



Under the patronage of the  
Custodian of the Two Holy Mosques,  
King Salman bin Abdulaziz Al Saud

## 2024 Reflections

Ministerial Roundtable: **9 January 2024**  
Conference and Exhibition: **10-11 January 2024**

### Organized by

وزارة الصناعة  
والتروة المعدنية  
Ministry of Industry and Mineral Resources



### Endorsed by



وزارة الطاقة  
MINISTRY OF ENERGY



وزارة الاستثمار  
Ministry of Investment



# The World's Premier Platform On Minerals

In the pages of this Reflections brochure you can read about the achievements of our third, and by far our largest edition to date, of the Future Minerals Forum (FMF).

Just three years after we launched, FMF has truly positioned itself as the world's premier platform on minerals. While in 2022 the Forum saw 3,500 participants, in 2024 we welcomed to the event over 14,000 representatives of governments, international organizations, mining companies and other professionals with an interest in minerals.

These numbers show that we are creating something special based on a commitment to a cause that will, over the long-term, reshape new and existing minerals jurisdictions to create local value and contribute to global sustainability.

They also show that the FMF has cemented its position as the place where the industry connects, and where governments and other stakeholders collectively shift the narrative to shape the future of minerals.

As proof that the Forum is the place where the minerals industry does business, in 2024 we witnessed the signing of deals worth around SAR 75 billion (more than 20 billion USD), that will drive R&D, technology, upstream, and other value chain opportunities.

But beyond the economic value that exists in minerals, there is also social value, hope, and prosperity that can be created for communities by responsible mineral production.

Unlocking that potential needs more than just talk, though. It needs action, collaboration, cooperation, and events such as the FMF to chart a course to developing these new mineral jurisdictions.

The Ministerial Roundtable is one of the ways in which we are delivering action, and this year we had 75 governments around the table – more than ever before, bringing together both supplier and consumer countries.

With 33 Ministers joining us, countries were represented at more senior levels than ever before and we made great progress, endorsing a detailed roadmap for the development of a regional critical minerals framework to promote global collaboration and maximize value creation in supplier countries.

We also agreed further work on exploring value chain creation opportunities for green metals hubs in the region, enabled by new technologies and renewable energy, and we considered draft sustainability expectations.

Other agreements included considering the creation of a regional critical mineral group open to other international organizations under the auspices of FMF and creating a senior level multistakeholder advisory group to provide strategic guidance to the Ministerial Roundtable and FMF, as well as contribute to shaping the global conversation on minerals supply.

Excitingly, we also endorsed a roadmap for the creation of a Mineral Innovation and Acceleration Park, the first phase of a global network of centers of excellence.

All of these conversations and agreements represent a historic moment in shaping the future of minerals.

We are united in ensuring that we drive reliability and sustainability in mineral supply to deliver on the world's energy

transition ambition, and that as we do so we must ensure that we leverage minerals to create social and economic benefit for local communities.

This dual focus constitutes a uniquely powerful and noble cause that I am proud and privileged to defend and it is proof that we are turning talk into action.

Since our inaugural event three years ago FMF has exceeded our highest expectations – not just in the numbers participating and in the world-class caliber of our speakers – but in driving the collaboration required, identifying the priorities and taking big steps forward for the minerals industry.

I hope that this brochure will inspire you to join us at a future event to take part in these important conversations.



**His Excellency Mr Bandar Alkhorayef**  
Minister Of Industry And Mineral Resources

# Turning Talk Into Action

The third edition of the Future Minerals Forum brought together our largest ever cohort of speakers to lead discussion on our themes: 'Towards an International Critical Minerals Framework' and 'Establishing Pillars of New Minerals Value Chains'.

These many distinguished speakers – most of whom are at CEO-level – represented global and regional businesses and other organizations from across the minerals and mining sector and its value chains.

Their presence demonstrated that the FMF has grown to become the world's must-go-to forum for shaping the future of minerals. It differs from other minerals platforms by being government-led, multistakeholder, and uniquely focused on the emerging Super Region covering Africa, Western and Central Asia.

But the FMF is much more than a conference – it also encompasses a Ministerial Roundtable, which this

year was even bigger and even more productive than its predecessors (see page 10) – and it is about more than just talk. It is about action.

To drive that action, the work of the Future Minerals Forum continues throughout the year, and we will see concrete achievement with the creation of a Mineral Innovation and Acceleration Park in Riyadh. This is the first phase in the creation of a global network of centers of excellence, aimed at building capacity.

The Forum has grown beyond simply an annual event and now also drives action on regional and international initiatives, year-long global outreach, and through leading research.

I am pleased to say that many of the conversations, debates, agreements and achievements generated by FMF24 are captured in this brochure, and I invite you to find out more in these pages.



**His Excellency Khalid Saleh Al-Mudaifer**  
Vice-Minister For Mining Affairs







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# Executive Summary

**1** 1. The Ministerial Roundtable, which was held on the first day of the FMF, witnessed the participation of 73 governments, including 35 countries represented at ministerial level, and 16 members of the G20. In addition it saw the participation of 35 international governmental and non-governmental organizations and trade associations.

The conference hosted 250 speakers in 85 sessions. Among them were ministers, high-ranking government officials and heads of the world's largest mining companies confirming the FMF's international reputation as the premier platform for minerals.

With the youngest demographic yet, pointing to a bright future for minerals, FMF witnessed the extraordinary energy of people coming together to make a positive difference.

**6** In total, 75 agreements with a total value exceeding 75 billion riyals were signed between Saudi government agencies and international and local companies in the field of mineral exploration, technology and communications, applications of sustainability standards, localization, training and qualification, and manufacturing.

The launch of the Innovation Oasis and Mining Technology Accelerators in cooperation between the Ministry of Industry and Mineral Resources, the National Industrial Development and Logistics Program (NIDLP), the King Abdulaziz City for Science and Technology (CAXT), the Geological Survey Authority, and Maaden Company.

**3** FMF24 welcomed a record number of attendees, with over 14,000 participants from 133 countries making it a global melting pot for minerals thought leadership, action and deal making.

The Kingdom announced a 90% increase in the value of its mineral resources, reaching the equivalent of 9.4 trillion riyals

A new incentive package worth 685 million riyals was launched, and a licensing competition for the first mining belt in the region was launched in Jabal Sayid, for an area of 4,000 square kilometers.

**9** His Excellency Bandar Alkhorayef, Saudi Arabia's Minister of Industry and Mineral Resources told the FMF: "For me it's truly rewarding to see a global community come together in such a noble cause. I am proud of the fact that we have been consistently optimistic as an industry in believing that we can change course and achieve our goal of bringing social and economic opportunity to more people everywhere."

## Global Action On Minerals

Strategic agreements reached by countries in the MRT to work together on ensuring minerals supply for the energy transition resilient and responsible included :

1. Developing a critical minerals framework to enable global collaboration on creating resilient supply chains
2. Developing sustainability principles setting out expectations of supplier countries
3. Creating a regional network of centers of excellence for capacity building, starting with the establishment of a new Mineral Innovation Acceleration Park (MIAP) to drive geological surveying and innovation.

# Most Important Topics

1. Financing the development of global manufacturing chains
2. The role of recycling and modern technologies in manufacturing chains
3. Transformation of the energy sector in the Kingdom
4. The major mining area is a center for metal processing and manufacturing
5. The role of modern technologies in shaping the future of the sector
6. Why the Great Mining District?
7. Promoting investments in new promising mining areas
8. Develop a roadmap for sustainable manufacturing chains
9. Tamir centers and their role in the major mining area
10. The importance of investing in environmental and social governance in providing critical minerals
11. Critical mineral strategies in a major mining region
12. The Saudi mining sector as a major enabler of transformation



# FMF Growth – The world’s premier platform on minerals

|   | 2022  | 2023  | 2024   |
|---|-------|-------|--------|
|  Ministerial meeting of ministers concerned with mining affairs (state)                              | 32    | 63    | 73     |
|  Organizations (governmental and non-governmental)   | 6     | 21    | 35     |
|  Program sessions (discussion sessions, one-on-one meetings, keynote speeches, and technical talks) | 56    | 79    | 85     |
|  Attendees include senior executives   | 5     | 20    | 45     |
|  Sponsors and exhibitors   | 35    | 96    | 150    |
|  Business meetings   | 658   | 1,362 | 3,100  |
|  Speakers  | 136   | 249   | 250    |
|  Memorandums of understanding and agreements   | 5     | 60    | 75     |
|  Audience  | 3,698 | 9,000 | 14,000 |





# Ministerial Roundtable

**Tuesday 9th January 2024**

Prefacing the FMF was the annual Ministerial Roundtable which this year brought together 73 governments, and 35 senior figures from multilateral organizations, mining industry representatives and NGOs. The Roundtable's objective is to create resilient and responsible minerals and metals value chains, with a specific focus on the Super Region. This region encompasses 80 countries across Africa, Western and Central Asia, all of which possess significant endowments of mineral resources required for the global energy transition.

Participants supported the development of a regional Sustainable Future Minerals Framework incorporating transparency and accountability, as well as a roadmap for implementation and engagement.

They also acknowledged efforts by international organizations to consolidate sustainability standards in the minerals sector. The FMF will engage with these processes, setting out the region's expectations, to ensure they are reflected in the development of standards.

The Roundtable heard that the creation of a Mineral Innovation and Acceleration Park (MIAP) to be established in Riyadh, will come as a first phase in the creation of a global network of centers of excellence aimed at building capacity.



**73**  
Governments

**35**  
Multilateral  
Organizations



Participants again called for increased financing to support supplier countries' development of their minerals sectors, as well as downstream value addition, and agreed to consider the creation of a regional critical mineral group open to other international organizations under the auspices of FMF.

They heard updates on progress on the four initiatives agreed at the 2023 Ministerial Roundtable. On the critical minerals framework, they endorsed the roadmap while on green metals hubs, they agreed work on exploring value chain creation opportunities. In the area of sustainability standards, they considered a set of sustainability draft expectations, and in the Centers of Excellence initiative they endorsed a roadmap for finalizing a framework for regional collaboration including governance structure and operating model for the new MIAP.

Other agreements included the formation of coordination and working groups comprising interested governments and organizations to be convened by FMF, and the establishment of a consultative group on value chain creation covering battery manufacturing, renewable energy and defense sectors.

Lastly, the meeting agreed to create a senior level multistakeholder advisory group to provide strategic guidance to the Ministerial Roundtable and FMF, as well as contribute to shaping the global conversation on minerals supply.



# 73 countries participating in the international ministerial meeting

## G20 countries



Argentina



Australia



Brazil



Canada



China



France



Germany



India



Indonesia



Italy



Japan



Mexico



Russia



South Africa



South Korea



Türkiye



United kingdom



United States

## Asia



Azerbaijan



Bahrain



Bangladesh



Iran



Iraq



Jordan



Kazakhstan



Kuwait



Kyrgyzstan



Malaysia



Oman



Pakistan



Qatar



Sri Lanka



Tajikistan



Thailand

The United Arab  
Emirates

Turkmenistan



Uzbekistan



Yemen

## Africa



Algeria



Angola



Botswana



Burundi



Chad

Democratic Republic  
of the Congo

Djibouti



Egypt



Ghana



Guinea Bissau



Kenya



Libya



Malawi



Mauritania



Morocco



Nigeria



Republic of Guinea



Senegal



Sierra Leone



Somalia



South Sudan



Sudan



Tanzania



Tunisia



Uganda



Zambia

## Europe



Austria



Belgium



Bulgaria



Denmark



Finland



Holland



Norway



Spain



Sweden



Switzerland



Ukraine

## South America



Chilean



Peru

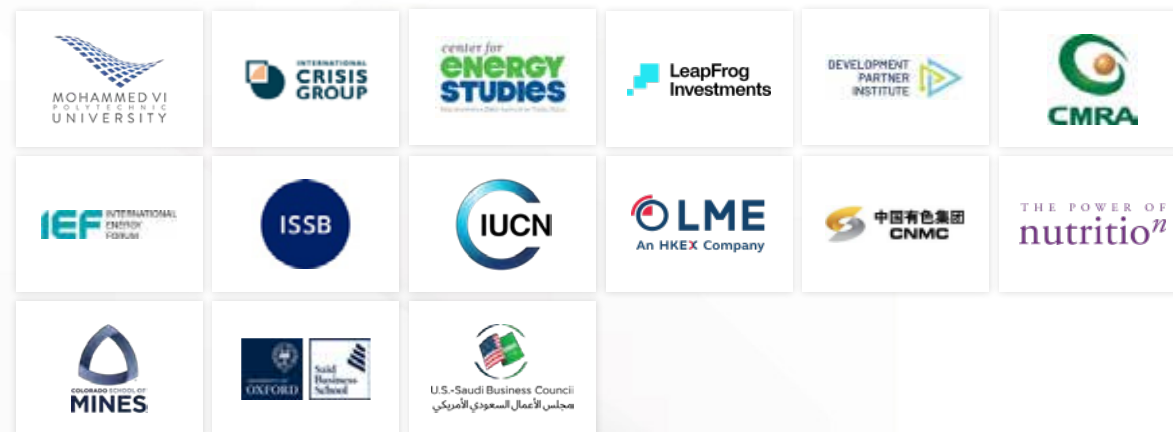


# 35 international organizations participated in the ministerial meeting

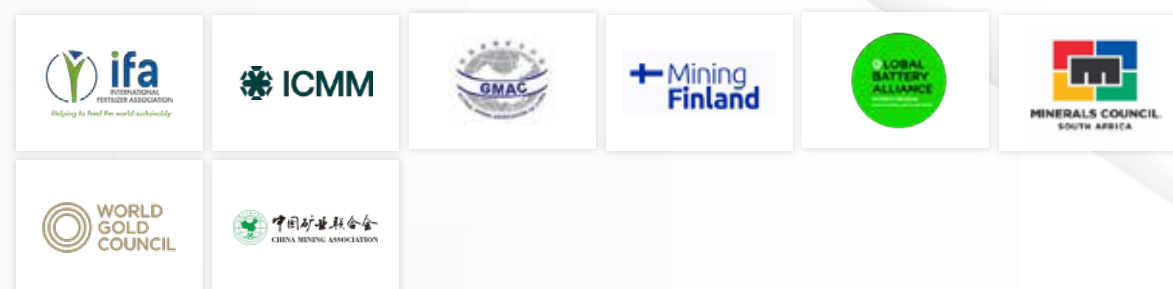
## International and regional organizations



## Non-governmental organizations



## Business associations





# International Geological Surveys Meeting

**Tuesday 9th January 2024**

The first ever International Geological Surveys meeting took place ahead of the FMF, bringing together global leaders in geological surveys. This landmark event aimed to address geological surveying challenges and promote international collaboration, fostering growth and sustainability in the mineral exploration sector.

The meeting brought together 36 Chief Executives of geological surveys from diverse regions, including Africa, Asia, Europe, and the Americas. It marked a significant step towards modernizing geological surveying capabilities, digitizing geological data, and supporting capacity building.

At the meeting, participants emphasized the pivotal role of geological surveys in the context of surging global demand for minerals essential for the electrification of transportation, industrial production, and the energy transition. The lack of reliable geological data and skilled professionals, they agreed, hindered efforts to identify mineral deposits and attract investments.



Participants agreed on the importance of capacity building in addressing these challenges – with people, processes, and tools emerging as the key pillars of capacity building and collaboration.

In terms of understanding geological potential, participants discussed ways to close the geological survey gap by identifying priority areas for surveying and exploring funding sources. They highlighted the role of new technologies in expediting exploration.

Saudi Arabia's Geoscience Data Analytics Centre (GDAC) and National Geological Database (NGD) were presented as models for transparent geological data management systems. GDAC, utilizing advanced Artificial Intelligence, offers a cloud-based platform for global geological data access, revolutionizing data gathering and exploration.

Participants also explored the concept of collaborative spaces for geological surveys under the Ministerial Roundtable's centers of excellence initiative. These centers will serve as hubs for capacity building across eight pillars and facilitate knowledge exchange.

The International Geological Surveys meeting set the stage for global collaboration, ensuring that geological advancements play a pivotal role in meeting the world's growing mineral demands. Participants were invited to continue the dialogue annually in Riyadh, and a technical workshop will be held by mid-2024. This will explore opportunities through GDAC and the Mineral Innovation and Acceleration Park (MIAP), along with assessing the establishment of a geological center of excellence. To advance progress, a coordination group will be formed, led by the Saudi Geological Survey under the auspices of the FMF.



# Conference

## 10 – 11 January 2024

With the event now in its third year, the Future Minerals Forum 2024 provided more opportunities than ever for attendees to hear from 250 of the leading and most senior voices in the metals and minerals industry. This year these included Eduardo Bartolomeo, Chief Executive Officer of Vale, Stuart Chambers, the Chairman of Anglo American and Dominic Barton, Chairman of Rio Tinto.

Various formats were used the sessions, from keynote addresses and one-to-one fireside chats to panel sessions and country showcases. This latter format enabled countries such as the DRC, Pakistan and Ghana to shine a spotlight on the most pressing issues of relevance to their mining jurisdictions.

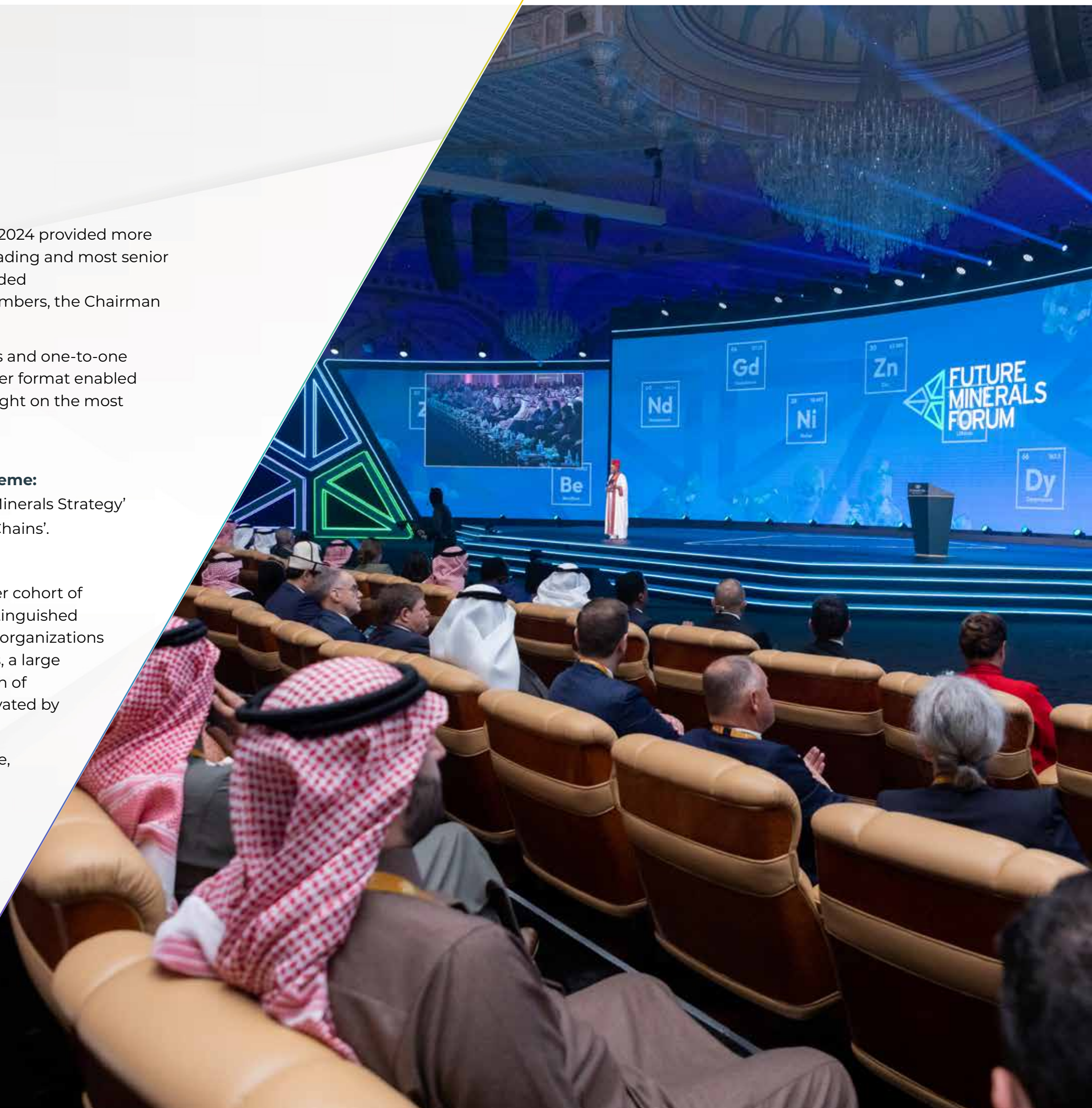
### Each day of the 2024 Forum was dedicated to a specific theme:

1. The first day to looking 'Towards an International Critical Minerals Strategy'
2. The second to 'Establishing Pillars of New Minerals Value Chains'.

The conference element of FMF brought together its largest ever cohort of speakers to lead discussion on these two themes. The many distinguished speakers represented global and regional businesses and other organizations from across the minerals and mining sector and its value chains, a large percentage of whom were at CEO-level. Their depth and breadth of expertise is unsurpassed and delegates were inspired and motivated by what they had to say.

Speakers explored topics such as creating the Mine of the Future, the transformative technologies that will reshape the industry, how AI and automation will drive the future workforce, and how we can accelerate the industry's future through a tech-enabled transformation.

However, the Future Minerals Forum as a whole is about much more than simply discussions, and so the afternoon of each day was devoted to ways that the industry can turn talk into action – a central ambition of the FMF.





# Featured speakers

## Your Highnesses and Excellencies



**H.R.H. Prince Abdulaziz bin Salman Al Saud**  
Minister of Energy,  
Saudi Arabia



**H.E. Adel Al-Jubeir**  
Minister of State for Foreign  
Affairs and Envoy for  
Climate Affairs, Saudi Arabia



**H.E. Mohammed Al Jadaan**  
Minister,  
Ministry of Finance



**H.E. Bandar Al Khorayef**  
Minister,  
Ministry of Industry and  
Mineral Resources



**H.E. Saleh Al Jasser**  
Minister,  
Ministry of Transport and  
Logistic Services



**H.E. Khalid Al-Falih**  
Minister,  
Ministry of Investment



**H.E. Faisal Al-Ibrahim**  
Minister of Economy  
and Planning



**H.E. Yasir Al-Rumayyan**  
Governor,  
Public Investment Fund (PIF)



**H.E. Khalid Al-Mudaifer**  
Vice-Minister for Mining  
Affairs, Ministry of Industry  
and Mineral Resources



**H.E. Khalil Ibrahim  
Ibn Salamah**  
Deputy Minister,  
Industrial Affairs,  
Ministry of Industry and  
Mineral Resources,  
Saudi Arabia

## International ministers



**H.E. Antoinette  
N'Samba Kalambayi**  
Minister of Mines,  
DRC



**Hon. Samuel Jinapor**  
Minister of Lands and  
Natural Resources,  
Ghana



**H.E. Nusrat Ghani**  
Minister of State for Industry  
& Economy,  
UK



**H.E. Salim Mvurya**  
Cabinet Secretary  
for Mining,  
Blue Economy and  
Maritime Affairs, Kenya



**Benjamin Gallezot**  
Interministerial delegate  
for supplies of strategic  
minerals and metals,  
France



**Amos Hochstein**  
Senior Energy Advisor,  
United States of America



**Mohamed Ali**  
Minister of Energy,  
Republic of Pakistan



**H.E. Dele Alake**  
Minister of Solid Minerals  
Development,  
Nigeria



**H.E. Paul Kabuswe**  
Minister of Mines and  
Minerals Development,  
Zambia



**Willie Redman**  
Minister of Economy,  
Finland



**Sara Modig**  
State Secretary Ministry of  
Climate and Enterprise,  
Sweden



**Hon. Dr. Peter Lokeris**  
Minister of State for  
Mineral Development,  
Uganda





Leading mining companies and investors



**Dominic Barton**  
Chairman, Rio Tinto



**Eduardo Bartolomeo**  
Chief Executive Officer,  
Vale



**Stuart Chambers**  
Chairman,  
Anglo American



**Mark Bristow**  
Chief Executive Officer,  
Barrick Gold Corporation



**Robert Friedland**  
Founder & Executive  
Co-Chairman,  
Ivanhoe Mines



**Steele Li**  
Vice Chairman & CIO,  
CMOC Group



**Mark Cutifani**  
Chairman,  
Vale Base Metals



**Bob Wilt**  
Chief Executive Officer,  
Maaden



**Jeremy Weir**  
Chief Executive Officer,  
Executive Chairman,  
Trafigura



**Jonathan Price**  
Chief Executive Officer,  
Teck



**Mikael Staffas**  
President & CEO,  
Boliden



**Mike Brown**  
Executive Vice President,  
Ajlan & Brothers Holding  
Company



**William Oplinger**  
Chief Executive Officer  
Alcoa



**Themba Mkhwanazi**  
Regional Director,  
Africa & Australia  
Anglo American



**Helena Nonka**  
Strategy &  
Sustainability Director,  
Anglo American



**Amanda van Dyke**  
Managing Partner,  
ARCH Emerging  
Markets Partners

Leading mining companies and investors



**Frank Giustra**  
President and Chief  
Executive Officer,  
Fiore Group of Companies



**Gareth Penny**  
Independent Non-Executive  
Director & Chairman,  
Ninety One



**Jeff Currie**  
Partner Alumnus,  
Goldman Sach



**Rahim Bhapoo**  
Managing Director,  
BMO Capital Markets



**Adam Lundin**  
Chair,  
Lundin Mining



**Martin Horgan**  
Chief Executive Officer,  
Centamin



**Benedikt Sobotka**  
CEO,  
Eurasian Resources Group  
Co-Chair,  
Global Battery Alliance

International organizations and bodies



**Gerd Müller**  
Director-General of UNIDO



**Dr. Kwasi Ampofo**  
Head of Metals and Mining,  
BloombergNEF



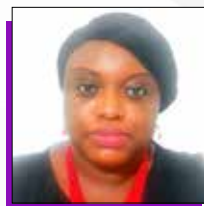
**Sergio Mujica**  
Secretary General,  
International Organization  
for Standardization



**Rohitesh Dhawan**  
President & Chief Executive  
Officer, International Council  
on Metals & Mining (ICMM)



**Dr. Alawi Swabury**  
CEO/Founder,  
Africa Battery Initiative



**Dr Vanessa Ushie**  
Acting Director,  
African Natural Resources  
Management and  
Investment Centre,  
African Development Bank





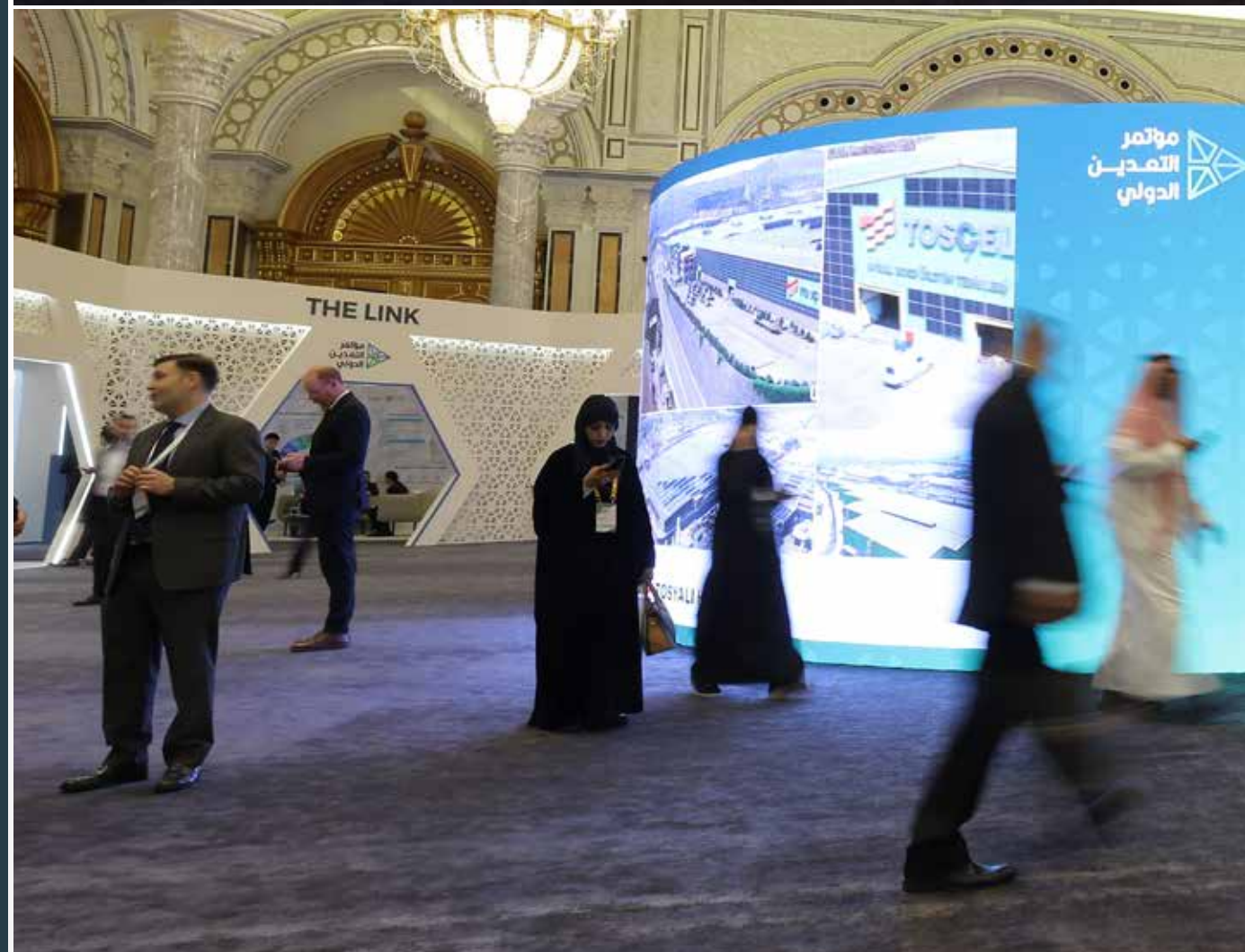
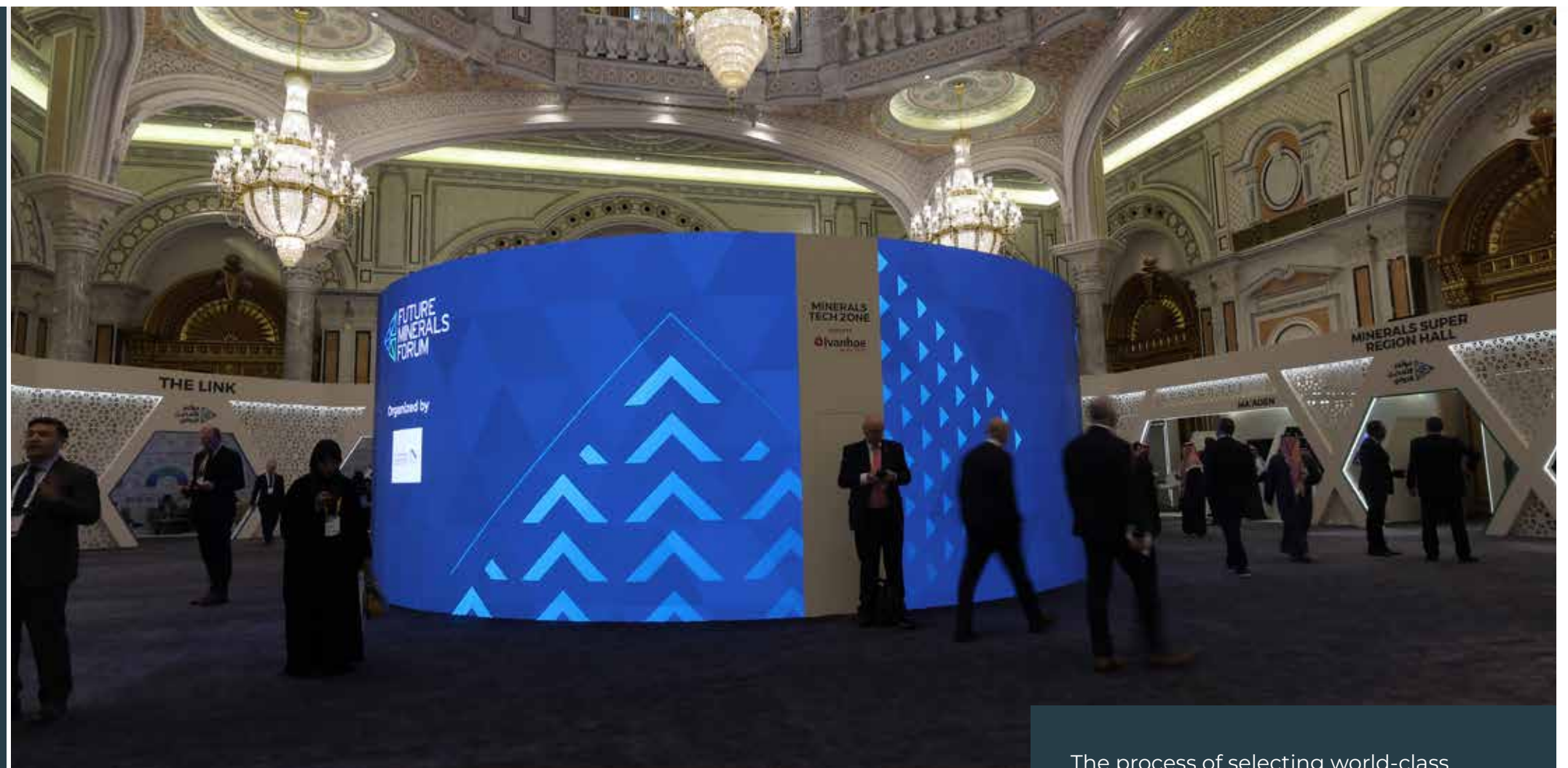
# Mineral Tech Zone

Dedicated to displaying the latest and future technologies in the mining and minerals sector, this year's Mineral Tech Zone followed the success of the inaugural Zone which took place at the Future Minerals Forum in 2023.

As an initiative that is aimed at shaping the future of our industry, the Forum is committed to showcasing the very latest in cutting edge mining and minerals technologies. These are helping to create a safer, more efficient working environment as well as a more sustainable one.

With ore grades declining, the challenges of water scarcity, and operating licenses becoming more difficult to obtain, we are seeing more and more mining companies focusing R&D efforts on the development of technological approaches to these issues.

Today, technology companies are driving the development and adoption of green technologies for metals and mineral production. By doing so, they are enabling environmental impact to be minimized and resources conserved. By enabling alternative extraction methods and by pushing for greener alternatives, technology companies are contributing to more responsible mineral value chains.



The process of selecting world-class exhibitors for the Zone was led by the King Abdulaziz City for Science and Technology (KACST), the Kingdom's scientific organization which develops mechanisms to transform the outputs of scientific research and technical development into industrial products. KACST formed a specialized evaluation committee which assessed multiple international entries for the Mineral Tech Zone 2024, as part of a prequalification process for participation.

This year, the Zone showcased a number of game changing technologies for the mining and minerals industry including drones, remote data measurement units, electric batteries, and virtual simulation technology. These technologies facilitate operational and administrative functions as well as remote monitoring operations, enabling businesses to reduce operating costs and adhere to environmental standards more effectively.



# Mineral Exploration Zone

















The Super Region, comprising Africa, Western and Central Asia, holds over 50% of the world’s critical mineral reserves, including copper, nickel, lithium and rare earths that are under-developed due to lack of exploration. Despite this, the region attracts only 12% of global exploration spending. This gap poses a glaring challenge in meeting the growing demand for minerals.

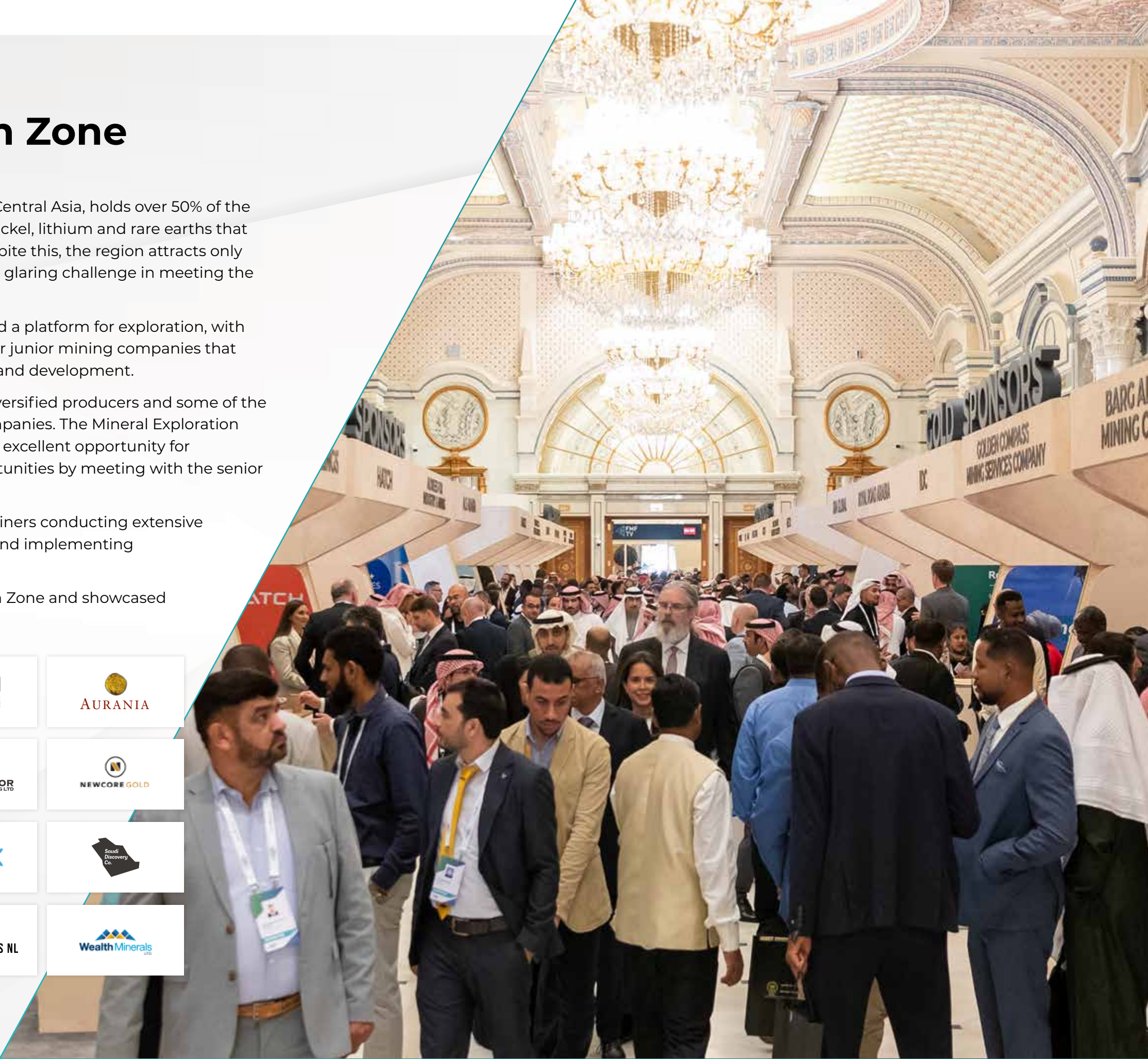
As a result, the Future Minerals Forum 2024 provided a platform for exploration, with a dedicated zone for junior exploration companies or junior mining companies that specialize in the early stages of mineral exploration and development.

This provided a showcase of global projects from diversified producers and some of the most compelling exploration and development companies. The Mineral Exploration Zone within the Future Minerals Forum provided an excellent opportunity for interested parties to identify new investment opportunities by meeting with the senior executives of these companies.

The Zone provided a premium platform for junior miners conducting extensive exploration activities, assessing economic viability, and implementing sustainable practices.

Companies who took part in the Mineral Exploration Zone and showcased their services included:

|   |   |   |   |
|---|---|---|---|
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |





## The world's premier platform for mineral investment and international cooperation. 75 agreements worth \$20bn

During the third international ministerial meeting of ministers concerned with mining affairs, the Ministry of Industry and Mineral Resources signed four memorandums of understanding with a number of countries participating in the meeting in the field of mineral wealth.



Memorandum of understanding with the Ministry of Energy Transition and Sustainable Development in the Kingdom of Morocco



Memorandum of understanding with the Ministry of Petroleum and Mineral Resources of the Arab Republic of Egypt



Memorandum of understanding with the Ministry of Natural Resources and Environment of the Russian Federation



Memorandum of Understanding with the Ministry of Mines of the Democratic Republic of the Congo





# Most prominent trade agreements



**Convention**  
A cooperation agreement between Manara Metals Company and the Japanese Organization for Mineral and Energy Security (JOGMEC), to enhance international investments in many countries, with a focus on Africa and Latin America.

**Impact**  
Providing critical minerals such as copper, lithium, nickel and minerals involved in the global energy sector transformation.



**Convention**  
A conditional agreement between the Royal Commission for Jubail and Yanbu (Ras Al-Khair City) and Saudi Aramco, worth 15 billion riyals, to allocate an area of 183 hectares in Ras Al-Khair City to produce 3.5 million tons annually of steel sheets.

**Impact**  
Enhancing added value, expanding the product portfolio, accessing global markets, and providing 1,455 direct job opportunities.



**Convention**  
Agreements between the Saline Water Conversion Corporation, JSG Alliance, and Ningxia TB Company, worth 242 million riyals, to enhance local content and empower national industries.

**Impact**  
Maximizing the use of brine waste water and additional quantities of water and minerals produced, which support the manufacturing chain.

**75**  
Agreement and memorandum of understanding

**\$USD 20 Bn**  
Worth of Business Deals and Agreements Concluded



**Convention**  
An agreement between the Royal Commission for Jubail and Yanbu (Ras Al-Khair City) and the Space Company for the production of poles, to allocate an area of 80 hectares in the city of Ras Al-Khair, with a capacity of 1.43 million, with an investment volume of 6.75 billion riyals.

**Impact**  
Work to localize the battery industry and the electric car industry, and provide 1,200 direct job opportunities.



**Convention**  
Cooperation agreements between the Ministry of Industry and Mineral Resources, the Ministry of Investment, the (Ndelab) program, Aramco, and the King Abdulaziz City for Science and Technology with Newlab.

**Impact**  
Strengthening international partnerships to attract investments, support entrepreneurship, and develop sustainable solutions related to the energy, mining, industry, and logistics sectors.



**Convention**  
An agreement between Rafd Al-Nahas Industrial Company and Glencore Technology Company, with an estimated value of 65 billion riyals.

**Impact**  
Developing a copper smelter is the first of its kind in the region. This agreement also contributes to developing human capabilities and transferring technical expertise.



**Convention**  
An investment agreement between the Royal Commission for Jubail and Yanbu (Ras Al-Khair City) and Vale Company, worth 12 billion riyals, to produce iron ore briquettes.

**Impact**  
Strengthening the Kingdom's capacity in vital mining industries, as it is expected to produce 15 million tons annually, and provide 1,800 direct job opportunities.



**Convention**  
Agreements between the Saudi Authority for Industrial Cities and Technology Zones with Al-Bonyan Iron and Steel Industry Company and Saraya Al-Alfi Company, worth 77 million riyals.

**Impact**  
Providing priority minerals that contribute to enhancing the Kingdom's industrial development and supply chains.



**Convention**  
A memorandum of understanding between the Saudi Export-Import Bank and its American counterpart to support exports in a variety of sectors.

**Impact**  
Strengthening economic relations between the Saudi and American markets, and enhancing the exchange of products and services.



**Convention**  
A cooperation agreement between the Ministry of Investment, the Ministry of Industry and Mineral Resources, and Jiangxi Copper Co., Ltd., to cooperate in evaluating and exploring investment opportunities in the copper manufacturing chain.

**Impact**  
Exploration and development of copper manufacturing chain projects in the Kingdom of Saudi Arabia, which is one of the strategic minerals.





## DAY ONE CONFERENCE SESSIONS





Welcome Address:

TH.E. Bandar Khorayef the minister of Industry and Mineral Resources in KSA, opened the forum on behalf of the custodian of Salman Ben Abdul Aziz, and conveyed the keenness of the loyal prime Prince Muhammad Ben Salman, of the success of forum as it fulfilled all the objectives.

His Excellency Minister said that the FMF has been able to position as the world’s premier platform on minerals, and the numbers of participants have increased from 3500 participants in 2022 to over 16000 this year and also the forum continues to grow in both size and stature.

He assured that it’s going to be witnessed in the upcoming two days the singing of deals worth around SAR 75 billion (more than 20 billion USD), which will drive R&D, technology, upstream and other value chain opportunity.

He confirmed that it has been achieved strong government presence and commitment which reflected in 73 governments.

He informed the new attendants that the FMF has been established because Vision 2030 had identified mining as the third key industrial pillar in transforming the economy and more to contribute positively to the global discussion on the future of minerals, as well as critical mineral is crucial for energy transition.

H.E. Bandar Khorayef announced initiatives beginning with the exploration incentive program in collaboration with the Ministry of investment with a budget of over \$182 million, which will de-risk in the exploration sector.

In addition, he announced the 5th and 6th rounds of licensing programs, offering access to 33 exploration sites this year.

He promised to start to offer county-size sites for exploration, beginning with the jabal Sayid mineral belt, spanning over 4000 sq. km.



H.E. Bandar Khorayef  
Minister of Industry  
and Mineral Resources



And as a result of the meeting of the previous day (ministerial roundtable discussion)

Firstly, it has been endorsed a detailed roadmap for the development of a regional critical mineral framework to promote global collaboration and maximize value creation in supplier countries.

Secondly, it has been agreed on further work on exploring value chain creation opportunities for green metals hubs in the region enabled by new technologies and renewable energy.

Thirdly, it has been considered draft sustainably expectations to be incorporated into the framework.

Finally, it has been endorsed a roadmap for the creation of mineral innovation and an acceleration park.

All of the proof is turning talk into action, and the results of FMF in 2022 are working.

He announced that the new estimation for the kingdom untapped mineral potential had increased from \$1.3 to \$2.5 trillion dollars and an increase of 90% thanks to the great previous effects.

This is based on new discoveries in the form of rare earth elements, and a combination of the increase of volumes in phosphates, gold, zinc, and copper as well as a re-evaluation of these minerals.

The figure he shared (\$1.3 to \$2.5 trillion) is based on mapping 30% of the Arabian Shield and more to discover.

He ended his speech, urging the attendants to contribute their opinions and collaborate with each other and thanking them for attendance.



PLENARY SESSION 1  
Towards a critical minerals strategy for the Super Region

Panel:  
Why the Super Region? Should the Super Region have its own critical minerals strategy?

Moderated by journalist and former BBC News anchor David Eades, the panel included distinguished guests H.E. Muhammad Ali, Minister of Energy Pakistan; H.E. Nusrat Ghani, Minister of State for Industry and Economy UK; H.E. Dele Alake, Minister of Solid Minerals Development Nigeria; Stuart Chambers, Chairman of Anglo American; Robert Wilt, Chief Executive Officer of Ma’aden; and Steele Li, Vice Chairman & Chief Investment Officer of CMOC Group Limited.


**Summary:** The panel discussion centered on the strategic significance of the Super Region in transitioning to clean energy and reducing greenhouse emissions, which has drastically heightened the demand for critical minerals like lithium and nickel.

The panelists discussed the need for strategic investment and collaboration between the public and private sectors, as well as the potential of the Super Region to exploit unique mineral resources for economic and social gains, including developing renewable energy sources.




They addressed the challenges and opportunities in mineral extraction and processing that minimize carbon emissions, the influence of cultural differences on regional cooperation, the Super Region’s role as a pivotal mining hub, and its potential impact on global markets.


Moderator




David Eades  
Journalist/ Former  
BBC News




H.E. Muhammad Ali  
Minister of Energy,  
Pakistan




H.E. Nusrat Ghani  
Minister of State for  
Industry and Economy,  
UK




H.E. Dele Alake  
Minister of Solid  
Minerals Development,  
Nigeria



Stuart Chambers  
Chairman, Anglo  
American



Robert Wilt  
Chief Executive Officer,  
Ma’aden



Steele Li  
Vice Chairman and  
Chief Investment  
Officer, CMOC Group  
Limited





Highlighting a projected 400% increase in demand for critical minerals by 2040, the panel emphasized the urgency of a unified approach to sustainably meet global needs. They concluded that the Super Region is committed to significantly enhancing the mining sector’s role in clean energy transitions and supporting economic development through responsible mineral practices.

**Overview:** David Eades initiated the discussion by asking Muhammad Ali about Pakistan’s new strategy and what the Super Region concept means in that context. Muhammad Ali emphasized the global shift towards reducing greenhouse emissions to net zero through clean energy solutions like wind turbines, which significantly increase the demand for critical minerals such as lithium and nickel.

David then questioned how these resources could be extracted and processed to make the world a better place, highlighting the need for strategic regional investment and public sector involvement. He also noted Nigeria’s rich mineral potential and determination to enhance its mineral sector. In response, Dele Alake stressed the importance of Nigeria’s transition to clean energy and the significant role of the Super Region in harnessing Africa’s unique mineral resources, positively impacting social and economic aspects.

The conversation then shifted to Nusrat Ghani, who, as a representative of the UK, emphasized the critical importance of extracting and globally sharing these minerals for environmental sustainability. She supported the continuation of the program, noting that the demand for critical minerals is expected to increase by 400% by 2040.

David discussed with Stuart Chambers the acceleration of mining and the challenges of processing and providing minerals without further carbonizing the world. Stuart emphasized the necessity of cooperation between the public and private sectors and proposed developing renewable energy sources in Africa to aid progress and support local communities.

Steele Li shared insights on China’s strategic approach to utilizing the Super Region’s abundant resources and strategic location. He said the region offered a glimmer of hope to the conundrum of mineral supply despite its significant cultural differences and present challenges.

David inquired whether competitive strategies could enhance benefits, to which Robert Wilt responded by highlighting Saudi Arabia’s central role in the Super Region and the necessity of building a comprehensive value chain across the region through collaborative efforts.

Nusrat Ghani highlighted the importance of recognizing countries’ efforts through frameworks like the ICMM, and Dele Alake added that the Super Region could greatly enhance opportunities for Africa. Muhammad Ali reiterated the challenges of disparities in technology and skills across countries but remained optimistic about growth and cooperation.

Stuart Chambers concluded the discussion by expressing confidence that cooperation among the countries would overcome these challenges. The panel collectively recognized the Super Region as a significant opportunity for committed countries to collaborate and achieve mutual benefits.



# KEYNOTE ADDRESS

## Towards a critical minerals strategy for the Super Region

### Panel: Saudi Arabian Energy in Transition

**Summary:** H.R.H. Prince Abdulaziz bin Salman Al Saud, Minister of Energy of Saudi Arabia, opened his speech by discussing the country’s proactive approach to energy transition since 2019, which had been recognized at COP 28. He then highlighted the Saudi Green and Middle East Green initiatives as central to adopting the circular carbon economy.

He emphasized Saudi Arabia’s shift from being seen solely as an oil-exporting country to one that produces diverse forms of energy, and detailed the commitments made at COP 28 for global efforts like tripling renewable capacity and reducing emissions.

Prince Abdulaziz also outlined the Kingdom’s strategic energy plans, including reducing carbon emissions, enhancing energy efficiency, and utilizing nature-based solutions. He concluded by stressing the importance of mining for critical minerals like cobalt and lithium due to the energy transition and called for local and global collaboration to meet these new demands, reinforcing Saudi Arabia’s role in supporting sustainable development and international climate goals.

**Overview:** H.R.H. Prince Abdulaziz bin Salman Al Saud, Minister of Energy of Saudi Arabia, opened the session with a speech on the support for mining and changes in energy security, associated costs, and security issues.

Prince Abdulaziz further discussed Saudi Arabia’s efforts since 2019 in investing in the energy transition, which had been recognized at COP 28. He noted that in 2019, Saudi Arabia adopted the circular carbon economy approach and subsequently launched the Saudi Green Initiative and the Middle East Green Initiative in 2021.



H.R.H. Prince Abdulaziz bin Salman Al Saud  
Minister of Energy,  
Saudi Arabia

These initiatives are the main pillars of achieving the circular carbon economy. He added that Saudi Arabia has launched the Greenhouse Gas Crediting & Offsetting Mechanism (GCOM).

He expressed a desire to spend the next two or three years ensuring the implementation of NFCC standards and hopes to establish a regional carbon or emissions market tailored to the needs of Saudi Arabia and its surrounding region.

At COP 28, discussions emphasized the need for a deep, rapid, and sustained reduction in greenhouse gas emissions, aligning with the 1.5°C pathways. The discussions called for:

- (A) Tripling renewable energy capacity globally and doubling the global average annual rate of energy efficiency improvements by 2030.
- (B) Accelerating efforts towards the phase-down of unabated coal power.
- (C) Accelerating global efforts towards net-zero emissions energy systems utilizing zero and low-carbon fuels well before, or by, mid-century.
- (D) Transitioning away from fossil fuels in energy systems in a just, orderly, and equitable manner, accelerating action in this critical decade to achieve net zero by 2050 in line with science.
- (E) Accelerating zero or low-emission technologies, including renewables, nuclear abatement, and removal technologies such as carbon capture, utilization, and storage, particularly in hard-to-abate sectors and low-carbon hydrogen production.
- (F) Accelerating and substantially reducing non-carbon-dioxide emissions globally, including methane emissions by 2030.





- (G) Accelerating the reduction of emissions from road transport on a range of pathways, including through infrastructure development and rapid deployment of zero and low-emission vehicles.
- (H) Phasing out inefficient fossil fuel subsidies that do not address energy poverty or transitions as soon as possible.

He also stressed that Saudi Arabia has already commissioned the Efficiency Center, which, according to his estimates, puts the gap between the USA, EU, and KSA at about five years. He outlined the Kingdom’s approach to energy transition:

- (1) Reduce:
- Liquid displacement
  - Renewable energy production and export
  - Combined-cycle gas plant with carbon capture readiness
  - Energy efficiency program
  - Clean and green hydrogen production and export
- (2) Reuse:
- Enhanced Oil Recovery (EOR)
  - CO2 for food and beverages

- (3) Recycle:
- Carbon Capture and Utilization
  - Glycol and urea
  - Green methanol
  - Synthetic Aviation Fuel
  - Carbon cured concrete
- (4) Remove:
- Via the Carbon Capture and Storage (CCS) hub in Jubail
  - Nature-Based Solutions

He emphasized that the energy transition creates opportunities in the mining sector as this transition will create demand surges for metals such as cobalt, nickel, lithium, and silicon. He confirmed that local and global collaboration to ensure availability is key, and the Kingdom plans to exploit these minerals through clean mining and incubators domestically, unlocking opportunities as the Kingdom offers clean energy and promotes investment.

He encouraged other government agencies to work collectively, as Saudi Arabia’s concerns are not just about finding enough metals and raw materials to manufacture vehicles but also about delivering on their potential and helping everyone involved. He concluded his speech by reaffirming Saudi Arabia’s commitment to its partners.



# FIRESIDE CHAT 1

## Towards a critical minerals strategy for the Super Region

### Panel: Interview with H.E. Yasir Al-Rumayya

Eithne Treanor, Managing Director of E.Treanor Media, moderated this interview.

**Summary:** H.E. Yasir Al-Rumayyan discussed Saudi Arabia’s strategic approach to capitalizing on the global shift towards mineral resource demand, which is expected to increase significantly by 2040. He highlighted the Kingdom’s ambitious exploration programs for minerals such as gold, zinc, and lithium, and the importance of partnering with global entities to ensure local access to unavailable essential minerals. Al-Rumayyan emphasized the role of artificial intelligence and data analysis in mining and noted the challenges faced by trading companies due to mineral resource deficits. He also mentioned the initiation of a new academic program in mining science and engineering at King Fahd Petroleum University to support the industry’s growth. Furthermore, he underscored Saudi Arabia’s commitment to maintaining low carbon emissions in mining operations, positioning the country as a leader in sustainable mining practices.

**Overview:** Eithne welcomed H.E. Yasir Al-Rumayyan and asked him how Saudi Arabia plans to strategically capitalize on the current global shift and meet the increasing supply demands. H.E. Yasir Al-Rumayyan stressed that demand for minerals is expected to increase sixfold by 2040 as part of the efforts to reach net zero targets by 2050, with estimates for the Kingdom’s untapped mineral resources having risen from \$1.3 trillion to \$2.5 trillion. Furthermore, he noted that 40,000 square meters of mineral resources will be explored, emphasizing that Saudi Arabia is conducting one of the largest global exploration programs for minerals such as gold, zinc, and lithium.


However, not all necessary minerals are available locally. Saudi Arabia is thus looking to bring in the right partners to ensure access.




Al-Rumayyan also pointed out that mining involves not only extracting mineral resources but also harnessing vast data, particularly from the oil and gas sectors, to enhance mineral investments. He mentioned that 74% of trading company leaders face challenges due to deficits in mineral resources. Additionally, he highlighted the launch of a new program with King Fahd Petroleum University, offering the first bachelor’s degree in mining science and engineering, where artificial intelligence will play a significant role in mining and manufacturing.

The Kingdom has started with international partners to invest in infrastructure worldwide, although some exploration challenges and legislative issues remain. Al-Rumayyan concluded that mining offers enormous opportunities for investment, but it also increases emissions. He said that Saudi Arabia’s emissions are among the lowest in the global industrial sector, significantly lower than the industry average – a testament to the country’s commitment to achieving zero carbon emissions.

Moderator



**Eithne Treanor**  
Managing Director, E. Treanor Media



**H.E. Yasir Al-Rumayyan**  
Governor, Public Investment Fund (PIF)





PLENARY SESSION 2  
Towards a critical minerals strategy for the Super Region

Panel:  
Making Africa, Western and Central Asia processing and manufacturing hubs

The FMF hosted a panel discussion titled “Making Africa, Western and Central Asia Processing and Manufacturing Hubs,” moderated by Tumi Makgabo, Broadcaster and Entrepreneur at Africa Worldwide Media. The panel included H.E. Khalid Al-Falih, Minister of Investment Saudi Arabia; Geoffrey Pyatt, Assistant Secretary for Energy Resources US Department of State; H.E. Paul Kabuswe, Minister of Mines and Minerals Development Zambia; Dominic Barton, Chairman Rio Tinto; Eduardo Bartolomeo, Chief Executive Officer Vale; and Mutlaq H. Al-Morished, Board Member & CEO of Tasnee.

**Summary:** The FMF panel titled “Making Africa, Western and Central Asia Processing and Manufacturing Hubs” focused on the critical role of minerals such as lithium and copper in the global shift towards clean energy. The panel highlighted the urgent need for substantial investment to support production and the strategic importance of partnerships in addressing the challenges of resource deficits and sustainability.



The discussion also emphasized the opportunity presented by the transition to clean energy, strategic mineral partnerships like the DRC Zambia battery council, and the comprehensive approach required to effectively manage resource demands and environmental impacts. The consensus underscored the necessity for accelerated action and equitable resource management to support sustainable development in the regions discussed.

**Overview:** H.E. Khalid Al-Falih, Minister of Investment of Saudi Arabia, began by discussing the critical minerals needed for attracting investment companies, noting that resource demand is expected to double in the next century. He mentioned that many current production processes are declining, highlighting the need for trillions of dollars over the coming decades to position the Kingdom as a connector between countries.

While H.E. Paul Kabuswe, Minister of Mines and Minerals Development Zambia, recognized the great opportunity for countries like Zambia in the global demand for critical minerals. He highlighted Zambia’s century-long mining history with minerals like lithium, copper, manganese, and graphite and encouraged policy optimization and collaboration for regional benefit.

Meanwhile, Geoffrey Pyatt, Assistant Secretary for Energy Resources US Department of State emphasized Saudi Arabia’s role in meeting global energy needs and the projected graphite requirements by 2040, citing the need to mobilize \$4 trillion annually to meet the 2030 energy transition goals. He appreciated the partnership efforts exemplified by the DRC Zambia battery council agreement signed in Washington DC during the African leader’s summit in 2022, and stressed the need for mineral security partnerships to leverage the benefits of their resources.

Mutlaq H. Al-Morished, Board Member & CEO of Tasnee, confirmed Tasnee’s long-standing involvement in the titanium business, with operations spanning from mines in countries like Australia, South Africa, and Brazil to manufacturing airplane parts, ensuring sovereignty from mine to final product.

Later, Eduardo Bartolomeo, CEO of Vale, discussed how the elimination of carbon dioxide represents an opportunity, not a threat, highlighting the importance of the Super Region, the need for partnerships, and its role in decarbonization.

Dominic Barton, Chairman of Rio Tinto, closed the session by stating that manufacturing companies must secure sufficient raw materials to maintain production capabilities and praising the shift towards clean and renewable energy sources.

The panelists collectively agreed that a long-term policy agreement is needed to prioritize continuous work, accelerate clean carbon disposal, equitable division of supply costs, and address the challenges of short-term obstacles.



**Tumi Makgabo**  
Broadcaster and Entrepreneur, Africa Worldwide Media



**H.E. Khalid Al-Falih**  
Minister of Investment, Saudi Arabia



**Geoffrey Pyatt**  
Assistant Secretary for Energy Resources, US Department of State



**H.E. Paul Kabuswe**  
Minister of Mines and Minerals Development, Zambia



**Dominic Barton,**  
Chairman, Rio Tinto



**Eduardo Bartolomeo,**  
Chief Executive Officer, Vale



**Mutlaq H. Al-Morished**  
Board Member and Chief Executive Officer, Tasnee





## FIRESIDE CHAT 2

### Towards a critical minerals strategy for the Super Region

**Panel:**  
**Saudi Arabia and minerals, catalysts for development – a multi-dimensional perspective**

**Summary:** CNBC's Dan Murphy anchored the fireside chat titled, "Saudi Arabia and minerals, catalysts for development – a multi-dimensional perspective." The chat featured H.E. Adel Al-Jubeir discussing the intersections of regional stability, economic development, and renewable energy. Al-Jubeir emphasized the need for global collaboration to overcome challenges and maintain stability, which he deemed essential for fostering foreign investment in the mining sector. He highlighted the critical need for global standards in renewable energy to optimally utilize resources while benefiting resource-rich and resource-needy countries alike.

The conversation also touched on the geopolitical tensions in neighboring regions like Sudan, the Red Sea area, and beyond, emphasizing the importance of regional peace for economic prosperity. Al-Jubeir also stressed the role of political agreements in addressing climate change and expressed Saudi Arabia's commitment to supporting developing countries in various sectors, including healthcare, infrastructure, and education.

**Overview:** Dan Murphy led the chat by welcoming H.E. Adel Al-Jubeir and began the conversation with the ongoing crisis in Gaza and its influence on regional stability and foreign investment.

His Excellency the Minister emphasized the need to work together to overcome global challenges, highlighting the importance of stability and security for economic development and encouraging investment, in line with the theme of the conference.



**Dan Murphy**  
Anchor and Correspondent, CNBC



**H.E. Adel Al-Jubeir**  
Minister of State for Foreign Affairs and Envoy for Climate Affairs, Saudi Arabia



He affirmed the importance of global standards in renewable energy, which are essential for efficiently utilizing resources in a way that benefits countries with resources, companies that extract these resources, and countries in need of them.

In addition, he noted that regional stability is crucial in this environment, pointing to conflicts in neighboring areas, particularly when considering Sudan and the conflicts in the Red Sea involving Ethiopia, Eritrea, Yemen, Ukraine, and others.

Al-Jubeir agreed and believed that security and stability are crucial if they want to promote investment in trade and enhance the standard of living for everyone in Saudi Arabia and the region. He highlighted the importance of building bridges, stating that long-term ambitions for the commercialization of this sector and greater integration could lead to stability and reduced conflict.

He concluded that addressing climate change significantly depends on a rational approach to making recycling and conservation more efficient. Al-Jubeir agreed that political agreements could be instrumental in overcoming this challenge, which was a focus at COP 28. He emphasized that Saudi Arabia and its leadership are committed to raising their climate ambitions.

However, he noted that these challenges cannot be met hastily and without sincerity, stressing Saudi Arabia's commitment to support developing countries in healthcare, infrastructure, and education.

## ROUNDTABLE DEBATE

### Towards a critical minerals strategy for the Super Region

**Panel:**  
**Funding global mineral value chains – exploration, projects and trading finance**

The FMF hosted a Roundtable debate titled "Funding Global Mineral Value Chains – Exploration, Projects and Trading Finance," moderated by David Eades, a former BBC News journalist.

Participants included H.E. Khalid Al Mudaifer, Vice-Minister for Mining Affairs at the Saudi Ministry of Industry and Mineral Resources; Jeremy Weir, CEO and Executive Chairman of Trafigura; Gareth Penny, Chairman of Ninety One; Frank Giustra, CEO of Fiore Group of Companies; H.E. Saad Alkhalb, CEO of Saudi Exim Bank; Alec Machiels, Board Member of Traxys; and Tom Kendall, Managing Director at ICBC Standard Bank.

**Summary:** Discussions focused on the critical need for substantial investment to address the shortages in minerals necessary for the energy transition, estimating a requirement of five trillion dollars by 2030. The debate also covered the logistical challenges of mineral supply chains, the potential of Saudi Arabia as a regional hub for mining finance, and the strategic importance of partnerships in de-risking investments in this sector.



The panelists emphasized the need for improved infrastructure to enhance supply chain efficiencies and the role of political and commercial strategies in fostering a stable investment environment for mining critical minerals.

**Overview:** H.E. Khalid Al Mudaifer began by discussing the critical minerals necessary for the energy transition, noting that experts can help deliver faster solutions to material transitions.



**David Eades**  
Journalist/ Former BBC New



**H.E. Khalid Al Mudaifer**  
Vice-Minister for Mining Affairs, Ministry of Industry and Mineral Resources, Saudi Arabia



**Jeremy Weir**  
Chief Executive Officer, Executive Chairman, Trafigura



**Gareth Penny**  
Independent Non-Executive Director and Chairman, NinetyOne



**Frank Giustra**  
President and Chief Executive Officer, Fiore Group of Companies



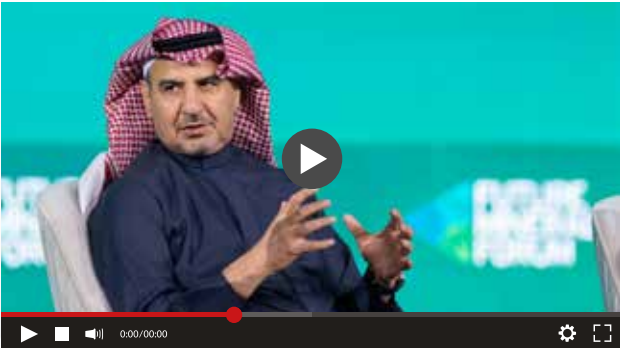
**H.E. Eng. Saad Alkhalb**  
Chief Executive Officer, Saudi Exim Bank



**Alec Machiels**  
Board Member, Traxys



**Tom Kendall**  
Managing Director, Global Head of Metals Sales and Origination, ICBC Standard Bank





He mentioned that extraction needs to cover up to four times the shortages and supply, requiring three trillion dollars to be invested by 2030, and potentially another two trillion for power generation, totaling five trillion dollars.

Jeremy Weir stated, “We have to turn over 234 billion dollars across the oil window, metals, and space as it is quite diverse. We are starting to focus on where we can improve the supply chains. We have seen a lot of fragmentation of supply chains around the world, and we are trying to improve it.” He added that it typically takes five weeks or longer to move materials out of the copper belt of Zambia and the DRC into various marketplaces. This railway line has a capacity of up to 1.5 billion tons, which minimizes the time to only 5 days to get it to the coast.

Gareth Penny announced that there is a lot of support from other major stakeholders to make this work, giving them confidence about the de-risking but acknowledging a challenging environment. His firm manages assets worth 160 billion dollars, with about 60% deployed in markets, showcasing a long track record of substantial investments.

Frank Giustra supported the idea of Saudi Arabia serving as the region’s springboard, hub, and mining finance center. He hinted that discussions are ongoing with the Minister about an idea they are excited about, which could provide capital in different ways and create real opportunities.

Giustra stressed that Africa is arguably the most mineral-rich continent on the planet and has become a battleground for various players.

Tom Kendall dubbed the Super Region the key to fulfilling the market demand for minerals supply. He noted that stakeholders over the past 10 to 15 years have been exposed to a lot of risks including physical, operational, environmental, and reputational risks, and they have faced enormous criticism for trying to intermediate and deploy capital. However, the critical minerals must ultimately be mined, processed, and delivered to transition energy.

Meanwhile, Alec Machiels spoke about the complex relationship between the private and public sectors, which is intricate as they are trading in flow from origin to destination.

H.E. Saad Alkhalb explained that long-term, capital-intensive projects carry more commercial and exclusive challenges than standard investment tools. The capital plays a crucial role in reducing risks for different types of lenders, investors, and traders.

They concluded the discussion by pledging support for investment in the Super Region and adopting Saudi Arabia as the capital for mineral supply, adding that the Kingdom has deployed geological surveys that would make life easier, and help investors make better informed decisions.



### PLENARY SESSION 3

## Towards a critical minerals strategy for the Super Region

#### Panel: Reality check on the energy transition – gradual and managed?

The FMF hosted a panel discussion titled “Reality Check on the Energy Transition – Gradual and Managed?” The discussion was moderated by Cornelius Pieper, Managing Director, Senior Partner, and the Global Leader in Climate and Sustainability for Industrial Goods at Boston Consulting Group (BCG).

Participants included H.E. Faisal Alibrahim, Minister of Economy and Planning, Saudi Arabia; Jonathan Price, Chief Executive Officer of Teck (Virtual); William Oplinger, Chief Executive Officer of Alcoa; Marna Cloete, President of Ivanhoe Mining; Princess Noura bint Turki Al-Saud, Co-Founder of AEON Collective; and Alec Machiels, Board Member of Traxys.

**Summary:** The discussion, featuring notable figures from the mining and finance sectors, centered on the critical need for increased mining of essential minerals like cobalt, nickel, and lithium due to

escalating global demands tied to energy transitions. Panelists discussed the importance of sustainable practices, the role of financial mechanisms in supporting development, particularly in developing nations, and the strategic importance of enhancing supply chains for critical minerals.



Moderator

**Cornelius Pieper**  
Managing Director and Senior Partner and the Global Leader in Climate and Sustainability for Industrial Goods, Boston Consulting Group (BCG)

**H.E. Faisal Alibrahim**  
Minister of Economy and Planning, Saudi Arabia

**Jonathan Price**  
Chief Executive Officer, Teck (Virtual)

**William Oplinger**  
Chief Executive Officer, Alcoa

**Marna Cloete**  
President, Ivanhoe Mining

**Princess Noura bint Turki Al-Saud**  
Co-Founder, AEON Collectiv

**Alec Machiels**  
Board Member, Traxys





The panel further emphasized collaborative efforts across sectors. It highlighted Saudi Arabia's pivotal role in fostering such initiatives through its strategic investments and support for technological advancements in the mining sector.

**Overview:** Cornelius Pieper welcomed attendees and introduced the discussion, highlighting the role that junior mining companies play in the discovery of significant mineral deposits acquired by senior companies. He stressed that their roles have become more imperative, given the increased demand for critical minerals by 2030.

Princess Noura bint Turki Al-Saud, Co-Founder of AEON Collective, emphasized the importance of collaboration across sectors for sustainability in mining, particularly in the context of climate change. She noted the significant responsibility of the industry to adopt more sustainable and equitable practices, especially when working with developing nations to transition to renewable energy. She pointed out that lack of finance was the primary challenge, particularly for developing nations competing for capital at high cost.

H.E. Faisal Alibrahim discussed the global material challenges Saudi Arabia addresses, emphasizing the Kingdom's efforts to alleviate these challenges over the next 16 years. He noted that the demand for critical minerals, such as cobalt, nickel, and lithium, is expected to more than double, to reach some 3 billion tons, requiring extensive extraction efforts. He underscored the extensive need for these minerals to support the likes of electric vehicle and wind farm production and highlighted Saudi Arabia's target to manufacture 500,000 vehicles annually, by 2030.

Jonathan Price, participating virtually, highlighted the significant need to increase the supply of technical minerals like copper, essential for the energy transition, with a projection to double the supply by 2050.

He also underscored the growing importance of ESG standards among investors, with a need to focus on the pillars of reuse and recycling.

Marna Cloete discussed the lengthy process of bringing mining discoveries to market, emphasizing the importance of local community involvement and support for the logistics service providers within the supply chain. She highlighted the value Saudi Arabia could add to infrastructure development.

Alec Machiels spoke about the long history of trading minerals and the importance of transparency in trading operations. He described the uniqueness of ensuring partners are well-informed about sales conditions.

William Oplinger discussed the growing demand in various industries served by his company, noting the exciting yet challenging times for aluminum companies. He mentioned ongoing work on technologies that could advance sustainable, vertically integrated value chains, referencing their \$10 billion investment in the Kingdom.

Cornelius Pieper concluded the discussion by asking H.E. Faisal Alibrahim about the key pillars to accelerate industry development. Alibrahim emphasized the global readiness for disruption and the need for new development approaches to meet growing demand.

Princess Noura bint Turki Al-Saud closed the discussion, highlighting the crucial role of Saudi Arabia as a hub for the Super Region, with its ability to deploy capital into various technologies and industries – significantly impacting the energy transition.



# PRESENTATION: Towards a critical minerals strategy for the Super Region

## Panel: Mining with a greater purpose and powering great ideas

The FMF hosted a presentation titled “Mining with a Greater Purpose and Powering Great Ideas,” delivered by Robert Friedland, Founder & Executive Co-Chairman of Ivanhoe Mines.

**Summary:** Robert Friedland delivered a compelling presentation titled “Mining with a Greater Purpose and Powering Great Ideas,” where he emphasized the critical role of minerals in the global transition to renewable energy. Highlighting Saudi Arabia’s vast mineral resources and ambitious energy goals, Friedland discussed the intense mineral demands of renewable technologies and projected significant copper needs due to global economic growth.

He showcased Ivanhoe Mines’ significant achievements in copper mining in the Democratic Republic of the Congo and introduced a joint venture in Saudi Arabia aimed at exploring and utilizing the Kingdom’s untapped mineral resources. Friedland also introduced the innovative I-ROX technology, which promises to revolutionize mining.

**Overview:** Friedland praised Saudi Arabia’s mining efforts, highlighting its vast mineral endowment, which is conservatively estimated at \$2.5 trillion, as the Kingdom looks to meet its own needs and also serve as an international provider.

Friedland noted that the Kingdom aims to reduce mineral imports by 65% and plans to source 50% of its energy from renewable sources by 2030. He pointed out that any kind of renewable energy is intensely mineral-dependent, as a typical electric car requires about six times the amount of minerals as a conventional car and an onshore wind farm needs nine times more minerals than a gas-fired power plant of similar output, due to the number of cables used in wind farms.



Friedland emphasized that copper is the “green metal,” adding that the world’s consumption of refined copper needed to maintain a 3% global GDP growth. He said that over 700 million metric tonnes of copper would be required in the next 22 years alone—a quantity that matches the volume mined throughout history (4000 B.C - 2020). He mentioned that currently, the world consumes about 23 or 24 million tons of copper a year just to sustain this growth.

He highlighted the challenge that copper prices could skyrocket by over 75% to record highs by 2025 due to expected deficits. Friedland stressed that capital-intensive mining operations that are only marginally profitable at \$8,000 a ton are common in Africa, which holds about 30% of the world’s mineral reserves and boasts the richest mineral endowment.

Friedland shared a video about the Democratic Republic of the Congo, where over 27 years ago, geologists began exploring for copper. Their efforts led to the discovery of Kamo-a-Kakula in 2008, followed by the ultra-high-grade Kakula discovery in 2016.



**Robert Friedland**  
Founder and Executive  
Co-Chairman, Ivanhoe  
Mines





Recognized today as the fourth largest copper resource in the world, Kakula began production in 2021 – only five years after its initial discovery. Within two years, Kakula completed a second expansion and produced over 800,000 tons of copper, generating around \$3.3 billion in EBITDA, and is on track to complete its third phase expansion in mid-2024.

This expansion will increase annual production capacity to over 600,000 tons of copper with exceptionally high grades, using green hydropower in partnership with the DRC. By the end of the year, a state-of-the-art copper smelter will be commissioned, producing 500,000 tons of copper anodes per annum and reducing cash costs by approximately 20%.

Friedland also discussed a joint venture in Saudi Arabia between Ivanhoe Electric and Ma’aden, where they began working at Al Amar, 32 years ago. He introduced another video showcasing a 50/50 joint venture with Ma’aden, one of the largest and fastest-growing mining companies globally, with Ivanhoe Electric as the operator.

He hinted that the joint venture has commenced the first deployment of the Typhoon system to begin exploring approximately 48,500 square kilometers of the underexplored Arabian Shield — an area larger than Switzerland.

These highly prospective grounds host some of the world’s most ancient and significant mines, such as the Mahad Al-Dahab or “Cradle of Gold,” which has been producing gold for over 3,000 years, and the Jabal Sayid underground copper mine. Friedland expressed profound honor in partnering with Ma’aden to uncover the tremendous mineral potential of Saudi Arabia.

He concluded the presentation by introducing a solution called I-ROX, designed to reduce energy consumption and carbon dioxide burden in mining by at least 80% — commercializing it with the best in the business. Partners include BHP, the largest mining company in the world, and Breakthrough Energy, founded by Bill Gates, who brought in many top technology investors, as well as the European Economic Community.

Friedland hinted that discussions are ongoing to bring this I-ROX solution to Saudi Arabia, which could significantly change the economics of mining.



## PLENARY SESSION 4

### Towards a critical minerals strategy for the Super Region

#### Panel: Growing mineral investment in new jurisdictions

FMF hosted a panel discussion titled “Growing Mineral Investment in New Jurisdictions.” This panel was moderated by Rohitesh Dhawan, President and Chief Executive Officer of the International Council on Mining & Metals (ICMM).


The panel included H.E. Bandar Alkhorayef, Minister of Industry and Mineral Resources Saudi Arabia; Mark Cutifani, Chairman of Vale Base Metals; Meshary Al-Judaimi, Chairman of Foulath Holding; Mark Bristow, Chief Executive Officer of Barrick Group; Benedikt Sobotka, Chief Executive Officer of Eurasian Resources Group (ERG); and Jeremy Weir, Chief Executive Officer and Executive Chairman of Trafigura.

**Summary:** The panel explored strategies for expanding mining investments into new areas, particularly focusing on Saudi Arabia’s increasing role in the global mining sector. The discussion featured insights from global mining leaders who highlighted the importance of creating a favorable investment climate through innovative policies, infrastructure development, and strategic public-private partnerships.


Key topics included the need for increased investment to harness Saudi Arabia’s mineral resources, the shift towards more environmentally responsible mining practices, and the potential of mining to significantly contribute to global supply chains and the energy transition.

The panelists collectively emphasized the critical role of mining in modern society and addressed various challenges and opportunities within the industry. They also commented on Saudi Arabia’s strategic initiatives and its position as an emerging leader and player in the global mining landscape.


Moderator




**Rohitesh Dhawan**  
President and Chief Executive Officer, International Council on Mining and Metals (ICMM)




**H.E. Bandar Alkhorayef**  
Minister of Industry and Mineral Resources, Saudi Arabia




**Mark Cutifani**  
Chairman, Vale Base Metals




**Meshary Al-Judaimi**  
Chairman, Foulath Holding



**Mark Bristow**  
Chief Executive Officer, Barrick Group



**Benedikt Sobotka**  
Chief Executive Officer, Eurasian Resources Group (ERG)



**Jeremy Weir**  
Chief Executive Officer, Trafigura





**Overview:** Alkhorayef expressed pride in the forum's three-year history, highlighting its demonstration of the potential in the sector. He encouraged the ecosystem to foster progress in attracting investment. Alkhorayef emphasized that Saudi Arabia, without a legacy to overcome and starting from scratch, has designed a forward-thinking mining future. He stressed the need for substantial investment in the sector and noted that many new projects are making Saudi Arabia a globally competitive place to grow the mining sector.

Alkhorayef also mentioned initiatives discussed in his opening speech, borne from listening to investors and responding with projects. He advised the audience to carefully study and scale projects, particularly in infrastructure, to leverage Saudi Arabia's role in global supply chain distribution through strong infrastructure logistics.

Meshary Al-Judaimi spoke about a major pelletizing plant in Bahrain, one of the largest in the world, and his interest in iron ore mining developments in Saudi Arabia, which is enticing due to the high-grade iron required for the shift from blast furnaces to electric furnaces.

Jeremy Weir discussed the challenges of developing mines responsibly and the importance of public-private partnerships in leveraging national resources.

He was optimistic about a project in Pakistan, highlighting it as an example of achieving a common vision through collaboration.

Mark Bristow expressed gratitude for the mining industry, emphasizing its essential role in producing materials for modern society, its positive environmental impact, and its crucial contribution to water purification and the energy transition.

Mark Cutifani discussed the importance of the following to mineral supply; stable political environments, access to land, and skill development to encourage investment. He stressed the importance of consistent policy frameworks and the mining sector's responsibility to improve integration and support for material development.

Benedikt Sobotka spoke about the significant shift in Saudi Arabia becoming a central player in the Super Region, praising the Kingdom's focus on mining and technology to meet the challenges of the sector. He highlighted the global initiative to build a sustainable battery industry as part of broader efforts to reduce reliance on fossil fuels.



## FIRESIDE CHAT 4

### Green metals and new technologies future

#### Panel: Interview with Saline Water Conversion Corporation (SWCC)

Fatma Fahad, a journalist and news anchor at Al Arabiya, moderated this interview, which featured H.E. Eng. Abdullah Alabdulkareim, Governor of the Saline Water Conversion Corporation (SWCC), focused on the Saline Water Conversion Corporation's efforts in Saudi mining.

**Summary:** In this interview, H.E. Eng. Abdullah Alabdulkareim, Governor of SWCC, discussed the historical and evolving relationship between desalination and mineral extraction. Highlighting initiatives since the 1920s, Alabdulkareim outlined SWCC's current focus on extracting minerals like bromine, sodium, and lithium from seawater, alongside providing potable water. He emphasized the sector's potential to significantly boost Saudi Arabia's economic metrics, including increasing the estimated value of its untapped mineral resources from \$1.3 trillion to \$2.5 trillion. The conversation also touched on the challenges of cost-effective extraction and the strategic importance of minerals in transitioning to more sustainable practices. Alabdulkareim expressed optimism about future investments and research collaborations aimed at enhancing the economic feasibility and impact of desalination and mining on Saudi Arabia's GDP.

**Overview:** Alabdulkareim began by explaining the relationship between mining and desalination. Since the late 18th century, the sea has been seen as a perpetual source of minerals, with some companies starting as early as the 1920s to extract bromine from seawater.

However, these initiatives faced challenges in efficiently extracting minerals. Today, the desalination sector aims to achieve the extraction of valuable minerals such as sodium, calcium, magnesium, and uranium, while providing drinking water.



He expressed hope that they would sign investment contracts at the conference, highlighting the encouraging news that the estimated value of untapped mineral resources in the Kingdom has increased from \$1.3 trillion dollars to \$2.5 trillion dollars from 2016 to the present, including minerals like copper and gold. He mentioned upcoming announcements about bromine, a crucial factor in additive industries and others, contributing significantly to mineral extraction.



**Fatma Fahad**  
Journalist and News  
Anchor, Al Arabiya



**H.E. Eng. Abdullah Alabdulkareim**  
Governor, Saline  
Water Conversion  
Corporation (SWCC)





Fatma discussed the trends in Saudi Arabia regarding the minerals and mining sector, noting that the sector is the third pillar of the Saudi economy.

She questioned how the company could reinforce this strength.

Alabdulkareim reiterated the advanced steps taken, such as in magnesium mining, which is used in creating aluminum—a strategically important and highly recyclable material. He discussed his role in desalination, which primarily focuses on securing additional water to supply cities and regions. He emphasized the importance of precious minerals previously supplied to the industry and how Saudi Arabia aims to improve its trade balance and contribute to GDP growth through alternatives for minerals like sodium, used in batteries, and lithium.

He focused on lithium, often extracted from salt lakes in countries like Chile and China, noting that Saudi Arabia could potentially extract lithium from a million liters of water, equivalent to 180 meters of

lithium extraction. However, the feasibility of such extraction hinges on reducing costs to make prices competitive with the market.

Alabdulkareim also highlighted daily discussions on reducing energy consumption and costs in extracting minerals. He mentioned the feasibility of lithium extraction, which, although visible for the future, encourages demand for such minerals due to rising prices and decreasing supply.

He was optimistic about the future, disclosing a commercial project to utilize bromine in the coming years. He stated that Saudi Arabia as the world’s largest producer of desalinated water, is ahead of other countries in using this industry as a catalyst for the mining industry, especially with seawater.

Finally, he mentioned ongoing research conducted in collaboration with institutions like King Abdullah University and MIT to improve economic feasibility and harness such research to enhance national GDP.



## FIRESIDE CHAT 5

### Green metals and new technologies future

#### Panel: Reimagining global finance – driving mineral investment in the Super Region

Former BBC News anchor and journalist David Eades moderated the interview, which featured Saudi Arabia’s Minister of Finance, H.E. Mohammed Al-Jadaan, on the topic, “Reimagining Global Finance—Driving Mineral Investment in the Super Region.”

**Summary:** H.E. Mohammed Al-Jadaan discussed the critical role of mining in the global energy transition, emphasizing the necessity for sustainable practices and international cooperation. He highlighted the importance of minerals like copper in energy technologies such as wind turbines and batteries while underscoring the interconnectedness of mining and energy transitions rather than seeing them as contradictory. Al-Jadaan pointed out the particular challenges faced by low-income countries, advocating for a supportive, collaborative approach to ensure that these nations can also benefit from and contribute to the global shift towards sustainable energy. The discussion also touched on the need for robust legislative frameworks and multilateral support to facilitate investment and participation in this transformative global effort.

**Overview:** H.E. Mohammed Al-Jadaan began by addressing the perceived contradiction between mining and the energy transition. He asserted that global collaboration is now more feasible than ever, and crucially, mining is integral to achieving the energy transition goals. He emphasized that the use of minerals like copper in wind turbines and batteries shows that there is no contradiction but a vital link.

Al-Jadaan advocated for mining in a sustainable manner to achieve our objectives. David then questioned if there were any specific plans to accelerate the energy transition.

Al-Jadaan outlined a clear route that considers each country’s specific circumstances and the overall health of the planet, stressing that clean energy is beneficial for the economy, investors, and the countries involved.

He expressed concern that low-income countries might lack the necessary resources, thereby being excluded from participating in the energy transition. He emphasized that no single country could tackle these challenges alone and called for collaborative efforts.

David pointed out that some countries, already burdened by debt, cannot afford further investments. Al-Jadaan responded by noting that in 2022 alone, there was about \$88.9 billion in service for countries suffering from multiple crises like COVID-19, inflation, and supply chain disruptions.

He confirmed that a more sustainable approach could allow these countries to benefit from energy transition by utilizing their own mineral and metal endowments, thus aiding themselves and the investing countries in moving towards a more sustainable environment.

David, optimistic about the examples provided by the minister, asked how to attract investment into this system and who should be involved. The minister explained that this would require a combination of a robust legislative framework, considering the long-term perspective of the industry, support from multilateral institutions for countries in need, and the creation of a special ecosystem that can collaborate with the private sector.

He concluded by stressing the need to remove ideology from the equation and to base decisions on scientific evidence.



**David Eades**  
Journalist/ Former  
BBC New



**H.E. Mohammed Al-Jadaan**  
Minister of Finance,  
Saudi Arabia





PLENARY SESSION 5  
Green metals and new technologies future

Panel:  
Minerals value addition enabled by infrastructure investment

This panel was moderated by Tumi Makgabo, Broadcaster and Entrepreneur of Africa Worldwide Media. The panel was attended by H.E. Saleh Al-Jasser, Minister of Transport and Logistic Services; H.E. Antoinette N'Samba Kalambayi, Minister of Mines Democratic Republic of Congo; Kirill Dmitriev, Chief Executive Officer Russian Direct Investment Fund; Martin Ayisi, Chief Executive Officer Minerals Commission of Ghana; and Wang Qinghai, Chairman JCHX Mining Management.

**Summary:** In this panel discussion, H.E. Saleh Al-Jasser addressed Saudi Arabia's strategic plans to harness the estimated \$2.5 trillion in untapped mineral resources expected to be discovered. He highlighted the country's significant investments in logistics and transportation infrastructure to support mining and other industries. The panel, featuring global experts, discussed the challenges and strategies for enhancing infrastructure in landlocked and developing countries to facilitate mineral extraction and trade. Key themes included the need for international cooperation, substantial investment in infrastructure, and innovative funding solutions to support sustainable and efficient mining practices worldwide

**Overview:** The panel began a question to Minister H.E. Saleh Al-Jasser, on how Saudi Arabia intends to manage the \$2.5 trillion expected to be discovered underground and the role it plans to play in the Super Region. H.E. Saleh Al-Jasser explained that transportation and logistics are key enablers for the mining industry, and Saudi Arabia has an ambitious strategy to transform into a global logistics hub, supporting all land-based industries including mining. He noted that many roads were built in the past specifically to support mining, including the construction of the longest rail line in the North, with over \$4 billion invested to double this line to further support the industry.

Tumi then asked H.E. Antoinette N'Samba Kalambayi how landlocked countries can coordinate infrastructure with neighboring countries. Kalambayi explained that this coordination enables them to transfer raw materials and engage in trade, creating opportunities. One outstanding project is the implementation phase to establish a new deep-water port to transfer commodities like bananas, striving to build strong infrastructure for exporting materials, particularly in the Congo context.

The discussion shifted to Martin Ayisi, who shared that Ghana has been mining for a century and has encountered critical deposits requiring substantial infrastructure, particularly for manganese. The government is addressing this by raising international finance and supporting mineral development projects.

Kirill Dmitriev praised Saudi Arabia's efforts in bringing diverse experts together for joint decision-making, with 40% of their investment in infrastructure. He highlighted a joint project with Chinese partners, the first railway bridge between Russia and China, which will handle 10% of trade between the two nations. He also mentioned the Northern Sea Route as the fastest path from Europe to Asia, emphasizing that joint investments are crucial for success, as many minerals and metals in the area can be explored and developed together.

The discussion turned to Wang Qinghai, who emphasized the need for significant infrastructure investment in mining. He suggested that companies and governments invest heavily to progress in this sector.

Martin Ayisi reiterated the importance of creating an environment attractive to funding and investment in developing countries, confirming that the Ghanaian government is leveraging resources and technology effectively.

Kirill Dmitriev added that sharing innovative approaches across the BRICS platform is crucial for progress.

H.E. Saleh Al-Jasser concluded that transportation projects are capital-intensive and require substantial investment. He emphasized collaboration with both local and international private sectors to build the necessary infrastructure and find creative funding solutions.



**Tumi Makgabo**  
Broadcaster and Entrepreneur, Africa Worldwide Media



**H.E. Saleh Al-Jasser**  
Minister of Transport and Logistic Services



**H.E. Antoinette N'Samba Kalambayi**  
Minister of Mines, Democratic Republic of Congo



**Kirill Dmitriev**  
Chief Executive Officer, Russian Direct Investment Fund



**Martin Ayisi**  
Chief Executive Officer, Minerals Commission of Ghana



**Wang Qinghai**  
Chairman, JCHX Mining Management





# REFLECTIONS ON MINISTERIAL ROUNDTABLE – PART 1

## Green metals and new technologies future

### Panel: Are we in a new era of Super Region collaboration on critical minerals?

The FMF hosted a roundtable debate titled “Are We in a New Era of Super Region Collaboration on Critical Minerals?” The session moderated by Fatma Fahad, journalist and news anchor at Al Arabiya, included contributions from Sara Modig, State Secretary at the Ministry of Climate and Enterprise, Sweden; H.E. Wille Rydman, Minister of Economic Affairs, Finland; Hon. Dr. Peter Lokeris, Minister of State for Mineral Development, Uganda; Benjamin Gallezot, Minister-Delegate for the Supply of Strategic Minerals and Metals, France; and Dr. Roman Stiftner, Chief Executive Officer of the Austrian Mining and Steel Association and Austrian Non-Ferrous Metals Association.

**Summary:** The FMF roundtable debate, “Are We in a New Era of Super Region Collaboration on Critical Minerals?” brought together global leaders to discuss the evolving dynamics of international cooperation in mining. Panelists from Sweden, Finland, Uganda, France, and Austria discussed the importance of legislative frameworks, sustainable practices, and the role of strategic partnerships in fostering a stable and equitable mining industry. The conversation highlighted the significance of critical minerals for energy transitions and the collective efforts to enhance financial and technical cooperation across borders.



The discussion accentuated a unified approach to addressing global mining challenges and leveraging international expertise to advance the mining sector sustainably.

**Overview:** Hon. Dr. Peter Lokeris emphasized the importance of a legislative framework to guide partners involved in the exploitation of mineral resources.



**Fatma Fahad**  
Journalist and News Anchor, Al Arabiya



**H.E. Sara Modig**  
State Secretary  
Ministry of Climate and Enterprise, Sweden



**H.E. Wille Rydman**  
Minister of Economic Affairs, Finland



**Hon. Dr. Peter Lokeris**  
Minister of State for Mineral Development, Uganda



**Benjamin Gallezot**  
Minister-Delegate,  
Supply of Strategic Minerals and Metals, France



**Dr. Roman Stiftner**  
Chief Executive Officer,  
Austrian Mining and Steel Association and Austrian Non-Ferrous Metals Association



He mentioned recent mining laws designed to ensure fair participation and described the industry as a win-win situation for all stakeholders involved. Lokeris explained that collaboration with partners is essential to establish a stable value chain for final products.

H.E. Sara Modig praised the shared enthusiasm for sustainability and stressed the importance of continued dialogue and cooperation. She advocated for innovation and cooperation in the mining business as well as the principles, referencing technological developments in waste management and recycling in the European Union and the US.

H.E. Wille Rydman reflected on the diversity of perspectives brought by representatives from 70 countries at the event. He expressed admiration for the strategic approaches discussed, emphasizing their growing relevance in world politics and value chains, particularly in relation to Saudi Arabia.

Benjamin Gallezot highlighted two main points from the previous day's conference: the technical cooperation between France's geological survey office and training organization, and the partnerships between France and Asia, African and Middle Eastern countries.

He also mentioned the importance of financing and referred to a €2 billion equity financing initiative for critical mineral projects and a public guarantee for project debt finance.

Dr. Roman Stiftner noted the significant presence of the global market at the table, facilitated by Saudi Arabia, which underscored the need for reliable partnerships to ensure a resilient supply of raw materials. He suggested leveraging the knowledge exchange in mining and refining to strengthen relationships.

The panel discussed Uganda's role in the future of mining in the region and the potential of minerals for green energy. They emphasized the importance of inviting international collaboration to support the development of the mining sector.





FIRESIDE CHAT 3  
Green metals and new technologies future

Panel:  
Reality check on the energy transition – gradual and managed?

Former BBC News anchor and journalist David Eades interviewed Amos Hochstein, Senior Advisor to the President of the United States of America, on the topic “Reality check on energy transition—gradual and managed?”

**Summary:** Amos Hochstein, Senior Advisor to the U.S. President, discussed the complexities of managing a global energy transition, emphasizing the significant financial investments required and the strategic legislative measures taken by the U.S. to support this transformation. Hochstein highlighted the necessity of reducing investment barriers and fostering international cooperation to build infrastructure that facilitates access to critical resources. He also pointed out the disparities in the cost of capital between developed and developing nations, underscoring the importance of global efforts to make the energy transition inclusive and equitable. Hochstein remains optimistic about future technological advancements in battery efficiency and recyclability, which are expected to significantly contribute to achieving global energy goals by 2050.

**Overview:** Amos Hochstein, Senior Advisor to the President of the United States, acknowledged that they are at an early stage of a massive global energy transition, which will require trillions of dollars in investment and have a significant impact. He emphasized the importance of managing this transition from the United States’ perspective, particularly concerning supply chain security and operational security, highlighting the roles of the Inflation Reduction Act, the SHIPS Act, and the Infrastructure Act, which together facilitate trillions of dollars in investment in the United States.



David Eades  
Journalist/ Former  
BBC New



Amos Hochstein  
Senior Advisor to the  
President United  
States of America



Hochstein added that countries need to take specific actions within their jurisdictions to reduce barriers to investment and encourage investment in supply chains, clean energy, and infrastructure. He also stressed the need for international collaboration, mentioning the G7’s announcement of the Partnership for Global Infrastructure and Investment. This includes building the Lobito Corridor in Africa, a highly ambitious, multi-billion dollar rail project extending from Angola across East Africa, which will enhance access to critical minerals and electricity for the global market.

The discussion highlighted the importance of reducing the cost of capital. While the cost of capital is relatively low in America, it is much higher in countries like the Democratic Republic of Congo (DRC), Uganda, and Nigeria, necessitating global efforts to decrease these costs. Hochstein emphasized that focusing on national interests should not prevent collaborative efforts to ensure that the energy transition also benefits developing countries, which is crucial for a balanced global approach.

Hochstein expressed optimism about the future, predicting that batteries will become more efficient, more recyclable, and more effective, contributing positively to the energy transition by 2050.

PLENARY SESSION 6  
Green metals and new technologies future

Panel:  
Reimagining global finance – driving mineral investment in the Super Region

FMF hosted a panel discussion titled “Reimagining Global Finance – Driving Mineral Investment in the Super Region.” The panel discussion moderated by David Eades, former BBC News journalist featured insights from Reta Jo Lewis, President and Chair of the Board of Directors at the Export-Import Bank of the United States; Frank Giustra, President and CEO of Fiore Group of Companies; Dr. Hamid Rashid, Head of Global Economic Monitoring at the United Nations; Jeff Currie, Partner Alumnus at Goldman Sachs; and Rahim Bapoo, Managing Director at BMO Capital Markets.

**Summary:** This FMF panel brought together experts to discuss strategies for mobilizing capital in the mining sector. Rahim Bapoo emphasized the availability of capital waiting to be deployed with proper demand signals. Jeff Currie highlighted the substantial amounts of money in safe sectors yielding significant returns. Reta Jo Lewis advocated for the effectiveness of public-private partnerships in facilitating large-scale projects. Dr. Hamid Rashid provided a broader economic perspective, warning of challenges in global growth that could affect investment in mining.



Frank Giustra concluded with insights into the evolving global monetary dynamics and their impact on the mining industry, emphasizing the shift away from the US dollar in international trade. The discussion underscored the complexity of financing in the Super Region and the need for innovative financial strategies to support the mining sector’s growth.

**Overview:** David Eades initiated the discussion by asking Rahim Bapoo about his views on driving mineral investments in the Super Region.



David Eades  
Journalist/ Former  
BBC New



Reta Jo Lewis  
President and Chair of  
the Board of Directors,  
Export-Import Bank of  
United States



Frank Giustra  
President and Chief  
Executive Officer, Fiore  
Group of Companies



Dr. Hamid Rashid  
Head, Global Economic  
Monitoring, United  
Nation



Jeff Currie,  
Partner Alumnus,  
Goldman Sach



Rahim Bapoo,  
Managing Director,  
BMO Capital Markets





Bapoo agreed with a previous speaker, Amos, stating that there is more than enough capital on the sidelines, ready to be mobilized, especially with consistent demand signals and forums like this one helping to move life capital into the region.

David then shifted the conversation to Jeff Currie, asking about his perspective on whether the industry was moving forward positively or still burdened by traditional barriers. Currie noted the massive amounts of money sitting in money market funds, emphasizing that to attract capital to this sector, which is considered safe and yields substantial returns, there must be a focus on key sectors known as the “magnificent seven.”

Reta Jo Lewis highlighted the necessity of public-private partnerships and nonprofit organization involvement, stating that there is a significant role for government, evidenced by the FMF being facilitated by government officials to discuss critical minerals. She believed that cooperation among companies, organizations, and government has proven effective in co-financing with other credit agencies, making projects more attractive and ensuring community involvement.

David then turned to Dr. Hamid Rashid, who emphasized the need for a reality check, noting that the global economic framework is entering a new phase. He pointed out that global growth has slowed due to increased trade fragmentation and a shift to sustained higher interest rates, which could suppress investment. He also mentioned that sectors promising quick returns, like AI and other tech innovations, might outcompete mining and minerals, which typically have slower and longer-term yields.

Frank Giustra addressed the financial aspects of mining critical minerals, underscoring the importance of understanding the shifts in the global monetary system, including de-dollarization and the rise of bilateral trade agreements using local currencies. He pointed out that countries like North Korea, Indonesia, India, Malaysia, China, and Brazil are moving toward trading in their currencies, which impacts the value of the US dollar and global power dynamics, particularly in how commodities are traded globally.



## PLENARY SESSION 7

### Green metals and new technologies future

#### Panel: Navigating a complex future - building a robust and resilient mineral supply roadmap

FMF hosted a panel discussion titled “Navigating a Complex Future - Building a Robust and Resilient Mineral Supply Roadmap.” The panel was moderated by Tumi Makgabo, broadcaster and entrepreneur at Africa Worldwide Media.


**Summary:** The FMF panel titled “Navigating a Complex Future - Building a Robust and Resilient Mineral Supply Roadmap” brought together industry leaders to discuss strategic approaches to enhancing the global mineral supply chain. The conversation covered the critical role of logistics in mining, the factors influencing investment decisions across different jurisdictions, and the importance of sustainable project development. Panelists highlighted the need for effective partnerships, advanced technology, and innovative practices to navigate the challenges of a complex global mining landscape. The discussion underscored the necessity for transparency, reliable information, and adaptation to technological advancements to ensure the mining industry’s growth and sustainability.

**Overview:** Dr. Bashar Al Malik began the discussion by emphasizing the need for solid and reliable logistic partnerships to support the mineral sector in delivering their commitments to customers. He believed that logistics partners play a crucial role in ensuring the successful delivery of minerals.


Martin Horgan discussed the considerations investors and lenders weigh when looking at different jurisdictions, highlighting the importance of infrastructure and regulatory regimes. He noted that mining projects are typically long-term, often spanning multiple decades, from initial explorations to the first extraction of minerals.

Adam Lundin spoke about the importance of developing sustainable roadmaps for projects, mentioning the diverse geographical presence of their publicly traded companies, from Sweden to Ecuador to Botswana. He stressed the importance of partnership with host nations, as it is their resources being developed.


Moderator




**Tumi Makgabo**  
Broadcaster and Entrepreneur, Africa Worldwide Media




**Adam Lundin**  
Chair, Lundin Minin




**Adam Lundin**  
Chair, Lundin Minin




**Martin Horgan**  
Chief Executive Officer, Centamin



**Amanda van Dyke**  
Managing Director, ARCH Emerging Markets Partners



**Pekka Vauramo**  
President and Chief Executive Officer, Metso



**Dr. Bashar Al Malik**  
Chief Executive Officer, Saudi Arabia Railways (SAR)





Taylor Melvin expressed enthusiasm for the role of midcap mining companies in developing new assets necessary to meet ambitious global goals for cleaner energy and carbon dioxide reduction. He was excited about collaborating with Saudi Arabia.

Amanda van Dyke highlighted the appeal of Saudi Arabia as an investment destination, praising its clear communication of what it offers to investors and its stable environment compared to other mining jurisdictions.

Pekka Vauramo remarked on global policy issues that divide the world, noting significant changes over the past five years. He emphasized the need for transparency about the future and learning from the past to prepare for upcoming challenges.

Dr. Malik pointed out weaknesses in communication and marketing within the sector, stressing the necessity for accurate information dissemination to ensure investors and stakeholders are well-informed and engaged.

Taylor Melvin discussed the integration of technology and innovation in mining, mentioning Ivanhoe's use of advanced surveying platforms and machine learning software in Saudi Arabia and the United States. He highlighted their project in Arizona, which utilizes innovative technologies for material handling that significantly reduce electricity consumption, with a substantial portion sourced from renewable energy.



## PLENARY SESSION 8

### Supply chain transparency and certification generating trust

#### Panel: Super Region's expectations of responsible supply – key priorities

FMF hosted a panel discussion titled “Super Region's Expectations of Responsible Supply – Key Priorities,” moderated by David Eades, journalist and former BBC News anchor.


Panelists included Bruce Bodine, President and CEO of The Mosaic Company; Andrew Southam, CEO of KAZ Minerals; Themba Mkhwanazi, Regional Director Africa & Australia at Anglo American; Dr. Bruno Oberle, President of the World Resources Forum; Rohitesh Dhawan, President and CEO of the International Council on Mining & Metals (ICMM); and Hon. Frank Fannon, Managing Director of Fannon Global Advisors and former U.S. Assistant Secretary of State for Energy Resources.

**Summary:** The panel explored the complexities of ensuring responsible mineral supply chains in the context of global sustainability goals. The discussion highlighted the critical need for adopting and enforcing high social and environmental standards across the mining industry.


Panelists from various sectors of the industry shared their experiences and challenges in implementing sustainable practices and emphasized the importance of transparency, ethical sourcing, and local community involvement. The conversation underscored the necessity for a unified global framework to manage the diverse standards and legal systems across different regions, aiming to foster a more sustainable and equitable global mining landscape.

**Overview:** Dr. Bruno Oberle began by discussing his involvement in the fertilizer business, mining phosphate and potash. He emphasized that responsible practices are essential regardless of location, despite his company's operations primarily in North and South America, which face different challenges. He also mentioned a joint venture in Saudi Arabia for a phosphate complex with modern and significant implications for sustainability.


Moderator




**David Eades**  
Journalist/ Former BBC New




**Bruce Bodine**  
President and Chief Executive Officer, The Mosaic Company




**Andrew Southam**  
Chief Executive Officer, KAZ Minerals




**Themba Mkhwanazi**  
Regional Director, Africa and Australia, Anglo American



**Dr Bruno Oberle**  
President, World Resources Forum



**Rohitesh Dhawan**  
President and Chief Executive Officer, International Council on Mining and Metals ICMM



**Hon. Frank Fannon**  
Managing Director, Fannon Global Advisors (former inaugural U.S. Assistant Secretary of State for Energy Resources)





Rohitesh Dhawan provided insights into how quickly industry leaders are adopting sustainable practices, revealing that while there are 25,000 mining companies globally, those represented in ICMM constitute a small fraction but account for one-third of the global industry output. He stressed the importance of CEOs personally committing to high standards of social and environmental practices as outlined in their 10 mining principles.

Hon. Frank Fannon expressed concerns about setting permissive standards that encourage adoption and make it feasible. He argued for mechanisms that incorporate market-driven incentives, noting that transparent pricing, as seen in the oil industry, is crucial for real adoption in a market economy.

Themba Mkhwanazi discussed the critical role of provenance and transparency, especially important for a company like Anglo American to ensure that their minerals, such as diamonds, are ethically sourced and that the proceeds benefit the producing countries rather than being siphoned off by corrupt practices.

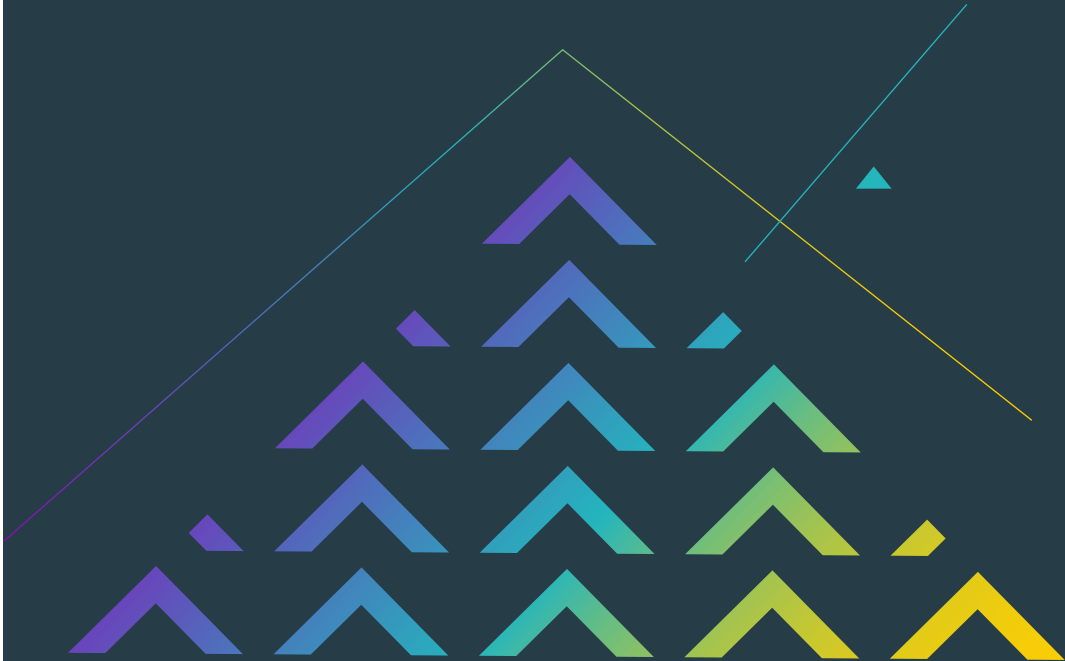
Dr. Bruno Oberle talked about the need for a global framework to manage the diverse standards that exist across different markets, which can be overwhelming for companies active in various legal environments. He highlighted the urgent need for such a framework, given the expected doubling of raw material use in the next decade and its significant environmental and biodiversity impacts.

Andrew Southam addressed the practical challenges of meeting high standards in governance, environmental respect, and community relations, particularly in Central Asia, where localizing supply chains to maximize community benefits poses significant challenges.

The discussion concluded with a focus on the necessity of a strategic approach that aligns with United Nations' sustainable goals, the Extractive Industry Transparency Index, and robust governance and financial standards. Panelists emphasized the importance of sustainable mining plans that drive technological developments to lessen environmental impacts and clearly address social aspects to meet global expectations effectively.



# DAY ONE STREAM SESSIONS





PANEL SESSION 1  
Green metals and technology

Panel:  
Will green metal supply be able to meet short/ mid/ long term demand levels?

**Summary:** This panel discussion centered around the burgeoning demand for minerals due to technological advancements and the shift toward electric vehicles. Speakers highlighted the challenges and opportunities this demand creates, including the need for substantial investment in renewable energy and skilled labor, the risks associated with licensing, permitting, and project delivery, and the importance of ethical supply chains and sustainability. With the industry at a crossroads, the focus was on collaboration, innovation, and transparency to meet demand responsibly and sustainably.

**Luisa, President of Defense Metals**  
Luisa, the President of Defense Metals, addressed the environmental impact of mining. She recognized its significance, citing the doubling of demand for rare earth minerals from 2012 to 2022, but argued that it could be conducted responsibly. Luisa highlighted global improvements in mining standards, including those in China, and emphasized the necessity for Western mining companies to maintain high standards. She also pointed out the ‘not in my backyard’ mentality prevalent in the West, stressing the importance of education to reconcile public demand for products like lithium and electric vehicles with the realities of mining.



Luisa concluded by spotlighting the importance of collaboration in meeting the escalating demand for metals.

**Agesan Rajagopaul, McKinsey**  
Agesan Rajagopaul, Partner McKinsey & Co, highlighted the extensive investment and resource planning needed to meet the burgeoning demand for minerals. He stressed that significant investment is crucial, with an anticipated requirement of 200 to 500 GW of power, representing 10% of renewable capacity by 2030. In addition to capital, Agesan pointed out the need for skilled labor in the mining sector, estimating a requirement for 300,000 professionals..

He identified three major hurdles in initiating mining projects: extensive licensing and permitting processes taking 5-10 years, the challenge of completing capital projects within time and budget constraints, and the risks posed by high inflation rates.

Focusing on sustainability, Agesan emphasized the importance of tracking, measuring, and reporting for mining companies. He advocated for proactive efforts by these companies in developing future sustainability metrics to ensure mines are future-proof. Furthermore, he discussed the role of Africa in meeting global mining demands. Due to the continent’s access to higher-grade minerals, which require less energy to process, Africa is positioned to significantly contribute to the mining sector’s affordability and sustainability efforts.

**T. Kumaresan, Minerals and Metals Larsen & Toubro.**  
T. Kumaresan from Minerals and Metals at Larsen & Toubro discussed the impact of increased demand on the engineering, procurement, and construction (EPC) sector. He noted that for EPC contractors, increased demand naturally leads to more projects. Kumaresan highlighted the sophisticated nature of risk management in this field, emphasizing the necessity for cutting-edge technologies that provide comprehensive solutions from the initial concept to final commissioning.

He also stressed the importance of collaboration among all stakeholders, pointing out that despite the finite nature of resources, effective management can lead to sustainable outcomes. Kumaresan commented on the evolving consumer landscape, noting that today’s consumers are well-informed and increasingly demand sustainable products. He concluded by discussing the economic perspective of sustainability, suggesting that while sustainable products may be costly initially, they represent a wise long-term investment, underlining the enduring presence and value of sustainable products in the market.

**Matthew Chamberlain – CEO of the London Metal Exchange; Reflection on the LME Passport**  
Matthew Chamberlain, CEO of the London Metal Exchange, provided insights on the LME Passport during his presentation. He described the LME Passport as a tool for voluntary disclosure designed to enhance transparency regarding the environmental and social governance (ESG) footprint of materials. Chamberlain emphasized the critical importance of this transparency, stating that it is essential for enabling informed decisions by users of the exchange. This approach, he noted, is key to fostering a more sustainable and ethical metals industry.



**Dr Kwasi Ampofo**  
Head of Mining and MetalAs, BloombergNEF



**Luisa Moreno**  
President and Director, Defense Metals Corporation



**Matthew Chamberlain**  
Chief Executive Officer, London Metal Exchange



**Agesan Rajagopaul**  
Partner, McKinseys & Co



**T. Kumaresan**  
Executive Vice-President and Head – Minerals and Metals, Larsen & Toubro





## FIRESIDE CHAT 2

### Green metals and technology

**Panel:**  
**Promoting the energy transition and ensuring responsible supply**

The chat was moderated by Remi Piet from Embellie Advisory and featured Moath Al Rawi, CEO of ARGAS.

**Summary:** In a fireside chat moderated by Remi Piet from Embellie Advisory, Moath Al Rawi, CEO of ARGAS, discussed the critical role of data in promoting the energy transition and ensuring a responsible supply of minerals. With Saudi Arabian mines leveraging decades of collected data, the conversation delved into the challenges of meeting global mineral demands for green energy and population growth against the backdrop of short-term investment cycles and fluctuating commodity prices. Al Rawi emphasized the necessity of collaboration and technology in advancing mineral exploration, highlighting the potential of underexplored areas like the Arabian and Nubian Shields. He also underscored the importance of fieldwork and the commercialization of technology to support the future of the Saudi Arabian mining industry.

**Overview**

The interview, moderated by Remi Piet, Co-Founder and Senior Partner at Embellie Advisory, featured Moath Al Rawi, the CEO of ARGAS, an exploration company providing geological information to sectors including oil & gas, geothermal, and mining. Al Rawi highlighted the critical value of data in the industry, noting that in Saudi Arabia, mines operate based on 50 years of collected data. He pointed out the challenge of reconciling short-term exploration investment cycles, where investors expect returns within 3-5 years, with the long-term needs driven by global demands for minerals essential for achieving net-zero targets, green energy, and accommodating population growth.



**Remi Piet**  
Co-Founder and Senior Partner, Embellie Advisor



**Moath Al Rawi**  
Chief Executive Officer, ARGAS

Al Rawi also discussed the impact of fluctuating commodity prices on investment recovery in the short term, stressing that insufficient investment hampers the ability to support long-term population growth. He remarked on the historical perception of mining as negative and how commodity prices have led to a fragmented service landscape, with technology and services often focused on niche markets—those experienced in gold might not engage with rare earth minerals, for instance.

The CEO of ARGAS emphasized the importance of collaboration and technology in meeting future demands and ensuring successful mining operations. He described the company’s strategy of creating a network of affiliated experts specialized in various fields, such as water, air, and military applications to advance mineral exploration. This approach enables them to assess geological resources effectively when acquiring mining exploration licenses.

Discussing the underexplored minerals in Saudi Arabia, Al Rawi mentioned the high potential of the Arabian Shield and the eastern part of the Kingdom, as well as the mineral-rich Nubian Shield. He also addressed the role of ARGAS in supporting the Saudi mining industry, noting its status as the oldest geophysical company worldwide, operating beyond Saudi borders. Al Rawi clarified that while ARGAS is not a technology company per se, it partners with specialized technology houses to support innovation, emphasizing the importance of field implementation and commercialization for technology development. He concluded by sharing ongoing efforts towards achieving a 24-hour airborne survey, highlighting ARGAS’s commitment to advancing exploration technologies.



## PANEL SESSION 2

### Green metals and technology

**Panel:**  
**Incorporating hydrogen into a phased managed energy transition**

**Summary:** The panel, moderated by Veronica Bolton Smith of The Connect Africa Network, explored hydrogen’s potential as a sustainable energy source. Key speakers, including Frank Wouters from the MENA Hydrogen Alliance, Driss Berraho of Green Hydrogen ACWA Power, and Joanne Bate from the Industrial Development Corporation of South Africa, highlighted the necessity of collaboration, investment, and supportive policy frameworks to advance hydrogen technology. They discussed the opportunities for economic development and job creation within the MENA region through competitive renewable energy resources, the scalability challenges and land management issues in producing green hydrogen, and the importance of making projects bankable to attract financing. The panel underscored the vital role of both public and private sectors in fostering a market for hydrogen energy, emphasizing the need for government support and international partnerships to realize hydrogen’s full potential.

**Frank Wouters, MENA Hydrogen Alliance.**

Frank Wouters of the MENA Hydrogen Alliance discussed the significant potential for hydrocarbon development in the MENA region due to its excellent access to renewable energy, including some of the lowest-cost sources available. He highlighted that the combination of renewable resources, skilled workforce, and solid infrastructure provides a substantial opportunity for industrialization and economic development, potentially leading to job creation.

Wouters emphasized the importance of shifting from coal and oil to sustainable, cost-effective energy solutions to support economic development. He noted that while major energy companies are investing in hydrogen, and considerable private and public sector activity supports market development, there remains a gap in final investment decisions. Wouters called for government action, including possible subsidies and obligations, to bridge this gap and accelerate project launches.



**Veronica Bolton Smith**  
Chief Executive Officer, The Connect Africa Network



**Frank Wouters**  
Chairman, MENA Hydrogen Allianc



**Driss Berraho**  
Vice President Business Development Green Hydrogen, ACWA Powe



**Joanne Bate**  
Chief Operations Officer, Industrial Development Corporation





**Driss Berraho, Green Hydrogen ACWA Power**  
Driss Berraho from Green Hydrogen ACWA Power highlighted Saudi Arabia's immense potential in solar energy, pointing out that the country receives enough sunlight to produce multiple times the amount of hydrogen projected to be consumed globally by 2050. Berraho discussed the challenges associated with producing green hydrogen, such as the extensive land requirements for thousands of solar panels and wind turbines and managing those lands and stakeholders. He stressed the importance of scalability for competitiveness but noted that scalability comes with challenges in investment, supply chain implementation, and machinery—areas where Saudi Arabia benefits from readily available resources. Berraho also emphasized the critical role of human capital and infrastructure, which is capital-intensive and involves substantial government coordination and support. However, he reassured the audience that financing projects has not been an issue, as recent initiatives have been oversubscribed.

**Joanne Bate, Industrial Development Corporation of South Africa.**  
Joanne Bate from the Industrial Development Corporation of South Africa addressed the financial aspects of hydrogen projects, noting that making projects bankable is the primary challenge, not access to capital. She discussed the premium on financing and the limitations of government resources in providing concessions compared to other markets. Bate highlighted the need to identify demand-side opportunities on the continent and leverage international value chains to secure early entry into European markets. She also mentioned the importance of leveraging infrastructure and resources continent-wide for this purpose. From a de-risking perspective, Bate emphasized the role of hydrogen in decarbonizing local industries, noting that producing green value chains, particularly through green hydrogen and ammonia, is vital for expanding local markets and enhancing their sustainability.



**PANEL SESSION 3**  
**Green metals and technology**

**Panel:**  
**Decarbonizing mineral and metal production**

**Summary:** This panel, moderated by Victor Rodriguez, Head of Consulting EMEA CRU, explored the pressing need for decarbonization within the mining sector. They emphasized the critical role of transparency, innovation in low-carbon technologies, and the importance of social and governance factors in sustainability efforts. The discussion highlighted the electrification of mines, advancements in lithium extraction and aluminum processing, and the significant potential of recycling. With a particular focus on Saudi Arabia's ambitious decarbonization and construction plans, the panelists underscored the urgency of substantial investments and innovative financing solutions to meet green technology demands and sustainability targets.

**Martin Feth, Managing Director and Partner, Boston Consulting Group (BCG);**  
Martin Feth, Managing Director and Partner at Boston Consulting Group (BCG), discussed the ongoing race for decarbonization within the mining industry. He highlighted that mining companies face significant challenges related to the technical feasibility, commercial viability, and organizational complexity of their decarbonization efforts.



Feth emphasized that while companies are investing millions into decarbonization, the full puzzle of transparency and the right path to sustainability are not yet in place. He noted that sustainability provides both direct and indirect value, but companies often lack insight into the indirect benefits, such as the license to operate. Feth urged companies to commercialize their low-carbon technologies and enhance their understanding of the value decarbonization brings to capitalize on it more effectively.

Moderator



**Victor Rodriguez**  
Head of Consulting (EMEA), CRU



**Joe Lombard**  
Vice Chairman, Hatch



**Martin Feth**  
Managing Director and Partner, Boston Consulting Group (BCG)



**Joanne Bate**  
Chief Operations Officer, Industrial Development Corporation



**Richard Horrocks-Taylor**  
Global Head Metals and Mining, Standard Chartered Bank



**Bassam Dally**  
Professor, Mechanical Engineering, King Abdullah University of Science and Technology (KAUST)





**Joanne Bate, Chief Operating Officer, Industrial Development Corporation;**

Joanne Bate, Chief Operating Officer at the Industrial Development Corporation, posed critical questions about the future demand for minerals and the bankability of mining projects. She stressed that mineral production needs to increase more than tenfold to meet the potential for green products and emphasized the importance of recycling in the mining process. Bate pointed out that Western companies compete with China and India, underlining the significance of social and governance aspects alongside environmental concerns. She highlighted the challenges and solutions identified in a recent study, which included improving data automation, integrating sustainability training, and linking sustainability efforts to business value. Bate also discussed financial strategies, mentioning the need for blended finance vehicles and separate investment vehicles to manage early-stage risks.

**Joe Lombard, Vice-Chairman, Hatch;**

Joe Lombard, Vice-Chairman at Hatch, focused on the increasing importance of renewable and nuclear energy in future decarbonization efforts. He mentioned commissioning the world's first full-scale underground mine using automated electric vehicles as a focal point for electrification.

Lombard highlighted various technologies in development stages that support global decarbonization efforts, including advances in lithium and aluminum processing. He stressed that significant environmental improvements and meeting demand are contingent on responsible mining practices and further technological developments in these areas.

**Bassam Dally, Professor, Mechanical Engineering, King Abdullah University of Science and Technology (KAUST).**

Bassam Dally, a Professor at the King Abdullah University of Science and Technology (KAUST), projected that Saudi Arabia will become the world's largest construction site by 2030, emphasizing the massive investments needed in steel and cement for decarbonization by 2060. He mentioned the development of low-carbon cement factories in NEOM, Saudi Arabia, aimed at producing environmentally friendlier cement for the market. Dally also noted the critical role of recycling in the cement industry, highlighting its importance in achieving Saudi Arabia's decarbonization goals.



**PANEL SESSION 4**  
**Green metals and technology**


**Panel:**  
**Supporting mining exploration in Saudi Arabia**

**Summary:** This panel, moderated by Peter Leon, Partner and Africa Chair, Herbert Smith Freehills, discussed Saudi Arabia's strategic initiatives to boost its mining sector, including the Mining Investment Law, exploration incentives, and the strategic use of technology and partnerships to boost exploration. Key themes included the need for increased drilling in underexplored areas, the critical role of community relations and infrastructure development, and the challenges of human resource shortages. The discussion underscored Saudi Arabia's commitment to becoming a mining hub through innovative licensing strategies, digital access to geological data, and the development of local talent, highlighting the Kingdom's ambitious vision for the future of its mining industry.


**Ahmed Al-Aqeel, General Manager of Mining Investment, Ministry of Industry and Mineral Resources;**

Ahmed Al-Aqeel, General Manager of Mining Investment at the Ministry of Industry and Mineral Resources, detailed the competitive nature of the new Mining Investment Law, which was crafted by learning from jurisdictions like Canada, Australia, and the United States to attract explorers and boost exploration activity. He highlighted the untapped resources in the Arabian Shield and the introduction of exploration incentives, offering up to SAR 7.5 million per license with a limit of five licenses per company, covering expenses such as drilling and lab testing. Additionally, Al-Aqeel mentioned that the ministry has started auctioning licenses alongside its first-come-first-serve strategy to attract technically proficient companies that uphold social responsibilities. He also noted that 30% of the Arabian Shield has been surveyed, with data now freely available online, including geothermal information.


Moderator




**Peter Leon**  
Partner and Africa Chair, Herbert Smith Freehills




**Kamal A. Al Juhani**  
Board Member and Managing Director, ALS Arabia




**Sheik Abdur Rashid Kader**  
Executive Vice President Operations, DRA Saudi Arabia




**Ameen AlGhamdi**  
Vice President of inspection, ESNAD



**Duncan Bradford**  
Executive Vice President, Base Metals and New Minerals Business Unit, Ma'aden



**Jonathan Cordero**  
Head of Corporate Development, Eurasian Resources Group (ERG)



**Ahmed Al-Aqeel**  
General Manager of Mining Investment, Ministry of Industry and Mineral Resources





**Duncan Bradford, Vice President, Base Metals & New Minerals Business Unit Ma’aden;**

Duncan Bradford, Vice President of Base Metals & New Minerals Business Unit at Ma’aden, reflected on the company’s past drilling efforts, acknowledging that certain areas were under-drilled. Currently, the focus has shifted to resource conversion and extension drilling in brownfield operations, particularly in the Mansourah and Massarah region, where they plan to drill over 100 kilometers this year. Bradford emphasized that Saudi Arabia is fundamentally under-drilled and mentioned partnerships with companies like Barrick and Ivanhoe to implement new technologies, such as Typhoon technology, to accelerate exploration targets.

**Ameen AlGhamdi, VP of Inspection ESNAD;**

Ameen AlGhamdi, VP of Inspection at ESNAD, described his organization as the operational arm of the Ministry, supporting regulations and license issuance. ESNAD facilitates investor support and ensures community needs are met, focusing on ensuring benefits to investors, economies, and communities. AlGhamdi pointed out the main challenges in maintaining community relations and accessing necessary infrastructure, emphasizing that with a solid work program, these challenges are manageable. He also highlighted the importance of manpower and competency building, noting the progress in the digital landscape that has simplified access to geological data for investors.

**Jonathan Cordero, Head of Corporate Development, Eurasian Resources Group (ERG);**

Jonathan Cordero, Head of Corporate Development at Eurasian Resources Group (ERG), discussed the massive demand for metals required for batteries, necessitating the activation of 200-300 new mines.

He voiced concerns over the viability of junior mines and the need for major mining companies to support them, emphasizing the necessity for smart and patient capital as capital markets currently fail to support junior miners. Cordero highlighted the lengthy timeline for bringing an average copper mine online, which typically spans 10-15 years, and pointed to the potential for large-scale tech-enabled exploration in Saudi Arabia to expedite and enhance mining processes.

**Kamal A. Al Juhani, Board Member and Managing Director, ALS Arabia;**

Kamal A. Al Juhani, Board Member and Managing Director at ALS Arabia, addressed the significant challenge of human resources and skills shortages in the mining sector, both internationally and locally. He expressed optimism about the Kingdom’s ambitious vision and the availability of talented local personnel, many of whom hold key positions within his organization. Al Juhani noted Saudi universities’ support through dedicated programs to enhance the local talent landscape.

**Sheik Abdur Rashid Kader, Executive Vice President Operations DRA Saudi Arabia;**

Sheik Abdur Rashid Kader, Executive Vice President of Operations at DRA Saudi Arabia, emphasized the importance of strategic planning in exploration programs. He mentioned that successful exploration teams are multifaceted and cross-disciplinary, maximizing the value of exploration programs. Kader stressed the necessity of skills transfer programs and maintaining licenses to operate in small communities to ensure sustainable and beneficial mining operations.



**PANEL SESSION 5**  
**Green metals and technology**

**Panel:**  
**Building a robust and resilient junior minerals sector**

**Summary:** Panelists discussed strategies to enhance the junior minerals sector in Saudi Arabia. The conversation highlighted the need for transparency, timeliness in licensing, and clear regulations to attract talent and investment.

Panelists emphasized the importance of government support, financial incentives for greenfield projects, and the role of venture capital. They pointed out the untapped potential of Saudi Arabia due to under exploration and the significance of security of title, consistent government policies, and the availability of data and skill sets for building a resilient junior mining industry. Specifically, the panel addressed the opportunities for junior miners in critical metals and minerals, and the necessity for innovative financing models to attract investment and facilitate project development and monetization.

**Marcel De Groot, Co-Founder and President, Pathway Capital;**

Marcel emphasized the importance of transparency and timeliness in Saudi Arabia’s mineral exploration endeavors. He highlighted these factors as crucial for attracting top talent to the industry and facilitating successful exploration projects.




**Dr. Tim Coughlin President, Chief Executive Officer, Royal Road Minerals;**

Tim addressed the role of the government in supporting mining activities. He emphasized the necessity of establishing clear regulations and efficient licensing processes to facilitate the sector’s growth and development. Tim also emphasized the importance of providing financial support and incentives for exploration companies.


**Pini Althaus, Managing Partner, Cove Capital;**

Pini focused on strategies to encourage junior miners’ involvement in critical metals and minerals exploration. He highlighted the necessity of offering financial incentives and crafting an attractive mining code to attract investment in the sector.


Moderator




**Jim Paterson**  
Principal, Discovery Group




**Sean Wade**  
Chief Executive Officer, Power Metal Resources




**Marcel De Groot**  
Co-Founder and President, Pathway Capital



**Dr. Tim Coughlin**  
President and Chief Executive Officer, Royal Road Minerals



**Pini Althaus**  
Managing Partner, Cove Capital



**Ross Bhappu**  
Senior Strategic Advisory Partner, Resource Capital Funds





Pini also discussed the importance of creating an environment that fosters innovation and exploration activities.

**Ross Bhappu, Senior Strategic Advisory Partner, Resource Capital Funds.**

Ross discussed the untapped potential of Saudi Arabia's mining industry and outlined key considerations for potential investors. He emphasized the importance of secure title ownership, stable governmental policies, and the availability of essential skill sets and project assets. Ross also highlighted the need for financial incentives and support mechanisms for junior exploration companies.

**Sean Wade, Chief Executive Officer, Power Metal Resources;**

Sean, representing a junior project incubator, expressed interest in investing in the Arabian Shield region. He highlighted the importance of early-stage project support and the need for investment opportunities that allow for profit realization. Sean emphasized the significance of enabling investors to exit and realize profits and the potential for partnerships with other license holders in Saudi Arabia.



**PANEL SESSION 1**  
**Responsible Future Minerals Theatre**

**Panel:**  
**New technologies fast tracking responsible exploration**

FMF hosted a panel discussion titled “New Technologies Fast Tracking Responsible Exploration,” moderated by Jim Paterson, Principal of the Discovery Group.

The panel included Rob Wood, Commissioner at the Geoscience Data Analytics Center (GDAC), and Govind Friedland, Founder and Executive Chairman of GoviEx Uranium Inc.


**Summary:** This panel featured insights from experts in the mining sector on how new technologies are revolutionizing mineral exploration. Rob Wood from GDAC highlighted how scientific advancements are making exploration more precise and less wasteful. Govind Friedland of GoviEx Uranium Inc. stressed the critical role and growing demand for copper, especially in the context of global development and technological advancement. The discussion underscored the importance of integrating new technologies to meet the challenges of sustainable and responsible resource extraction.

**Overview:** Rob Wood emphasized the role of science in enhancing the efficiency of exploration processes. He stated that by using scientific methods, they can accurately target areas with high potential, significantly reducing unnecessary expenditures in early exploration phases.


Govind Friedland discussed the critical importance of copper in the context of electrical and thermal conductivity, noting that copper is second only to precious metals in these properties but is less expensive. He highlighted the immense demand for copper, pointing out that the world will double its current consumption—from 25 million tons to 50 million tons in the next 20 years—to meet growing needs. This increase implies that more copper will be consumed in the next two decades than has been mined historically since the beginning of human civilization.




Moderator



**Jim Paterson**  
Principal, Discovery Group



**Rob Wood**  
Commissioner,  
Geoscience Data  
Analytics Center  
(GDAC)



**Govind Friedland**  
Founder and Executive  
Chairman, GoviEx  
Uranium Inc





PANEL SESSION 2  
Responsible Future Minerals Theatre

Panel:  
Debunking myths and changing perceptions: outlining what a new mineral development social contract looks like

FMF hosted a panel discussion titled “Debunking Myths and Changing Perceptions: Outlining What a New Mineral Development Social Contract Looks Like.” The panel was moderated by Carole Cable, Partner and Co-Head of Energy and Resources at Brunswick Group.

Panelists included Florence Drummond, Executive Chairman of the Development Partner Institute; Michelle Michot Foss, Fellow in Energy Minerals and Materials at the Baker Institute for Public Policy, Rice University; and Dr. Robin N. Armstrong, Mining Sector Leader at the Department of Earth Sciences, The Natural History Museum.

**Summary:** The panel explored topical issues in redefining the social contract within the mining industry. The discussion, led by experts Florence Drummond, Michelle Michot Foss, and Dr. Robin N. Armstrong, covered the economic, gender, and community engagement aspects of mining. They highlighted the need to adjust perceptions and expectations concerning affordability, the inclusion of women, and community involvement to ensure that mining operations are both socially responsible and sustainable. The conversation emphasized the industry’s need to adopt more inclusive and community-focused approaches to foster positive public perception and practice changes.

**Overview:** Michelle Michot Foss discussed the affordability issue, which she described as a fundamental aspect of the social contract. She emphasized that the lifecycle costs of minerals are often perceived as affordable, but in reality, they are quite expensive. Foss argued that there needs to be a solid base and reference layer for evolving expectations, particularly among consumers and the younger generation, who are increasingly aware of social contracts.

Florence Drummond addressed the role of women in mining, highlighting that the acceptance of women in the industry has historically been a challenge. She stressed the importance of redefining organizational values to incorporate and support the effective involvement of women, viewing this as pivotal for the future of mining.

Dr. Robin N. Armstrong discussed the social contract related to community engagement, noting past mistakes where the industry needed to listen to community concerns. He identified the critical issue of reshaping the sector’s public perception and understanding what constitutes a new social contract. Armstrong further stressed the need to thoroughly explore how to redefine and implement this social contract effectively.



**Carole Cable**  
Partner and Co-Head  
Energy and Resources,  
Brunswick Group



**Florence Drummond**  
Executive Chairman,  
Development Partner  
Institute



**Michelle Michot Foss**  
Fellow in Energy,  
Minerals and Materials,  
Baker Institute for  
Public Policy, Rice  
University



**Dr Robin N. Armstrong**  
Mining Sector Leader,  
Department of Earth  
Sciences, The Natural  
History Museum



PANEL SESSION 3  
Responsible Future Minerals Theatre

Panel:  
Transforming the critical mineral sectors and delivering on the United Nations Sustainable Development Goals: A fit for purpose sustainability framework for the region

The FMF hosted a panel discussion titled “Transforming the Critical Mineral Sectors and Delivering on the United Nations Sustainable Development Goals: A Fit for Purpose Sustainability Framework for the Region.”

The panel was moderated by Dr. Hamid Rashid, Head of Global Economic Monitoring at the United Nations. Panelists included Julian Treger, President, CEO, and Director of CoTec Holdings; Aiden Lee, CEO and Co-Founder of Graphjet Technology; and Dr. Stacy Hope, Managing Director of Women in Mining UK.

**Summary:** This panel explored how the mining sector could adopt sustainability frameworks that align with global environmental objectives. The discussion, led by Dr. Hamid Rashid with contributions from Julian Treger, Aiden Lee, and Dr. Stacy Hope, emphasized the need for regional approaches tailored to the unique characteristics and opportunities of the region. The panelists discussed the integration of sustainability into national frameworks, the commitment of the mining industry to sustainable investments, and the complexities of implementing solutions like electric vehicles. The conversation highlighted the importance of adapting global sustainability standards to local contexts to address regional and global environmental challenges effectively.

**Overview:** Julian Treger emphasized the need for careful consideration of national development frameworks, such as those in the Kingdom, alongside global concerns about climate change. He mentioned that the region has the advantage of starting with a relatively clean slate, without the burden of historical legacies, which presents a unique opportunity to integrate sustainable practices from the outset.

Dr. Stacy Hope focused on the alignment with the Sustainable Development Goals (SDGs). She highlighted that the Super Region’s context differs significantly from the environments where these standards were initially conceived. She pointed out that mining companies are recognizing the level of investment needed to ensure sustainability and are willing to commit to these practices.

Aiden Lee discussed the growing public awareness of climate change and the emphasis on achieving net-zero targets. He noted that policy support and government funding are bolstering sustainability efforts. However, Lee also cautioned that while solutions like electric vehicles (EVs) are introduced to address environmental issues, they can sometimes lead to other problems, indicating the complexity of truly sustainable solutions.



**Dr Hamid Rashid**  
Head, Global Economic  
Monitoring, United  
Nations



**Julian Treger**  
President, Chief  
Executive Officer  
and Director,  
CoTec Holding



**Aiden Lee**  
Chief Executive Officer  
and Co-Founder,  
Graphjet Technology



**Dr Stacy Hope**  
Managing Director,  
Women in Mining UK





FIRESIDE CHAT 1  
Responsible Future Minerals Theatre

Panel:  
New trends in the Kazakhstan mining sector – opportunities for junior mining sector

The interview with Dr. Kanat Kudaibergen, founder and CEO of GreyWolf Management, was moderated by Remi Piet, Co-Founder and Senior Partner at Embellie Advisory. It examined conversations around “New Trends in the Kazakhstan Mining Sector—Opportunities for Junior Mining Sector.”

**Summary:** Dr. Kanat Kudaibergen discussed the parallels between the mining industries in Central Asia and Saudi Arabia, noting that a large portion of Kazakhstan’s territory remains unexplored and ripe for investment. He highlighted the lack of a formal stock exchange system, which hampers financing opportunities, but also mentioned ongoing efforts to establish such financial infrastructure to support and develop the mining sector. This discussion underscored the potential growth and development for junior mining companies in Kazakhstan as they begin to establish more robust financial systems.

**Overview:** Dr. Kanat Kudaibergen explained that the situation in Central Asia’s mining sector is very similar to that of Saudi Arabia. According to ministry reports, only 35% of Kazakhstan’s territory has been explored, a situation similar to that in neighboring countries, which also have vast territories with significant opportunities in the mining sector.

He further explained that the system is relatively undeveloped, as they do not have a stock exchange like those in Canada or Australia. However, they are currently creating the necessary infrastructure to attract financing and develop a stock exchange market. Dr. Kudaibergen expressed optimism about solving these issues step by step since establishing the capital, Astana.



**Remi Piet**  
Co-Founder and Senior Partner, Embellie Advisory



**Dr Kanat Kudaibergen**  
Founder and Chief Executive Officer, GreyWolf Management



PANEL SESSION 4  
Responsible Future Minerals Theatre

Panel:  
Winning hearts and minds. Addressing the mineral sector’s image problem

The FMF hosted a panel discussion titled “Winning Hearts and Minds: Addressing the Mineral Sector’s Image Problem.”

The panel was moderated by Gracelin Baskaran, Research Director and Senior Fellow at the Energy Security and Climate Change Program, Center for Strategic and International Studies.

Panelists included Amanda van Dyke, Managing Director at ARCH Emerging Markets Partners; Dr. Patience Mpofu, Founder of Insight Mining Experts; Carole Cable, Partner and Co-Head of Energy and Resources at Brunswick Group; Richard Rothenberg, Chief Executive Director at Global AI; and Johnson Omolo, General Manager at Africa Broadcasting.

**Overview:** Amanda van Dyke explained that all mining companies need to communicate regularly and maintain support from local communities and governments to move forward successfully in the sector.

Dr. Patience Mpofu emphasized that effective engagement with stakeholders and the community is crucial for solving problems in the mining sector, highlighting the importance of maintaining a social license to operate.

Carole Cable added that each country and community has specific issues, and being truthful and transparent is essential for addressing and solving problems within the sector.

Richard Rothenberg discussed the perception of mining, noting that perceptions are data that can be quantified, indicating how society views mining activities as either negative or positive.

Johnson Omolo spoke about the social license to operate from an African perspective, pointing out the challenge of conflicts in regions where mining occurs. He noted that these conflicts are often partly contributed by mining activities, stressing the need for mining companies to focus on responsible operations.

**Summary:** This panel tackled the persistent challenges of public perception and community relations in the mining industry. The conversation underscored the necessity of consistent communication, community engagement, and the cultivation of a positive social license to operate. Panelists from various backgrounds shared insights on the importance of transparency, the quantifiable nature of public perception, and the specific challenges faced in different regions, particularly in Africa, where mining-related conflicts are prevalent. The discussion highlighted strategies for improving the sector’s image and stressed the critical role of ethical practices in securing community and governmental support.



**Gracelin Baskaran**  
Research Director and Senior Fellow, Energy Security and Climate Change Program, Center for Strategic and International Studies



**Amanda van Dyke**  
Managing Director, ARCH Emerging Markets Partner



**Dr Patience Mpofu**  
Founder, Insight Mining Experts



**Carole Cable**  
Partner and Co-Head Energy and Resources, Brunswick Group



**Richard Rothenberg**  
Chief Executive Director, Global AI



**Johnson Omolo**  
General Manager, Africa Broadcasting





PANEL SESSION 5  
Responsible Future Minerals Theatre

Panel:  
Are companies recalibrating their risk appetite to invest in Super Region mineral development?

FMF hosted a panel discussion titled “Are Companies Recalibrating Their Risk Appetite to Invest in Super Region Mineral Development?”

The panel was moderated by Amanda van Dyke, Managing Director at ARCH Emerging Markets Partners.

Panelists included Owen Hegarty, Executive Chairman at EMR Capital; Michael Barton, Managing Partner at Orion Resource Partners; William Husband, Global Head of Metals and Mining at Citi; George Cheveley, Portfolio Manager at Ninety One; Christopher Ecclestone, Principal and Mining Strategist at Hallgarten & Company; and Rogier de la Rambelje, Head of Mining at EAS Advisors.

**Summary:** This panel explored the various perspectives on the risks associated with investing in a broadly defined Super Region spanning Central Asia to Central Africa.

The panelists discussed the geographical, economic, and operational risks prevalent in the region. They also highlighted the region’s rich mineral resources and the increasing demand for critical minerals. The conversation emphasized the need for a proper risk assessment to understand the diverse risks in different parts of the region and the overall positive outlook for investment in these mineral-rich areas.

**Overview:** Christopher Ecclestone shared his perspective on the “Super Region,” describing it as an oval-shaped area stretching from Central Asia through the Middle East and into Central Africa. He noted that the main risk in this region is not geological.

Owen Hegarty discussed the increasing demand for critical minerals and materials, highlighting that the Super Region is both significant and instrumental in the charge for energy transition.


George Cheveley commented that companies perceive they are taking risks because they focus on the most minor parts of their operations. He playfully suggested that we could be less argumentative, humorously referring to the region as a traditional bank to emphasize its reliability in terms of resource availability.

Michael Barton explained that risk across the Super Region is not homogeneous; it varies greatly. He emphasized the importance of maintaining a positive outlook when assessing risks in such a diverse region.


Rogier de la Rambelje pointed out that the unknown risks are those that are typically most concerning. However, he reassured the audience by stating that the Super Region is well-known and rich in minerals, leading him to believe that there are no significant risks in investing there.




Moderator




Amanda van Dyke  
Managing Director,  
ARCH Emerging  
Markets Partner




Owen Hegarty  
Executive Chairman,  
EMR Capital




Michael Barton  
Managing Partner,  
Orion Resource  
Partners




William Husband  
Global Head of Metals  
and Mining, Citi



George Cheveley  
Portfolio Manager,  
NinetyOne



Christopher  
Ecclestone  
Principal and Mining  
Strategist, Hallgarten  
& Company



Rogier de la Rambelje  
Head of Mining,  
EAS Advisors





PANEL SESSION 6  
Responsible Future Minerals Theatre

Panel:  
Technology deep dive: x4 transformative technologies that will reshape the critical minerals industry

The FMF hosted a panel discussion titled “Technology Deep Dive: x4 Transformative Technologies That Will Reshape the Critical Minerals Industry.”

Moderated by Dr. Donald R. Sadoway, Professor Emeritus of Materials Chemistry at the Massachusetts Institute of Technology, the panel featured Hirofumi Katase, Executive Vice Chairman and Director at i-Pulse; Emilie Bodoïn, Founder and CEO of Pure Lithium Corporation; Dr. Saeed Al Shihri, Vice President of Energy and Industry at King Abdulaziz City for Science and Technology (KACST); Sarah Coleman, CEO of IDOBA; Oliver Beck, Global Solutions Head at Innomotics; and Yamen Al-Hajjar, Managing Partner at Olive Tree Capital.

**Summary:** This panel highlighted several groundbreaking technologies to transform the mining sector.



Panelists discussed advancements from high-speed electrical pulse applications to innovative lithium processing methods and the integration of digital technologies to enhance operational efficiencies and decision-making. The discussion touched on the importance of sustainability, education, and the role of digital transformation in evolving the critical minerals industry towards a more efficient and environmentally conscious future.

Overview: Hirofumi Katase described how his company is revolutionizing mining with a technology based on high-speed electrical pulses, capable of discharging one gigawatt of power in a fraction of a second. This technology not only enhances oil well production but also has the potential to reduce power consumption by up to 80%.

Emilie Bodoïn shared insights into her company, Pure Lithium, which streamlines the production of battery-ready lithium. Their technology efficiently converts dilute sources of lithium into anodes in a single step, simplifying the supply chain and significantly saving energy.

Dr. Saeed Al Shihri spoke about the dual role of KACST in supporting applied research and fostering innovation within Saudi Arabia. He highlighted efforts to integrate digital technologies like AI to enhance decision-making and optimize mineral resource allocation.

Sarah Coleman discussed the importance of digital transformation in mining, focusing on how AI can support human decision-making across multiple operational dimensions, including cost, volume, quality, energy, emissions, and social impact.

Oliver Beck from Innomotics elaborated on how their century-old expertise in cement manufacturing aids the mining industry by enhancing productivity, safety, and energy efficiency through innovative tools and decision-making technologies.

Yamen Al-Hajjar from Olive Tree Capital emphasized the importance of scaling and commercializing frontier technologies sustainably within the mining sector. He noted the critical role of higher education and internships in integrating new technologies and approaches, such as ESG principles, into the mining industry.



**Dr. Donald R. Sadoway**  
Professor Emeritus of Materials Chemistry, Department of Materials Science and Engineering, Massachusetts Institute of Technology



**Hirofumi Katase**  
Executive Vice Chairman and Director, i-Pulse



**Emilie Bodoïn**  
Founder and Chief Executive Officer, Pure Lithium Corporation



**Dr Saeed Al Shihri**  
Vice President of Energy and Industry, King Abdulaziz City for Science and Technology (KACST)



**Sarah Coleman**  
Chief Executive Officer, Idoba



**Oliver Beck**  
Global Solutions Head, Innomotics



**Yamen Al-Hajjar**  
Managing Partner, Olive Tree Capital





COUNTRY SPOTLIGHT 1  
Country Showcase – Lands of Opportunity

Panel:  
Democratic Republic of Congo (DRC)

**Summary**  
Moderated by Gavan Collery, Founder of the Melbourne Mining Club, Prof. Dieudonné-Louis Tambwe, Deputy Coordinator, Cellule Technique de Coordination, highlighted DRC's significant potential for mining investment, boasting vast resources and a strategic location surrounded by nine countries.

The DRC offers 80 million hectares of arable land, 4 million hectares of irrigable land, and substantial fishing and breeding potential.

The DRC Mining Code provides a secure legal framework, emphasizing both artisanal and industrial mining, with strategic minerals such as cobalt, germanium, and coltan identified for future development.

The country's rich metallogenic provinces, including copper, cobalt, zinc, and iron, present ample investment opportunities, supported by increasing exports and strategic partnerships for infrastructure development, including hydroelectric projects and public-private partnerships.

Key mining facts & figures:

- The DRC has 250 million cubic meters, partly in the Sahara Desert, and is surrounded by 9 countries, providing it a distinctive location with many international corridors. The Congo is a democratic republic.
- The DRC has 80 million hectares of arable land and 4 million hectares of irrigable land.
- Fishing potential of 700,000 tons of fish per year
- Diverse climate and abundant rainfall (1000mm per year), suitable for agricultural development

- Breeding potential of 40 million livestock
- The DRC mining code provides an attractive, secure and competitive legal framework for all parties interested in the mining sector.
- By law, there are two approaches to mining in the DRC: artisanal and industrial. Only Congolese can be artisanal miners.
- The DRC Mining Code identifies strategic minerals in line with future mineral needs of countries.
- Cobalt, Germanium and columbo-tantalite (Coltan) are considered strategic minerals in the DRC.
- DRC metallogenic provinces and their characteristic minerals – Gold, Iron,3t, Diamond, Nickel, Coltan, copper and chrome, cobalt, zinc, diamonds, tin, oil shale, lead.
  - Copper +82 million t
  - Cobalt +5,8 million t
  - Zinc +7 million t
- Production in 2022 : Copper : 2 394 630 t ; Cobalt :115 371 t ; Zinc :13,578 t
- Iron: + 10 million tons
- Manganese: +30 million tons
- Over the past five years, exports of copper have been increasing.
- Strategic partnership with Excalibur – completing geophysical studies.
- Investment opportunities for infrastructure – roads, rail, etc. to ease access to mineral deposits and to support exports.
- Huge, world-class hydro potential
- New projects are under development thanks to PPPs.



Gavan Collery  
Founder, Melbourne Mining Club



Prof. Dieudonné-Louis Tambwe  
Cellule Technique de Coordination et de Plantification Minière (CTCPM), Democratic Republic of Congo (DRC) Ministry of Mines



COUNTRY SPOTLIGHT 2  
Country Showcase – Lands of Opportunity

Panel:  
Pakistan

**Summary:**  
Moderated by Richard Morrow, Chairman Melbourne Mining Club, panelists highlighted Pakistan's vast untapped mineral potential, with 7 billion tons of gold, silver, and copper, and emphasized the need for technology, capital, and a stable legal framework to attract investors. Mark Bristow underscored the importance of partnerships and enabling legislation for mining success, citing the Balochistan mines' potential to produce significant amounts of gold and copper. Panelists also emphasized Pakistan's political stability, its focus on strategic minerals, and efforts to develop human capital and infrastructure, presenting the country as an attractive investment destination with substantial growth opportunities.

Talking Points  
Muhammad Ali, Minister of Energy Pakistan

Pakistan boasts significant untapped mineral potential, with an estimated 7 billion tons of gold, silver, and copper, along with one of the largest deposits of pink rock salt.

Other valuable minerals include lithium, barite, nickel, graphite, among others. The country compares itself to Chile in terms of mineral investments, highlighting the need for technology, capital, and know-how.

To attract investors, Pakistan has identified key mining areas and recognized the importance of establishing a favorable legal and fiscal framework, addressing challenges posed by governmental changes. The establishment of the Special Investment Facilitation Council (SIFC) serves as a solution, providing a one-stop-shop for investors and ensuring consistency in decision-making regardless of governmental changes. Pakistan now offers four different licenses for investors and is standardizing mining regimes at the federal level. Efforts are also underway to develop a centralized data center housing a GIS-based web portal for easy access to information on the country's minerals, facilitating business operations.



Richard Morrow  
Chairman, Melbourne Mining Club



H.E. Muhammad Ali  
Minister of Energy, Pakistan



Mark Bristow  
Chief Executive Officer, Barrick Group



Masood Nabi  
Managing Director, Pakistan Minerals Private Limited



Faheem Haider  
Managing Director, Mari Petroleum Company Limited



Rebecca Campbell  
Partner, White & Case



Glen Ireland  
Senior Advisor, RB&A Partners





Additionally, Pakistan is investing in human resource development through institutions like Navtech, aiming to train and upskill individuals for the mining sector. With a GDP of \$400 billion, Pakistan presents significant opportunities for investment and economic growth.

**Mark Bristow, Chief Executive Officer of Barrick Group**

Capital, expertise, and enabling legislation are pivotal for the flourishing of mining operations. Despite Pakistan being perceived as high-risk, investing in the US poses similar risks, exemplified by the 15-year process to obtain permits for a new mine in Nevada. Barrick's agreement, initiated two years ago with Pakistan Minerals, in contrast, will yield copper production by 2028. Balochistan mines are forecast to yield 500,000 ounces of gold annually and 400,000 tons of copper.

In the area where Barrick operates, it has established three schools, that are attended by 50% boys, 50% girls. Additionally, efforts are underway to achieve universal attendance for children under ten years old in the future. Fundamentally, mining is about fostering relationships and partnerships, recognizing the indispensable role of people in the industry's success.

**Masood Nabi, Managing Director of Pakistan Minerals Private Limited**

With the company's financial strength, it can invest in mining ventures, while also facilitating technology transfer. Drawing on its 50 years of expertise in oil and gas, we bring valuable insights to the table. Additionally, it collaborates with academic and training institutes to foster human capital growth in the industry. Our focus extends to creating an enabling environment and forming partnerships, demonstrating our readiness to collaborate for mutual success.

**Rebecca Campbell, Partner at White & Case;**

Rebecca said that partnership and a can-do attitude across all relevant government ministries were evident in making the Barrick-Pakistan Minerals project a success. This experience served as a learning opportunity, as the project unfolded in record time compared to similar endeavors globally. Prospective investors in Pakistan should take note of the swift pace at which things can progress. Additionally, the investments made in Pakistan are robust and legally sound, contributing to a stable long-term fiscal and legal framework essential for mining jurisdictions. The success witnessed in Pakistan should instill confidence in junior miners looking to enter the market.

**Faheem Haider, Managing Director at Mari Petroleum Company Limited.**

Mining and oil & gas industries share similarities in investment decision-making processes and considerations for environmental, social, and governance (ESG) factors. Pakistan maintains political stability and seeks to diversify its metal resources. The focus is on strategic minerals, with efforts directed towards establishing exploration work floors equipped with the latest technologies. Additionally, initiatives are underway to harness local and international expertise while nurturing young talent. Pakistan boasts world-class engineering universities, contributing to the country's potential for innovation and development in the mining sector.

**Glen Ireland, Senior Advisor at RB&A Partners.**

Pakistan holds immense geological potential that remains largely untapped, prompting investment interest from the EU. Significant political reforms have spurred development in this area, paving the way for substantial progress. The country offers various opportunities for growth, spanning sectors such as oil and gas, necessitating the development of new infrastructure projects, including a network of roads, to facilitate further investment and economic development.

COUNTRY SPOTLIGHT 3  
Country Showcase – Lands of Opportunity

Panel:  
Nigeria

Moderated by Gavan Collery, Founder of the Melbourne Mining Club, this panel featured Dr. Abdulrasaq Garba, Director General of Nigeria Geological Survey Agency, who emphasized Nigeria's efforts to create mining investment opportunities.

Summary:

With a population of 230-250 million and a vast landmass of over 923,000 square kilometers, Nigeria boasts diverse mineral occurrences in over 500 locations, including metallic, energy, and industrial minerals such as granite, niobium, lithium, and tantalum. The country has undertaken extensive mapping and exploration projects, including high-density sampling initiatives, and has established a National Integrated Mineral Exploration Project to generate bankable geoscience information. Nigeria also provides comprehensive access to mineral resource data through its national GC data center and website, showcasing its commitment to transparency and accessibility in the mining sector. Moderated by Gavan Collery, Founder Melbourne Mining Club, this panel featured Dr. Abdulrasaq Garba, Director General Nigeria Geological Survey Agency.

Talking Points

Dr. Abdulrasaq Garba, Director General of Nigeria Geological Survey Agency, shared how Nigeria is actively working to cultivate mining investment opportunities, leveraging its vast landmass and rich mineral resources.

With a population ranging between 230 to 250 million people and a land area of over 923,000 square kilometers, Nigeria presents an interesting and conducive geological framework for various types of mineralization. The country has identified approximately 44 types of minerals across over 500 locations, including metallic minerals like niobium, lithium, and titanium, as well as energy minerals and industrial minerals such as granite and lead zinc.

A significant portion of Nigeria has been geologically mapped on a detailed scale of one in 100,000. Recently, efforts have been intensified with high-density sampling at scales of one in two to two and a half square kilometers in certain parts of the country. This initiative is part of the National Integrated Mineral Exploration Project, aimed at generating bankable geoscience information through integrated exploration methodologies on both greenfield and brownfield sites.

Additionally, Nigeria boasts locations with high lithium oxide content of 7.5% in areas currently without mining activities. The country also maintains a comprehensive map highlighting the mineral resources of each state and hosts a national geological data center. This center contains over a century's worth of data, including various resources and maps, all accessible through their website, further supporting the nation's mining sector.



**Gavan Collery**  
Founder, Melbourne Mining Club



**Dr. Abdulrasaq Garba**  
Director General, Nigeria Geological Survey Agency





COUNTRY SPOTLIGHT 4  
Country Showcase – Lands of Opportunity

Panel:  
United Kingdom

**Summary:**  
Moderated by Fiona Clouder, CCEO, Clouder Vista and Associate, Ambassador Partnership, this spotlight discussion on the UK featured experts discussing various facets of advancing sustainable mining practices and skill development. Dr. Paul Monks outlined the government’s support for critical minerals agenda and emphasized collaboration and ESG principles. Professor Kip Jeoffrey highlighted the importance of developing global industry skills alongside technology. Professor Richard Hartington emphasized the need for responsible mining practices to support the green economy, suggesting repurposing old mine sites and involving social scientists in community engagement.

**Talking Points:**  
**Dr. Paul Monks, Chief Scientific Advisor for the UK Department for Energy Security and Net Zero.**  
The UK government is supportive of the critical minerals agenda, emphasizing collaboration and the importance of environmental, social, and governance (ESG) considerations. In June 2021, the UK published its critical mineral strategy, aiming to accelerate mining both nationally and internationally through collaboration efforts. The country’s national resources include lithium in Cornwall, tungsten in Devon, and various other resources across the UK.

The Super Region, leveraging locations such as Saudi Arabia as gateways to Africa and Asia presents opportunities, though challenges exist due to skill and capability gaps. Centers of Excellence (COEs) are seen as exciting prospects for innovation, driving resource efficiency across the value chain.

Sustainable mining practices are increasingly important, with a focus on circularity and leveraging science and innovation for greater recoverability. Consumer demand for ESG considerations is growing, although challenges remain in terms of clarity, standards, and ensuring fairness. To decarbonize effectively, the right technology, social context, and financial support are deemed essential components.

**Professor Kip Jeoffrey, Professor of Mining Education, Camborne School of Mines.**  
Professor Kip Jeoffrey focused on the development of skills necessary to support the global mining industry and the challenges faced by companies and countries while fostering sustainable mining practices.  
  
Camborne School of Mines collaborates with states, countries, and companies to develop and enhance skills among national staff and integrate them into world-class mining operations.

This focus on skill development has led to excitement about the Centers of Excellence (COEs) being established in Saudi Arabia. It is vital that human capital skills evolve alongside technological advancements and mineral project development.

While Saudi Arabia thrives with qualified individuals from the petroleum sector, there’s still a need for targeted skills development within the mineral sector. With strategies in place and a commitment to Vision 2030, there’s a sense of urgency to accelerate skills development, recognizing it as a key driver for progress. Ultimately, investing in skills development is vital for shaping the future of mining.

**Professor Richard Hartington, the Natural History Museum**  
Professor Hartington underscored the importance of effectively communicating scientific information to the public in a balanced manner, fostering engagement and ownership of scientific issues.

He also emphasized the challenge of reconciling the need for mineral extraction with environmental conservation efforts.

The Professor highlighted the potential for innovative solutions inspired by nature, such as repurposing old mine sites as has been done so successfully by the Eden Project. He emphasized that innovation in the mining industry extends beyond technology, with a focus on ensuring that every mine site transitions to a net positive impact on the environment. On the future use of mines, the ongoing economic and employment opportunities for communities were emphasized.

Acknowledging the complexities involved, the Professor stressed the need for social scientists within the mining industry, citing examples of collaboration with indigenous communities in the Philippines to rebuild trust and navigate complex social dynamics surrounding mine closures.



**Fiona Clouder**  
CEO, Clouder Vista and Associate, Ambassador Partnership



**Dr. Paul Monks**  
Chief Scientific Advisor, UK Department for Energy Security and Net Zero



**Peter Clack**  
Director of Global, University of Exeter



**Prof. Richard Herrington**  
Head Of Earth Sciences Department, The Natural History Museum





# COUNTRY SPOTLIGHT 5

## Country Showcase – Lands of Opportunity

### Panel: Northern Ireland

**Saleem Haddad, Regional Director for Saudi Arabia and Levant at Invest Northern Ireland**  
Saleem Haddad, Regional Director for Saudi Arabia and Levant at Invest Northern Ireland, outlined the organization's global efforts and strategic presence. As a government organization under the Northern Irish Department for Economy, Invest Northern Ireland is tasked with promoting investments into Northern Ireland and supporting exports worldwide. The organization operates 28 offices globally, including notable locations in Jeddah, Dubai, Johannesburg, Cairo, and Mumbai. These offices focus on fostering relationships and identifying opportunities in their respective regions, with the office in Mumbai particularly attuned to prospects in India, the Middle East, and Africa.

Haddad noted that Northern Ireland is renowned for its expertise in engineering and manufacturing, especially in material handling equipment used across various sectors such as mining, quarrying, and waste recycling.

Remarkably, 40% of the world's exports in this category originate from Northern Ireland. In 2022 alone, the region exported approximately £1.3 billion worth of material handling equipment globally. Of this, 15% was directed towards markets in India, the Middle East, and Africa, with around 40% of these exports landing in Saudi Arabia. This highlights the significant role of the Saudi mining sector as a key market for Northern Ireland.

Haddad also emphasized the potential for further partnerships and collaborative opportunities between Northern Ireland and Saudi Arabia, aiming to strengthen and expand their mutual economic ties.

**Ruchin Garg, Regional Manager for the CDE Group**  
Ruchin Garg, Regional Manager for the CDE Group, provided an overview of the company's extensive global presence and its specialization in designing processing solutions.

CDE, a company with a 30-year history, boasts over 2,000 installations in 100 countries. They focus on developing processing solutions that recover resources from waste and efficiently extract natural resources, aligning with the concept of positive mining. With a network of offices in key regions such as the Middle East, Africa, Europe, Australia, and the Americas, CDE is strategically positioned to cater to a diverse global clientele.

Garg discussed how technological innovations and evolving market demands have significantly shaped their business models. Initially, processing plants were predominantly stick-built, but the pressing need for quicker installation—given that mining operations cannot afford extensive downtime—has made modularity crucial. This shift has spurred further advancements in digitization and the development of smart applications. In response to these industry needs, CDE has developed a patented application that provides real-time insights from a live database, significantly optimizing plant operations and enhancing efficiency. This innovation represents a major leap forward in operational optimization and resource management.

**Jamie Mairs, International Sales Director at EvoQuip.**  
Jamie Mairs, International Sales Director at EvoQuip, shared insights into the distinct identity and focus of EvoQuip within the Terex family. EvoQuip, one of three mobile crushing and screening brands under Terex, was developed organically, leveraging Terex's 60-year legacy in the mobile crushing and screening market, unlike Terex's traditional acquisition strategy. EvoQuip has carved a niche in the compact equipment market, primarily targeting the quarrying and recycling sectors. Their equipment, designed for ease of setup and transport, includes machines up to 35 tons, with recent developments focusing significantly on the Middle East. Mairs also highlighted their latest customer fleet app that enhances operational efficiency and mentioned their active involvement in electrification, including hybrid machines and exploring hydrogen diesel solutions in collaboration with Queen's University Belfast, aiming to integrate this technology in their equipment by the end of 2024.

**Idir Boudaoud, Chief Executive Officer at Sensoteq**  
Idir Boudaoud, CEO of Sensoteq, discussed the role of their company in the burgeoning field of wireless sensor technology for remote machine condition monitoring. Sensoteq's sensors are utilized across various industries, with mining accounting for about half of their market share. These sensors are crucial for monitoring equipment efficiency and maintenance needs, increasingly important in the post-Covid era with growing demands for remote site management. Sensoteq's products are currently exported to 35 countries worldwide, reflecting their significant global footprint.

**Fergal McPhillips; Global Business Development Manager atTerex Washing System**  
Fergal McPhillips, Global Business Development Manager at Terex Washing Systems, detailed the establishment and evolution of Terex Washing Systems, formed in 2012 from the amalgamation of Powerscreen Washing and Finley Washing. With over six decades of collective experience, they offer a wide range of washing equipment solutions, from feeders to filter presses, primarily serving the quarrying, construction, and mining sectors, particularly in washing silica sand for glass production. McPhillips emphasized the importance of data collection through sensor technology for maintenance and operational efficiency, highlighting their system's capability to recycle 95% of water used, which is crucial in mining operations requiring large quantities of clean aggregates and sand.

**Julian Fegan, Business Development Manager at Tesab**  
Julian Fegan, Business Development Manager at Tesab, discussed the unique market position of Tesab, a relatively small but highly influential company in the crushing industry. Despite its size and recent operational changes, Tesab maintains its innovative edge and has shifted its focus towards expanding its distribution network. Fegan pointed out Tesab's commitment to innovation, particularly in electrification and hybrid technologies, noting the industry's need for reeducation to fully utilize these advancements. He also underscored the importance of digitization in keeping Tesab at the forefront of the industry.



**Gavan Collery**  
Founder, Melbourne Mining Club



**Saleem Haddad**  
Regional Director, Saudi Arabia and Levant, Invest Northern Ireland



**Ruchin Garg**  
Regional Manager, CDE Group



**Jamie Mairs**  
International Sales Director, EvoQuip



**Idir Boudaoud**  
Chief Executive Officer, Sensoteq



**Fergal McPhillips**  
Global Business Development Manager, Terex Washing System



**Julian Fegan**  
Business Development Manager, Tesab





COUNTRY SPOTLIGHT 6  
Country Showcase – Lands of Opportunity

Panel:  
Kazakhstan

**Summary**  
Andrew Southam, CEO of KAZ Minerals highlighted the company’s significant presence in copper mining across Kazakhstan. Dr. Kanat Kudaibergen, Chief Executive Officer GreyWolf Management, emphasized the vast untapped potential in Kazakhstan’s mineral exploration, with only a fraction of the land explored. Nariman Absametov, Chief Business Development Officer Tau-Ken Samruk, pointed out neighboring regions with major gold and copper projects, suggesting opportunities for Kazakhstan’s future development. Overall, the discussion underscored Kazakhstan’s promising prospects and strategic importance in the global mining landscape.

Andrew highlighted that KAZ Minerals, which was listed in the UK in 2005, employs 65,000 staff and operates 18 mines across Kazakhstan. The company primarily focuses on copper mining but also produces byproducts such as gold, silver, and zinc. Dr. Kanat added to the discussion by emphasizing Kazakhstan’s vast potential in the mineral resources sector, noting that only 35% of the country’s land has been explored to a depth of no more than 200 meters. Nariman pointed out the strategic significance of Kazakhstan in the regional mining landscape, mentioning that one of the world’s largest gold mines is located just 100 kilometers from the Kazakhstan border in Uzbekistan, and one of the largest copper projects is near Kazakhstan in Mongolia.



**Remi Piet**  
Co-Founder and Senior Partner, Embellie Advisory



**Andrew Southam**  
Chief Executive Officer, KAZ Minerals



**Dr. Kanat Kudaibergen**  
Founder and Chief Executive Officer, GreyWolf Management



**Nariman Absametov**  
Chief Business Development Officer, Tau-Ken Samruk



COUNTRY SPOTLIGHT 7  
Country Showcase – Lands of Opportunity

Panel:  
Ghana

Moderated by Gavan Collery Founder of the Melbourne Mining Club, this country spotlight on Ghana featured Martin Ayisi, Chief Executive Officer at the Minerals Commission of Ghana. Martin Ayisi explained that Ghana has a rich history in mining, dating back to 1897, and has been renowned for abundant minerals such as gold, bauxite, cobalt, aluminum, and manganese. Currently, the country also possesses two critical

minerals, lithium and graphite. Ghana is recognized as the largest producer of gold in Africa and ranks sixth globally. Notably, they have two significant gold mines with a projection of producing 1.45 million ounces per year. Additionally, Ghana is set to launch its first lithium mine, expected to produce around 360,000 tons annually, possibly by the middle of 2024



**Gavan Collery**  
Founder, Melbourne Mining Club



**Martin Ayisi**  
Chief Executive Officer, Minerals Commission of Ghana





DAY TWO  
CONFERENCE SESSIONS





PLENARY SESSION 9

Building capacity by creating centers of excellence in the Super Region

Panel:

Regional Centers of Excellence: Investing in Capacity Building – Key Focus Areas

The FMF hosted a panel discussion titled “Regional Centers of Excellence: Investing in Capacity Building - Key Focus Areas.”

The panel moderated by Sheila Khama, Non-Executive Director of Listed Companies and former Chief Executive Officer of De Beers Botswana, featured; Kimmo Tiilikainen, Director General of the Geological Survey of Finland (GTK); Roby Stancel, Managing Partner Innovation Architects; Princess Mashael Alshalan, Co-Founder AEON Collective; Juan Carlos Jobet, Visiting Fellow Center on Global Energy Policy, Columbia University School of International and Public Affairs (SIPA); Dr. John Bradford, Professor of Geophysics and Vice President for Global Initiatives, Colorado School of Mines; and Saleh M Saleh Vice President Characterization and Field Development Geosciences Saudi Aramco.

Sheila Khama opened her remarks by acknowledging the significant task at hand and emphasized the importance of action following the conference. She highlighted the necessity of building capacity across various sectors, including institutions, knowledge, finance, and commercial aspects.

She stressed that one of the key outcomes of the Ministerial Roundtable was the recognition that institutions are central to capacity building, adding that these institutions are tasked with providing the necessary brainpower to formulate effective policies and conduct research and development to advance geoscientific engineering technology.

Addressing the audience, Kimmo Tiilikainen highlighted key points from the Ministerial Roundtable. Firstly, he emphasized the need to expand the mineral sector’s exploration efforts, which requires increasing education in geosciences

and enhancing skill levels to utilize modern technologies and data science methods. This, he explained, would provide investors with more usable information and data.

Secondly, Tiilikainen addressed the issue of material efficiency within the mining sector. He pointed out that while the sector often focuses on a few profitable metals, a large percentage of extracted materials are wasted. He stressed the importance of assessing deposits to identify fractions that can be utilized for beneficial purposes, thereby improving material efficiency and contributing to a more sustainable society.

Dr. John Bradford highlighted the importance of acknowledging the significant heterogeneity across the Super Region. He noted the disparity ranging from well-developed infrastructure to some of the poorest countries globally, many in Africa. Despite this, Africa holds 30% to 35% of the critical energy minerals essential for the energy transition, indicating its indispensable role in the transition process.

To address the challenges posed by this diversity, Dr. Bradford emphasized the need for political stability and policy continuity. He explained that implementing these measures in some of the world’s poorest countries presents a challenge, suggesting that a viable solution could be that multiple countries pool their resources to establish centers of excellence.

Dr. Bradford said the centers would facilitate the development of technical expertise, enabling more efficient utilization of resources and promoting sustainable development.

As the conversation turned to Juan Carlos, Sheila inquired as to how to effectively mobilize the resources of the Super Region and translate them into actionable steps, particularly with regard to the role of private companies.

Juan Carlos emphasized the crucial role of mining companies in driving innovation alongside governments, universities, and institutions. He noted that mining companies possess the necessary financial resources, long-term vision, and tolerance for trial and error required to innovate effectively. Carlos added that their access to data and real-world operations provides an ideal testing ground for innovative solutions before they are scaled up and deployed on a larger scale.

He criticized the idea of operating in isolation, stressing that it is inefficient and that companies are liable to face a number of risks. He said that if companies work together and cooperate to get the right technology, they can then deploy at massive scale and recoup their investments.

The focus then turned to Roby Stancel, with Sheila inquiring about the steps governments and supervisory bodies can take to ensure a positive response from the private sector.



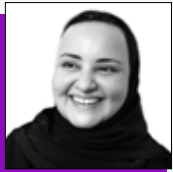
**Sheila Khama**  
Non-Executive Director of Listed companies and former Chief Executive Officer, De Beers Botswana



**Kimmo Tiilikainen**  
Director General, The Geological Survey of Finland (GTK)



**Roby Stancel**  
Managing Partner, Innovation Architects



**Princess Mashael Alshalan**  
Co-Founder, AEON Collective



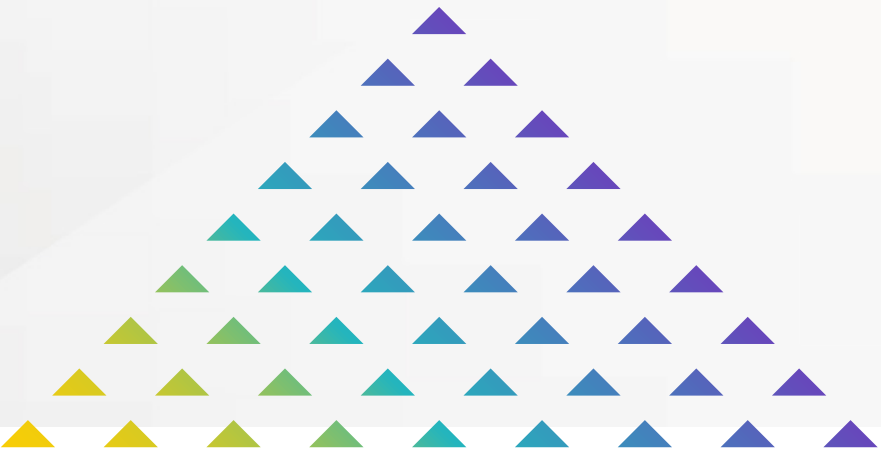
**Juan Carlos Jobet**  
Visiting Fellow, Center on Global Energy Policy, Columbia University School of International and Public Affairs (SIPA)



**Dr. John Bradford**  
Professor of Geophysics and Vice President for Global Initiatives, Colorado School of Mines



**Saleh M. Saleh**  
Vice President, Characterization and Field Development Geosciences, Saudi Aramco





Roby began by examining the similarities between mining and its value chain, emphasizing the importance of understanding each stage. He outlined the roles of different stakeholders, adding that governments must provide stable and strategic leadership; academia should foster ideas and innovation; start-ups and venture capital should drive growth; and mining companies should focus on commercialization.

Additionally, Roby highlighted the significance of evaluating the costs associated with each stage of the value chain, suggesting the establishment of an ideal standard for public spending in this regard.

Sheila turned to Princess Mashael Alshalan, asking her how centers of excellence can contribute to achieving this objective.

In her response, Princess Mashael began by delving into the concept of sustainability and the essential skills integrated or embedded within a center of excellence. She emphasized the key components necessary for achieving the intended goal.

First, she stressed the importance of policy leadership in driving innovation and advocating for science-based and forward-looking policies. Second, she highlighted the significance of timing in establishing these initiatives.

Princess Mashael concluded by addressing the importance of multi-disciplinarity, emphasizing the need for a focus on social science and understanding the dynamics of people's preferences and comfort levels.



Sheila asked Saleh M. Saleh about the lessons that centers of excellence can learn from Saudi Arabia's experiences to ensure their success from the very beginning.

Saleh M. Saleh pointed out Saudi Arabia's deep understanding of hydrocarbon resources in developing a long-term strategy to exploit and monetize energy globally. He highlighted several key variables and constants within this strategy. One crucial aspect was ensuring that the Kingdom possessed a skilled workforce and implemented highly rewarding training programs in the industry.

The second pillar of the strategy involved leading in technology advancement. Saleh noted that last year, Saudi Arabia celebrated the grant of over 1,000 patents, marking a significant milestone in the country's history. Additionally, he suggested that the Kingdom invest in supercomputers to enable high-resolution subsurface imaging for resource identification and simulation of reservoir responses, with the objective of optimizing field development.

Saleh added that Saudi Arabia has seen rewarding outcomes by leveraging the latest data analytics, monitoring systems, and remote operations, including the ability to visualize reservoir fields and optimize their development.



# PLENARY SESSION 10

## Building capacity by creating centers of excellence in the Super Region

### Panel: An Inclusive Multi-stakeholder Approach: Accelerating Responsible Mineral Supply

The FMF hosted a panel discussion titled "An Inclusive Multi-Stakeholder Approach: Accelerating Responsible Mineral Supply," moderated by Eithne Treanor, Managing Director of E.Treanor Media.

The panel featured H.E. Khalil Ibrahim Ibn Salamah, Vice Minister for Industry at the Ministry of Industry and Mineral Resources, Saudi Arabia; Mikael Staffas, President and CEO of Boliden; Helena Nonka, Director of Strategy and Sustainability at Anglo American; Emily Olson, Chief Sustainability and Corporate Affairs Officer at Vale Base Metals; and George Q. Fang, Board Member and Executive Vice Chairman at Huayou Cobalt.

Eithne Treanor welcomed the audience and speakers, beginning with Mikael Staffas. She asked him about the approach to stakeholder responsibility and engagement in Northern Europe and how it has evolved over the years.


Mikael Staffas explained that in Sweden, people don't rely on mining for their livelihood as much as in other regions. Therefore, stakeholders primarily consist of locals, but they also need to consider stakeholders at a regional or national level. Despite

the abundance of critical minerals in Northern Europe and Scandinavia, there is often resistance from local communities.


Eithne turned attention to Emily Olson and asked about Vale Base Metals' approach. Emily emphasized the importance of considering community perspectives in their operations, citing examples from Brazil, Canada, and Indonesia. She noted the evolving expectations and stakeholders in these regions, highlighting the need for adaptability and flexibility to meet changing demands.




Moderator




**Eithne Treanor**  
Managing Director,  
E. Treanor Media




**H.E. Khalil Ibrahim Ibn Salamah**  
Vice Minister for Industry,  
Ministry of Industry and  
Mineral Resources, Saudi  
Arabia




**Mikael Staffas**  
President and Chief  
Executive Officer,  
Boliden



**Helena Nonka**  
Director, Strategy and  
Sustainability, Anglo  
American



**Emily Olson**  
Chief Sustainability  
and Corporate Affairs  
Officer, Vale Base  
Metals



**George Q. Fang**  
Board Member  
and Executive Vice  
Chairman, Huayou  
Cobal





On the other hand, Helena Nonka discussed the importance of maintaining focus on the essence of mining amid the rush towards a greener and more sustainable future. She stressed that while mining plays a crucial role in supporting the green transition, it must also address issues such as poverty eradication and inequality reduction.

Nonka further highlighted the immense scale of the opportunities ahead, particularly in developing countries where the demand for resources is substantial.

George Q. Fang spoke on ensuring the resilience of the supply chain, and emphasized the need for a shift in business philosophy to adapt to the changing business and environmental landscape. He stressed the importance of building sustainable and green development supply chains through collaboration with the right partners.

Fang added that by working together with multiple stakeholders, they aim to establish a reliable and sustainable industrial ecology, ensuring mutual value creation and success for all involved.

In response to Eithne’s question on balancing economic and environmental development in the mineral sector, H.E. Khalil Ibrahim Ibn Salamah emphasized the importance of addressing this complex issue.

He acknowledged that despite mining not having been a primary focus in Saudi Arabia in the past, the country is now prioritizing it as part of industry diversification efforts.

He added that Saudi Arabia aims to achieve a successful and sustainable mineral sector by defining its role in the global supply chain and setting clear goals. “We are considering all aspects of the value chain, recognizing that mineral extraction and purification are energy-intensive processes,” H.E. Khalil Ibrahim Ibn Salamah added.

He further emphasized the importance of understanding the global demand and ensuring that supply chain connections between miners and users are established, adding that supporting smaller companies within the supply chain is essential for sustainability and resilience.

H.E. Khalil Ibrahim Ibn Salamah concluded by emphasizing more strategic cooperation among companies of all sizes to ensure stability and success in the sector.



## PLENARY SESSION 11

### Building capacity by creating centers of excellence in the Super Region

#### Panel: Bridging the ESG Investment Drag to supply critical minerals the world needs – cost or value

The FMF hosted a panel discussion titled “Bridging ESG Investment Gap to Supply Critical Minerals the World Needs - Cost-effective Value.” Moderated by Tumi Makgabo, Broadcaster, and Entrepreneur at Africa Worldwide Media, the panel featured John Raymond, Chief Executive Officer and Managing Partner of The Energy and Minerals Group; Brian Menell, Chairman and Chief Executive Officer of TechMet; Cyrus Hirananeck, Senior Managing Director at M Klein and Company; and David Awram, Senior Executive Vice President of Sandstorm Gold Royalties

David Awram said that his organization has been investing in commodities and metal streams, taking a long-term perspective, since 2004. He said they consider not just the immediate outcomes but also envision how things will look a decade or two down the line, noting that while the concept of ESG (Environmental, Social, and Governance) may not have always been explicitly named, it has always been inherent in the mining industry.

Awram stated that the challenge now is to identify companies and groups that have been effectively managing sustainability. This, he believes, aligns with the recent trend of adopting more quantitative measures for assessing ESG performance, reflecting a shift towards greater accountability and transparency in recent years.



Moderator

**Dr Kwasi Ampofo**  
Head of Mining and Metals, BloombergNEF

**John Raymond**  
Chief Executive Officer and Managing Partner, The Energy and Minerals Group

**Cyrus Hirananeck**  
Senior Managing Director, M Klein and Company

**David Awram**  
Senior Executive Vice President, Sandstorm Gold Royalties





Cyrus Hiranamek explained that mining companies engage in long-term partnerships not only with host governments but also with communities, emphasizing the importance of labor and collaboration in remote locations for sustainable development. He highlighted the necessity for true partnerships, citing companies like Ma’aden in Saudi Arabia as examples of organizations that have established environmental and social codes in partnership with the government.

Tumi turned her attention to Brian Menell to share his organization’s approach to considering the cost implications of sustainability and long-term thinking.

Brian emphasized that ESG is a critical component in transforming the industry, alongside scaling production to meet the demand for battery metals, rare earth metals, and other minerals crucial for climate change mitigation and the energy transition.

He reiterated the need for this transformation to align with geopolitical and national security interests, emphasizing the importance of funding to ensure sustainable and responsible production for the energy transition.

Meanwhile, John Raymond spoke about his perspective on engaging with the industry in light of these ESG pillars.

He highlighted three key ESG pillars, emphasizing the shared responsibility to implement them effectively. He suggested leveraging the ESG template to attract much-needed capital formation to the industry, which requires hundreds of billions of dollars annually to fund numerous projects aimed at meeting the growing global demand for mineral resources.

Raymond added that failure to secure adequate capital formation could significantly affect global economies and individual countries.

Meanwhile, Cyrus noted that about four years ago, the energy and materials sector represented around 15% to 20% of the S&P index 500, but today, it comprises only about 4% of the index due to post-COVID recovery trends. He highlighted the challenge of finance-ability, mentioning that the sector currently trades at historically low multiples.

In response to Tumi’s question on the conversation in domestic markets regarding changes in policy frameworks. David explained the challenge of fitting within policy frameworks due to the unique nature of each mining project and the lack of capital availability in recent years.



## PLENARY SESSION 12

### Building capacity by creating centers of excellence in the Super Region

#### Panel: Growing metals supply through recycling enabled by new technologies

The FMF hosted a panel discussion titled “Growing Metals Supply Through Recycling Enabled by New Technologies.” The session was moderated by David Eades, former BBC News journalist, featured Petar Ostojic, Founder and CEO of the Center of Innovation and Circular Economy; Alec Sellem, Founder of UNIMETALS; Dr. Hyung Hwan Joo, Invited Professor at Seoul National University and Former Minister of Trade Industry and Energy of the Republic of Korea; and Marco Levi, CEO of Ferroglobe.

David introduced the topic before turning to the former Minister of Trade and Energy of Korea to shed light on the challenges he faced.

Hyung Hwan Joo emphasized key challenges in battery recycling, particularly regarding policy responses. Drawing from his extensive experience, he highlighted collaboration with battery recycling firms and identified two critical challenges; ensuring a stable supply of spent batteries and fostering continuous technological innovation.

To address these challenges, he said, they implemented a comprehensive legal, regulatory, infrastructural, and policy support system covering the entire lifecycle of spent batteries.


This integrated approach encompasses crucial stages like collection, performance and safety evaluation, transportation, and recycling, ensuring efficiency and consistency, adding that their holistic approach was to efficiently secure critical minerals.

Joo pointed out that China poses significant competition in the battery sector, emphasizing the need to establish a genuine circular battery manufacturing process. Addressing the challenge of stable supply, he identified two primary sources of batteries; domestic and foreign.


He noted that establishing a systematic collection system is crucial, particularly for domestic sources, which are relevant for manufacturing batteries with lower recoverable metal values such as LF batteries. Joo added that South Korea aims to extend its responsibility to other battery makers, including those of lithium batteries – by collaborating with manufacturers, especially those involved in battery change and disposal, alongside junkyards to create an efficient collection system.

Marco Levi of Ferroglobe highlighted their position as a Western leader in producing silicon metals, silicone alloys, and manganese alloys.


Moderator




**David Eades**  
Journalist/ Former  
BBC News




**Petar Ostojic**  
Founder and Chief  
Executive Officer,  
Center of Innovation  
and Circular Economy



**Alec Sellem**  
Founder, UNIMETALS



**Dr. Hyung Hwan Joo**  
Invited Professor  
at Seoul National  
University, former  
Minister of Trade,  
Industry and Energy,  
Republic of Korea



**Marco Levi**  
Chief Executive Officer,  
Ferroglobe





He emphasized the importance of silicon metal for future battery development and solar energy, stating that efficient batteries and solar panels rely on silicon.

Levi maintained that pure quartz is essential for producing silicon. While quartz is globally available, the challenge lies in sourcing high-quality quartz.

Petar Ostojic acknowledged Saudi Arabia's penchant for ambitious endeavors and saw a significant opportunity to advance the concept of recycling and transition toward a circular economy in the region.

Ostojic emphasized the potential of utilizing equipment within the mining sector, particularly in copper mining. He viewed the conference as a platform to connect the Atacama Desert with the Arabian Shield, adding that such synergy between the two regions would push the narrative on recycling.

Meanwhile, Alec Sellem highlighted his business's crucial role as the final link in the metal recycling chain, ensuring metals are reintegrated into industries. He added that in the UK, the company's focus lies on sorting and organizing logistics to transport metals directly to steel mills or copper smelters.

In the United Arab Emirates (UAE), their operations revolve around extracting and reclaiming waste from industrial companies, including petrochemicals or gold refiners. Sellem recognized the gradual adoption of new technologies within their operations but underscored the significance of forging partnerships with industries, governments, and financial institutions to secure essential financial backing.



## PLENARY SESSION 13

### Building capacity by creating centers of excellence in the Super Region

#### Panel: Accelerating the future of mining: unleashing a just and tech-enabled transformation

The FMF hosted a panel discussion titled “Accelerating the Future of Mining: Unleashing a Just and Tech-Enabled Transformation.” The discussion was moderated by Tumi Makgabo, a renowned Broadcaster and Entrepreneur at Africa Worldwide Media.

Among the panelists were Dr. Donald R. Sadoway, Professor Emeritus of Materials Chemistry at the Massachusetts Institute of Technology; Abdullah Mofter Al-Shamrani, Chief Executive Officer of the Saudi Geological Survey; Mikko Keto, Group Chief Executive Officer of FLSmidth; Ibrahim Al-Nassar, Chief Executive Officer of ESNAD; Jun Xu, Chief Technology Officer of the Mine Business Unit at Huawei; and Nick Myers, Chief Executive Officer and Co-founder of Phoenix Tailings.

Responding to Tumi’s question on Saudi Arabia’s role in accelerating the future of mining and

utilizing technology, Ibrahim Al-Nasser explained that since the maiden edition of the Future Minerals Forum in 2021, under the Ministry of Mineral Resources, Saudi Arabia has focused on two key aspects;

Firstly, it developed a vision and strategy that align with the national mining resources strategy, aimed at adding value to the sector and creating an attractive environment for investors. Secondly, Saudi Arabia recognizes the mining sector’s importance as a cornerstone of its economy, as outlined in Vision 2030.

Mandates have been established to enhance various aspects of the sector, including promoting the investor journey from application to licensing, ensuring compliance with land rights and financial regulations, and prioritizing environmental, health, and safety standards.



**Tumi Makgabo**  
Broadcaster and Entrepreneur, Africa Worldwide Media



**Dr Donald R. Sadoway**  
Professor Emeritus of Materials Chemistry, Department of Materials Science and Engineering, Massachusetts Institute of Technology



**Abdullah Mofter Al Shamrani**  
Chief Executive Officer, Saudi Geological Survey



**Mikko Keto**  
Group Chief Executive Officer, FLSmidth



**Ibrahim Al-Nassar**  
Chief Executive Officer, ESNAD



**Jun Xu**  
Chief Technology Officer, Mine Business Unit, Huawei



**Nick Myers**  
Chief Executive Officer and Co-founder, Phoenix Tailings





Al-Nasser emphasized the Kingdom’s commitment to sustainability, not only in terms of health, safety, and environmental impact but also in fostering positive social and economic outcomes in surrounding communities.

Tumi turned to Abdullah with a question on the impact of fossil fuels on the environment and business practices in organizations. Abdullah acknowledged that the mining sector faces various challenges, including cost and efficiency. He highlighted the significant evolution in technology over the past 15 years, comparing the reliance on multiple devices like computers, TVs, and calculators to the streamlined capabilities that smartphones offer today.

Drawing parallels with advancements in sectors like oil, gas, and petrochemicals, Abdullah emphasized the transformative role of technology in improving efficiency and productivity in mining operations.

In response to a question about Huawei’s contribution to technological transformation in the mining sector, Jun Xu affirmed the organization’s extensive research capabilities across various technologies. He emphasized the importance of leveraging information technology to enhance productivity and safety in mining operations.

Drawing on China’s experience, he highlighted the pivotal role of automation and information technology in driving productivity gains and improving safety standards in mining over the past three decades.

On the other hand, Mikko Keto gave insight into the steps in dealing with technology transformation. He elaborated on the transformation process within FLSmidth, particularly in providing comprehensive solutions for process plants, focusing on commodities like copper and gold.

Keto affirmed that miners must understand the flow sequence to prioritize research and development efforts, adding that the key focus area was the crushing and grinding circuit, which consumes significant electricity. He added that his company has developed high-pressure grinding technology to reduce energy consumption and enhance recovery rates by 1%, 2%, or even 3%, providing substantial benefits to mining companies.

This research, he stressed, also includes innovations like flotation cells aimed at further improving energy efficiency and metal recovery to positively impact the mining industry.

Responding to the question of the environmental impact of mining leftovers, Nick Myers emphasized the importance of achieving their targets, such as transitioning to an electrified future and maximizing the output of essential metals like neodymium, nickel, and copper. He stressed the need to rethink traditional processes by adapting to small particle sizes and heterogeneous mixtures found in tailings deposits.

Additionally, Myers highlighted the necessity of adopting a globally acceptable business model.

Meanwhile, Dr. Sadoway addressed the audience on the importance of minimizing emissions by transitioning to electric tools and analyzing factors like ore transportation to processing sites.

Myers further elaborated on the conservative nature of the mining industry due to operational challenges. He highlighted Saudi Arabia’s unique position for innovation and technology deployment, particularly in areas like gold mining – given the significant investments in the region’s mining sector

Tumi asked how the 2.5 trillion dollars’ worth of minerals underground could be uncovered and put to innovative use. Ibrahim Al-Nasser emphasized the importance of leading digital transformation by integrating various solutions cohesively. He outlined three key aspects: establishing platforms within Saudi Arabia for integration, leveraging comprehensive and clean data from sources like GIS and historical data from the Ministry of Industry and Minerals, and adopting technology-driven approaches such as robotics and artificial intelligence.

In concluding the discussion, Abdullah Mofter Al-Shamrani discussed processes to enhance efficiency while addressing environmental concerns in Saudi Arabia. He noted the critical role of technology in utilizing available data comprehensively, emphasizing the need to transition from outdated methods.

He further stressed the significance of investing in people, ensuring they are educated and equipped to leverage technology effectively for optimal outcomes.

## PLENARY SESSION 14

### Building capacity by creating centers of excellence in the Super Region

#### Panel: Building economic resilience through value chain creation – case studies

The FMF hosted a panel discussion titled “Building Economic Resilience Through Value Chain Creation – Case Studies.” The panel was moderated by Eithne Treanor, Managing Director of E.Treanor Media.

Amongst the panelists were H.E. Eng. Khalid Mohammed Al-Salem, President of the Royal Commission for Jubail and Yanbu; Suliman Al-Mazroua, Chief Executive Officer of the National Industrial Development and Logistics Program (NIDLP); and Abdulaziz Al Hamwah, Vice Chairman and Chief Executive Officer of Modern Industrial Investment Holding Group.

Eithne Treanor kicked off the session with a question addressed to H.E. Eng. Khalid Mohammed Al-Salem about the Royal Commission for Jubail and Yanbu’s role in fostering effective value chains in Saudi Arabia.

In his response, Al-Salem highlighted the Commission’s significant contributions over the past 50 years, while emphasizing their meticulous planning of cities like Jubail and Yanbu with a keen focus on value chains and industrial competitiveness.

He detailed their attention to energy and utilities provisioning, which ensured industries had access to essential resources like power, gas, and water.

Al-Salem emphasized the importance of industry studies to optimize resource consumption during master planning and infrastructure development.

He further noted their commitment to sustainable practices, stating that approximately 65% of industrial waste is recycled or managed in an environmentally friendly manner, demonstrating their dedication to responsible waste management and sustainability.

Responding to how Vision 2030 addresses the future of value chains, Al-Mazroua began by commending the Future Minerals Forum as a crucial event in the global mining calendar and lauded the Ministry of Industry and Mineral Resources for its successful execution. He outlined three key areas in which Vision 2030 is addressing value chains:

- The evolving economy, characterized by the development of products such as clean energy, digital economy, and mobility solutions.



**Eithne Treanor**  
Managing Director,  
E. Treanor Media



**H.E. Eng. Khalid Mohammed Al-Salem**  
President, Royal  
Commission for Jubail  
and Yanbu



**Suliman Al-Mazroua**  
Chief Executive Officer,  
National Industrial  
Development and  
Logistics Program  
(NIDLP)



**Abdulaziz Al Hamwah**  
Vice Chairman and  
Chief Executive Officer,  
Modern Industrial  
Investment Holding  
Group





- The significance of robust supply chains in meeting demand within each value chain.
- The seamless integration of these elements.

Al-Mazroua stressed the importance of innovation in product development, optimizing supply chains, and fostering robust supply-demand relationships to realize the future of value chains.

Meanwhile, Al Hamwah spoke on Vision 2030's role in fostering a favorable environment for the private sector. He cited sector-focused endeavors such as Ma'aden and value chain developments like the Red Sea Project as initiatives driving this growth.

Al Hamwah further highlighted the comprehensive strategy and framework established under Vision 2030, which has provided a roadmap for critical sectors, including mining. He emphasized the pivotal role of private sector engagement in driving growth and development within Saudi Arabia's mining infrastructure industry.

Speaking on Saudi Arabia's aspiration to lead in various domains, particularly the value chain, H.E. Eng. Khalid Mohammed Al-Salem reflected on the Kingdom's remarkable transformation from a desert to a thriving city over the past 50 years. He highlighted the success of visionary plans in managing cities, expressing optimism that similar success will be achieved by 2030.

H.E. Eng. Khalid Mohammed Al-Salem noted that the establishment of Saudi Arabia Park as a special economic zone demonstrates global investors' confidence in the Kingdom's potential as an ideal investment destination. He said the Kingdom was committed to continued investment, even amidst challenges like the COVID-19 pandemic, which yielded results evident in events like the FMF and other significant conferences held in Saudi Arabia.

For his part, Suliman Al-Mazroua emphasized the pivotal role of technology in integration. He said technology provides a network of smart infrastructure encompassing smart factories, industrial cities, and grids, facilitated by intelligent logistics. He stressed the importance of data-driven decision-making driven by artificial intelligence in anticipating and mitigating challenges.

Confirming the commitment to leveraging resources for education and technological advancement, Abdulaziz Al Hamwah shared recent initiatives to enhance the mining industry's technical expertise. He highlighted a recent agreement to train 1,200 staff in artificial intelligence in collaboration with the Ministry of Interior via GSF.



## FIRESIDE CHAT 7

### Building capacity by creating centers of excellence in the Super Region

#### Panel: Interview with Ma'aden

During FMF24, David Eades, a former BBC News journalist, interviewed Robert Wilt, the CEO of Ma'aden.

Wilt began by highlighting significant statistics indicating a growing global demand for minerals such as aluminum and copper. He emphasized the urgent need for a comprehensive overhaul of the industry, particularly in attracting talent, fostering community acceptance, and securing governmental support.

However, Wilt noted a more favorable environment in Saudi Arabia, where government and local communities welcome mining initiatives and employees are eager to work for Ma'aden. Despite this, Wilt acknowledged the intense competition for talent, pushing Ma'aden to strive for excellence to stand out in the industry.

He also mentioned Ma'aden's portfolio companies, including the Red Sea Development and NEOM, stressing the necessity for Ma'aden to surpass previous standards. Wilt highlighted the company's successful exploration efforts, exemplified by the recent discovery of the Mansoura site's potential gold resources, contributing to the industry's growth. He expressed confidence in Saudi Arabia's ability to develop the necessary skill sets to meet ambitious targets and drive the industry forward.

Furthermore, Wilt expressed his belief in the effectiveness of capitalism, streamlined processes, and competitive clusters. He emphasized the importance of infrastructure and trade policies but stressed the need for rational decisions regarding the development of integrated electric vehicle battery value chains. Wilt advocated for market-driven approaches, expressing confidence that providing the right incentives would lead to solutions.



He concluded by providing insights into Ma'aden's operation and highlighting the company's significant presence in Saudi Arabia.



**David Eades**  
Founder, Melbourne Mining Club



**Robert Wilt**  
Chief Executive Officer, Ma'aden





PLENARY SESSION 15

Building capacity by creating centers of excellence in the Super Region

Panel:

Developing responsible mineral value chains in Saudi Arabia

The FMF convened a panel discussion titled “Developing Responsible Mineral Value Chains in Saudi Arabia,” with Tumi Makgabo, a Broadcaster and Entrepreneur at Africa Worldwide Media, as the moderator.

The panel featured distinguished participants, including Abdulrahman Al-Belushi, Assistant Deputy Minister of Mining Enablement at the Ministry of Industry and Mineral Resources in Saudi Arabia; Suliman Al-Othaim, Chairman of the Saudi Gold Refinery Company; Brian Hosking, CEO of Gold & Mineral Co; Eng. Zouhair Samhi, CEO of Al Haytham Mining Company; and Eng. Ali Al-Omeir, Vice President of the Saudi Authority for Industrial Cities and Technology Zones (MODON)

Abdulrahman Al-Belushi opened the discussion by emphasizing that Saudi Arabia has a long history in the extractive industries, dating back to the 1940s and 1950s when the focus was only on supplying oil to global consumers. The government, he said, has invested significantly in developing midstream and downstream activities, including oil exploration, refining, and chemical industries, to support the nation's growth.

He added that the government is now shifting its focus to the mining industry to ensure sustainable practices and foster talent development. Al-Belushi stressed that the Kingdom is committed to encouraging exploration by opening applications and incentivizing exploration activities, adding that efforts are being made to educate the population and establish specialized universities to support the industry.



Addressing regulatory concerns, Al-Belushi said Saudi Arabia has adopted international standards and protocols through collaborations with organizations like the World Bank and the private sector.

However, he said, implementing these guidelines requires ongoing monitoring and evaluation. “For instance, social contributions, talent development, and local investment are evaluated when awarding licenses,” he noted.

He further highlighted several incentives approved by the government to enhance exploration activities, including subsidies for local content and talent development, including an exploration incubator to diversify industry players and attract global talent.

Al-Belushi concluded that the government is responsible for selecting the right players and ensuring compliance with regulations to maintain a safe and sustainable mining environment in the Kingdom.

Suliman Al-Othaim echoed the minister’s sentiment about Saudi Arabia’s interest in developing its mining industry and creating domestic opportunities. He emphasized the Saudi Gold Refinery Company’s objective of refining metals locally and supplying them to modern manufacturers – mirroring the model established with oil.

Al-Othaim stressed the need for collaboration between international investors, local companies, and government entities to ensure responsible and sustainable mining practices. “Establishing effective communication channels and addressing community concerns are crucial steps in resolving industry challenges and fostering long-term growth and development,” he added.

Brian Hosking outlined three levels of responsibility from his perspective. Firstly, the governmental responsibility, which entails enacting and enforcing laws to ensure sustainability. He emphasized that responsibility is synonymous with sustainability,

and without responsible governance, sustainability cannot be achieved.

Secondly, he mentioned corporate responsibility, highlighting the importance of organizations operating in a responsible manner within legal and corporate frameworks. However, he noted that a corporation could act responsibly within these frameworks but still be considered irresponsible from a broader perspective.

Lastly, Hosking underscored the significance of personal responsibility, which is often overlooked in global discussions. He said that no industry can achieve responsibility without individuals taking personal ownership of their actions and decisions.

On the other hand, Eng. Zouhair Samhi emphasized that his company’s perspective revolves around being responsible and accountable to all stakeholders, not just one party. He stressed the importance of environmental stewardship, social commitment, and embracing new technologies and innovations. Samhi highlighted the need for global knowledge sharing to ensure responsible mineral extraction and sustainability and to align with international standards.

Eng. Ali Al-Omeir echoed these sentiments and emphasized Saudi Arabia’s commitment to sustainability despite its young footing in the mineral and mining sector. Al-Omeir called for collaboration with stakeholders to foster progress, citing initiatives such as the King Abdul Aziz research centers and global partnerships to promote sustainable practices.

He emphasized the focus on customer needs, growth capabilities, and incentivization to encourage investors toward the development of a robust mining ecosystem.



**Tumi Makgabo**  
Broadcaster and Entrepreneur, Africa Worldwide Media



**Abdulrahman Al-Belushi**  
Assistant Deputy Minister of Mining Enablement, Ministry of Industry and Mineral Resources, Saudi Arabia



**Suliman Al-Othaim**  
Chairman, Saudi Gold Refinery Company



**Brian Hosking**  
Chief Executive Officer, Gold and Minerals Co



**Eng. Zouhair Samhi**  
Chief Executive, Al Haytham Mining Company



**Eng Ali Al-Omeir**  
Vice President, Saudi Authority for Industrial Cities and Technology Zones (MODON)





PLENARY SESSION 16

Building capacity by creating centers of excellence in the Super Region

Panel:

Minerals in 2040 – making the future of mining possible today

The FMF hosted a panel discussion titled “Minerals in 2040: Making the Future of Mining Possible Today.”

Dr. Klaus Kleinfeld, Former Chief Executive Officer of Siemens, moderated the panel, which featured Rob Wood, Commissioner of the Geoscience Data Analytics Center (GDAC); Satish Rao, Chief Innovation Officer at Newlab; Jesse Evans, Chief Operating Officer of Maverick Biometals; and Chuck Price, Chief Operating Officer of Allonnia.

Rob Wood spoke on the Geoscience Data Analytics Center’s (GDAC) role in facilitating greenfield exploration and early-stage environmental assessment in the Kingdom. He emphasized the importance of de-risking mining and exploration, citing greenfield exploration and environmental approval as primary concerns for the private sector.

Wood highlighted the Kingdom’s vast potential, estimating it at \$2.5 trillion, with ongoing discoveries, which could further increase its current mineral value. He said the initial investment of approximately \$1.7 billion is expected to yield \$27 billion in returns over the business case lifespan, fostering further exploration and discoveries, disclosing that GDAC aims to establish a third pillar

of mining from an industrial perspective, leveraging advanced analytics and machine learning, including entity recognition, to analyze geological and earth science documents globally.

He concluded by stating that the initiative is well on course to revolutionize exploration efforts in Saudi Arabia and beyond.

Satish Rao began by highlighting the role of deep tech startups in driving global change and the need for support in various aspects. He emphasized their platform’s focus on assisting these startups in product development through operating labs, investment, and industry partnerships.



Rao noted that mining was one of the first industries their investors targeted, acknowledging its suitability for innovation due to inherent challenges in cultural and operational aspects of the construction.

Meanwhile, Chuck Price stated that their company is driven by a mission centered around harnessing nature to address complex environmental issues. He highlighted the numerous environmental challenges in mining and the other vertical markets they engage in.

According to Price, nature operates on the principle of a circular economy, where waste serves as a valuable resource for other organisms. “Inspired by this principle, their platform aims to apply biological processes to mining applications as a means of solving challenges within the industry,” he added.

Jesse Evans concluded the session by sharing his journey into the industry from a young age. He discussed Maverick Biometals’ innovative approach, which involves using enzymes for bioextraction. He explained that these enzymes facilitate solubilization at room temperature with minimal reagents, resulting in greater energy efficiency and reduced environmental impact.

Evans highlighted their extensive work with over 35 metals and 15 minerals in the lab, focusing particularly on silicates, feldspars, lithium, and rare earth elements.



**Dr Klaus Kleinfeld**  
Former Chief Executive Officer, Siemen



**Rob Wood**  
Commissioner, Geoscience Data Analytics Center (GDAC)



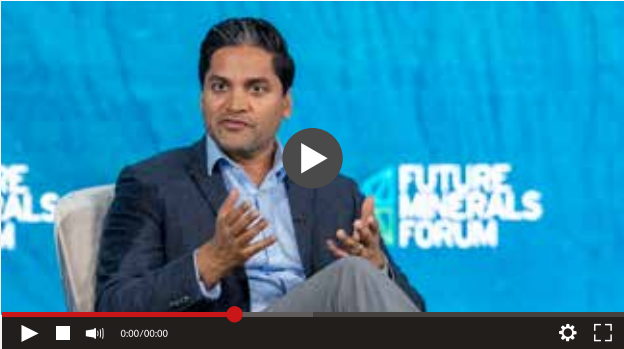
**Satish Rao**  
Chief Innovation Officer, Newlab



**Jesse Evans**  
Chief Operating Officer, Maverick Biometals



**Chuck Price**  
Chief Operating Officer, Allonnia





PLENARY SESSION 17

Building capacity by creating centers of excellence in the Super Region

Panel:

Accelerating development of talent for critical mineral production

The FMF hosted a panel discussion titled “Accelerating Development of Talent for Critical Mineral Production.” The panel moderated by David Eades, a former BBC News journalist, included Dr Thamraa Al Shahrani, Vice Dean of Graduate Studies for Academic Programs and Development, Princess Nourah Bint Abdulrahman University; Sheikh Khalid Ahmed Al-Amoudi, Chief Executive Officer, Saudi Red Bricks; Stephen Durkin, Chief Executive Officer, AusIMM; Eng. Ali Saeed AlQahtani, Chief Operating Officer Central Mining Holding Co; Nicky Black, Director of Sustainability and Impact SG&; and Eissa Aqeeli, Chairman of the Board (KSA) Worley Arabia.

Eissa Aqeeli highlighted that engineering expertise cannot be developed overnight, noting that it requires years of experience and hands-on work.

He disclosed that most engineers in Saudi Arabia transition to project management or administrative roles, resulting in a loss of talent in core engineering technology.

Eissa Aqeeli said talent sourcing is imperative in sustaining the momentum of critical mineral production in the Kingdom. He highlighted that Saudi Arabia has established the digital delivery industry, which will be primarily managed by digital professionals, referring to the recent hiring of a Saudi woman from Microsoft to lead the industry. This, he maintained, was Saudi’s way of committing to digital innovation and female inclusion.

Sheikh Khalid Ahmed Al-Amoudi recounted his transition to a tech-driven production style in 1998. According to him, this shift marked a significant milestone in the market.

Recognizing Saudi Arabia’s youthful population, with over 86% aged between 14 and 28, he emphasized diverse career opportunities beyond traditional professions such as medicine and engineering. He stressed the importance of upskilling the workforce to meet the demands of the evolving industry.

Additionally, Al-Amoudi highlighted the transformation of manufacturing from a “dirty” to a clean, efficient business, prioritizing environmental sustainability. He noted that 30% of their workforce comprises qualified Saudis, underscoring his commitment to fostering a skilled labor force.

Nicky Black acknowledged the formidable task of leading in today’s mining industry, marked by unprecedented complexity. He said leaders must navigate diverse stakeholder demands for environmental, social, and financial outcomes, often necessitating organizational restructuring and the integration of diverse talent from outside the sector.

Black added that amid the perception of mining as a necessary but contentious industry, leaders face the challenge of fostering talent development while grappling with multifaceted issues. She emphasized the need for leadership capabilities tailored to managing complexity, understanding geopolitical dynamics, fostering open communication, prioritizing human-centric leadership, and embracing innovative thinking.

According to her, effective leadership in mining demands a multifaceted approach that addresses both current challenges and future uncertainties.

Meanwhile, Eng. Ali Saeed AlQahtani detailed the logistical challenges of operating in a desert environment, moving 2.5 million cubic meters monthly with a workforce of around 400 people in Ma’aden.

He added that despite initial difficulties, including a high attrition rate among new hires, improvements have been significant.

Eng. Ali Saeed AlQahtani highlighted the role of the Saudi Minerals Polytechnic in Arar in preparing talent for the demanding work, focusing on English communication and safety as well as training on managing the heavy equipment. He said over time, they have seen a shift as education opportunities have increased, with a more stable workforce and a sense of pride in the industry’s safety record over 15 years.

AlQahtani further addressed the distinction between rock mining and oil and gas extraction, noting that while they fall under the same ministry, the processes and challenges are vastly different. “Unlike oil and gas exploration, which benefits from established locations, mining requires exploration for optimal extraction, with advancements in AI aiding in this endeavor,” he added.

Dr. Thamraa Al Shahrani on the other hand, emphasized the need for strong collaboration between universities, the private sector, and the government to align educational programs with labor market needs. She called for programs to be designed based on market assessments and in partnership with international universities.

Dr. Thamraa Al Shahrani highlighted upcoming programs in material science and mining, developed with top-ranked universities.

Bringing the session to a close, Stephen Durkin said the mining industry is fundamentally about people. While favorable conditions and investment environments are crucial, skilled individuals ultimately drive opportunities forward. He emphasized the importance of having the right people to realize the potential within the sector.



David Eades  
Journalist/ Former  
BBC New



Dr Thamraa  
Al Shahrani  
Vice Dean of  
Graduate Studies for  
Academic Programs  
and Development  
Princess Nourah Bint  
Abdulrahman Universit



Sheikh Khalid  
Ahmed Al-Amoudi  
Chief Executive Officer,  
Saudi Red Bricks



Stephen Durkin  
Chief Executive Officer,  
AusIMM



Eng. Ali Saeed  
AlQahtani  
Chief Operaal-ting  
Officer, Central Mining  
Holding Co



Nicky Black  
Director of  
Sustainability and  
Impact, SG&



Eissa Aqeeli  
Chairman of the Board  
(KSA), Worley Arabia





PLENARY SESSION 18

Building capacity by creating centers of excellence in the Super Region

Panel:

Closing panel session

The FMF hosted a panel discussion titled “Closing Panel Session.” Eithne Treanor, Managing Director of E.Treanor Media, moderated the panel.

The discussion featured Mark Cutifani, Chairman of Vale Base Metals; Chris Maybury, Deputy Chairman of Bermuda Commercial Bank; Andrew Trahar, Partner and Co-Founder of Vision Blue Resources; Florence Drummond, Executive Chairman of Development Partner Institute; Emilie Bodoïn, Founder and CEO of Pure Lithium Corporation; and Petar Ostojic, Founder and CEO of Center of Innovation and Circular Economy.

Emilie Bodoïn initiated the discussion by highlighting the urgent need for radical innovation both in the Kingdom and globally. She emphasized that achieving better mining practices requires a radical approach rather than relying on incremental improvements.

Bodoïn stressed that outdated technology would not propel them into the desired future, emphasizing the need for investments in new innovations.

Mark Cutifani outlined three key takeaways for building a Super Region. First, he emphasized the importance of negotiation, compromise, and agreement among companies to determine the best position.

Second, he accentuated the significance of sustainability and the need to ensure that conversations between stakeholders are framed with sustainability in mind.

Lastly, Cutifani stressed the importance of increasing awareness that mining is not solely about extraction but about supplying the materials essential for various industries that drive the world. He noted the role of materials in shaping the world

and cautioned against overlooking long-term strategies due to capital constraints and the need for immediate results.

Sharing her view on collaboration, Florence Drummond emphasized the importance of industry collaboration, particularly in engaging indigenous communities and local participants. She said the mining industry needs transparency and information sharing across the value chain, while stressing the significance of multi-stakeholder dialogues at the outset of investment discussions.

Drummond further emphasized that investing in these dialogues from the beginning, involving all stakeholders from communities to government, is crucial for creating a sustainable and valuable future, especially in transitioning to a circular economy.

Supporting the call for collaboration, Chris Maybury expressed his belief in its power, noting that face-to-face interactions are more effective than digital communication methods. He said the mining industry’s historical reputation as one of the oldest – and yet often associated with negative perceptions – can be linked to a lack of collaboration.

However, he was optimistic that the Kingdom of Saudi Arabia could reshape this image by approaching mining in an environmentally friendly, technologically advanced, and socially equitable manner, particularly with the involvement of young people and female inclusion.

Maybury further identified two key factors that could differentiate the region: Financial stability and Governance. He highlighted the importance of securing funding for mining projects, which are capital-intensive and require long-term commitments, suggesting that sovereign funds or Saudi Arabia’s vision and commitment could play a crucial role in this regard.

Andrew Trahar affirmed that Saudi Arabia is a preferred partner due to its political alignment, access to low-cost power, vast chemical reagents, renewable energy initiatives, entrepreneurial spirit, and openness to business in all aspects. He highlighted the Kingdom’s clarity of vision and strategy, key performance indicators (KPIs), guidelines, and ongoing support for international investors like themselves.

Trahar noted that Saudi Arabia is on the cusp of establishing processing plants and collaborating with private and governmental institutions within the country to develop international supply chains for mineral resources.

Petar Ostojic sees a historic opportunity for Saudi Arabia to establish a thriving, sustainable, and responsible mining industry from the ground up. He believes that implementing a circular mining business model can drive sustainable economic growth, create high-quality jobs, and decarbonize the process—an opportunity that arises only rarely in history.

Additionally, he identified the potential of the fourth industrial revolution, emphasizing that transitioning to a circular economy requires leveraging Industry 4.0 technologies. He said that the convergence of these two trends in the Super Region presents significant opportunities.

Ostojic concluded the discussion by emphasizing the importance of establishing a robust high-tech supplier ecosystem to enable the mining industry to operate efficiently, more circularly, sustainably, and responsibly while also integrating the local community.



Eithne Treanor  
Managing Director,  
E. Treanor Media



Mark Cutifani  
Chairman,  
Vale Base Metals



Chris Maybury  
Deputy Chairman,  
Bermuda Commercial  
Bank



Andrew Trahar  
Partner and  
Co-Founder, Vision  
Blue Resources



Florence Drummond  
Executive Chairman,  
Development Partner  
Institute



Emilie Bodoïn  
Founder and Chief  
Executive Officer, Pure  
Lithium Corporation



Petar Ostojic  
Founder and Chief  
Executive Officer,  
Center of Innovation  
and Circular Economy





# DAY TWO STREAM SESSIONS

## FIRESIDE CHAT 3 Green Metals and Technology

### Panel: Investing in critical minerals

The Future Minerals Forum (FMF24) featured a Fireside chat on “Investing in Critical Minerals,” anchored by Aldo Pennini, Director of Strategy Programs and Content at FMF. Joining the dialogue were Farid Habib, Director of the Industrials and Mining Sector at the Public Investment Fund (PIF), and Tarmo Haehnsen, Chief Investment Officer at Manara Minerals. T

Farid Habib began by highlighting the significant increase in Saudi Arabia’s mineral value, nearly doubling from \$1.3 trillion to \$2.5 trillion. This reinforces the vast potential of the Kingdom’s mining sector, prompting concerted efforts aimed at accelerating the industry’s growth and overall GDP. With aspirations to position the sector as the third pillar of the economy, alongside oil and gas and petrochemicals, Saudi Arabia is poised for substantial growth.

He emphasized the pivotal role of the Public Investment Fund (PIF) in enabling the sector, leveraging the Kingdom’s portfolio companies to drive progress.

Farid pointed to Ma’aden’s remarkable trajectory as the fastest-growing mining company. He highlighted its success in developing and building value chains in phosphate and aluminum, proving Ma’aden’s capacity to champion growth within the industry.

He elaborated on Ma’aden’s strategy towards achieving a tenfold growth by 2040. This ambitious target aims to increase GDP to \$23 billion and triple the current number of employees.

He explained that Ma’aden was given a clear direction to focus on its ambitious plan in the Kingdom and put off other international investments.

Hence, PIF took the initiative to establish Manara Minerals, whose objective is to invest internationally in mining assets. Manara was established and announced in 2023 at the previous FMF.

Tarmo Haehnsen elaborated on the rationale behind the establishment of Manara Minerals, describing it as a complementary piece to the Kingdom’s overall critical minerals strategy. While Ma’aden is a major established operator, Manara Minerals, on the other hand, operates as an investment vehicle.



He said that Manara Minerals’ first investment was with Vale Base Metals, securing a 10% stake primarily in nickel and copper. This investment aims to support the development of three key value chains within the Kingdom of Saudi Arabia under careful supervision.

Tarmo expressed confidence in Manara Minerals’ ability to provide enduring, and long-term capital for global mining investments.



**Aldo Pennini**  
Director of Strategy,  
Program and Content,  
FMF



**Farid Habib**  
Director of the  
Industrials and  
Mining Sector, Public  
Investment Fund (PIF)



**Tarmo Haehnsen**  
Chief Investment  
Officer, Manara  
Minerals





# FIRESIDE CHAT 4

## Green Metals and Technology

### Panel: Critical minerals outlook

The fourth fireside chat at the FMF, moderated by Eithne Treanor, Managing Director of ETreanor Media, explored the topic “Critical Minerals Outlook.” Joseph McGonigle, Secretary General of the International Energy Forum; Paul Mitchell, Global Mining and Metals Leader at EY; and Ian Lange, Associate Professor of Economics and Business at the Payne Institute, Colorado School of Mines, joined the conversation.

McGonigle highlighted a notable shift in focus within his company, traditionally centered on oil and gas, towards considering mining and critical minerals essential. He emphasized the importance of addressing the challenge presented by the growing demand for these minerals, noting the significance of the FMF in this regard.

While acknowledging the potential for pricing to encourage investment in critical minerals, McGonigle expressed concern about the possibility of demand outstripping supply. He said this could result in heightened electrification costs, prompting him to stress the importance of accelerating the transition to meet demand effectively.



Paul Mitchell noted that the confusion between critical materials and minerals needs to be addressed. He pointed out that while minerals are not immediately running out, the focus should be on identifying potential shortages in the initial stages of the energy transition. He added that geopolitical and supply chain issues compound these shortages.

Mitchell emphasized the importance of infrastructure to ensure a smooth energy transition. He stressed the need to pay close attention to the process of generating, transmitting, and storing power to ensure its smooth and efficient operation.

He highlighted the industry’s role in this process, noting that significant planning work needs to be done. Additionally, Mitchell stressed the importance of lobbying to address future challenges.

While advocating for acceleration in these processes, Mitchell cautioned against overlooking good practices, adding that a balance needs to be struck between speeding up the transition and maintaining high standards.

Meanwhile, Ian Lange explained that the definition of “critical” arises from rarity, particularly in the United States, where copper holds significant importance despite its widespread availability.

He noted Canada as an attractive destination for high-quality investments in new mining infrastructure. Lange highlighted the challenge of separating critical minerals from other substances during refining or processing, which could potentially flood the market once production techniques expand, leading to a market crash.



**Eithne Treanor**  
Managing Director,  
E. Treanor Media



**Joseph McGonigle**  
Secretary General,  
International Energy  
Forum



**Paul Mitchell**  
Global Mining and  
Metals Leader, EY



**Ian Lange**  
Associate Professor,  
Economics and  
Business, Payne  
Institute, Colorado  
School of Mines





PANEL SESSION 6:  
Green Metals and Technology

Panel:  
Charting the GCC’s development into a world-class processing and manufacturing center

The FMF convened a Fireside chat titled “Charting the GCC’s development into a world-class processing and manufacturing center.”


Igor Hulak, Partner and Global Head of Metals and Mining Practice at Kearney moderated the session featuring Eng. Mahmoud Al-Asmari, Director Minerals and Metals at the National Industrial Development Center (NIDC); Philip Lindop, Head of Natural Resources (EMEA) at Barclays Investment Bank; Scott Taylor, Partner at Taylor David Lawyers; and Mark Ashwin, Principal Vice President and Metals and Mining General Manager for Europe, Africa, and the Middle East at Bechtel.

Philip Lindop accentuated the importance of capital opportunities in the mining sector, acknowledging the limited interest from public equity markets and the pressure on banks to comply with complex requirements.


He highlighted the need for more copper, iron, and lithium resources and emphasized the challenge of utilizing these valuable resources efficiently.

Meanwhile, Mark Ashwin applauded the significant growth of the global mining business in Europe, Africa, and the Middle East, noting the GCC’s advantageous position with accessible power, a robust renewable energy segment, and favorable government policies.


Moderator




**Igor Hulak**  
Partner, Global Head of Metals and Mining practice, Kearney




**Eng. Mahmoud Al-Asmari**  
Director, Minerals and Metals, National Industrial Development Center (NIDC)



**Philip Lindop**  
Head of Natural Resources (EMEA), Barclays Investment Bank



**Scott Taylor**  
Partner, Taylor David Lawyers



**Mark Ashwin**  
Principal Vice President and Metals and Mining General Manager for Europe, Africa and the Middle East, Bechtel

He emphasized the GCC’s potential for industry growth, particularly with the increasing mineral resource body in Saudi Arabia.

Eng. Mahmoud Al-Asmari shared his aspirations for Saudi Arabia, focusing on localization efforts in the construction and infrastructure sectors. He discussed the country’s target to localize over 50% of its demand products, highlighting opportunities for expansion and new products.

Scott Taylor highlighted agreements between Australian and European companies to build lithium hydroxide plants in the Middle East, citing the region’s stable sovereign and political environment, reduced operational expenses, and access to government financial support.

He further addressed practical challenges associated with developing new supply chain hubs, emphasizing the GCC’s willingness to attract and partner with companies for investment to overcome these challenges and align with Vision 2030 goals.



PANEL SESSION 7:  
Green Metals and Technology

Panel:  
Super Region spotlight: Powering the growth of mineral supply chain infrastructure

A panel discussion titled “Super Region Spotlight: Powering the Growth of Mineral Supply Chain Infrastructure” was held at FMF24, with Peter Arkell, Chairman of the Global Mining Association of China (GMAC), moderating the session.

The panelists included Andrew Starkey, Executive Chairman of Merdeka Group; Nariman Absametov, Chief Business Development Officer of Tau-Ken Samruk; Tom Kendall, Managing Director of the Global Head of Metals Sales and Origination at ICBC Standard Bank; Matt Fifield, Managing Partner of Pacific Road Capital; and Michael Willoughby, Managing Director of the Global Head of Metals Mining and Transition Materials at HSBC.

Michael Willoughby began the conversation by noting that the industrial supply chain for electric vehicles (EVs) is an oligopoly, with 320 suppliers in 50 countries, creating an oligopoly that reinvests into the technology.

He added that the focus should be on diversifying the supply chain rather than focusing on a single region or country, emphasizing that emerging companies and countries are competitive in the space where their cost of equity capital is lower.




Willoughby maintained that Western capital markets are institutionalized, making EVs less competitive globally – with countries like China, Indonesia, Morocco, and Saudi more competitive in the market.

He concluded that geopolitics significantly influences the diversity of supply chains, emphasizing the importance of leveraging top-tier technology and strategic geographical placement.

Moderator




**Peter Arkell**  
Chairman, Global Mining Association of China (GMAC)



**Andrew Starkey**  
Executive Chairman, Merdeka Group




**Nariman Absametov**  
Chief Business Development Officer, Tau-Ken Samruk



**Tom Kendall**  
Managing Director, Global Head of Metals Sales and Origination, ICBC Standard Bank



**Matt Fifield**  
Managing Partner, Pacific Road Capital



**Michael Willoughby**  
Managing Director, Global Head of Metals, Mining and Transition Materials, HSBC





Meanwhile, Andrew Starkey pointed out that Indonesia’s policy of national ownership of major mining assets has led to significant success in the nickel sector, with the country exporting 1% to 2% of nickel to China.

He added that the establishment of high-pressure acid leach plants in Indonesia has also contributed to the country’s supply of over 50% of nickel-based battery chemistry. In his words, the government’s consistent support for foreign investors in enhancing the supply chain has centralized processing materials and attracted private capital offshore. This policy has also paved the way for Indonesia to continue to develop its natural mineral resources and ensure that its products are exportable.

On the other hand, said Tom Kendall, investment in China and Africa is directed by policy and commercial realities but generalizing it to other countries can complicate the picture. He further noted that investments have historically come from multiple entities, including state-owned, private, and export credit agencies – affecting the overall picture.

Nariman Absametov explained that Kazakhstan, a top 10 copper and uranium producer, boasts a robust infrastructure connection with China. He added that government initiatives like One Road One Belt have further strengthened ties between the two nations.

Absametov further hinted that Russia’s recent supply chain disruptions have posed challenges for exporting to Western markets.

Despite these hurdles, China’s influence is rising, making Kazakhstan an increasingly valuable market for its goods.

Matt Fifield lauded the emergence of the Super Region as a strategic move by long-term stakeholders to foster capital freedom and encourage favorable behaviors. He added that the development of logistical and processing hubs marks a noteworthy phenomenon, with national champions gaining prominence – hinting that the German government and the EU are aligning with European auto manufacturers to establish new supply chains directed toward national champions.

He emphasized the increasing significance of the evolving political landscape and supply chain alignment. These factors, he said, have notable implications for businesses anchored in Australia, particularly those managed by US and European family offices, adding that the establishment of an investment office in the Gulf Region could effectively pool funds from diverse programs, streamlining investment processes in these regions.

Fifield accentuated the critical role of geopolitics in the current global scenario characterized by the fragmentation of supply chains. He argued that the availability of low-cost energy drives processing activities, highlighting the imperative for companies and investors to navigate these shifts and tailor their investment strategies accordingly.

PANEL SESSION 8:  
Green Metals and Technology

Panel:  
Diversifying mineral supply and developing processing hubs in Africa and Central Asia

Remi Piet, Co-Founder and Senior Partner Embellie Advisory, moderated a panel at FMF24. The panel discussion titled “Diversifying mineral supply and developing processing hubs in Africa and Central Asia,” was attended by Jean-Raymond Boulle, Chairman Jean Boulle Group; Sahibzada Tariq, Chief Executive Officer Piranha Company; Roland Getreide, Founder Livista Energy; Craig Scherba, CEO NextSource; Hon. J. Peter Pham, Former US Special Envoy, Great Lakes and Sahel Regions of Africa; and Christopher Ecclestone, Principal and Mining Strategist Hallgarten & Company.


Hon. J. Peter Pham started the discussion by highlighting three key areas for developing African countries; energy, infrastructure, and investment. He explained that energy is crucial for households and businesses. At the same time, infrastructure is essential for bringing abundant resources to market. Investment in these areas not only benefits the region but also develops human capital.




Jean-Raymond Boulle lauded the organization of FMF24 while commending Canadians, South Africans, and Australians for organizing world-class mining events as well.




Moderator




**Remi Piet**  
Co-Founder and Senior Partner, Embellie Advisory




**Jean-Raymond Boulle**  
Chairman, Jean Boulle Group




**Sahibzada Tariq**  
Chief Executive Officer, Piranha Company




**Roland Getreide**  
Founder, Livista Energy



**Craig Scherba**  
CEO, NextSource



**The Hon. J. Peter Pham**  
Former US Special Envoy, Great Lakes and Sahel Regions of Africa



**Christopher Ecclestone**  
Principal and Mining Strategist, Hallgarten & Company





He highlighted partnerships, such as the US government’s backing for mining in Syria and the European food industry’s involvement in the Greenland project, stressing the significance of securing local community satisfaction and financial backing for projects. Boule emphasized the importance of employing seasoned scientists and maximizing discovery opportunities within a country.

Meanwhile, Roland Getreide emphasized the significance of the European mining industry for the region’s development, given its proximity to 500 million Europeans. He highlighted a current challenge, including Europe’s insufficient production of refined lithium, which has led to many contracts being negotiated in China. Some contracts, he added, are slated to commence in China next year when local plants become operational.

Getreide proposed that Saudi Arabia join the European Middle East (EMA) market. He further pointed out that lithium transportation would primarily occur from Australia to Europe, with the possibility of a collaborative effort involving the US, emphasizing the partnership is geared towards supporting vertical integration and optimizing supply chains.

Craig Scherba maintained that vertical integration is essential for industrialization and ensuring security supply and competitiveness in the production of critical materials, which involves building a critical supply chain that is highly integrated and cost-certain.

He added that valuing and controlling the price base is crucial for critical battery materials, physical quantum materials, and technological aspects. Scherba reiterated the need for establishing global hubs for processing capability, which would address security and price by finding middle resources and minimizing the need for miners.

Scherba highlighted that Saudi Arabia is well-equipped to host processing hubs, capable of managing the crucial processing aspect requiring energy, infrastructure, and a skilled workforce. This setup enables economies of scale and synergies, enhancing the efficiency of waste streams.

He suggested that all essential battery materials should possess processing centers, with the Kingdom of Saudi Arabia ideally positioned for such endeavors.

Christopher Ecclestone hinted that China’s mothership policy, which requires mining activity to be returned to the motherland for processing, has adversely affected value-add in China. He stressed that the policy has received increased attention from countries like Saudi Arabia, which intends to increase its energy surplus and refining capacity.

Sahibzada Tariq explained that Pakistan has faced challenges accessing capital due to previous setbacks. Despite this, the project remains active and is currently updating resource and feasibility studies. He also mentioned that the Copper Belt map identifies three central ore bodies, including those in Pakistan and Afghanistan, with many more resources yet to be discovered.

PANEL SESSION 9:  
Green Metals and Technology

Panel:  
Building a battery manufacturing industry

The FMF held a panel discussion titled “Building a battery manufacturing industry.” This discussion was moderated by Veronica Bolton Smith, Chief Executive Officer of The Connect Africa Network.

The panelists included Dr. Alawi Swabury, Chief Executive Officer and Founder of Africa Battery Initiative; Wilfredo A. Reyes, Founder and Chief Executive Officer of Critical Minerals Association USA; Greg Pitt, Vice President of Battery Materials Growth Worley; Ling Lu, Executive Director of Standard Chartered Bank.

The discussion began with Ling Lu highlighting the remarkable growth of the battery industry, attributed in part to geopolitical developments such as the Inflation Reduction Act, which is fueling investments in North America. He noted the emergence of new production facilities by Western companies, primarily focused on critical minerals and key components.

He explained that Chinese companies are venturing beyond China to invest in nations with free trade agreements lured by incentive policies. Ling Lu emphasized that Asia, encompassing China, South Korea, and Japan, is at the forefront

of the battery industry, adding that Japan achieved battery commercialization in the 1990s, while South Korean giants like Samsung and LG have significantly expanded production capacities and driven technological innovation.

He cited BYD, the world’s leading producer of rechargeable batteries, as a prime example of success in the battery industry. Similarly, companies like CMT prioritize research and development, leading to significant technological advancements and fostering competitive environments.


Furthermore, Ling Lu highlighted Tesla’s interest in China, which underscores China’s crucial role in driving growth and innovation in the battery sector.

Greg Pitt emphasized that mineral production and refining, especially for electric vehicle manufacturing, significantly impact the environment. However, organizations are actively pursuing sustainable projects, focusing not only on construction methods but also on product sustainability.


He cited a project in Finland that generated significant waste, prompting the realization that these processes are unsustainable.




Moderator




**Veronica Bolton Smith**  
Chief Executive Officer,  
The Connect Africa  
Network




**Dr. Alawi S Swabury**  
Chief Executive Officer  
and Founder, Africa  
Battery Initiative



**Wilfredo A. Reyes**  
Founder and Chief  
Executive Officer,  
Critical Minerals  
Association USA



**Greg Pitt**  
Vice President, Battery  
Materials – Growth,  
Worley



**Ling Lu**  
Executive Director,  
Standard Chartered  
Bank





He highlighted a pressing need for education across communities, industry participants, governments, and authorities to comprehend the impact of these processes.

Pitt maintained that asset development in the sector is increasingly vital, prompting global efforts to promote value chain development. He said companies like BSF and Unicorns are adopting systems as a standard approach to development while recognizing the importance of a circular industry model.

He concluded by emphasizing that recycling mandates are the gold standard for sustainability practices in Europe, highlighting the collaborative effort required for recycling development and the importance of sustainability across the production, processing, and distribution of electric vehicles for a more sustainable future.

Dr. Alawi Swabury noted that the Africa Initiative focuses on fostering investment in critical minerals across the entire supply chain, from extraction to refining, emphasizing that critical commodities cannot be exported without first being developed within the country.

He said the initiative aims to attract global investors and facilitate their involvement in the refining stage, where 70% of the final product can be exported while 30% remains domestically.

Swabury further disclosed that the initiative’s primary focus is a technology and energy utility, with Tanzania, aiming to achieve 2.1-gigawatt operational plants by the end of 2024.

Wilfredo A. Reyes explained that the battery industry in the US has strong potential due to its tech edge, protection R&D capacity, universities, and academia, adding that the market is making progress in consumer applications, national security, defense, and storage.

He noted that the US has three levels of government; economic development, supporting policies, and the state as a global leader. Reyes called for the US to focus on these areas, promote connections and networking opportunities, and bridge the gap between the public and private sectors – suggesting that the association focus more on cost-effective technologies and building a robust supply chain.

Addressing the US as a global leader in the fourth industrial revolution, Reyes called for the country to focus on promoting and enabling connections between the public and private sectors while facilitating measures to bridge the gap between them.

He brought the session to a close while urging the United States to maintain global competitiveness as a strong leader in the battery industry because of its tech edge, strategic resource allocation, and collaboration efforts.



PANEL SESSION 7:  
Responsible Future Minerals Theatre

Panel:  
Sustainable Seawater Mining: Innovation and Economic Prosperity

At the 2024 Future Minerals Forum, Fatma Fahad, a seasoned journalist and news anchor from Al Arabiya, moderated an enlightening panel discussion titled “Sustainable Seawater Mining: Innovation and Economic Prosperity,”.

Engaging the audience with their expertise, officials from the Saline Water Conversion Corporation (SWCC) took turns to share insights on the topic. Among them was Eng. Mohammed Al Sheikh, Executive Director of Engineering Studies and Local Content at the Saline Water Conversion Corporation (SWCC); Eng. Youngwook Yoo, Senior Expert at SWCC; Dr. Seungwon Ihm, Senior Expert at SWCC; and Eng. Mohammed Alghamdi, Business Executive Director for Development and Department at SWCC.

Eng. Al Sheikh shared insights into Saudi Arabia’s pivotal role as the foremost producer of distilled water. Alghamdi elaborated, emphasizing the burgeoning opportunities and capacities that extracted materials could unlock locally and across the region.

Eng. Yoo offered a meticulous examination of mineral prioritization, emphasizing the critical role of market value in informing investment strategies and optimizing harvesting systems.

Afterwards, Dr. Ihm brought attention to the environmental benefits of seawater mining, drawing a sharp contrast with traditional mining practices and advocating for a more sustainable approach.

The panel discussion provided a comprehensive exploration of the subject, delving into technical nuances while also addressing broader economic and environmental implications. It underlined the importance of innovation, collaboration, and responsible stewardship in shaping a prosperous and sustainable future for the industry and beyond.



**Fatma Fahad**  
Journalist and News Anchor, Al Arabiya



**Eng. Mohammed Al Sheikh**  
Executive Director of Engineering Studies and Local Content, Saline Water Conversion Corporation (SWCC)



**Eng. Youngwook Yoo**  
Senior Expert, Saline Water Conversion Corporation (SWCC)



**Dr. Seungwon Ihm**  
Senior Expert, Saline Water Conversion Corporation (SWCC)





PANEL SESSION 8:  
Responsible Future Minerals Theatre

Panel:  
Strategic directions: the future of diversity and inclusion

The FMF recently convened a panel discussion titled “Strategic Directions: The Future of Diversity and Inclusion,” moderated by Wendy Tyrrell, Director of Long View Consulting.

Notable attendees included Mark Cutifani, Chairman of Vale Base Metals, Ana Gabriela Juárez, Founder of Women in Mining Central America; Dr. Stacy Hope, Managing Director of Women in Mining United Kingdom; Rana Zumai, Senior Director of Corporate Communications and Knowledge Saudi Geological Survey Editor In Chief Arduna Journal (Geology and mining), Florence Drummond Executive Chairman Development Partner Institute, Lamees Mutasim Assidmi, Chief Diversity and Inclusion Officer Maaden, Raksha Naidoo Chairperson, Women in Mining South Africa and Chief Executive Officer The Particle Group.

The panel discussion focused on strategies for advancing diversity and inclusion, emphasizing the need for transparent leadership, strategic partnerships, and community empowerment.



Experts took turns to highlight the imperative role of clear definitions and foresight in addressing future challenges, such as automation, while fostering an inclusive culture.

Dr. Stacy Hope started the discussion by noting the complexity of defining diversity and inclusion and emphasizing the need for a community-centric approach that considers the diverse perspectives within society.

Lamis Mutasim Assidmi reiterated the importance of building a solid foundation and infrastructure to support female employees in the workplace. She pointed out strategic partnerships aimed at promoting diversity and inclusion through education and professional development initiatives.

Meanwhile, Mark Cutifani stressed the role of leadership in fostering transparent and inclusive organizational cultures. He further elaborated on the business imperative of diversity and inclusion, particularly in terms of accessing talent, driving innovation, and establishing a culture of transparency and engagement.

Raksha Naidoo echoed the sentiment, underscoring the critical role of leadership in driving diversity and inclusion efforts.

She emphasized the need for clear communication and transparent leadership to effectively articulate diversity and inclusion goals.

Finally, Florence Drummond stated the importance of strategic foresight in addressing the future of diversity and inclusion. She stressed the challenges of automation and called for the need to upskill and empower local communities for sustainable economic growth.

Collectively, their submissions pointed to one conclusion: the importance of taking a comprehensive and inclusive approach to diversity, inclusion, and the essence of leadership, strategic planning, and community empowerment in driving meaningful change and fostering inclusive workplaces and societies.



**Wendy Tyrrell**  
Director, The Long View Consulting



**Mark Cutifani**  
Chairman, Vale Base Metals



**Ana Gabriela Juárez**  
Founder, Women in Mining Central America



**Dr. Stacy Hope**  
Managing Director, Women in Mining UK



**Rana Zumai**  
Senior Director of Corporate Communications and Knowledge, Saudi Geological Survey, Editor-in-Chief, Arduna (Geology and Mining) Journal



**Florence Drummond**  
Executive Chairman, Development Partner Institute



**Lamees Mutasim Assidmi**  
Chief Diversity and Inclusion Officer, Maaden



**Raksha Naidoo**  
Chairperson, Women in Mining South Africa and Chief Executive Officer, The Particle Group





PANEL SESSION 9:  
Responsible Future Minerals Theatre

Panel:  
Navigating Political Complexity and Enabling Effective Collaboration on Critical Mineral Supply Chains Certification

A panel discussion titled “Navigating Political Complexity and Enabling Effective Collaboration on Critical Mineral Supply Chains Certification,” held on the sidelines of FMF24, convened a significant list of distinguished industry leaders under the moderation of Peter Bryant, Board Chair and Managing Director of Clareo. This focused on the importance of electricity in clean energy, the need for transparency in mining contracts, and a pragmatic approach to addressing critical mineral shortages for sustainable development.

The panelists included Bernd Schäfer, CEO and Managing Director of EIT Raw Materials; Konstantin Lyakhov, Partner at Kearney’s Metals and Mining Practice; Andrew Naylor, Head of Middle East and Public Policy at the World Gold Council; Louise Assem, Head of Global Material Stewardship at the International Copper Association; and Andrew Irvine, Legal and Engagement Director at the Extractive Industries Transparency Initiative (EITI).

Louisa set the ball rolling by highlighting the crucial role of electricity in facilitating the transition to various applications, such as electric vehicles, wind power, as well as household appliances.

She also projected mineral demand to double by 2050 to meet societal goals, particularly in clean energy, with expected tonnage to exceed 50 million.

She accentuated the disparity in critical mineral designations among countries, citing proposals by some nations like Australia, Canada, Japan, and China. However, she noted the absence of such initiatives in the US, which instead focuses on clean energy incentives, leading to potential copper shortages.

Louisa further drew attention to the substantial provisions for clean energy. She briefly stated the looming challenge of copper shortages by 2035, when the US may need to import two-thirds of its copper. This, she noted, was the mismatch between incentives and access to essential minerals. She advocated for streamlined permitting processes to ensure sufficient copper supply.

Speaking on the investment partnership, Bernd Schäfer emphasized the importance of strategic investment in the supply chain sector to strengthen international collaborations and address challenges. Drawing parallels to the Roman era, he stated the need to bolster investments for long-term sustainability.

His submissions include building skills and trust within society and intensifying transparency and information disclosure efforts to foster public understanding.

Bernd further stressed the importance of disclosing terms in government contracts and taxes and the social benefits of mining to enhance public perception and support for the industry.

Meanwhile, Konstantin Lyakhov shared his views on the evolving landscape of gold supply, noting its widespread distribution across continents compared to a single country’s dominance decades ago.

He noted that gold played a critical role in global economies and communities. He further noted that it was essential to articulate the value of gold to the public, which he believes is a good step toward enhancing public perception and understanding of the socio-economic benefits of gold and its integral part in driving economic growth and stability.



**Peter Bryant**  
Board Chair and Managing Director, Clareo



**Bernd Schäfer**  
Chief Executive Officer and Managing Director, EIT RawMaterials



**Konstantin Lyakhov**  
Partner, Metals and Mining Practice, Kearney



**Andrew Naylor**  
Head of Middle East and Public Policy, World Gold Council



**Louise Assem**  
Head of Global Material Stewardship, International Copper Association



**Andrew Irvine**  
Legal and Engagement Director, Extractive Industries Transparency Initiative (EITI)





PANEL SESSION 10:  
Responsible Future Minerals Theatre

Panel:  
What does responsible environmental stewardship look like in high-risk jurisdictions?

The FMF hosted a panel discussion titled “What does responsible environmental stewardship look like in high-risk jurisdictions?” Peter Bryant, Board Chair and Managing Director of Clareo moderated the discussion.

The panelists include Eng. Ali Bin Saeed Al-Ghamdi, Chief Executive Officer of National Center for Environmental Compliance; Vicente Mello, Senior Vice President and Country Manager (Brazil) AECOM; Elefteria Castis, Chief of Strategy and Business Prince Mohammed bin Salman Reserve Development Authority; and Dr Robin N. Armstrong Mining Sector Leader, Department of Earth Sciences at The Natural History Museum.

Vicente Mello expressed optimism about the transformative potential for countries in the Super-Region to leverage industry advancements and leapfrog past historical and environmental challenges. He also emphasized the pressing need to address lingering challenges faced by countries such as Brazil, Chile, South Africa, and others.

Ali Bin Saeed Al-Ghamdi reiterated the significance of comprehending legacy challenges and assessing the costs associated with remediation strategies.

He highlighted that three years ago, the annual cost for such endeavors amounted to 86 billion Riyals, necessitating decisive action to address these legacy issues.


Meanwhile, Al-Ghamdi called for collaboration with the Ministry of Industry, Mining, and Business to devise comprehensive plans for legislative solutions.


Elefteria Castis expressed optimism, emphasizing progress beyond mere commitment towards tangible action, likening it to taking significant strides along a challenging path.


Dr Robin N. Armstrong explained that the department is focused on understanding the physical properties of materials and their interactions with biology, particularly in recolonizing areas. He noted investor uncertainty regarding initiating projects from scratch or leveraging existing legacy items for potential improvement opportunities.


Armstrong added that technical constraints and community impact must be considered in exploration areas to ensure responsible environmental stewardship.


Moderator

  
**Peter Bryant**  
Board Chair and Managing Director, Clareo

  
**Eng. Ali Bin Saeed Al-Ghamdi**  
Chief Executive Officer, National Center for Environmental Compliance

  
**Vicente Mello**  
Senior Vice President and Country Manager (Brazil), AECOM

  
**Elefteria Castis**  
Chief of Strategy and Business, Prince Mohammed bin Salman Reserve Development Authority

  
**Dr Robin N. Armstrong**  
Mining Sector Leader, Department of Earth Sciences, The Natural History Museum



PANEL SESSION 11:  
Responsible Future Minerals Theatre

Panel:  
Case Study - Mine of the Future

The FMF24 held a panel discussion titled “Case Study - Mine of the Future.”

The session moderated by Jim Paterson, Principal Discovery Group, was attended by Govind Friedland, Founder and Executive Chairman of GoviEx Uranium Inc.; Pascal Lacourie, Chief Executive Officer of EPC Asia Pacific; Majed AlHumaid, Vice President of Digital Development at ESNAD; Nils Janssen, Head of Global Projects and Accounts at Innomotics; and Cyriac Joseph, Managing Director and Chief Executive Officer of Squadron Infra and Mining Private Limited.

Nils Janssen emphasized the evolving business landscape and advocated for a growth mindset that embraces innovation and explores emerging technologies. He said that this forward-thinking approach entails thorough testing, weighing risks against potential gains, and fostering collaborations with mechanical and electrical providers. An example of a collaborative endeavor in this context would be the co-creation of a digital copper mine with Anglo American that enables digital design and parameterization.

He added that such collaborations would increase the capacity for continuous improvement, which is important in achieving a future digital mindset.

Majed AlHumaid emphasized the pivotal role of digitization in propelling the industry forward, stressing the need for innovative technological solutions. He advocated for the establishment of an ecosystem that fosters the development and sustainability of digital technologies, encompassing data streams sourced from drones, satellite imagery, and sensors.


He also highlighted the transformative potential of AI and machine learning tools in facilitating informed decision-making processes. He proposed the creation of a comprehensive data lake to integrate information from diverse tools and processes, enabling predictive analytics and in-depth analysis.


AlHumaid maintained that the primary role of the ecosystem is to make investors' lives easier by ensuring they focus on implementing and drilling, while adhering to environmental and social policies


He called for democratizing access to information collected through these tools to enhance the efficiency of investment decision-making processes.


Govind Friedland elaborated on the interconnectedness of blast design and drilling patterns facilitated by an integrated digital platform known as Vertex, which seamlessly integrates


Moderator


  
**Jim Paterson**  
Principal, Discovery Group

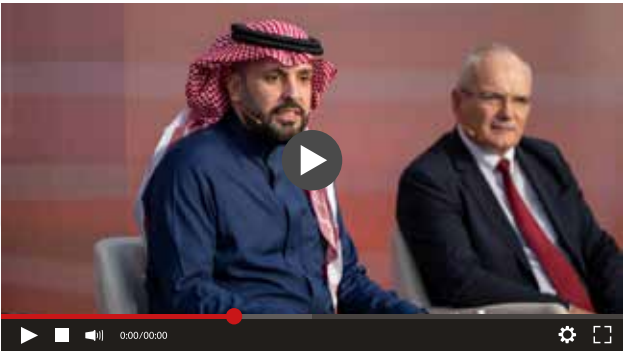
  
**Govind Friedland**  
Founder and Executive Chairman, GoviEx Uranium

  
**Pascal Lacourie**  
Chief Executive Officer, EPC Asia Pacific

  
**Majed AlHumaid**  
Vice President of Digital Development, ESNAD

  
**Nils Janssen**  
Head of Global Projects and Accounts, Innomotics

  
**Cyriac Joseph**  
Managing Director and Chief Executive Officer, Squadron Infra and Mining Private Limited





with MCS and PC systems. He noted that the data integration optimizes energy consumption and waste, enhances measurement accuracy, facilitates efficient management practices, and drives overall industry improvement.

He further highlighted the utilization of drone surveys for data collection from blasting activities, enabling the identification of fragmentation patterns and their impact on downstream operations. Friedland explained that this strategic approach not only minimizes energy consumption, waste, and emissions but also ensures precise control over blasting activities while supporting Environmental, Social, and Governance (ESG) considerations.

Cyriac Joseph highlighted Squadron’s current challenges, including meeting net-zero targets, Sustainable Development Goals (SDGs), and componentization. Emphasizing the importance of data-driven solutions, he stated that Squadron aims to drive disruption and enable sustainable operations through responsible practices and technology adoption.

He stressed that Squadron is focused on quick, accurate, reliable, and easy-to-handle technology to support the global community. This, he hopes, will change the way mining is done and contribute to a more sustainable future.

Meanwhile, Pascal Lacourie underlined the significance of ESG characteristics in determining the pricing of metals within the mining industry. With metals increasingly traded at premiums or discounts based on their ESG attributes, differential pricing plays a pivotal role in decarbonizing the world and reducing hydrocarbon emissions.

Pascal Lacourie expressed optimism that the mining industry is expected to see metals trade at a premium or discount based on their ESG characteristics. He noted that the differential pricing of metals is crucial for decarbonizing the world and reducing hydrocarbon emissions.

He explained the narrow differential pricing in renewable natural gas, aluminum, steel, and copper and the potential for blockchain technology, like Apex’s metal trading platform, could drive higher metal prices.

He further highlighted that the full impact of ESG considerations may take up to five years to fully materialize.

PANEL SESSION 12:  
Responsible Future Minerals Theatre

Panel:  
Connecting the Super Region through centers of excellence – how many, where should they be, what structure, who should be involved?

The FMF hosted a panel discussion titled “Connecting the Super Region through centers of excellence – how many, where should they be, what structure, and who should be involved?”

Wendy Tyrrell, Director of The Long View Consulting, moderated the discussion which had in attendance Dr. Jacqui Coombes, Executive Chair Mining; Mzila Mthenjane, Chief Executive Officer, Minerals Council of South Africa; Dr. Thamer Aldaajani, General Manager Mining and Hydrocarbon Research Institute, King Abdulaziz City for Science and Technology (KACST); Dr. Orkun Hasekioglu, Vice President TENMAK; and Rajkumar Mathiravedu, Vice President Digital Solutions Orica.

Dr. Thamer Aldaajani referred to the Minister of Industry and Resources having announced the establishment of a Mineral Innovation Acceleration Park to help position the Kingdom as a leader in the Super Region.


He emphasized that the park focuses on applied research, technology development, and accelerating technologies for the mining industry. It comprises three major segments; applied research, technology incubators, and accelerated technologies.




He said, “The park’s objective is to enhance the value of materials and establish international laboratories utilizing minimal processing techniques. It prioritizes harnessing minerals as a gateway for advancing technologies and bolstering industries spanning South Africa, Turkey, and Kazakhstan.”




Moderator




**Wendy Tyrrell**  
Director, The Long View Consulting




**Dr Jacqui Coombes**  
Executive Chair, Mining3




**Mzila Mthenjane**  
Chief Executive Officer, Minerals Council South Africa



**Dr. Thamer Aldaajani**  
General Manager, Mining and Hydrocarbon Research Institute, King Abdulaziz City for Science and Technology (KACST)



**Dr. Orkun Hasekioglu**  
Vice President, TENMAK



**Rajkumar Mathiravedu**  
Vice President, Digital Solutions, Orica





He added that the park seeks to bridge the innovation gap and facilitate the shift from raw materials to cutting-edge technologies, contributing to the industry’s evolution.

Dr. Orkun Hasekioglu highlighted the widespread discourse on automation goals and hurdles across a broader geographic scope, with certain nations leading the charge in technology. He emphasized the significance of accessing critical minerals for national security, industrialization, and technological advancement.

He illustrated the significance of critical minerals by using smartphones as an example, highlighting that nearly 50 of these minerals are indispensable for their manufacturing. Dr. Orkun added that access to these minerals in some regions is wielded as a political leverage or subject to stringent business certification requirements.

He further noted that technology adoption is advocated for multiple purposes, including mitigating the circulation of hazardous elements and overcoming engineering and technological limitations.

Later, Dr. Jacqui Coombes explained that the International Center for Radio Astronomy Research, established in 2009 in Western Australia, is a collaborative effort between two universities.

She said the center was significant for its worldwide endeavor to push the boundaries of telescope technology. She further disclosed that the center has expanded from a small group of six radio astronomers to a community of 1,000 engineers and scientists, garnering international recognition.

Coombes emphasized the importance of an altruistic motive for the center’s success, citing the achievements of the Square Kilometer Array program as evidence.

Mzila Mthenjane partly reiterated the significance of technology across diverse industries, emphasizing the centrality of data. He highlighted the Australian industry’s example, where technology facilitates the establishment of an open subsurface data universe.

He said the initiative aims to unite various stakeholders, enabling faster communication, better production of existing data, and a sustainable approach.

Mzila further explained that the open subsurface data universe is a collaborative platform for customers, vendors, and regions to commit to insight generation through data, which will improve sustainable operations in the industry.

On the one hand, Rajkumar Mathiravedu highlighted the success of the Mandela Mining Precinct in South Africa in establishing a thriving center of excellence. This achievement was made possible through collaboration among industry, government, labor, traditional authorities, civil society, and indigenous communities.

He said, “With a primary focus on the platinum and gold mining sector, which remains a key employer in the country, the center prioritized technologies to enhance efficiency, prolong mine life, maximize resource potential, and ensure safety in deep-level mining operations.”

He added that over the past five years, the center has laid a robust foundation for collaboration and exploration of opportunities in critical minerals – with ongoing research involving universities and other institutions to harness these opportunities for further advancement.



PANEL SESSION 13:  
Responsible Future Minerals Theatre

Panel:  
Outlining the role that mineral development can play in turbo-charging national economies across the Super Region

The FMF convened a panel discussion entitled “Outlining the role that mineral development can play in turbo-charging national economies across the Super Region.” The session was moderated by Gracelin Baskaran, Research Director and Senior Fellow at the Energy Security and Climate Change Program, Center for Strategic and International Studies.

The panel comprised Hon. Frank Fannon, Managing Director of Fannon Global Advisors, and former Inaugural U.S. Assistant Secretary of State for Energy; Charles Hendry, Former Minister of State for Energy of the United Kingdom; and Ernst Müller, Senior Associate at Herbert Smith Freehills.

During the discussion, Hon. Frank Fannon highlighted the uniqueness of the Super Region concept, emphasizing that it is defined by geological formations rather than political boundaries.

Fannon stressed that countries with a limited history of modern mining have an opportunity to establish a new modern mining ecosystem within the geologic Super Region. “This is pivotal as minerals underpin economies, and mining is indispensable for market sustainability,” he said.



He added that the FMF initiative aims to lure top-tier companies by embracing leading standards and fostering collaboration with stakeholders through a shared-value approach to the industry.

Regarding low-carbon transitioning, Charles Hendry said the mining industry’s ambition and determination are crucial for transitioning to a low-carbon world.

Moderator

**Gracelin Baskaran**  
Research Director and Senior Fellow, Energy Security and Climate Change Program, Center for Strategic and International Studies

**Hon. Frank Fannon**  
Managing Director, Fannon Global Advisors and former inaugural U.S. Assistant Secretary of State for Energy Resources

**Charles Hendry**  
Former Minister of State for Energy, United Kingdom

**Ernst Müller**  
Senior Associate, Herbert Smith Freehills





He noted that the industry’s reputation of confidence has been a significant factor in its success, stressing that changes need to be effected to the business practices and provide benefits to host countries.

Charles emphasized that the UK, as a prominent global financial and activity hub, can play a pivotal role in facilitating this transition by providing incentives and streamlining administrative processes. However, he noted that shifting towards a low-carbon world necessitates a comprehensive approach involving diverse activities and more effective management of relationships and contracts.

He added that by aiding countries in structuring these agreements, the industry can attract desirable investors and contribute significantly to fostering a sustainable future.

Ernst Müller emphasized the importance of creating a predictable, fair, and transparent mining framework for communities and the operating environment. He suggested that the government should focus on sustainability and education and invest in jurisdictions with clear resources and a robust operations marketing model. He said this would help companies gain access to resources and support their growth.

Ernst called for all stakeholders to be considered participants in the conversation, with governments, universities, and academics being held accountable and transparent. He stressed that such inclusion would lead to a more sustainable and thriving mining industry.



## COUNTRY SPOTLIGHT 9

### Country Showcase – Lands of Opportunity

#### Panel: South Africa

The FMF hosted a Country Spotlight discussion moderated by Peter Arkell, Chairman of the Global Mining Association of China (GMAC). The panelists included Jacob Mbele, Director-General of the Department of Mineral Resources and Energy; Mosa Mabuza, Chief Executive Officer of the Council for Geoscience; Mzila Mthenjane, Chief Executive Officer of the Minerals Council of South Africa; Botlhale Seageng, Director of the Investment Promotion Department at the Ministry of Mineral Resources and Energy; and Themba Mkhwanazi, Regional Director for Africa & Australia at Anglo American.

Starting the discussion, Jacob Mbele emphasized that the Future Minerals Forum is fostering collaboration and partnerships to transform research and development initiatives in the mining sector.

He disclosed that the South African mining industry has historically focused on large-scale capitalization for over a century, resulting in a mature and well-developed sector. Mbele added that mining has long dominated the political, social, and economic landscape, serving as the backbone of the country’s economy.


He noted that South Africa boasts abundant minerals such as coal, gold, diamonds, and platinum, crucial to its economic processes.


Meanwhile, Mosa Mabuza elaborated on South Africa’s extensive mining history, spanning over 150 years, and highlighted the country’s exceptional geological wealth, comparable to that of Saudi Arabia. He said that South Africa had made a global commitment to addressing climate change and promoting sustainable energy industries.


Furthermore, Mabuza underscored the government’s recognition of the importance of investing in geology, allocating significant resources to this endeavor over the past five years. He discussed ongoing mapping exercises conducted on a countrywide scale of 150,000, providing essential information for informed decision-making regarding mineral resources.


He also mentioned the significance of understanding geological controls on lithium mineralization in pegmatites, noting South Africa’s potential as an attractive destination for lithium investments due to its abundant lithium resources.

Moderator


  
**Peter Arkell**  
Chairman, Global Mining Association of China (GMAC)

  
**Jacob Mbele**  
Director-General, Department of Mineral Resources and Energy

  
**Mosa Mabuza**  
Chief Executive Officer of Council, Geoscience

  
**Mzila Mthenjane**  
Chief Executive Officer, Minerals Council of South Africa

  
**Botlhale Seageng**  
Director, Investment Promotion, Department Mineral Resources and Energy

  
**Themba Mkhwanazi**  
Regional Director, Africa and Australia, Anglo American





Mzila Mthenjane added that mining is pivotal to South Africa's socio-economic landscape. He said, the mining industry currently contributes approximately 6% to 7% of the country's GDP, noting that, from a social standpoint, mining activities have a multiplier effect, ranging between 8 and 10 in certain regions of South Africa.

He argued that there is a noticeable trend toward stabilization and improvement across various mineral sectors. He added that the coal export target may not be fully met, but that encouraging progress is being made in that direction.

Mthenjane hinted that similar positive developments are anticipated in iron, manganese, and ferrochrome. He is optimistic that the momentum will serve as a foundation for further expansion in other areas.

He added that government intervention remains integral to the economy, presenting an opportunity to capitalize on this foundation for further growth.

Speaking on the country's history in mining, Bothhale Seageng said that the mining sector has spanned well over a century.

He highlighted ongoing discussions at the Future Minerals Forum regarding responsible mining practices and the need to balance resource access with downstream value chains.

Seageng expressed confidence in South Africa's ability to serve as a model for the mining industry, citing its established mining code, which was formulated by the Department of Minerals and Energy. He said the framework provides potential investors with guidelines for engaging in mining activities within the country.

Themba Mkhwanazi emphasized the substantial potential for investors interested in entering South Africa. He highlighted a common theme among all panelists: Africa possesses extensive mining experience dating back to the 1850s. This accumulated expertise has led to the establishment of a center of excellence within South Africa.

Mkhwanazi stressed the importance of leveraging this expertise, as the country has produced world-class CEOs and can continue exporting its skills to the rest of the world.



## COUNTRY SPOTLIGHT 10

### Country Showcase – Lands of Opportunity

#### Panel: East Africa

The FMF hosted a Country spotlight discussion on East Africa that was moderated by Gavan Collery, Founder of the Melbourne Mining Club.

Dr. Alawi Swabury, Chief Executive Officer and Founder of the Africa Battery Initiative highlighted the initiative's close collaboration with the East African community. The initiative plans to expand to Saudi Arabia and other African regions by 2030, capitalizing on opportunities presented by the South Africa summit.

He stated that Africa faced challenging negative publicity surrounding its mineral industry, necessitating the promotion of the region and attracting Gulf Cooperation Council (GCC) investors to the continent.

Swabury expressed optimism that opportunities abound, with recent studies indicating that the Democratic Republic of Congo (DRC), Tanzania, Burundi, and Zambia collectively hold significant global deposits of critical minerals, which include cobalt (65%), nickel (40%), lithium (40%), graphite (45%), and manganese (45%).

He disclosed that ABI has curated a database comprising 2,500 critical minerals concessions owned by East African Community (EAC) member countries.



Swabury further disclosed that ABI is committed to partnering with Saudi Arabia on different strategic initiatives, including supporting the Kingdom's ambition to emerge as a leader in electric vehicle manufacturing, aligning its efforts with the Saudi Green Initiative to advocate for climate action in both Saudi Arabia and Africa, and lastly, supporting Saudi Arabia's Vision 2030, which aims to elevate the non-oil GDP share from 16% to 50% by 2030.

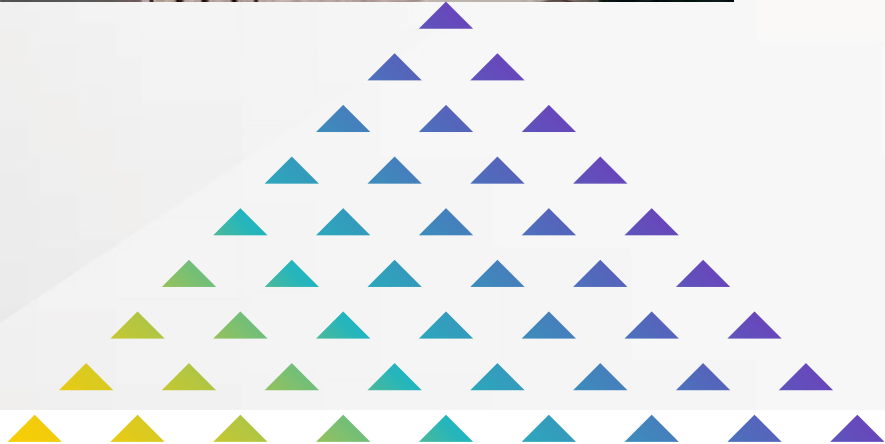
He capped off the session with a call for collaboration at various levels, emphasizing its role in achieving these goals. He added that ABI intends to engage with various stakeholders in Saudi Arabia, including the Public Investment Fund (PIF), Ma'aden, NIDC, and other private enterprises within the King Abdullah Economic City (KAEC) and others.



**Gavan Collery**  
Founder, Melbourne Mining Club



**Dr Alawi Swabury**  
Chief Executive Officer and Founder, Africa Battery Initiative





COUNTRY SPOTLIGHT 11  
Country Showcase – Lands of Opportunity

Panel:  
Uganda

The FMF hosted an insightful Country Spotlight discussion on Uganda. The session was moderated by Peter Arkell, Chairman of the Global Mining Association of China (GMAC).

Attendees included distinguished figures such as Hon. Dr. Peter Lokeris, Minister of State for Mineral Development in Uganda; Mr. Vincent Kedi, Commissioner of License Administration at the Ministry of Energy and Mineral Development; Mr. Ibrahim Buya, Senior Portfolio Manager in Fixed Income at the National Social Security Fund; and Mr. Ali Saleh O. Aswayeh, Uganda’s Special Advisor on Trade and Investment in the Kingdom of Saudi Arabia.

The audience was treated to a comprehensive presentation highlighting Uganda’s vast mineral potential. From metallic treasures like beryllium, copper, and gold to industrial stalwarts such as bentonite and gypsum. Uganda boasts diverse mineral resources and an assortment of gemstones, including emeralds, quartz, and topaz. A visual aid displayed the geographic distribution of these minerals across the country’s map.



**Peter Arkell**  
Chairman, Global Mining Association of China (GMAC)



**Hon. Dr. Peter Lokeris**  
Minister of State for Mineral Development



**Vincent Kedi**  
Commissioner License Administration, Ministry of Energy and Mineral Development



**Ibrahim Buya**  
Senior Portfolio Manager, Fixed Income, National Social Security Fund



**Ali Saleh O. Aswayeh**  
Uganda’s Special Advisor on Trade and Investment in the Kingdom of Saudi Arabia



The discussion also touched upon the lucrative investment prospects within Uganda’s mining sector, notably in extracting precious metals like iron ore and rare earth elements, alongside the exploitation of industrial minerals.

Uganda offers an attractive framework with streamlined procedures and assured investor protection. To attract investors, the country has incentivized its mining sector along with new mining laws to simplify the ease of doing business in the country. Some of the incentives include:

- Streamlined procedures with investor protection.
- 100% foreign ownership allowed for businesses in Uganda.
- Zero-rated import taxes on mining equipment.
- Strong governance and security measures.
- Possibility of forming joint ventures

COUNTRY SPOTLIGHT 13  
Country Showcase – Lands of Opportunity

Panel:  
Saudi Arabia

The FMF held a Country Spotlight discussion on Saudi Arabia, moderated by Richard Morrow, Chairman of the Melbourne Mining Club.

The country spotlight featured Saudi Arabia’s government officials, including Eng. Abdullah Alenezi, Assistant Deputy Minister of Mining Investment at the Ministry of Mining and Mineral Resources; Abdulrahman Bin Muhaya, Exploration Development Manager at the Ministry of Mining and Mineral Resources; Othman Hamdan, Business Development Manager at the Ministry of Mining and Mineral Resources; Ahmed Alaqeel, General Manager of Mining Investment at the Ministry of Mining and Mineral Resources; Anthony Benham, Regional Director for the UK and Saudi Arabia at MSA Mining Consulting; and Al Workman, a seasoned Senior Associate Exploration Geologist at Watts, Griffis, and McQuat (WGM).

Eng. Abdullah Alenezi led the discussion, highlighting some of the qualities that make Saudi Arabia’s mining industry a choice destination for investors.

1. KSA is blessed with vast and untapped mineral resources valued at 2.5 trillion US dollars and attractive exploration incentives.
2. KSA is strategically located at the crossroads of Asia, Africa, and Europe. With 133% of global trade coursing through its seas, the nation stands as a pivotal junction for international commerce.
3. KSA is supported by a robust infrastructure and world-class accessible ports, making it a natural transit hub for mineral trade.
4. KSA has one of the lowest energy costs globally, with a high and growing capacity for clean energy. This enables the production of decarbonized products and aligns with global sustainability imperatives.



**Richard Morrow**  
Chairman, Melbourne Mining Club



**Eng. Abdullah Alenezi**  
Assistant Deputy Minister of Mining Investment, Ministry of Mining and Mineral Resources, Saudi Arabia



**Abdulrahman Bin Muhaya**  
Exploration Development Manager, Ministry of Mining and Mineral Resources, Saudi Arabia



**Othman Hamdan**  
Business Development Manager, Ministry of Mining and Mineral Resources, Saudi Arabia



**Ahmed Alaqeel**  
General Manager of Mining Investment, Ministry of Mining and Mineral Resources, Saudi Arabia



**Anthony Benham**  
Regional Director, UK and Saudi Arabia, MSA Mining Consulting UK



**Al Workman**  
Senior Associate Exploration Geologist, Watts, Griffis and McQuat (WGM)





5. Finally, KSA has a strong and growing domestic demand, driving the attractiveness of investors into the Kingdom.

He further disclosed that the Kingdom launched its comprehensive mining strategy and national industrial strategy with the aim of:

- Maximizing the value of its mineral resources through various value chains and related industries.
- Tripling GDP to \$900 billion and doubling non-oil exports to \$600 billion SR by 2030.
- Identifying 12 priority future industry clusters covering 18 subsegments, including aerospace, renewable energy, automotive, military, and maritime.
- Saudi Arabia aims to become a global green mineral processing hub, facilitating the global energy transition with initiatives like the Aqua Power Green Hydrogen Project.
- Committing to decarbonization by achieving 15% of power from renewable energy resources by 2030, with plans to install 130 gigawatts of renewables.

Anthony Benham then presented to the audience an overview of Saudi Arabia's geology – with a focus on the Arabian Shield, which comprises four main geological domains:

- Recent cover
- Rocks associated with the Red Sea rift
- Phanerozoic cover sediments
- Arabian Shield

Saudi Arabia boasts diverse metallic and non-metallic resources, varying from occurrences to world-class deposits. Most metallic mineral resources are situated in Precambrian rocks within the Arabian Shield, primarily in the western half of the Kingdom.

Base and precious metal occurrences are often linked with mineral districts, forming prospective belts characterized by collision zones and orogenic intrusives.

Benham further noted that the industrial and non-metallic mineral resources are found in shield and cover rocks within Saudi Arabia, adding that the geological similarities and crustal evolution between the Arabian and Nubian Shields are noteworthy.

He stated that exploration and mining data spanning over 3,000 years has revealed a range of precious and base metals deposits and occurrences.

**The prospective mineral occurrences include:**

- Orogenic type gold associated with faults.
- Epithermal gold with or without base-metal sulfide mineralization.
- Base metals (copper, zinc, lead) related to submarine volcanism.
- Tantalum (tin-tungsten) mineralization linked to pre-aluminous post-collisional granite.
- Porphyry-type copper-molybdenum, copper-gold mineralization.
- Platinum group elements (chromium-titanium-iron-nickel-copper) mineralization associated with mafic-ultramafic rocks.
- Rare earth elements-thorium-uranium mineralization.
- Sedimentary lead-zinc mineralization.
- Titanium and gold in residual deposits.

**Othman Hamdan emphasized three key pillars enabling Saudi Arabia's mining sector:**

- Geological endowment
- Local demand and,
- Geographical advantage





# Exhibition

The 2024 Future Minerals Forum attracted 14,000 participants from 133 countries, and so the event represented a great opportunity for a select number of organizations to showcase live, innovative products and solutions to an engaged audience of pre-approved key decision-makers at the unique annual trade exhibition.

This exhibition was held in tandem with a number of other features and business lounges providing networking opportunities for the many thousands of professionals attending the FMF.

The exhibition bridged thought leadership with solutions across the entire minerals value chain. It provided a dual opportunity for enablers and innovators of change to drive specialized conversations in a hands-on environment where exhibits included some of the most cutting-edge technologies and innovations in the minerals and mining industry.

On display for the first time, for example, was an innovative smart exploration rover, the NOMAD, which has been developed by Eurasian Resources Group (ERG). Designed for challenging terrains such as those in Saudi Arabia, the NOMAD is a remotely operated soil sampling robot and its launch marks a significant leap in exploration technology, potentially transforming early exploration efforts.

Exhibits such as the NOMAD meets one of the aims of the FMF in providing thousands of professionals working in the region of Africa, Western and Central Asia with a unique platform to gain insight into advanced solutions and technologies from leading international organizations. These contributions are essential for ensuring a resilient supply of minerals across all phases, from exploration and extraction to the downstream manufacturing and distribution sectors.

The Exhibition supports the role of the Forum as a truly multi-dimensional event that reflects how important partnerships and collaborations are in achieving the goals of the Super Region.

**14,000**  
participants

**133**  
Countries





# + Delivering Business Global Meetings and Delegate Connect

A central part of the ethos of the Future Minerals Forum is its emphasis on the importance of collaboration in order to create modern, sustainable, resilient metals and minerals value chains.

In keeping with that ethos, the FMF24 included a digital feature – Delegate Connect – which ensured that those attending the Forum could take full advantage of the opportunities for forging new business links with other participants.

By using Delegate Connect, attendees could identify the attendees they wished to meet, and schedule introductions, leading to potential business deals and commercial opportunities.

Delegates simply needed to update their profile, provide some background information about themselves and their business interests, before adding a profile picture in order to be recommended to others.

The Delegate Connect feature used an algorithm to automatically suggest people that an attendee should meet based on the interests they selected during registration, and when they updated their profile. Delegates could then review their personalized recommendations and send meeting requests.

The feature meant that users could identify contacts they would like to meet, through an intuitive filter and search functionality. Once identified, meetings could be booked with a single click.

Users received an email every time someone requested a meeting with them or accepted their meeting request.

Delegate Connect ensured that attendees were able to enjoy the benefits of access to an array of senior decision-makers from across the global mining and metals industry.



## Delegate Connect Overview

### Attendee Insights

**13,767**

Contacts on the platform & received welcome email

**2,794 (20%)**

Contacts used the “Find People” search function

**3,018 (22%)**

Contacts updated profile

**6,657 (48%)**

Contacts accessed the platform

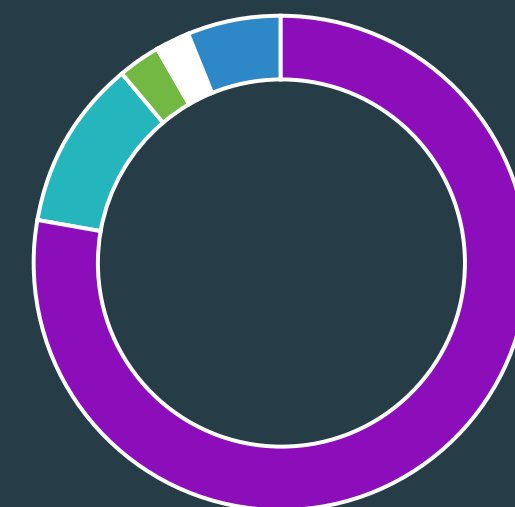
**1,600**

Contacts with a confirmed meeting

**1,147**

Companies with a confirmed meeting

### Delegate Connect Meeting Rates



- 77% Exceptional**
- 11% Exceeded Expectations**
- 3% Met Expectations**
- 2% Acceptable**
- 6% Unacceptable**



## FMF TV

**For the first time, at the 2024 Future Minerals Forum we were delighted to be able to launch our own dedicated and professionally-crewed TV studio at the event.**

This presented a great opportunity for senior figures, subject matter experts, thought leaders and other luminaries from across the industry to expand on their panel sessions and continue the conversations on a one-to-one basis on FMF TV.

It allowed those already speaking at the FMF to connect with an industry audience and align with the pillars of the FMF: explaining their business' s investments in metals and minerals production; the work they are doing to contribute to critical minerals strategies; the projects they are running to promote responsible mining; development of centers of excellence; and how their work is contributing to green minerals value chains.

Broadcasts from the studio were hosted by Ryan Chilcote, a TV veteran and renowned industry moderator, alongside a full TV production team.

In addition, the crew also used a roving camera to roam the event, interviewing those in attendance and giving a flavour of the excitement of being at the Forum.

These interviews were published across the FMF's digital and social channels, extending the reach of the Forum even further and giving a global audience a taste of the industry-shaping discussions taking place in Riyadh.

Interviewees who spoke to the FMF TV team included His Excellency Mr Bandar Alkhorayef, Saudi Arabia's Minister of Industry and Mineral Resources, as well as His Excellency Vice-Minister Al-Mudaifer, and Mark Cutifani, Chairman of Vale Base Metals.



Get a sense of the scope and scale of FMF24 by watching all the interviews from FMF TV on YouTube at <https://www.youtube.com/@FutureMineral>



# FMF TV Global Business Leader Interviews

The International Mining Conference Television was launched for the first time at the conference headquarters, where many television interviews were conducted with government officials and heads of major mining companies.



**His Excellency A. Adel Al-Jubeir**  
Minister of State for Foreign Affairs, Member of the  
Council of Ministers and Envoy for Climate Affairs



**Benjamin Galzo**  
Minister Plenipotentiary for Mineral Supplies and  
Minerals - France



**His Excellency M. Tariq Al-Mulla**  
Minister of Petroleum and Mineral Resources - Egypt



**His Excellency A. Autumn Bandar**  
Minister of Industry and Mineral Resources



**His Excellency Samuel Abu Jinapur**  
Minister of Lands and Natural Resources - Ghana



**His Excellency M. Khaled Al-Mudaifer**  
Deputy Minister of Industry and Mineral Resources for  
Mining Affairs

## 47

Indepth Interviews Covering Global Mineral Perspectives



**Kanat Charlabayev**  
Minister of Industry and Construction - Kazakhstan



**Dominic Barton**  
President of Rio Tinto



**Benedikt Sobotka**  
CEO of the European and Asian Resource Group



**Mark Bristow**  
CEO of Barrick Gold



**Mark Cutifani**  
Chairman of the Board of Directors of  
Vale Base Metals Company



**Robert Friedland**  
Founder and Co-CEO of Ivanhoe Mines



Get a sense of the scope and scale of FMF24 by watching all the interviews from FMF TV on YouTube at <https://www.youtube.com/@FutureMineral>



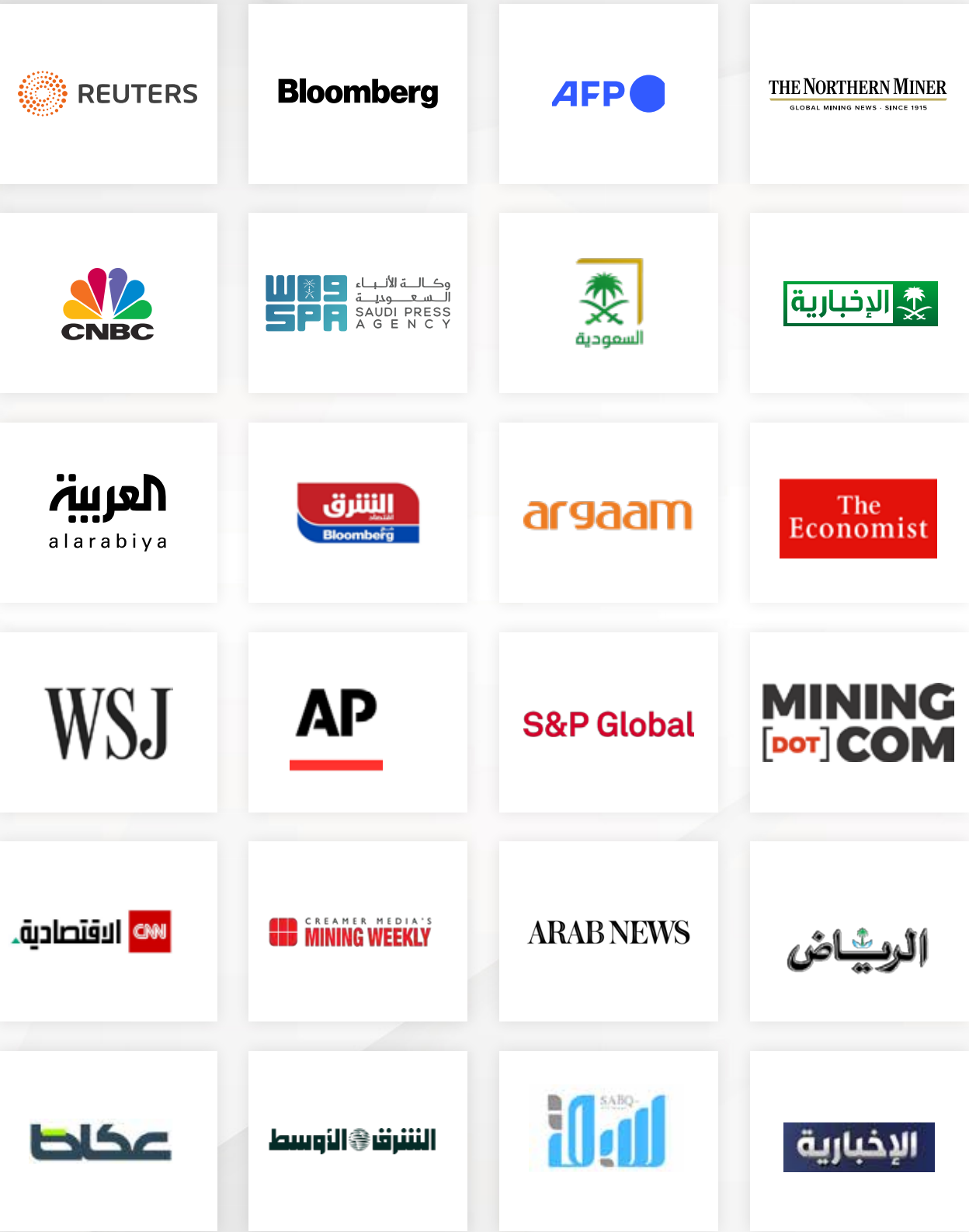
# MEDIA COVERAGE





# Media Supporters

# Global Media Growth at FMF over the years

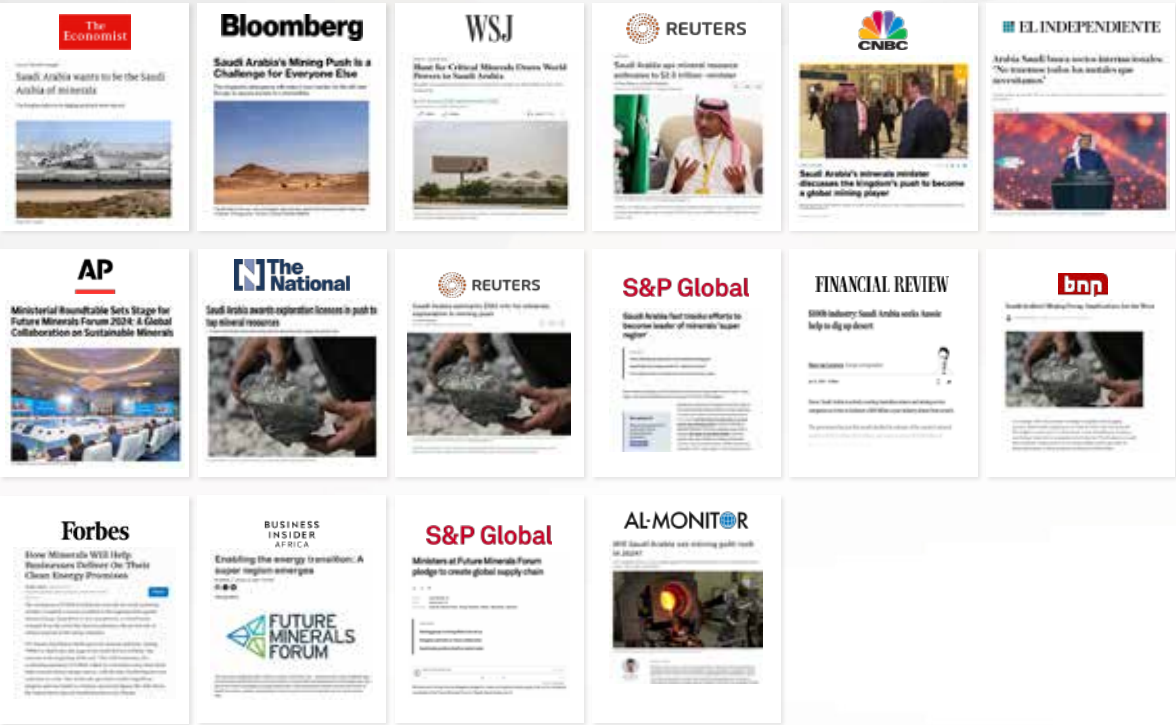


|  | 2022 | 2023  | 2024   |
|--|------|-------|--------|
|  <b>Journalist</b><br>Local and international   | 120  | 301   | 314    |
|  <b>Press Meeting</b><br>Local and international means  | 100  | 157   | 197    |
|  <b>Total news and media articles</b><br>Total number of news   | 498  | 2,486 | 7,202  |
|  <b>Print news and articles</b><br>Total number of news stories from print sources                            | 143  | 178   | 226    |
|  <b>TV reports</b><br>Total number of reports from visual sources   | 54   | 106   | 203    |
|  <b>News and articles on websites</b><br>Total number of news from websites                                   | 355  | 2,202 | 6,773  |
|  <b>Total reach (million)</b><br>Total number of people who viewed media materials                            | 69.6 | 115.2 | 165.8  |
|  <b>Total advertising value equivalent (million riyals)</b><br>Advertising value equivalent to print articles | 62   | 105   | 176.25 |

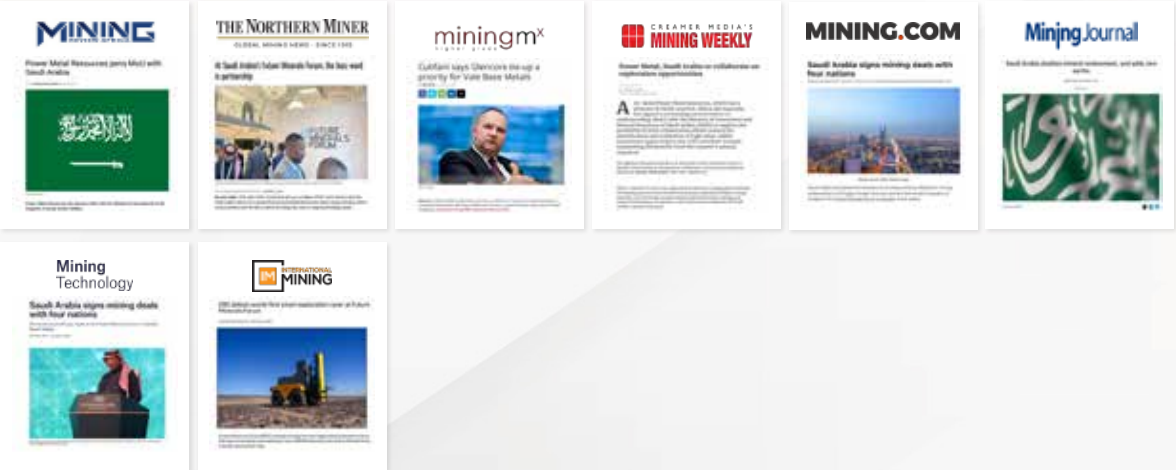


# Media Exposure

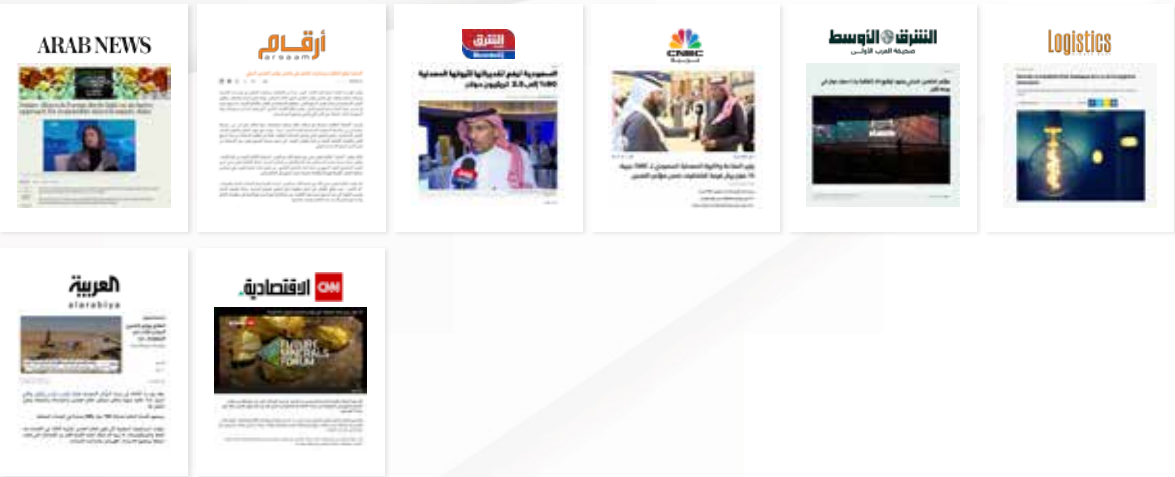
## Experts from the international press



## Experts from the mining press



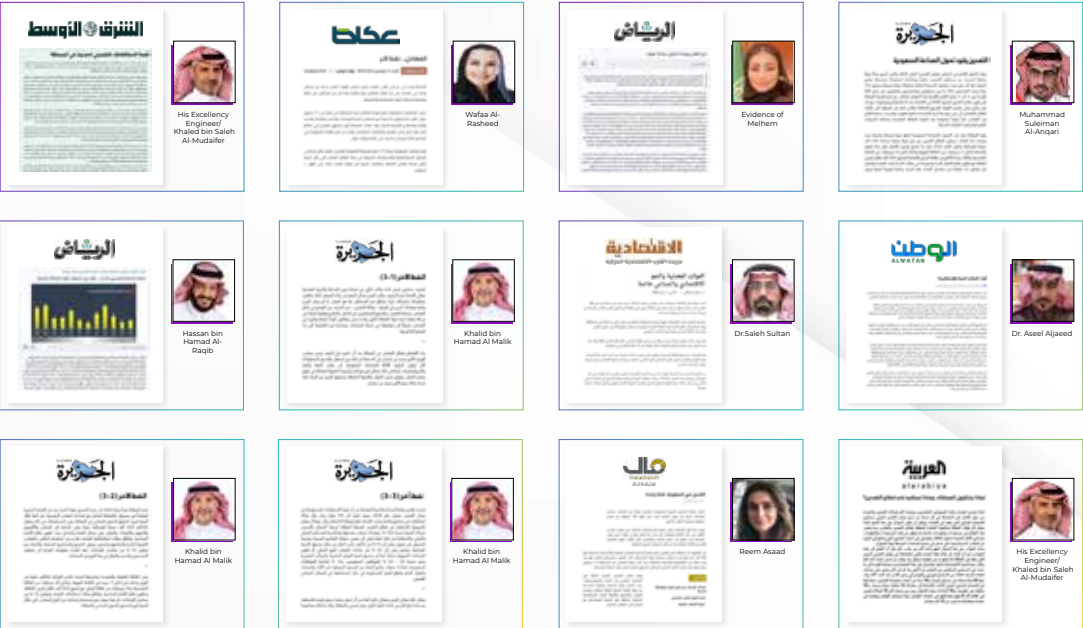
## Experts from the regional press



## Experts from the local press



## Writers' articles and opinion leaders





# Sponsors

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## Strategic Partners



## Logistic Partner



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## Gala Dinner Sponsors



## Platinum Sponsors



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## Technology Sponsor



## Registration & Lanyard Sponsor



## Gold Sponsors



## Strategic Insights Partner



## Speaker Lounge (Green Room) Sponsor



## Delegate Connect Lounge Sponsor



## Hospitality Partners



## VIP Lounge Sponsor



## Silver Sponsor




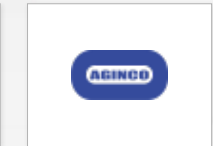


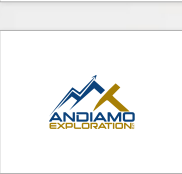

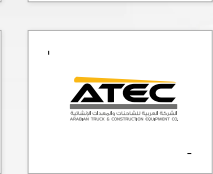


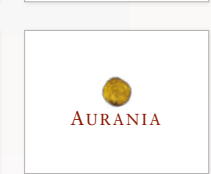

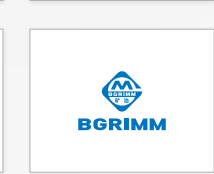


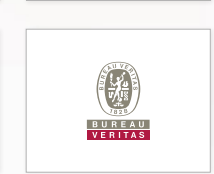


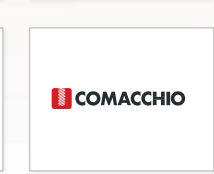

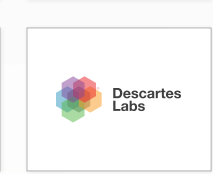







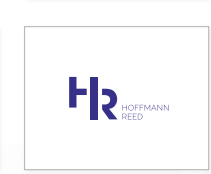

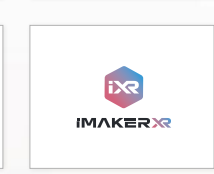












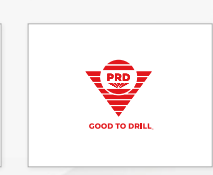
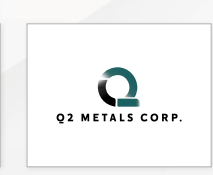
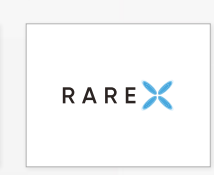




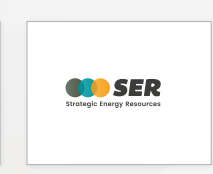
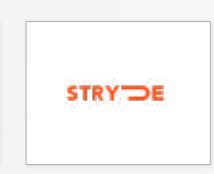







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# Exhibiting Companies

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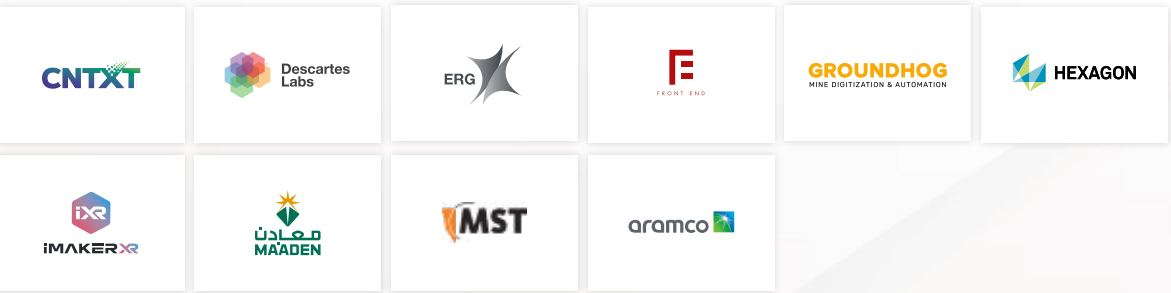


# Exhibiting Organizations

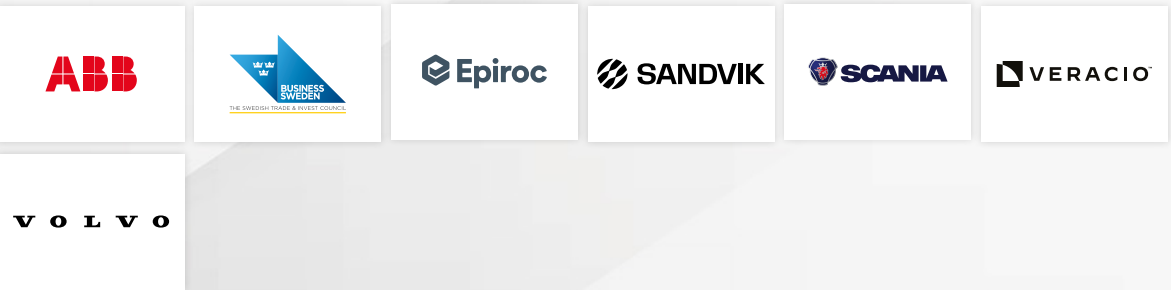
## Mineral Exploration Zone Exhibiting Organizations



## Mineral Tech Zone Exhibiting Organizations



## Business Sweden Pavilion Exhibiting Organizations



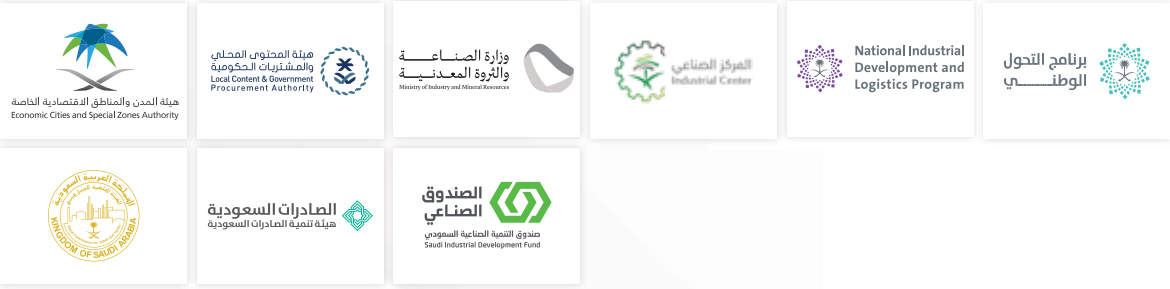
## Invest Northern Ireland Pavilion Exhibiting Organizations



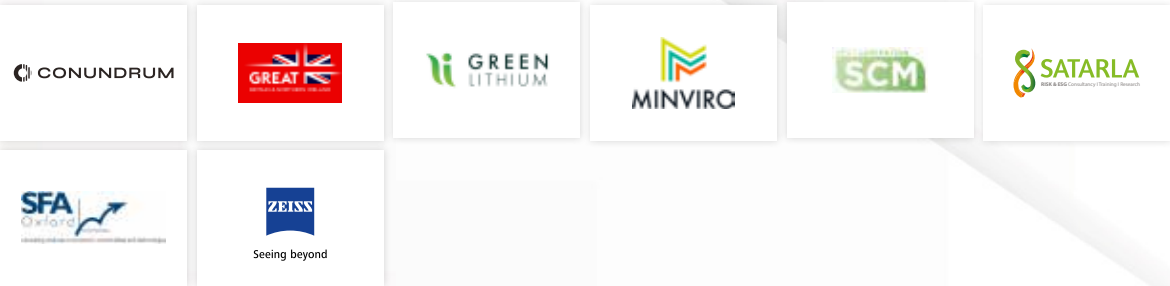
## Pakistan Pavilion Exhibiting Organizations



## Invest Saudi Exhibiting Organizations



## UK Pavilion Exhibiting Organizations







10-11 January 2024  
Riyadh, Saudi Arabia

- For sponsorship enquiries: [partner@futuremineralsforum.com](mailto:partner@futuremineralsforum.com)
- For exhibition enquiries: [sales@futuremineralsforum.com](mailto:sales@futuremineralsforum.com)
- For media enquiries: [media@futuremineralsforum.com](mailto:media@futuremineralsforum.com)
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