



KOBOLD METALS TO BUILD COPPER COBALT MINE IN ZAMBIA BACKED BY BILL GATES & JEFF BEZOS

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4.3 MILLION BARRELS OF OIL PRODUCED IN THE DRC BY THE OIL INDUSTRY IN 8 MONTHS

The oil industry based in the Democratic Republic of the Congo produced 4.394 million barrels of oil in the first 8 months of 2022 compared to 4.852 million barrels in the same period in 2021, informs the data taken from the Digest of information October 2022 statistics from the Central Bank of Congo.

For the whole of 2021, the Democratic Republic of the Congo had produced 8.455 million barrels of oil.

Perenco is currently the only oil company operating in the Democratic Republic of Congo. In July 2022, the Congolese Government launched calls for tenders for the exploitation of the 27 oil blocks in the DRC.

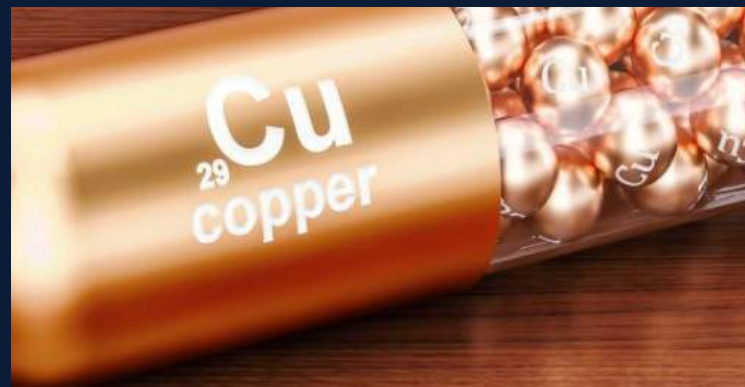


THE DRC MINING INDUSTRY PRODUCED 1.9 MILLION TONNES OF COPPER AT THE END OF OCTOBER 2022

Mining companies in the Democratic Republic of Congo produced a volume of 1 million 966,957 tonnes of copper during the first 10 months of this year 2022 against 1 million 443,061 tonnes in the same period in 2021, i.e. an increase in production more of 500 tonnes of copper, according to data provided by the Central Bank of Congo in its Summary of statistical information for the month of November 2022.

Recall that over the whole of 2021, the Democratic Republic of the Congo had produced a total of 1 million 797,836 tonnes of copper.

On the international market, a ton of copper is currently trading around 7,800 USD.





ZAMBIAN GOVT LOOKING FOR MOPANI COPPER MINES' PARTNER

Mines and Minerals Development Minister PAUL KABUSWE says Government is working to identify a strategic partner and financier for Mopani Copper Mines.

Mr. KABUSWE says Government will continue working to find capital for the mining firm even when it is also trying to source for its own money for operations.

And the Mines Minister says Konkola Copper Mines -KCM- has appointed a financial advisor who is working closely with Government and the provisional liquidator to identify and develop strategic options to secure the long term future of the mine.

Speaking during a press briefing in Lusaka today, Mr. KABUSWE said the expected outcome will lead to a guaranteed duration of the mining operations.

He said Government has placed priority on ensuring that the issues involving the two mines are resolved soon.

Mr. KABUSWE said Government will inform the nation when progress is made.



OVER 24,325 KG OF RAW GOLD PRODUCED IN THE DRC BY NOVEMBER 2022,

Between January 1 and November 30, 2022, the mining sector in the Democratic Republic of Congo produced more than 24,325 kg of raw gold.

These figures were provided by the **Central Bank of Congo (BCC)** in its compendium of statistical information published in November 2022.

Compared to these figures from the Central Bank of Congo, the production of raw gold recorded a slight decrease during the period under evaluation compared to last year.

At the end of November 2021, the Congolese mining sector had notably produced a production of raw gold of around 29,135 kg, i.e. nearly 5,000 kg more gold this year.

For the whole of 2021, the production of raw gold in the Democratic Republic of Congo (DRC) was around 31,903 kg, inform the sources of the Ministry of Mines quoted by the Central Bank of Congo.



Gécamines Produced Only 4,114 Tonnes of Copper in first 11 Months of 2022, (report)

The **General Company Of Quarries And Mines (GÉCAMINES)** produced only 4,114 tonnes of copper from January 1 to November 30, 2022, reports a report from the **Central Bank of Congo (BCC)**.

According to the compendium of statistical information from the BCC, mining companies in the Democratic Republic of Congo produced, in 11 months, a volume of 2,190,818 tons of copper.

If Gécamines produced only 4,114 tons during the period mentioned, private companies, for their part, produced 2,186,704 tons, notes the same document.

Copper production at the end of November last year (2021) was around 1,607,485 tonnes to end the year with a production volume of around 1,797,836 tonnes.

It should be noted that copper production in the DRC is increasing this year compared to last year.

Halfway, i.e. in the 1st half of the current year, copper production in the Democratic Republic of Congo (DRC) is estimated at 1,144,965.75 tonnes against 873,938.13 tonnes for the same period in 2021, an increase of 271,027.62 tons. This equates to an increase of 31.01%.

The mining sector is the lung of the economy of the Democratic Republic of Congo and contributes more than 20% to the gross domestic product (GDP).

EURONEXT SANCTIONING ON ZCCM-IH LIFTED

Effective 09th November 2022, the Paris Euronext Access Stock Exchange lifted the sanctioning placed on ZCCM-IH shares on 04th October 2022 in which it transferred the Company's listed shares to the Penalty bench/non-compliant issuers for breach of the requirements related to publication of financial statements by or before 30 June.

The lifting of the sanction follows the issuance of company provisional accounts for 2021 by ZCCM-IH on 28 October 2022 in compliance with the requirements of the Euronext Access rules.

In a statement released to the market and to ZCCM-IH, the Euronext Stock Market states that "due to the measures taken by the company to comply with the requirements of paragraph 3 of the Euronext Access rules, the shares of the company ZAMBIA CONSOL.COPPER MINES LTD will be transferred out of the trading group 32 ACCESS-SHARES-Penalty bench/Non-Compliant issuers on November 09, 2022".

Going forward, ZCCM-IH has put in place measures (which include early commencement of group audit) to issue financial statements within regulatory requirements.

CANADIAN TANTALEX WILL LAUNCH PRODUCTION OF TIN AND TANTALUM CONCENTRATE IN 2023 IN THE DRC

In Africa, the DRC and Namibia are the two main producers of tin. While Namibia has gradually increased its production in recent years thanks to the Uis mine, the DRC does not intend to give up ground and can count on new projects.

In the DRC, Tantalum Resources will start producing tin concentrate and tantalum concentrate as early as March 2023, at the Titan project. This announcement made on Monday, October 31 by the Canadian mining company follows the obtaining of two mining concessions in the Manono

region, in place of the exploration permits it previously held.

This transformation of licenses into mining concessions opens the way, we learn, to the "immediate" construction of a processing plant capable of producing 1,400 tonnes of tin concentrate and 220 tonnes of tantalum concentrate annually. The revenues generated by this project should amount to 30 million dollars each year, if we consider the current prices of these two products.

"This will be the most modern alluvial plant in operation in the DRC and we

believe this is probably only the first of many that we will be installing," commented Hadley Natus, President of Tantalum Resources.

As a reminder, Tantalum Resources is also active in lithium, still in the Manono region, where it is piloting a tailings project. Part of the income from its tantalum-tin plant will therefore be allocated to the development of this other project.

African tin production is dominated by Namibia, mainly thanks to AfriTin's Uis mine, and the DRC where the mining company Alphamin operates the Bisie mine.

KAGEM UNVEILS COLOSSAL 37KG CLUSTER OF EMERALDS

Lufwanyama-based Kagem Mining continued to put Zambia's gemstones at the forefront of world demand this week as it unveiled a giant 37kg cluster of emeralds.

The team's find – named the Kafubu Cluster – is expected to be the most expensive single emerald piece ever sold by the company when it comes up for auction this month, generating foreign exchange for the nation as proceeds are repatriated to Zambia.

Geologists at Kagem have "freed the emerald crystals from their host rock." The result is a large mass, filled with numerous individual and intertwined emerald crystals, displaying their perfect hexagonal structure.

Kagem Assistant Sort House Manager Jackson Mtonga, who has 28 years of experience of emerald discoveries at Kagem, paid testimony to the incredible nature of this find: "Rarity is one of the factors that makes emeralds hold such a special value in many cultures around the world, but the combination of this crystal cluster formation, the overall quality and the sheer enormity of the Kafubu Cluster is something I never thought possible."

The Kafubu Cluster displays all the desired characteristics that an emerald should possess: a vivid green colour overall that glows and shines. It offers different levels of perfect crystallisation, to allow the future cutter to create a collection of gems, from fine quality faceting material to cabochons and beads for everyday fun. It is possible that a customer may decide to preserve this in its natural form or cut the piece to yield tens of thousands of carats of commercial to fine quality

cut emeralds.

The Kafubu Cluster is being offered for sale by Kagem's parent company Gemfields at its upcoming emerald auction in Bangkok, with bidding closing on 17 November 2022. Given its size and quality, it is likely that the Kafubu Cluster will be the most expensive single emerald piece ever sold by Gemfields.

The Kafubu Cluster was discovered in the Chama pit of the Kagem emerald mine, based in Lufwanyama in Zambia. Kafubu is a river which forms the natural boundary of Kagem in the southern part of the Kagem licence, and it is from this that the Kafubu Cluster takes its name – honouring the unique landscape in which it was formed. Kagem is believed to be the world's single largest producing emerald mine; it is 75% owned by Gemfields, in a model partnership with the Zambian government.

Discovered in March 2020, the Kafubu Cluster is a colossal cluster of emeralds. Close inspection of the 37,555-gram (187,775 carat) cluster reveals that it contains very little matrix or other minerals, meaning the piece is almost entirely made up of emeralds, which, given its sheer size and formation, makes this a very rare find indeed.

The Kafubu Cluster is a testament to the high-quality gemstones that can be produced when Mother Nature allows time for the various crystals to form deep within the Earth's crust. Gemfields' geologists describe the formation process of emeralds as an incredibly rare coming together of uncommon elements in unusual circumstances.

A precise set of remarkable geological and geochemical conditions is required for the formation

of these brilliant green gems. Beryllium, essential for the crystallisation of beryl, is one of the most elusive elements in the Earth's crust (estimated to be about 2 parts per million) and must be carried up to the surface by pegmatites, which, in turn, must come into contact with chromium and vanadium-bearing (ultramafic) rocks in order to attain the desired colour. Not all pegmatites are beryllium-bearing and even fewer are emplaced within rocks that contain adequate chromium. These factors – coupled with even more specific temperature, pressure and fluid content requirements for its formation – makes emerald extremely rare and remarkably erratic in its distribution.

Zambian emeralds tend to have a higher iron content than emeralds from other origins, which means they are less fragile. High iron content also means fewer surface-reaching fractures and less need for treatments and enhancements. The careful process of recovering emeralds by hand at the Kagem emerald mine has enabled the safe recovery of some of the largest and most exceptional emeralds ever found, of which the Kafubu Cluster is an extraordinary example.

The naming of uncut emeralds is a tradition reserved only for the rarest and most remarkable gems. While no official record exists, it is thought that no more than two dozen gemstones have ever been given their own name, and it is extremely unusual to encounter a gemstone weighing more than 1,000 carats. Unlike Insofu (elephant), Inkalamu (lion) and Chipembele (rhino), the Kafubu Cluster is not one single crystal and is completely unique in character.

TDB, SYNDICATED BANKS JOIN HANDS WITH TRAFIGURA TO DEVELOP DRC MINES

The Eastern and Southern African Trade and Development Bank (TDB), acting as mandated lead arranger, has closed a syndicated \$600-million copper and cobalt development financing facility with commodity trading company Trafigura to advance responsible copper and cobalt mining in the Democratic Republic of Congo (DRC).

This follows after Trafigura concluded an initial \$600-million financing agreement with Chemaf Resources and Chemaf SA, a leading vertically integrated copper and cobalt producer in the DRC.

Trafigura subsequently invited other financial institutions to participate in a secondary syndicated transaction, with TDB as the lead arranger.

The facility will contribute substantial economic value and social impact for the country, with thousands of jobs created and sustained, and several service contracts for DRC-based companies.

In particular, the facility will enable the completion of the new mechanised Mutoshi mine and processing plant in

Kolwezi and the expansion of the Etoile mine and processing plant in Lubumbashi.

The Mutoshi mine is expected to start production by the fourth quarter of 2023 at a capacity of 16 000 t/y of cobalt hydroxide and 48 000 t/y of copper cathode, placing it among the largest cobalt producing mines globally.

TDB CEO Michael Awori says the bank and Trafigura have been working together to meet the energy needs of TDB member States and that the \$600-million facility should have an impactful effect in the DRC and lead to an increase in the supply of metals that are essential to the energy transition.

TDB has been active in the DRC in several sectors and opened a regional office in the country in 2019.

In turn, Trafigura nickel and cobalt trading head Socrates Economou comments that the company is delighted to welcome TDB and a syndicate of banks on board, and looks forward to welcoming more international and African banks to the syndicate in subsequent rounds of refinancing for these vital developments.

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KOBOLD METALS TO BUILD COPPER-COBALT MINE IN ZAMBIA BACKED BY BILL GATES & JEFF BEZOS

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DEAL ROOM

KoBold Metals, a start-up backed by a coalition of billionaires including Bill Gates and Jeff Bezos, has committed \$150 million to developing the Mingomba copper-cobalt mine in Zambia, said to be the world's highest-grade undeveloped large deposit of the orange metal.

The start-up, which has Gates' Breakthrough Energy Ventures and the world's top miner BHP (ASX:BHP) as shareholders, will use its artificial intelligence tools to process drilling data and optimize exploration for copper and cobalt at Mingomba.

KoBold is buying into what will be a joint venture with the existing owners of the project – Australian private equity firm EMR Capital and Zambia's state-owned mining investment vehicle ZCCM-IH (LON:ZCC).

Mingomba contains 247 million tonnes of ore with an average grade of 3.64% copper. This figure represents about six times higher grades than those found in Chile, the world's top copper producing nation, according to KoBold.

The mine development would be a major win for Zambia's President Hakainde Hichilema, who has set an ambitious copper production target of 3 million

tonnes a year by 2032, from around 850,000 tonnes the country produces currently.

"Our message to the world is that Zambia is here, and is open for business," Hichilema said on Wednesday at the US-Africa Leaders Summit in Washington D.C.

"This investment today is not about KoBold, it's not about ZCCM, it's not about Zambia, it's about all of these, and the rest of the world, as we grapple with climate change," he noted.

The investment deal, which will grant KoBold a majority stake in Mingomba, is set to close in the first quarter of 2023.

Copper is in high-demand due to its use in renewable energy and electric vehicles (Evs), but big, new deposits are rare.

It is estimated that the global copper industry needs to spend more than \$100 billion to build mines able to close what could be an annual supply deficit of 4.7 million tonnes by 2030.

NOT A MINER

KoBold, as its chief executive officer Kurt House has stated, does not intend to be a mine operator "ever."

The company's quest for battery metals began two years ago in Canada, after it acquired rights to an area of about 1,000

square km (386 sq. miles) in northern Quebec, just south of Glencore's Raglan nickel mine.

It now has about a dozen exploration properties in places including Zambia, Quebec, Saskatchewan, Ontario, and Western Australia, which have resulted from joint ventures like with BHP and with BlueJay Mining (LON:JAY) to explore for minerals in Greenland.

The common denominator of those assets is that they contain or are expected to be sources of battery metals.

KoBold aims to create a "Google Maps" of the Earth's crust, with a special focus on finding cobalt deposits. It collects and analyzes multiple streams of data — from old drilling results to satellite imagery — to better understand where new deposits might be found.

Algorithms applied to the data collected determine the geological patterns that indicate a potential deposit of cobalt, which occurs naturally alongside nickel and copper.

The technology can locate resources that may have eluded more traditionally minded geologists and can help miners decide where to acquire land and drill, the company said.

Caterpillar Successfully Demonstrates First Battery Electric Large Mining Truck And Invests In Sustainable Proving Ground

Caterpillar Inc. (NYSE: CAT) announced a successful demonstration of its first battery electric 793 large mining truck and a significant investment to transform its Arizona-based proving ground into a sustainable testing and validation hub of the future.

Caterpillar completed development of its first battery electric 793 prototype with support from key mining customers participating in Caterpillar's Early Learner program. Participants of the program with definitive electrification agreements include BHP, Freeport-McMoRan, Newmont Corporation, Rio Tinto and Teck Resources Limited.

"Our global team came together to develop this battery truck at an accelerated pace to help our customers meet their sustainability commitments," said Resource Industries Group President Denise Johnson. "This demonstration is a significant milestone, and we are excited for these trucks to get to work at customers' sites around the world in the near future."

The Early Learner program launched in 2021 and focuses on accelerating the development and validation of Caterpillar's battery electric trucks at participating customers' sites. This approach supports the individual commitments each Early Learner participant has made to reduce and eliminate greenhouse gas emissions from their operations. A primary objective of the program is for Caterpillar to collaborate more closely with its

customers as the industry undergoes transformational change through the energy transition.

Early Learner customers came together to witness a live demonstration of Caterpillar's prototype battery truck on a seven-kilometer (4.3-mile) course. During the event, Caterpillar monitored over 1,100 data channels, gathering 110,000 data points per second, to validate simulation and engineering modeling capabilities. Fully loaded to its rated capacity, the truck achieved a top speed of 60 km/h (37.3 mph). The loaded truck traveled one kilometer (0.62 mile) up a 10% grade at 12 km/h (7.5 mph). The truck also performed a one kilometer (0.62 mile) run on a 10% downhill grade, capturing the energy that would normally be lost to heat and regenerating that energy to the battery. Upon completing the entire run, the truck maintained enough battery energy to perform additional complete cycles.

Caterpillar's first battery electric 793 large mining truck demonstrated at the company's Tucson Proving Ground.

Caterpillar early learner customers attended the demonstration of the company's first battery electric 793 mining truck.

Mine Site of the Future

The prototype truck was built at Caterpillar's Tucson Proving Ground, located in Green Valley, Arizona. In support of the energy transition,

Caterpillar is investing to transform the proving ground into a working, sustainable "mine site of the future" by installing and utilizing a variety of renewable energy sources. The objective is to implement the same sustainable solutions mining companies will use at their own operations to learn firsthand what it takes to run an electrified mine site and effectively support customers through the changes.

"The transformation of the Tucson Proving Ground allows Caterpillar to demonstrate our energy transition commitments and serve as a stronger advisor to customers as we navigate the changes together. We know it will take an integrated, site-level solution for miners to achieve their carbon-reduction goals, and we're here to help as they redefine the way they mine for generations to come," emphasized Johnson.

As part of the site transformation, the company will install the latest advancements in sustainability technology, including green hydrogen production, natural gas and 100% hydrogen reciprocating engine power generation, fuel cell power generation and expanded energy storage systems. The site will also leverage a variety of renewable power sources, including wind, solar and hydrogen, capable of powering the facility and its products as they become electrified. The transformation of the facility will also serve as a learning platform for optimizing charging and energy management integration.

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WEIR PREPARING TO TRIAL PROPRIETARY ORE SORTING TECH BY THE END OF 2022

In the Weir Group Capital Markets Event presentation last week, Chris Carpenter revealed that the company was collaborating within its divisions on trials of ore sorting technology in an effort to move less rock at mine sites and optimise processing within the plant.

Carpenter, Vice President of Technology at Weir ESCO, said the company was combining Motion Metrics' particle size distribution (PSD) capability with ore characterisation technology to explore "in-pit sorting" opportunities for its clients.

Weir preparing to trial proprietary ore sorting tech by the end of 2022 2

"Looking further out, we believe ore characterisation and in-pit ore sorting has the potential to transform mining by moving less rock, using less energy and creating less waste," he said during his presentation. "Ore characterisation technology, which is underpinned by sophisticated sensing systems, captures critical data on properties and composition of rock, including rock hardness and mineral and moisture content.

"When coupled with Motion Metrics fragmentation analysis technology, it has the potential to be a game changer, giving miners a full picture of the size and characteristics of rocks."

Weir preparing to trial proprietary ore sorting tech by the end of 2022 3

Motion Metrics, a developer of artificial intelligence (AI) and 3D rugged machine vision technology, was acquired by Weir almost a year ago, with the business incorporated into the Weir ESCO division. Its smart, rugged cameras monitor and provide data on equipment performance, faults, payloads and rock fragmentation. This data is then analysed using embedded and cloud-based AI to provide real-time feedback to the mining operation.

These technologies were initially developed for ground engaging tool applications but have recently been extended into a suite of products and solutions that can be applied from drill and blast through to primary processing.

Carpenter said the added PSD capability from Motion Metrics was expanding the company's value presence across the mine to the processing plant, where Weir Minerals operates.

"Results from early adoption of Motion Metrics PSD solutions have been extremely encouraging," he said. "Feedback from customers is positive; data sharing and collaboration have increased.

"Given this early progress, we are really excited about the opportunity and expect fragmentation analysis to be a key growth driver for Motion Metrics in the years to come."

On the in-pit sorting potential, Carpenter said Weir ESCO had laboratory-validated equipment and field trials of its proprietary

solution that were due to start at customer sites before the end of the year tied to these developments.

"If successful, this technology opens the door to in-pit sorting, where miners complete the first stage of crushing in the pit and analyse the outputs to make real-time decisions about which rocks have sufficient mineral content to be moved," he said. "This is a step change from the current process, where energy is expended in transporting and processing all of the rocks, regardless of mineral content, and with significant waste generated from zero- and low-grade material."

He concluded: "Our vision is to move less rock, moving only the rocks with sufficient mineral content and using the data that is captured on size and hardness to optimise processing. The natural evolution thereafter will be towards real-time automation control of processing equipment, ensuring the right rocks are processed in the most efficient way, using less energy and creating less waste."

THE FUTURE: TRANSFORMATIVE TECHNOLOGY


Move less rock

Use less energy

Create less waste

In pit ore characterisation and sorting

Ore characterisation technology reduces volume of rock moved from the pit, optimises processing and reduces waste



PSD

- 1%+ Grade
- 0.75 - 1% Grade
- 0.5 - 0.75% Grade
- 0 - 0.5% Grade
- Waste

PSD + Ore characterisation

Challenge: Processing isn't optimised and energy is used moving low grade rock

Ore characterisation technology

Assess the properties of rock, including mineral composition

Motion Metrics conducting early field trials

In pit characterisation and sorting

Move less zero grade rock

Optimise processing blend feed

Automated control of processing

BARRICK DECLARES DIVIDEND OF \$0.15 PER SHARE FOR Q3, LEADING TO RECORD ANNUAL RETURNS IN 2022- PRESS RELEASE

Barrick Gold Corporation (NYSE:GOLD)(TSX:ABX) today announced the declaration of a dividend of \$0.15 per share for the third quarter of 2022. The dividend is consistent with the Company's Performance Dividend Policy announced at the start of the year. The Q3 2022 dividend will be paid on December 15, 2022 to shareholders of record at the close of business on November 30, 2022.

In addition to the enhanced dividends declared so far in 2022, Barrick has continued to repurchase shares under the share buyback program that was announced in February of this year. As of the end of Q3, Barrick has repurchased 18 million shares¹ under the program, or approximately 1% of Barrick's issued and outstanding shares at the time the program was announced, for net cash of \$322 million¹, including \$141 million paid during Q3 2022.

Consequently, through the end of Q3 2022, \$1.2 billion of cash has been used for

dividends and share buybacks during the year. With the payment of the dividend announced today to be made in Q4 2022, the return to shareholders in 2022 in the form of dividends and share buybacks is expected to exceed the record \$1.4 billion of distributions made in 2021.

"The combination of the performance dividend policy and share buyback program

that were introduced earlier this year has allowed us to provide significant benefits to our shareholders," says senior executive vice-president and chief financial officer Graham Shuttleworth. "Anchored by our solid operating performance and cash flows, we continue to maintain a robust balance sheet whilst simultaneously providing our shareholders with meaningful returns."



FQM TRIDENT SCOOPS THE EMERGENCY RESPONSE COMPETITION



FQM Trident Scoops the 6th Inter-mine Emergency Response Competition held at Lubambe Copper Mine on the 14th of November, 2022. The best of the best in the Mining Companies' emergency response rescue teams put their skills to the test to demonstrate that the Mining sector is in safe hands.

The Six-member team earned the overall title by winning two of the three surface events, which included High Angle Ropes manoeuvres, Vetter Bags Rescue, and Team Relay by scoring 240 points, followed by Lubambe Copper Mine who came with 212 points, third position went to Lumwana Mine with 209 points, whilst at the tail end was Kansanshi Mine with 150 points.

The winners of the 6th Inter-mine Emergency Response Competition reflect the industry's commitment to emergency response training.

It gives teams the opportunity to test their skills in the field through simulated emergency situations in preparation for real-life emergency events.

Scenarios are designed to be the closest teams will get to the real thing, while putting teams under the pressure of being judged by seasoned professional adjudicators and watched by their peers, colleagues, family, and the general public.

Lubambe Copper Mine General Manager Mr Daniel Chihili said the competition was a great display of mateship, learning, and professionalism, he also thanked the teams and everyone who supported the event.

KAMOA COPPER'S JOURNEY TO BEING ONE OF THE WORLD'S LOWEST GREENHOUSE GAS EMITTERS PER UNIT OF COPPER PRODUCED

The United Nations' annual COP27 climate change conference is already well underway in Egypt and the topic of developing and deploying low-carbon technologies, which are critical for the world to achieve its net-zero targets, is high on the agenda. Because the deployment of low-carbon technologies relies heavily on minerals, the mining sector is critical in the fight against climate change.

Africa, a continent rich in minerals, will play a leading role in the supply of key minerals such as copper, cobalt and platinum group metals. These minerals are critical for renewable energy, hydrogen, and battery energy storage technologies – all of which are required for the clean energy transition. However, this must be addressed against the backdrop of Africa's climate vulnerability and climate adaptation needs.

By doing its part in prioritising low-carbon investments and partnerships on the continent and building agency and capability, KamoA Copper plans to become the first net-zero operational carbon emitter among the world's top-tier copper producers.

We believe that mining companies can be the champions of global decarbonisation, not just in reducing their operational carbon emissions and producing lower carbon minerals and metals, but also in producing the critical raw materials needed to facilitate the global clean energy transition.

In May 2021, KamoA Copper pledged to

achieve net-zero Scope 1 and Scope 2 emissions at its KamoA Copper Mining Complex in the Democratic Republic of Congo – a commitment that supports the 2015 Paris Agreement on climate change, which aims to sharply cut carbon emissions to reduce the threat of climate change.

Scope 1 emissions are classified as direct greenhouse gas emissions from company-owned and controlled resources, for example from vehicles, equipment, and machinery, while Scope 2 emissions are indirect greenhouse gas emissions, usually from the generation of purchased energy. The Company's Scope 3 greenhouse emissions are currently calculated from its land and air-related travel and cover the travel across the operations as well as from our head offices.

KamoA is already making progress on achieving its net-zero goals.

The Company's mining operations and its Phase 1 and 2 concentrator plants are currently being powered by clean, renewable hydro-generated electricity from the refurbished Mwadingusha hydropower plant. Following the successful upgrade of Turbine #5 at the Inga II hydropower plant, which is currently under way, these two hydropower plants will provide KamoA Copper access to a combined estimated 256 MW of clean, renewable electricity for Phase 3, the smelter and future expansions, while also benefitting local communities.

Meanwhile, the Company has also recently taken delivery of several key pieces of state-of-the-art mining equipment powered by electric batteries or hydrogen fuel cells, supplied by Swedish original-equipment manufacturer Epiroc. This includes the Minetruck MT65 haulers, the world's highest payload underground truck in the field, as well as Scooptram ST18 loaders and Boomer 282 face drilling rigs.

In 2021, KamoA's Scope 1 emissions were 17,634 tCO₂e, while its Scope 2 emissions were zero, thanks to its use of 100% renewable electricity usage. The Company's Scope 3 emissions (currently calculated on the Company's land and air travel) totalled 2,091 tCO₂e.

"Once we achieve net-zero Scope 1 and 2 emissions, we will turn our focus on achieving net-zero total emissions at the KamoA Copper Mining Complex, which will include Scope 3 emissions and become an industry leader in the fight against climate change," says Ivanhoe Mines Founder & Co-Chairperson Robert Friedland.

A 2020 independent audit of KamoA's greenhouse gas intensity metrics performed by consulting engineering and project implementation firm Hatch, confirmed that the KamoA will be among the world's lowest greenhouse gas emitters per unit of copper produced.

Copper is an irreplaceable element required in the manufacture of advanced decarbonisation technology including electric vehicles, wind turbines, and solar panels.



ERG AND GÉCAMINES RESTART OPERATIONS AT BOSS MINING IN THE DRC

The phased restart of Boss Mining will commence with the processing of the historically mined Kiwana fines at its Luita concession, paving the way for further development

Eurasian Resources Group (ERG) and its joint-venture partner, La Générale des Carrières et des Mines (Gécamines), celebrated the kick-off of the restart of operations at Boss Mining with a ceremony held at its concession on 23 November 2022.

Boss Mining, located in the Lualaba and Haut-Katanga provinces of the Democratic Republic of the Congo (DRC), has a long history of copper and cobalt production from significant open-pit resources. Boss Mining was placed into care and maintenance early 2019 to allow for ERG and Gécamines to assess different investments paths and conduct further studies to improve Operations' economics and sustainability.

Benedikt Sobotka, Chief Executive Officer at ERG, said: "We are not only celebrating the return to production at this time, but also our long-standing partnership with Gécamines and its professional team, without whom this restart would not have been possible. ERG believes that collaboration is the key to building a better future."

Recognising that mining plays a vital role in the social and economic upliftment of its host communities, ERG aims to

develop and scale operations at Boss Mining in a sustainable way to allow for positive, longer-term social, environmental and economic outcomes.

"We are proud that this phase of the restart will create around 750 jobs for DRC citizens, primarily recruited from the surrounding communities, ensuring that direct members of our communities are the primary beneficiaries of Boss Mining's activities," added Sobotka.

Provincial Minister of Interior and Security of the Lualaba Province, Mr. Kapenda Wa Kapenda Déodat, commented: "As a government, we can only rejoice once again because the restarting of an operation means not only the creation of jobs for our population, but also that the tax revenue of the province will increase. And every time there is production, we know that there is a small amount that goes into the government's tax coffer that helps us develop other sectors of our society."

The phased restart will concentrate on processing historically mined fines over the next 16 months to produce copper cathodes and cobalt hydroxide. The operation will ramp up over the coming months to its full capacity producing, on average, 1,800t of copper cathode and 300t of cobalt hydroxide a month, by March 2023.

"The current restart is only the beginning of our journey, and will provide financing for further potential development,

exploration and other mining-related activities at Boss Mining. I am convinced that the revival of Boss Mining's activities will allow for the creation of important number of new jobs in the future and the union of countless families from the surrounding communities and the four corners of the country," said Chief Executive Officer of Gécamines, Mr. Ntambwe Ngoy Kabongo.

Boss Mining is also currently renewing its five-year ESIA commitments and formalising its Cahier de Charges. Restarting the production will allow Boss Mining to update its commitments and social contribution, in turn supporting the action programme of the DRC President, His Excellency Mr. Félix Antoine Tshisekedi Tshilombo, which aims to improve social conditions through housing, health, education and employment.

"It is important for us to transmit to you the message of encouragement of his Excellency the Governor of Haut Katanga, Mr. Jacques Kyabula Katwe, who sees this restarting of Boss Mining as a vital sign of life returning to the territory of Lubudi and the economic life of our province, Haut Katanga. ERG and Gécamines have our full support for the relaunch of this giant amongst the mines," assured Provincial Minister of Mines and Hydrocarbons, Mr. Georges Mawine Kaindu.

BEMETALS DEFINES PRIORITY COPPER TARGETS AND COMMENCES CORE DRILLING AT PANGENI COPPER PROJECT

BeMetals Corp. (TSXV: BMET, OTCQB: BMTLF, Frankfurt: IOI.F) is pleased to announce the completion of its 2022 aircore campaign, the definition of copper targets and commencement of core drilling at the Pangeni Copper Project (Pangeni" or the "Project" or the "Property"). The Project is located on the western extension of the prolific Central African Copperbelt in Zambia (the "Zambian Copperbelt").

HIGHLIGHTS OF THE COMPLETED AIRCORE PROGRAM AND CORE DRILLING TARGETS:

A total of 3,619 metres of shallow aircore drilling was completed in this phase of exploration to extend copper mineralization at existing copper prospects and to define new targets.

A total of six targets for core drill testing have been identified at areas E, G, K, P, Q, and D.

Core drilling has commenced to test the newly identified priority targets and is expected to be completed before year end, and their analytical results early in 2023.

The 2022 core drilling will follow-up on the 2022 aircore results and the encouraging copper intersections made in 2021 at the Q and D prospects including:

Q-Target: Drill Hole Q3-C1 intersected 4.14 metres grading 0.62% copper ("Cu")

Including: 1.30 metres grading 1.10% Cu

D-Prospect: Drill Hole D7-C1 intersected 5.00 metres grading 0.58% Cu

D-Prospect: Drill Hole D7-C2 intersected 3.37 metres grading 0.51% Cu

And also: intersected 6.00 metres grading 0.39% Cu

Note: Intertek Genalysis completed this previously reported analytical work of the intervals above with the core samples processed at their preparation facility in Kitwe, Zambia. All analytical procedures were conducted in an Intertek Genalysis laboratory in Australia. Reported widths are drilled core lengths as true widths are unknown at this time. Based upon current data it is estimated true widths range between 80 to 90% of the drilled intersections.

John Wilton, President and CEO of BeMetals stated, "We have now completed another phase of aircore drilling and are excited to have commenced core drill testing of six newly defined targets as part of our 2022 exploration program, funded pro-rata by both BeMetals and JOGMEC. The new targets were generated by the recent aircore program in combination with the historical data. Three of our targets are related to potential extensions of prospects where we previously intersected significant copper mineralization (Q, D, and SW Prospects) and the remaining three are newly generated or have been defined with data from the 2022 and prior aircore drilling information.

We currently interpret our D and SW Prospects to be

related to basement hosted copper mineralization similar in style to Barrick Gold's Lumwana copper mine in Zambia while the Q-Prospect, and potentially P and G targets, are in Katangan host units with similar geological settings to First Quantum Minerals' Sentinel mine some 130 kilometres to the northeast of Pangeni. The Company expects to test at least five of the targets with six to eight core drill holes."

PANGENI PROJECT 2022 EXPLORATION PROGRAM

From July to September 2022, 3,619 metres of shallow aircore drilling were completed at the Pangeni Project. The copper anomalies and targets resulting from this campaign are illustrated on Figure 1 below in context with the results of the prior aircore programs previously reported. The primary objective of the aircore drilling is to generate targets for concealed copper deposits under the thin Kalahari sand over to be subsequently tested by core drilling.

Figure 1 shows the locations of the priority new targets generated and defined potential extension of previously discovered copper prospects from the 2022 aircore results in combination with the previously reported phases of drilling. The aircore holes were spaced at various distances along the lines from 400-metre to 200-metre and 100-metre infill centres based upon field results and geological observations of the drill cuttings. The exploration program is jointly pro-rata funded by BeMetals and Japan Organization for Metals and Energy Security ("JOGMEC").

Q-PROSPECT and E TARGET

Figure 2 shows the combined 2022 and previously reported copper aircore results in the Q-Prospect and E8 Target areas. At the Q-Prospect, drill hole Q3-C1 completed in 2021 intersected 4.14 metres grading 0.62% Cu (from 92.36 metres drilled depth) of copper oxide mineralization hosted within siltstones interpreted to be part of the Katangan Supergroup near interpreted basement units. Many of the world class, sediment-hosted, copper deposits and mines of the Central African Copperbelt occur in this same geological setting when coupled with favourable structural feeders for the copper mineralization.

The copper anomaly in aircore hole Q3-03 of 1,545 parts per million ("ppm") copper, represents a target for core testing some 150 metres stepped back from drill hole Q3-C1 (Figure 2). Aircore hole Q3-12 with 502ppm copper, with copper oxide minerals identified in logging chips, also provides another potential follow-up target in this area dependent upon initial core information from the Q3-03 target.

Target E8 is situated to the northwest of the SW-Prospect as depicted on Figure 2. This relates to a 695ppm copper in bedrock anomaly in aircore hole E8-03 which is supported by a 903ppm copper in

the Kalahari sand just above the bedrock contact.

D-PROSPECT

Figure 3 shows the location of 2022 aircore hole D5-06, which returned 1,424ppm copper in bedrock approximately 600 metres to the southwest of an untested 556ppm copper anomaly in D2-13. The D5-06 target represents a potential extension of mineralization first discovered at the D-Prospect near the end of 2019. Based upon this and subsequent core drilling results, this area remains an important target area for further exploration.

Thus far, copper mineralization in this area extends for at least 1.2 kilometres along the interpreted strike of the mineralization including holes D7-C1, and D7-C2. These core holes returned meaningful and multiple copper intersections ranging from 6.0 to 2.12 metres in width and 0.58% Cu to 0.32% Cu in grade (0.3% Cu cut-off grade). To date, significant copper mineralization has been intersected in five of the six core drill holes completed at the D-Prospect. The copper grades in many of the previous drill holes are similar to those for operating large-scale copper mines in the Domes Region of the Zambian Copperbelt (Examples: First Quantum Minerals' Sentinel Mine Reserves: 876.8 million tonnes grading 0.46% Cu(1) and Barrick Gold's Lumwana Mine Reserves: 538.8 million tonnes grading 0.56% Cu(2)). (See Figure 4 for other regional project locations).

(1) First Quantum Minerals Ltd. website, Mineral Reserves - depleted for mining as at 31st December 2019, and based on a \$3.00/lb Cu price, Sentinel Mine, Trident Project, North West Province, Zambia, NI 43-101 Technical Report, March 2020.

(2) Barrick Gold Corporation website, Mineral Reserves - December 31, 2013, Technical Report on the Lumwana Mine, North-Western Province, Republic of Zambia, Barrick Gold Corporation, Report for NI 43-101, March 27, 2014.

P, G and K TARGETS

Figure 1 shows the location of newly defined, stand-alone copper targets on the P, G and K aircore lines. These targets for potential core drilling are focused on aircore holes P1-07B, P1-11A, G2-06 and K2-03B with copper anomalies of 699, 473, 1,447 and 495ppm respectively. The targets at the southern end of the P line specifically are currently interpreted as being potentially hosted Katangan units. Decisions on which of these targets to be tested, and their priority for the 2022 core drilling program will be made as the program advances based upon the geological information.

Tables 1 and 2 below provide details of the aircore anomalies discussed with hole ID, azimuth, dip, end of hole depth and collar coordinates. The quality assurance and quality control section below describes details of the sampling and analytical procedures.

ANGOLAN MINISTRY OF TRANSPORT AND THE CONSORTIUM TRAFIGURA, VECTURIS AND MOTA-ENGIL SIGN A CONCESSION CONTRACT FOR THE MANAGEMENT OF THE LOBITO CORRIDOR

A consortium comprising Trafigura Pte Ltd ("Trafigura"), a global commodity market leader, Mota-Engil Engenharia e Construcao Africa SA ("Mota-Engil Africa"), an international construction and infrastructure management company and Vecturis SA, an independent rail operator, have signed a 30-year agreement for the concession of rail services and logistical support for the Lobito Corridor, a key axis connecting rail access from the Democratic Republic of Congo (DRC) to Lobito port in Angola and international markets. The consortium is 49.5% each owned by Trafigura and Mota-

Engil, with the remaining 1% held by Vecturis.

The Consortium will be responsible for the operation, management, and maintenance of the railway infrastructure for the transport of goods, minerals, liquids and gases for the corridor which extends over approximately 1,290 km, connecting the port of Lobito in Luau, in eastern Angola, near the DRC border. As part of the concession agreement, the consortium has committed to invest significant capital in rail infrastructure improvements to improve the capacity and safety of the Lobito Corridor, as well as to invest in important rolling stock for freight

operations. With an initial term of 30 years, the agreement provides for a total investment of \$450 million, plus operating, and additional investment. The overall figure includes \$100 million for the initial concession bonus; \$170 million for infrastructure.

The consortium will take responsibility for the concession when the conditions precedent of the agreement are met in the coming months. The concession is expected to create approximately 1,600 jobs while providing fundamental infrastructure for the future of Angola and for the future development of international trade in Africa.



KOLWEZI-LUMWANA ROAD AND THE LUSAKA-NDOLA DUAL CARRIAGEWAY CONCESSION AGREEMENTS TO BE SIGNED

The Zambian Government will in the next three weeks sign a concession agreement under a Public-Private Partnership financing model for the construction of a dual carriageway from Ndola to Lusaka.

Finance and National Planning Minister SITUMBEKO MUSOKOTWANE has announced during the 2023 Post Budget Symposium in Kitwe on the Copperbelt.

Dr. MUSOKOTWANE has further disclosed that government will proceed to sign two more concession agreements to work on the Ndola – Mufullira Road and a build a road from Kolwezi in the Democratic Republic of Congo -DRC- to Lumwana to

enhance trade between the two countries.

He said this is because government appreciates the importance of an improved road network to facilitate development through easy movement of goods and services.

Meanwhile, the Finance Minister said government is working towards consolidating economic stabilisation to allow the private sector thrive without worrying on policy changes.

He said the proposed tax incentives on the mines are aimed at aligning with competing countries in line with increasing copper production as well as

attracting more investors in the sector.

Dr. MUSOKOTWANE further indicated that government is also concerned with high unemployment levels in the country which he said has to be addressed with the help of the private sector.

And Bank of Zambia Governor DENNY KALYALYA said the proposal to maintain international reserves to above three months of import cover should not be something to worry about.

Earlier, Kitwe District Chamber of Commerce, Trade and Industry President EMMANUEL MBAMBIKO commended government for managing to stabilise key economic drivers within a year.

DRC GOVT. ENDORSES NEW LICENCE APPLICATIONS BY CONGO RESSOURCES SAU

AJN Resources Inc. (CSE: AJN) (FSE: 5AT) is pleased to announce that further to the Company's news releases of February 8th and April 19th, 2022, and pursuant to the Memorandum of Understanding (the "MoU") between the Company and the Government of the Democratic Republic of the Congo ("DRC" or the "State") announced on February 8th, 2022, which was endorsed by the State as announced on April 19th, 2022, the State has now authorized the Cadastre Minier RDC (DRC Mining Register) ("CAMI") to accept 22 new applications for exploration permits, which cover 6,278 Mining Squares or 5,398km² in the eastern DRC, from the newly created, State wholly-owned subsidiary, Congo Ressources SAU. Twenty-one of these applications are prospective for gold in the Kilo-Moto Belt and one permit, which is prospective for lithium, is located in the Manono area. See figures 1 and 2 below. Application will be made according to procedures prescribed by the Mining Code and Regulations of the Democratic Republic of Congo ("DRC").

The portfolio is two-fold in that the first part consists of several highly prospective gold licences located within the Wanga, Rambi, Gada and Nizi project areas and a further 10 prospective exploration licences are in the Kilo-Moto Belt. The second part is aimed at satisfying the State's objective of creating a supply chain of minerals to support the electric vehicle sector. The State has therefore agreed to support the granting of a lithium licence, which covers part of the Manono pegmatite, to Congo Ressources SAU. Additional coordination measures will be undertaken by the State in the coming weeks to ensure the smooth granting of the lithium licence.

Congo Ressources SAU, which has now been fully incorporated, has commenced with the application processes. All licences will have new numbers and will be granted as research permits.

It is the intention of the parties that once all licences are granted the proposed transaction will close and (1) Congo Ressources SAU will hold a 100% direct interest in the secured licences and become a wholly owned subsidiary of AJN, and (2) AJN will issue, to the State, that number of common shares in the

capital of AJN so that after closing the State will hold sixty percent (60%) of the fully-diluted issued and outstanding common shares of AJN, whereby the calculation of the sixty percent (60%) is to be made immediately after the closing, not immediately prior to the closing as reported in the Company's February 8, 2022 news release. The issuance of common shares to the State will occur following completion of one or more financings to be conducted in connection with the proposed transaction. The quantum of the capital raise will be assessed during the due diligence period. Shares issued to the State pursuant to the proposed transaction may be subject to regulatory escrow requirements as imposed by Canadian regulatory authorities. After the closing of the proposed transaction the State will have a first right of refusal on any fund raisings carried out by AJN in the future.

On closing of the proposed transaction, the Board of Directors of AJN will be comprised of five directors, two of whom will be directors appointed by the State (one of whom will be Deputy Chairman) and three will be current directors of AJN (one of whom will be Chairman). Closing of the transaction will be subject to legal and technical due diligence, and certain conditions precedent including AJN having obtained all necessary governmental and regulatory approvals and confirmation from all relevant government agencies that all outstanding legal charges, royalties, and taxes have been paid.

A 10% finder's fee is payable at the close of the transaction and the acquisition of the projects, which will be settled by the issuance of AJN common shares to Klaus Eckhof, CEO and President of AJN or his permitted nominees.

Mr. Klaus Eckhof, CEO and President of AJN, commented, "We are extremely excited about the opportunity of working together with the State in developing this highly prospective portfolio of gold exploration assets and the lithium asset at Manono. The State recognises that although the projects have been under government control since the end of colonialism, very little systematic exploration has been carried out on the majority of these projects. We believe that with our management's track record in the DRC, and the strong support that we have

from the State, we will be able to deliver on the portfolio of gold projects and the lithium asset at Manono, which underpin the making of a significant new mineral resource player in DRC. We strongly believe that all parties will benefit from a transaction of this type in which the State will have majority ownership of a public company and will benefit in full transparency from its successes. We are confident that our exploration success will profit not only the State but also will be a key driver in alleviating poverty and social conditions in the areas through improvements of the infrastructure and local job creation."

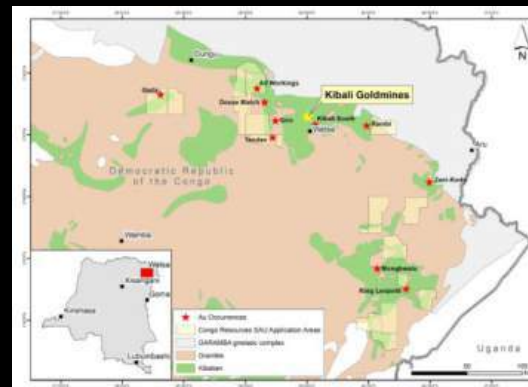


Figure 1: Portfolio of Gold Licences included in the Partnership Agreement with the Democratic Republic of Congo. Note: All application areas are new applications and licence numbers will be awarded once granted.

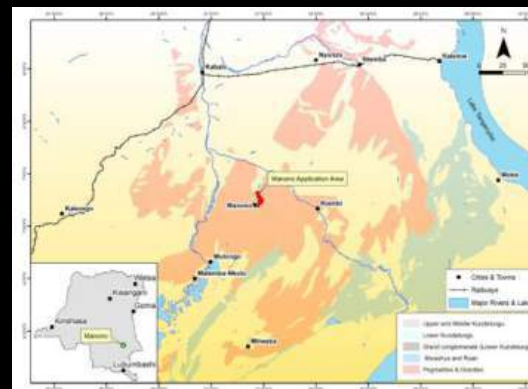


Figure 2: District Geology and Lithium Licence Application within the Manono Project Area. Note the licence is a new application and a new number will be awarded once granted.

AVZ LAUNCHES LEGAL ACTION TO AFFIRM INTERESTS IN THE MANONO PROJECT

AVZ Minerals Limited through its wholly owned subsidiary AVZ International Pty Ltd (AVZI), on 1 December 2022 filed the first of two International Chamber of Commerce (ICC) arbitrations against Dathomir Mining Resources SARL (Dathomir) (First Dathomir Arbitration) and expects to file the second arbitration shortly (Second Dathomir Arbitration) (together the Dathomir Arbitrations).

The purpose of the Dathomir Arbitrations is to seek a declaration affirming AVZI's legal title to the 15% stake in the Manono Project acquired under the validly executed and completed sale and purchase agreements with Dathomir, there being two such agreements pursuant to which AVZI acquired 10% and 5% stakes, respectively, in Dathcom Mining SA (Dathcom).

Background to the Dathomir Arbitrations

In 2019 and 2020, AVZ, AVZI and Dathomir entered into two separate binding contracts for Dathomir's sale and AVZI's purchase of 15% of the shares in Dathcom, the company through which the Manono Lithium and Tin Project (Manono Project) is held (Dathomir SPAs).

By letter dated 14 May 2021, Dathomir claimed to terminate the Dathomir SPAs. The letter did not cite any valid ground, nor did it have the effect of terminating either of the Dathomir SPAs.

AVZI duly completed each of the Dathomir SPAs in August 2021, including

payment within the required time period, and thereby legally acquired a further 15% interest in Dathcom.

Dathomir has since maintained its claims to have terminated the Dathomir SPAs and denied the validity of AVZI's acquisitions under them. Manifestations of this include the DRC Tribunal Decisions referred to in the Company's announcements of 4 May 2022, 9 September 2022 and 20 October 2022. However, as both of the Dathomir SPAs contain, and are subject to arbitration agreements, only a properly constituted arbitral tribunal has jurisdiction to rule on Dathomir's claims. Prior to 1 December 2022, Dathomir had not commenced any such arbitration proceedings.

AVZ and AVZI have brought the First Dathomir Arbitration, and will bring the Second Dathomir Arbitration, to affirm AVZI's acquisition in August 2021 of the aforesaid 15% interest in Dathcom, to put an end, once and for all, to Dathomir's claims and to recover losses sustained from them.

Background to Cominière's 25% interest in the Manono Project

La Congolaise d'Exploitation Minière (Cominière) holds 25% of the share capital of Dathcom. The shareholders of Dathcom (namely, Cominière and AVZI) are parties to a joint venture agreement dated 27 January 2017 and its subsequent amendments and, as such, benefit from a right of first refusal on proposed transfers

of shares in Dathcom to third parties.

Under the laws of the Democratic Republic of Congo (DRC), a transfer of shares made in violation of a right of first refusal of this kind is null and void.

Cominière has purported to transfer shares in Dathcom to a third party (Jin Cheng Mining Company Limited a subsidiary of Zijin Mining Group Company Limited) in breach of AVZI's right of first refusal, which is the subject of the Jin Cheng ICC Arbitration Proceedings previously addressed in the Company's announcements of 11 May 2022, 17 June 2022, 9 September 2022 and 20 October 2022.

The Company will seek to annul any purported third party transfer by Cominière which contravene AVZI's right of first refusal.

AVZ's 75% interest in the Manono Project

AVZ confirms that it retains legal title to a 75% interest in the Manono Project and pre-emptive rights over 15% out of Cominière's 25% interest in the Project (noting that Cominière must cede 10% out of its 25% interest in the Project to the Government of the DRC as a condition of the award of the mining licence under the Dathcom Joint Venture Agreement).

The Company considers it has strong prospects of success in the Dathomir Arbitrations and Jin Cheng ICC Arbitration Proceedings and will vigorously pursue its claims to vindication.

CONGOLESE TOWN TO 'DISAPPEAR' TO GIVE WAY FOR COBALT MINES

Houses in the Gecamine district of the DRC on the edge of the abyss of the Chinese mining company COMMUS, downtown Kolwezi. Once a thriving neighborhood of neat houses and tree-shaded avenues, this district of the city of Kolwezi is now nearly destroyed.

"We are finished," said Alphonse Fwamba Mutombo, standing on a rubble overlooking an open-cast cobalt mine in Kolwezi, south eastern DR Congo.

His had once been a thriving neighborhood of neat houses and tree-shaded avenues.

Today, the wreckage of demolished houses, separated from the sprawling pit by a concrete barrier, surrounds his cherished home.

The Chinese-owned mine wants to expand, and many of Mutombo's fellow residents have taken buy-outs. Mr Mutombo does not want to leave. The 70-year-old is clinging on, hoping to secure a better deal.

"We live on top of minerals," Mr. Mutombo said.

But he had no delusions about what ultimately awaited his neighborhood: "It will disappear," he said.

Kolwezi, home to more than half a million people, sits atop some of the world's richest mineral reserves — a treasure trove of copper, cobalt and gold that provide the motor for DR Congo's economy.

INDUSTRIAL MINES

The city is already ringed by a moat of industrial mines, a sandy moonscape of enormous open pits, access roads and pylons.

But mining is increasingly edging inside the city itself, uprooting thousands of people who often complain of unfair treatment.

Mining permits cover most of Kolwezi's surface area, according to the Democratic Republic of Congo's mining cadaster.

Kolwezi was founded in 1937 by the then

Belgian Congo's mining monopoly.

Seven years after independence in 1960, the monopoly was nationalized, eventually becoming a giant called the Generale des Carrieres et des Mines, or Gecamines.

As mining in Kolwezi flourished in the subsequent years, the parastatal built neighborhoods such as Mutombo's Quartier Gecamines Kolwezi for its workers.

Gecamines' production collapsed in the 1990s after decades of mismanagement, but many of the neighborhoods' remaining residents still have ties to the firm.

"Everyone's gone, we're the ones who are left," said Martin Tino Kolpy Kapenda, a retired Gecamines employee, standing on the plot of what was once his neighbor's house.

MORE MONEY

Kapenda, 60, also wants more money from Compagnie Minière de Musonoi (COMMUS), the Chinese firm that owns the adjacent copper-cobalt mine.

Some of the remaining residents fear the money on offer will not allow them to find similar-quality housing elsewhere.

Their district has reliable electricity and running water, a rarity in the DRC.

About 2,000 people out of 38,000 have left the neighborhood within the last six months, according to city figures seen by the media.

An official in the city administration, who spoke on condition of anonymity, said the entire district may disappear within three years.

COMMUS is offering residents \$7,500 to leave, the official said, although many of the remaining residents are asking for at least three times that amount.

A semi-abandoned housing estate several kilometers outside of Kolwezi has served as a warning to some about enticements offered

to leave neighborhoods' opened up for mining.

Luzanga Muteba, 78, accepted an offer in 2017 from Chinese firm Congo Dongfang International Mining (CDM) to leave his native Kasulo district.

NEIGHBOURHOOD RAZED

A portion of that neighbourhood was razed to make way for a cobalt mine. In surrounding houses, many residents have taken to digging in their gardens for minerals themselves.

CDM built 21 houses for displaced Kasulo residents, but they say the firm never finished the work.

Muteba, wearing an oversized pinstriped shirt, said he once had a thriving bakery in Kasulo, but cannot replicate the business in his new location, which is relatively isolated.

There is also no running water or electricity, although pylons carrying power to nearby mines stretch over the housing estate. Only a few of the houses are now inhabited.

FINISH THE WORK

"They have to come and finish the work," said Muteba, pointing to fetid green puddles in a ravine, where he and other residents draw their water.

"They take our minerals and develop their country," he added, noting that he was losing hope after petitioning the government several times, without success.

"I wait only for death," Muteba said.

Shanghai-based Zhejiang Huayou Cobalt, which owns majority stakes in both COMMUS and CDM, did not respond to questions.

A senior official in the local government, who asked for anonymity, said he thought it was "inevitable" that Kolwezi would one day disappear under expanding mines.

"This is the mess we live in," said the official.

CSOs in DRC Demands the Rebalancing of Mining Contracts for Tenke Fungurume, Sicomine and Sachim

At the end of the mines and hydrocarbons week held in Kinshasa from Tuesday November 29 to Friday December 02, 2022, some forty civil society organizations, grouped together within a synergy of action for the protection, monitoring and citizen control of the natural resources of the Democratic Republic of Congo, made recommendations to take advantage of the various opportunities and meet the challenges facing the DRC.

After the Congolese government recovers assets from Ventora, civil society turns the page on Gertler and focuses on other cases. As a result, it calls for the lifting of sanctions against Gertler in order to promote the exploitation of the recovered assets.

"Dan Gertler returned these assets thanks to the efforts of Civil Society and American sanctions, the man having obviously understood that it was necessary to change the way of doing things, it is a page that is turned. There are now d other cases on which we will concentrate, always in the interest of the Congolese people and the Democratic Republic of Congo. The

sanctions having fulfilled their objective, they could prove to be counter-productive, from where we recommend their lifting in order to promote the exploitation of the recovered assets", recommends the civil society.

Welcoming the government's approach, which marks a decisive turning point in the fight for transparency and accountability of those who govern in the DRC, civil society recommends the publication of the annexes of the said memorandum of understanding.

"We recommend that the government continue this momentum and publish the annexes in order to consolidate the relationship of trust," read their statement.

In addition, in the string of recommendations, civil society recommends that the government rebalance all contracts in natural resources for the benefit of the DRC.

"Support the government's desire to rebalance all contracts in natural resources (mainly TENKE FUNGURUME MINING, SICOMINE, SACHIM) with a view to

benefiting the portfolio companies concerned and the republic with their ignored rights", reads among the recommendations.

In the same vein, civil society participating in the week of mines and hydrocarbons recommends sanctions against all sellers of natural resources in the DRC.

"Identify and sanction Congolese political and military figures who sell off or facilitate the sale of mining, gas, oil and forestry assets, as are the officials of COMINIÈRE currently in court," insists civil society.

Civil society is committed to the drive to know, understand, and appropriate the country's natural resources, to promote good governance.

She promises the launch in the very next day, of a vast citizen dynamic bringing together formal organizations of civil society, citizen movements, women's organizations, student organizations as well as public figures to train, inform and raise awareness on the management of natural resources in the DRC and thus democratize the debate on this specific issue.



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ZIMBABWE TO ENACT A LAW THAT FORBIDS THE EXPORT OF MINERAL CONCENTRATES



In a few days to come, Zimbabwe will gazette a law that will ban exports of raw minerals and concentrates to enable the country to fully benefit from its mineral wealth without having to export more jobs.

Speaking at the official commissioning of the US\$67 million new Central Shaft Expansion Project at Blanket Mine in Gwanda town, President Mnangagwa said the move to ban exports of raw lithium comes at a time when Chinese Nationals were getting the commodity at a song in Mberengwa depriving the people of fair value.

President Mnangagwa said if the country was to achieve its vision of becoming an upper middle-income economy by 2030, greater effort was supposed to be made to ensure that the export of raw minerals and concentrates is been banned.

"In line with Vision 2030, greater efforts should be made towards value addition and

beneficiation of minerals. We cannot as a country continue to export primary products including concentrates and ores. Recently in Mberengwa, we discovered that there was a mountain with nothing but lithium and our people were collecting this lithium ore and being paid something like US\$100 when that same quantity will fetch more than a thousand to US\$2000 and then exporting it unprocessed, so Zimbabwe loses. Within a few days I'm gazetting a law prohibiting what has been happening in Mberengwa," said president Mnangagwa.

Last year the Cabinet approved a ban on all exports of unprocessed chrome ore in order to protect the ferrochrome industry, which it says is integral in the country's attainment of an envisioned US\$12 billion industry by 2023.

A cumulative twenty-two chrome smelters are now operating and are shared among nine foreign and local companies.

INDONESIA PROPOSES TO CANADA SETTING UP OPEC-LIKE GROUP FOR NICKEL

Indonesia has proposed in talks with Canada establishing an OPEC-like organisation for nickel producing countries, the Southeast Asian nation's investment ministry said in a statement on Wednesday.

Indonesia and Canada are the first and sixth biggest nickel producers in the world, respectively.

The proposal was made when Indonesian Investment Minister Bahlil Lahadalia met Canada's International Trade Minister Mary Ng on Tuesday on the sideline of the G20 summit in Bali.

The minister raised the prospect of trying to "coordinate and integrate nickel policy" like the Organization of the Petroleum Exporting Countries (OPEC), the group of 13 oil-producing nations that often determine global output, the statement said.

Bahlil previously raised the idea of such a grouping in an interview with the Financial Times last month, though at the time he said Indonesia was still formulating a structure and had yet to approach other nickel producers.

In Wednesday's statement, Bahlil said a group of nickel producing countries could make sure that they get an optimal return from the electric vehicle (EV) industry, accusing countries where EVs are made of conducting protectionist trade policies.

"Through this collaboration, we hope that all nickel producing countries can benefit an evenly distributed value addition," Bahlil said.

Ng said, in the statement, the two countries could explore such collaboration and that both shared a vision on optimising natural resources in a

sustainable way.

Indonesia is keen to utilise its nickel reserves to attract investment into metal processing and further down in the supply chain, including producing EV batteries and manufacturing EVs in the country.

Since 2020, Jakarta has banned exports of unprocessed nickel ore to ensure sufficient supplies for investors, which include major metal companies from China, as well as South Korean companies.

Indonesia's move to bar nickel ore export has sparked a trade dispute with the European Union. The World Trade Organization (WTO) is due to rule on the dispute in the current quarter, but Indonesian President Joko Widodo has said Jakarta has likely lost.



SOLAR HIGHMAST LIGHTING | BEKA SCHRÉDER

BEKA Schröder is proud to have supplied the LED solar highmast lighting solution for a village in the North West Province, South Africa.

BEKA Schröder's South-African designed and manufactured SOLARFLOOD highmast lighting solution has been installed in a village which has not had any streetlighting previously. The community had approached the Madibeng Local Municipality, requesting for a lighting solution to try combat the high crime rate in the area. Due to the village being off the electrical grid, solar lighting was the obvious solution.

This new lighting installation has been welcomed by the community, making them feel safer when having to walk in the dark when going to, and returning, from work. This installation is one of many to come for this community.

The SOLARFLOOD has been designed and manufactured in South Africa and is a solar lighting highmast solution for outdoor open area and rural applications and provides a high performing, robust option for off-grid solar lighting requirements.

The SOLARFLOOD, combined with the OMNISTAR-MINI luminaire, provides a reliable lighting solution with a high Ingress Protection level (IP 66) that withstands high ambient temperatures. The OMNISTAR-MINI range is a sustainable off-grid performer with a superior lumen/watt ratio.

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We are very proud to be associated with Madibeng Local Municipality in providing a sustainable LED solar streetlighting solution for this project.

For further enquiries, contact Conuel Shilenge at +27 (0)11 238 0056 or northern@beka-schreder.co.za

GHH RAISES THE BAR WITH NEO WITH NEW LOADER IN THE 10-TON CLASS

Mining and tunnelling equipment manufacturer GHH has unveiled a new load haul dumper (LHD): The LF-10 NEO is a powerful and compact 10 ton loader, an all-around improved version of the LF-10, a well-established product in its class. The LF-10 NEO is the latest in a line of new GHH loaders like the LF-14, the LF-7 and the LF-8.

The LF-10 NEO has a z-link design with the maximum tipping height in its class, of 2.5 m, which is perfect for truck loading all 30 ton trucks in the market. "The high break out forces, efficient boom and bucket motion times as well as the strong power to weight ratio makes the LF-10 NEO one of the best in class" says Ingo Rath, Product Line Manager Loaders at GHH in Germany. With a length of 9,6 m and width of 2,6 m the LF-10 NEO is very compact and versatile for excellent maneuverability in a mid-seam underground mining environment.

Best in class in the mid-range segment

The standard bucket holds 4,6 m³ or 10 tons at 2500 mm width, making loading and unloading easier and more cost-effective. "GHH installs the water-cooled Mercedes OM936 diesel engine with 240 kW which is the best in the 10 ton loader size class", says Rath. "The large fuel tank also allows for full shift operation with no worry for refueling mid shift and losing valuable production time". Exhaust gas emissions complies with EPA Tier 3 or EU Stage IIIA on the standard machine, while EU Stage V is also optionally available. The low fuel consumption, ease of maintainability and robust design as well as durability and reliability of the product all add to the low operating costs.

The LF-10 NEO has a great operators' compartment which boasts excellent ergonomics, which is evident through the way the controls have been laid out and the general arrangement within the cabin. There is also a nice, large footbox giving the operator significantly more space and comfort, while the excellent visibility rounds off an already well designed operators' compartment. In general, the loader now comes standard with useful safety and maintainability features such as the Proximity Detection System (PDS) interface, which allows the integration of third-party equipment. And optional wear sensors on the brakes.

Easy operation, seamless integration

Like other GHH vehicles, the articulated LF-10 NEO is designed for underground hardrock mining and can be ordered with many options. Also worth mentioning is the seamless integration with electronic monitoring and digital analytics systems "GHH inSITE", which provides for great insight into the machine performance and maintenance requirements and can be tailored to customers specific needs. The LF-10 NEO, with an operating weight of around 28 tons manages up to 32 km/h with four-speed transmission and gradients up to 25%. It tips the 10-ton payload in just 2,6 seconds. The NEO joins the company's mid-range segment of LHD offering, which is one of the most comprehensive on the market: The range of 18 diesel and electric models with payloads from 1 to 21 tons is a weighty factor in choosing the perfect loader. And by the way, the Germans have the same great selection in dump trucks to complement.

THE US, DRC AND ZAMBIA SIGNS AN MOU FOR THE ELECTRIC VEHICLE BATTERY VALUE CHAIN

Zambia and DRC appended their signatures to an MOU on U.S. Assistance (Investments & Technologies) to develop the DRC-Zambia Electric Vehicle the DRC-Zambia Electric Vehicle Battery Value Chain, further supporting the Minerals Security Partnership's objectives said Secretary Antony Blinken. Does it mean a change of strategic partnership for the DRC, USA versus China? In order to build up that value chain, DRC will need to start by assessing its climate of investment in the mining industry.

"Zambia and the Democratic Republic of Congo have signed an agreement with the United States of America to jointly develop the Zambia-DRC electric vehicle value chain," said Minister of

Foreign Affairs and International Corporation, Stanley Kasongo Kakubo.

"My counterparts, US Secretary of state Anthony Blinken and DRC Deputy Prime Minister/Foreign Minister Christopher Lutundula signed on behalf of their respective Countries whilst I signed for Zambia. Both President HICHILEMA and President TSHISEKEDI witnessed this key moment."

"The MOU establishes the framework under which the US manufacturing sector will participate in the minerals that are key in the Electric Vehicles," he noted.

The value of copper, cobalt and lithium is expected to go up significantly in the next decade.

ZAMBIA HAS MOVED FROM WORLD'S NUMBER 3 EMERALD PRODUCER TO NUMBER 1

Zambia is now home to the world's number one emerald mine which is Kagem mine. In addition to that, Africa has become the number one exporter of emeralds.

Emeralds and Semi-Precious Stones Mining Association of Zambia (ESMAZ) has disclosed that Zambia has moved from being the world's third-biggest producer of emeralds to number one.

Speaking during the Association's Annual General Meeting, ESMAZ President Victor Kalesha stated that Zambia is now home to the world's largest emerald mining giant, which is Kagem mine, following the high level of marketing which Grizzly and Kagem Mining have put to the mineral resource.

Mr. Kalesha said it is also gratifying to note that government is committed to promoting diversification and value addition not only to copper but also to gemstones and other high value minerals as indicated in the 2022 national budget speech to Parliament by Finance Minister Situmbeko Musokotwane.

He however noted that despite having the birth right to the gemstones that are in the ground, sector players are not extracting them due to challenges such as lack of equipment and proper exploration, and access to finance which they have failed to unlock for a very long time, hence it is now time for the small scale mining industry to become vibrant and well organised.

"I want to announce to you that with the level of marketing our brothers have put to our emeralds, Zambia has moved from world's number 3 emerald producer to number 1 and furthermore, Zambia is now home to the world's number one emerald mine which is Kagem mine. In addition to that, Africa has become the number one exporter of emeralds."

"This is now the opportunity we have to become a vibrant and well organised small scale mining sector. Once we get organised and learn lessons from our big

brothers Kagem and Grizzly Mining respectively, success will be knocking on our door steps," Mr. Kalesha stated.

Meanwhile, Mr. Kalesha called on license holders not to celebrate illegal dealers and illegal dealers but strengthen security in the emerald restricted area which has deteriorated to zero, emphasizing that every person going into the area should be screened and regulated.

He further said all those working on dumpsites should be screened and organised into cooperatives, have their details put in a data base and given passes from the Association.

"The illegal activities happening in the emerald restricted area is a site no new investor would like to see unless control measures are put in place. We have to work extra hard to recreate confidence with investors and the government."

"I want ourselves to start operating as businessmen are organised as we engage government to listen to our empowerment calls, and the only way we can do that is by putting our efforts together as an Association and get more organized and focused without dividing ourselves."

"In the past we haven't been very well organised, each one wants to get empowerment from government individually, what can only be possible if we do it collectively. Through this new Dawn administration colleagues, there are quite some opportunities we can get hold of once we get well organised. The Head of State will be more than willing to engage us once he is convinced that we are organised and willing to contribute to the sustainable economic development of the country," he emphasized.

Mr. Kalesha also said most license areas are very small, therefore it is high time sector players started consolidating themselves for those who are nearby, so that their emerald license areas are much bigger in order to attract investment.



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A BATTERY PASSPORT CAN CREATE A CIRCULAR ECONOMY FOR EVS

Benedikt Sobotka warns that the lack of recycling capability could dramatically limit the speed at which the EV transition takes place

Transportation currently accounts for 37% of global CO₂ emissions, according to the International Energy Agency, which means the decarbonisation of the transport sector forms an essential part of any serious plan to address climate change. At the heart of this process is the transition from traditional, internal combustion engine (ICE) vehicles to electric vehicles (EVs).

Global electric car sales have continued on a strong upward trend in 2022, with 2 million sold in the first quarter—a 75% increase from the same period in 2021. However, to keep meeting this rapidly rising demand, greater attention must be placed on the reuse, repurposing, and recycling of the batteries that power EVs.

A Battery Passport can create a circular economy for EVs 1

Automakers that are pushing hard on EVs, like VW and Renault, are also investing in recycling

CURRENT EV BATTERY RECYCLING MARKET

At present, only around 5% of lithium-ion (Li-ion) batteries are recycled globally, which is a concerning state of affairs, particularly when Greenpeace predicts that over 12 million metric tonnes of Li-ion batteries are expected to retire by 2030. Not only is this an enormous amount of waste, but the lack of recycling capability could dramatically limit the speed at which the EV transition takes place.

This problem has been recognised and is, to a certain extent, being addressed, with a recent spate of investments in recycling infrastructure and technology. For example, in the UK, companies along the supply chain such as Veolia, BritishVolt and European Metal Recycling have all announced major recycling projects in 2022, which will collectively process tens of thousands of tonnes of batteries annually. The impact of this could be significant for the UK; with the help of projects like these, the WMG team at the University of Warwick predicts that recycling could supply 22% of the nation's required battery material by 2040.

Continental Europe is also seeing growth in the

recycling sector. Just look at Volkswagen, which recently announced a battery recycling pilot in Germany that could recycle up to 97% of the components of a battery, or Renault, which is looking to repurpose EV batteries as energy storage in France.

12 million metric tonnes of Li-ion batteries are expected to retire by 2030

However, the recycling of Li-ion batteries still lags behind the rapidly developing EV manufacturing industry, both in terms of investment and technology. There are many reasons for this, including the economic viability of recycling batteries, the technological complexity of reprocessing varied and fast evolving battery types, and logistical friction points as a result of regulatory issues.

ENVIRONMENTAL CASE FOR EV BATTERY RECYCLING

Currently, one of the major issues with EV batteries is their contribution to environmental degradation in landfills and areas where they are disposed. Some of the key components of batteries, such as copper, nickel and lead, can be highly toxic. As the batteries decay, these chemicals can leak into the surrounding area, causing harm to the local ecosystems.

Lead acid batteries present a risk, with one in three children globally exposed to lead poisoning as a result of inadequate lead-acid battery recycling, according to a report by UNICEF and Pure Earth. The long-term harm this can cause if not tackled is staggering. It is estimated that lead poisoning is responsible for a reduction of around 2% of GDP in Asia and 4% in Africa due to the impact on productivity in some communities. Improving the battery recycling rate to battery disposal rate ratio can reduce the harmful impact of EVs on the environment—and on humans.

Recycling can also contribute more broadly to the fight against climate change through the supply of commodities needed to support the energy transition. These materials also play a significant role in facilitating the implementation of renewable energy generation methods. For example, solar and offshore wind needs to and five times as much copper respectively than traditional energy generation methods.

A Battery Passport can create a circular

economy for EVs 2

Volkswagen is laying out a battery recycling strategy

Historic underinvestment in mining projects, coupled with the long lead times for their development, means that the supply of metals like cobalt and copper will struggle to keep up with the demand driven by the increased use of renewables. Recycling the used metal from batteries can support the manufacture of a wide range of clean energy technologies and accelerate action against global warming.

ECONOMIC ARGUMENTS FOR RECYCLING BATTERIES

While the environmental advantages of recycling are clear, in a world where companies and governments often prioritise returns and profitability, it is important to also reflect on the economic benefits of increasing the recycling rate of EV batteries. First off, supporting the supply of key minerals will temper metal prices which otherwise might surge uncontrollably. In turn, this controls the price of EVs at the point of sale, making them more accessible to the consumer and accelerating their uptake and the shift towards clean transport.

However, the economic benefits are much wider than this. Currently, recycling infrastructure and the recycling industry is in need of significant development and further investment. The expansion of the industry supply chains will create new jobs, boost economic activity and spur growth. In fact, the global lithium-ion battery market is projected to grow from US\$4.6bn in 2021 to US\$22.8bn by 2030, according to Markets and Markets. And while in the short term, the markets for repurposing and recycling may compete for end of life battery volumes, in the longer term, there is no doubt: the markets are complementary. Repurposed batteries will eventually require recycling.

This growth in itself can provide a much-needed boost, especially to regions such as some African countries, where the battery recycling industry is extremely underdeveloped. But beyond that, while these countries will benefit from job creation, skills diversification and increased economic

ANGLO AMERICAN SOURCES 100% RENEWABLE ELECTRICITY SUPPLY FOR AUSTRALIA OPERATIONS

Anglo American has sourced the supply of 100% renewable electricity for its operations in Australia from 2025, agreeing to terms for a 10-year partnership with Stanwell Corporation, the Queensland Government-owned provider of electricity and energy solutions. The deal will effectively remove all Scope 2 emissions from Anglo American's steelmaking coal business in Australia from 2025, supporting Anglo American's progress towards carbon-neutral operations by 2040.

Dan van der Westhuizen, CEO of Anglo American in Australia, said: "Sourcing 100% renewables supply from Stanwell Corporation, linked to two major wind and solar projects in Queensland, is a big step towards our target of carbon neutral operations in Australia – and globally – by 2040. We are committed to playing our part to help combat climate change, including accelerating a number of technologies to abate our on-site emissions, from electrifying our truck fleet and other mobile equipment to capturing the methane from our steelmaking coal seams.

"I am delighted that we are able to support Stanwell Corporation in its investment in 650MW of renewables capacity for Queensland. Today's deal brings significant environmental benefits and is NPV positive compared with our current energy mix while underwriting a large investment in renewable energy generation for Queensland."

Anik Michaud, Anglo American's Group Director of Corporate Relations and Sustainable Impact, said: "We are working tirelessly across our global footprint to reduce emissions. Many of the metals and minerals we produce are critical to the infrastructure and technologies required to decarbonise the world's energy and transport systems – and this includes the ingredients needed for steelmaking. Our commitment to being part of the solution to climate change begins in our own business by meeting our emissions reduction targets and our 2040 operational carbon neutrality goal.

"Combined with the agreements we already have in place for all our South America operations, from 2025 we expect to be drawing 60% of our global electricity requirements from renewable sources, transforming our Scope 2 emissions profile. We are committed to producing the metals and minerals that we need to mitigate the extent of global warming in the most responsible and sustainable way."

The partnership between Anglo American and Stanwell underwrites investment in the two major Queensland renewable energy projects – Clarke Creek Wind Farm in Central Queensland, and Blue Grass Solar Farm near Chinchilla.

Anglo American – renewable electricity supply secured across South America operations

Renewable energy – Brazil

In 2019, Anglo American signed agreements with Casa dos Ventos and AES Tietê to provide wind power and with Atlas Renewable Energy to provide solar power to meet all the electricity needs of Anglo American's iron ore and nickel operations in Brazil. Our CO2 emissions in Brazil are expected to reduce by approximately 70% as a result.

Renewable energy – Chile

In 2019, Anglo American signed an agreement with Enel Generación Chile to provide renewable power (a mix of wind, solar and hydroelectric) to meet all the electricity needs of Anglo American's copper operations in Chile. Our CO2 emissions in Chile are expected to reduce by approximately 70% as a result.

Our 44% owned copper operation, Collahuasi, signed agreements with both Enel and solar power producer Sonnedix to provide 100% renewable power for the operation from April 2020.

Renewable energy – Peru

In 2021, Anglo American signed an agreement with Engie Energía Perú to provide a combination of wind and hydroelectric power to meet all the electricity needs of the Quellaveco copper operation which began production in 2022. Our CO2 emissions in Peru are expected to reduce by approximately 70% compared with our original project baseline projections.

...A BATTERY PASSPORT CAN CREATE A CIRCULAR ECONOMY FOR EVS

activity, the repurposing of batteries can improve their economies much more directly. Repurposed batteries can enable increased energy access where there is a large gap between those with access to electricity, and those without it.

CAN A 'BATTERY PASSPORT' HELP?

Battery recycling will clearly be a force for good. However, there remain obstacles to the industry's development which must be overcome if it is to reach its full potential. Differing regulations means that there are often friction points which prevent or stall the transboundary movement of lithium-ion batteries for recycling and repurposing. Additionally, as batteries evolve to become more efficient, longer lasting and safer, they become more complex—as does recycling them.

A solution can be found in providing more transparency and information on the battery cycle and its period of utilisation in the EV. Making this information available to relevant stakeholders, governments and companies can ensure that any particular battery is suitable for recycling, conforms to relevant standards, and has the necessary components to make recycling or reuse possible.

The Global Battery Alliance (GBA), the largest multi-stakeholder organisation of its kind, comprises around 110 national governments, industry actors, and NGOs—including WEF, UNICEF, Eurasian Resources Group, BMW and Tesla—and is working to solve some of these issues.

As batteries evolve to become more efficient, longer lasting and safer,

they become more complex—as does recycling them

The GBA is developing a 'Battery Passport', which will give every battery an identity, acting as a digital twin of the battery to record important information across its entire lifecycle. It will provide end-users with key data about its material provenance, chemical make-up, manufacturing history, as well as applicable ESG and lifecycle requirements, based on the comprehensive definition of a sustainable battery. This technical data will be collected from value chain stakeholders including mining companies, refiners, cell producers, module producers, battery producers, automotive OEMs and recyclers.

By setting relevant performance indicators, and tracking and validating battery performance against these indicators, the GBA's Battery Passport will therefore create greater transparency across the value chain and facilitate resource efficiency, life extension, safe second use and stronger battery recycling.

More widely, the Battery Passport is a prime exemplar of an engineering initiative that can have serious governance impact that reaches all levels of society. From helping safeguard those at the coalface of production, to ensuring the quality of a battery thousands of kilometres away to a consumer, the Battery Passport has the potential to touch every aspect of how we engage with the 21st century's breakthrough electric technologies.

About the author: Benedikt Sobotka is Co-Chair of the Global Battery Alliance and Chief Executive of Eurasian Resources Group

ESTABLISHMENT OF THE ELECTRIC BATTERY MANUFACTURING PLANT, THE WISHES OF THE PEOPLE OF TANGANYIKA AND HAUT-LOMAMI SUBMITTED TO JULIEN PALUKU

The execution of the major project of the electric battery industry which will create more wealth and jobs in the Democratic Republic of Congo was Tuesday, November 1, 2022 at the center of exchanges between the national deputies of the provinces of Tanganyika and Haut-Lomami (provinces which abound in lithium and other minerals) and Julien Paluku, Minister of Industry in his office.

These elected officials wanted to soak up reliable information on the installation process of the manufacturing plant for the precursors of electric batteries and to reassure themselves that no province is excluded from this major integrative project. According to them, the grievances or needs of the populations of these provinces must be taken into account in this project.

"We have come to see the Minister to bring him the message of our populations regarding the actual installation of this electric battery manufacturing plant for which the first stone was laid in Sakania (Haut-Katanga) and we have just passed review the situation with the minister who gave us his point of view let us say the government's point of view on this project and we also presented our concerns, the concerns of our people. Today, we are going to assure you that everything happening around Lithium, our populations, starting with their elected officials, have not been invited to anything and it is today that we are informed of everything that is

happening", said, on behalf of the group, the deputy national Odette Mwamba Banza at the end of the audience with Julien Paluku.

And to add:

"Never mind, we still presented our concerns, which for us, we think that in order to be able to open up, to be able to balance our corners economically, this factory must be installed in one of the northern provinces, it is true that there is a project to create economic zones, we do not disagree. We can have as many in other provinces but for Lithium we think it is in the North, that is Tanganyika where the Upper Lomami that this factory for the manufacture of electric batteries is to be built".

For these elected officials, everything that is done without the involvement of the populations concerned is done against them.

"You know, there was a colleague who said it. An expression of Gandhi that says if you do something for me without me, you do it against me and we think that everything that has been done until then without however associating the population of the north is made against this population. And it is time to be able to correct this," said the elected representative of the electoral district of Kabongo in the province of Haut Lomami.

And to continue:

"We have spoken, he cannot give us an answer straight away, he is a member of a

team and he will also discuss with his hierarchy to be able to give us a follow-up that we expect and which is not contrary to our expectations. He will invite us to a meeting shortly so that we can harmonize our points of view, we tell our people to be able to calm down, they have not done a vain job to be able to elect us as their representatives, we take the problem to heart and we're going to do everything to get it back."

In turn, Julien Paluku promised to inform the government of his grievances in the implementation of this project.

Recall, the main objective of RDC-Afrique Business Forum 2021 held in Kinshasa on "Developing a regional value chain around the electric battery industry, and a market for electric vehicles and clean energies" was to bring together parties high-level stakeholders to engage, identify opportunities and facilitate investments to increase Africa's share in the battery, electric vehicle and renewable energy value chain.

The global transition to green energy and rapid decarbonization offers significant opportunities for Africa. It has spurred demand for electric vehicles and investment in battery-powered storage systems, which is driving the deployment of solar and wind power in particular. Thanks to its endowment in natural resources, and in particular in strategic minerals that go into the composition of lithium-ion batteries, the Democratic Republic of the Congo wants to play a key role in the global energy transition in terms of energy storage and mobility. electric.

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