CRITICAL MINERALS & THE UK'S 10 POINT PLAN FOR A GREEN INDUSTRIAL REVOLUTION EVENT
HIGHLIGHTS OF 'THE EU-UK TRADE DEAL & CRITICAL MINERAL SUPPLY CHAINS POST BREXIT' EVENT
HYPROMAG: RECYCLING FOR RARE EARTH MAGNETS
ESG BLOG SPOTLIGHT: SRK CONSULTING & SATARLA WELCOMING TUNGSTEN WEST
Welcome to our January Critical Minerals Association monthly newsletter & updates on the critical minerals space.

Read on for:

- Breakfast Chat - Critical Minerals & the UK’s 10 Point Plan for a Green Industrial Revolution - 9th Feb at 9am GMT
- Highlights of 'The EU-UK Trade Deal & Critical Mineral Supply Chains Post Brexit' Event
- HyProMag & EMR: Recycling for Rare Earth Magnets
- Li4Uk announces production of lithium carbonate from a UK Source
- Welcoming a New Member: Tungsten West
- Roskill: 2021 Cobalt Outlook
- Critical Mineral News Stories
- ESG Blog Spotlight: SRK Consulting & Satarla
- Cornish Lithium granted rights for offshore exploration
- UNESCO Lecture Series & Critical Mineral Research Forum
- Argus White Paper '2021: A brave new world for batteries?'
- Vehicle-to-Grid rollout could deliver £880m in annual savings

This month's newsletter has been put together by CSM MSc Exploration Geology Olimpia Pilch.

Kirsty & Jeff

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

Want to learn more? Check out our website: https://www.criticalmineral.org/ & follow us on twitter @CMA_Minerals
The Critical Minerals Association's next Breakfast Chat, on Tuesday 9th February at 9am GMT, will discuss the UK Government's recently announced Ten Point Plan for a Green Industrial Revolution and the role of critical minerals in its delivery. Our speakers will be:

- Will Drury, Director, UKRI Driving the Electric Revolution
- Sarah Gordon, Managing Director, Satarla
- Jack Bedder, Director, Roskill
- Robert Pell, Director, Minviro
- Caroline Messecar, Senior Reporter, Argus Media

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The EU-UK Trade Deal & Critical Mineral Supply Chains Post Brexit

On Monday 25th January, CMA hosted a webinar to discuss the effect of Brexit on critical minerals and implications on supply chains. The discussion featured insights from:

- Steve Double MP, Chair of the All Party Parliamentary Group for Critical Minerals
- Guy Winter, Partner at Fasken Law

READ HIGHLIGHTS & WATCH THE RECORDING HERE
In late November 2020, Mkango Resources announced a partnership between its indirect subsidiary HyProMag, metal recycler EMR and, the University of Birmingham Department of Materials, to create a supply chain for the recycling of high-strength rare-earth magnets.

Mkango’s subsidiary, Maginito Limited, holds a 25% equity interest in HyProMag, with an option to increase its interest up to 49%.

The nine month Rare-Earth Extraction from Audio Products (REAP) project will help the UK to start reducing its reliance on the mining of strategically important virgin materials such as neodymium and dysprosium. With a focus on magnets found in loudspeakers in audio equipment and vehicles.
Li4UK has locally produced its first lithium carbonate, an essential ingredient for the batteries that power electric vehicles (EVs) and high-tech devices. The development is a huge stepping-stone in breaking foreign dependency on battery-grade lithium supply.

The Li4UK project, funded by Innovate UK as part of the Government Faraday Battery Challenge, is a consortium comprising Cornish Lithium, Wardell Armstrong and the Natural History Museum. The main goal of the project is to secure a domestic supply chain of the battery element in the UK. Li4UK reported that lithium has been sourced from Cornish Lithium’s site in Cornwall and another site, in Scotland.
Welcoming CMA's Newest Member: Tungsten West

The Critical Minerals Association is delighted to welcome our Newest Member - Tungsten West!

Tungsten West owns the Hemerdon tin-tungsten mine in Plymouth, UK and is touted as one of the largest tungsten reserves in the western world.

Tungsten is critical to a range of industrial, mining and agricultural applications and key uses are in cemented carbides, steel alloys, metal products, lighting, drill bits and jewellery.

Welcome to the group!
According to Roskill’s Cobalt Cost Model Service (Extractive), cobalt’s all-in sustaining cost (AISC) of production is expected to fall by around 2% y-o-y in 2021 (from US$23,085/t to US$22,600/t). As a result, this year Roskill estimates that over 98% of cobalt production capacity will be cash positive on an AISC basis, based on a forecast cobalt price circa US$39,700/t.

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@Roskill_Info

*Plus don't miss the next Roskill MMTA Event - Aerospace applications & the impact on minor metals - on 25th Feb*

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**Waterfall graph of change in cobalt AISC cost, 2020-2021 (US$/t)**

This figure shows the potential landscape of the future lithium upstream sector along with operations, deemed by Roskill to have the potential to come online over the next decade.
The following January news articles from Argus Media, Mining Weekly, Mining.com, Mining Magazine, Roskill, The Northern Miner and others, provides an overview of critical mineral mining for:

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

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

- **Global (7.1.21)**
  - Viewpoint: Metals demand to ride green energy wave.

- **Global: BEV (19.1.21)**
  - Breakthrough Energy Ventures (BEV) has raised $1 billion to help start-ups capable of cutting global emissions.

- **Europe**
  - **Norway (6.1.21)**
    - Norway electric vehicle uptake at record high in 2020.

- **North America**
  - **Canada (6.1.21)**
    - Quebec Government recently announced plan to advance critical and strategic minerals sector

  - **USA (30.12.21)**
    - US Government spending package includes $800 million to fund Rare Earths and Strategic Minerals Research.
Cobalt

• Global (29.12.20)
  - Cobalt may substitute platinum in fuel cells.
    https://www.mining.com/cobalt-may-substitute-platinum-in-fuel-cells/

• Global (6.1.21)
  - Cobalt prices enter 2021 on the rise.
      backToResults=true&selectedMarket=Metals

• Africa
  - DRC (14.1.21)
    - Cobalt, Copper: China strengthens relations with DRC through debt relief and Belt and Road Initiative.

• North America
  - Canada: First Cobalt (12.1.21)
    - First Cobalt announces cobalt partnership including a commitment to CIRAF (Cobalt Industry Responsible Assessment Framework)
  - USA (17.1.21)
    - Scientists at Michigan State University found that Geobacter – bacteria found in soil and sediment – are effective cobalt miners, as they are able to extract the metal from rust without letting it penetrate their cells and kill them.
Copper

• Africa
  ○ DRC: Sodimico (5.1.21)
    ▪ A company led by American-Senegalese R&B singer Akon has signed a deal to finance a copper and cobalt mine in the Democratic Republic of Congo in a joint venture with a state miner
  ○ DRC: Ivanhoe Mines (6.1.21)
    ▪ Production at Kamoa-Kakula expected in less than six months
    ▪ https://www.mining.com/initial-production-at-kamoa-kakula-expected-in-less-than-six-months/

• Latin America
  ○ Chile: Codelco (5.1.21)
    ▪ Chile’s state miner Codelco, the world’s no.1 copper producer, has approved a $1.383 billion underground expansion of its Salvador mine, which will extend the productive life of the operation by 40 years and increase output by 30%.

• North America
  ○ USA: Rio Tinto (15.1.21)
    ▪ The US government published a report that triggers a swap involving Native American land for an area that could become North America’s largest copper mine, pushing the project into the next phase of a permitting process.
Lithium

• Africa
  ○ DRC: AVZ Minerals (8.1.21)
    ▪ AVZ Minerals, owner of the DRC-based Manono lithium project, announced it had secured a significant offtake agreement with a subsidiary of Ganfeng Lithium.

• Asia
  ○ China: Yahua Lithium (8.1.21)
    ▪ Lithium: Yahua to sign lithium hydroxide supply agreement with Tesla.

• Latin America
  ○ Brazil: Brazil Minerals (4.1.21)
    ▪ Brazil Minerals has received exploration permits for two additional mineral claims that are part of its lithium project in the northeast part of the state of Minas Gerais, Brazil.
    ▪ [https://www.mining.com/brazil-minerals-to-expand-lithium-project/](https://www.mining.com/brazil-minerals-to-expand-lithium-project/)

• North America
  ○ USA: Lithium Americas (18.1.21)
    ▪ The US Bureau of Land Management gave final approval on Friday to Lithium Americas’ Thacker Pass lithium mine, located 100 km northwest of Winnemucca, in Humboldt County, Nevada.
    ▪ [https://www.mining.com/lithium-americas-shares-up-on-thacker-pass-approval/](https://www.mining.com/lithium-americas-shares-up-on-thacker-pass-approval/)
Graphite

• Global
  ○ GlobalData (6.1.21)
    ▪ Global natural graphite output to grow 7.6% in 2021 – report.

• Africa
  ○ Madagascar: Tirupati Graphite (5.1.21)
    ▪ Specialist graphite producer and graphene developer Tirupati Graphite is on track to commission its Vatomina graphite project in Madagascar in Q2, 2021.

• Europe
  ○ Norway: Mineral Commodities (19.1.21)
    ▪ Mineral Commodities has moved to consolidate its position in Norway, snapping up two new, highly prospective graphite plays 15 km from the company’s Skaland graphite mining operations.

• North America
  ○ USA: Graphite One (21.1.21)
    ▪ Graphite One’s Graphite Creek project has been designated a “high-priority infrastructure project” by the Federal Permitting Improvement Steering Committee of the US Government.
Manganese

• Asia
  ○ China (21.12.20)
    ▪ China's manganese prices are expected to rise in the near term in light of production cuts caused by power shortages in many regions of the country, according to market participants.
  ○ China (15.1.21)
    ▪ China's Manganese output cuts add to EU buyers' challenges.
      backToResults=true&selectedMarket=Metals

• North America
  ○ USA: American Manganese (6.1.21)
    ▪ American Manganese has welcomed the Journal of the Electrochemical Society's publication of the company's technical paper detailing its ground-breaking battery recycling process.

• Oceania
  ○ Australia: GFG Alliance (8.1.21)
    ▪ GFG Alliance finalises takeover of South32’s TEMCO manganese alloy smelter.
Nickel

• Africa
  ○ Tanzania: Kabanga Nickel (19.1.21)
    ▪ Tanzania and UK-based mining firm Kabanga Nickel Limited signed a framework agreement to jointly develop the Kabanga nickel project formerly owned by Barrick Gold and Glencore.

• Latin America
  ○ Brazil: Jervois Mining (19.1.21)
    ▪ Jervois Mining looks to POX leaching to boost SMP nickel-cobalt refinery recoveries.

• North America
  ○ Canada: ALX Resources (4.1.21)
    ▪ ALX Resources has executed a definitive agreement for an option to purchase a 100% interest in the Electra nickel project in the Thunder Bay South Mining District of Ontario.

• Oceania
  ○ Australia: BHP (8.1.21)
    ▪ Mining major BHP and Toyota have collaborated to trial light electric vehicles (LEV) at the Nickel West operations in Western Australia.
Tin

• Europe
  ○ UK: Cornish Metals (13.1.21)
    ▪ Copper and tin miner Cornish Metals has announced plans to list on the Alternative Investment Market (AIM) of the London Stock Exchange in February.

Tungsten

• Asia
  ○ China (7.1.21)
    ▪ Chinese tungsten prices are expected to rise steadily in 2021 on expectations of a recovery in the global economy and as production cuts take effect.
Rare Earth Elements

- **Africa**
  - Namibia: Namibia Critical Metals (6.1.21)
    - Additional drill results at Namibia Critical Metals’ project confirm multiple dysprosium zones.

- **Asia**
  - China (18.1.21)
    - Rare earths: China’s new rare earth regulations strive for better industry management.

- **North America**
  - Canada: Rio Tinto (15.1.21)
    - Rio Tinto builds commercial-scale scandium plant in Canada.
  - Greenland (16.1.21)
    - In search of Greenland’s rare earths. The world’s biggest island has a rich helping of rare-earth minerals, and the superpowers want them.
    - [https://www.economist.com/europe/2021/01/14/in-search-of-greenlands-rare-earths](https://www.economist.com/europe/2021/01/14/in-search-of-greenlands-rare-earths)
Responsible Mining: Jargon Fountain or a Material Shift in ESG Performance Drivers? (Jan 2021; Fiona Cessford)

"The next decade will be one of establishing precedents as these new standards are tried and tested in the real world."

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ESG: Paradigm shifts and adding value (Jan 2021; Jane Joughin)

"New compliance enforcement tools are motivating more careful attention to commitments made and conditions incurred in permitting processes, coupled with better tracking of conformance with these."

READ ON HERE

ESG Tips for Juniors (Nov 2020; Jane Joughin)

"While they often do not have in-house resources to keep abreast of every trend, juniors can be nimble in seizing the opportunities created by the high worth now placed on environmental social and governance (ESG)."

READ ON HERE
ESG - Risk Management (Nov 2020)

In a University of London webinar, Dr Sarah Gordon discussed enterprise risk management (ERM), environmental, social governance (ESG), what ESG risk management is and its importance.

"Now it is the time for practical risk management to be fully unleashed and provide the mechanism through which organisations can hold themselves to account and achieve their objectives in an ethical manner."

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Can mining make the world a greener place? (Dec 2020)

On 3rd and 4th December 202, the Natural History Museum hosted an online event 'Can mining make the world a greener place?'. The fifth session, 'Who decides?', explored the importance of ESG in mine planning.

"A triple bottom line approach in which the mining industry puts the people, planet and profit in equal measure would ensure responsible and sustainable operations and provide a greener world."

READ ON HERE
Cornish Lithium will begin its desk-based exploration program to start identifying potential geological targets for later research. Physical exploration work is not anticipated to start for at least four years.

The £4 million project will trial direct lithium extraction (DLE) technology, which removes dissolved lithium compounds from water without the need for the large evaporation ponds, such as those used in South America’s salt flats.

Jeremy Wrathall, CEO of Cornish Lithium, commented: “We believe that this is a hugely exciting opportunity to put Cornwall back on the map as a mining centre as well as develop a new industry in the UK. We look forward to providing further updates as the project develops.”

Full statement available [here](#).
UNESCO Lecture Series

'Earth Materials for a Sustainable and Thriving Society'
- organised in collaboration with IUGS and iCRAG.

- **The neglected minerals and materials of development** - 9 February 2021 at 9:00 GMT
  - Prof. Daniel Franks, University of Queensland, Australia.

- **Mineral extraction and communities** - 16 February 2021 at 14:00 GMT
  - Dr Rajiv Maher, EGADE Business School del Technológico de Monterrey, Mexico.
  - Dr Melba Kapesa Wasunna, Base Titanium Ltd., Kenya.

- **Suppliers, consumers, and the global minerals supply chain** - 2 March 2021 at 10:00 GMT
  - Dr Kathryn Moore, University of Exeter, UK.
  - Dr Judy Muthuri, Nottingham University Business School, UK.

- **Earth materials and a sustainable future** - 9 March 2021 at 12:00 GMT
  - Prof. Murray Hitzman, Director, iCRAG, Dublin, Ireland.
  - Ms Halleluya Naantu Ekandjo, PhD candidate at iCRAG, University College Dublin.

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- **Americas - 12 February 2021 at 18:00 GMT**  
  'The role of geological survey organisations to advance critical mineral research'

- **Europe and Africa - 19 February 2021 at 12:00 GMT**  
  'The past, present, and future directions of critical mineral research'

- **Asia and Oceania - 26 February 2021 at 5:00 GMT**  
  'Geoscience to support critical mineral discovery'

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The nickel market is likely to be dominated by a supply shortage next year.

Growing battery revolution may divert class 1 nickel use away from stainless steel and toward batteries.

The market is also adjusting to China’s newly revised law on the prevention and control of environmental pollution by solid wastes, which came into effect on 1 September. The stricter law is expected to increase domestic sulphate production costs or even reduce output in the long term.

China is also expected to import more nickel sulphate, especially from Indonesia and Australia.

Most battery producers in Europe and the US are still expected to rely heavily on China and other Asian countries for cathode materials, including nickel sulphate, next year.

Argus Media's Thomas Kavanagh, senior reporter, and Echo Ma, senior analyst, project an outlook for battery metals markets in 2021.

Key highlights include:

- The nickel market is likely to be dominated by a supply shortage next year.
- Growing battery revolution may divert class 1 nickel use away from stainless steel and toward batteries.
- The market is also adjusting to China’s newly revised law on the prevention and control of environmental pollution by solid wastes, which came into effect on 1 September. The stricter law is expected to increase domestic sulphate production costs or even reduce output in the long term.
- China is also expected to import more nickel sulphate, especially from Indonesia and Australia.
- Most battery producers in Europe and the US are still expected to rely heavily on China and other Asian countries for cathode materials, including nickel sulphate, next year.
Edie’s Matt Mace writes:

"V2G is a concept that enables plug-in vehicles to act as a form of distributed energy storage by providing demand-response services to the power grid. The batteries in parked vehicles can be used to let electricity flow from the car to the distribution network and back based on demand needs.

Nissan and E.ON have been championing the technology through the e4Future project which is being funded by the Department for Business, Energy and Industrial Strategy (BEIS) and the Office for Zero Emission Vehicles (OZEV), in partnership with Innovate UK, part of UK Research and Innovation."

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Thanks to our supporters!