CRITICAL MINERALS ASSOCIATION

NOVEMBER 2022

CMA & GSBF ANNUAL CRITICAL MINERALS CONFERENCE

CMA & CMA AUSTRALIA WEBINAR: BRIDGING THE GAP

MINES AND MONEY LONDON: RESOURCING TOMORROW
Welcome to our November Critical Minerals Association monthly newsletter & updates on the critical minerals space.

Read on for:

- CMA & GSBF 2nd Annual Critical Minerals Conference
- CMA UK & CMA Australia: Bridging the Gap
- Mines & Money London: Resourcing Tomorrow
- SMMT Annual Dinner 2022
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- Less Common Metals: A UK Magnet Plant Could Be Established by 2025
- CMA Founder Jeff Townsend Joins MPIUK PRISM Advisory Board
- Steps to Improve Resilience and Diversify REE Supply Chains Away From China
- NSW Announces Funding to Advance Critical Minerals Exploration
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- E-Tech Resources: Diamond Drilling Intersects Thick REE Mineralisation
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- Cornish Metals Signs a New Mineral Lease Adjacent to South Crofty
- Circulor Recognized With "Climate Positive Award 2022" at COP27
- Australia to become 'more assertive' on foreign investment in critical minerals

Kirsty, Jeff & Olimpia

This month's newsletter has been put together by Lily Dickson, PhD student at the University of Leeds, Becca Kirk, PhD student at Camborne School of Mines and Eileen Maes, London School of Economics & Political Science.

Thank you to our speakers, and our generous sponsors-- SRK Consulting, Tungsten West, Sovereign Metals, Minexia, Minviro, and Dalradian Gold!

The event commenced with a breakfast at the Houses of Parliament hosted by the APPG for Critical Minerals, and continued at Burlington House with a series of presentations and panel discussions about the delivery of the UK’s critical minerals strategy, concluding with a drinks reception.

Some highlights of the day include Baroness Northover’s speech at the Terrace Pavilion, insights provided during the Government Strategy panel and Funding Mining Projects panel, and a lively debate about traceability during the Battery Materials panel.

Panel recordings will be available online next week.
On Thursday the 24th of November, the Critical Minerals Association (CMA) and the Critical Minerals Association Australia (CMA Australia) held a breakfast discussion on bridging the gap between miners and original equipment manufacturers (OEMs). Jointly hosting were Jeff Townsend, co-founder of the CMA, and Namali Mackay, Managing Director of CMA Australia.

They were joined by a prestigious panel of industry experts that included John Walker (CEO of Tees Valley Lithium), Michael Naylor (CEO of EV Metals Group), Stephen Grocott (CEO of Queensland Pacific Metals) and Quentin Wilson (former Top Gear host and automotive journalist).

The panel’s discussion spanned the global demand for electric vehicles (EV), the benefits of owning rather than leasing an EV, how to reinvent global critical mineral supply chains, the benefits of industry education for politicians and civil servants, as well as the ways in which the Chinese critical mineral monopoly can be challenged.
From 29 November to 1 December, Mines & Money hosted its London conference at the Business Design Centre with the theme 'Resourcing Tomorrow.' This year sustainability and ESG were pushed higher on the agenda than ever before.

A highlight of the event included a Dialogue Table chaired by Dr Sarah Gordon (Satarla) that heard insights from experts across the industry, including environmental consultants, lawyers, and outreach officers, on differentiating between sustainability and greenwashing.

Another highlight includes co-founder of the Critical Minerals Association (CMA), Jeff Townsend, joining a panel on Thursday, addressing the question 'What should the UK’s approach to Critical Minerals be going forward?'

Other members of the CMA team-- Kirsty Benham, Olimpia Pilch, Eileen Maes, and Sam Howard-- joined the conference as well. Namali Mackay, Managing Director of CMA Australia, and Wilfredo Reyes of CMA USA joined too.
Thank you to the Society of Motor Manufacturers and Traders (SMMT) for inviting Critical Minerals Association Founder Kirsty Benham to join the Innovation table at its 105th Annual Dinner in London.

At an event dominated by motor manufacturers and traders, the inclusion of critical mineral companies and associations marks an important milestone in the downstream sector engaging with the upstream extraction of materials.

Delivering the keynote speech at the dinner was the recently appointed Minister for Industry and Investment Security at the Department for Business, Nusrat Ghani MP who highlighted critical minerals, and the work of CMA members Pensana and Green Lithium.

FIND OUT MORE ABOUT THE ANNUAL DINNER HERE
Jeff Townsend, Founder, Critical Minerals Association, shared his opinion on the challenges in meeting the future clean energy goals and the situation in the United Kingdom with Minespider:

The pandemic and certain geopolitical events accelerated the changes needed to meet clean energy goals in many countries, including the United Kingdom. The country’s green economy potential is massive. According to the Faraday Institution forecast, the UK’s automotive and electric vehicle battery ecosystem could grow by 100,000 jobs by 2040. However, success is only possible if UK battery manufacturing is established and mineral supply chains become less dependent on other countries.

Earlier, we published an article about the top 5 rare minerals needed to meet the global clean energy demand. In this article, we asked Jeff Townsend to share his opinion on critical minerals' role in the green economy and some of the context in the United Kingdom.
A feasibility study carried out by Less Common Metals (LCM) has confirmed that it is feasible to establish a rare earth permanent magnet production facility in the UK to service the UK market, however, it must be under the right conditions.

In 2019 LCM was awarded funding, guided through the Advanced Propulsion Centre (APC) as part of the Automotive Transformation Fund, to conduct a feasibility study to identify the requirements for a fully integrated supply chain for Rare Earth Permanent Magnet production in the UK.

After this study finished, LCM was awarded funding by UK Government on a second occasion to develop a detailed scope for a rare earth permanent magnet manufacturing facility in the UK. The focus has been on innovation and the study investigated market opportunities, location, size of a magnet plant, amount of feed required, health and safety, environmental impacts, local community, and employment.
Jeff Townsend, co-founder of the Critical Minerals Association, has joined the Materials Processing Institute as the latest member of its PRISM Advisory Board.

PRISM is a five-year research and innovation programme, led by the Institute to revolutionise the steel and metals sector.

Funded through Innovate UK, part of UK Research and Innovation, it supports Government aims to achieve net zero by 2050, improve business productivity and competitiveness while levelling up the UK regions.

READ ON HERE
Parliamentary Questions: What steps are the Government taking to improve resilience and diversify rare earth mineral supply chains away from China? (Andrew Rosindell, MP).

Minister of State at the Department for Business, Energy and Industrial Strategy, Ms Nusrat Ghani, responded to questions on what steps the government are taking to diversify rare earth mineral supply chains away from China.

“The Government published the Critical Minerals Strategy in July, which sets out plans to improve the resilience of critical minerals supply chains by boosting domestic capability, enhancing global markets, and playing a leading role in solving global challenges with our international partners.

The Government is committed to building domestic critical mineral supply chains, for example, by supporting UK-based rare earths developer Pensana’s new rare earth magnet materials refinery in Yorkshire. Earlier this year, the UK signed up to the Minerals Security Partnership alongside ten other like-minded partners to support the development of diverse supply chains”.

MORE ON PENSCANAN HERE
Australia’s New South Wales (NSW) Government is spending A$8.6m ($5.69m) to support critical minerals exploration in the state.

The funding is planned to be shared among 19 organisations and forms part of the wider A$130m ($86m) Critical Minerals and High-Tech Metals Activation Fund. With the fund, the NSW government seeks to position the state as a major global supplier and processor of critical minerals and high-tech metals.

NSW Resources Minister and Deputy Premier Paul Toole said: “Critical minerals and high-tech metals are going to be crucial to future technologies like advanced manufacturing, aerospace, ag-tech and renewables, and this fund will progress projects and support feasibility studies right across the state.

READ ON HERE
Sudbury is historically known for nickel. But there remain hundreds of millions of tonnes of overlooked and valuable mineral commodities left behind by mining activity over the decades.

An upstart mining company with ambitions to be Sudbury’s next producer is seizing on an opportunity to bring a former INCO mine back into production, possibly by the end of next year.

With the recently acquired Denison Project, Jason Jessup, CEO of Magna Mining is taking some pages out of the playbook from his former employer, FNX Mining, which enjoyed phenomenal growth and success in the 2000s in revitalizing some historic Sudbury mine properties.
Teeside, UK will host the UK’s first large-scale lithium refinery, and possibly the largest electric vehicle (EV) battery recycling facility currently planned in the country.

UK-based clean technology startup Altilium Metals has selected Teesside as the “preferred location” for the largest end-of-life EV battery recycling facility currently planned in the UK. A final decision on the location will be made in early 2023.

Altilium says that with the UK banning sales of petrol and diesel cars in 2030, the global “EV revolution” could lead to more than 11m t/y of battery waste by then. Closed loop lithium-ion batteries will serve the developing UK EV supply chain, with any excess being sent to Europe.

Altilium’s planned plant will transform battery waste from 150,000 EVs per year, providing a secure and sustainable supply of critical minerals needed to support growing production of EVs in the UK, at a time when demand for these minerals is at its highest.

READ ON HERE
The US and Europe can cut their dependence on China for electric vehicle batteries through more than $160bn in new capital expenditure by 2030, Goldman Sachs has forecast.

EV batteries are one of the core technologies giving rise to concern across western capitals over dependence on China. Following years of deep state support and a desire by Beijing to cut its own reliance on oil imports, China produces three quarters of the world’s batteries and also dominates production of their materials and components.

However, according to a report to clients, seen by the Financial Times, the investment bank’s analysts believe a stark pivot to protectionism in Washington and Brussels, combined with an unprecedented spending spree by non-Chinese companies, have the potential to extricate the west from its reliance on Beijing over the next seven years.
E-Tech Resources Inc. is pleased to announce that its Phase 2 diamond drilling program has again successfully intersected shallow and thick REE mineralisation at its 100% owned Eureka REE Project.

Highlights from the diamond drilling include:
- Drill Hole ED028 intersected 8.2m at 2.6% TREO from 83m (including 3.7m at 4.7% TREO)
- Drill Hole ED027 intersected 7.9m at 1.4% TREO from 58m (including 4.9m at 2.1% TREO)

Jim Megann, Interim CEO commented, “The significant scale potential of the Eureka Project continues to be underscored by our repeatable quality REE results and we look forward to further drilling commencing this month. These intercepts of shallower and wider zones of mineralization will add significant tonnage potential to the current Zone 1 and 3 areas.”
REEtec, a Norwegian-based manufacturer of high-quality and sustainable rare earth elements (REE), has closed a financing round of EUR 115 million to build an industrialscale plant for separating rare earths in Herøya, near Porsgrunn in Norway. REEtec has developed a proprietary technology for environmentally friendly and efficient production of neodymium and praseodymium, commonly referred to as ‘NdPr’. Known as “magnet metals”, these two rare earth elements are essential in the manufacturing of electric motors, wind turbines, robots, and pumps.

REEtec was founded in 2008 by Scatec Innovation, a family-owned incubator and investment company focusing on renewable energy and advanced materials. Through this financing round, LKAB, an international mining and minerals group, will become the largest shareholder in REEtec. The Norwegian State's climate investment company Nysnø and energy and commodity groups Mercuria and TechMet also participated with new equity alongside existing shareholders.

TechMet Participates in Funding Rare Earths Processor

READ ON HERE
Cornish Metals Inc., a dual-listed company focused on advancing the South Crofty high-grade, underground tin project through a parallel mine dewatering programme and delivery of a Feasibility Study, as well as exploring its additional mineral rights, all located in Cornwall, South West England, is pleased to report that it has reached an agreement with Roskear Minerals LLP (“Roskear Minerals”) to lease certain mineral rights located immediately adjacent to the southern boundary of the South Crofty Underground Permission area.

The 49 hectare lease area covers part of the historic Great Flat Lode and lies within the Company’s South Carn Brea Exploration Area. Exploration targets in this area include the sections of the Great Flat Lode not previously mined, as well as the Wide Formation, a structure interpreted to exist parallel to and beneath the Great Flat Lode.
On 7 November 2022, the second day of the UNFCCC Conference of the Parties 2022 (COP 27) in Sharm El Sheikh, Egypt, the Green Cross United Kingdom announced that Circulor, the leading supply chain transparency solution, has been selected as one of the winners of the Climate Positive Award 2022.

The award recognizes and honors extraordinary efforts made by people and organizations worldwide to avoid, prepare for, or address concerns related to global climate change. Circulor winning this distinguished award highlights the essential role that supply chain transparency plays in underpinning circular economies to deliver net zero.

“We would like to thank Green Cross UK for recognizing the crucial role that new technologies such as ours play in establishing circular economies,” said Circulor CEO and Founder Douglas Johnson-Poensgen. “By bringing real-time transparency and traceability to complex industrial supply chains, Circulor enables customers to affect meaningful change that supports the global drive to net zero.”

READ ON HERE
Top lithium supplier Australia announced at a conference in Sydney on 21 November that is set to become more selective about its investors in its growing critical minerals industry.

"As investment interest grows, we’ll need to be more assertive about encouraging investment that clearly aligns with our national interest in the longer term," says Treasurer Jim Chalmbers. "Our international friends need to rely on someone, so let’s have them relying on us."

The Labor government which took power in May is strengthening Australia's critical minerals policy to position itself as a green superpower. Resource Minister Madeleine King flagged key sector developments, which includes a rare earth oxide processing plant run by Iluka Resources as part of a AU$2 billion federal investment and 3 separate lithium hydroxide processing plants in Western Australia.
The following November news articles from Argus Media, Mining Weekly, Mining Magazine, and others, provide an overview of critical mineral mining for:

- Cobalt
- Copper
- Graphite
- Lithium
- Manganese
- Nickel
- Rare Earth Elements
- Tin
- Vanadium

*The Critical Minerals Association takes no credit for any articles and makes no endorsement of any of the content.*
Cobalt

- **Africa**
  - **DRC: Trafigura [21.11.22]**
    - Trafigura gets $600 million from Africa's TBD for cobalt mines.

- **North America**
  - **Canada [16.11.22]**
    - U.S. military weighs funding mining projects in Canada amid China rivalry.

  - **Canada: Power Metals Corp [16.11.22]**
    - Junior mining companies say they are 'left out' from Ontario's critical mineral strategy.

  - **USA: Idaho Champion [22.11.22]**
    - Idaho Champion completes it's fall exploration program on Twin Peaks Cobalt project.

- **South America**
  - **Brazil: Jervois Global [9.11.22]**
    - Jervois Global to restart Sao Miguel Paulista refinery, Brazil.
Copper

• North America
  ○ Canada: Rio Tinto [9.11.22]
    ▪ Rio Tinto's takeover of Turquoise Hill indefinitely on hold as Quebec regulators step in.
    ▪ [link]

• Oceania
  ○ Australia: BHP [21.11.22]
    ▪ BHP's bid for OZ reignites interest in Central Australia.
    ▪ [link]

• South America
  ○ Chile: Capstone Copper [21.11.22]
    ▪ Capstone Copper presses case for copper mining potential in Chile.
    ▪ [link]

  ○ Peru: Las Bambas [4.11.22]
    ▪ Blockades at Peru's Las Bambas copper mine hits operations.
    ▪ [link]
Graphite

• North America
  ○ Canada: Lomiko Metals [22.11.22]
    ▪ Lomiko Metals grows land package in Quebec graphite region.

• Oceania
  ○ Australia: Hazer [18.11.22]
    ▪ Hazer and Mitsui sign MoU to jointly investigate market for Hazer Graphite from hydrogen production.

  ○ Australia: Syrah Resources [21.11.22]
    ▪ Syrah Resources (Tesla Supplier) warns of graphite supply risk in 'opaque' market.
    ▪ https://www.ft.com/content/46e5c98e-f9cd-4e88-8cd5-23427522c093
Lithium

• Asia
  ○ Indonesia [29.11.22]
    ▪ Indonesia to build lithium refinery & anode production facility

• Europe
  ○ Germany: Rock Tech [4.11.22]
    ▪ Rock Tech completes lithium converter study.

• North America
  ○ Canada [3.11.22]
    ▪ Canada orders three Chinese firms to divest in stakes in Lithium mines.
    ▪ https://www.ft.com/content/6ca9a470-59ee-4809-8a5b-35f6073c9907

  ○ Canada [22.11.22]
    ▪ Lithium extraction a possibility for Alberta, with environmental uncertainty.
    ▪ https://www.cbc.ca/news/canada/edmonton/lithium-brine-extraction-alberta-canada-1.6656858

  ○ USA: Lithium Americas [3.11.22]
    ▪ Lithium Americas to split into two companies.
    ▪ https://www.mining.com/lithium-americas-to-split-into-two-companies/

  ○ USA: Livent [19.11.22]
    ▪ Livent warns of lithium roadblock to rollout of electric cars.
    ▪ https://www.ft.com/content/511e45e0-fd87-4197-b690-a03597d62768
### Manganese

#### Africa
- **Morocco: Elcora [15.11.22]**
  - Elcora initiates manganese mining plan and preparations.

#### North America
- **Canada [16.11.22]**
  - Euro Manganese explores opportunity to produce battery grade manganese in North America.
- **USA: LG [22.11.22]**
  - LG Chem to build US battery cathode plant.
Nickel

• Europe
  ○ Russia: Ural Federal University [1.11.22]
    ▪ Physicists have proposed a theory of solidification of iron-nickel alloy.

• North America
  ○ Canada [21.11.22]
    ▪ Canadian industry 'rebuffs' idea of joining OPEC-like alliance for nickel.
  ○ Canada: Victory Nickel [22.11.22]
    ▪ Norway House community members voice concerns on potential northern Manitoba nickel mine.

• South America
  ○ Brazil: Horizonte [21.11.22]
    ▪ Horizonte secures long-term renewable energy for its Araguaia nickel project in Brazil.
Rare Earth Elements

• Asia
  ○ China: Chinese Academy of Sciences [17.11.22]
    ▪ Electrokinetic mining technology for recovering rare earth elements from weathering crusts discovered.

• North America
  ○ USA: Rare Element Resources [21.11.22]
    ▪ Rare Element Resources receives a $4.4 million grant from Wyoming Energy Authority in support of rare earth demonstration plant project.

  ○ USA: PennState [21.11.22]
    ▪ New process developed to extract high purity rare earth element oxides form acid mine drainage and associated sludges.
Tin

- Europe
  - UK: Cornish Metals [8.11.22]
    - Cornish Metals provides update on South Crofty project.

Tungsten

- Europe
  - UK: Tungsten West [19.11.22]
    - Hemerdon mining firm halts plans to expand business.

- North America
  - Canada: Fireweed Metals [10.11.22]
    - Fireweed Metals acquires zinc, tungsten project essential to Canada's growth.
  
  - Canada: Great Atlantic Resources [10.11.22]
    - Great Atlantic Resources complete 2022 exploration program on Newfoundland tungsten property.
Vanadium

• Asia
  ○ Saudi Arabia: Tdafoq [22.11.22]
    - Tdafoq and Delectrik strike deal to commercialise vanadium flow batteries in GCC.
  ○ Taiwan: Invinity [22.11.22]
    - Invinity sells 2.2MWh of flow batteries to Taiwan's Bei Ying international corporation.

• Oceania
  ○ Australia: Currie Rose Resources [1.11.22]
    - Currie Rose resources announces updated mineral resource estimate for the North Queensland vanadium project.