinc, silver and gold. This was part of the sixth round, announced by the Ministry of Industry and Mineral Resources in November 2024.

Much has been written so far about Vision 2030, and much more will be written about the Saudi government's support for the sector in the following pages. However, Scotland's experience serves as a benchmark for assessing how the industry was back then and how it is today.

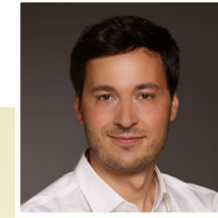
According to the executive director of this Australian-based company, when they first entered Saudi Arabia through Citadel Resources, Ma'aden was the only active mining company, with four operating mines. Today, it has seven. The government was also different back then, as a deputy ministry handled mineral resources under a larger petroleum ministry. Despite the differences between then and now, Scotland still maintains that they saw the commitment we all hear about today, having allowed the company to complete drilling and pre-feasibility and feasibility studies in just five years: "Today, things are very different, with the government offering incentives up to roughly US\$1.5 million per 100 m², which make it financially viable to test deeper IOCG-style deposits that could lie 300 m or

more below the surface. These deep holes are high risk and also very costly [...]. Such support is transformative, especially for deep drilling in the Arabian Shield, which has little exploration below 100 m," she added.

This incentive mentioned by Scotland is part of the governmental Exploration Enablement Program (EEP), an initiative launched in April 2024 to boost mineral exploration. The EEP is a bi-ministerial program managed by the Ministry of Industry and Mineral Resources and the Ministry of Investment. It promises to provide access to SAR 685 million (around US\$182 million) in incentives to stimulate mineral exploration activities in "strategic and critical minerals, improve geological knowledge, identify new frontiers of mineral potential in greenfield areas, and expand the capabilities of local talent." To apply for the EEP, companies must hold an active exploration license for Class A minerals under the new Mining Investment Law, focus on greenfield exploration sites, and run the program from 2024 to 2030. It will finance up to 25% of approved exploration costs, with a cap of SAR 4 million (US\$1.06 million) and additional labor funding of up to SAR 3 million (US\$800,000).

Alan Davies, CEO of Moxico Resources, also commented on how the Saudi government has been a "tremendous ally" with programs like the EEP, which have been of "much help."

Moxico jumped from Zambia, a jurisdiction where they brought the Mimbula copper mine into production and are currently ramping up operations, to partner with local Ajlan & Bros and become one of the first companies to participate in the bidding rounds organized by the ministry. In 2022, they won the bid for the Khnauyah zinc-copper project. "As we prepare to initiate the construction phase, we are in advanced discussions with the Saudi Industrial Development Fund (SIDF) to secure the final funding package. We are just awaiting the final signoffs from the expert panel advising the SIDF, with expectations to close this financing in the first half of 2025. Once the full financing package is secured, we will move into construction of the main plant – a zinc and copper concentrator that will produce concentrates for both metals," added Davies.



Christopher Schmidt
CEO
ANS EXPLORATION

“

We want to list on the TSX by mid-2025 and explore a dual listing on Saudi Arabia's Junior Exchange, making ANS the first company listed in both Canada and Saudi Arabia, enabling direct Saudi investor participation.

”

The missing piece: An incubator for Saudi Arabia's junior market

While we can say that Saudi Arabia might hold the title of "the capital of the Super Region," we can be sure that Toronto is the capital of the junior world because it is home to the TMX and the TSX-V, where juniors can raise capital, grow and, eventually "graduate" to the TSX, the senior market. "Over 300 mining companies listed on TSX began as juniors, a feat few other markets can match. Even with challenging equity conditions, miners raised CAD8.5 billion in the first nine months of 2024, including CAD5 billion from junior companies alone. These companies operate not just in Canada but across Latin America, Africa Australia and other key jurisdictions," commented Graham Dallas, head of business development, Europe, Middle East and Africa, Toronto Stock Exchange and TSX Venture Exchange.

In October 2024, the Minister of Industry and Mineral Resources Bandar Ibrahim Alkhorayef met with TMX CEO John McKenzie and TMX President Louis Anastasopoulos to discuss opportunities for cooperation. One of the key points the Saudi junior segment hoped they would address was the establishment of a local junior market. "While financing options are improving, there is still room for growth, such as the potential establishment of a junior stock exchange. Listing on the Saudi exchange poses challenges for junior explorers due to requirements like three years of profitability, which is often not feasible for asset-focused companies like ours," explained Sean Wade, CEO of Power Metal Resources, an exploration-incubator exploring in KSA under its local subsidiary Power Arabia.

In fact, there is always room for improvement in any jurisdiction. In the case of KSA, Power Metal views the situation as an "incredible opportunity for foreign investment," particularly after signing an MoU with the Minis-

try of Investment nearly a year ago. "We have received outstanding support from the government, which has facilitated key introductions and helped us navigate local processes efficiently. Strong government relations are crucial in any country, but they are significant in KSA, given the focus on Vision 2030, with mining positioned as the third pillar of the economy," he added.

It seems that the lack of a local junior market is offset by governmental support. That is what John Webster, CEO of Gold and Minerals, told GBR. The company, which operates out of Bisha, is developing the Jibal Qutman gold project, which is close to being "production ready," as Webster stated, and the Hawiah deposit, a larger site that holds gold, copper, silver and zinc.

When he was asked how his job as a CEO differed in Saudi Arabia compared to more mature mining jurisdictions, at least on the financing side, he responded that his experience in Canada showed him how the cyclical-ity of the market is supported by mechanisms like flow-through financing: "Therefore government incentives, like SIDF, are critical here. They help offset the lack of established equity financing options," he commented, adding: "If a project meets international and bankable feasibility standards, SIDF can provide loans at competitive interest rates, covering up to 75% of the project value—a level of support virtually unheard of elsewhere. I have spent over 40 years in the mining industry and led

POWER
METAL RESOURCES

AIM: POW
OTCQB: POWMF

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companies since the mid-90s, and I have had to be focused extensively on fundraising. Here, my job is primarily focused on rapid project development optimization and development of in-house skills."

An integrated supply chain

Mining nationalism, or what I prefer to call supply sovereignty—the integration of upstream, midstream, and downstream sectors—is not exclusive to KSA. Similar paths are being attempted in countries like Canada and the United States through their respective policies. The main difference lies in the pace of progress. "Saudi Arabia's role in the energy transition is not limited to the mining of critical minerals but also includes the development of a comprehensive hub for mineral processing. Through the building of smelting and transformation capacities to supply global markets, the country is on its way to becoming a central economic and geopolitical actor in the global mineral processing chains [...] As the supply of critical minerals has become a global concern, Saudi Arabia's push to become a mineral exploration and processing hub could help diversify supply chains and offer more security for the global transition to clean energy," commented Rémi Piet, co-founder and senior partner, Embellie Advisory.

Regarding integration, Luke Fitzgerald, CEO of EV Metals Group, has much to share. Through their "mine-

to-refine" strategy, the company operates various subsidiaries that connect upstream mining assets with midstream refining, creating an integrated supply chain for critical minerals to produce high-purity battery chemicals at a lithium refinery in KSA. "The Lithium Chemical Plant (LCP) in Yanbu Industrial City is the first of its kind in the region, designed to serve as a midstream hub and a cornerstone of the Kingdom's industrial diversification efforts under Vision 2030," he explained.

The LCP is in advanced pre-development, with front-end engineering progressing well, and now the company is working to secure equity and debt financing, aiming for the final investment decision and construction by late 2025, with production expected by late 2027. For Fitzgerald, geography is crucial: "KSA is ideally positioned to become a midstream hub for processing of critical minerals, with growing domestic demand and proximity to key growth markets including Europe, Turkey, the Gulf region, and India. As the Kingdom's mining sector matures and local demand increases, the country is making significant strides in developing a comprehensive EV supply chain and supporting ecosystem," he added.

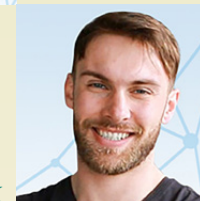
Open Mineral identified an opportunity to digitize the upstream base metals value chain within this integrated downstream-to-upstream model. Using AI, they connect mines, refineries, and engineering firms while providing insights into financing, pricing and market conditions. Their approach blends technology and AI with the traditional business of trading. "Our system considers factors like financing options, product pricing that accounts for fluctuating market conditions and regional arbitrage opportunities, giving mines and smelters the insights they need for informed decision-making on future business strategy," commented Johan Knapp, business development, ores and concentrates.

According to Boris Eykher, co-founder and CEO of Open Mineral, this kind of technology benefits vertically integrated mines and smelters. By inputting all costs into one system alongside true market terms, they can determine the optimal production path to enhance profitability. He added: "To really add value in an industry dominated by giants, you need to go beyond the basics and offer something extra. Technology has become the natural next step for the industry's evolution, yet large, established companies often struggle with experimenting."

Saudi Arabia alone cannot meet the demand for the minerals required to achieve its vision of an integrated supply chain. To succeed, it will need allies within the Super Region, where it serves as a leading voice, and from other global partners. To this end, the Public Investment Fund and Ma'aden have established Manara Minerals, which they describe as the trading arm, to acquire stakes in overseas assets. Initially, Manara will focus on investing in iron ore, copper, nickel and lithium, securing physical offtake of critical minerals to ensure supply security for domestic downstream sectors. So far, Manara Minerals has invested US\$3.4 billion in Vale Base Metals Limited. ■



BE



JK

“Open Mineral fits well within this ecosystem, combining the trading of raw materials with advanced technology, and aligning with Saudi Arabia's vision to establish a robust industrial base.”

Boris Eykher and Johan Knapp

BE: CEO and Co-Founder

JK: Business Development, Ores and Concentrates

OPEN MINERAL

What is the history behind Open Mineral, and what is its presence in the Middle East?

BE: We founded Open Mineral in 2016 with former Glencore colleagues to bring digitization into the metals industry, specifically metal trading and its supply chain, areas that lacked efficiency due to the sheer complexity and scale involved. Since then, we have grown to about 80 people across 12 offices, allowing us to stay close to suppliers and customers like smelters. In 2022, after a capital raise led by Mubadala, we opened our first office in the Middle East, in Abu Dhabi. We are currently opening an office in Saudi Arabia. Over the past 24 months, we have done business with nine of the 10 largest companies in the mining sector, which shows how well-integrated we are within the industry. Over the last five years, we have achieved over 50% annual growth in revenue and gross profit margins.

How do you integrate technology and AI in a traditional business like trading?

JK: Open Mineral has digitized the entire upstream base metals value chain. That is mine-to-refinery and everything in between. This means

we can now deploy AI to this data and optimize commercial decision making and investment analysis. While this has typically benefited our trading business by enabling us to take market positions with limited risk, the technology we have developed also benefits our customers, namely the smelters, mines and the engineering firms who build these types of assets. Our system considers factors like financing options, product pricing that accounts for fluctuating market conditions, and regional arbitrage opportunities, giving mines and smelters the insights they need for informed decision-making on future business strategy. This sort of intelligence generates profitability with our previous case studies showing typical uplift of 5-10% to net present value. This can be the difference between whether a metal-producing asset will be built or not – that is crucial in the green transition as demand of critical minerals rises.

BE: Our technology also benefits vertically integrated mines and smelters. We can determine the optimal production path to enhance profitability by inputting all costs into our system alongside true market terms. Machine learning evalu-

ates raw materials based on recoverable and penalized elements to maximize profitability. By predicting shifts in raw material costs and potential penalties with high accuracy, our system enables proactive decision-making on which inputs yield the most profitable outputs.

How can a company hire your services, and how do you add value?

BE: Most often, companies will invite us to participate in tenders, where we submit competitive terms alongside other buyers. Alternatively, we offer a transparent marketing-as-a-service model for mines. In this setup, we handle all aspects of logistics, trade finance, insurance, and other necessary components to deliver a complete end-to-end solution with full transparency for the mine.

What makes the Middle East, especially KSA, stand out?

BE: The Gulf countries are developing rapidly, and their governments prioritize economic transformation, industrial growth, and mining. The region also maintains strong connections with emerging markets, including those in Africa and Latin America, opening new doors for us to expand. Besides, they also have substantial capital, which makes the Gulf a natural strategic partner for many nations that need funding. Additionally, they hold a neutral position, balancing ties with the Global South, the West, and China, which is crucial in trade as impartiality matters. Despite being a desert, the Gulf is genuinely an oasis of capital, opportunities, and a natural trading hub.

JK: What stands out about the Gulf countries, especially Saudi Arabia, is their ability to craft and execute a long-term vision. Globally, few can match their capability to turn ambitious plans into reality. Saudi Arabia, in particular, is blending traditional industries—like manufacturing and construction—with cutting-edge technologies. Aramco, for example, is more than an oil company; it has heavily invested in technology and AI for industrial applications. Open Mineral fits well within this ecosystem, combining the trading of raw materials with advanced technology and aligning with Saudi Arabia's vision to establish a robust industrial base. ■

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28 Ni Nickel	27 Co Cobalt	03 Li Lithium	79 Au Gold	47 Ag Silver	82 Pb Lead	26 Fe Iron	46 Pd Palladium	29 Cu Copper	50 Sn Tin
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Sean Wade

CEO
POWER METAL RESOURCES

“KSA offers an incredible opportunity for foreign investment, especially in mining, where openness to external partnerships has grown exponentially.”

Can you introduce our audience to Power Metal Resources?

Power Metal Resources PLC (AIM:POW) is an exploration company listed on the London Stock Exchange, operating under the mining exploration incubator model. With a current market cap of around £18 million, we focus on early-stage exploration in tier-one jurisdictions, including North America, Australia, Saudi Arabia and Africa.

Our business model centers on acquiring stakes in promising assets and improving their value through geophysical surveys, soil sampling, exploration drilling, and other early-stage exploration activities. Once these assets reach a certain maturity, we aim for a ‘crystallization event’, which could involve an IPO, as we did with Guardian Metal Resources, joint ventures like the recent partnership with UCAM for uranium projects, or asset disposal, such as the sale of our stake in Kavango Resources.

What strategy is Power Metal following for its projects in Saudi Arabia?

We have been exploring the Arabian Shield through our subsidiary Power Arabia, covering both Saudi Arabia and Oman. So far, we have made progress by securing some promising deals, and we are optimistic about bringing them to fruition soon. Our strategy involves partnering with existing license holders to help them advance their projects, which differs from applying for licenses independently, which is a bit more complex. For example, spending US\$3 million on exploration over the next two years at AMAK’s Qatan project will grant us a 49% stake. Now, if there is a significant breakthrough in the project’s commercial viability, we can buy out the remaining stake. This scenario represents the ‘crystallization event’ mentioned earlier. Additionally, we have the Balthaga lithium project managed through RIWAQ, an Australian subsidiary of EV Metals. In this case, we are looking at an investment of up to US\$500,000 across 15 licenses, which will secure us a 30% stake in the entire license area. This presents a significant opportunity for our shareholders to benefit from potential discoveries without fully funding the project.

Power Metal signed a Memorandum of Understanding (MoU) with Saudi’s Ministry of Investment. What are the benefits and a key challenge of mining in KSA?

The MoU we signed with the Saudi Ministry of Investment

during the 2024 Future Minerals Forum has proven to be a critical step. We have received outstanding support from the government, which has facilitated key introductions and helped us navigate local processes efficiently. Strong government relations are crucial in any country, but they are significant in KSA, given the focus on Vision 2030, with mining positioned as the third pillar of the economy.

KSA offers an incredible opportunity for foreign investment, especially in mining, where openness to external partnerships has grown exponentially. While Ma’aden has historically dominated the sector, the Kingdom is trying to diversify to attract new investors. The FMF has evolved from a modest event to one of the world’s premier go-mining events.

KSA’s experience in managing oil and gas operations provides a solid foundation for navigating the complexities of mining, having mastered the balance between domestic interests and foreign investments. While financing options are improving, there is still room for growth, such as the potential establishment of a junior stock exchange. Currently, listing on the Saudi exchange poses challenges for junior explorers due to requirements like three years of profitability, which is often not feasible for asset-focused companies like ours.

Do you have a final message for investors interested in Power Metal?

Investors considering Power Metal Resources PLC will notice our proven track record of delivering value. For example, our 45% stake in Guardian Metal Resources, which holds the largest undeveloped tungsten resource in the USA, showcases the success of our IPO strategy. The UCAM deal further highlights our ability to crystallize value and attract significant investment, leading to commercial discoveries that appeal to investors.

We are now applying this model in Saudi Arabia and Oman, where our track record has already opened up exciting new opportunities. Securing financing for Power Arabia will likely bring additional positive news and results, significantly enhancing shareholder value. Although recent market conditions have been challenging, we are trading at a substantial discount compared to our intrinsic value. As UK market conditions improve, Power Metal presents a compelling, diversified investment in tier-one geographies focused on critical metals essential for the energy transition. ■



Alan Davies

CEO
MOXICO RESOURCES

“When Saudi Arabia made mining a pillar of its Vision 2030, at Moxico, we saw a unique opportunity to expand, especially under new reforms introduced to encourage mining investment.”

What is Moxico Resources’ history and footprint?

Moxico Resources is a company focused on exploration, development and operations. Since 2016, we have been building our portfolio in Zambia, acquiring several assets and bringing the Mimbula copper mine from the exploration phase to production. We are currently ramping up operations to produce 60,000 t/y of copper cathode, with several other properties in Zambia, including the Kalengwa copper project, also progressing from exploration to production.

When Saudi Arabia made mining a pillar of its Vision 2030, at Moxico, we saw a unique opportunity to expand, especially under new reforms introduced to encourage mining investment. As the Kingdom’s largest mineral exploration site, we were confident that the Khnaiguiyah project had significant potential and would play a crucial role in achieving Saudi’s strategic vision. We partnered with Ajlan & Bros and put considerable effort into our proposal, with a lot of focus on the project’s environmental and social aspects. We were one of three bidders accepted in the final stage of the bidding process and, in September 2022, we won the bid for the Khnaiguiyah exploration licenses.

More recently in October 2024, Moxico Resources executed an investment to earn up to a 100% interest in two copper exploration assets forming the Esperanza project in the Province of San Juan in Argentina. Similarly to Saudi Arabia, Argentina has adopted reforms that include incentive programs to help unlock the country’s mining potential.

What factors influenced the decision to expand into Saudi Arabia?

The Arabian Shield caught our attention, especially after reviewing the historical data and seeing the potential in the region’s mineral wealth. As importantly, the transparent bidding process reassured us of Saudi Arabia’s commitment to building a sustainable and competitive mining sector, making the opportunity even more appealing. We are not entirely jurisdiction agnostic – a robust local legal framework and promising geology must go hand in hand.

Finding the right local partner was essential. Ajlan & Bros stood out not only for their well-established reputation but also because they shared our interest in aligning with Vision 2030 as a driving force in the mining indus-

try. As such, we established a 50/50 joint venture combining Moxico’s technically driven approach with Ajlan’s deep-rooted local expertise and cultural strength.

How have you advanced Khnaiguiyah, and when do you expect to begin constructing its plant?

We recognized right away that the Khnaiguiyah area had promising occurrences of zinc, copper and manganese, which the geological mapping and analysis we conducted confirmed. What stood out was the potential for both brownfield and greenfield exploration, providing a clear path for development while also allowing room to uncover new resources. Additionally, we conducted extensive drilling to confirm the first phase of our resources and reserves at Khnaiguiyah and completed a bankable feasibility study.

To date, Moxico Ajlan & Bros Mining has invested in excess of US\$100 million in the Khnaiguiyah project. As we prepare to initiate the construction phase, we are in advanced discussions with the Saudi Industrial Development Fund (SIDF) to secure the final funding package. We are just awaiting the final signoffs from the expert panel advising the SIDF, with expectations to close this financing in the first half of 2025. Once the full financing package has been secured, we will move into construction of the main plant – a zinc and copper concentrator that will produce concentrates for both metals. Concurrently, we continue to advance our plans for early exploitation of the manganese deposits at Khnaiguiyah and are on track to operationalize the manganese plant in the first quarter of 2025, funded entirely by Moxico and Ajlan, to supply the Saudi ferro-manganese industry. We are moving very fast; we promised the Government we would, and we have.

How does Moxico’s strategy and Khnaiguiyah fit under Vision 2030?

KSA is diversifying into other key minerals like lithium for the automotive industry, and the program’s main goal is to boost self-sufficiency in critical mineral supplies. This strategy aligns perfectly with Khnaiguiyah’s zinc, copper, and manganese production.

KSA currently imports large quantities of these metals, so establishing a local production base will strengthen the domestic supply chain and supports Vision 2030’s goals. We are also conducting a feasibility study for a zinc smelter to process material from the Khnaiguiyah project. ■



**Michael
Bradley**
CEO
GREYRIDGE
EXPLORATION

When did Greyridge enter Saudi Arabia?

We are a Canadian mining exploration company focused on precious and base metals. We are exploring solely in Saudi Arabia. Our vision is to become Saudi Arabia's preeminent explorer, with a mission to discover the next world-class copper and gold deposit, and support development of the rapidly expanding mining sector, in line with Vision 2030.

We recently entered the market through acquisition of ERG's highly prospective assets in Saudi to become the largest foreign holder of exploration licenses in the country. We own 25 licenses covering just under 2,000 km². Our main assets are at Ad Dawadimi and Al Amar, both of which lie on, or are near to, defined gold and VMS mineral belts that contain highly prospective ground for intrusion related gold, orogenic gold, polymetallic epithermal mineralization, and copper-rich VMS deposits. Our licenses border Ivanhoe and Ma'aden, and are close to geological structures, mines and known mineral occurrences, so we are certainly in the right neighborhood.

What work has been done in the areas Greyridge currently owns?

The assets are early-stage exploration. We are picking up from where ERG left off, and building on their targeting work, we are now conducting further geological sampling and mapping.

What factors made Greyridge focus only on Saudi Arabia?

We entered Saudi for three main reasons: first, its immense geological prospectivity—metals and minerals in the country are largely underexplored; second, the hugely ambitious mining sector reforms under Vision 2030; and third, the unrivaled investment incentives for junior explorers like Greyridge.

Are you planning to tap into the Enablement Exploration Program?

Absolutely, though we haven't used it yet. Greyridge only entered the market in October, so it is still early days. In the next window we will apply to recover part of our technical and labor costs, which will reduce both our OpEx and dilution for shareholders. ■



Inés Scotland
Executive Chair
METAL BANK

Does Metal Bank aim to replicate its success with the Jabal Sayid discovery?

We have a three-tier strategy: First, we are establishing a joint venture, CMC, in partnership with Central Mining Holding Company from Sheikh Khaled al-Qahtani, with whom we partnered back when we were developing Jabal Sayid. With this JV, where Metal Banks holds a 60% share, we have recently been awarded Wadi Al Junah in Licensing Round 6. Second, we are identifying areas with significant potential for copper and other critical minerals. Finally, alongside our application efforts, we are also exploring joint ventures with companies already established in the region, which gives us a diverse approach to grow our footprint.

What makes the Arabian Shield more attractive for exploration?

Despite its history, which dates back to King Solomon's source of gold, the Arabian Shield is a geological treasure trove that remains largely untapped in terms of modern exploration. French and American geological teams explored parts of the mid-20th century, but their work was limited and shallow, leaving much undiscovered. Jabal Sayid is an excellent example of the shield's potential. The mine alone holds over 55 million tons of copper at 2.5%, proving that KSA has the projects and the resources ready for those willing to invest.

What are the next steps for Metal Bank in the KSA?

We applied for four exploration licenses in round six and are also exploring JVs with local mining companies. By early 2025, we want to be well-prepared for field activities. Our geologist is already on the ground doing preliminary reconnaissance, setting us up to start our programs just before the heat of July and August. Based on our previous experience, night drilling works well under Saudi's climate. Typically, we would start around 5 pm and continue until morning, around 7 or 8 am, then take a break during the day. ■



**Luke
Fitzgerald**
CEO
EV METALS GROUP

What is EVM's "mine-to-refine" strategy, and how are you implementing it?

Through our special purpose subsidiaries, we are advancing our "mine-to-refine" strategy by connecting upstream mining assets with midstream refining, creating an integrated supply chain for critical minerals to produce high purity battery chemicals.

EV Metals Arabia, subsidiary in the Kingdom, is leading this strategy by developing a lithium refinery to produce battery-grade lithium chemicals. As our flagship project, the Lithium Chemical Plant (LCP) in Yanbu Industrial City is the first of its kind in the region, designed to serve as a midstream hub and a cornerstone of the Kingdom's industrial diversification efforts under Vision 2030.

Currently, our focus is on advancing the LCP while laying the groundwork for future integration with upstream projects. In the short term, we are securing agreements with global suppliers of spodumene concentrate. Over the long term, we aim to diversify the LCP's feedstock by participating in and owning mining mineral resources, alongside progressing our current upstream exploration activities.

Why is Saudi Arabia strategically positioned for the EV supply chain?

The Kingdom's competitive energy costs, skilled labor, and solid infrastructure create a strong foundation for high value refining projects such as EVM's LCP project. In addition, the government offers substantial support through incentives and initiatives, such as the Saudi Industrial Development Fund (SIDF), providing debt financing and investment opportunities, backed by commercial lenders and access to equity investors.

What are some developments at EVM's Balthaga exploration project?

Through our Saudi mining subsidiary, RIWAQ Al Mawarid for Mining, we hold 13 tenements spanning 1,300 km², providing significant exploration opportunities in the underexplored and highly prospective Arabian Shield. Our geological team has successfully completed initial reconnaissance programs, collecting rock chip samples from priority targets for geochemical analysis. These early findings have established a solid basis for understanding the mineral potential in the region and for planning the next phases of exploration. ■



John Webster
CEO
GOLD AND MINERALS

Could you briefly introduce us to Gold and Minerals?

A number of years ago, we secured initial Exploration Licenses and made major discoveries at the Jibal Qutman and the larger Hawiah projects. The team moved these projects from grassroots targets to Indicated and Inferred Mineral Resources. We expect to rapidly advance both projects into production over the next four years. Being a discovery-led company, we have developed a portfolio of 14 other Exploration Licenses with one of the most successful exploration teams in KSA.

What factors make Jabal Qutman the likely starting point for production?

Jabal Qutman has six open pits containing mineable resources, offering a straightforward processing plan with high gold recoveries. These advantages make it an ideal candidate for fast-tracking into production.

Hawiah is a much larger project with resources in excess of 30 million tons of polymetallic ores. Three phase development is planned, starting with a six-year mine life for the oxidized ores and expanding to a 15-year life

for deeper resources, with additional exploration to extend resources, both along strike and down dip.

Why is the proactive attitude of Saudi authorities significant for mining development?

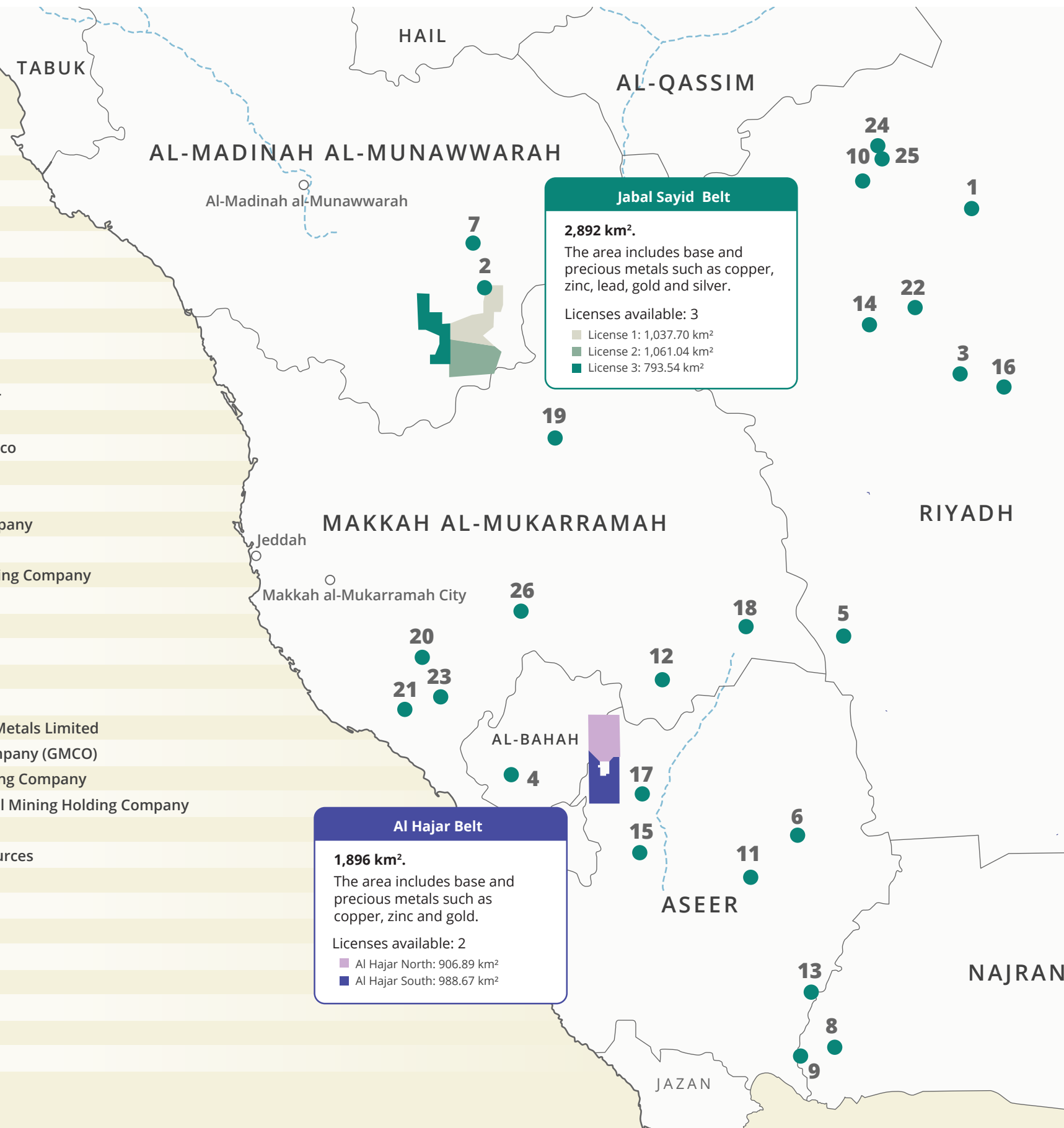
In KSA you will find educated, helpful, pleasant professionals who make permitting and compliance straightforward, highly interactive and personable.

How does your job as a CEO differ in KSA compared to other jurisdictions?

Saudi Arabia offers a unique and remarkable financing system through the SIDF (Saudi Industrial Development Fund). If a project meets international and bankable feasibility standards, SIDF can provide loans at competitive interest rates, covering up to 75% of the project value—a level of support virtually unheard of elsewhere. Having spent over 40 years in the mining industry and led companies since the mid-90s, and I have had to be focused extensively on fundraising. Here, my job is primarily focused on rapid project development optimization and development of in-house skills. ■

Rounds of Exploration Licensing for Mining Sites and Mineralized Belts

FIRST ROUND		Commodities	Area (km ²)	Winner
1	Khnaiguiyah	Zn (Cu)	353	Ajlan Bros & Moxico Resources
SECOND ROUND				
2	Umm Ad Damar	Cu (Ag, Zn)	40	Ma'aden and Barrick
THIRD ROUND				
3	Ar Ridaniyah	Zn	44	Ma'aden
4	Muhaddad	Cu (Pb, Zn, Au)	15	Ma'aden
FOURTH ROUND				
5	Umm Hadid	(Pb, Zn, Cu)	246	Sumou Holding and Kuya Silver
6	Jabal Sabahiyah	Zn (Pb, Cu, Fe)	283	MSB and Royal Road
7	Bir Umq	Cu (Zn)	187	Abilitii (Ajlan & Bros) and Norinco
FIFTH ROUND				
8	Al Halahilah	Zn, Cu (Pb, Au)	34.70	Discovery Arabian Mining Company
9	Jabal Qaran	Au, Cu, Zn, Ag (Pb)	57.72	AMAK
10	Makman Hejab	Au, Ag	118.40	Eqleed Group and Indotan Mining Company
11	An Nimas	Au, Cu (Ag, Zn, Ni)	222.22	Ma'aden
12	Al Miyah (Shaib Burayk)	Cu, Au (Zn, Pb, Ag)	234.44	Royal Road Arabia Company
13	Al Hajirah	Ag, Cu, Zn (Pb, Au)	274	AMAK
SIXTH ROUND				
14	Umm Qusur	Au, Ag (Pb, Zn)	20	ANS Exploration and Odyssey Metals Limited
15	Wadi Ad Dawsh (Al Farah)	Au (Ag, Cu)	157.76	Gold and Minerals Limited Company (GMCO)
16	Shaib Marqan	Au (Ag, Cu)	91.81	Auking and Barg Alsaman Mining Company
17	Wadi Al Junah	Ag, Cu (Zn, Au)	425.37	Metal Bank Limited and Central Mining Holding Company
18	Hazm Shubat	Au	93.47	RWAKED and Masharef
19	Huwaymidan	Au	34	Midad Almona and Tinka Resources
SEVENTH ROUND				
20	Wadi al Lith	Au	243.87	
21	Jabal Baudan	Au (Cu, Ag)	244.92	
22	Jabal Sabha	Ag, Pb, Zn	171.50	
23	Jabal Al Ad Dimah	Au (Cu, Pb, Zn)	210.90	
24	Jabal al Klah North	Ag, Pb, Zn	98.15	
25	Jabal al Klah South	Ag, Pb, Zn	9.21	
26	Umm Hijlan (Mamilah)	Ag, Pb, Zn	78.40	



Jabal Sayid Belt

2,892 km².
The area includes base and precious metals such as copper, zinc, lead, gold and silver.

Licenses available: 3

- License 1: 1,037.70 km²
- License 2: 1,061.04 km²
- License 3: 793.54 km²

Al Hajar Belt

1,896 km².
The area includes base and precious metals such as copper, zinc and gold.

Licenses available: 2

- Al Hajar North: 906.89 km²
- Al Hajar South: 988.67 km²



SERVICE PROVIDERS

“

There is a common idea that it is tough to do business here, but that is not the case. Saudi Arabia offers great opportunities, and the investment climate is more welcoming than many people realize.

”

Grahame Nelson
Partner and Head of KSA Office
AL TAMIMI & COMPANY

GBR Series • SAUDI ARABIA MINING 2025

Image courtesy of Orica



Image courtesy of Darkstone

Service Providers

Consolidation and sophistication

The mining sector in Saudi Arabia is largely dominated by three major players, Ma'aden, Saudi Gold Refinery and AMAK, with Ma'aden holding a much larger share. This consolidation not only shapes core mining operations but also influences the ecosystem of service providers. For example, with the current surge in early-stage exploration activities, consulting and contracting firms handling exploration, drilling and geophysics are experiencing a noticeable boom. However, it raises questions about how engineering firms navigate this landscape, especially the new ones.

While many international companies are eager to establish a foothold in Saudi Arabia, does consolidation make the market more challenging than elsewhere? How competitive is the market and is there enough room for everyone, especially newcomers trying to secure contracts?

Mapping out the Easter egg hunt

International firms, alongside local players, have joined forces with either the Ministry of Industry and Mineral Resources or the Saudi Geological Survey (SGS) to survey and map the Arabian Shield. Historically underexplored but considered a "marvel" or "treasure trove" by many, the Shield remained largely unnoticed until 2020. That year, Minister Bandar Ibrahim Alkhorayef, head of the Ministry of Industry and Mineral Resources, with the SGS, launched the Regional Geological Survey Program (RGP) to survey approximately 600,000 km² of the Arabian Shield over six years, bringing its potential into the global spotlight—or more on the radar.

Four years later, GBR interviewed Abdullah bin Moftar Al-Shamrani current CEO of the SGS, who highlighted the progress made so far: "The Arabian Shield covers an area of approximately 630,000 km², and we have successfully mapped about 85% of the Shield through our recent geological initiatives and acceleration programs. We operate a fleet of 10 airplanes specialized in airborne geophysical surveys, data of which will be integrated with over 85,000 collected stream sediment samples to evaluate mineral resources within

the Arabian Shield. The Minister of Industry and Mineral Resources has announced that the estimated value of these resources in the Kingdom of Saudi Arabia is US\$2.5 trillion."

To attract investment, especially foreign, SGS has prioritized the digitization of geological data through the National Geological Database, which is intended as an investor-friendly platform that connects users worldwide to assess geological information for potential licenses. "Over the past three years, it has attracted more than 90,000 visitors, and our geological database is now ranked third in the world," said Al-Shamrani.

Abdullah Al-Attas, general manager of Geotech Arabia, founded the company in 2017 after retiring from SGS with a vision to serve both the public and private sectors in the Kingdom. Describing Geotech's role in the consortium, he stated: "Geotech is the technical partner and vital link between the local and international companies in this consortium, ensuring the quality and accuracy of the data collected, overseeing the bidding process, and collaborating closely with SGS to guarantee the project meets high-quality assurance and control standards."

For Xcalibur Multiphysics, a Spanish company specialized in airborne and marine geophysics, the RGP marked its entry into the Saudi market. Darío Castellanos, the company's general manager for the Middle East, shared: "The task we took on is huge, about the size of Spain. Right now, we have six aircraft working in the region and have already mapped most of it, leaving just a small percentage of the project to finish, which we plan to wrap up by the end of 2024 or the first quarter of 2025. Beyond data collection, we are also working with the SGS to help interpret the data, and the results will be published on the SGS's NGD portal."

The early-stage nature of Saudi Arabia's mining sector, boosted by government efforts to accelerate exploration, presents abundant opportunities for consultancies and geophysics companies. "There is currently a large focus on mineral exploration and development in line with the clear and ambitious economic diversifica-

tion foundation of the 2030 vision. While there is a large quantity of historical and recently collected geological and exploration data, the full endowment potential of the country's mineral resources is yet to be fully determined," commented Mark Campodonic, corporate consultant at SRK.

Castellanos (from Xcalibur) agrees with Campodonic, emphasizing the sector's immense potential. He also highlights how this is particularly advantageous for companies like Xcalibur, as their services play a crucial role by providing high-quality data that helps reduce risks and costs for mining projects. "If we continue to succeed here, we are looking to set up an Xcalibur Lab in Saudi Arabia, a research and development hub focused on pushing new tech-forward for our industry," he concluded.

Providing investors with information

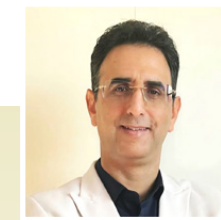
MSA is a consultancy specialized in geology, environmental services and mining. According to Antony Benham, the company's regional director, in 2022, MSA partnered with Al-Rushaid Group to establish MSA Arabia in Jeddah to strengthen ties with clients. "We have noted a surge in activity and inquiries about exploration and mining opportunities in Saudi Arabia both from large international producers and juniors alike. The Saudi Ministry of Industry and Minerals has done a remarkable job promoting the country's geological potential to investors and drawing attention to KSA. I have personally been involved from the early stages, including assisting with the first auction process and identifying prospective areas for investors. Much of our recent work for our clients in KSA has focused on early-stage exploration, including prospectivity analysis, license applications, Mineral Resource Estimations and Competent Person reporting."

MSA has been collaborating with the SGS and Golden Compass on the Accelerated Exploration Program. This initiative, described by SGS CEO Abdullah bin Moftar Al-Shamrani as a "forecast initiative," is designed to equip investors with detailed geological insights.

By conducting drilling, mapping, and sampling in targeted areas, the program aims to achieve a high level of confidence, providing data with 90% accuracy to support informed investment decisions. "The winner of the auction can immediately begin exploration and, eventually, move on to extraction. This accelerates the transformation of the site into a functioning mine. The Accelerated Exploration Program is part of a long-term tender covering geophysics, geochemistry, and geological mapping. The process begins with geochemical and geophysical analyses, with geological mapping serving as the final phase," concluded al-Shamrani.

The desert stretches as far as the eye can see

The third protagonist of the Accelerated Exploration Program is Golden Compass, founded and led by Meshary Al-Ali. Reflecting on the company's growth, Al-Ali shared that in just 10 years, Golden Compass evolved



Samih Ayadi
Managing Director KSA
SGS



We are opening a new geochemistry lab in Jeddah in Q2 2025 through a joint venture with Golden Compass. With 5,000 m², it will feature top-of-the-line technology tailored to support KSA's Vision 2030 by advancing the mining sector.



from a small consultancy into Saudi Arabia's largest drilling and mining services provider. Starting with a single diamond rig, the company plans to operate 40 rigs by 2026 and 106 rigs by 2035.

For Al-Ali, the appeal of the Accelerated Exploration Program does not lie in the size of the contract but in the "unique challenges it brought" that allowed Golden Compass to demonstrate its capabilities while navigating complex and demanding exploration conditions. "This project is also tied to our consulting services and laboratory business unit, especially through our partnership with SGS. This collaboration increases our presence in the mining value chain and strengthens our brand," he commented.

As one of the largest contractors in Saudi Arabia, Al-Ali was asked how the anticipated mining boom might reshape the local market. He noted a significant shift: before 2022, only four companies specialized in mining services were registered in the Kingdom, but today, that number exceeds 22. Al-Ali pointed out that international firms entering the market often face challenges, such as unexpected pricing variations, which could deter investment. Despite these barriers for international players, Al-Ali offered an optimistic perspective—at least for those foreign companies that want to establish themselves in KSA. He expects more companies to enter the market in the coming years, increasing competition. "There is a risk that some companies might adopt surface-level changes just to appear competitive. Balancing these dynamics is key to achieving sustainable growth in the local market," he warned.

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“KSA presents a golden opportunity for investing in mining. Only around 30% of KSA’s mining resources have been explored, and the government has passionately committed to the sector.”

Meshary Al-Ali

CEO
GOLDEN COMPASS

How has Golden Compass evolved since its early days as a consulting firm?

Golden Compass, founded in 2015 as a small consultancy firm. By 2016, we expanded into drilling operations with one diamond rig. Over the past decade, we have grown into Saudi Arabia’s largest drilling, and mining services company, with operations in Saudi Arabia, Morocco, Jordan and Oman. Golden Compass is targeting to operate 40 rigs by 2026 and 106 rigs by 2035. Golden Compass has successfully facilitated the production of over 5 million t of raw material and 500,000 m of drilling through our contracting services.

Beyond mining operations, Golden Compass provides extensive data analysis, reporting and geological surveys, having helped shape government tenders. We have been the driving force behind the recent acceleration of exploration activities and have built data packages for the Saudi Geological Survey (SGS).

Early in 2024 we partnered with SGS, a top global laboratory and testing firm, to build a 4,000 m² state-of-the-art facility in Jeddah, setting up KSA as a regional hub for mining services.

How does your planned listing on Tadawul fit into Golden Compass’ long-term strategy?

We have set the goal of listing the company on Tadawul (TASSI), Saudi

Arabia’s stock exchange, by the second half of 2026. This move aligns with our belief that public listing strengthens our company’s sustainability and reinforces trust among partners and stakeholders.

Our path to going public includes several routes, from direct listing to potential mergers or swaps, with all options under consideration.

Why is Saudi Arabia considered unique for mining investments in the Middle East?

KSA stands out with its unique political and economic stability, presenting a golden opportunity for investing in mining. Only around 30% of KSA’s mining resources have been explored, and the government has passionately committed to the sector. The public sector has become highly competitive, efficient and professional, —more so than many private companies.

Can you share some projects in which Golden Compass has recently worked?

The Accelerated Exploration program we are working on with the Saudi Geological Survey is exciting, not just because of the contract size but due to the unique challenges it brings. On other hand, last year we drilled over 30,000 m for a REE project for consultant companies using 15 rigs within just three to four months.

How do you think this mining boom will reshape KSA’s market?

In the next two years, the arrival of new companies will spark competition: Before 2022, we only had four registered companies specialized in services; today, there are over 22 companies in the market. This competitive environment also presents challenges for global firms, particularly with unexpected pricing variations in KSA that could deter investment.

On the positive side, this push for quality and healthy competition will foster a culture of continuous improvement across the sector.

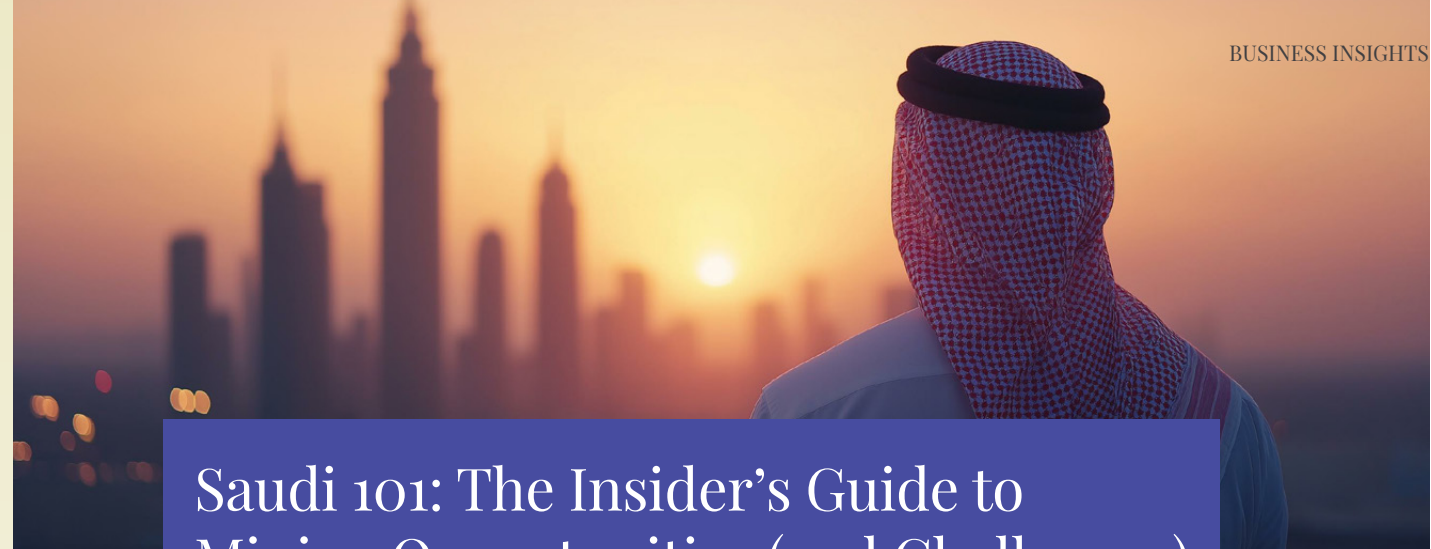
What specific challenges do you see in the KSA exploration segment?

Many Saudi investors do not understand that exploration carries risk and that there is no reward without risk. However, the government is now working to address this by supporting the junior environment through the Exploration Enablement Program (EEP). While 49 applications have been approved, details on how these companies will be supported remain unclear. The idea is to offer up to US\$2 million in grants, but disbursement will occur gradually, and companies must show tangible progress to qualify for further funding.

On the regulatory front, the government is collaborating with the Toronto Stock Exchange to create a new mining exchange, un named yet, dedicated to junior mining companies. Currently, companies need at least US\$100 million in revenue to get listed in TASI, making it harder for smaller ones to secure the funding they need.

What do you think makes Golden Compass stand out from other companies?

A key part of our approach is integrating local involvement into every project by including communities in our Request for Proposals (RFPs) and quotations. As the first end to end integrated company in Saudi Arabia to adopt this practice, we ensure that CSR is embedded in our business processes. Additionally, we are pioneers in sustainability by implementing advanced ventilation systems on all our rigs, eliminating dust, and creating a clean and safe work environment, and focusing all the time to build strong local experiences capabilities. ■



Saudi 101: The Insider’s Guide to Mining Opportunities (and Challenges)

Image courtesy of Amir at Adobe Stock



"If you stick to the rules, KSA is a pretty straightforward place to do business. The tax rates are lower than in many other countries, and while there are some requirements around hiring Saudis, overall, it is becoming easier for foreign investors."

Grahame Nelson, Partner & Head of KSA Office
AL TAMIMI & COMPANY



"Establishing a business in KSA takes about three months and companies need a strong track record to qualify, including audited financials and demonstrated capabilities. While a local partner is not mandatory, it can be advantageous for gaining insights and easing the transition."

Steven Little, Founder and CEO
MASSAR BUSINESS SOLUTIONS



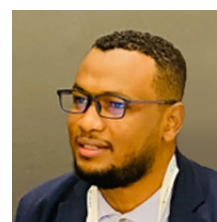
"Skilled actors will arrive, but the big question is when. I sense a potential gap between the desire to progress rapidly and the industry's current capacity to meet these demands."

Gilles Dubuisson, CEO
GINGER SOFRECO



"If you come visit KSA, you will see firsthand how important mining is to the government. The transparency and the attractive regulatory framework make the industry very appealing to new investors."

Abdullah Al-Attas, General Manager
GEOTECH ARABIA



"One advantage is the government's support through financial assistance programs through the EEP. If your company meets the criteria, the Government can provide up to SAR 7 million in funding to support exploration activities."

Elhamem M. Abdalla, CEO
BARG ALSAMAN MINING COMPANY

Maximising Mineral Exploration Success in KSA

Image courtesy of EV Metals

The role of governments and the private sector



Antony Benham
Regional Director
MSA ARABIA

Mineral exploration is frequently expensive and time-consuming and offers no guarantee of success. Due to the inherent uncertainties and high costs of exploration, companies need assistance when seeking to identify new potentially prospective areas, particularly at very early stages.

The acquisition of regional scale geological, geophysical and geochemical data is normally beyond the budget of most exploration companies, and is often undertaken by Geological Surveys, or similar organisations. The economic benefits to countries that have invested in acquiring new geodata are well known (e.g. Duke, 2010; Deloitte, 2023 etc). Since this is often a costly exercise, the work is commonly funded by development agencies or by national governments. The ongoing National Geological Programme (NGP) in KSA is an example of such a program. The NGP includes geological mapping, geochemical sampling and airborne geophysical data acquisition, and is one of the largest regional geodata programs in the world. The release of this data through the National Geological Database (NGD) will enable companies to more easily identify prospective areas and apply for exploration licences.

In addition, the Kingdom is also undertaking early-stage exploration at a variety of locations throughout the Arabian Shield as part of the Accelerated Exploration Programme (AEP), led by The MSA Group and Golden Compass, working with the Saudi Geological Survey (SGS). The results of this work will inform the Ministry of Industry and Mineral Resources on the location of potential future licence auctions and aims to accelerate the development of the mining industry in the Kingdom.

The Ministry is not only providing new geodata through the RGP and AEP but is also providing additional incentives to explore in KSA. The Exploration Enablement Programme (EEP) has a budget of SAR 685 million from 2024 to 2030, and is designed to encourage exploration by providing financial support to exploration companies. The EEP aims to reproduce the success of the Exploration Incentive Scheme (EIS) in Western Australia, which offers a 50% refund for certain drilling projects, capped at specific amounts. If this success can be repeated, this will no doubt help to accelerate the number of companies exploring in KSA.

Which ever approaches are used in mineral exploration, it is important that an exploration team has the necessary experience to collect and interpret the results. Many deposits around the world have only been discovered after multiple exploration programs in the same area, and this is often because results have not been interpreted correctly.

Exploration success through the private sector

The success of the mining industry in KSA will be driven by exploration discoveries and the opening of new mines. The greater the number of companies involved, the greater the chances of a discovery. To maximise the chances of locating a mineral deposit, exploration companies should consider an integrated exploration strategy appropriate for their licence area. A popular type of remote sensing used in regions with good exposure of rock at surface, like the Arabian Shield in KSA, uses multispectral or hyperspectral data acquired from satellites such as ASTER or WorldView 3. The data comprises narrow bandwidths from the electromagnetic spectrum that is reflected from the earth's surface. This can be useful to identify mineralogical composition of different lithologies and alteration mineral assemblages corresponding to particular mineralisation styles, for example for porphyry deposits, or identifying the presence of alteration associated with shear zones.

Advances in geochemical analysis also now allow elements to be analysed at ultralow detection limits, with some analysis techniques detecting elemental concentrations down to parts per billion (ppb). Some of these techniques also allow mineralisation to be detected directly above any concealed mineralisation since they analyse the precursor ion species rather than elements that have combined into surface products. Whilst the analysis cost for these samples is slightly higher than for traditional samples, this is partly offset by the ability of the sampling team to collect more samples per day and has the advantage of being able to identify primary anomalies rather than secondary (transported) anomalies.

Geophysical techniques such as Electromagnetic (EM), Induced Polarisation (IP), Magnetics, and Gravity surveying can also be useful to detect anomalies between potential mineralisation and the host unit. However, data from these surveys needs to be interpreted in combination with other techniques.

In conclusion, to maximise success in KSA exploration companies are recommended to seek professional advice from companies experienced of operating in the region and who understand how to navigate the challenges that exploration companies experience.

Another major contractor in Saudi Arabia is Saudi Canadian Mining Services (SCMS), which has been operating since 1993, providing services ranging from exploration drilling to full-scale mining operations, mainly for Ma'aden. Ahmed AbouZied, SCMS's CEO, said: "The mining and drilling market in Saudi Arabia has a strong demand for services that outpaces the available supply, creating significant opportunities for new companies to enter. Even though there are well-established contractors, the current boom in exploration and mining requires more capacity and expertise. The country's initiative to build a local workforce through technical programs is setting up Saudi nationals to enter the mining field."

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Roy Dabbous, regional director for the Middle East at the consultancy and engineering firm Hatch, agreed with AbouZied in the sense that the biggest challenge for companies looking to enter Saudi Arabia is the availability and cost of contractors. "Hatch has been in Saudi for a long time, so we know the local market and the established contractors. We have also helped bring in external contractors and get them up to speed with the Saudi market. But even with that, finding qualified contractors for complex mining projects is still a big challenge. To manage that, solid engineering is key. When the contractor pool shrinks, you want to make sure your engineering is rock solid, with everything from

material quantities to project specs clearly defined upfront," he asserted.

Laboratories

The laboratory segment of Saudi Arabia's mining industry is served by a mix of local companies, such as Alamri Labs, as well as local and regional branches of international firms, including Bureau Veritas and SGS.

Samih Ayadi, managing director for KSA at SGS, mentioned keeping pace with such rapid growth and, notably, attracting qualified talent, is challenging: "To address this, we are investing in training and skill development for Saudi nationals, ensuring that we meet local demand requirements and actively build a skilled local workforce."

In partnership with Golden Compass, SGS expects to open a new 5,000 m² geochemistry lab in Jeddah by Q2 2025 to support Vision 2030 and the development of the mining sector. This will be beneficial for both companies, fostering synergies and collaboration. "Golden Compass has a strong local presence in minerals but has not previously focused on lab testing, so this partnership lets us combine our strengths; SGS's testing expertise and Golden Compass' industry connections to create a complementary, non-competitive service. Though we will prioritize Saudi's market, the lab will be equipped to serve clients across the region," concluded Ayadi. ■

MSA | ARABIA

MSA Arabia is a leading provider of exploration, geology, mining and environmental solutions to the mining industry.

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Mark Campodonic

Corporate Consultant
SRK

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The Kingdom is definitely open for business, and there is no place in the world with as much appetite and investment opportunities to develop a mining sector right now.

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Can you share a case study of SRK's work in Saudi Arabia?

SRK has been working in Saudi Arabia since the 1990s, initially providing consulting input to major projects like the Bulghah and Ad Duwayhi gold mine and Jalamid phosphate mine. We have built a solid reputation for providing technical services, including input into multi-disciplinary technical studies, water supply studies, geotechnical studies in support of major infrastructure projects, exploration prospectivity studies, Mineral Resource and Reserve estimates, and rehabilitation and closure planning, all in line with international reporting codes and industry best practices. SRK has worked extensively and closely with the major mining companies exploring and operating in Saudi Arabia, including producing Competent Persons Reports for both the Saudi Arabian Mining Company (Ma'aden) and Al Masane Al Kobra (AMAK), in support of their listing on the Tadawul Stock Exchange in Saudi Arabia. SRK is actively involved in multiple projects across the Kingdom, across most of the major minerals/commodities, from early-stage exploration, through project and mine development, operational support and planning for rehabilitation and closure.

Can you provide an assessment of Saudi Arabia's mining industry?

There is currently a large focus on mineral exploration and development in line with the clear and ambitious economic diversification foundation of the 2030 vision. Whilst there is a large quantity of historical and recently collected geological and exploration data, the full endowment potential of the country's mineral resources has yet to be fully determined. The regulatory framework for explorers and miners has been developed in recent years to become more structured and transparent, with an updated mining law supported by key country stakeholders. The changes appear to be making Saudi Arabia a much more appealing destination for international exploration and mining companies, as well as supporting the existing and more mature companies. Exploration License applications have increased significantly in recent years, which is demonstrated by the interest that has been seen in the recent round of license tenders that have been released, which have received interest from local and global players in the industry.

The significant and ongoing investment in large-scale, country-wide regional geological programs, an invest-

ment of over US\$700 million, creates opportunities for new discoveries in a country which remains relatively under-explored. Whilst there are challenges in understanding the new systems/frameworks and getting familiar with how things work, the strong appetite within the Kingdom is a huge positive.

Can you share insights on the market trends based on SRK's involvement in the region since the 1990s?

When I first started coming to Saudi Arabia in the early 2000's, there were only a few operating mines, and exploration was limited to a few companies, however the growth over the past 20 years has been incredible. The country has seen major investment and success in mining and processing projects (and associated infrastructure) in the phosphate, gold and base metals and aluminum industries, notably with exciting and successful joint venture partnerships with the likes of PIF, Mosaic, Alcoa, SABIC, Barrick and Ivanhoe Electric, to name just a few.

The real driver in the mineral sector now is in exploration to find the the next big deposits, the development of which will form a foundation for a mining and industrial sector which satisfies the country's large demand for minerals and economic growth.

What is SRK's plan to adapt to the evolving needs of Saudi Arabia's mining sector?

By having a strong local focus, we will be able to nurture and develop the next generation of scientists and engineers under the SRK global umbrella, while staying committed to our key principles of delivering quality work in consideration of sustainability and social and environmental responsibility.

Can you tell us about SRK's goals for the future and how they align with Vision 2030?

International expertise and companies establishing themselves and integrating into the Kingdom will be key in supporting this vision. SRK has a great track record, experience and reputation in the Middle East and is here to work with local companies to meet those clear Vision 2030 objectives. The Kingdom is definitely open for business, and there is no place in the world with as much appetite and investment opportunities to develop a mining sector right now. ■



Darío Castellanos

General Manager – Middle East
XCALIBUR MULTIPHYSICS

“

Xcalibur started operations in KSA in 2022, after winning a Saudi Geological Survey (SGS) bid to map 500,000 km² of the Arabian Shield. The task we took on is huge, about the size of Spain.

”

Could you tell us a little about Xcalibur's presence in the Middle East, particularly in Saudi Arabia?

Xcalibur started operations in KSA in 2022, after winning a Saudi Geological Survey (SGS) bid to map 500,000 km² of the Arabian Shield. The task we took on is huge, about the size of Spain. Right now, we have six aircraft working in the region and have already mapped most of it. We are also working with the SGS to help interpret the data, and the results will be published on the SGS's NGS portal.

In February 2024, we signed a contract with Ma'aden to do electromagnetic mapping using helicopters and planes over 20,000 km². The project is underway with two helicopters and soon two aircraft, and we plan to complete it by the summer of 2025.

What other projects does Xcalibur have in the pipeline?

We are bidding for the phases 2 and 3 of the SGS program in the Arabian Shield. In these phases, we will keep mapping the Arabian Shield but with a more targeted approach and using extra technologies like electromagnetism and gravity gradiometric. The goal is to dive deeper into the anomalies we spotted earlier with magnetic and radiometric methods. We are also in discussions with other clients to expand our services and offer advanced solutions in electromagnetism, magnetic radiometry, gravimetry and gravity gradiometric.

What differentiates Xcalibur in the market?

Xcalibur stands out for three main reasons. First, our technology is the most advanced in data acquisition, which has helped us earn recognition from the top mining companies. Second, we have a big advantage in economies of scale, with 42 aircraft. This gives us unmatched flexibility and speed when launching projects. Third, one of the most significant differences locally is our presence in Saudi Arabia. We are the only international airborne geophysics company with registered offices. In 2023, we set up our operations office in Saudi Arabia to better support our local clients, further cementing our regional presence.

How is Saudi Arabia positioning itself globally for Xcalibur, especially in the context of Vision 2030?

Saudi Arabia is positioning itself very strategically on the global stage, especially with the great work being done by

the SGS, Ministry of Industry and Mines and the Ministry of Investments. They are focused on attracting international investors, especially in mining, by making regulations easier and opening the country to foreign investment.

This is good for Xcalibur since we are the first step in the exploration process, providing crucial data that helps minimize risks and costs for mining projects. The country is also rolling out innovative programs inspired by models from places like Australia, such as the pre-competitive data program. This includes major airborne geophysics projects and makes the data publicly available to attract investors and mining concessions. We see this as one of the sector's most ambitious and promising initiatives.

Saudi Arabia has the potential to become a major player, not just in regional mining but globally. With its financial strength, the country could take the lead in mining acquisitions. Beyond dominating its territory, Saudi Arabia could also play a big role in developing mining resources in other regions.

Can you tell us more about TEMPEST and HeliTEM?

Our most cutting-edge technology is TEMPEST, an electromagnetic system for fixed-wing aircraft. TEMPEST is great for flat terrain because it makes mapping more efficient, saving time and cost. We would like to use it in Phase 2 of the Arabian Shield mapping, and we expect to have two Tempest aircraft up and running early next year for MAADEN.

We are also working with HeliTEM on projects for Ma'aden and plan to expand its use with other investors and private miners.

Do you see more interest in new technologies in Saudi Arabia?

With its massive sovereign wealth fund, Saudi Arabia is investing heavily in technology worldwide, creating a great environment for innovation. If we continue to succeed here, we are looking to set up an Xcalibur Lab in Saudi Arabia, a research and development hub focused on pushing new tech-forward for our industry. We are also exploring sensors on aircraft to detect gases like methane, hydrogen, and others. We want to become a regional local champion, developing and applying these technologies alongside Saudi Arabia and the Greater Region. ■



Ayman Badirah

CEO

MASHAREF ADVANCED COMPANY

How has Masharef evolved during the last few years?

After years of experience in the Saudi mining industry with companies like Ma'aden, we founded Masharef Advanced Company in 2020 to provide geological and mining consulting services to local companies and international investors exploring opportunities in KSA. By 2022, we expanded Masharef into a full-fledged exploration company, aligning with the global model of a "junior company." Starting with just two team members, we have since grown into a dynamic team of 18 geologists and professionals, supported by our own drilling equipment. Our journey has included collaborations with prominent industry leaders, playing a key role in our growth and contributing to the advancement of the Saudi mining sector.

Can you tell us more about the company's "junior side"?

In 2023, we became part of a consortium including Rwaked and Rikaz Al Sahara. Masharef's primary role being the provision of technical consultancy. As part of the mining licensing round organized by the ministry, the

consortium successfully secured over five licenses. Our current efforts are centered on exploring high-value minerals such as gold, silver and nickel.

To strengthen our strategy, we partnered with RPM leveraging their expertise in planning and exploration. Together, we are addressing challenges such as enhancing the classification systems and policies for mineral resources in Saudi Arabia.

What are some governmental initiatives that you consider beneficial for the junior space?

The Ministry has introduced initiatives like Ta'adeen Platform and the Enablement Exploration Program (EPP) to accelerate greenfields exploration and attract investment in the Kingdom's mineral sector and to encourage investors by partially covering exploration costs. For Class A licenses, support can reach up to SAR 7.5 million, providing significant relief for exploration activities. Notably, this program is not a loan but a grant. This initiative is a valuable incentive, as exploration is both costly and high-risk, helping to ease the financial burden for investors. ■



Mert Karpuz

General Manager

BORETECH

CEO

DRILLING & EXPLORATION

Can you explain more about Drilling & Exploration and Boretech and how they are related?

Boretech started its drilling operations in Turkey in 2016, and by 2017, we were up and running in Saudi Arabia with Geological Services and Drilling & Exploration (D&E) with three drill rigs. Today, we have grown to 25 rigs operating across the country, having drilled over 300,000 m by 2024. We offer core drilling, directional drilling, RC drilling and underground drilling. On the other hand, Boretech, the contracting company, primarily offers geological consulting services, working with a variety of clients across Saudi Arabia, including Sofreco, Ma'aden, Worley and Ajlan & Bros.

Do you manufacture your own rigs, and what makes them different from other companies?

Yes, we have a manufacturing facility in Ankara, Turkey, where we produce our own drill rigs for operations and external clients. D&E exclusively uses drill rigs manufactured in-house at our factory. To minimize downtime, we have established maintenance

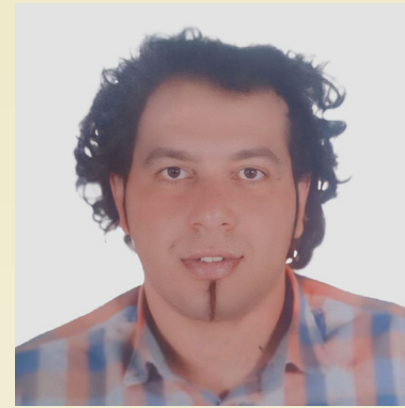
plants, factories and workshops in Saudi Arabia, enabling rapid service and repairs for our rigs.

Can you tell us more about the projects you are currently working on in Saudi Arabia?

We work with Ma'aden on multiple projects, including Mansourah-Massarrah, Ar Rjum, and the recently completed Ad Duwayhi project. We are also on Ma'aden's New Mines Development (NMD) projects. Additionally, we have been involved at Moxico and Ajlan & Bros' Khnauyah project, providing drilling and geological services, including staffing geologists and technicians for logging and sampling.

What can we expect from Boretech and Drilling & Exploration in 2025?

We are focusing on contributing to Saudi Arabia's Vision 2030, with the goal of playing a key role in the country's future projects. Looking ahead to 2025, we are excited to launch directional drilling services, making us the first company in Saudi Arabia to offer this advanced technology. ■



Ahmed AbouZied

CEO

SAUDI CANADIAN MINING SERVICES (SCMS)

How is SCMS organized, and how extensive is its fleet?

Saudi Canadian Mining Services (SCMS) has been active since 1993, pioneering as the first mining and drilling contractor in Saudi Arabia. SCMS is organized into two main divisions. The drilling division handles a variety of drilling services, including grade control, reverse circulation drilling, diamond drilling, and underground exploration. We operate around 26 rigs for different drilling purposes. On the mining side, we maintain a robust fleet of more than 150 machines, ranging from excavators to dump trucks and loaders. Our lineup includes Caterpillar, Komatsu & Sany machinery, specifically dump trucks like Caterpillar's 777, 745, 770, and 772 models, along with dozers, graders, and other essential equipment.

SCMS has worked across nearly all Ma'aden sites, handling everything from exploration and drilling to blasting, crushing, and earthmoving. We have a long-term contract with Ma'aden to provide our mining services for their aluminum projects in Al Baitha mine.

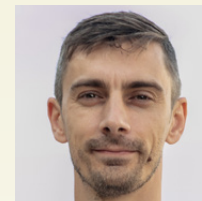
We have partnered with private players too, including Sofreco, Gold and Minerals and AMAK. Currently, we are managing two major projects, offering our mining services at two of AMAK's open-pit gold mines near the southern region.

What are the reasons that KSA's mining sector is booming?

Mining has turned into a core economic pillar, and this shift is reshaping the sector. Saudi Arabia is attracting top-tier companies and service providers from all over the world. With its diverse mineral endowment, the country's vast land has a lot of potential. Each year, you see more investment and a stronger commitment from both local and international players, making Saudi Arabia a really exciting place for mining right now.

Is there room for everyone to succeed in KSA's expanding landscape?

The mining and drilling market in Saudi Arabia has a strong demand for services that outpaces the available supply, creating significant opportunities for new companies to enter. ■



LP



KA

Luca Passone and Khaled Abdelgawad

LP: CEO

KA: COO

FALCONVIZ

How does StockViz work?

KA: This software allows us to work with high-resolution aerial photos captured by our drones. These photos represent mining sites linked to ESNAD; we optimize them for online viewing. Each site is marked by a large yellow polygon representing a mining license. Different licenses belong to other companies or investors, and each license covers one or more stockpiles. For example, one license might include three stockpiles that need to be monitored. When you click on any stockpile, the software shows a 3D model of that stockpile, allowing you to interact with the data. StockViz can create a digital twin of the stockpile that clients can manage and visualize on their desktops. The great thing is we can update this model regularly, weekly, monthly, or even daily. Over time, clients can compare different versions of the stockpile from different dates to track changes.

LP: We also provide a capacity-building program through FalconViz Academy, where we train clients' teams to use our drones and software. Clients can either use the software and handle the scanning and processing themselves or choose to have us manage the entire process.

What is next for FalconViz in mining, and how does it align with Vision 2030?

LP: We are exploring the potential to apply technologies developed for other industries, like health and safety, to the mining sector. For example, we have started using AI on construction sites to detect workers not following safety protocols, such as not wearing helmets or properly fitted vests. We are also looking into solutions for slope analysis and other safety monitoring tools to increase operational efficiency and safety standards on mining sites.

KA: While we have mainly focused on the production phase, we are now looking at how we can use our drone tech in earlier stages, like exploration. ■

Ahlan Wa Sahlan Fi Al-Saudiyyah

Image by NEOM at Unsplash

“Welcome to Saudi Arabia”: Setting up a business

Saying that Saudi Arabia was a closed market for international companies until Vision 2030 began reshaping the national economy and mining sector would be misleading. Many companies featured in this report have been operating in the country long before Vision 2030 was even a concept. However, it is fair to say that Vision 2030, along with all the government incentives to foster greenfield exploration, has placed Saudi Arabia firmly on the radar of the global mining industry.

For instance, in the last six mining tender results announced by the Ministry of Industry and Mineral Resources many foreign junior companies that previously focused on other jurisdictions have now turned their attention to Saudi Arabia and won a tender with a local partner. Examples include Royal Road Minerals, previously in Colombia; Tinka Resources, and Kuya Silver, which have spent years working in Peru.

More recently, in November, the Ministry announced the qualified companies competing for exploration licenses in KSA’s first mineralized belts at the Jabal Sayid and Al Hajar sites. Among the selected qualified bidders are several international companies, including First Quantum Minerals, McEwen Mining and Zijin Mining Group. At the same time, established companies cannot be overlooked. Ma’aden continues to drive its agenda across its different business units, while AMAK has actively participated in these bidding rounds and formalized partnerships with other juniors like Power Metal Resources.

The pipeline of projects, boosted by government incentives, has created a hype, which is already shaping into a mini boom: “I moved here three and a half years ago after spending years working across Africa, where mining is big business, backed by cutting-edge tech and mineral endowment. But here in Saudi, things have taken on a whole new energy, thanks to the government’s Vision 2030 [...] Each year, you see more investment and a stronger commitment from both local and international players, making Saudi Arabia a really exciting place for mining right now,” commented Ahmed AbouZied, the new CEO of Saudi Canadian Mining Services (SCMS), a company that has been active since 1993.

Right now, Saudi Arabia is like honey to bees. However, challenges remain in this process of transformation, and the government is taking steps to ensure that this honey stays within its hive rather than being taken elsewhere.

Business setup and the Saudization process

Each company interviewed for this report had a different market entry approach. While some companies are entirely foreign-owned in exploration, most new entrants to Saudi Arabia establish themselves through consortiums or joint ventures with local partners. For example, ANS Exploration and Greyridge are juniors pursuing a 100%

foreign ownership model. Conversely, Moxico Resources and Gold and Minerals are advancing their projects with local partners. In the equipment sector, most international OEMs collaborate with local distributors, as you will see in detail later.

On the service provider front, while many companies have been operating in the region, primarily from the United Arab Emirates, several have either recently opened offices in Saudi Arabia or are planning to do so. For junior companies, having a local partner is not mandatory. Is it advisable though?

Rémi Piet, co-founder and senior partner at Embellie Advisory, a consultancy specialized in risk assessment and mitigation, suggests it often is: “International mining companies can register in Saudi Arabia and work independently, winning auctions or claiming first come, first served licenses. However, building partnerships with local Saudi consortiums can prove to be a smart move. The future of the Saudi mining development also depends on the participation of more Saudi consortiums and families in the growth of the sector by building value-creating joint ventures with the most innovative and experienced international mining companies.”

For Adam Ginster, founding partner for the Middle East region at Hoffmann Reed, a global executive search and leadership advisory firm, the energy transition and the growing focus on green metals have increased the demand for talent. However, this demand has outpaced supply, creating a talent deficit and posing challenges in building the workforce necessary to achieve decarbonization goals. “This is evident in KSA, especially in mining, where the gap has driven up demand for international executives with extensive global mining experience, particularly in regulatory areas. Since the mining sector in KSA is still developing, having expertise in greenfield and brownfield projects is crucial,” he said.

Talent shortages are a shared challenge in more mature mining jurisdictions. One key difference in Saudi Arabia is that Vision 2030 emphasizes the development of society as a central pillar. A crucial aspect of this vision is Saudization, a government scheme promoting employment opportunities for Saudi nationals, under which companies are required to meet specific quotas for hiring Saudi employees. “From a business standpoint, Saudi Arabia’s approach is practical. By inviting foreign partners to tap into its mineral boom, the Kingdom expects solid returns on its investments in infrastructure and resources. Localization is not just encouraged; it is a critical strategy. This expectation of commitment and integration is natural, as Saudi Arabia aims to ensure that the mining boom benefits the local economy as much as it does international players,” commented Hannes Storch, VP of metals and chemicals processing at Metso. ■



“As the focus shifts toward securing licenses and moving into early-stage development and production, the demand for skills, especially in geology, will continue to grow.”

Adam Ginster

Founding Partner Middle East Africa Region
HOFFMANN REED

What are the areas of Hoffmann Reed’s expertise within the mining and metals sector?

Hoffmann Reed is a global executive search and leadership advisory firm with offices in 17 cities across five continents. We are delighted to announce the opening of our 18th office in Riyadh. Our focus is appointing leadership talent, including chairs, board directors, CEOs, CFOs, other executive committee members and senior management to the mining and metals industry. In addition, we assess and develop talent.

Within the mining sector, we appoint, assess and develop talent throughout the entire value chain. We also conduct board evaluation and remediation, and provide corporate education tailored to organizations to improve their capabilities. To coincide with our launch in the Kingdom, we have designed and built talent assessment and development tools in Arabic, so we are able to support the Kingdom’s 2030 Vision of diversifying the economy and growing its local employment.

Where is the current focus in terms of demand in KSA’s mining industry?

Right now, there is a strong emphasis on exploration projects to scale-up the sector, spurred on by the Ministry of Industry and Mineral Resources offering very attractive initiatives to attract foreign mining houses and in-

vestment as well as streamlining the process for awarding mining rights.

As the focus shifts toward securing licenses and moving into early-stage development and production, the demand for skills, especially in geology, will continue to grow, alongside mine design and construction, noting that many of the mines being developed in KSA are open-pit operations.

How does mining contribute to Saudi Arabia’s broader economic transformation strategy?

Mining is crucial in KSA’s shift from oil and petrochemicals to an industrialized economy. Companies like Ma’aden and its international arm, Manara Minerals, are at the forefront of this transformation. Not only will mining contribute significantly to the Kingdom’s GDP, but moreover the shift to industrialization is anchored in the mining sector’s ability to supply commodities to drive the aerospace, automotive, construction and chemicals sectors, for example.

How is the global push for decarbonization impacting the demand for mining skills, especially in KSA?

There is currently a global supply-deficit of mining skills, which will continue to worsen as we experience growing calls for decarbonization. The supply-deficit of mining skills is made worse by the declining number of graduates entering the field globally.

This is evident in KSA, especially in

mining, where the gap has driven up demand for international executives with extensive global mining experience. Since the mining sector in KSA is still developing, having expertise in greenfield and brownfield projects is crucial.

How are generations changing, and is technology important in recruitment?

Younger generations are definitely reshaping values and expectations regarding work. They prioritize work-life balance, seek purpose in what they do, and are keenly aware of the impact of their roles.

Now, when we look at technology, it helps us find talent around the globe, but our search process follows a detailed 100-step blueprint that blends technology with human insight. While tools like AI and knowledge management systems are crucial for identifying candidates, the human touch is irreplaceable, especially when reaching out to executives and assessing their suitability.

What are Hoffmann Reed’s goals within KSA, and what sets the company apart?

Our goal is clear: to be the number one executive search provider in KSA’s mining and metals sector. Beyond mining and metals, we also specialize in related infrastructure areas such as ports, logistics, rail, power, and water. This holistic approach enables us to support the mining sector and the infrastructure that underpins it.

Establishing a local office in KSA, will help set Hoffmann Reed apart from our competitors, noting our global footprint. Unlike other organizations that fly-in and fly-out, we have made a long-term commitment to the Kingdom and its Vision 2030, an initiative we feel you cannot genuinely advocate for from outside the country. Coupled with our global presence, we are able to tap into talent from anywhere on the globe, ensuring that we do not just find candidates but we appoint world-class talent to the Kingdom. Also, in light of our Arabic assessment and development tools, we can nurture and develop Saudi talent in the mining and metals sector in the Kingdom and across the Middle East region. ■



Rémi Piet
Co-Founder and Senior Partner
EMBELLIE ADVISORY

“ We act as a bridge between the Ministry of Industry and Mineral Resources and global companies looking to engage with the country’s mining and processing sectors. ”

Can you give us a brief overview of Embellie Advisory? Embellie Advisory was founded nearly 15 years ago in the Arab Gulf, focusing on supporting regional Sovereign Wealth Funds and family offices’ investments. We specialize in assessing and mitigating above-the-ground risks, particularly in the energy transition and critical minerals sectors, through local partnerships and comprehensive ESG strategies.

In recent years, we have had the honor of supporting the Saudi Ministry of Industry and Mineral Resources, contributing to the country’s global mining and mineral processing strategy.

How is Embellie helping build a sustainable mining and processing jurisdiction with the Ministry of Industry and Mineral Resources?

We act as a bridge between the Ministry and global companies looking to engage with the country’s mining and processing sectors. Our role is to help both sides understand how to partner effectively. We assist the Ministry in identifying the companies with the best track record and experience while we guide investors, mining companies, and service providers in understanding how to navigate Saudi Arabia’s business and regulatory environments. We have helped several companies to set up operations in Saudi Arabia and find local partners, successfully participate in license bids, and grow their operations in the Kingdom. In parallel, we have supported the Ministry’s promotion effort across the Americas, Africa, Europe, Central Asia, and as far as Australia. We also built a strong expertise in sustainable mining practices that we help translate into local regulations and in existing exploration and processing operations, advising mining companies on their social and environmental impact management programs.

How would you assess the Saudi mining industry, and where do you see room for improvement?

Saudi Arabia is the last largely untapped mining region, with huge potential. The commitment of the government to support the development of sustainable mining operations as part of Vision 2030 and beyond is clear, as the sector holds strong capacities to support the Kingdom’s economic diversification efforts and geopolitical aspirations.

Many mining projects are still, however, in the early stages of development, and a lot of groundwork is need-

ed. Yet, the Saudi government has demonstrated a strong commitment to supporting junior explorers and mining operators, fast-tracking permitting, and providing a large range of financial incentives. These include hefty grants to pay for early exploration work as well as covering a large part of Saudi nationals’ and expats’ salaries to boost job creation. Another key sign of the strong governmental support is the fact that competitive mining royalties nourish a Mining Fund that will finance new incentives for operators and junior miners.

The ministry’s decision to dedicate a sizeable part of the mining license bid evaluation to the quality of social and environmental impact management programs is a clear signal that mining companies need to adopt the most ambitious ESG practices. This forward-thinking approach and the encouragement to involve local communities in the diversified development of mining territories reduces the risk of opposition to mining operations witnessed in most mature mining jurisdictions globally, where failure to secure a lasting social license to operate has hampered mining development and scared away investors.

What advice would you give to foreign companies looking to KSA?

International mining companies can register in Saudi Arabia and work independently, winning auctions or claiming first come, first served licenses. However, building partnerships with local Saudi consortiums can prove to be a smart move.

What role do you see Saudi Arabia playing in the energy transition?

Saudi Arabia’s role in the energy transition is not limited to the mining of critical minerals but also includes the development of a comprehensive hub for mineral processing. Through the building of smelting and transformation capacities to supply global markets, the country is on its way to becoming a central economic and geopolitical actor in the global mineral processing chains.

With its competitive energy prices, business-friendly regulations, and strategic location, Saudi Arabia is positioning itself as a key player in energy transition and global mineral security. The Kingdom already made strong moves, with partnerships to process minerals from the mega region and ambitious plans to produce EV batteries. ■



Engineering

Image courtesy of Tesmec

Mansourah-Massarrah: The gold flagship

At the end of 2023, Ma’aden’s newest and most ambitious gold mine, Mansourah-Massarrah, was commissioned. Within months, it is expected to reach full capacity and claim its place as KSA’s largest gold mine, also contributing to Ma’aden’s biggest gold output.

Mansourah-Massarrah is more than just another mine (actually, they are two different mines). For Saudi Arabia, it is a symbol of progress and sophistication due to its rapid construction. For some engineering firms, it became a platform to showcase their technological capabilities and deepen their partnership with Ma’aden; for others, it served as the vessel to establish a foothold in the country. For Global Business Reports, it served as a case study to understand local dynamics and as a focal point for connecting the dots across the industry.

In April 2019, Ma’aden Base Metals and New Minerals Company (BMNM) awarded the EPC contract to an international consortium comprising of Finland’s Metso Outotec (today Metso) and India’s Larsen & Toubro (L&T) for SAR 2,272.5 million (around US\$606 million). Metso provided the gold extraction and beneficiation technology, while L&T oversaw the EPC construction, including end-to-end engineering, plant design and commissioning.

Dip Kishore Sen, ECOM member & advisor to CMD development projects & metals & minerals at L&T, highlighted the project’s importance: “We ensured the project’s smooth execution by mobilizing the requisite Plant & Machinery, large workforce, and very experienced engineering team handling all execution and technical challenges. Today, Mansourah-Massarrah is a flagship project in Saudi Arabia.”

EPC contracts account for 65% of L&T’s operations, with a big portion coming from overseas, particularly from KSA through projects like Mansourah-Massarrah.

Mansourah-Massarrah’s sophistication and size spilled over and translated into opportunities for other companies. Smaller firms like Istanbul-based Tomarok Engineering also found a platform for growth and to make themselves a place in KSA’s market. After collaborating with Metso and Bechtel in Abu Dhabi, Tomarok secured its place in the project. “We have established ourselves as a valuable solution partner in the mining sector, working closely with major players like Metso Outotec since 2010. While companies like Ma’aden, Bechtel and Sandvik are industry giants, we focus on niche tasks and

specialized expertise,” said Mehmetcan Akyüz, founder and managing director of Tomarok Engineering.

Tomarok started with engineering support before transitioning to on-site work under Metso. The company’s responsibilities included construction supervision, cold commissioning and hot commissioning, transitioning the project from its CapEx phase to its OpEx phase in 2024.

“Being on-site for those years offered valuable insights and connections, such as working closely with Ma’aden, a major mining company, and collaborating with Bechtel, the PMC, for the project. Witnessing firsthand the rise of investments and meeting key industry players emphasized the potential of the Saudi market. This experience opened doors and secured an extension of the maintenance contract through Metso for two additional years, keeping our team engaged at Mansourah-Massarrah’s gold plant,” reflected Akyüz when interviewed by GBR.

DRA’s entry into KSA predates the Mansourah-Massarrah project. The company’s debut in the country is also linked to Ma’aden, though through the Ad Duwayhi gold plant, the largest at the time, according to Rashid Kader, EVP operations for the EMEA region and president for Saudi Arabia.

Kader explained that the plant, originally built by another engineering company, failed to meet its design targets. Rather than focusing on past shortcomings, the company rolled up its sleeves and worked closely with Ma’aden to modify and optimize the plant. “Within a year or two, we had it running above its nameplate capacity, and it became a flagship operation for Ma’aden. Even now, the plant remains a major part of their gold production commitment. The fact that this project has been running for close to 10 years speaks for itself,” Kader added.

While Ma’aden’s projects dominate the attention of many engineering firms, Saudi Arabia’s mining landscape is expanding. Recent developments like AMAK’s Moyoath orebody, the Guyan gold mine, and future projects such as the Khnaiguiyah zinc-copper project—a collaboration between Mexico and Ajan Bros—demonstrate the kingdom’s growing ambitions in the sector. “We completed a successful project with AMAK, where SENET was engaged as the EPCM partner and undertook




OUR ASPIRATION: TURNING THE FUTURE OF MINING INTO A REALITY

DRA Global Limited (DRA or the Group) is an international multi-disciplinary engineering, project delivery and operations management group, predominantly focused on the mining, minerals and metals industry.

The Group has an extensive track record spanning four decades across a wide range of commodities. Thousands of projects, studies and managed services solutions have been delivered through DRA's projects business, and its operations and maintenance division, Minopex, currently operates more than a dozen sites.

DRA's teams have deep expertise in the mining, minerals and metals processing industries, as well as related non-process infrastructure such as, water, and energy solutions. The Group delivers comprehensive advisory, engineering and project delivery services throughout the capital project lifecycle, from concept through to operational readiness and commissioning as well as ongoing operations, maintenance and engineering services; all with a focus on sustainability and assisting clients to achieve their ESG goals.

DRA covers all major mining centres with offices across Africa and the Middle East, North and South America, and Asia-Pacific.

Visit www.draglobal.com

the construction on a self-perform basis, working closely with the client to ensure quality delivery. The project is now fully commissioned and operating well. Another exciting project is with Moxico and Ajlan through SEN-ET, where we are updating their BFS for the project and planning to move into the EPCM phase in early 2025," concluded Kader.

Desert drama: tailings, tech, and millions saved

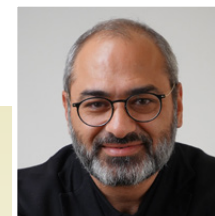
For Australian-based ATC Williams, their journey with Ma'aden's Mansourah-Massarrah started back in 2017, as Arash Roshdieh, international operations manager and senior principal engineering, told GBR: "The Mansourah-Massarrah project began in 2017 when an EPC contractor approached us to review and complete the initial design for a central thickened discharge system. ATC Williams reviewed the initial design and made improvements. Although we usually prefer to work directly with mining companies, we accepted this project because the Central Thickened Discharge (CTD) scheme is an area where we believe we can contribute significantly. We reworked the entire design, completed the detailed planning, and broadly oversaw the construction of Stage One, which proceeded smoothly."

Roshdieh highlighted how the CTD reduced water loss through evaporation compared to conventional methods and that this success has led to a second project with Ma'aden, for which they recently submitted a proposal, recommending switching to a CTD system to reduce costs: "We confirmed that switching to this method would save the client tens of millions of dollars over the project's lifetime," added Roshdieh.

The Australian-based company is now exploring a new frontier in tailings technology, 'Ultra Paste', a hybrid of thickening and filtration. While not yet applied in any projects, Roshdieh commented on its benefits, particularly in water-scarce regions like KSA: "High-end technologies prove particularly useful in places like Saudi Arabia, where the high cost of water makes advanced dewatering solutions more feasible and appealing," he concluded.

In 2023, MGBM awarded a SAR 105 million (US\$18 million) EPC contract to the consortium of Darkstone Arabia and ATC Williams for the development of Phase Two of the Mansourah-Massarrah project, which involved the installation of tailings storage facilities and wastewater management systems. "The TSF spans 2.5 million m², making it the largest of its kind in Saudi Arabia. Managing earthworks, lining, mechanical, and air systems on such a scale required meticulous planning. Completing it within five months is a remarkable achievement and reflects our high standards for project execution," commented Haytham Ahmad, CEO at Darkstone.

Now, both companies are working on Phase 3: "we are set to start the Stage 3 ramp and distribution system upgrades in November 2024," added Ahmad, who also commented that Darkstone has an EPC contract at Al Jalamid Phosphate mine from Ma'aden.



Moath Al Rawi, CEO
ARGAS

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Investors and customers demand more in less time. Mining companies face expertise gaps and logistical challenges, struggling with fragmented services that cost extra time and money. An integrated solution is the answer to the future demand.

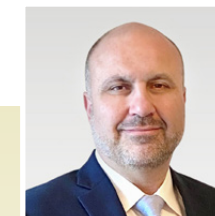
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Sweating gold and aluminum

When L&T took charge of the EPC aspects of Mansourah-Massarrah, they tasked Wärtsilä to supply engineering, equipment and technical advisory services for a 58 MW hybrid power plant at the site. Speaking from the company's UAE branch, Alexandre Eykerman, Wärtsilä's energy business director for the Middle East and managing director for the UAE, explained that the company provided a hybrid power plant equipped with a 32TS engine, allowing the integration of PV solar power: "The challenge with this project was to supply reliable and sustainable power to the mine and ensure maximized use of solar energy without risking any loss in performance. The mine is located in a remote region where temperatures can reach up to 55°C. The project needed a long-term infrastructure investment instead of just renting smaller, temporary power generation units. Ma'aden was looking for a power generation system that could last and keep up with the gold mine's 12-year production cycle," shared Eykerman.

Incorporating sustainable energy solutions into energy-intensive sectors like mining remains a global challenge. On one side lies the capital factor; on the other, the inherent intermittency of renewable sources. Wärtsilä's engines provided stability by managing fluctuations in solar generation, ensuring a reliable and consistent energy supply.

On the economic side, Eykerman acknowledged that while the upfront costs for renewable energy integration are higher, the long-term benefits far surpass them: "Solar power, for example, can significantly cut down fuel costs, which make up a big share of operational ex-



Anas Al Kassem, Managing Director
Middle East
STANTEC

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KSA boasts a diverse mineral endowment —such as gold, phosphate, and rare earths—and promotes foreign investment through supportive policies. Yet, challenges remain, such as the need for comprehensive geological mapping, addressing environmental impacts, and building a skilled workforce.

”

penses. This makes the mining operations more cost-effective and sustainable in the long run," he concluded.

"When it comes to climate change, the elephant in the room is actually heat. Heat accounts for more than 50% of global energy use," remarked Rod MacGregor, CEO of GlassPoint.

GlassPoint, specialized in using sunlight to generate heat, recently announced an agreement with Ma'aden to develop what MacGregor called the "world's largest industrial process heat system." This ambitious project for Ma'aden's alumina-bauxite complex will involve a 1,500-megawatt solar heat system valued at US\$1.5 billion. By providing steam to power the refinery, they want to decarbonize its operations.

When asked about the costs of renewable sources, MacGregor emphasized the cost advantage of directly generating heat instead of relying on electricity from solar photovoltaic systems, which can triple the costs in industrial settings: "We concentrate sunlight to create heat. In our case, we use giant mirrors, each about six meters across. They focus sunlight onto a pipe; the pipe becomes 450 °C hot, and we flow a liquid salt through that pipe. When the salt heats up, we store it in a tank for use day and night. We then remove the salt from the tank and put it through a heat exchanger to make steam. The salt then goes back into a cold tank to go through the solar array again the next day. It is a very simple process and very inexpensive," he explained.

The project is expected to start construction by 2026 and aims to cut around 600,000 t/y of CO₂ emissions, making a major step toward more sustainable industrial practices. ■



Rashid Kader

EVP Operations - EMEA Region and President Saudi Arabia
DRA GLOBAL

“ We have opened our analytical laboratory division, QLS, in Riyadh in 2024 to provide a variety of services including sample analysis, metallurgical testwork and water analysis for exploration and process plant samples across various commodities. ”

How was DRA's entry into Saudi Arabia?

We first started working in Saudi Arabia around 2012 with Ma'aden. We were awarded the outsourced operation for Ma'aden's Ad Duwayhi gold plant, which was their largest at the time. Within a year or two, we had it running above its nameplate capacity, and it became a flagship operation for Ma'aden. Even now, the plant remains a major part of their gold production commitment.

How important was DRA's success at Ad Duwayhi for its growth in the country?

The success led us to take on new challenges, including operating the Mansourah-Massarrah power plant, which generates both crude oil and PV power. A few years ago, we also launched an in-country project's division, starting with a study for Ma'aden's Ar Rjum project, which is likely to be developed soon. We are also currently involved in another critical minerals project for Ma'aden, which is going through various study phases. Over time, we have grown our client base, working with companies like Gold and Minerals, AMAK Mining, Moxico Ajlan & Bros Mining, and provided services for the Saudi Geological Society (SGS) on exploration and geo-sampling. We have opened our analytical laboratory division, QLS, in Riyadh in 2024 to provide a variety of services including sample analysis, metallurgical testwork and water analysis for exploration and process plant samples across various commodities.

In the last 10 years, we have experienced incredible growth. We officially registered as a local foreign entity in Saudi Arabia nearly a decade ago, and since then, we have focused heavily on localization, training Saudi staff, and partnering with local colleges to create sustainable growth within the kingdom. Just in 2024, we opened our regional headquarters in Riyadh, which now serves as a hub for the entire MENA region and Europe.

How do you see DRA's role evolving along with Vision 2030?

With operations across Canada, the US, Australia, and Africa, we have become a key link for international clients wanting to expand into Saudi Arabia. We help them navigate the local landscape, using our strong connections with ministries to assist with funding, licensing, and other needs. We see that Saudi Arabia's Vision 2030

is not just about mining minerals but also about sustaining that wealth by developing industries like refining and chemicals. The goal is to process and sell finished products within the kingdom, rather than exporting raw materials as has been the tradition.

In addition to gold, we are involved in base metals like zinc and copper, industrial minerals (e.g. phosphate), manganese, rare earths and hydrometallurgical operations in Saudi Arabia.

Can you share insights on your work on the Mo'ayath project with AMAK and your collaboration with Moxico Resources?

We completed a successful project with AMAK, where SENET was engaged as the Engineering, Procurement, Construction Management (EPCM) partner and undertook the construction on a self-perform basis, working closely with the client to ensure quality delivery. The project is now fully commissioned and operating well.

Another exciting project is with Moxico Ajlan through SENET, namely the Khnaiguiyah zinc-copper project. We are working with Moxico Ajlan & Bros Mining on updating their BFS for the project and planning to move into the EPCM phase in early 2025. This is a significant milestone for DRA, and to support these projects, we are expanding our project office in Riyadh, bringing in expertise from our Perth, Canada, and Africa offices.

What final message would you share with those interested in Saudi Arabia and DRA's services?

Unlike many newcomers, we bring valuable expertise and digital technology, which sets us apart. We have 40 years of experience and IP to create value for our clients more efficiently, closing the gap between mistakes and successes. What makes us different is our ability to help clients meet their commitments in the quickest possible time, even in the face of challenges. Many companies fail within the first year of operation because they do not capture the value early enough, but we have developed operational readiness plans and platforms that help overcome these hurdles and secure long-term success. We are fully invested in Saudi Arabia's future and committed to supporting the Kingdom's Vision 2030. We are excited to be part of Saudi Arabia's mining and industrial transformation. ■



Dip Kishore Sen

Director, Senior Vice President and Head - Infrastructure
LARSEN & TOUBRO

“ With an extensive inventory of equipment in the Gulf and a highly skilled workforce ready to be deployed, we can meet the fast-paced demands of Saudi Arabia's ambitious industrial growth. ”

What role does Saudi Arabia play in Larsen & Toubro's (L&T) international business operations?

L&T's work in Saudi Arabia goes back four decades, beginning with small projects and gradually expanding. Today, we operate large offices in Riyadh and Al Khobar alongside a manufacturing facility specializing in hydrocarbons and heavy-wall pressure vessels in Jubail.

The EPC contracts business accounts for 65% of operations, covering hydrocarbon, solar energy, power transmission, infrastructure, water and mining & metals projects, etc. A large portion of the overseas EPC contracts come from Saudi Arabia, where we have completed projects like the Riyadh Metro and the Mansourah-Massarrah gold plant.

How did L&T and Metso collaborate to ensure the success of the Mansourah-Massarrah gold plant?

Metso provided the gold extraction and beneficiation technology, while we contributed with our expertise in EPC construction, handling end-to-end engineering, plant design, and commissioning. We ensured the project's smooth execution by mobilizing the requisite plant & machinery, large workforce and very experienced engineering team handling all execution and technical challenges. Today, Mansourah-Massarrah is a flagship project in Saudi Arabia. This project has strengthened our reputation in

KSA and positioned us to leverage new opportunities in the region's mineral-rich landscape.

What key advantages does L&T's product portfolio offer for mining and material handling projects?

Our capabilities extend to a complete end-to-end EPC approach and a robust product portfolio, including crushers, surface miners, wagon tippers, and reclaimers. What sets L&T apart is our ability to deliver projects on time while offering comprehensive solutions. With an extensive inventory of equipment in the Gulf and a highly skilled workforce ready to be deployed, we can meet the fast-paced demands of Saudi Arabia's ambitious industrial growth.

What are the main challenges posed by Saudization requirements for large-scale projects?

Strict Saudization requirements present challenges, particularly for such multi-billion-dollar projects requiring significant manpower and specialized resources. KSA's limited local production capacity and workforce availability often necessitates sourcing labor and materials from other countries posing challenges to comply with localization requirements. The metals and minerals sector is expected to grow from US\$17 billion to US\$75 billion by 2030. That is a massive jump, and to keep up the target of a US\$12 billion addition to the program will be challenging, with such stringent regulations.

Given the region's current developments, how open is KSA's market to new players?

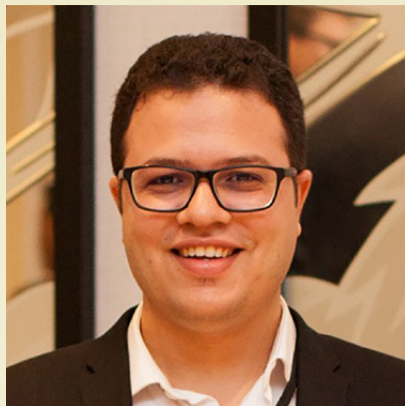
There is plenty of room for everyone, especially with the way things are shaping up in the region right now. The GCC has a lot to offer, but Saudi Arabia is where the spotlight really is now. With limited opportunity in the rest of the GCC except for UAE, KSA is the only place where the most ambitious projects are happening. Over the next couple of years, the country plans to invest at least US\$100 billion in various sectors in its broader strategy to reduce reliance on oil and diversify its economy.

Having said that, the bar is set high for those looking to establish themselves in KSA. Success requires exceptional quality, strict safety standards, and the ability to scale operations to meet demanding project requirements. Commitment to contractual timelines is non-negotiable. Delivering top-notch quality and reliability will be essential to success in this competitive and fast-evolving market.

How does Saudi Arabia's Vision 2030 align with L&T's expertise in metals and minerals?

KSA's mineral endowment, including gold, copper, phosphate and new age metals is estimated to be US\$2.5 trillion. With more than four decades of experience in building metal and mineral process plants in India, L&T is well-prepared to partner KSA's ambitious Vision 2030 goals, which include generating US\$75 billion in GDP from metals and minerals.

We have an estimation of US\$11.5 billion worth of prospects over the next two to three years in KSA. A significant portion of that, around US\$6.3 billion, comes from Ma'aden, mainly focused on phosphate, aluminum and gold. We have been following Ma'aden's ambitious phosphate project prospect, having concluded several discussions with them. Additionally, Aramco is exploring steel plant projects worth US\$1.7 billion, and there are also promising opportunities with EV-related projects. With Saudi Arabia's fast industrialization and our proven capabilities, we are confident that L&T will play a significant role in the region's growth story over the coming years. ■



Haytham Ahmad

CEO
DARKSTONE ARABIA



This is a prime time for businesses to engage and capitalize on Saudi Arabia's thriving mining industry and establish a solid foothold in the region.



What are Darkstone Arabia's main business units?

Darkstone Arabia offers integrated mining services and industrial solutions throughout Saudi Arabia, with a primary focus on the gold, copper, phosphate, and cement sectors. Our comprehensive suite of services spans geological exploration, drilling operations, engineering, and processing, structured across four key divisions. Our Geological Services division handles exploration, RC and DD drilling, geotechnical monitoring, geological studies, and resource modeling. In Industrial Operations and Maintenance, specialized mechanical and electrical teams ensure optimal plant performance. Our Industrial Construction division oversees large-scale infrastructure projects across various industries, while the Solar Division concentrates on renewable energy solutions, particularly solar construction, to advance sustainable energy transitions.

What milestones did you achieve at Ma'aden's Mansourah-Massarrah gold mine – TSF Project?

Our team accomplished a notable milestone at Ma'aden's Mansourah-Massarrah gold mine with the (TSF) project, valued at SAR 105 million. This expansive project, completed six months ahead of schedule, demonstrates our efficiency and commitment to client timelines. Partnering with engineering consultant ATC Williams, Darkstone oversaw procurement, construction, and implementation.

The TSF spans 2.5 million m², making it the largest of its kind in Saudi Arabia. Managing earthworks, lining, mechanical, and air systems on such a scale required meticulous planning. Completing it within five months is a remarkable achievement and reflects our high standards for project execution.

What upcoming projects are you pursuing with Ma'aden and other partners?

Currently, we are set to begin an EPC project at Al Jalamid phosphate mine for CV 13,16 upgrades. Additionally, we are preparing for the commissioning of the Sa'ad solar power station, a 330 MW project in Riyadh.

At Mansourah-Massarrah, we are set to start the Stage Three ramp and distribution system upgrades in November 2024.

We are also collaborating with SRK Consulting on Ma'aden's Phosphate 3 tender, which focuses on geological and technical services.

Other active projects include an EPC for the power connection at the Al-Zabira aluminum project, in addition to our daily geotechnical monitoring and hydrology data collection at Ma'aden's gold mines.

At Yamama Cement, we are handling shutdown maintenance and mechanical repairs, as well as mill relining for MWSPC, ensuring uninterrupted plant maintenance and operations.

What are the key benefits of integrating solar energy into mining operations?

Sustainability is a core principle at Darkstone. We recently secured a Solar construction contract for a 330 MW solar PV at Sa'ad near Riyadh. By integrating solar energy across our services, we aim to be an integral part of Saudi Arabia's sustainable initiatives.

What are some of Darkstone's technology and new operations goals?

Our focus is on enhancing safety and efficiency through advanced monitoring technologies, including drone airborne surveys. Collaborating with innovative partners allows us to bring global expertise to the Saudi market, advancing the local mining sector.

We are also exploring further expansions in cement and mining, targeting prominent projects such as the Ar Rjum gold mine, one of Saudi Arabia's largest gold reserves.

Do you have a final message for international investors and companies regarding Saudi Arabia?

Saudi Arabia offers one of the most dynamic and secure markets globally, presenting unprecedented opportunities for investment and collaboration. In line with Vision 2030, the government supports innovative approaches and advanced mining technologies. Events like the FMF foster collaboration between international firms and local contractors, strengthening the sector.

This is a prime time for businesses to engage and capitalize on Saudi Arabia's thriving mining industry and establish a solid foothold in the region. ■



Sh. Rasheed A. Al Rushaid

CEO
AL-RUSHAID GROUP

How is the Al-Rushaid Group involved in the mining industry?

Al-Rushaid Group has strategically expanded into the mining sector, aligning with Saudi Arabia's Vision 2030 objectives. In 2012, the group partnered with Jac Rijk BV to establish Jac Rijk Al-Rushaid, a company specializing in mining and infrastructure services within the Kingdom. This joint venture offers comprehensive surface mining solutions.

In 2021, Jac Rijk Al-Rushaid secured a significant contract with Ma'aden to provide operational mining services at the Mansourah & Massarah gold mines, Ma'aden's largest gold project to date. This contract encompasses drilling, scaling, loading, hauling, re-handling, ore control, and dewatering operations, highlighting the group's active role in advancing Saudi Arabia's mining industry.

Furthermore, in February 2023, Al-Rushaid Group signed partnership agreements with four international firms specializing in mining services, drilling technology solutions, industrial auctions, and geotechnical solutions at the African mining conference "Indaba" in Cape Town. These collaborations aim to strengthen Saudi Arabia's domestic mining sector by empowering local cadres and bringing international technical expertise to the Kingdom.

This is evidenced by the MOU signed with the Colorado School of Mines in September 2024 to drive sustainable development and technology advancement in the mining sector of Saudi Arabia.

Do you have a final message for GBR's international audience?

Al-Rushaid Group is committed to developing and nurturing worldwide partnerships for innovative and sustainable growth within the mining sector. In support of Saudi Arabia's Vision 2030, the Group is committed to the diversification of the economy and the creation of a dynamic workforce. We invite all international stakeholders to join us in unlocking the full potential of the mining sector for the benefit of the Kingdom and beyond. ■



Mehmetcan Akyüz

Founder and Managing Director
TOMAROK ENGINEERING

What is Tomarok's presence, and what are some of its partnerships?

Tomarok specializes in engineering, electrical instrumentation, automation services, and maintenance. We work closely with international partners like ABB, Yokogawa, Siemens, Arenal, and Sensoteq, reselling their products for automation, instrumentation, and electrical needs.

What was the rationale behind opening a new branch in Al Khobar?

We saw the significant push by Saudi Arabia toward expanding its mining sector and diversifying its economy as part of Vision 2030, moving beyond oil and gas. In this context, we secured a significant project in late 2019: the Mansourah-Massarrah gold mine project plant in the Taif region. We partnered with Metso for this and were actively involved when the project transitioned from its CapEx phase to its OpEx phase in 2024.

Being on-site for those years offered valuable insights and connections, such as working closely with Ma'aden and collaborating with Bechtel, the PMC for the project. Witnessing firsthand the rise of investments and meeting key industry players emphasized the potential of the Saudi market. This experience opened doors and secured an extension of the maintenance contract through Metso for two additional years, keeping our team engaged at Mansourah-Massarrah's gold plant.

Can you speak of other projects on your radar?

One of the projects on our radar is Ma'aden's Phosphate 3 project, which is the industry's "jackpot" due to its value and scale. While major construction packages worth billions have already been awarded, we have finalized our registration with vendor databases for companies like Ma'aden, SABIC, and Aramco. Completing them would allow us to work as a sub-vendor for construction companies or EPCs. Another promising project is the Ar Rjum gold plant near Mansourah-Massarrah, now in the engineering phase with Bechtel.

Additionally, we are part of a project led by the Australian EV Metals Group, which is developing a lithium cathode active material plant in Yanbu. ■



Arash Roshdieh

International Operations Manager and Senior Principal Engineer
ATC WILLIAMS

What is ATC Williams' expertise in mining, and how long has it been operating in KSA?

Our core expertise is in managing tailings, water and waste, each being a critical part of our work.

One major jurisdiction of growth for us has been in Saudi Arabia, mainly through our partnership with Ma'aden since 2017. This collaboration aligns with our commitment to sustainable practices, as Ma'aden adopts the Global Industry Standard on Tailings Management (GISTM). With them, we have introduced a pioneering central thickened discharge scheme, which we are proud to have presented at a recent industry conference, positioning us at the forefront of thickened tailings technology.

What makes KSA more open to adopting new technology?

Saudi Arabia's mining industry is still in its early stages, which opens up opportunities to introduce innovative technologies that might not be as readily accepted in more established mining jurisdictions. Additionally, Saudis have a different, more open culture to adopt-

ing cutting-edge solutions. They have a strong desire to lead in certain areas, making it easier to bring in fresh ideas. However, they approach these innovations carefully, especially companies like Ma'aden, who ensure each technology is thoroughly tested to avoid unnecessary risks.

A key factor driving the adoption of new mining technologies in Saudi Arabia is water scarcity. Unlike countries where water is abundant, Saudi Arabia's limited water resources make advanced, often costly, water-conserving technologies more viable.

What does ATC Williams have in the pipeline for KSA?

With Mansourah-Massarrah Stage Two complete, we are designing Stage Three and providing technical support during operations. The project was initially planned for a conventional tailings management approach, but during a site visit, we suggested that a central thickened discharge system could yield significant savings. We are also actively working to work on other Ma'aden projects and other mining companies in the KSA. ■



Alexandre Eykerman

Energy Business Director, Middle East & Managing Director
WÄRTSILÄ UAE

What is Wärtsilä's total energy generation capacity in KSA?

In Saudi Arabia alone, which is one of the few countries where Wärtsilä delivers EPC projects, we have an installed base of around 2 GW, with a significant portion serving industries like mining.

How has Wärtsilä helped optimize power generation in Ma'aden's Mansourah-Massarrah gold project?

We worked closely with Ma'aden to design a system that could optimize solar energy during peak sun hours, despite limited land and capacity. Our engines ensured that the system could handle any fluctuations in solar power generation, providing backup when needed for a consistent, uninterrupted energy supply to the mining operations. This project stands out due to the exceptional performance of Wärtsilä 32TS engine.

While the project is still in the early stages, we are already seeing solid results. With 97% availability so far, we are confident that this solution will continue delivering reliable, efficient power as the mine becomes fully operative.

What exciting projects or developments do you have in the pipeline for Saudi Arabia?

While the momentum for Saudi Vision 2030 is growing, some of the larger, iconic projects like NEOM and Amaala are progressing at a slower pace than expected. However, we are optimistic about the long-term opportunities in Saudi Arabia, especially as more industries, including mining, integrate renewable energy solutions into their feasibility studies. We are seeing a growing awareness of the benefits of hybrid energy systems, and our experience in markets like Africa and Australia shows that they are not only possible but highly effective.

How do you see the future of Wärtsilä Energy in Saudi Arabia?

We are fully committed to supporting Saudi Arabia's Vision 2030, especially with the shift toward more sustainable energy. Our technology is future-proof and ready to run on sustainable fuels, so as Saudi moves toward greener options, we are right there with them. ■



Roy Dabbous

Regional Director - Middle East
HATCH

Can you tell us about Hatch's history and presence in the Middle East?

For over 30 years, Hatch has been deeply rooted in Saudi Arabia and the broader Middle East. We have worked closely with Ma'aden—Saudi Arabia's leading mining company—right from its early days, helping to deliver some of the nation's first gold projects.

Today, most of our work in Saudi Arabia is focused on mining and metals, with key partnerships across major players like Ma'aden, the Public Investment Fund (PIF), and the Ministry of Industry and Mineral Resources.

What opportunities do you see in Saudi Arabia's mining sector?

The new mining law and the government's efforts to create an attractive business environment have made the country a magnet for some of the world's best innovations and operators, bringing a lot of cutting-edge thinking to the table. As more of these advanced operators move into Saudi Arabia, they will bring valuable know-how and innovation, bridging

the gap between Saudi Arabia and more developed mining regions.

What key challenges should new mining companies be aware of if they are looking to enter the market?

The biggest challenge for new mining companies looking to enter Saudi Arabia is the availability and cost of contractors. With so many infrastructure and giga-projects happening in the country, many contractors are already booked, making it tough to find the right people.

Hatch has been in Saudi for a long time, so we know the local market and the established contractors. We have also helped bring in external contractors and get them up to speed with the Saudi market. But even with that, finding qualified contractors for complex mining projects is still a big challenge. To manage that, solid engineering is key. When the contractor pool shrinks, you want to make sure your engineering is rock solid, with everything from material quantities to project specs clearly defined upfront. ■



Rod MacGregor

CEO
GLASSPOINT

How do you deliver solar process steam in commercial quantities?

We concentrate sunlight to create heat. In our case, we use giant mirrors, each about six meters across. They focus sunlight onto a pipe; the pipe becomes 450 °C hot and we flow a liquid salt through that pipe. When the salt heats up, we store it in a giant hot tank and then put it through a heat exchanger to make steam. The salt then goes back into a cold tank to go through the solar array again the next day, which lets us deliver solar steam, both day and night. It is a very simple process, very inexpensive.

When did you start being active in Saudi Arabia?

We recently announced a deal with Ma'aden, the mining champion in Saudi Arabia, for what will be the world's largest solar industrial heat system. It is 1,500 megawatts and a U\$1.5 billion CapEx project. It will provide Ma'aden with steam to help them decarbonize their bauxite refinery. The project with Ma'aden will be our first in the kingdom. We hope it is the first of many to come afterwards.

Construction starts in 2026 with a technology showcase plant, demonstrating our system at 1% of Ma'aden's steam use. This transitions into the main project in 2027.

What is the importance of Saudi Arabia to the company?

Together with the Ministry of Investment of Saudi Arabia and the Global Supply Chain Initiative, we have selected Saudi Arabia as our regional manufacturing hub. Saudi is the obvious choice; It is the largest economy in the region, but also its strategic location on the Red Sea lets us easily ship to Europe, North Africa, and the wider Gulf region. The factory we will create with the Ministry of Investment is a high-tech manufacturing facility, and it will supply the local Saudi Arabian market, and create over 200 green jobs. ■

Blasting Services

A boom in memorandums

It is not surprising that the blasting and explosives sector is as consolidated as the production segment in the mining industry. The Kingdom of Saudi Arabia has two local companies specialized in explosives production: Modern Chemicals and Services Company (MCS) and Saudi Chemical Company Holding. However, between these two local players, an international company, Orica, is crafting its strategy to establish itself in this market.

MCS was established in 2009 as a joint venture between the French EPC Group and Modern Chemical Company (MCC) under the Modern Industrial Investment Holding Group. Since then, the company has expanded its regional production facilities. "We provide solutions that exceed expectations. A prime example is our pioneering use of bulk emulsion technology. MCS was the first company to introduce and be authorized to use this technology, transforming the industry by reducing mining costs and significantly enhancing safety, particularly in tunneling," commented Abdulaziz Barakat Al-Hamwah, CEO of MCS. According to Fahad Abdulaziz Al-Hamwah, chief administration officer of the company, this regional footprint

has enabled them to stay close to their mining clients, reducing logistical challenges and transportation costs. Through its technology arm, Orica Digital Solutions, Orica announced in September 2024 that it had signed a Memorandum of Understanding (MoU) with MCC to introduce cutting-edge digital solutions.

This partnership aims to equip the growing sector with data-driven insights and optimized decision-making across the entire value chain. "It is a big step for us in supporting Vision 2030. We see it as an exciting opportunity to bring our technology and expertise into the country at a time when there is a real push to improve productivity and sustainability in mining. MCC has been a key player in Saudi mining for years, and when we started talking, they made it clear they wanted to bring in Orica's digital solution to help shape the future of mining here," commented Víctor Morales Baeza, vice president representing Orica Europe, Middle East and Africa (EMEA).

With partnerships such as the one with MCS, Orica aims to make Saudi Arabia a flagship for its technology. "KSA is at the center of a vast area that includes Africa, the Middle East, India, and Central Asia, holding 40% of the public world population. This super region is investing massively in sustainable mining and in critical minerals for the green transition. We want Saudi Arabia to be a model for how Orica can support sustainable mining development across this Super Region and become the partner of choice for value generation," Baeza added.

According to Abdullah Alzaedi, CEO of the Explosives Sector at Saudi Chemical Company Holding, both companies have been working together at the Ma'aden-Barrick mine in Western Saudi Arabia: "We aim to conduct an initial trial in November 2024, and if successful, it could serve as a model for other mines facing similar challenges," he added.

Saudi Chemical Company has two subsidiaries: Saudi Chemical Company Limited (SCCL) and Suez International Nitrate Company (SINCO, in Egypt) and, overall, they have a production capacity of more than 120,000 t/y of explosives and also manufacture over 10 million units of non-electric detonators. "Over the past five decades, SCCL has expanded its footprint with three state-of-the-art production facilities for civil explosives across the kingdom. The first, built in Riyadh in the 1980s, supports central Saudi projects. A second plant, in Dahaban near Jeddah, supplies the western and southern regions, where mountain and rock-cutting projects are prevalent. The newest facility in the north focuses primarily on Ma'aden's phosphate operations," continued the CEO.

Besides working with Orica, SCCL signed a MoU with another international company, Dyno Nobel. Among the key points of the agreement, Dyno Nobel will support the front-end engineering design and project services for the development of Saudi Arabia's first technical ammonium nitrate plant in Ras Al Khair, with a planned capacity of 300,000 t/y. "The planned facility will produce 300,000 metric tons of ammonium nitrate and 440,000 tons of nitric acid annually, significantly strengthening the local supply chain. Ammonium nitrate production will directly benefit the mining sector, resulting in rising explosives availability, while nitric acid will support several downstream industries that KSA wants to develop as part of its economic diversification efforts," concluded Alzaedi. ■

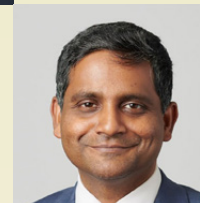


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We are excited about establishing a center of excellence for digital innovation in partnership with the local ecosystem.

”

Víctor Morales and Rajkumar Mathiravedu

VM: VP EMEA Mining
RM: Senior VP Digital Solutions
ORICA

What is the significance of the collaboration agreement signed with Modern Chemical Company (MCC)?

VM: It is a big step for us in supporting Vision 2030. We see it as an exciting opportunity to bring our technology and expertise into the country at a time when there is a real push to improve productivity and sustainability in mining. MCC has been a key player in Saudi mining for years, and when we started talking, they made it clear they wanted to bring in Orica's digital solution to help shape the future of mining here. We have discussed everything from mobile intelligence tools for better exploration and geosolutions, to digital tools that help improve quality control and data integration.

RM: Our vision is to partner with MCC to dynamically optimize the end-to-end mining value chain process using sensors, software, and algorithms, enabled by domain expertise and on-ground personnel integrating workflows. We have focused our efforts on three key areas of investment and development: understanding the orebody by delivering real-time in-situ characterisation to improve exploration effectiveness and efficiency; designing for an outcome through digitalised blast design and execution, combining technical expertise with predictive blast modelling and geological data to digitalise on-bench op-

erations, optimise blasting services, and maximise grade, throughput and recovery via Mine to Mill workflows; and achieving measured outcomes through a superior geotechnical portfolio of sensors and monitoring services, using real-time geotechnical data and insights to enhance safety and manage environmental risks.

Do you see more interest in adopting new technology in KSA than elsewhere?

RM: The mining industry is undergoing a profound transformation, driven by robotics, automation, AI, big data, and Internet-of-Things (IOT). These technologies are revolutionizing every stage of the value chain—from exploration to transport—enabling us to think differently, mine differently, operate more precisely and most importantly, remove people from harm's way. The key to future success lies in fostering openness and collaboration across the ecosystem, rather than striving to be the sole innovator. While investments in sensors, connectivity, and remote operations have generated valuable data, the challenge remains in converting insights into actionable intelligence. Our focus is on bridging this gap, transforming data into outcomes that drive smarter, safer, and more efficient operations.

Can you highlight a recent project in Saudi Arabia?

VMB: Orica has been indirectly participating in Saudi Arabia for at least 60 years by supplying products and technologies through local partners. Recently we have been exploring more options and opportunities to directly participate further in this market in terms of supplying technologies and other products. Even though drill and blast remain critical, our focus in this phase is expanding beyond that to incorporate these cutting edge digital solutions, helping Saudi Arabia move towards more advanced, technology-driven mining practices.

How different is operating in Saudi Arabia from other jurisdictions?

VMB: Mining in Saudi Arabia has its unique challenges, and all stakeholders in the country are working hard to create an investor's friendly environment. In the first place, creating the right infrastructure to access and operate the mine sites. While some areas are well-equipped, others still need work, especially regarding energy and water supply. Talent is another area in which Saudi Arabia is working hard to improve by building up local talent to fill critical technical roles. The regulatory environment is also evolving to make the processes smoother and more predictable, especially for investors and companies like Orica, which are bringing in new technologies.

What are some of the company's goals for the next five years in Saudi Arabia?

VMB: Our ultimate goal is to make Saudi Arabia a flagship for value generation through our cutting-edge technologies and partnerships with the local mining ecosystem. This super region is investing massively in sustainable mining and in critical minerals for the green transition.

RM: Our focus for the next five years in Saudi Arabia is on building local capabilities to drive customer productivity through orebody intelligence, blast optimization, grade control, and geotechnical technologies, and help KSA in its roadmap to create successful centers of excellence in the super region. We are also excited about establishing a center of excellence for digital innovation in partnership with the local ecosystem. ■



Over the past five decades, Saudi Chemical Company Limited has expanded its footprint with three state-of-the-art production facilities for civil explosives across the Kingdom.



Abdullah Alznaedi

CEO - Explosives Sector

SAUDI CHEMICAL COMPANY HOLDING

What companies make up the Saudi Chemical Company Limited, and what role does it play in explosives production?

The company operates within two sectors: one focused on the civil and military explosives and its solutions, and it is a major player in the country's mining, oil and gas exploration, infrastructure, and cement sectors. Under the explosives sector, we have two companies: Saudi Chemical Company Limited (SCCL) and Suez International Nitrate Company (SINCO). We are one of the only two explosive producers in KSA, leading in market share with a production capacity exceeding 120,000 t/y of explosives. We also manufacture over 10 million units of non-electronic detonators yearly to meet growing demand. SINCO, in Egypt, adds to the company's capabilities, producing around 80,000 t/y of ammonium nitrate used primarily as raw material for manufacturing explosives, which ensures the security of supply for (SCCL) primary feedstock.

Over the past five decades, SCCL has expanded its footprint with three state-of-the-art production facilities for civil explosives across the kingdom. The first, built in Riyadh in the 1980s, supports central Saudi projects. A second plant, in Dahaban near Jeddah, supplies the western and southern regions, where mountain and rock-cutting projects are prevalent. The newest facility in the north focuses primarily on Ma'aden's phosphate operations. Additionally, due to strict transportation regulations, SCCL has established strategically placed

storage facilities across the country to ensure the safe and timely distribution of products.

How is Saudi Chemical Company supporting new projects like Khn-aiguiyah?

The Ajlan & Bros and Moxico Resources recently won the first auction for a new mining site, marking an exciting collaboration in Saudi Arabia's mining sector. We have signed an MoU with them to supply explosives, offer blasting services, and provide consulting expertise. We are optimistic about their success in this project, hoping it will inspire other investors to follow similar paths.

What led Saudi Chemical to choose Dyno Nobel as a partner for this ammonium nitrate and nitric acid production project?

We are developing local ammonium nitrate and nitric acid production facilities, both crucial for mining and downstream industries. We chose Dyno Nobel, a global leader in explosives and ammonium nitrate products, as our technical partner after a thorough screening and selection process. Their international expertise, strong market knowledge, and technology make them the ideal candidate for this ambitious project.

SCCL obtained a gas-allocation letter from the Ministry of Energy to support this strategic project. Together with our internal and external allies, we have completed feasibility and financial planning, secured a site in Ras Al Khair near Jubail, and signed a gas supply agreement with Aramco. The front-end

engineering phase is set to begin, by Q1 2025. The planned facility will produce 300,000 t/y of ammonium nitrate and 440,000 t/y of nitric acid, significantly strengthening the local supply chain.

What is the focus of Saudi Chemical's current collaboration with Orica and Barrick?

We are also collaborating with Orica on a project for the Maaden-Barrick mine, where we are addressing specific site challenges through a tailored solution. We aim to conduct an initial trial in November 2024, and if successful, it could serve as a model for other mines facing similar challenges.

In addition to our technical solutions, we provide training for industry stakeholders, including the police and security workforce and emerging companies in the blasting sector. Saudi Chemical Company Limited is authorized to offer certification programs, empowering new professionals to work safely and effectively in this field.

What role will Saudi Chemical play in Saudi Arabia's mining sector transformation?

In KSA, while early exploration in the 1930s focused on gold and silver, real progress did not take place until the 1960s, when a framework for mineral resource management was established. In 1972, Saudi Chemical Company entered the mining scene, and the industry gained momentum in 1997 with new developments and the founding of Ma'aden, marking the beginning of a more robust mining sector. Today, the mining industry in Saudi Arabia is entering a new era under Vision 2030 - and it is a central pillar of this vision, diversifying the economy and reducing reliance on oil, moving from traditional methods toward a more modern, efficient approach.

The goal is clear: positioning KSA as a global mineral hub with sustainable and substantial industry growth. This transformation is an opportunity for Saudi Chemical Company's explosives sector, given that mining simply cannot happen without explosives. Our expertise in explosives, a critical component in mining, places us as a key partner in this expanding market. Additionally, our ongoing projects to secure ammonium nitrate supply ensure we are well-equipped to meet the growing demand from investors and support the industry's long-term growth trajectory. ■



AB



FA



Our most demanded services have recently included precision blasting products and comprehensive technical support to optimize mining operations.



Abdulaziz Barakat Al-Hamwah and Fahad Abdulaziz Al-Hamwah

AB: CEO

FA: Chief Administration Officer

MODERN CHEMICALS & SERVICES COMPANY (MCS)

What is the history of MCS?

AB: MCS was established in 2009 as a joint venture between the EPC Group of France and Modern Chemical Company (MCC). Notably, MCC was the first company to be formed under the Modern Industrial Investment Holding Group, marking the start of a legacy focused on industrial growth and innovation in Saudi Arabia. Over the years, MCS has cemented its position as a key player in the civil explosives sector, combining local expertise with EPC's global industry leadership.

FA: This partnership has empowered MCS to leverage advanced technology and best practices, enhancing our service capabilities and market competitiveness. The combined strengths of MCS and EPC have enabled us to offer innovative solutions that meet the evolving needs of the mining and tunneling industries in the Kingdom.

What services does MCS offer to the mining sector?

AB: We have strategically positioned production facilities to meet clients' needs throughout the region, boasting a robust production capacity. Our offerings include high-performance civil explosives and comprehensive technical support. We do more than simply align with client requirements; we provide solutions that exceed their expectations. A prime example of this is our pioneering use of bulk emulsion

technology. MCS was the first company to introduce and be authorized to use this technology, transforming the industry by reducing mining costs and significantly enhancing safety, particularly in tunneling. This is achieved by decreasing human involvement by a factor of 10, ensuring a safer, more efficient mining process.

FA: Our most demanded services have recently included precision blasting products and comprehensive technical support to optimize mining operations. Our experienced team and dedication to upholding the highest safety standards support these offerings.

What do you believe sets MCS apart in the market?

FA: One of the key differentiators of MCS is our innovative approach to redefining the supply model in the mining industry; by locating production facilities near the primary mining sites, we have significantly reduced logistical challenges and transportation costs for our clients. This proximity enables more efficient delivery schedules and responsive service, decreasing overall mining costs and streamlining operations. For instance, our collaboration with a major mining client in the NEOM area highlighted these advantages, showcasing how our tailored, localized solutions directly contributed to improved operational efficiency and cost savings.

What recent technological advancements has MCS made?

AB: The civil explosives industry is experiencing rapid changes, with technology playing a pivotal role in increasing safety, efficiency and sustainability. MCS has been proactive in adopting these advancements, incorporating digital blasting systems, and using data analytics for precise blast designs. We recently introduced a digital platform solution that enhances quality control and assurance, ensuring that every step of the process meets the highest standards. This platform allows real-time monitoring and data-driven decision-making, reinforcing our commitment to excellence.

FA: Additionally, we focus on sustainable practices by developing eco-friendly products and implementing reduced-emissions techniques. Safety remains at the forefront of our operations, supported by continuous investments in training and advanced safety protocols.

Do you think Vision 2030 is increasing competition?

AB: Since MCS was founded, the Saudi mining sector has undergone significant shifts driven by regulatory changes and investment under Vision 2030. The industry has expanded, attracting both local and international players. While this has increased competition, it has also opened up opportunities for companies like MCS to differentiate through experience, quality and strategic partnerships. Our ability to blend global insights with local knowledge enables us to respond effectively to this evolving landscape and maintain our leadership position in the market.

What are the growth opportunities for MCS under Vision 2030?

FA: Vision 2030 has set the stage for tremendous growth in KSA's mining sector. As the Kingdom seeks to diversify its economy, mining has emerged as a vital contributor. MCS is well-positioned to support this expansion, providing advanced solutions tailored to meet the scaling demands of the sector. The emphasis on sustainability also presents avenues for growth as we continue to develop eco-friendly processes that align with national and global environmental standards. The combination of technological investment and strategic market positioning places MCS at the forefront of future growth opportunities in the sector. ■



EQUIPMENT AND TECHNOLOGY

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Competition is inevitable in Saudi Arabia's mining sector, especially with Vision 2030 spotlighting the wealth of untapped mineral resources. This clear vision has put Saudi Arabia on the radar of global mining companies hungry to be part of the development wave.

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Hannes Storch
VP Metals and Chemicals Processing
METSO

GBR Series • SAUDI ARABIA MINING 2025

Image courtesy of Tesmec



Image courtesy of Tesmec

Mining Equipment

The drill deal

According to figures provided by the Ministry of Industry and Mineral Resources, Saudi Arabia's machinery and equipment sector has a market size of US\$22 billion and is expected to grow to US\$31 billion by 2030. This market, in the mining sector, is mainly served by local representatives and dealers who act as distributors for international OEMs such as Caterpillar, Hitachi, Komatsu, Normet and Epiroc, among others.

To give some details, Bin Shehab is Epiroc's distributor; Normet and Boart Longyear are represented by AGINCO; larger equipment brands like Caterpillar and Komatsu are represented by Zahid Group and Abdul Latif Jameel Machinery, respectively, while Hitachi is represented by Arabian Trucks & Construction Equipment (ATEC). If we can say something about this segment, it is that it is well-served.

For this segment, the question is not whether there is room for new players, as most are already present in KSA. Instead, the question is how the current mining boom will impact the decisions of these OEMs at an HQ level. Will the traditional business model of relying on local partners continue, or will these OEMs start opening local offices with a direct presence? How important is it to have a well-established local partner versus starting from scratch and investing in building these new partnerships?

Long-term partners

Bin Shehab became Epiroc's partner in Saudi Arabia after its split from Atlas Copco in 2018. However, as Yasir Hamed, division manager for mining and infrastructure solutions (MIS), explained, Bin Shehab has been operating since 1975 as a contracting company specialized in drilling and blasting. It was not until a few years later that it diversified into a trading division, which is its main focus today in the mining industry. "We have been working with Ma'aden for quite some time, along with other new players entering the Saudi mining market. On the production side, we currently hold the largest market share, supplying equipment and services to about 80% of the country's mines. Major players like Ma'aden and AMAK depend on us for their operations," said Hamed.

Hamed noted a shift in the market: "While Saudi Arabia has traditionally been dominated by local players, we are now seeing a wave of international companies



“Contractors are increasingly seeking innovative solutions that require less operator intervention and offer enhanced digital control.”

Yasir Hamed Division Manager – Mining & Infrastructure Solutions (MIS) BIN SHEHAB

How have Bin Shehab's activities evolved in Saudi Arabia's mining industry?

Bin Shehab started out in 1975 as a contracting company focused on drilling and blasting, which gave us strong roots in the mining world even though we were primarily involved in the construction segment. Over time, we diversified, launching a trading division, which is our main focus today. In the late 80s, we made a big move into supplying rock drilling tools. A significant turning point came in 2018 when we became Epiroc's partner in Saudi Arabia after the split from Atlas Copco.

Along with Epiroc, we also work with several European companies, mainly from Sweden, giving us diverse offerings. One standout partner is Brokk, a leader in robotics, which we believe will see significant growth in the coming years thanks to ongoing innovations.

Our headquarters are in Riyadh, and we provide services to the central region from there. In Jeddah, we cover the western region, which houses our main service center. In the north, we operate out of Tabuk. For the southern region, we have a branch in Khamis Mushait, and our Dammam office covers the eastern part of the kingdom.

Who are Bin Shehab's main clients?

We have been working with Ma'aden for quite some time, along with other

new players entering the Saudi mining market. On the production side, we currently hold the largest market share, supplying equipment and services to about 80% of the country's mines. Big names like Ma'aden and AMAK depend on us for their operations. Still, we also partner with major contractors like Al Haytham Mining Company (AGC) and others to help push the industry forward.

In the past two years, we have seen a significant surge in the mining industry, heavily focused on exploration. Although we work on production, our current priority is exploration, which is already evident in our performance, with consistent year-on-year growth. As such, we collaborate with most of the contractors in this area, from local drilling and exploration companies to international firms.

How has the mining market shifted under the 2030 Vision?

While the mining sector has long been dominated by local players, a wave of international companies is entering the kingdom and partnering with local firms through joint ventures, creating a win-win situation. We are in an exciting time for Saudi Arabia's mining industry, driven by rapid growth that brings both opportunities and challenges. The main challenge is keeping pace with this fast-moving environment while expanding our operations to ensure

we continue delivering the high level of support and service our customers expect.

Why is it crucial to have a local partner in Saudi Arabia?

Customers invest significantly in our machinery, and they expect to see a solid return on that investment. To facilitate this, we provide regular maintenance visits—ranging from every few weeks to constant on-site supervision. In the mining industry, clients prioritize on-site maintenance by service technicians over the location of service centers because maintenance often occurs directly on-site.

This localized support differentiates us from other international brands that may not have a comprehensive presence in the kingdom.

Are clients seeking more cutting-edge technology solutions?

Contractors are increasingly seeking smarter, more automated machines. Where the focus used to be on basic, manual equipment, customers are now more informed and seeking innovative solutions that require less operator intervention and offer enhanced digital control.

That said, we are not yet at the level of full autonomy seen in more advanced mining markets. This is mainly due to the current infrastructure lacking the connectivity and specific conditions needed for fully electric and autonomous machines. However, we are in a transition, moving toward more intelligent solutions that align with the needs of modern mining.

What are Bin Shehab's goals for the following years in the region?

We have exciting expansion plans, starting with the Cooperation Council for the Arab States of the Gulf (GCC) region, where we want to establish our presence. After that, we will evaluate further development opportunities. Despite the rise of joint ventures in KSA, many local firms still struggle in Saudi's mining industry. As such, we are exploring ways to establish contracts or support mechanisms that will strengthen the presence of local entities in this industry. ■



ADC



AD

Alberto Dalle Coste & Antonio D'Ambrosio

ADC: General Manager

AD: Territory Sales Manager
COMACCHIO

Can you give us an overview of the company and its operations?

ADC: Comacchio has become one of Italy's largest drilling equipment makers. We offer over 100 models for various industries.

How important is Saudi Arabia to your business?

AD: We are a relatively new player in the GCC. We see great potential in Saudi Arabia, especially with the increasing investment in mining exploration. Our goal is to make Comacchio a well-known brand in the region, not just in mining but across the drilling sector. Currently, the GCC represents about 7-10% of our revenue, but we are putting a lot of focus on promoting our rigs, particularly our CX line, in Saudi Arabia.

What would be your message to the Saudi market?

AD: Our rigs allow clients to monitor fleet conditions and performance data in real-time, enabling them to make informed decisions and improve efficiency. We also offer more sustainable products like our eGEO 405, a fully electric, battery-powered exploration drill, which aligns with the growing push for sustainability. ■

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entering the Kingdom and partnering with local firms through joint ventures. This creates a win-win situation. Local companies gain global insights, while foreign firms tap into established networks and regional expertise," he concluded.

How do companies like Bin Shehab cope with this wave? For Hamed, localized support is a key differentiator that international OEMs lack. "In the mining industry, clients prioritize on-site maintenance by service technicians over the location of service centers. Maintenance often occurs directly on-site. This localized support differentiates us from international brands that may not have a comprehensive presence in the Kingdom. For example, if a customer has a machine issue and their service center is in Jeddah, it could take days for a technician to arrive at a site located 1,000 km away. Our clients typically cannot afford to have equipment down for more than a day," he concluded.

Another long-standing local player is AGINCO, which represents Boart Longyear, Normet, Strata, and others. "We began supplying mining equipment in 1985, right when the Kingdom of Saudi Arabia started exploring the Arabian Shield. Our initial focus was on providing equipment and spare parts to the Mahd Ad Dhahab mine, particularly diamond bits, from our long-time partner, Boart Longyear," said Faisal Sindi, director at the company.

AGINCO, like Bin Shehab, is aware of the influx of foreign companies. However, Wasseem Fayyumi, AGINCO's sales manager, noted that many of these newcomers do not meet the standards that Saudi Arabia should uphold: "We have observed an influx of newcomers to the sector who lack the necessary expertise. They often bring in unreliable equipment from abroad, posing significant risks to the operational efficiency and safety of mines."

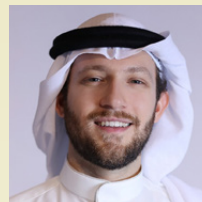
To cope with this, AGINCO has taken on an educational role with its clients, demonstrating that investing

in higher-quality equipment and providing a dedicated training program—despite higher initial costs—offers substantial long-term benefits. "With our warehouses in Jeddah, near the second-largest and busiest seaport in the Middle East, we maintain a significant stock of essential equipment, which enables us to meet customer demands without compromising quality," Sindi added.

Something worth highlighting from AGINCO's strategy and conversation is its focus on sustainability. Sindi emphasized that KSA's mineral endowment presents a significant opportunity to diversify revenue streams beyond oil and petrochemicals. This diversification must align with safeguarding the environment for future generations rather than contradicting the goals for which these minerals are expected to be used.

Comacchio, an Italian manufacturer of drilling rigs, aims to establish a presence in Saudi Arabia through a partnership. "We want to partner with local mining operators and distributors. We have been highly selective about who we work with and are looking for partners who share our commitment to innovation and quality. Additionally, we plan to collaborate with local stakeholders, universities, and mining groups to help raise the bar in drilling operations," commented Antonio D'Ambrosio, the company's territory sales manager.

Alberto Dalle Coste, general manager for Comacchio, expressed enthusiasm about the opportunities presented by Vision 2030 and Saudi Arabia's estimated mineral wealth of US\$2.5 trillion, emphasizing the company's focus on innovation: "Recently, we launched our CX product line, specifically for exploration, with rigs mounted on tracks and crawlers. With recent discoveries like the gold reserves at Mansourah-Massarrah, we are looking forward to playing a part in Saudi Arabia's growing mining industry," he concluded. ■



FS



WF

Faisal Sindi and Wasseem Fayyumi

FS: Director

WF: Sales Manager

AGINCO

What equipment and solutions does AGINCO offer, and what brands does it represent?

FS: Our initial focus was on providing equipment and spare parts to the Mahd Ad Dhahab mine, particularly diamond bits from our long-time partner, Boart Longyear. We also supply mine sites with underground utility vehicles and essential solutions like ventilation systems manufactured by our French partner - Cogemacoustic.

WF: Along with Boart Longyear, we represent Normet, a Finnish company specializing in manufacturing utility vehicles for underground mines. Their product range includes charging and shotcrete equipment, scissor lifts, and more. We also collaborate with Strata, a US-based company that provides safety equipment for underground mining, such as rescue chambers. Additionally, we work with Element, another Finnish company renowned for manufacturing spare parts for slurry pumps and crushers.

What other projects is AGINCO involved in within KSA besides supplying equipment to Ma'aden's Mahd Ad Dhahab mine?

WF: KSA is undertaking an ambitious project called NEOM, a transformative city that will span 170 kilometers in the north. This visionary city necessitates extensive tunneling, and we are proud to support the project by supplying

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One of the main challenges within KSA's mining industry is the reliability of machines and equipment.
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essential equipment and machinery, including shotcrete equipment, and charging machines from Normet. Aginco also supplies many exploration and mining companies that are in remote areas far from major cities with all their local needs, such as mechanical, electrical, and other critical items, sourced internationally and locally.

What challenges does the industry face, and how do you help them overcome them?

WF: One of the main challenges within KSA's mining industry is the reliability of machines and equipment. In recent years, we have observed an influx of newcomers to the sector who lack the necessary expertise. They often bring in unreliable equipment from abroad, posing great risks to mines' operational efficiency and safety. Our role is actually educating our clients by showing them that opting for higher-quality equipment along with deep knowledge and skills through dedicated training programs, even at a higher initial cost, offers significant long-term benefits, especially in extended lifespan and reduced maintenance costs.

FS: It is about providing high-quality products while ensuring quick and reliable delivery. With our warehouses in Jeddah, near the second-largest and busiest seaport in the Middle East, we maintain a significant stock of essential equipment, which enables us to meet

customer demands without compromising quality. Another point that keeps us at the forefront in such an evolving landscape is our balance of innovation with accessibility. Our recent partnership with Element allows us to provide specialized components for slurry and crusher machine spare parts, which often experience significant wear and tear. We can help mining companies significantly reduce maintenance costs by utilizing high-quality, durable solutions.

Why is sustainability crucial for large-scale projects under Vision 2030, and what initiatives does Aginco have to support this?

FS: KSA's mineral endowment is more than SAR 10 trillion, presenting a significant opportunity to diversify from revenue streams beyond oil and petrochemicals. However, realizing this potential requires a strong focus on sustainability. Given the scale of these projects, we must adopt sustainable practices to ensure we maximize the benefits of our resources while safeguarding the environment for future generations. We are particularly excited to promote Normet's Battery Electric Vehicle (BEV) system, engineered to improve energy efficiency while reducing operating costs, as it also minimizes environmental impact by operating without harmful emissions. Another great feature of the BEV system is its Smart Drive Technology, which includes regenerative braking, meaning it can recover energy during downhill movement, further increasing efficiency. By combining these innovations, the BEV system significantly lowers a mine's carbon footprint.

Vision 2030 is attracting major players to Saudi Arabia. Will this result in increased competition or encourage collaboration?

FS: The sector's growth is manifesting in various ways, mainly through new tenders and bidding processes for licenses related to exploration and production that provide opportunities for both local and global companies at different levels. While the government's proactive engagement is attracting various players to the market, resulting in increased competition, it also fosters collaboration, leading to the establishment of new JVs. Aginco is positioned to play a role in this landscape by introducing innovative technologies or facilitating partnerships between international and local companies, ensuring the best possible outcomes for all stakeholders. ■

Trucks and Auxiliary Equipment

Header image courtesy of Barg Alsaman. Bottom image courtesy of Scania.

No camels here: a caravan of steel

In the truck and dump segment, GBR interviewed representatives from Komatsu Middle East, XCMG, and Scania, each of whom provided unique perspective based on the current nature of their operations. Komatsu operates through its local representative, Abdul Latif Jameel Machinery, XCMG opened its Saudi office in 2023; while Scania, currently based in the UAE and with GCC Olayan, plans to expand into KSA to capitalize on the opportunity that Vision 2030 embodies and does not rule out establishing a local office.

Han Ke, general manager for Saudi Arabia at XCMG, ranked the company as one of China's largest construction equipment manufacturers and the fourth largest worldwide, behind Caterpillar, Komatsu, and John Deere. Reflecting on their experience in KSA so far, he said: "Our time in Riyadh helped us identify a strong demand for equipment capable of withstanding harsh climate conditions and meeting the precise requirements of each project. Building relationships with local stakeholders has also helped us better understand market dynamics. Additionally, we have noticed the importance of skilled operators and reliable after-sales support, which remain challenges in the industry."

XCMG offers a wide range of mining equipment, including wide-body trucks (70-100 t), rigid dump trucks (90-400 t), articulated dump trucks and excavators. Despite working with industry giants like Rio Tinto, XCMG's entry into Saudi Arabia has been challenging. "Many contractors rely on OEMs they have worked with for years, and their technical teams are familiar with maintaining and troubleshooting this equipment. Convincing them to switch is a real challenge for us. However, we aim to grow our market share by at least 20%. Our goal is to establish lasting relationships with key players like Ma'aden who operate across various commodities. In this context, we have a strategic plan to help us progress," Ke concluded.

Although GBR did not have the pleasure to interview executives from Abdul Latif Jameel Machinery (Komatsu's representative), it had the opportunity to speak with the managing director of Komatsu Middle East based in the UAE: "In Saudi Arabia, with our authorized distributor Abdul Latif Jameel Summit we ensure that our High performing equipment meets the Kingdom's growing needs. With the objective of providing strong product support and uninterrupted after-market services, a

dedicated Komatsu team is stationed with the distributor's office in KSA," commented Tomomitsu Hoga.

Some of the latest equipment introduced by the Japanese OEM includes the PC550 surface hydraulic excavator and the HD785 dump truck. Hoga highlighted the biggest challenge posed by Vision 2030: "Now, the challenge is meeting shorter lead times as projects progress fast. Ensuring timely delivery of machines for mobilized operations will test readiness."

"Our main goal is to establish a presence in every market across the region, with an urgent focus on Saudi Arabia, a key market with immense opportunities," declared Juan

Carlos Ocampo, managing director at Scania Middle East.

Based out of Dubai, Scania Middle East operates across the Middle East and North Africa (excluding Morocco) through independent distributors, but currently lack operations in the Kingdom's mining sector. "At present, we are involved in mining operations, primarily quarries, in Oman, Abu Dhabi and Dubai. However, we have yet to establish ourselves in Saudi Arabia, where we see significant potential as the mining sector is set to become the third pillar of the Saudi economy under Vision 2030," Ocampo explained.

Scania is renowned for its Heavy Tippers, available in 6X4 and 8X4

configurations. Regarding their plans for entering Saudi Arabia, Ocampo elaborated: "We are evaluating several approaches, including sending team members from Dubai and coordinating with our local partner, GCC Olayan. Establishing a standalone company is also under consideration. We are preparing a solid, comprehensive offering for Saudi Arabia's mining sector and look forward to launching our presence in this market soon," he concluded.

For Francesco Morosini, CEO at Tesmec, an Italian trencher manufacturer with a subsidiary in KSA, the rapid pace at which the mining industry is evolving under Vision 2030 presents a dual-sided experience.

On the challenges side, it makes securing investment and building local partnerships difficult. However, that does not discourage the CEO from seeing the company succeed: "Tescmec is confident in its ability to grow in the region. By 2026, we plan to establish a local assembly base to serve both the Saudi market and the wider GCC region," he added. On the positive side, the same pace will enable the company to grow, and its already established local presence is an asset: "This local presence ensures that Tesmec can offer timely and efficient service, essential for an industry focused on maximizing productivity while minimizing environmental impact," he emphasized.

Tescmec has recently completed a year-long proof-of-concept project with Ma'aden to test its trenchers. According to Morosini, these trenchers streamline operations by eliminating the need for blasting, drilling, and primary crushing, which, coupled with GPS technology, provides the perfect recipe for precise excavation and improves the overall quality of ore extraction: "Over six months, mines using this technology reported a 10-15% increase in ore recovery, a significant improvement in operations, especially when handling high waste-to-ore ratios," concluded Morosini. ■





Tomomitsu Hoga

Managing Director
KOMATSU MIDDLE EAST

How does Komatsu support its customers in Saudi Arabia?

In Saudi Arabia, with our authorized distributor Abdul Latif Jameel Summit, we ensure that our equipment meets the Kingdom's growing needs. With the objective of providing strong product support and uninterrupted after-market services, a dedicated Komatsu team is stationed with the distributor's office in KSA.

What specific equipment has Komatsu provided recently to KSA's mining operations?

We recently delivered several mining machines designed for large-scale operations. One of these is the PC5500 surface mining hydraulic excavator, an ultra-large hydraulic excavator built for heavy-duty mining tasks. Additionally, we have supplied several HD785 dump trucks, each with a payload capacity of 100 tons.

How does Vision 2030 create opportunities in Saudi Arabia's mining and construction sectors?

Saudi Arabia's mining potential is immense, with many exploration projects underway and abundant current resources. KSA is creating an investment-friendly, competitive environ-

ment modeled after leading global mining ecosystems.

Now, the challenge is meeting shorter lead times as projects progress fast. Ensuring timely delivery of machines for mobilized operations will test readiness. In Saudi Arabia, our regional hub ensures parts availability, continuous training through our local training center, and reliable service.

What are Komatsu's goals for CO₂ emissions reduction?

By 2030, we plan to cut CO₂ emissions by 50% and use 50% renewable energy. To advance in this journey, we are developing diverse power source options for construction equipment, including battery-powered, fuel cell, biofuel, hydrogen, and low-impact diesel machines.

What are the main areas of focus in Komatsu's long-term strategy?

We are committed to becoming the market leader in Saudi Arabia by going beyond providing machinery to act as a total solution provider. This includes ensuring parts availability, offering continuous training, and delivering strong service support to help customers maximize productivity and minimize machine downtime. ■



Francesco Morosini

CEO
TESMEC

What is Tesmec's approach regarding trenching and surface mining in KSA?

Tesmec's approach to mining by the use of surface miners differs from traditional excavation techniques, which often rely on blasting, crushing, and other heavy machinery, thereby offering safer and more environmentally friendly operations. In markets like South Africa, Tesmec has already adopted a service-oriented model that goes beyond just selling machines, offering comprehensive excavation services. In Saudi Arabia, Tesmec plans to support the entire excavation process, ensuring smooth integration and ongoing support, especially in the mining sectors of bauxite and phosphate.

By 2026, the company plans to establish a local assembly base to serve both the Saudi market and the wider GCC region.

What are the benefits of Tesmec's Rock Hawgs?

Tesmec's Rock Hawgs are designed to replace traditional drilling, blasting, and crushing methods in mining operations. These machines bring

significant benefits, particularly in terms of environmental sustainability and operational efficiency.

The Rock Hawgs are equipped with advanced features such as remote operation capabilities, ground-penetrating radar and drones. These technologies allow for precise excavation, real-time monitoring, and better management of the mining process. The ability to identify valuable ore and avoid waste material enhances the efficiency and accuracy of mining operations, further reducing costs and environmental impact.

By combining excavation and crushing into a single step, they eliminate the need for primary crushing, producing uniform, high-quality materials and increasing output. These machines enhance safety by avoiding explosives and minimizing the number of onsite machines, significantly reducing risks and personnel exposure. Rock Hawgs stand out by generating less dust, noise, vibration and water waste. Additionally, their cost efficiency simplifies logistics and site management by requiring fewer machines and operators. ■



Juan Carlos Ocampo

Managing Director
SCANIA MIDDLE EAST

What plans does Scania have for expanding its presence in Saudi Arabia's mining industry?

Currently we are involved in mining (mostly quarries) operations across Oman, Abu Dhabi and Dubai, but we have yet to establish ourselves in Saudi Arabia, where we see a big opportunity, given it is set to become the Saudi economy's third pillar under Vision 2030. In 2025, we will move forward with plans to enter the Saudi market, bringing a bundled solution that includes vehicles alongside repair, maintenance, insurance, and financing. We are assessing our next steps for entering Saudi Arabia, considering sending a few team members from Dubai and coordinating with our local partner — GCC Olayan. However, establishing a standalone company is on the table. We are preparing a solid, comprehensive offering for Saudi Arabia's mining sector and look forward to launching this market presence soon.

What are Scania's plans to expand financial services for mid-sized and smaller clients?

We currently use a cross-border solution based in Sweden. However, we plan to establish an offshore company in Dubai's free zone, which we expect will be operational by Q1 2025. This new base will streamline financing options locally, especially for medium- to high-sized clients who meet specific criteria. However, our broader goal is to have a strong presence across the region, especially in Saudi, so we are exploring options for launching our own financial company there in the near future. This would be a game-changer, allowing us to offer financing access not only to large corporations but also to smaller and mid-sized clients. We see this expanded financial support as a key differentiator, enabling more companies to engage with us. ■



Han Ke

General Manager – Saudi Arabia
XCMG

How has XCMG's first year in Riyadh shaped your understanding of the needs and expectations of the Saudi mining sector?

We opened an office in KSA in 2023, but our journey in the region began in the 90s when we were the first Chinese manufacturer to enter the Saudi market. With Saudi Vision 2030 driving efforts to diversify the economy, primarily through mining, we have focused on aligning our strategy with these national priorities by launching XCMG's dedicated mining machinery department.

Our time in Riyadh helped us identify a strong demand for equipment capable of withstanding harsh climate conditions and meeting the precise requirements of each project. Building relationships with local stakeholders has also helped us better understand market dynamics. Additionally, we have noticed the importance of skilled operators and reliable after-sales support as the industry struggles with these challenges.

Can you share any projects in KSA where you provided your equipment? Al-Khaleeb Holding Company was

facing significant challenges in optimizing operations, as their outdated articulated dump trucks were causing frequent breakdowns, lower efficiency, and higher operational costs. They needed a modern, reliable solution to meet higher production demands and align with Saudi Arabia's ambitions for the Trojena project at NEOM.

In April 2024, we signed a trial agreement with Al-Khaleeb, providing them with one XDA45-ADTs for a 30-day evaluation period. This allowed them to test the truck's performance firsthand and helped them build confidence in its capabilities. As a result, they purchased five units, and discussions are already underway to expand their fleet to 20 units in the near future.

What is your strategy for gaining market share in KSA?

Many contractors rely on OEMs they have worked with for many years, and their technical teams are familiar with this equipment's maintenance and troubleshooting, so convincing them to switch is a real challenge for us. We ultimately want to grow our market share by at least 20%. ■



Image courtesy of FLSmidth

Comminution and Material Handling

Technology and sustainability are shaping the Kingdom’s mining future

While Saudi Arabia is yet to experience problems like declining ore grades or high energy costs, sustainability remains a key focus. KSA’s three producers have integrated sustainability into their ESG strategies, and the next generation of mines have already planned for it. “Energy costs, alongside declining ore grades, are significant concerns in mining. Our solutions aim to reduce these costs while advancing sustainability

objectives. By improving energy efficiency and performance, we help customers cut operational costs and their environmental footprint,” commented Philippe de Bosscher, APAC & Middle East general manager at Magotteaux.

De Bosscher explained Magotteaux’s strategy in the country: “While we typically engage once operations are underway or construction is in progress, we are also

closely monitoring emerging junior mining projects. As Saudi Arabia’s mining sector becomes a cornerstone of the country’s future, we are positioning ourselves to grow alongside it,” de Bosscher said.

To support sustainability and energy cost management, there is a trend towards offering a more comprehensive or holistic approach that encompasses a broad ecosystem in what equipment providers

can offer. This is precisely what Magotteaux is developing with Enaex, another company within their parent group, Sigdo Koppers, to explore the “mine-to-mill” concept. “Although still in its early stages, the mine-to-mill concept holds tremendous potential for regions like Saudi Arabia. By optimizing the entire supply chain—from blasting to milling and beyond—every step contributes to better cost management, reduced energy consumption, and improved metal recovery,” emphasized de Bosscher.

Bernard Kaninda, region president of sales and services for EMEA at FLSmidth, highlighted that the key trends impacting Saudi Arabia are a growing interest in sustainable solutions, digital transformation, and investment in critical minerals: “With the increasing mining activity in the region, it is fundamental to ensure that these minerals are produced more sustainably and in a timely manner. This is vital for a successful green energy transition, as mining accounts for approximately 3.5% of total global energy consumption and is one of the most water-intensive industries,” Kaninda added.

Fazel Majlessi, senior vice president and materials BU at Yokogawa Middle East and Africa, who worked with Aramco and Ma’aden on their gold operations and now on Phosphate 3, commented that technologies like advanced control systems, AI and robotics will take time to be fully adopted in the country: “The level of automation and digitalization you see in places like Australia and South

America is not quite there yet. However, as the push for reducing carbon footprints grows and aligns with Vision 2030, we will likely see these technologies start to make their way into the Kingdom,” Majlessi stated.

For Nasier al Saadi, CEO for Saudi Arabia at Innomotics, a company that produces motors and drives while integrating digitalization and automation, the idea that mining has been slow to embrace

new technologies does not shake his optimism. Al Saadi believes the industry has advanced, especially since technology adoption is a central pillar of Vision 2030: “One very important aspect is the Saudi government’s focus on diversifying the economy. They do not want to depend only on oil and gas; this diversification increases investment in the mining sector. This offers growth opportunities for advanced technologies.” ■



Manoj Joseph Kallarackal,
Managing Director
THEJO ENGINEERING



In Saudi Arabia, the biggest challenge is resistance due to the tough environment and ozone, which can degrade rubber. To address this, we use chemical compositions with high antioxidants and ozone-resistant formulations, which help extend the life of the belts.



Nasier al Saadi,
CEO Saudi Arabia
INNOMOTICS



Our technologies can help mining companies overcome other challenges such as a shortage of trained manpower because at the end of the day, automation means that less workers are required to work in the mine itself.



Doğan Özel, Business
Development Manager
CDE GROUP



Modular solutions allow mines to easily expand as production grows or resources change. This is a great fit for remote areas in Saudi Arabia, where building large, fixed plants might not be practical due to high costs or limited infrastructure.



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Philippe de Bosscher

General Manager APAC & Middle East
MAGOTTEAUX

Can you introduce us to Magotteaux?

Magotteaux is a global leader in wear-resistant solutions and process optimization for the mining and cement industries. In addition to our products, we provide expert advice, services, and resources, including equipment and systems. Magotteaux utilizes relevant tools to help customers optimize their operations, recover more valuable minerals, and deliver their final products at the best total cost of ownership, all while minimizing environmental impact.

While we have a strong presence in markets like Australia, where we hold around 30% of the market share, Saudi Arabia is a key focus for future expansion. Though our footprint in KSA has been relatively small, the country's rapidly growing mining sector offers significant opportunities. Leveraging our deep experience in hard rock mining from regions like Australia, Chile, South Africa and Canada, we are well-positioned to support Saudi Arabia's growth in both the mining and cement industries.

How can your products reduce energy consumption?

In addition to our core products, such as all types of grinding media, we offer specialized solutions like MagoSense, MagoPulp, and MagoFloat, designed to help customers streamline processes and minimize energy use. This approach supports both environmental and economic sustainability goals.

“Leveraging our deep experience in hard rock mining from regions like Australia, Chile, South Africa and Canada, we are well-positioned to support Saudi Arabia's growth in both the mining and cement industries.”

What is Magotteaux's experience and plans to expand in KSA?

We have developed strong relationships with key mining customers in Saudi Arabia, including Ma'aden Gold and Ma'aden's phosphate operations, AMAK, and ASK Gypsum. These partnerships provide a solid foundation for expanding our market presence and introducing cutting-edge technologies. While we typically engage once operations are underway or construction is in progress, we are also closely monitoring emerging junior mining projects. As Saudi Arabia's mining sector becomes a cornerstone of the country's future, we are positioning ourselves to grow alongside it.

What advantages do you gain by being part of Sigdo Koppers, particularly in the context of the "mine-to-mill" approach?

Our collaboration with Enaex, a leading explosives provider in South America and Australia which is part of our holding company Sigdo Koppers, gives us a unique advantage, enabling us to explore innovative concepts like the "mine-to-mill" approach. We are currently piloting this with major companies such as Vale in Brazil and selected projects in Australia. The concept is both simple and powerful: by optimizing blasting techniques in the mine to improve rock fragmentation, we can enhance the efficiency of downstream milling and mineral recovery. This integrated approach

not only boosts operational efficiency but also drives increased revenue for customers, whether they are mining gold, copper, or other minerals.

Although still in its early stages, the mine-to-mill concept holds tremendous potential for regions like Saudi Arabia. By optimizing the entire supply chain—from blasting to milling and beyond—every step contributes to better cost management, reduced energy consumption, and improved metal recovery.

As we continue to refine this approach, we aim to introduce these cutting-edge solutions to new markets, offering a competitive edge that few can match. By combining our expertise in both mining and milling, we are paving the way for a more efficient and sustainable future in the mining industry.

What are the main pillars of Magotteaux's business strategy?

At Magotteaux, we continually advance new technologies and materials to push industry boundaries. A prime example is our EXPAND technology, which incorporates ceramic materials into our castings using Metal Matrix Composite (MMC) technology. This enhances product durability, extends equipment lifespans, and reduces energy consumption, helping customers maximize performance and lower costs.

Digitalization is another key focus, with tools like MagoSense and MagoPulp enabling real-time monitoring and process optimization. These technologies provide data-driven insights that help customers improve efficiency, boost productivity, and make informed decisions.

Sustainability is the third pillar of our strategy. We are committed to reducing our carbon footprint in line with Science-Based Targets Initiative (SBTi) goals. Sustainability not only minimizes environmental impact but also delivers long-term value to our clients and communities. We strive to create a greener future for the mining and cement industries.

Energy optimization is another critical focus, especially in regions like Saudi Arabia, where remote operations present unique challenges. By improving energy efficiency, we help reduce costs and address these challenges, supporting both economic and environmental sustainability. ■



Bernard Kaninda

Region President Sales and Services EMEA
FLSMIDTH (FLS)

“Saudi Arabia's commitment to becoming a hub for the mineral value chain aligns perfectly with FLS' strategy of providing full flow sheet technology and services.”

How important is KSA in FLS' growth journey and what are the main market trends you observe?

The Kingdom of Saudi Arabia plays a crucial role in FLS' growth journey. The region's strategic location, abundant mineral resources make it a key market for our expansion. Saudi Arabia's commitment to becoming a hub for the mineral value chain aligns perfectly with FLS' strategy of providing full flow sheet technology and services.

There is a strong focus on sustainable solutions, driven by global environmental concerns and regulatory pressures. Programs like FLS' MissionZero, which aims for zero emissions, water waste, and energy waste by 2030, are well-positioned to meet these demands. At the same time, digital transformation is accelerating as the industry adopts advanced technologies like analytics and automation to enhance efficiency and cut costs. FLS' digital solutions are playing a vital role in helping customers optimize their processes and boost productivity. Another significant trend is the rising demand for critical minerals essential for green technologies, such as electric vehicles and renewable energy. With a rich mineral endowment and proactive policies, Saudi Arabia is emerging as a key player in this sector. Together, these trends and Saudi Arabia's strategic initiatives offer substantial opportunities for FLS to drive growth and innovation in the mining industry.

FLS has set out a target to provide zero-emission solutions to the mining sector by 2030. Could you walk us through these ambitions and the kind of product innovations you are bringing to the market?

Our approach involves identifying and quantifying opportunities to improve sustainability across the entire flowsheet, together with delivering operational and financial benefits. These efforts are driving incremental changes today while also supporting the development of our MissionZero mine flowsheets, aiming at zero energy waste, zero water waste and supporting the industry's decarbonization efforts.

Our strategy is already yielding tangible results. For example, FLS' LoadIQ mill scanning technology optimizes mill loading to maximize energy efficiency in grinding, ultimately achieving the best results at the lowest costs. At a copper mine in the US where this technology was applied, there was a 10% throughput increase, an 8% energy reduction, and a 9% reduction in the ener-

gy-per-ton of copper produced. LoadIQ leverages data to improve and optimize equipment performance, both in terms of productivity and profitability.

Another example is our filtration technology, which was applied at an Australian iron ore mine. By upgrading the mine's horizontal belt filters to operate with blowers and roller belt supports compared to the previous vacuum pumps and air deck belt systems, we achieved a 29% energy savings, and consequently a 29% reduction in CO₂ emissions and water savings of 383,162 m³ per year. The roller deck systems also entail lower maintenance downtime, indirectly supporting higher production rates.

Lastly, across the full flowsheet, the most energy-intensive processes are crushing and grinding. We developed the HPGR/HPGR Pro for a more efficient and sustainable comminution. This advanced technology delivers up to 20% higher throughput while reducing energy consumption by up to 15% and extending roller life by up to 30%. With a "Centre of Excellence for HPGRs" established in Africa, this technology is already in use at mining sites across Europe and around the world.

Some say local support is even more important than before. Do you agree and if so, why?

FLS is fully committed to maintaining a strong local presence with robust capabilities across the region and beyond. The logistical challenges of traveling between countries make it even more crucial to stay closely connected with your partners and respond quickly when needed. At FLS, we support a mine throughout its entire lifecycle, so it's essential that we are on the ground to deliver the highest level of service and achieve optimal results.

Do you have a concluding message for our international readers?

FLS is engaged in the latest developments in mining, leveraging our technology, R&D efforts, and resources to drive more sustainable practices. We empower the future of mining and are evolving together with the mining industry. Beyond providing products, we deliver comprehensive solutions and services that enhance the productivity and profitability of our partners. We support miners' evolving needs and drive proven innovation to uncover opportunities for tomorrow's mine. ■



NS



FM

Norinao Sato and Fazel Majlessi

NS: President and CEO
FM: Materials BU Head

YOKOGAWA MIDDLE EAST AND AFRICA

Yokogawa celebrates its 110th anniversary in 2025. What has been its evolution in the Middle East?

NS: Yokogawa has been at the forefront of industrial automation, providing advanced control systems, sensors, and solutions to ensure smooth operations. In the Middle East, we have partnered with key players like Saudi Aramco, ADNOC and SABIC, with Saudi Arabia emerging as our largest market in the region. Since 2006, we have established local entities for sales, engineering and service, supporting our strong presence in the Kingdom.

Saudi Arabia is now one of our top global markets, just behind Japan and China. In 2020, we set up a factory at King Salman Energy Park (SPARK) to manufacture sensors, panels and integrate systems, aligning with IK-TVA and Saudization goals. Beyond oil and gas, we have expanded into mining, collaborating with Ma'aden on projects like Phosphate 3 and providing solutions for gold processing.

Can you tell us more about Yokogawa's role in the Phosphate 3 project with Ma'aden?

NS: Yokogawa has enjoyed a strong partnership with Ma'aden, starting with Phosphate 1, where we delivered control and safety systems. This collaboration continued through

Phosphate 2 and now into Phosphate 3 Phase 2, which is a significant step forward for Saudi Arabia's growing mining sector. We are excited to deepen our involvement with Ma'aden and, looking ahead, plan to expand into gold and aluminum projects.

FM: For the Phosphate 3 project, we will be bringing in technologies we have successfully used in other regions, especially around digitalization, robotics, drones, advanced control systems and AI. We will improve efficiency, reduce carbon footprint and boost production without redesigning the whole process. Instead, we optimize the existing equipment, which means lower upfront costs but significant long-term benefits. It will take a bit of time for these technologies to be fully adopted in Saudi Arabia since the level of automation and digitalization you see in places like Australia and South America is not quite there yet. However, as the push for reducing carbon footprints grows and aligns with Vision 2030, we will likely see these technologies start to make their way into the Kingdom.

Where do you see the biggest growth opportunities for Yokogawa in Saudi Arabia?

NS: Mining is a key growth area for Yokogawa in Saudi Arabia. With the discovery of copper, zinc and other

resources, we are excited to support the government in accelerating production. Our solutions for advancing industrial automation to industrial autonomy (IA2IA) will enable plants to operate more independently and efficiently.

FM: With the Kingdom focusing more on efficiency and sustainability, our technologies are right at the center of these changes. We offer solutions for energy management, helping industries use renewable energy, reduce carbon emissions and optimize energy use. These solutions are becoming more important, especially in the mining sector, as they work to meet the new environmental regulations and sustainability targets of Vision 2030.

What can you tell us about the use of digital twins?

FM: For mining, we have introduced this concept through our Operator Training Simulator (OTS), currently used at Ma'aden. The OTS helps train new operators and maintenance staff, transferring knowledge and skills. Our next step is to evolve this into a full digital twin, allowing operators to interact with a higher-resolution model of the process, manipulate control algorithms, and implement them directly on-site.

What can we expect from Yokogawa in the coming years in the region?

NS: We are committed to nurturing young Saudi talent through internship programs and by sharing our global expertise, particularly from markets like Japan. Collaborations with institutions such as King Fahd University of Petroleum and Minerals aim to develop the next generation of mining professionals. Additionally, we are exploring cutting-edge technologies, including space-based solutions and satellite systems, to provide real-time monitoring for mining operations and exploration, further enhancing efficiency and innovation in the sector.

FM: We have been working across different industries for decades, and one of the things that drives us is co-innovation. We believe in teaming up with our partners to tackle challenges and find the best solutions. In the mining sector, our goal is to help make operations cleaner and more efficient while bringing in new tech that keeps Saudi Arabia competitive globally. ■

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Our goal is to help make operations cleaner and more efficient while bringing in new tech that keeps Saudi Arabia competitive globally.

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Technology for Exploration and Production



Image courtesy of Stryde

The desert is thirsty for tech

After working with Ma'aden across different business units like phosphates and at the Mansourah-Massarrah project, Hannes Storch, VP of metals and chemicals processing at Metso, noted: "There is a distinct openness in Saudi companies to go beyond traditional paths. For instance, Ma'aden seems far more open and willing to embrace new or improved technologies than many international companies, which might be tied to the fact that international firms often carry more legacy baggage."

One of the main obstacles to technology adoption is capital investment. But is this a deterrent for a company like Ma'aden? For Storch, it is not, given the company's clear vision rooted in Vision 2030: "They do not, however, jump into things blindly. Ma'aden conducts thorough and diligent analyses before taking any steps. For instance, in the phosphates sector, they have established careful partnerships with key players, showing they understand the landscape and choose wisely," he warned.

While Metso's technology starts in the CapEx phase, this sentiment is also shared in an earlier stage, or at least in those companies that provide technologies to the exploration segment: "Saudi Arabia is very exciting when it comes to technology uptake. In more established mining regions, tried-and-true methods often prevail, based on years of development, lessons learned, and established supplier bases. But in Saudi, the atmosphere is different; there is a palpable ambition and willingness to embrace out-of-the-box thinking, all driven by technology," shared Junior Potgieter, global strategy head for minerals & mining at Viridien.

For Viridien, exploration will be intrinsically linked to technology in the

future, especially in KSA, where the Saudi Geological Survey is still collecting information from the Arabian Shield: "The sheer volume of data being gathered is reaching a level where it is no longer feasible to analyze it all manually. That is where advanced data science, machine learning and AI come into play, transforming raw data into actionable insights to de-risk areas and optimize the drilling process," Potgieter said.

IMDEX' CEO, Paul House, provided us with insights into the potential of a more strategic approach in using technology in the exploration phase for

ore-body knowledge and how mining could learn from oil and gas: "Typically, mines are developed through limited targeting and exploration, with more knowledge gained as the ore body is developed during production. In contrast, oil and gas invests more time understanding the ore body before extraction." This greater understanding before committing to a billion-dollar capital investment allows for precise deployment of capital, engineering planning, and ore body extraction, presenting the greatest opportunity to maximize returns and ensure success," explained House. ■



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Hannes Storch

VP Metals and Chemicals Processing
METSO

Can you tell us about Metso's partnerships in Saudi Arabia, specifically with Ma'aden?

Our partnership with Ma'aden is built on providing advanced technology solutions that address industry challenges, particularly in areas like circularity and energy transition. Rather than traditional EPC roles, we focus on developing innovative technologies and improving the reliability and efficiency of operations through digital tools and more dependable equipment.

What is the adoption rate of new technologies in Saudi Arabia's mining sector?

There is a distinct openness in Saudi companies to go beyond traditional paths. For instance, Ma'aden seems far more willing to embrace new technologies than many international companies. There is a true agenda here, supported by a strong will and substantial financial backing.

What technologies is Metso employing in Saudi Arabia?

One area of focus is transformational processes, especially regarding circularity. For instance, we are investigat-

ing the potential to use phosphogypsum, a waste product of the fertilizer production, to capture carbon dioxide and allowing the sulfur to be reused as a raw material and cutting down waste. If successful, it would be the first major instance of such technology applied in the fertilizer industry. Saudi's scope for development allows us to apply a wide range of solutions.

Do you perceive an increase in competition among international companies?

Competition is inevitable in Saudi Arabia's mining sector, especially with Vision 2030 spotlighting the wealth of untapped mineral resources. This has put Saudi Arabia on the radar of global mining companies hungry to be part of the development wave. Joint ventures and partnerships are common, as Saudi Arabia welcomes companies to bring new expertise and technologies. Yet, succeeding here is not just about showing up—it is about establishing a local presence. The Saudization initiative is essential; companies really need to bring in Saudi talent and partner with local suppliers to succeed. Those who jump on this quickly definitely have the advantage. ■



Mike Shahrokni

Managing Director
IMAKER XR

How is iMakerXR partnering with universities and the private sector to develop a VR training experience?

iMakerXR is collaborating with four universities in Canada and the US to develop a cutting-edge VR platform for health and safety training in the mining industry. This platform will offer highly realistic, customized VR courses, tracked and evaluated within the platform itself.

We are also working closely with mining companies to co-fund the development of 100 VR training modules. This collaborative approach allows us to tailor the platform to specific needs.

This innovative partnership between academia and industry will revolutionize mining safety training, providing a cost-effective and immersive learning experience that prepares workers for real-world challenges.

In what other projects are you currently working on?

We are currently focused on advancing our industrial metaverse for mining, a platform that leverages real-world data to create immersive digital replicas of mining sites. This offers users the abili-

ty to explore global mines in real-time, from Canada and US, to South Africa, Australia and Saudi Arabia.

Our immersive training experiences provide personalized feedback, while AI-powered analytics offer valuable insights to improve operational efficiency.

Do you see a specific gap in Saudi Arabia's mining sector that presents an opportunity for your solutions?

Saudi Arabia's mining sector, while rapidly expanding, presents significant opportunities for innovative solutions. The Kingdom's abundant mineral resources, strong economic foundation, rich cultural heritage, and strategic geographical position provide a compelling backdrop for technological advancement.

A key area for improvement is the sector's digital transformation. Although there is a growing recognition of the potential benefits of advanced technologies, many mining operations still rely on traditional methods. By addressing these digital gaps, we can help Saudi Arabia unlock its full mining potential and contribute to a more sustainable future. ■



Mat Matthews

CEO
CONUNDRUM AI

What opportunity did Conundrum AI see in the market for launching its software?

In the world of advanced process control (APC) software, traditional suppliers offer solid platforms based on linear control, which does not quite fit the unpredictable and nonlinear challenges found in industries like mining. Traditional APC systems merely alert operators when parameters go off track, leading to prolonged downtime while the teams analyze reports and try to fix the problem.

Our solution, however, is an adaptive and fully closed-loop, constantly adjusting and re-optimizing the plant's performance in real-time. For example, in one of our client's plants, the whole process control is autonomous – our platform is changing 300 setpoints every 10 seconds and 5,000 tags per minute, which resulted in an additional revenue. By autonomously controlling plant processes, we open up endless possibilities for plant managers to choose their goals.

What is Conundrum's outlook for Saudi Arabia?

Conundrum brings cutting-edge expertise in AI for industrial automation, enabling Saudi companies to lead in efficiency and innovation. We can help fulfill the vision of a tech-enabled Saudi Arabia that leads the world in sustainable industrial advancements. ■



Junior Potgieter

Global Strategy Head -
Minerals & Mining
VIRIDIEN

How has Viridien evolved from CGG, and what is its focus on KSA?

Viridien, formerly CGG, is an advanced technology company that specializes in Earth science and data science and offers High-Performance Computing (HPC) and Cloud solutions that include AI and Machine Learning capabilities. We rebranded from CGG to Viridien in June 2024.

We recently opened an office in Saudi Arabia, supported by our Sercel sensing and monitoring specialists who provide high-end monitoring solutions.

The oil and gas industry has been using seismic data very effectively to optimize drilling programs and we believe that a similar approach for mining is possible using seismic to define ore bodies and drilling to verify potential.

What role will technology play in exploration?

The sheer volume of data being gathered is reaching a level where it is no longer feasible to analyze it manually. Advanced data science, machine learning and AI can transform raw data into actionable insights to de-risk areas and optimize the drilling process. Drilling is time-consuming, costly, and labor-intensive, so anything we can do to streamline this step holds immense value. ■



Paul House

Managing Director and CEO
IMDEX

How important is KSA becoming for IMDEX?

We currently operate in the region through an agent, as our technologies are designed to be driller-operable and intuitive for geologists, allowing us to maintain a lighter footprint.

Why is early-stage ore body knowledge crucial for successful mining investments?

Typically, mines are developed through limited targeting and exploration, with more knowledge gained as the ore body is developed during production. In contrast, oil and gas invests more time understanding the ore body before extraction. This greater understanding allows for precise deployment of capital, engineering planning, and ore body extraction, presenting the greatest opportunity to maximize returns and ensure success.

A better understanding of the ore body advances precision mining opportunities, allowing more targets to be prosecuted at a lower cost. The next critical step is data analytics and computational processing. We are investing in this through tools like DataRock, drilling analytics, and cloud-based 3D visualization through MinePortal. These technologies combine machine learning, AI and computer vision to accelerate decision-making, improve accuracy and provide actionable insights for new projects. ■



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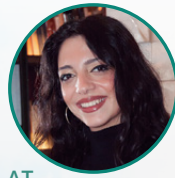
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Thank you!

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