CRITICAL MINERALS ASSOCIATION

SEPTEMBER 2020

CMA BREAKFAST CHAT: UK CRITICAL MINERALS
CMA BREAKFAST CHAT: CIRCULAR ECONOMY
ROSKILL WHITE PAPER CRITICAL MINERALS CORNISH LITHIUM RESULTS
EU UPDATED CRITICAL RAW MATERIALS LIST
NATURAL RESOURCES FORUM - ESG EVENT
WELCOMING MKANGO RESOURCES
Welcome to our September Critical Minerals Association monthly newsletter & updates on the critical minerals space.

Read on for:

- CMA Podcast: Critical Minerals Sustainability & Circular Economy
- Roskill's Critical Materials White Paper
- Cornish Lithium's "globally significant" lithium results
- EU Updated Critical Raw Materials List
- Natural Resources Forum 5-9 October - ESG Week
- Welcoming CMA's newest member: Mkango Resources
- News Stories
- Minerals Engineering International Conferences 2021

Kirsty & Jeff

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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
UK Critical Minerals - An Opportunity to Secure Supply

On the 15th September, our 3rd breakfast chat - 'Critical Minerals in the UK - An Opportunity to Secure Supply' brought together an insightful discussion on the UK’s domestic capabilities for vertical integration of ethical & sustainable critical mineral supply chains with:

- Frances Wall, Professor of Applied Mineralogy at Camborne School of Mines
- Jeremy Wrathall, CEO at Cornish Lithium
- Brett Grist, Exploration Manager at Cornwall Resources
- Ian Higgins, Managing Director at Less Common Metals

HIGHLIGHTS & RECORDING HERE

BREAKFAST CHAT - UK CRITICAL MINERALS:
AN OPPORTUNITY FOR BRITAIN TO SECURE SUPPLY

15 SEP @ 9AM BST
The Critical Minerals Association's 1st Breakfast Chat: Sustainability & Circular Economy in Critical Minerals on 11th August brought together great insights from:

- Andrew Clifton, Global Sustainability Manager @ Rolls Royce
- Robert Spencer, Head of Sustainable Development @ AECOM UK
- Robert Pell, Founder @ Minviro
- Chris O’Brien, Senior Environment Consultant @ SRK Consulting UK

HIGHLIGHTS & RECORDING HERE.
Roskill's Jack Bedder has published a white paper on Critical Raw Materials:

"Set against the backdrop of trade wars, new technological breakthroughs, rising populism, and the supply chain shocks caused by the COVID-19 pandemic, critical materials remain as topical as ever. Roskill’s new white paper provides clients with an understanding of the definition of critical raw materials in academic and government circles, explores policy responses and their effectiveness, and sets out some of Roskill’s key reflections on the subject."

**Jack explored the processes and behaviours that shape critical materials supply chains in his PhD at Cambridge University**

**READ THE WHITE PAPER HERE.**
Cornish Lithium have announced “globally significant” grades of lithium within geothermal waters. Highlights of the sampling include:

- Average lithium concentrations of 220 milligrams per litre (‘mg/L’) with concentrations of up to 260 mg/L
- Ultra-low levels of magnesium, 5 mg/L
- Total Dissolved Solids concentrations of 29,000 mg/L – an order of magnitude lower than many other geothermal waters worldwide

**Argus Media** - "Cornish Lithium says it has "globally significant" stores of lithium within geothermal brine — touted as some of the world’s purest sources, with average concentrations of 220 mg/l."

**The Guardian** - "The people of Redruth make it clear this is not just about money. Mining is part of the place’s identity."

The graph illustrates the results in a global context and shows lithium levels relative to (TDS) for various types of lithium rich waters and brines, such as salar brines from the Atacama Desert, oilfield brines and other geothermal waters.
The EU has published its 4th Critical Raw Materials List. The complete list of 30 critical raw materials for 2020 is:

Antimony, Barytes, Bauxite, Beryllium, Bismuth, Borate, Cobalt, Coking coal, Fluorspar, Gallium, Germanium, Hafnium, Heavy rare earth elements, Indium, Light rare earth elements, Lithium, Magnesium, Natural graphite, Natural rubber, Niobium, Platinum group metals, Phosphate rock, Phosphorus, Scandium, Silicon metal, Strontium, Tantalum, Titanium, Tungsten, Vanadium

READ THE UPDATED 2020 LIST HERE
Natural Resources Forum
5-9 October - ESG Week: Challenges and Opportunities in the Mining Sector

Exciting online event on 5-9 October at 12:30-13:30 and 14:30-15:30 by the Natural Resources Forum - with speakers from CMA founding members SRK Consulting, Minviro & Mkango Resources

"The panel discussions will look to identify the main opportunities and barriers companies are facing while aiming to operate in a more sustainable manner. These webinars will also focus on what responsible investors are looking for and how companies are changing in the current environment."

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Welcoming CMA's newest member: Mkango Resources

We're delighted to announce our newest member - Mkango Resources!

Mkango Resources Ltd. (TSX-V / AIM: MKA) is a Canadian dual TSX-V and AIM listed mineral exploration and development company focused on rare earth elements (REE) and associated minerals in the Republic of Malawi.

Mkango Subsidiary Maginito also holds a 25% equity interest in Hypromag, a University of Birmingham Spinout Focused on Rare Earth Magnet Recycling.
Critical Mineral News

The following September news articles from Mining Weekly, Mining.com, Reuters, Roskill, Proactive, Argus Media, 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.
Cobalt

- **Global (25.9.20)**
  - Artisanal mining linked to UN sustainable development goals – report

- **Global (21.9.20)**
  - The need for larger rechargeable batteries and more energy storage for 5G technology is expected to boost demand for cobalt over coming years and potentially pit the sector against electric vehicle makers

- **Asia**
  - **China: China Molybdenum (3.9.20)**
    - China Molybdenum steering Tenke Fungurume copper-cobalt mine in the DRC to profitability with focus on copper production

- **North America**
  - **Canada: First Cobalt (23.9.20)**
    - Canada’s First Cobalt, which owns North America’s only permitted cobalt refinery, is confident that cobalt will continue to play an essential role in batteries
Copper

• Asia
  ○ India (10.9.20)
    ▪ India to restrict copper and aluminum imports with an eye on China
  ○ Indonesia: Freeport McMoRan (10.9.20)
    ▪ Freeport McMoRan’s Grasberg mine in Indonesia will become an entirely underground operation in a little over a year – nearly doubling copper and gold output in the process.

• North America
  ○ USA: Oak Ridge National Laboratory (28.9.20)
    ▪ New copper composite to support wider EV adoption - Scientists at Oak Ridge National Laboratory created a composite that increases the electrical current capacity of copper wires

• Oceania
  ○ Australia: Rio Tinto (28.9.20)
    ▪ Rio Tinto ready for talks over Bougainville mine over allegations of human rights breaches
  ○ Australia: Glencore (23.9.20)
    ▪ Glencore will invest A$500 million to extend the life of its copper smelter and refinery in the Australian state of Queensland beyond 2022.
Lithium

• Global
  - Roskill White Paper: What does Tesla’s Battery Day mean for the industry and for battery materials? (25.9.20)

• Asia
  - China (18.9.20)
    - Chinese battery manufacturer Contemporary Amparex Technology (CATL) will pay C$8.5mn ($6.4mn) to acquire an 8pc equity stake in Canada-based lithium brine explorer Neo Lithium.

• Latin America
  - Chile: SQM/ Albemarle (10.9.20)
    - Lower prices a key factor in driving Chilean lithium supply down the cost curve in 2020
  - Chile: Albemarle (16.9.20)
    - Back to the drawing board for SQM after Chilean regulator rejects the company’s environmental plan for Atacama operation

• North America
  - USA: Tesla (23.9.20)
    - Tesla is planning to build its own cathode factory in North America, and when Elon Musk announced the company’s claim on a 10,000-acre lithium clay deposit in Nevada, it signaled that Tesla is officially getting into the mining business.
• Global (10.9.20)
  - Natural graphite remains on EU critical raw materials list, for now. China’s dominance in natural graphite is under threat

• Africa
  ○ Tanzania: Armadale Capital (10.9.20)
    - Armadale Capital submitted an environmental and social impact assessment to the National Environment Management Council of Tanzania. Armadale is developing its Mahenge graphite project 350km from Dar es Salaam

• Asia
  ○ India: Indian Oil Corporation (3.9.20)
    - Indian Oil Corporation planning to invest US$1.7M in a new petroleum needle coke unit - key in the production of synthetic graphite electrodes for electric arc furnaces in steel and lithium-ion battery anode material

• Europe
  ○ Norway: Elkem (3.9.20)
    - Elkem has selected site for a potential large-scale plant for battery materials production in Norway. The company is already constructing a pilot plant for battery graphite in Kristiansand, Norway.
Nickel

• Asia
  ○ Indonesia: PT Halmahera Persada Lygend/ GEM (3.9.20)
    ▪ Indonesian prospective nickel producer, PT Halmahera Persada Lygend has signed an 8-year supply deal with GEM, the refiner and recycler in China.

• Europe
  ○ Sweden: Sandvik (21.9.20)
    ▪ The additive manufacturing (AM) sector is consolidating as companies move to strengthen their metal powder offerings for the aerospace and medical industries. Sandvik's metal powder plant in Sweden was opened in October 2019 to produce titanium- and nickel-based superalloys,

• Oceania
  ○ New Caledonia: Vale (10.9.20)
    ▪ Australia’s New Century Resources has announced that it will not be tabling an offer for Vale’s New Caledonia plant and Goro nickel-cobalt mine
  ○ Australia: BHP (16.9.20)
    ▪ BHP Nickel West expects to complete construction of its nickel sulphate plant located at the Kwinana nickel refinery in H1 FY2021 with first production due in H2 FY2021
Tin

• Global
  ▪ Roskill's Tin Webinar highlights resurging consumer electronics demand in the wake of COVID-19 (24.9.20)

• Asia
  ○ Myanmar (30.9.20)
    ▪ Returning smelters reduce imports; Myanmar flooding to pressure China supply
    ▪ https://www.internationaltin.org/china-trade-august-2020/

• Europe
  ○ UK: Cornish Metals (9.9.20)
    ▪ Cornish Metals hits high-grade tin-copper at South Crofty - the highlight intercepts include 5.16% copper over 0.73 metres starting at 378 metres, with 3.43% Sn Eq

Tungsten

• Asia
  ○ China (16.9.20)
    ▪ China’s tungsten market weakens as suppliers destock
Manganese

- Africa
  - South Africa: Transalloys (3.9.20)
    - Transalloys declares force majeure at its manganese alloys plant
  - Ghana (24.9.20)
    - Government of Ghana takes steps to cap future manganese ore exports

Rare Earth Elements

- Asia
  - China: Ganzhou Rare Earth Mining (24.9.20)
    - Rare earths: Ganzhou RE expects mining resumptions

- Africa
  - Malawi: Mkango (28.8.20)
    - Mkango gets Minister’s praise for Songwe Hill project
      - https://www.miningweekly.com/article/mkango-gets-ministers-praise-for-songwe-hill-project-2020-08-28

- North America
  - Canada (28.8.20)
    - Saskatchewan Gov. announced C$31-million in funding for a rare earth processing facility, delivering on a key element of its 2030 Growth Plan.
  - Canada: Geomega Resources (4.9.20)
    - Geomega Resources’ patent application, ‘A system and a method for metallurgical extraction of rare earth elements (REE) and niobium’, approved
      - https://www.miningweekly.com/article/company-attains-approval-for-metallurgical-extraction-of-rare-earths-2020-08-20
The Critical Minerals Association is proud to announce that we will be an Associate Partner for MEI Conferences in 2021. The 2021 conferences are:

- **Comminution '21**
  - April 19-22, 2021, Cape Town, South Africa
- **Physical Separation '21**
  - June 7-9, 2021, Falmouth, UK
- **Integration, Optimisation & Design of Mineral Processing Circuits '21**
  - June 10-11, 2021, Falmouth, UK
- **Biomining '21**
  - June 21-22, 2021, Falmouth, UK
- **Sustainable Minerals '21**
  - June 23-24, 2021, Falmouth, UK
- **Flotation '21**
  - November 8-11, 2021, Cape Town, South Africa

These high profile meetings bring quality presentations to an international audience, culminating in final publication in the respected, peer-reviewed Minerals Engineering journal.
Thanks to our supporters!

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