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EAST AFRICAN MINING NEWS

Kenya to restrict exports on critical metals

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Editorial Note

Is it export restriction or value chain development?

Andrew Maramwidze (Editor)

News of Kenya joining the bandwagon of countries that have decided to place export restrictions on critical raw materials has a double-edged effect.

With the Organisation for Economic Co-operation and Development reporting a five-fold increase since 2009, on countries placing export restrictions, this development has interesting facets.

Though statistics indicate that export restrictions on ores and minerals — in essence, the raw materials located upstream in critical raw material supply chains — grew faster than restrictions in the other segments of the critical raw materials supply chain, correlating with the increasing levels of production, import and export, as well as the concentration in a small number of countries. The question is: What is the real impact of this development?

While African countries intend to retain more economic benefits from their vast mineral wealth by controlling the value chain through refining and exporting processed gold, gemstones, and granite, thereby boosting value addition, experts have still raised concerns about this development.

The OECD says the trend toward increasing export restrictions may be playing a role in key international markets, potentially having sizable effects on the availability and prices of these materials.

On the other hand, experts have cautioned that these restrictions could face challenges, as some countries have abandoned similar policies due to infrastructure deficits and limited immediate benefits. This clearly calls for Kenya to hunt for the appropriate investors, without whom this ideal decision will fall through the cracks.

Fears have also been raised that countries imposing restrictions on exports of raw materials could well compromise achieving global net zero CO2 emissions targets and the digital transformation necessary to ensure economic security.

Remember the OECD monitors the use of these restrictions to contribute to a better understanding of why countries resort to such measures and their impact on international markets.

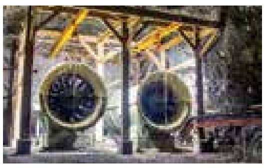
So this tells us that Kenya has to pull their socks up in several areas for their decision not to backfire on them. However, we genuinely need value chain development for the region's minerals sector to grow.

May one of the countries in the region be developed as a central processing hub for these minerals, thereby pulling resources together.

We take this opportunity to say, thank you to our valued readers and supporters; enjoy the holidays, wishing you a prosperous 2025.

Enjoy the read!

Redefining the Standard for Mine Ventilation Efficiency & Availability



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Cover Story

Kenya to restrict exports on critical metals

Kenya is set to join several African nations in restricting raw mineral exports in favor of local processing.

According to the Principal Secretary for Mining, Elijah Mwangi, the country is constructing gold and granite plants, which will be completed by mid-2025. The move will allow Kenya to refine and export processed gold, gemstones, and granite, boosting value addition.

Kenya's decision aligns with policies from around 10 other African countries, which aim to retain more economic benefits from their vast mineral wealth.

According to a McKinsey report, the continent could generate an additional $200 million to $2 billion annually by 2030 through local mineral processing, creating up to 3.8 million jobs.

Nevertheless, experts caution that these restrictions could face challenges, as some countries have abandoned similar policies due to infrastructure deficits and limited immediate benefits.

In addition, countries that impose restrictions on exports of raw materials could well compromise achieving global net zero CO2 emissions targets and the digital transformation necessary to ensure economic security.

The OECD monitors the use of these restrictions in order to contribute to a better understanding of why countries resort to such measures and their impact on international markets.

A significant scaling up of both production and international trade of critical raw materials is needed to meet projected demand for the green transition and achieve global net zero CO2 emissions targets.

Meanwhile a new policy paper on Raw Materials for the Green Transition: Production, International Trade and Export Restrictions, shows the price of many materials – including aluminum and copper – have reached record highs, driven by the repercussions of the COVID-19 pandemic, trade tensions and the continuing consequences of Russia's invasion of Ukraine.

While the production and trade of most critical raw materials has expanded rapidly over the last ten years, growth is not keeping pace with projected demand for the metals and minerals needed to transform the global economy from one dominated by fossil fuels to one led by renewable energy technologies.

Lithium, rare earth elements, chromium, arsenic, cobalt, titanium, selenium and magnesium recorded the largest production volume expansions - ranging between 33 percent for magnesium and 208 percent for lithium - in the last decade, but this falls far short of the four- to six-fold increases in demand projected for the green transition. At the same time, global production of some critical raw materials, such as lead, natural graphite, zinc, precious metal ores and concentrates, as well as tin, actually declined over the last decade.

"The challenge of achieving net zero CO2 emissions will require a significant scaling up of production and international trade in critical raw materials," OECD Secretary-General Mathias Cormann said.

"Policy makers must closely scrutinise how the concentration of production and trade coupled with the increasing use of export restrictions are affecting international markets for critical raw materials. We must ensure that materials shortfalls do not prevent us from meeting our climate change commitments."

Production of critical raw materials is becoming more concentrated amongst countries, with China, Russia, Australia, South Africa and Zimbabwe among the top producers and reserve holders.

While both imports and exports of critical raw materials have also become increasingly concentrated amongst countries, trade of these materials remains relatively well diversified. This suggests that the possibility of significant disruption to the global green transition by disturbances to import or export flows of critical raw materials is limited. However, concentrations of exports and imports are significant in some specific cases, notably in upstream segments of supply chains for some critical raw materials, including lithium, borates, cobalt, colloidal precious metals, manganese and magnesium.

Export restrictions on critical raw materials have seen a five-fold increase since the OECD began collecting data in 2009, with 10 percent of global exports in critical raw materials now facing at least one export restriction measure. Export restrictions on ores and minerals — in essence the raw materials located upstream in critical raw material supply chains — grew faster than restrictions in the other segments of the critical raw materials supply chain, correlating with the increasing levels of production, import and export, as well as the concentration in a small number of countries.

China, India, Argentina, Russia, Viet Nam and Kazakhstan issued the most new export restrictions over the 2009 to 2020 period for critical raw materials, and also account for the highest shares of import dependencies of OECD countries. The OECD finds that the trend toward increasing export restrictions may be playing a role in key international markets, with potentially sizable effects on both availability and prices of these materials.

Kenya seek foreign investors to achieve mining potential

Kenya seeks to leverage foreign funding and echnology to boost the mining sector, government authorities have revealed.

According to government, through international partnerships, the contribution of the mining sector can expand from the current 0.7 percent of the country's gross domestic product (GDP) to 10 percent by the year 2030, said Sophie Kutiti Olesambu, chairperson of the state-owned Mineral Rights Board, in Nairobi, the capital of Kenya.

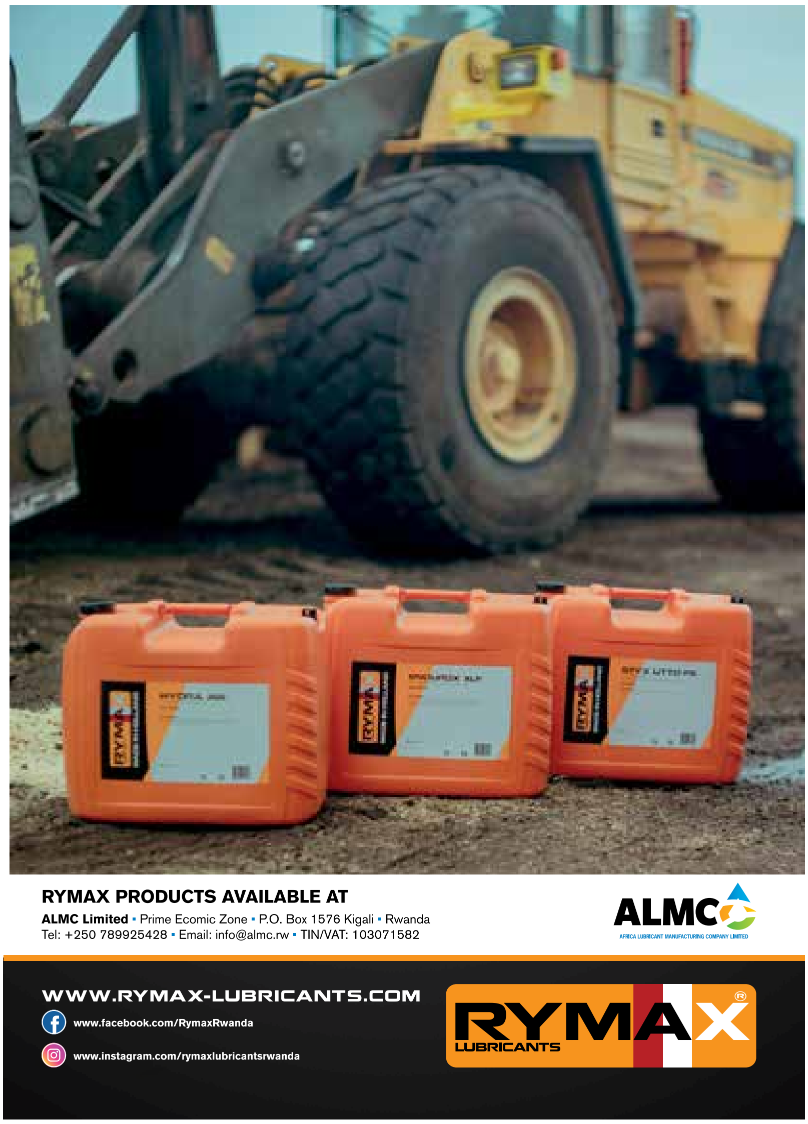
"The mining sector is very capital-intensive, and so we need foreign investors to help Kenya achieve its full potential," Olesambu said at the signing of a memorandum of understanding (MoU) between Jialin East Africa Mining Company Limited and Sinohydro Corporation on the Sokoke titanium mining project, in Kilifi County.

A stronger mining sector will help improve Kenya's socio economic development, as most mines are located in arid and semi-arid areas that lack access to key social services such as education and health, Olesambu said.

Duan Juan, chief executive officer of Jialin East Africa Mining Company Limited, said mining at the Sokoke project is expected to begin by December.

Jialin East Africa is committed to improving the livelihoods of the community near the titanium mine by providing employment opportunities, she said.

Her company will invest in infrastructure to speed up the development of port and logistics facilities in Kenya, Duan said.



Kenya

Marula seals deal to acquire Kenya manganese processing plant

London stock exchange listed and African focused mining and exploration investment company, Marula Mining has formalised a deal to acquire an 80 percent stake in Agarwal Metals and Ores (AMO), which owns the Kilifi Manganese Processing Plant in Kenya.

The sale and purchase agreement replaces a binding term sheet signed between the companies in July 2024.

Located on 1.31 hectares of freehold land and situated around 60km from the Port of Mombasa, the Kilifi Plant comprises a conventional manganese processing facility with various components for ore processing.

These components include a belt conveyor, fine jaw crusher, jig separator, magnetic separator, pumps, run-of-mine and final manganese product stockpiling areas, tommel scrubber, vibrating feeder and vibrating screen.

The final cash payment of £2m ($2.54m) will be transferred to AMO, along with the issuance of £500,000 worth of new ordinary shares to AMO's major shareholder. Service and maintenance work at the Kilifi Plant is in progress, before the resumption of manganese ore processing operations.

Marula intends to capitalize on its knowledge and relationships in the advanced battery business and rare earths not only in Africa but globally as to create shareholder value via the focused investment of financial and intellectual resources in a carefully selected collection of core assets accessible in the sector and beyond.

Marula is actively looking to increase its investments in advanced mining and exploration projects and companies that are located throughout East, Central and Southern Africa and which have the potential to produce critical metals and commodities for export and use in the global green economies.

Currently, Marula has interests and investments in the Blesberg Lithium, and Tantalum Mine in South Africa and the Nkombwa Hill Niobium, Tantalum, Rare Earths and Phosphate Project in Zambia. Marula continues to identify investment opportunities in other mines and advanced projects and is currently reviewing a number of opportunities in Kenya, Tanzania, Zambia, South Africa and Zimbabwe.

Uganda to take stakes in mining operations

Uganda has formed a state-owned mining company to manage the government's equity interests in mining operations, its minister for energy and mineral development, Ruth Nankabirwa, said.

All mining activities in Uganda have previously been done by private firms after obtaining exploration and mining licenses.

Under a new mining law approved in 2022, the government can compulsorily take a 15% free carry stake in all mining operations in the country.

The launch of the state-owned mining company is a part of Uganda's efforts to expand its mineral wealth, similar to neighbouring country Tanzania.

Nankabirwa explained that the company will manage Uganda's commercial interests in the mining industry through strategic partnerships from new private sector developers. She was speaking at a mining conference in the country's capital, Kampala, where the launch of the state-owned company was announced.

Ugandan President Yoweri Museveni and his government have been encouraging sector investors to process minerals domestically to add value and minimise the need to export raw materials. According to data from the Bank of Uganda, the country's gold exports increased by ten times in 2023 compared with 2022. Uganda exported $2.3bn of gold last year.

The influx of state involvement in Uganda's mining sector could create new investment opportunities but may also introduce regulatory complexities.

With companies like Chinese-backed Sunbird Resources and Australia's Ionic Rare Earths already stepping in, the market is poised for growth. Investors should monitor how this state-private sector dynamic unfolds, as it could impact market stability and profitability.

Uganda's initiatives mirror a larger African trend of resource nationalism, where countries aim to capture more value domestically. With significant deposits of gold, cobalt, copper, and rare earth elements, Uganda is well-positioned to capitalize on its mineral wealth.

These moves could drive economic growth and set a precedent for other nations looking to renegotiate terms with foreign mining firms to ensure more equitable resource distribution.

Barrick mines tops extractive industry's contribution to Tanzania's economy

The Twiga partnership between Barrick Gold Corporation and the Tanzanian government is contributing 51 percent of the government's revenue from the extractive industry, according to the latest report of the Tanzania Extractive Industry Transparency Initiative. Twiga comprises the North Mara and Bulyanhulu gold mines.

Both mines also led the industry's safety performance, with Bulyanhulu winning this year's Occupational Safety and Health Award and North Mara named as the best company for caring for workers with special needs by Tanzania's Occupational Safety and Health authority.

Speaking to the media and local stakeholders recently Barrick President and Chief Executive Officer, Mark Bristow said ongoing brownfields exploration around its Bulyanhulu and North Mara mines continues to define additional opportunities to replace and expand depleted reserves, further supporting their life of mine flexibility. In addition, good progress has been made in defining new greenfield areas of interest with potential to add new mines to the company's portfolio.

Bristow said the Barrick-Twiga Future Forward Education initiative had completed its first phase, with Barrick financing a $10 million infrastructure expansion at 64 schools, including the construction of 396 classrooms, 97 dormitories and 600 ablution blocks. The program's second phase is planned to start in the fourth quarter of this year with another $10 million investment which will be followed by a further $10 million third phase.

Meanwhile the Barrick Academy, inaugurated at the beginning of the year by the Minister of Minerals at the closed Buzwagi mine, has already trained more than 1,000 foremen, supervisors and superintendents from across the company's Africa and Middle East region. The Academy is on track to meet its target of training more than 2,000 people this year.

Bristow said in line with Barrick's commitment to transparency, it had referred the latest in a series of allegations of human rights abuses at the North Mara Mine to the Tanzanian Commission of Human Rights and Good Governance. Following a site visit and investigation, the Commission has completed a report confirming that there was no evidence of human rights violations, refuting allegations made by certain international NGOs.

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Ethiopia

Ethiopia's Segele mine announces first gold bar production

Scandinavian-based gold exploration and mining company with operations in Ethiopia, Akobo Minerals recently announced the production of the first gold bar from its Segele Mine.

According to the company, this significant milestone marks the beginning of gold production as the company moves forward with its operational plans.

The 1.4 kg gold bar was smelted from approximately 170 tons of lower-grade material collected and processed from development tunnels, located on the edge of the Segele ore body. This initial batch yielded an average grade of 8 grams per ton.

"While the results are very promising, it is too early to provide a definitive recovery rate or the gold purity grade, as the process is still in its early stages. We anticipate mining higher-grade ore once stoping activities begin," said Jørgen Evjen, Chief Executive Officer of Akobo Minerals.

He said the tailings generated from this initial processing phase will be stored and later reprocessed through Carbon-in-Leach (CIL) tanks once these are fully operational.

"This additional step will allow us to maximize recovery and ensure maximum extraction of gold from our mineral resources," he said.

Evjen said the company will continue blasting and stockpiling material from the Segele mine, followed by further production batches.

"As production progresses, we expect both an increase in the gold content from the mine and improved recovery rates from the processing plant."

He said the achievement brings the company closer to its goal of establishing Akobo Minerals as a leading gold producer in the region.

"We look forward to providing further updates as production continues to ramp up."

Ethiopia

New mining policies place Ethiopia 4th globally in Bitcoin mining

Ethiopia's cabinet has approved a legal framework for central bank digital currency (CBDC), at the same time as the government is pursuing policies to make the country a global bitcoin mining destination.

The draft law will now be reviewed in the lower chamber of parliament, which is dominated by the government's Prosperity party.

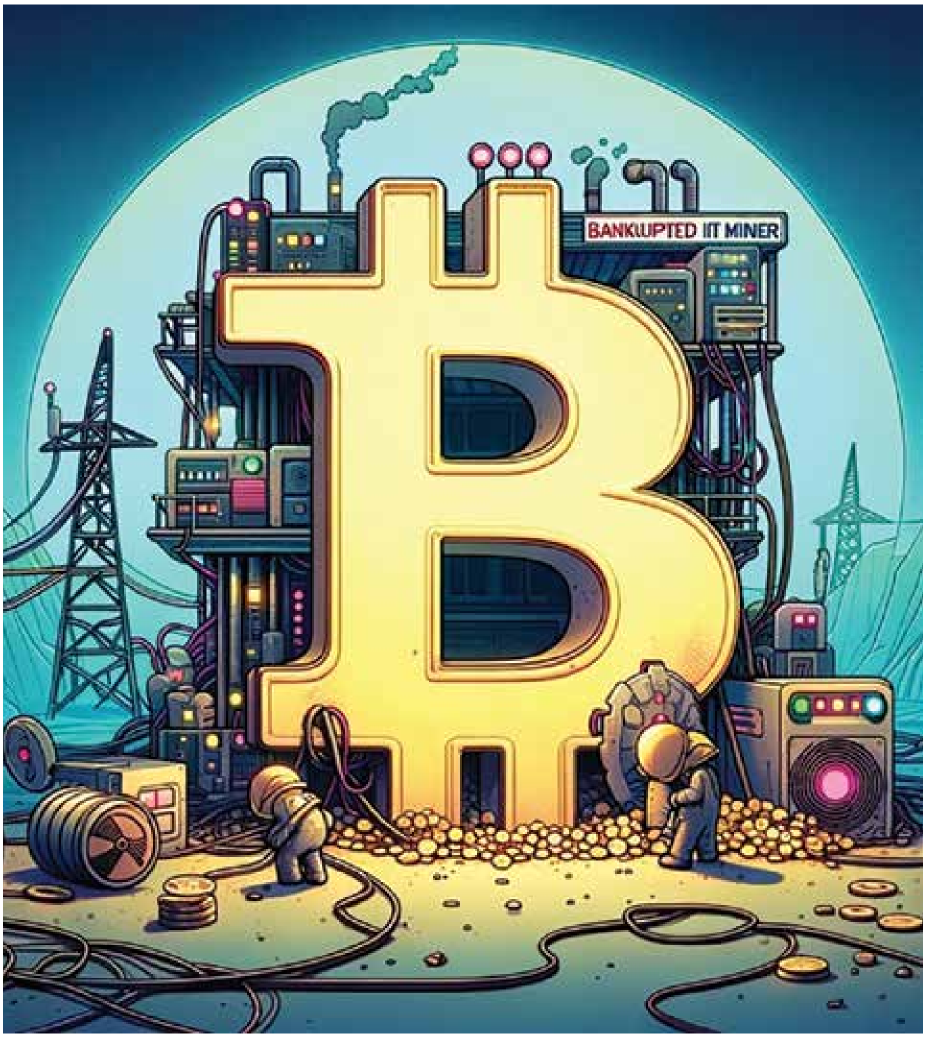
The law is part of wider economic reforms. The Council of Ministers passed the National Bank of Ethiopia Proclamation and the Banking Business Proclamation on June 13.

As the country quietly transforms into a major Bitcoin mining hub on the African continent, the abundant hydropower resources are being harnessed to fuel a growing crypto mining industry.

Ethiopian Electric Power (EEP) has allocated 600 megawatts (MW) to Bitcoin miners operating within the country. This significant commitment places Ethiopia fourth globally in Bitcoin mining hash rate contribution, behind only the United States, Hong Kong, and Asia.

Ethan Vera, co-founder and COO of Luxor Mining, recently toured state-approved mining facilities in Ethiopia. He reported that several hundred additional megawatts are expected to come online later this year. The Antminer S19J Pro is the preferred mining rig among Ethiopian operators. It boasts an efficiency of 30 J/TH and a hash rate capacity of approximately 100 TH/s per unit.

Vera noted the impressive infrastructure surrounding these mining farms. Water walls have been installed to accelerate heat dissipation. However, the region's cold climate renders these cooling systems largely unnecessary for most of the year.



Ethiopia's current mining capacity represents about 2.25% of the total Bitcoin hash rate. This makes it a significant player in the global crypto mining landscape. The country's rise as a mining hub began in the wake of China's 2021 ban on Bitcoin mining. Many Chinese miners relocated to Ethiopia, attracted by its abundant hydropower and favorable regulatory environment.

Ethiopia legalized Bitcoin mining in 2022, since then, the government has been heavily funding infrastructure to boost the sector.

The state's investment arm, Ethiopian Investment Holdings (EIH), recently signed a $250 million memorandum of understanding with West Data Group based in Hong Kong. This cooperation seeks to build infrastructure for operations involving data mining and artificial intelligence training.

The International Trade Association claims Ethiopia has 5,250 MW of installed generating capability. Of this power, an astounding ninety percent comes from environmentally friendly hydropower plants. Despite this plenty, just half of Ethiopia's people have access to electricity. The government is eager to profit from the notable excess this leaves.

Although plans call for selling extra electricity to surrounding nations, building transmission infrastructure is too expensive. One practical substitute that lets Ethiopia make use of its excess electricity without large infrastructure spending is bitcoin mining.

Ethiopia is positioning itself as a major actor in the worldwide Bitcoin network as it keeps expanding its crypto mining industry. The nation's dedication to using its natural resources for this growing sector could have wide-ranging effects on its economy and the larger African tech scene.

Authorities in Rwanda suspend beryllium exports

The Rwanda Mines, Petroleum, and Gas Board (RMB) have recently suspended exports of beryllium, citing cases of illegal mining and associated unrest and conflicts.

Beryllium is a strong, light metal used in aerospace and defense, electronics, and nuclear industries.

The mining board did not provide details of the cases that unfolded to the build-up of the decision, but noted that the suspension will last "until further notice."

"During this suspension period, RMB will conduct a comprehensive review of the reported cases of illegal activities and implement improved export procedures to streamline the beryllium business," RMB said in a public notice released on Thursday, August 8.

The agency also warned that mineral exporters are "strictly required to purchase minerals only from licensed mining companies," in accordance with the law on mining and quarry operations.

Rwanda's mineral exports rose to over $1.1 billion in 2023, up from $772 million in 2022, a 43 per cent growth.

The growth, according to the mining board, is largely attributed to increased value addition, continued professionalisation, greater investment in mechanisation, and the strategic implementation of sustainable and responsible mining practices.

However, it's not all rosy for the sector whose growth is still hindered by illegal mining activities, particularly land owners who allow persons without licenses to carry out mining activities on their land.

The development comes on the heels of the new mining law intended to address key gaps left by the repealed Mining Law of 2018.

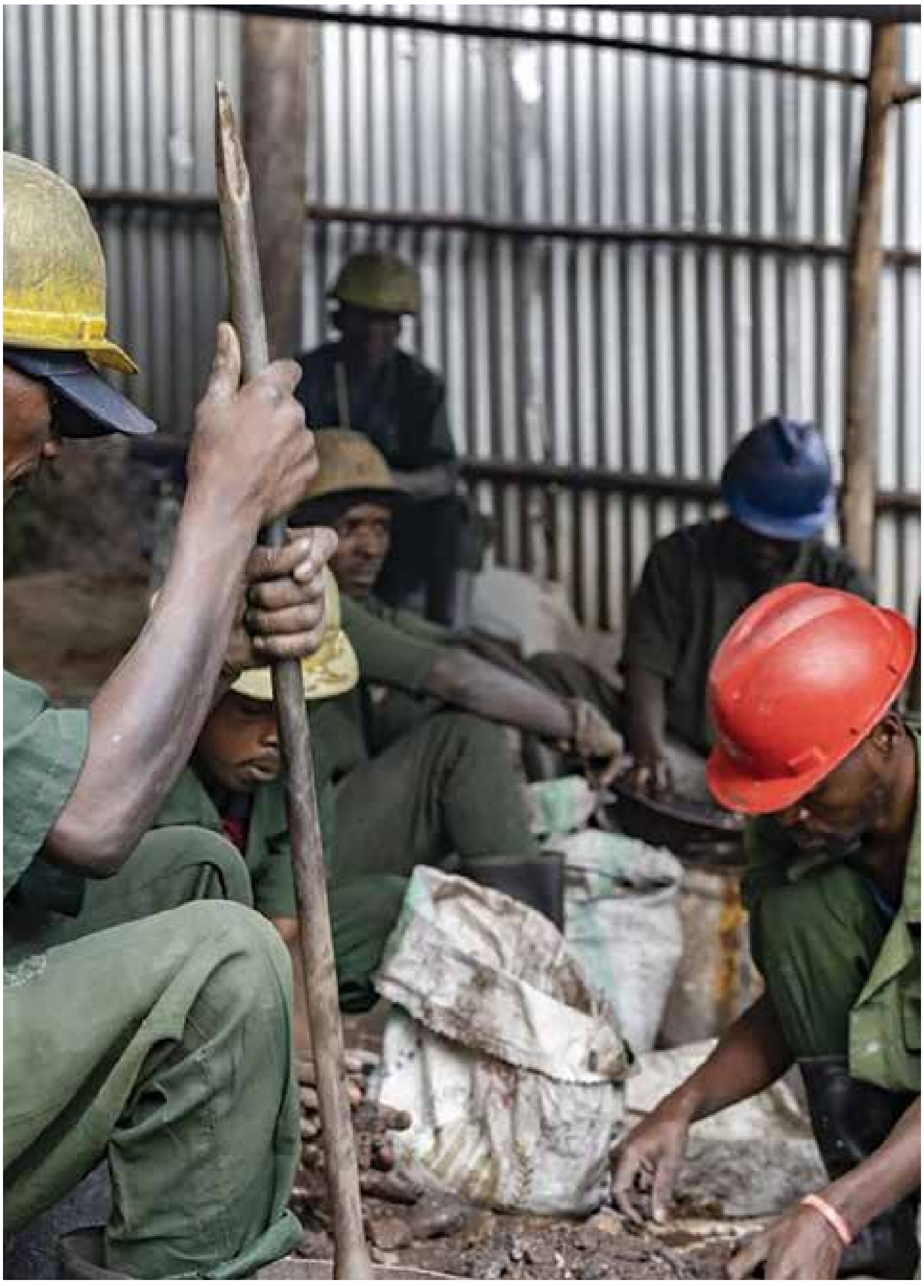
One of the most pressing challenges under the previous legal framework was the inadequate penalties for illegal mining and mineral trading.

Under the previous law, illegal mining and mineral trading were considered petty, with imprisonment terms under six months and fines of less than Rwf1 million.

Such leniency failed to deter illegal operators who profited handsomely at the expense of the state and the environment. The new law represents a paradigm shift. Offenses like illegal mining now carry penalties of up to five years in prison and fines as high as Rwf80 million, while illegal mineral trading could lead to imprisonment of up to 10 years and fines reaching Rwf150 million.

The steep increase in penalties signals the government's commitment to stamping out illegal activity in the sector.

Furthermore, possession of illegally extracted minerals and allowing unauthorised mining activities on one's land now also carry severe consequences, including up to three years in prison and fines of up to Rwf80 million.



US funds ESG projects in Rwanda

Trinity Metals has received a technical assistance grant of $3.8m from the US Development Finance Corporation (DFC) for ESG projects in Rwanda

The grant will support baseline environmental and social impact assessments, among other initiatives.

DFC's grant will facilitate integrated development planning for all mining concessions and planning for the rehabilitation of legacy tailings and rivers.

The US DFC's $3.865m investment in Trinity Metals Group underscores the significant role of local and international partnerships in advancing the development of Rwanda's mining sector.

"This aligns with our commitment to transforming the mining industry into a more productive and profitable sector on a larger scale," said Rwanda Mines Petroleum and Gas Board Chief Executive Officer, Francis Kamanzi.

The funding will be allocated to environmental and social governance (ESG) projects across Trinity's mining operations in Rwanda.

Trinity Metals said the DFC's grant will support a range of ESG initiatives including baseline environmental and social impact assessments, employee skills development and the implementation of an international standard SHEQ Management System.

Established in May 2022, Trinity Metals operates Africa's largest tungsten mine, Nyakabingo, as well as Rwanda's largest and second-largest tin mines, Rutongo and Musha, respectively.

So far, Trinity has indicated its commitment to be part of the energy revolution through holding itself accountable to the communities where the company operates and the greater good of the planet.

"We support the UN's mission to ensure that by 2030 all people enjoy peace and prosperity and do our part to contribute to the Global Sustainability Development Goals."

In addition steps have been taken to track, actively reduce and offset carbon emissions and utilise eco-conscious mining methods and technology.

"We employ a replacement strategy for trees affected by our mining operations and have planted in excess of 657,000 trees across the three mine sites. And we work collaboratively with the local environment, forestry and water management authorities to ensure that our efforts add net value to the environment," said the company.

Trinity has launched a community beekeeping project at its Nyakabingo mine, promoting biodiversity in rehabilitated forests. This sustainable initiative provides livelihood opportunities.

Barrick allays breaching commitments in Mali

Barrick Gold Corporation denies the allegations made by the Malian Ministry of Mines and the Finance Ministry that it had not honoured its commitments made under an agreement designed to achieve a more equitable distribution of mineral resource exploitation to the benefit of all stakeholders.

As announced by Barrick on 30 September, the company and the government agreed on a negotiation framework to achieve a global resolution of their disputes. Since that date, Barrick has been actively engaged with the government in pursuit of such a settlement, the terms of which will be set out in a memorandum of agreement.

This memorandum of agreement is intended to settle outstanding differences and to establish the principles that would guide Barrick's partnership with the government in future, including an increase in the state's share of the economic benefits generated by the Loulo-Gounkoto complex.

In early October, Barrick made a payment to the government of FCFA 50 billion (US$85 million) in the context of the ongoing negotiations. Since then, it has consistently maintained its efforts to engage with the government.

While Barrick does not accept any claims of wrongdoing, it has chosen to act in good faith as a long-standing partner of Mali, aiming to resolve outstanding disputes through this memorandum of agreement.

Barrick President and Chief Executive Officer Mark Bristow said the company's mutually beneficial relationship with successive Malian governments had endured for 30 years and occasional differences had always been amicably resolved.

He said Barrick remains committed to finding a mutually acceptable solution to the current impasse in the interest of all stakeholders.

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International News

Rio Tinto progressing major projects to deliver organic growth

British-Australian multinational and the world's second largest metals and mining corporation, Rio Tinto says ambition to grow overall copper equivalent production by around three percent of compound annual growth from 2024 to 2028 are on track.

The development comes as the company continues to strengthen operations, with the roll-out of the safe production system delivering consistent production at Pilbara iron ore business and a step change from Australian bauxite mines.

"We are building on this, with more work to do across our global portfolio," said Rio Tinto Chief Executive Jakob Stausholm, adding that the company is progressing major projects to deliver profitable organic growth.

"We are on track for first production from our Simandou high-grade iron ore project next year and first lithium from the Rincon starter plant by the end of this year. Meanwhile the ramp-up of copper production continues at the Oyu Tolgoi underground mine."

He said the acquisition of Arcadium Lithium will bring a world-class lithium business alongside leading aluminium and copper operations to supply materials needed for the energy transition.

"This is aligned with our strategy and our disciplined capital allocation framework, increasing our exposure to a high-growth, attractive market at the right point in the cycle."

Meanwhile decarbonisation of the business remains a priority and is also progressing.

"We took another important step in securing a long-term future for the Boyne Smelter, announcing a partnership with the Queensland Government to support investment in renewable energy projects."

The company has reiterated that its long-term pathway to deliver profitable growth and create shareholder value remains clear, as the company progresses in business in line with its objectives.

On safety, the company's all injury frequency rate (AIFR) for the third quarter was 0.40, an increase from the second quarter of this year (0.31) and the third quarter of 2023 (0.35).

"We continue to prioritise learning from safety incidents to improve the effectiveness of our critical controls. The health, safety and wellbeing of our people and partners remains at the heart of everything we do."

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Industry Innovation

Caterpillar introduces energy management solution ...for battery and diesel-electric mining equipment

Caterpillar Inc. has unveiled an innovative OEM-designed solution to help solve one of the most complex aspects of the mining industry's energy transition – energy management.

Cat® Dynamic Energy Transfer (DET) is a fully Caterpillar-developed system that can transfer energy to both diesel-electric and battery-electric large mining trucks while they are working around a mine site. It can also charge a machine's batteries while operating with increased speed on grade, improving operational efficiency and machine uptime. The innovative Cat DET system provides the industry with options to support both near-term and long-term sustainability strategies.

"We believe Cat DET provides a technological leap for the mining industry. Our team of innovators designed this system to provide immediate benefit to miners who want to lower their operating costs and greenhouse gas emissions today while also creating flexibility for the future," said Denise Johnson, Caterpillar's Resource Industries group president.

"We know customers need choices to fit their unique site objectives. We are proud to deliver an innovative, integrated solution that can support their needs of today and those of the future."

Cat DET is comprised of a series of integrated elements, including a power module that converts energy from a mine site's power source, an electrified rail system to transmit the energy and a machine system to transfer the energy to the truck's powertrain.

The rail system is a highly deployable, mobile solution that can be customized to customers' specific site layouts, including high-speed and curved haul roads, enabling higher productivity.

The connecting arm can be installed on either side of a truck and on multiple truck models, providing options to fit customers' specific operations. It can also be used on mature or developing sites, and it can be easily moved or expanded to allow maximum mine site coverage.

Cat DET will integrate with the Cat MineStar™ Command for hauling solution, merging autonomy and electrification technologies to provide a holistic site solution.

Caterpillar Senior Vice President Marc Cameron explained, "We believe mine sites will benefit from enhanced efficiency with the integration of electrification and automation. When combined, these technologies will help miners achieve production targets while simultaneously managing energy demands."

Data Driven Grind Circuit Optimization

Hydrocyclone performance and particle size classification are crucial elements in the comminution process. The ability to measure particle size within individual cyclones is essential for grind circuit optimization and for controlling product size sent downstream.

Current Challenges

All cyclones within a cluster behave differently, yet until recently, operators were unable to measure the particle size from each individual cyclone. How can they ensure target size classification for optimal recovery? How is particle size variability controlled? In a macro economic environment where the demand for valuable mineral is outstripping the supply, how does a concentrator relax the grinding task, grind coarser, and increase throughput without violating the downstream process barrier? It is impossible to respond to industry challenges using conventional measurement technologies.

Innovative Solutions

For over 20 years, CiDRA Minerals Processing has been creating reliable and innovative technologies designed to address the most difficult challenges in the mining industry.

CiDRA's CYCLONEtrac™ Particle Size Measurement System(PST) with SMARTsensor™ technology is quickly becoming the industry standard for particle size measurement and is the only real time measurement system that directly measures and tracks particle size for individual cyclones every four seconds.

The SMARTsensor is a wave guide that is inserted through the pipe wall on each overflow pipe. As the particles strike the waveguide, high frequency acoustic waves are generated, captured, and produce a frequency spectrum that is processed to determine particle size.

The Paradigm Shift

This unique technology allows minerals processing operations to make a step change from conventional measurement to direct, real-time measurement of individual cyclones with the capability to provide up to five particle size measurements every four seconds.

Operators can now make decisions that reduce particle size variability and achieve their target grind size (micro control strategy). CYCLONEtrac PST also enables a consolidated particle size measurement from all cyclones in the cluster to derive a P80 measurement for the control and optimization of the grind circuit (macro control strategy).

Another benefit of using CYCLONEtrac PST is the ability to prevent roping, a process upset that negatively impacts recovery before it occurs. Additionally, identifying cyclones that are out of class enables condition-based monitoring at the individual hydrocyclone level. Finally, relaxing the grind task and producing coarser particles minimizes maintenance required to shut down and clean flotation circuits. This helps reduce water usage and energy consumption.

What Our Customers Say

One customer attests to the benefits and value that CYCLONEtrac PST technology provides: ***"CYCLONEtrac PST allows us to obtain better control of the P80, by cyclone, and evaluate its positive impact on tonnage without drastically affecting plant recovery. Also, it allows us to optimize the classification circuit, identifying the main constraints (cyclone feed pump flow, pressure, water addition to control % solids, classification efficiency)."***

Another customer stated ***"The good news is that each individual cyclone's performance can been seen. There is a wealth of new information that none of us have ever seen before regarding cyclone cluster operation."***

(Joe) João Felix, Felix Projects
Representative in Sub-Sahara Africa for:
CiDRA Mineral Processing, Inc.

Metso expands its flotation mixing offering

Sustainable technologies company Metso is expanding its flotation portfolio with a new innovative solution, the FloatForce®+ mixing mechanism. With FloatForce®+, part of Metso's Planet Positive offering, Metso introduces a plug-and-play solution that maximizes metallurgical recovery, boosts pumping efficiency, and reduces energy consumption, helping customers recover valuable materials and increase revenue.

Launched in 2006, FloatForce® has set the standard for efficient flotation mixing mechanisms in the industry, but recent R&D breakthroughs have unveiled new ways to further enhance performance and sustainability.

"The FloatForce+ is designed for seamless plug-and-play installation with existing FloatForce configurations. It's also compatible with other mixing mechanisms, needing only minimal modifications for integration," said Christian Cardoso, Product Manager, Mechanical Flotation Services at Metso.

Flotation technology has played a pivotal role in Metso's history for over five decades. Through subsequent advancements in the company's evolution, Metso has significantly influenced the trajectory of mechanical flotation technology and helped to propel the industry forward.

"Metso's new flotation mixing mechanism marks the latest advancement in our ongoing journey of flotation innovation and represents a major milestone in our Planet Positive initiatives," said Antti Rinne, VP, Flotation at Metso.

Metso's developments in flotation cell technology enable upgrading and retrofitting of older flotation equipment for enhanced performance.

This upgrade aligns with our sustainability goals by optimizing manufacturing materials and integrates seamlessly with digital solutions, enabling customers to track energy consumption, recoveries, and maintenance planning.

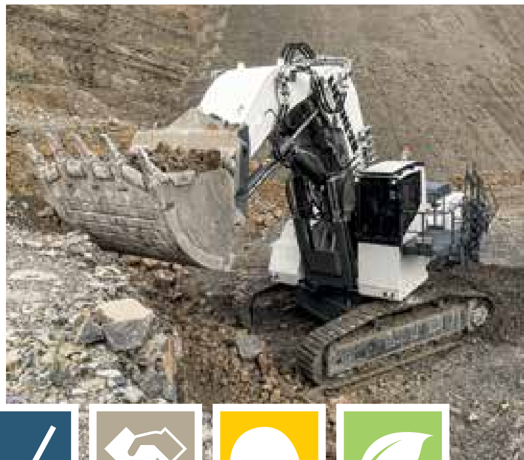
Experience the Progress.











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- Highest productivity and efficiency through intelligent energy management
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- Liebherr's commitment to reduce environmental footprint across all machines

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Industry Innovation

ABT to distribute BrakeiQ system for other global OEM's

Advanced Braking Technology (ABT) supplier of fail-safe brakes for commercial vehicles has signed a global distribution agreement with RaptorTech..

The partnership is set to distribute, market and sell BrakeiQ, a cutting-edge auto braking system designed to integrate with Collision Avoidance Systems (CAS).

Some of the highlights of the deal are ABT is to be the exclusive distributor for the product worldwide for three years, with provision for renewal of the contract.

In addition, ABT will market and sell the product under its own branding – BrakeiQ, compatible with more than 30 Caterpillar models, and a select few Komatsu models, with further customisation available for other original equipment manufacturers (OEMs)

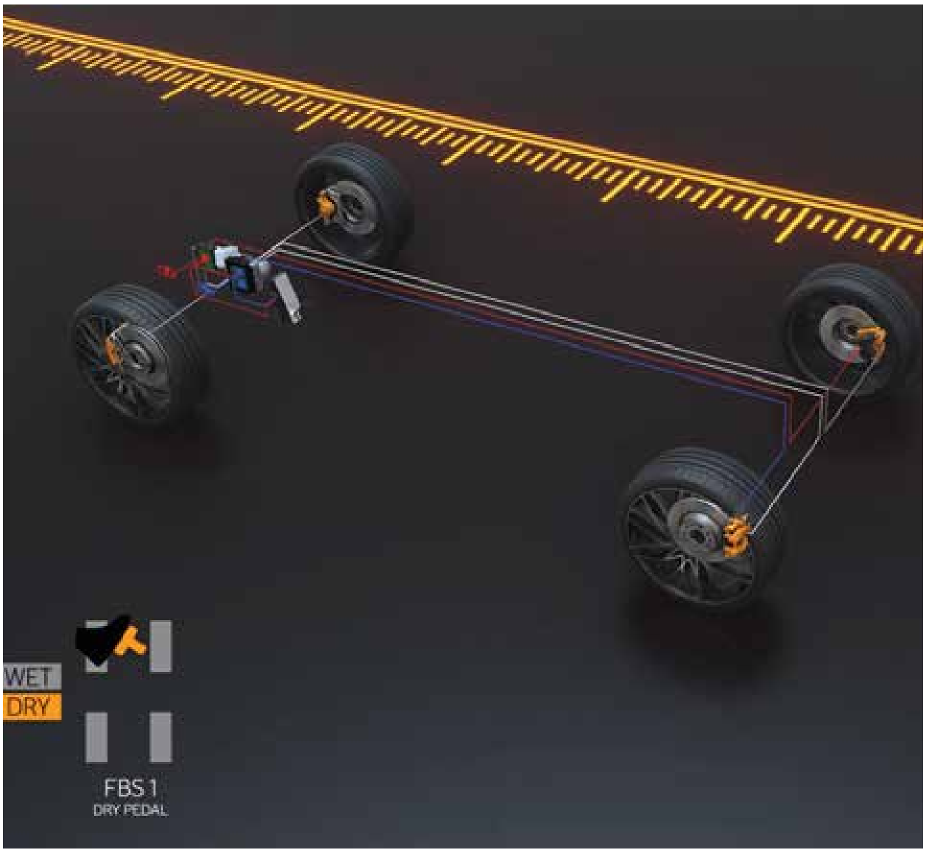
ABT anticipates the partnership will provide entry into untapped markets like open cut mining, potentially expanding its geographical footprint.

RaptorTech Pty Ltd was founded in 2018 with the vision of providing all levels of industry with access to leading technology. The company believes that technology should work on any brand machine with a high focus of interoperability that empowers owners and operators to achieve their business goals.

BrakeiQ is designed with consideration to ISO 21815-2 standards and EMESRT Level 9 intervention, ensuring seamless integration with existing CAS. Its versatile design allows application across various machine types, supporting compatibility with more than 30 Caterpillar wheel loader and dozer models as well as Komatsu models.

While the system is instantly compatible with Caterpillar and Komatsu models, it only requires 2 – 4 weeks to create, develop and deploy a BrakeiQ system for other global OEM's.

The Agreement includes a provision for further development of the Product to allow or enhance the Products integration with any other system or vehicle.



Under the agreement, ABT has exclusive global distribution rights to distribute, market, promote and sell the product.

The initial term of the agreement is three years. In the last three months of the initial term the parties shall negotiate in good faith over the renewal of the Agreement for a further extended term of three years.

In addition to generating incremental revenue for the Company, the Company is of the view that through this partnership, ABT is likely to gain additional market share and enter otherwise untapped markets, including above ground mining and expansions into currently unserviced geographical regions in the near to medium term.

The Agreement includes an initial purchase of inventory from RaptorTech, with approximately $1.1m in revenue from the first order. It includes customary performance KPI's based on volumes and service performance criteria. ABT will use available cash on hand to pay the initial purchase.

Exclusivity will be reviewed biannually against the achievement of the performance criteria.

The agreement otherwise contains terms and conditions customary for contracts of this nature.

"ABT's strategic innovation focus in the Collision Avoidance Systems (CAS) space offers a significant growth opportunity via increasing applications as a leading safety OEM brand in the mining market. We are thrilled to partner with RaptorTech to bring our safety solutions to clients in Australia and globally. RatporTech has a proven track record of providing top tier safety technology and we're confident that our partnership will provide ABT's highly valued blue-chip customers with the best possible solutions and add further momentum towards ABT's revenue expansion" said Andrew Booth, Chief Executive Officer of RaptorTech.

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