CRITICAL MINERALS ASSOCIATION

OCTOBER 2021

CMA INFLUENCES UK NET ZERO STRATEGY 2021
BREAKFAST CHAT - ENVIRONMENTAL, SOCIAL, GOVERNANCE: TRACK, TRACE & PROVENANCE
MINVIRO WHITE PAPER: SHIFTING THE LENS
CMA, GEOLOGICAL SOCIETY & IOM3 HYBRID EVENT
LIVE STREAMED & DRINKS RECEPTION - 30TH NOV
Welcome to our October Critical Minerals Association monthly newsletter & updates on the critical minerals space.

Read on for:

- ESG: Track, Trace & Provenance Breakfast Chat - 8th Nov
- Countdown to COP26 - What Needs to Be Done?
- CMA, Geological Society & IOM3 Event - 30th Nov
- Minviro White Paper: Shifting the Lens
- Webinar: Building Responsible & Secure UK - AUS Supply Chains - 24th Nov
- Tirupati Graphite Collaborates with Monash University
- EU Makes $2B Push for European Rare Earths Supply Chain
- How Green is Your Electric Vehicle?
- Circulor Partners with Blackstone and Trafigura
- Tungsten West Lists on AIM
- E-Tech Resources Trading on the TSX-V
- CMA at 17th International Rare Earths Conference
- Critical Mineral News
- RSC: Role of Critical Raw Materials in Reaching Net-Zero
- Sustainable Lithium Exploration in Cornwall
- Cornish Mines to Fuel Energy Transition
- TechMet Opens New School Kitchen in Rwanda
- Mines & Money ESG Award by Satarla & Digbee

This month’s newsletter has been put together by Olimpia Pilch, CMA’s Business Development & Communications Associate!

Kirsty & Jeff

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Got a suggestion? Want to feature in next month’s newsletter? Contact olimpia@criticalmineral.org

Want to learn more? Check out our website: https://www.criticalmineral.org/ & follow us on twitter @CMA_Minerals

“The UK Government’s statement of commitment to support the industry is a huge step in the right direction. The industry is finally gaining the recognition it deserves as fundamental to achieving UK’s Net-Zero ambitions. We look forward to working with the UK Government to ensure the UK is regionally competitive and not only promotes but also attracts responsible mining and investment.” – Jeff Townsend, Founder, CMA

Deep Dive - Critical Minerals, Supply Chains and Net Zero

The transition to Net Zero means new supply chains are becoming critical to the UK’s energy production. Critical minerals are metals and non-metals that are vital for a defined economic activity and for the well-being of the country, yet whose supply may be at risk owing to geological distribution, lack of substitutes and/or other factors. Such minerals provide materials essential for components in many of today’s rapidly growing clean energy technologies – from off-shore wind turbines to electric vehicles. The World Bank suggests that the production of minerals such as graphite, lithium and cobalt, could increase by nearly 500% by 2050 to meet the growing demand.21

- Ensuring the UK has a reliable supply of critical minerals and metals;
- Establishing an enabling environment for growing the sector in the UK;
- Showing leadership through working bilaterally and multilaterally to support work on international standards to extend and strengthen the circular economy in technology-critical minerals;
- Ensuring our work to build critical mineral supply chain resilience supports our international development priorities;
- Using our R&D resource to build a better understanding of markets and prices to help mitigate the impact of supply shocks.
We are delighted to announce our latest breakfast chat, 'ESG: Track, Trace & Provenance', will be taking place on Monday 8th November 2021 at 9:00AM BST. The discussion will centre around the importance of track, trace and provenance of critical minerals in ensuring that the benefits of ESG compliance are kept throughout supply chain.

Our speakers will be:
- Douglas Johnson-Poensgen, CEO & Co-founder of Circulor
- Nathan Dubrich, Head of Sales, Source Certain International
- Jamie Strauss, CEO & Founder of Digbee

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**ESG: TRACK, TRACE & PROVENANCE**

- Douglas Johnson-Poensgen, Co-founder of Circulor
- Jamie Strauss, Founder of Digbee
- Nathan Dubrich, Head of Sales, Source Certain International

Moderated by Jeff Townsend, Co-founder of CMA.

**MON, 8 NOV @ 9AM BST**
The first goal for COP26 is to secure global net zero by mid-century and keep 1.5 degrees within reach.

To achieve this goal, at the Critical Minerals Association, we believe that the following measures need to be taken:

1. Widespread recognition that renewable technologies and electric vehicles are made from metals and minerals, and that demand for these materials will continue to increase.
2. Ensuring that the critical minerals and materials in renewable technologies and electric vehicles needed to facilitate global net zero are produced alongside the protection/restoration of ecosystems, and in support of local communities.

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Our hybrid event, co-organised with the Geological Society of London and IOM3, 'Critical Minerals & The UK’s Green Industrial Revolution', is taking place on 30th November 2021. Kicking off with a livestream from 10:30 GMT, the event will feature a range of industry voices and Government representatives.

Don't miss out on our Drinks Reception (19:00 - 21:30) happening after the Conference for a chance to network with the industry, government and support services across the critical minerals value chain.

HYBRID EVENT | ONLINE | LONDON
Critical Minerals & The UK’s Green Industrial Revolution

- CONFERENCE LIVE STREAM | 10:30 - 17:30
- IN-PERSON DRINKS RECEPTION | LONDON | 19:00 - 21:30

TUES, 30 NOV 2021

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We are very excited to share Minviro's new Whitepaper - "Shifting The Lens: The Growing Importance of Life Cycle Impact Data in the Battery Material Supply Chain".

In this paper, Minviro explore the variability in individual raw material environmental impacts, and the cumulative effects on final battery climate change impact. The study particularly highlights the pressure placed on nickel sulfate, anode-grade graphite and lithium hydroxide production in NMC-811 batteries.

Relative contribution by life cycle stage to climate change for electric vehicles

Increasing contribution from the production of raw materials
At the Critical Minerals Association, we have been working hard behind the scenes with the Australian State Governments of Queensland, Western Australia and South Australia as well as with Austrade, to bring together some of the most impactful companies in the industry, including Lynas, BHP, BAE Systems and many more, to discuss what down under has to offer.

The webinar will take place on **Wednesday 24th November at 8:00 GMT**. Register below to be part of the discussion on how UK and Australia can forge resilient, responsible and secure partnerships.

**REGISTER HERE**

**LIVE WEBINAR**
**BUILDING RESPONSIBLE & SECURE UK - AUS SUPPLY CHAINS**
WHAT AUSTRALIA HAS TO OFFER | 8:00 - 9:30AM GMT
WED, 24 NOV 2021
EU Makes $2B Push for European Rare Earths Supply Chain

The European Union is pushing to establish Europe’s own supply of rare earths to reduce reliance on China for the elements crucial to the continent’s electric cars, wind turbines and mobile phones, as Bloomberg reported.

A plan released late last week by the European Raw Materials Alliance, of which Pensana is a founding member, calls for governments and manufacturers to support Europe’s rare earth industry. ERMA identified 14 projects in the EU that will require about $2 billion of total investment.

READ ON HERE
Tirupati Graphite has entered into a research collaboration agreement with Monash University in Australia to develop commercial applications for a range of graphene products in raw and recycled polymer nanocomposites and dispersions.

Under a 12-month agreement with the Department of Material Sciences and Engineering, research will focus on enhancing thermal, electrical, and mechanical properties of various polymers and preparation of dispersions for developing a range of commercial products. Graphene dispersions can be used as the raw input in multiple polymers and in the manufacture of paints.

"The success of this research collaboration will further extend our product offering," said Tirupati chief executive Shishir Poddar.
Climate change is depressing. In a Guardian interview, Greta Thunberg’s father shared how his daughter had been deeply depressed at the age of 11, her fears rooted in the climate crisis. With the increased omnipresence of information on social media, news, and websites, it’s no wonder that people are experiencing climate anxiety, particularly those who have never known a time where research meant borrowing a book from the library.

But what happens when you come across an article – ‘How Green is Your Electric Vehicle’ in the Financial Times*. Suddenly the solution to climate change – rapidly transitioning to renewables, is not so straightforward.

Could the electric vehicle that should be solving climate change, be part of the problem? The question arises, what exactly is an electric vehicle? Where did it come from? Who made it and what is it made of?
Circulor Partners with Blackstone and Trafigura

Circulor is a leading sustainable supply chain traceability provider, allowing businesses to fully analyse, track and manage their supply chains to support responsible sourcing and improve sustainability.

Blackstone Partnership

Blackstone has teamed up with Circulor to create product nickel traceability from mining through to the electric vehicle (EV) market for their Vietnam Ta Khoa Assets, a first in South-East Asia.

READ ON HERE

Trafigura Partnership

Trafigura, one of the world’s largest physical commodity trading companies, and Circulor have signed a master services agreement to provide traceability and carbon dioxide tracking for Trafigura’s nickel and cobalt trading division.

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On 21 October 2021, Tungsten West commenced its first day of trading on AIM with a market capitalisation of approximately £106.2 million following a £39 million fundraise at an Offer price of £0.60 pence per share.

Proceeds of the Offer, together with a £36 million project financing facility from Orion Resource Partners will be used to execute the planned capital expenditure of £44.6 million for the process plant rebuild and refurbishment, enabling the Company to bring the Hemerdon mine back into commercial production by the end of 2022.

The Hemerdon mine is the world’s third largest Tungsten resource, had over £170m spent on it via the previous operator and has a mine life of 18.5 years.

The Company is focused on rebuilding and restarting the mine to supply two critically important strategic minerals in tungsten and tin to the Western Hemisphere. In addition to the production of these mineral concentrates, Tungsten West will produce aggregates as a by-product of the new processing route to be installed at site.
E-Tech Resources, a rare earth exploration and development company, began trading on the TSX-V on 21 October 2021. E-Tech Resources is focused on developing its Eureka Rare Earths Project in Namibia. E-Tech produced its current Mineral Resource Estimate for the Eureka Project with an effective date of 2 August 2021. The MRE was prepared by SRK Consulting (Canada).

The Eureka Project is located approximately 250 km northwest of Namibia's capital city Windhoek and 140km east of Namibia's main industrial port Walvis Bay.

Namibia is recognized as one of Africa's most politically stable jurisdictions, with an extremely well-established national infrastructure and a clear and transparent mining law. The Corporation continues to assess new project opportunities and expand its Southern African portfolio.

READ ON HERE
The Critical Minerals Association team was invited to attend the 17th International Rare Earths Conference in London hosted by Metal Events.

The conference talks covered industry insights, project pitches, future outlooks and latest research including potential for REE extraction from fly ash.

Jeff Townsend was delighted to give an overview of the CMA and our work centred around bringing the industry and governments together to create secure and responsible supply chains.

It was fantastic to meet key international players in the upstream and midstream sectors alongside our members Roskill, Mkango, Pensana, E-tech Resources and Minviro.
Caroline Messecar writes:

'Electrification of the transport sector is a once in a lifetime opportunity for the rare earths industry but the challenges are considerable and will require strong collaboration across the supply chain and across borders.'
The following October 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
- Tin
- Tungsten
- Rare Earth Elements

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

- Europe
  - UK [20.10.21]
    - ‘Ambitious’ UK plans for electric vehicles welcomed – with reservations. Green groups fear the policy will embed car use at the expense of healthier and ultimately cheaper alternatives.
  - UK: Phillips 66 [20.10.21]
    - Phillips 66 is exploring opportunities to fill gaps in the electric vehicle supply chain at a high level with government, after ramping up production of vital battery feedstocks.
    - [https://www.business-live.co.uk/manufacturing/phillips-66-eyes-wider-role-21916688](https://www.business-live.co.uk/manufacturing/phillips-66-eyes-wider-role-21916688)
  - UK: Envision [25.10.21]
    - The Chinese owner of the UK’s only large-scale battery factory has revealed plans for a big expansion that will put the plant in Sunderland among the biggest electric vehicle facilities in Europe.

- North America
  - USA: Tesla [20.10.21]
    - Tesla has confirmed that it has achieved an annual run rate of 1 million electric cars per year at the end of last quarter.
    - [https://electrek.co/2021/10/20/tesla-achieves-annual-run-rate-1-million-electric-cars/](https://electrek.co/2021/10/20/tesla-achieves-annual-run-rate-1-million-electric-cars/)
ESG

• Europe
  ○ Serbia: Rio Tinto [25.10.21]
    ■ The permits have yet to be issued and Serbian authorities have mooted the possibility of a referendum, but with so much at stake can “the voice of the people” really stop mining giant Rio Tinto’s plan to dig Europe’s biggest lithium mine in western Serbia?
  ○ Spain [20.10.21]
    ■ Spain’s rush for lithium falls foul of local opposition, campaigners seek to halt creation of one of Europe’s largest lithium mines next to a world heritage city.
    ■ [https://www.ft.com/content/459191d9-774d-4a2b-8ec6-ba472017b05e](https://www.ft.com/content/459191d9-774d-4a2b-8ec6-ba472017b05e)

• North America
  ○ USA: BHP [14.10.21]
    ■ BHP is seeking direct engagement with Native American communities living near a vast proposed copper mine in Arizona, as its partner on the project, Rio Tinto, struggles to build trust among native landowners.
    ■ [https://www.ft.com/content/7202f4c5-ed88-4e69-b48c-9d8d116cdb29](https://www.ft.com/content/7202f4c5-ed88-4e69-b48c-9d8d116cdb29)

• Oceania
  ○ Australia: BHP [21.10.21]
    ■ BHP Group is looking at the potential to use the waste from its Australian nickel mining operations to capture and store carbon and will conduct field trials this financial year.
Africa

○ Congo [8.10.21]
  - Democratic Republic of Congo should renegotiate its $6 billion infrastructure-for-minerals deal with Chinese investors, according to the draft of a report commissioned by a global anti-corruption body of governments, companies and activists.

Europe

○ UK: Britishvolt [7.10.21]
  - Developing UK battery producer Britishvolt has signed up to the Fair Cobalt Alliance (FCA), indicating its commitment to using responsible cobalt sourced in the Democratic Republic of the Congo (DRC) as it builds up its operations.

North America

○ Canada: First Cobalt [5.10.21]
  - First Cobalt Corp has awarded a contract to Metso Outotec for the design and manufacturing of solvent extraction cells as well as technical support for the layout of a new solvent extraction plant and its process control at First Cobalt’s refinery in Ontario, Canada.
  - https://im-mining.com/2021/10/05/first-cobalt-to-use-metso-outotec-modular-solvent-extraction-tech-at-refinery/
Copper

• Global [8.10.21]
  - Global copper mine production is set to expand by 7.8% year-on-year this year as a result of multiple new projects coming online and low-base effects owing to Covid-19 lockdowns in 2020, Fitch Solutions Country Risk and Industry Research, a unit of Fitch Group, says.

• Africa
  - Namibia: Trigon Metals [21.10.21]
    - Canada-based Trigon Metals said it has begun operations at its Kombat copper mine in Namibia after a 14-year closure.

• Europe
  - UK: LME [20.10.21]
    - London Metal Exchange warehouses now have their least stocks since 1974, according to the report, which has led to wild gyrations in the price of copper with the buy/sell spread now the widest on record.
  - Serbia: Zijin Mining [22.10.21]
    - China's Zijin Mining began operations at a new Serbian copper and gold mine expected to make the Balkan country Europe's second-largest copper producer.
Graphite

- **Africa**
  - **Tanzania: Armadale Capital [7.9.21]**
    - Armadale Capital has announced the formal confirmation and receipt of the mining licence for its 100%-owned Mahenge Graphite Project in south-east Tanzania from the Tanzanian Ministry of Energy and Minerals.

- **Europe**
  - **Sweden: Talga [23.9.21]**
    - Talga has started trial mining at its Vittangi graphite project in north Sweden.

- **North America**
  - **Canada: Nouveau Monde [23.9.21]**
    - Nouveau Monde Graphite Provides Update on the Deployment of its Fully Financed Phase-1 LiB Anode Material Project.
• Global [25.10.21]
  - A recent survey conducted by Future Market Insights (FMI) on the lithium mining market provides detailed analysis on factors enabling growth through 2031. It studies the market on the basis of segments including source, type, application, and region. The survey also provides a blueprint of key strategies adoption by the leading player through 2031.

• North America
  ○ USA [15.10.21]
    - Study: Recycled Lithium Batteries as Good as Newly Mined - Cathodes made with novel direct-recycling beat commercial materials.
  ○ USA [21.10.1]
    - A new way to extract lithium from contaminated water could make this technologically important metal much easier to produce. The technique, which involves passing aqueous brines through lithium-selective polymeric membranes, works in a way that mimics the potassium channels that regulate the balance of ions in biological systems.
    - [https://physicsworld.com/a/biological-systems-inspire-new-method-for-extracting-lithium/](https://physicsworld.com/a/biological-systems-inspire-new-method-for-extracting-lithium/)
Manganese

• Africa
  ○ South Africa: South32 [21.10.21]
    ▪ Saleable production increased 12% to a record 668,000 wet metric tons in the quarter, South32’s first of its 2022 financial year. Including production from its Australian operations, the group’s first quarter manganese output totalled 1.57 million tons (Mt), a 7% year on year increase.

• South Africa [24.10.21]
  ▪ South Africa’s manganese output is expected to increase strongly, with Roskill predicting that the country will account for around half of the additional global manganese ore production over the next decade.

• Oceania
  ○ Australia: Accelerate Resources [25.10.21]
    ▪ Accelerate has elected to exercise the Option with Pardoo Resources Pty Ltd and Great Sandy Pty Ltd to acquire the manganese and iron ore rights on Ripon Hills East and Braeside West Projects in the East Pilbara Manganese Field.
Nickel

• Europe
  ○ UK: Johnson Matthey [26.10.21]
    ▪ Johnson Matthey nickel-rich battery material eLNO to debut at COP26 in two-seater electric race car.
    ▪ https://www.greencarcongress.com/2021/10/20211026-elno.html

• Latin America
  ○ Brazil: Sibanye Stillwater [26.10.21]
    ▪ Sibanye Stillwater agreed to pay $1 billion in cash for nickel and copper mines in Brazil, in a deal that highlights the race to supply battery metals to the booming electric-vehicle sector.

  ○ Guatemala: Solway [25.10.21]
    ▪ Swiss mining project protest triggers regional curfew in Guatemala.

• North America
  ○ Canada: Giga Metals [25.10.21]
    ▪ Giga Metals aims to develop Turnagain into the world’s first carbon-neutral nickel mine.
Tin

• Africa
  ○ DRC: Alphamin [5.10.21]
    - Tin producer Alphamin Resources has pointed to a 56% boost in earnings for the third quarter, thanks to increased production at its high-grade mine in the Democratic Republic of Congo and a soaring tin price.
  ○ Namibia: AfriTin [26.10.21]
    - AfriTin Mining has started exploration programmes designed to increase the size of the current resource at its flagship Uis tin mine in Namibia.
Tungsten

- **Europe**
  - **Spain: Rafaella Resources [4.10.21]**
    - Rafaella Resources has produced its first tungsten from its Santa Comba underground mine, in Spain.
  - **Spain: W Resources [11.10.21]**
    - W Resources rejigs management at La Parilla mine as executive director Pablo Neira to step down.

- **Oceania**
  - **Tasmania: King Island Sheelite [4.10.21]**
    - King Island Scheelite Limited said total funding for redevelopment of the Dolphin Tungsten Mine, near Grassy, had now reached its targeted $88 million after it received firm commitments from investors for the $31 million equity raising.
  - **Tasmania: Venture Minerals [14.10.21]**
    - Venture Minerals has started work on a feasibility study for an underground mine focused on the high-grade tin and tungsten zones within the existing Mount Lindsay Tin Tungsten deposit in northwestern Tasmania.
Rare Earth Elements

- Africa
  - Burundi: Rainbow Rare Earths [13.10.21]
    - Rainbow has raised £6.44-million, or about $8.5-million, through the issue of 42.9-million shares for South Africa, Burundi projects.

- Latin America
  - Chile: Hochschild Mining [19.10.21]
    - Hochschild Mining will spin out and list its Chilean rare earth deposit, as the business needed new capital to become a supplier to the clean energy industry.
    - [https://www.ft.com/content/16776902-4b9b-465f-884b-3b4b70614f01](https://www.ft.com/content/16776902-4b9b-465f-884b-3b4b70614f01)

- North America
  - USA: Penn State [26.10.21]
    - An eco-friendly way to extract and separate rare earth elements from unconventional sources has been demonstrated by researchers at Penn State and Lawrence Livermore National Laboratory.
    - [https://www.photonics.com/Articles/Biobased_Extraction_Method_Can_Help_Build/a67461](https://www.photonics.com/Articles/Biobased_Extraction_Method_Can_Help_Build/a67461)

- Oceania
  - Australia: Hastings Technology Metals [26.10.21]
    - DAWE has finalised its environmental approval for the hydrometallurgical plant at Yangibana rare earths project.
    - [https://www.miningweekly.com/article/hastings-ticks-another-box-for-rare-earth-processing-2021-10-26](https://www.miningweekly.com/article/hastings-ticks-another-box-for-rare-earth-processing-2021-10-26)
In line with the UK Government’s planned expansion of low carbon energy supplies, UK electricity production is set to be zero carbon by 2035, along with a suspension of the sale of new petrol and diesel cars and vans by 2040. Delivering this transition will require billions of pounds of investment in clean energy infrastructure and new low carbon technologies, such as wind turbines, solar panels, energy storage capacity, and electric vehicles. Significant amounts of CRMs – as well as technology metals and critical materials more broadly – will also be needed to build them, such as the lithium in the battery of an electric vehicle or the neodymium in the permanent magnets of a wind turbine generator.

READ ON HERE
A holistic approach to raw material exploration and extraction must be taken to ensure the drive towards the green revolution fully encompasses sustainability and Environmental, Social and Governance (ESG) protocols.

Since the inception of the company in 2016, Cornish Lithium has been using innovative methods that take sustainable exploration in the UK to new frontiers. Projects partnering with earth observation specialists utilising satellite imagery to hone in on prospective targets for lithium in Cornwall and de-risking the exploration effort has been undertaken since the Lithium 1 project in 2018.

Since this initial study in 2018 Cornish Lithium have expanded their Earth Observation and Remote Sensing portfolio to adapt to Cornish geology and to their expanding exploration programme.
Cornish Mines to Fuel Energy Transition

Mining firms hope to re-visit old sites in Cornwall in a bid to revitalise the region's metal-based economy and fuel the global transition towards zero carbon technologies, delegates heard at the Cornish Mining Conference.

A series of projects in the region aim to produce lithium, copper, tin and tungsten, with many exploring old mining sites that helped fuel the UK's industrial revolution in the 18th and 19th centuries.

"This new industrial revolution is an unprecedented opportunity for Cornwall, which most of you will know is famous for tin and copper mining," said Jeremy Wrathall, chief executive of Cornish Lithium, which is developing a geothermal brine extraction project.
In October Techmet's Nyakabingo Tungsten Mine was able to formally hand over a new school kitchen to Groupe Scolaire Shyorongi.

Luke Rogers, COO, commented, "It was great to see all the students and staff enjoying food made at the new facility and a real honour to support the Rwandan Government's new initiative to provide school meals for all young people."

FIND OUT MORE ABOUT TECHMET HERE
Mines & Money ESG Awards
Nominations Close 5 Nov

ESG AWARDS
Sponsored by Satarla & Digbee

Is your mining company doing more than is required to help protect and preserve the environment? Are you making a positive difference in the local communities you operate in?

Nominations for the Mines and Money London Outstanding Achievements Awards, in the category of Environmental, Social and Governance (ESG) are now open! Awards will be given to exploration, development and mining companies who have a positive influence on the environment and communities they operate in. Interested companies are welcome to submit their nominations on this link: https://rb.gy/8fah25

For more information, please contact ellen@satarla.com

Entries close on the 5th of November 2021
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MORE INFORMATION & NOMINATIONS HERE
Thanks to Our Supporters!