CRITICAL MINERALS ASSOCIATION

JUNE 2020

CORNISH LITHIUM Q&A
MINEX - WESTERN & NORTHERN EUROPE JULY 1ST: SRK/CORNWALL RESOURCES/ JEFF TOWNSEND
HOW TO BUILD REE SUPPLY CHAINS - ARGUS
SECURING A GREEN RECOVERY FROM COVID-19
SO YOU WANT TO MAKE BATTERIES TOO? - PAYNE
ROSKILL: EV BATTERIES: TESLA, GLENCORE & COBALT
NEWS ARCHIVE
MINVIRO @EIT RAW MATERIALS VENTURE FORUM
Welcome to our June Critical Minerals Association monthly update. We've brought together some of June's Critical Minerals news stories and features with our Founding Members.

Read on for:

- Q&A with Cornish Lithium
- MINEX - Western & Northern Europe Forum - July 1st
- MINEX - SRK Consulting
- MINEX - Cornwall Resources
- Summary IPPR: Securing a Green Recovery from Covid-19
- How to build REE Supply Chains - Argus
- BBC Getting Busy...
- Roskill: EV Batteries: Tesla, Glencore & DRC cobalt
- For Policymakers: Developing Lithium-Ion Battery Supply Chain- Payne Institute
- UK Gov Funding competition - Catalysing Green Innovation
- News Archive
- Critical Minerals in Oz
- Minviro @EIT Raw Materials Venture Forum - Save the Date!

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
Q&A Cornish Lithium

Founding Member, Cornish Lithium is evaluating the possible extraction of lithium from geothermal waters and from hard-rock sources, such as granite, in Cornwall.

The Q&A with CL Founder Jeremy Wrathall will cover:

- Cornish Lithium's origins
- Potential of the UK's South West/ Cornwall
- CL's role in UK EV supply chains
- CL's use of historic/ contemporary data to assemble digital models

Find out more here.
MINEX - Western & Northern Europe Forum  
July 1st

Join CMA Founder Jeff Townsend, SRK Consulting's Mike Armitage, Cornwall Resource's Brett Grist on July 1st. Speakers include Ros Lund @ UK Department of International Trade, Patrick Nadoll @EIT RawMaterials, Steven Gifford @ Faraday, Christopher Ecclestone @Hallgarten

Jeff Townsend will be speaking at 10:30am BST on 'A new critical mineral strategy for the UK post Brexit'

The world is shifting from an oil based economy to one of electric vehicles and renewable energy. Critical minerals are now the essential building blocks to the economy. If the UK’s new global ambition is to be realised it must make use of its mineral expertise and begin to shape the industry. The UK's critical mineral industry is fractured and diverse. The CMA works to bring the industry together to provide a single voice for the industry and subsequently help the UK government shape its policy to ensure the UK is best placed to take advantage of the new green, global economy.

Agenda here.  
Sign up here.
At MINEX 2020, SRK Consulting will be at:

@10:30 - 11am BST - Networking - Meet SRK Consulting

'Mining Hotspots' 

@11am BST - moderated by Mike Armitage, presentation by Jon Russi on 'Exploration for Ti-V-P and Nickel mineralisation on the Bjerkreim intrusion, Norway'

'Building Safer and more efficient Mining'

@4pm BST - William Harding, Principal Consultant and Hydrogeologist - 'Maximising the value of exploration and infill characterisation work through the piggy-backing of hydrogeological and geotechnical field testing on resource drilling programmes'

@4:15pm BST - Chris Bray, Principal Consultant - 'Underground mine planning considerations for Battery Electric Equipment

Sign up here.
@11am, hear from Cornwall Resources' Brett Grist on:

'Redmoor, Cornwall: A Cornish Mine of Global Significance'

The Redmoor tin-tungsten-copper deposit in eastern Cornwall, provides an instructive example of successful exploration in the region, which represents one of the most heavily mined but under-explored parts of the world. Extensive historic mining has occurred at Redmoor from mediaeval times to 1943, on lodes for tin, copper, tungsten, lead, and silver.

Sign up here.
IPPR: Securing a Green Recovery From Covid-19

On June 11th, the IPPR hosted an insightful Webinar on ‘Securing a green recovery from Covid-19.’ The talk focused on the positives, and opportunities for integrating environmental elements into the UK's recovery plan. The speakers were:

- Ed Miliband MP
- Alexander Stafford MP
- Baroness Brown of Cambridge
- Angela Francis, WWF UK

Read key takeaways here.

"The Green Economy could be as significant as the Industrial Revolution"

- Alexander Stafford MP, Officer APPG Critical Minerals
In the following 3-part series by Caroline Messecar, Argus Media spoke with alloy and metal maker Less Common Metals, and rare earths producers MP Materials, and Lynas.

These excellent articles discuss building a sustainable supply chain for the rare earth magnets - vital to automotive, electronics and manufacturing sectors, and about their experience of operating in one of the world's most politically and economically brutal sectors.

Well worth a read!

**Part 1: Less Common Metals**
**Part 2: MP Materials**
**Part 3: Lynas**
The news is finally no longer solely dominated by Covid-19! Check out these BBC articles where media meets industry and explores rare earth recycling, coal's replacement and battery technology

*The treasure trove hidden in discarded computers* - 9 June - featuring CMA's Jeff Townsend

*Could the coronavirus crisis finally finish off coal?* - 9th June

*Podcast: How Batteries are powering ahead* - 16th June

*How Elon Musk aims to revolutionise battery technology* - 17th June
EV Batteries: Tesla signs offtake with Glencore for DRC cobalt

Tesla has made a deal with Glencore on DRC cobalt for EV Li-on batteries. This is significant, as Roskill notes:

"It is likely only a matter of time before direct sourcing methods become the norm"

"The mechanics behind establishing such relationships, with regards to #sustainability, will be a key space to watch."

See which other EV Li-on battery agreements have been made in Roskill's Jake Fraser's article.

Read the Roskill article here.
For Policymakers: Developing Lithium-Ion Battery Supply Chain- Payne Institute

In this essay, authors Alex Grant, Emily Hersh, Chris Berry map the current, global lithium-ion battery supply chain and propose a framework for lithium-ion battery industrial policy development. They analyze active and aspiring supply chain participation in different jurisdictions to understand:

- attributes of active supply chain participation which makes them successful
- attributes of aspiring supply chain participation which makes them unsuccessful
- preconditions for participation in a lithium-ion battery supply chain step

Great insight into what countries around the world are doing to build their lithium battery supply chains. They believe that:

- policymakers should incentivize electric vehicle adoption using tax rebates or other mechanisms early
- jurisdictions should implement policies that start either with lithium resource development (far upstream) or EV manufacturing (far downstream)
- the European approach, where different companies with different skillsets and histories specialize in different activities, is more likely to succeed

Read the essay here.
UK registered businesses can apply for a share of up to £5 million to develop supply chain capability for power electronics, machines and drives (PEMD).

Competition opened 16th June and closes on the 29th of July.

Driving the Electric Revolution, part of the Industrial Strategy Challenge Fund is investing up to £5 million in innovation projects that will support the UK’s continued push towards net zero carbon.

The online networking tool, Meeting Mojo, can be used to discuss project opportunities and facilitate introductions between organisations interested in the next funding competition for the Driving the Electric Revolution challenge. Register here.

Find out more here.
Critical Mineral News

The following June 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
- PGMs
- Manganese
- Rare Earth Elements
- EVs/ Batteries

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

• Africa
  ○ DRC
    - Experts say artisanal mining is here to stay and helps sustain global markets in the lead-up to the DRC Mining Week conference (9.6.20)
    - Covid 19 pandemic underscores need for action in artisanal & small scale mining (12.6.20)
    - DRC woes having limited impact on metals production (8.6.20)
        backToResults=true&selectedMarket=Metals

• Asia
  ○ China: Svolt (2.6.20)
    - Chinese battery maker Svolt revealed 2 battery technologies that forego cobalt - NMx, the new battery uses nickel-manganese cathode chemistry

• Europe
  ○ Russia (2.6.20)
    - Russia ready to increase domestic cobalt production – even under the Pacific Ocean
Global

- Copper Mark, a traceability system launched by the International Copper Association, expected more members this year after Rio Tinto joined in May
  - https://www.miningweekly.com/article/copper-sustainable-group-expects-more-members-following-rio-tintos-units-2020-06-17

Asia

- China (8.6.20)
  - China's Zijin Mining Group to pay $548-million to acquire majority stake in a mining firm with rights to two copper deposits in Tibet
    - https://m.miningweekly.com/article/zijin-takes-control-of-tibet-copper-miner-for-548-mln-2020-06-08

Latin America

- Chile (9.5.20)
  - Chile’s copper mines' Codelco & Escondida output rises despite Covid-19

- Chile: Coldeco (23.6.20)
  - Chile’s State-run Codelco to implement new sanitary measures at its El Teniente copper mine

North America

- USA: Sandfire Resources (8.6.20)
  - Sandfire Resources' Black Butte copper project is facing a lawsuit by groups over concerns relating to the mine’s potential impact on Smith river
    - https://m.miningweekly.com/article/sandfires-black-butte-copper-mine-challenged-2020-06-08

- USA: University of California Berkeley (14.6.20)
  - Iron-storing bacteria may be used to mine gold, copper
    - https://www.mining.com/iron-storing-bacteria-may-be-used-to-mine-gold-copper/

- USA: Pebble Partnership (17.6.20)
  - Pebble Partnership to distribute a percentage of revenue from the Pebble mine, in Alaska, to year-round residents of Bristol Bay
Graphite

- **Africa**
  - **Tanzania: Mahenge (4.6.20)**
    - Developments at two flake graphite projects in Mahenge

- **Asia**
  - **Mongolia (4.6.20)**
    - Construction begins on new ‘ultra-large’ flake graphite mine in Inner Mongolia with capacity of 100ktpy for graphite, lithium-ion battery anode material, and graphene products
  - **South Korea: POSCO/ Black Rock Mining (11.6.20)**
    - South Korean steelmaker POSCO signs MoU with Black Rock Mining for battery-grade flake graphite

- **Europe**
  - **Sweden: Talga Resources (18.6.20)**
    - Swedish Geological Survey (SGU) has demarcated battery anode and graphene additives company Talga Resources’ Vittangi graphite project as a mineral deposit of national interest
Lithium

• Africa
  ○ Namibia: AfriTin (16.6.20)
    ▪ Tin mining company AfriTin's internal review shows potential extraction of lithium as an additional revenue stream
    ▪ https://www.miningweekly.com/article/potential-lithium-extraction-afritin-2020-06-16

• Asia
  ○ China (17.6.20)
    ▪ Mixed prospects for China's lithium prices

• Europe
  ○ EU: Infinity Lithium (18.6.20)
    ▪ Infinity Lithium has executed agreements for funding and added services with EU-based innovation initiative EIT InnoEnergy
    ▪ https://www.miningweekly.com/article/infinity-lithium-stock-surges-on-eu-funding-deal-2020-06-18

• Latin America
  ○ Argentina: Millennial Lithium (3.6.20)
    ▪ Millennial Lithium gets license to expand Pastos Grandes project
    ▪ https://www.mining.com/millennial-lithium-obtains-final-license-to-expand-pastos-grandes-project/
  ○ Argentina: Latin Resources/ Integra Capital (17.6.20)
    ▪ Latin Resources signed joint venture agreement on Catamarca lithium pegmatite projects with Argentinian investment group Integra Capital
    ▪ https://www.miningweekly.com/article/latin-resources-joins-forces-with-integra-on-catamarca-lithium-projects-2020-06-17
• North America
  ○ USA: Piedmont (12.6.20)
    ▪ Lithium developer Piedmont completed US public offering of more than 2-million American Depository Shares, raising $13-million

• Oceania
  ○ Australia: Liontown (11.6.20)
    ▪ Liontown outlined new points of focus for an updated pre-feasibility study on the Kathleen Valley lithium project in Western Australia
  ○ Australia: Core Lithium (15.6.20)
    ▪ Core Lithium has reported a 52% increase in the mineral resource estimate for its Finnis lithium project
  ○ Australia: Altura/ Ningbo Shanshan (19.6.20)
    ▪ Altura Mining signs multi-year lithium supply contracts with its second-largest shareholder Ningbo Shanshan Co Ltd
Nickel

• Global
  - Nickel sulphate to be key growth area of nickel demand over the next decade as a crucial raw material in Li-ion batteries used in EVs (1.6.20)
  - Nickel market to evolve with China's nickel deficit, the EV success story, and Russia's slowly falling nickel surplus says Fitch Solutions (5.6.20)

• Asia
  - **China (18.6.20)**
    - Roskill's Nickel/ Chrome insights from 18th International Nickel & Chrome Products Summit, held by CNFEOL in Jiangsu, China
  - **Indonesia (11.6.20)**
    - Indonesian government quashes hopes of nickel ore export ban U-turn
  - **Indonesia: Vale/ Inalum (22.6.20)**
    - Vale to sell 20% stake in nickel producer PT Vale Indonesia to state-controlled PT Indonesia Asahan (Inalum)

• Europe
  - **Sweden: Sienna Resources (1.6.20)**
    - Sienna starts 3rd drill programme for PGMs, nickel, copper in Sweden

• Oceania
  - **Australia: BHP/ Norilsk Nickel (19.6.20)**
    - BHP to acquire the Norilsk's Honeymoon Well nickel project
Tin

• Asia
  ○ Kazakhstan: Tin One Mining JSC (4.6.20)
    ▪ Kazakh tin mine developer, Tin One Mining JSC, has announced a positive outcome for the feasibility study on its Syrymbet project
  ○ Indonesia: PT Timah (18.6.20)
    ▪ World’s largest refined tin producer in 2019, Indonesia’s PT Timah will target refined tin sales of 55kt in 2020, compared to 67.7kt in 2019

• Europe
  ○ UK: Strongbow Resources (23.6.20)
    ▪ Strongbow starts drilling in South Crofty tin project and plans to drill test the new United Downs copper-tin discovery in Cornwall, UK

• Oceania
  ○ Australia: Metals X (17.6.20)
    ▪ Metals X, part-owner of Renison Bell mine in Tasmania, announced results of new mining optimisation study and life-of-mine plan
    ▪ https://www.internationaltin.org/metals-x-renison-plan-upside/
Tungsten

• Asia
  ○ China (4.6.20)
    - Chinese tungsten industry saw lower production and profitability in this year's first quarter
  ○ China: Chongyi Zhangyuan (10.6.20)
    - Chinese tungsten producer Chongyi Zhangyuan acquired mining rights to Huangzhulong tungsten deposit in the southern province of Jiangxi
      backToResults=true&selectedMarket=Metals
  ○ Vietnam: Masan Resources/ H.C. Starck Tungsten (11.6.20)
    - Masan Resources completes acquisition of H.C. Starck Tungsten

• Europe
  ○ UK: Tungsten West (1.6.20)
    - Tungsten West plans Hemerdon mine restart for 2021
      backToResults=true&selectedMarket=Metals
PGMs

• Global
  - The Covid-19 pandemic is serving to highlight the vital role that platinum group metals (PGMs) play in the health sector (11.6.20)
  - Platinum nudged into sweeter spot by Covid-19, new focus on diesel vehicles, substitution of platinum for palladium and worsening supply constraints (4.6.20)
    - https://m.miningweekly.com/article/covid-diesel-substitution-nudging-platinum-into-sweeter-spot-2020-06-04

• Africa
  - South Africa: Altmet (3.6.20)
    - Covid-19 brought research and innovations into recycling PGMs from disused catalytic converts to a near standstill
  - South Africa: Pilanesberg Platinum Mine (11.6.20)
    - Pilanesberg Platinum Mine (PPM) announced it had reached an agreement with the Lesetlheng community, to start mining on the Wilgespruit farm, in Gauteng, within the next few months

• Europe
  - Greenland: Platina Resources/ Eastern Zinc (1.6.20)
    - Platina Resources is finalising the sale of its wholly-owned Skaergaard project, in Greenland, to Canadian company Eastern Zinc
Manganese

• Africa
  ○ South Africa: Tshipi/ Jupiter Mines (17.6.20)
    ▪ Tshipi manganese mine profitable throughout Covid lockdown according to Jupiter mines

• Europe
  ○ Czech Republic: Euro Manganese (28.5.20)
    ▪ Euro Manganese has keen interest in Europe’s progress to self-sufficient lithium-ion battery industry

• North America
  ○ USA: US Department of Energy (4.6.20)
    ▪ U.S. Department of Energy (DOE)’s Researchers eye manganese as key to safer, cheaper lithium-ion batteries
    ▪ https://www.newswise.com/doescience/?article_id=732707&returnurl=aHR0cHM6Ly93d3cubmV3c3dpc2UuY29tL2FydGljbGVzL2xpc3Q=

• Oceania
  ○ Australia: Bryah Resources (9.6.20)
    ▪ Bryah Resources drilling identifies new high-grade manganese zone at joint venture project
Rare Earth Elements

• Asia
  ○ China (10.6.20)
    ■ Firm demand, tight supply lift China’s Pr/Nd prices
  ○ South Korea: Australian Strategic Materials/ Zirconium Technology Corporation (4.6.20)
    ■ ASM’s Korean R&D partner awarded US$4.5 million to develop a low-emission, high-purity metal refining technology that can be applied to zirconium, titanium and rare earths for permanent magnet alloys
  ○ China: Grirem Advanced Materials(22.6.20)
    ■ Q&A: China’s Grirem sees new energy aiding rare earth prices
      backToResults=true&selectedMarket=Metals

• Africa
  ○ Angola: Pensana (12.6.20)
    ■ Pensana receives investment to expand Angolan mine
    ■ https://m.miningweekly.com/article/pensana-receives-investment-to-expand-angolan-mine-2020-06-12/rep_id:3861
  ○ Namibia: Namibia Critical Metals (22.6.20)
    ■ Namibia Critical Metals provides update on progress at Lofdal heavy rare earth project in northern Namibia - a joint venture with JOGMEC
    ■ https://resourceworld.com/namibia-critical-metals-advancing-lofdal-rare-earths-project/
Rare Earth Elements

• Europe
  ○ UK (1.6.20)
    ▪ 'Rare Earth Recycling for E-Machines' (RaRE), the initiative is being supported by a £1.9m grant from government agency Innovate UK
  ○ Slovenia
    ▪ A facile method for the simultaneous recovery of rare-earth elements and transition metals from Nd–Fe–B magnets
    ▪ https://pubs.rsc.org/en/content/articlelanding/2020/gc/c9gc03325d#!divAbstract

• North America
  ○ USA: USA Rare Earths (12.6.20)
    ▪ USA Rare Earths opens rare earths pilot processing plant in Colorado
    ▪ https://m.miningweekly.com/article/colorado-rare-earths-pilot-processing-plant-opened-2020-06-12/
  ○ USA: Urban Mining Company (UMC) (11.6.20)
    ▪ UMC raised $25 million in 2016, scaling processes for recovering REEs from electronic waste, & manufacturing new magnets from recycled metals

• Oceania
  ○ Australia: Arafura Resources/ USA Rare Earths (17.6.20)
    ▪ Rare earths miner Arafura Resources to test samples of concentrates as potential feedstock for USA Rare Earth refinery
EVs/ Batteries

- **Global EV Outlook 2020: IEA**
  - The Global EV Outlook is an annual publication that identifies and discusses recent developments in electric mobility across the globe

- **Korea: Posco (3.6.20)**
  - Posco shifting toward cathodes with higher nickel content to meet demand for greater energy density & longer driving ranges in EVs

- **China: Huayou Cobalt (4.6.20)**
  - Huayou to build integrated battery supply chain in Indonesia & China

- **Global (12.6.20)**
  - Demand for silicon carbide semiconductors rising as EV manufacturers aim to increase efficiency & reduce size of drivetrains/ motors

- **UK (16.6.20)**
  - In the UK, special license plates for zero-emission vehicles will be introduced this autumn. The UK Gov announced £12 million R&D grants

- **Belgium: Umicore (15.6.20)**
  - Umicore secures €125mn EIB loan amid growing support for EVs

- **China**
  - China’s Hainan province to ban ICE vehicle sales by 2030 (11.6.20)
  - China issues NEV credit scheme for 2021-23 (22.6.20)
Critical Minerals in Oz

The Australian Critical Minerals Facilitation Office is partnering with Geoscience Australia to develop a web-based Critical Minerals Portal. The Portal will be a tool for users to assess the economic and geological potential of selected critical minerals within Australia.

Australia & India sign critical minerals agreement (4.6.20) and Australia tightens foreign investment laws (9.6.20)

**Australian Battery Chains Report:**

*The governance of battery value chains: Security, Sustainability and Australian Policy Options*

*Perth USAsia Centre's 'Strategies for Securing Critical Material Value Chains'*
Save the Date
Minviro @EIT Raw Materials Venture Forum - 23-25 Sept

Save the date! Minviro has been chosen to speak at the EIT Raw Materials Venture Forum on 23-25th September

&

Congratulations to the Minviro team for receiving an EIT Raw Materials booster grant!

Minviro offers innovative solutions for the mining industry to reduce their environmental impact, access materials responsibly and reduce risks
Thanks to our supporters!

Roskill

MINVIRO

srk consulting

FASKEN

Technical Critical Minerals

DIAMOND FIELDS RESOURCES

Cornish Lithium

Cornwall Resources

E-tech Metals