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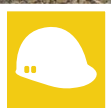
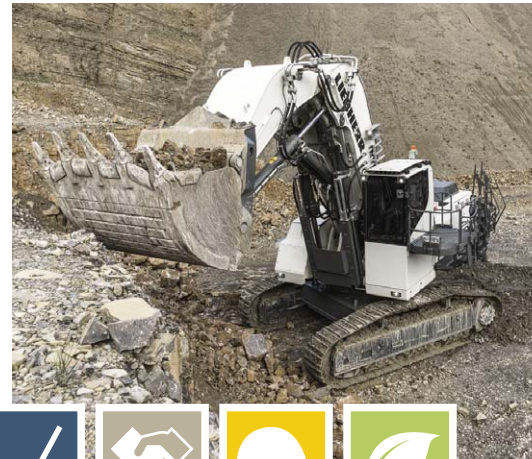


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CONTENTS

- 03 **Comment**
- 05 **News**
- 08 **Industry View**

REGIONAL REPORT: SOUTH AMERICA

- 10 **A Miner's Playground**
Steven Chopade and Shaheen Mulani, QY Research, India.

SPECIAL REPORT: COPPER

- 16 **Sextuple Threat**
Samuel Grant (UK) and Jaime Sepúlveda (Chile), CRU.



DRILL & BLAST

- 21 **Blast Off**
Russell Lamont, Miguel Valenzuela and Jim Kennedy, Dyno Nobel, the Americas.
- 27 **Head In The Clouds**
Caitlin McKinnon, Motion Metrics, Canada.

GEARS, MOTORS & DRIVES

- 31 **Extracting Potential**
Marcelo Perrucci (Switzerland) and Ulf Richter (Germany), ABB.

- 35 **Torque The Torque**
Andreas Westphalen and Michael Nafe, Caterpillar, Germany.

AUTOMATION & CONTROL

- 39 **Adaptability And Automation**
Brendon Cullen, RCT, Australia.

IPCC & SURFACE MINERS

- 42 **Strong Gains In Ukraine**
Alexey Ihl, Wirtgen, Germany.



SHOVELS, EXCAVATORS & DRAGLINES

- 46 **Services In Smart Mining**
George Barturen, Liebherr-Mining Equipment Colmar, France.

PUMPS, PIPING & VALVES

- 51 **Inner Peace**
K. Schroerer and J. Edwards, ROSEN Group, Germany.

CONVEYORS

- 54 **In The Load Zone**
Franklin Moore, Flexco, USA.



ON THE COVER

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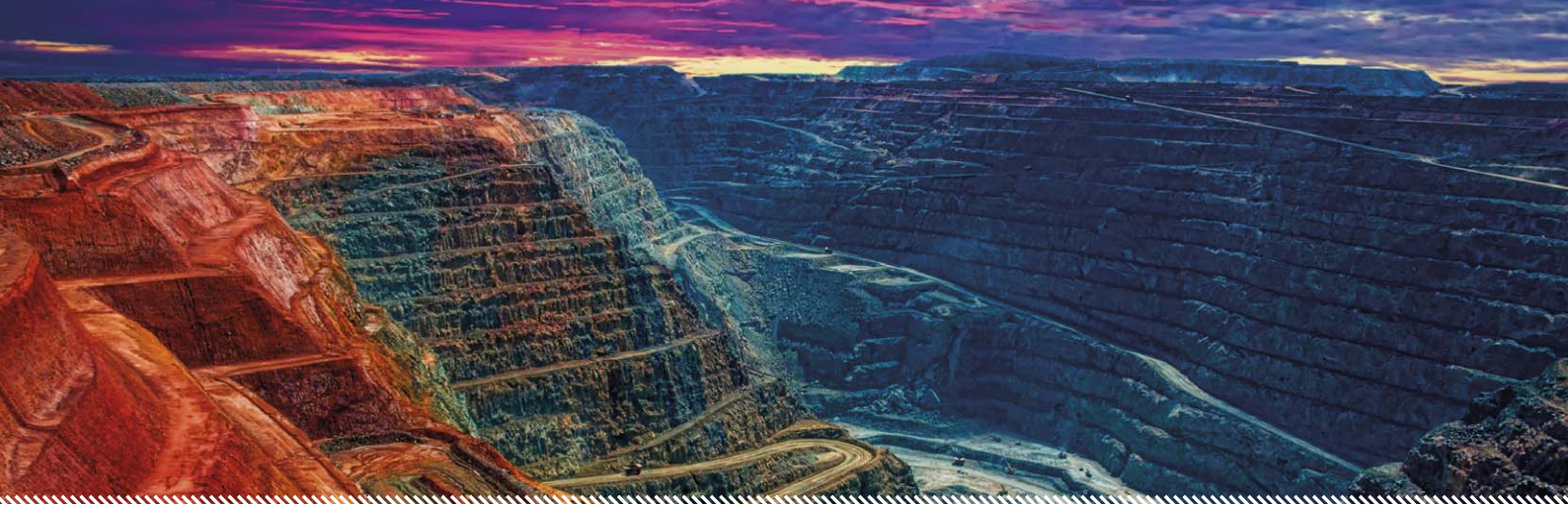
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COMMENT



JOHN WILLIAMS
EDITORIAL ASSISTANT

A flicker at the end of a long tunnel? This is what many people around the world will be beginning to see as governments start to gradually ease restrictions across the board and dip a solitary toe into the unknown temperatures of a post-COVID world. In Germany's case, an impressive recovery rate of 143 000 out of a total of 173 000 cases has, among other things, resulted in the tentative readmittance of children back into classrooms and the Bundesliga's much anticipated restart.

But matters are not as simple as they appear.

Since the changes, the country's infection rate (R_0 , the tracking rate of how many people, on average, will be infected for every individual who has the disease) has risen above 1, and Dynamo Dresden's entire squad remains in isolation just one week out from the first fixture back. Considering how swift the country's lockdown was, and how effective its testing plan has been, these consequences paint a jarringly real picture of just how perilous the path of lockdown-lifting will be to walk.

For the mining industry, nowhere is this problem more apparent than for copper-producing heavyweight Peru, whose lockdown in the middle of March brought the industry to a grinding halt. At the start of May, Reuters reported it to have 42 534 confirmed cases – the second highest in the continent – with a death count of 1200. However, if the country's impressive recent economic growth is to continue, much will depend on the state of the country's mining sector, which accounts for roughly 14% of its GDP and 60% of exports.¹ The lasting socioeconomic impact this has had has been immense for a country whose poverty rate has been cut in half since the turn of the century.

Mining's importance to the economic and social health of Peru cannot be overstated, so it is unsurprising that the temporary closure of key copper mines such as Antamina, 270 km north of Lima, and owned by BHP, Glencore, Teck and Mitsubishi, has been a cause for concern. According to BHP, the mine, which sits a cool 4300 m above sea level in the Andes Mountains, can process roughly 145 000 tpd of ore depending on hardness and accounted for approximately 3% of the country's total corporate tax base in 2016. It may have been something of a relief for the mine then that the Peruvian government started to ease the sector's restrictions at the beginning of May, including on storage and transportation.

Just as in Germany however, the situation is precarious at best. On 27 April, Antamina reported 210 cases of COVID-19 among its staff and contractors. Although arguably the more important figure is the 87% of these that were asymptomatic – a feature of the disease that makes it difficult to identify and contain on mine sites and indeed anywhere without consistent testing.

The government decreed that: "It is necessary to begin the social and economic recovery. Therefore, it is a priority to address the transition to a resumption of activities that incorporates precautions and protective measures to prevent infections and minimise the risk of a rebound in the disease." Despite this line, questions still remain about workplace safety and the kind of implications for infection rates.

Peru will have to walk along the knife edge to normality, on one side of which lies this clear and present issue, and on the other, the nation's social and economic health. As countries battle to keep their R_0 values below 1, and with the threat of a healthcare system-busting second wave a very real danger, just how safe and effective these gradual changes will be remains to be seen.

In these difficult times it is more important than ever to stay informed of the industry's latest news and developments, which Global Mining Review will continue to provide through our online issues and flips, daily news updates, webinars, and Facebook, Twitter and LinkedIn posts. The team at Global Mining Review would also like to thank all key workers and medical staff around the world for their tremendous effort in us keeping ahead of this pandemic. **GMR**

1. DE LA FLOR, P., 'Mining and Economic Development in Peru,' <https://revista.drclas.harvard.edu/book/mining-and-economic-development-peru> (Accessed 12/5/20)

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WORLD NEWS

AUSTRALIA Rajant and Hitachi deploy autonomous hauling system in Australian coal mine

Rajant Corp., the provider of Kinetic Mesh® wireless networks, and Hitachi Construction Machinery Australia are improving operational safety and productivity through the use of autonomous haulage systems in an Australian coal mine. Hitachi selected Rajant Kinetic Mesh because it is the only industrial wireless network enabling vehicle-to-vehicle (V2V) communication, which allows autonomous vehicles to talk directly to each other, providing enhanced coverage and reliability.

Robert Schena, CEO of Rajant, said: “The mine’s existing Rajant wireless network deployed across a vast number of mobile and fixed infrastructure easily met the requirements to support and enable Hitachi’s autonomous operations. Additionally, Hitachi systems can be retrofitted onto existing vehicles, expanding their scope and market significantly.”

Distinct to Rajant Kinetic Mesh is the proprietary InstaMesh® networking software protocol, which improves Kinetic Mesh performance as network characteristics change, without the need for a controller node or human intervention.

Mobile nodes can communicate directly with each other

to enable V2V communications between both manned and unmanned vehicles.

In September 2019, Rajant Corp. and Velodyne Lidar Inc. demonstrated the simplicity of viewing and managing LiDAR data remotely at IAA Frankfurt, Germany. Velodyne LiDAR provides high-resolution, long-range LiDAR for ADAS and autonomous applications. V2V and V2X communication of LiDAR and fused data is a key component for the dynamic updating of traffic and infrastructure information to enable envisioned Smart City applications. Rajant also previewed their crypto solution, code-named Wolverine, designed for the military and adapted for commercial applications, along with their wireless V2X technology for last-mile autonomous applications such as test tracks.

The Wolverine solution is a fully programmable, multi-chip design, built with programmable flexibility, providing the ability to add new algorithms in the future and is designed to meet stringent NSA certification requirements. It contains advanced encryption and authentication algorithms using a fail-safe design to provide design flexibility for multiple IoT applications.

CHILE Kal Tire launches Maple Programme

Kal Tire’s Mining Tyre Group has announced the certification of its new carbon calculator that is able to determine fuel and carbon emissions saved by retreading earthmover tyres compared to buying new. With that, the company is launching its Maple Programme, which quantifies a customer’s environmental impact as they grow their fleet with retreads.

“Retreading reduces a tyre’s operating cost per hour, and it has become increasingly important to customers to reduce their impact on the environment. We look forward to providing customers with actual data on the environmental savings they achieve,” said Darren Flint, Vice President, Tyre Lifetime Services and Vice President, European and West African Operations at Kal Tire. The Maple Programme uses data from Kal Tire’s new carbon calculator to award customers with one to five stars according to the percentage of their fleet running retreads rather than new tyres. The programme is first launching in Chile and the UK, with plans to roll out in other regions Kal Tire operates.

In 2021, new environmental laws in Chile will dictate responsible tyre recycling, of which retreading is an official option. Pedro

Pacheco, Vice President, Latin America Operations, Kal Tire, said Chilean customers have already embraced the Maple Programme and see the value in receiving the certificate. “This programme gives us a framework to promote the environmental value of our retread product and process and provides solutions for customers within this new law. As we can offer incentive to increasing the amount of tyres retreaded, we’re giving tyres another life at a much lower cost and environmental impact, with the added benefit of reducing the number of casings going into the waste stream.”

One of the largest quarrying groups in the UK has been benefitting from Kal Tire retreads for several years, retreading hundreds of tyres each year. They are among the first UK companies to receive the Maple Programme certificate highlighting how much oil and carbon emissions they have saved by retreading.

After a 6 month approval phase, the carbon calculator was validated by SCS Global Services, an international body in third-party environmental certification. The verification applies to all Kal Tire retreading facilities located in Canada, the UK, West Africa and Chile, as well as their newest retread facility opening in Mexico.



WORLD NEWS

DIARY DATES

Electra Mining Africa

07 - 11 September 2020
Johannesburg, South Africa
<https://www.electramining.co.za/>

PASTE 2020

22 - 25 September 2020
Santiago, Chile
<http://paste2020.com/index.php#register>

Hi-Tech Metals '20

12 - 13 October 2020
Cape Town, South Africa
<http://www.min-eng.com/hitechmetals20/>

Process Mineralogy '20

14 - 16 October 2020
Cape Town, South Africa
<http://www.min-eng.com/processmineralogy20/>

Future of Mining Americas

19 - 20 October 2020
Colorado, USA
<https://www.expomin.cl/en/online-registration/>

Mining World Russia 2020

20 - 22 October 2020
Moscow, Russia
<https://www.miningworld.ru/Home>

International Mining and Resources Conference and Expo (IMARC)

27 - 29 October 2020
Victoria, Australia
<https://imarcmelbourne.com/register.php>

Future of Mining EMEA

02 - 03 November 2020
London, UK
<https://emea.future-of-mining.com/emea2020/en/page/register-now>

EXPOMIN 2020

09 - 13 November 2020
Santiago, Chile
<https://www.expomin.cl/en/online-registration/>

MEXICO Great Panther plans to restart Mexican operations

Great Panther Mining Ltd has reported that it intends to restart operations in Mexico in May in accordance with the Mexican federal government's announcements of the lifting of restrictions that have suspended mining operations in the country since the start of April.

At the Guanajuato Mine Complex (GMC) in Mexico, one employee has been diagnosed with COVID-19. The employee was working remotely at the time of the diagnosis.

The restart of operations in Mexico will follow a phased approach based on health guidelines and government regulations in each jurisdiction with appropriate protocols in place to protect the health and safety of the company's workforce and communities.

In Peru, the federal government state of emergency and quarantine measures remain in effect until 24 May 2020. The Coricancha Mine is on care and maintenance and is not material to the company's operations. Great Panther places the safety and wellbeing of its personnel and communities as its highest priority and has implemented epidemic plans aligned with local health authorities and the World Health Organization guidelines at all its operations and offices.

CANADA Gran Colombia Gold proposes merge with Guyana Goldfields and Gold X

Gran Colombia Gold Corp. has recently announced that it has signed a definitive agreement to complete a business combination with Gold X Mining Corp. and that it has submitted a proposal to Guyana Goldfields Inc. to acquire all of its issued and outstanding common shares. The contemplated business combination between Gran Colombia and Gold X is conditional upon the successful concurrent acquisition of Guyana Goldfields, and the proposal to Guyana Goldfields is conditional on the concurrent acquisition of Gold X.

The combined entity will continue as Gran Colombia and will be managed by the current Gran Colombia executive team, with corporate headquarters remaining in Toronto. Shareholders of Gran Colombia will own 60% of the combined company, with Guyana Goldfields and Gold X shareholders owning 25% and 15% respectively, on a basic shares outstanding basis.

Gran Colombia and Gold X welcome the opportunity to bring their expertise in Latin American mining projects to maximise the value of the combined assets and create a new Latin American intermediate gold producer. In support of the Proposal, Gran Colombia has purchased 8.7 million shares of Guyana Goldfields, representing 5% of the basic shares outstanding. Serafino Iacono, Executive Chairman of Gran Colombia, stated: "Not only does this transaction unlock meaningful value for all shareholders, but it creates a new Latin American gold champion with Latin American operators and mine builders."

Lombardo Paredes, CEO of Gran Colombia, commented: "Based on our internal integration plan, we have identified US\$200 million of synergies as there are a number of different areas where Toroparu can benefit from the existing infrastructure at Aurora. This is truly a unique opportunity and I look forward to using Gran Colombia's strong operating and mine-building team to unlock this substantial value for shareholders."

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INDUSTRY VIEW

ESG IN THE MINING SECTOR: WHAT'S ON THE ROAD AHEAD?

Rachel Speight, Partner, and Emma Sturt, Associate, Mayer Brown, UK.

In recent years, there has been a significant shift in attitudes to the environment, social concerns and ethical governance by investors in the mining industry. Never has the environment been in as sharp focus as now, with investors and mining companies alike claiming it as the biggest challenge facing the mining industry in 2020. Equally important is the ability to demonstrate to stakeholders that social issues and ethical governance are embedded in the strategic decision-making process. The proliferation of social media, together with increased knowledge and scrutiny of behind the scenes activities, also thrust environmental, social and governance (ESG) concerns into the spotlight in a way that is impossible to ignore.

To date, there is no internationally recognised definition of ESG. However, the three commonly accepted 'pillars' of ESG encapsulate the following concerns:

- Environment: greenhouse gas emissions, resource depletion, waste and tailings management, pollution/contamination and deforestation.
- Social: working conditions, community interaction, conflicts (e.g. with artisanal miners), health and safety and employee relations.
- Governance: remuneration, bribery and corruption, government relations (resource nationalism), board diversity and taxation.

You only have to look at the fallout from the tragic collapse of the Brumadinho tailings dam to see the impact of not heeding the importance of ESG. A quarter of Vale's market value was wiped out. It is no surprise that divestments in non-ESG-compliant enterprises are growing. For example, JP Morgan Chase has now joined the ranks of other big investing institutions in declaring a restriction on thermal coal financing and arctic drilling investments, making available a budget of US\$200 billion to provide financing for sustainable projects in support of the UN Sustainability Development Goals (SDGs).

So, what can (and should) mining companies be doing? A number of early-mover big mining companies have made a start on developing their 'good ESG' profile. This is now having a trickle-down effect, as "the small mining companies simply cannot afford to be left behind", said Dr. Aoife Brady of iCIRAG, a leading geosciences research institution that has seen a

significant increase in contact from small mining companies.

In addition to the plethora of mandatory and non-mandatory environmental laws, regulations and best practice, mining companies keen to build an advantage around supporting climate change reduction should develop two things.

Firstly, a business strategy focused on the climate-related trends that could affect the companies' business. For example, the demand for coal in the short, medium and long term; new innovations and the minerals that will support those innovations, and secondly, climate-proof operations – for example, the use of synthetic water being investigated by Anglo American or geothermal heating/cooling by Barrick Gold.

Tickling off as much of the relevant ESG measurement criteria as possible is advisable. Particularly as indexes of companies leading on environmental transparency and performance, such as the one from the UK Climate Disclosure Standards Board, now exist.


Being an 'A-list company' brings kudos and investor interest. The SDGs are a good place to start and the taxonomies set out for investing companies in the proposed taxonomy regulation provide insight on what constitutes environmentally sustainable economic activity.

On the social side, companies should engage stakeholders with an inspiring mission, have a social conscience and listen to the communities in which they operate. This ethos should filter through the company to all employees, with narrative that is authentic, coherent and engaging.

An air-tight governance programme should be a non-negotiable – both at a group level and throughout the companies' supply chain. This does not need to be overwhelming. The key to success is simplicity; setting up an appropriate risk-based compliance programme for the company concerned. This needs to a continuously evolving programme covering areas such as anti-money laundering, anti-bribery, sanctions and fiscal requirements.

Of course, the incongruity of 'green mining' is not lost on society: it is a contradiction in terms. Or is it? The hard fact that mining is key to our green, sustainable and socially responsible future is highly pertinent. Electric vehicles and 3 MW wind turbines cannot operate without the minerals produced by the global mining industry. As a result, ESG is increasingly important in the future of all mining companies, whatever their size. **GMR**

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A MINER'S PLAYGROUND

Steven Chopade and Shaheen Mulani, QY Research, India, give an overview of the mining industry in South America.

South America – expected to become the world's new mining capital – takes pride in its enormous reserves of lithium, copper, silver, nickel, zinc and other major metals. In its 2019 annual publications, the United States Geological Survey ranked Brazil second in the world for its iron ore production and showed the country sharing the fourth spot with Bolivia and Peru for its tin production. Besides being a land blessed with metals and minerals wealth, South America has the operational excellence, exploration strength, government backing and mining experience and expertise to take its mining industry to the next level.

Industry analysts expect partnerships with international companies and high technological advancement to support the growth of the mining industry in South America. Late in 2019, Peru-based mining company Minsur partnered with Google for the application of blockchain to trace and fully register its specific mining processes, such as tin extraction.

South American miners and governments are desperately trying to win the favour of local communities and build a rapport with indigenous populations to ensure uninterrupted, protest-proof mining and exploration of metals and minerals in their areas.

Early in 2020, the head of the Brazilian Ministry of Mines and Energy discussed the country's sustainable and responsible mining plans with several European diplomats. According to Brazil's Minister of Mines and Energy, leaders from hundreds of indigenous communities in the country had called on the government to allow exploitation of resources on their lands.

Gold miners in South America are expected to strike gold in 2020 if the prices improve. Don Durrett, an expert on gold and silver mining stocks, listed a couple of gold mining companies with operations in South America in his list of top 10 gold mining stocks for 2020. South America may enjoy increased international attention as gold mining prospects improve in the future.

Taking a step back in time

The history of South American mining and the exploitation of the region's mineral resources, labour and technology can be traced back to the 16th century. It all began in 1545, at the extremely rich Potosí mine 'Cerro Rico', located in Bolivia. The European colonial empires carried out silver production and disrupted the indigenous world through forced migration and enslavement of the natives. Gradually, the mining sector underwent nationalisation before privatisation took over. Favourable tax regimes and lenient regulations attracted foreign capital and huge mining corporations. Since then, companies have been extracting minerals in this region and to date, South America forms a key base for the global supply of metals and mineral reserves.



South America is home to 13 countries. Chile is the top exporter of copper in the world; Mexico is recognised as the leading country in silver production; Brazil stands in third position in iron production and Peru is the top exporter of silver, gold, copper and lead. Approximately 85% of South American mineral and metal exports come from these four nations.

What does the future hold?

Although certain factors are holding back the mining sector's growth in South America, the region seems promising. Some of the countries in South America are still unmapped in terms of several minerals. This will offer growth opportunities for companies looking to expand their mining operations with the appropriate resources, as well as mining strategies in the region.

A growing demand for copper and lithium across the globe as a result of power electric vehicles is expected to play a major role in building the future of South American mining. Reportedly, a battery electric vehicle deploys about 83 kg of copper, and most of the plug-in hybrid electric vehicles (PHEVs) and all-electric vehicles (EVs) make use of lithium-ion batteries.



Figure 1. Chuquibambilla, the world's biggest open-pit copper mine in Chile.



Figure 2. Brazilian labourers washing for gold. This image is of an antique miniature drawing taken from the *Illustrated Atlas of the World*, published circa 1828.



Figure 3. A lump of gold on a stone floor.

The 'lithium triangle' – comprising of Bolivia, Argentina and Chile – holds beyond half of the global reserves of lithium in brine form, which is more feasible to process compared to other forms. An abundant presence of this strategic resource is likely to provide a great opportunity for the region's mining sector. Puno, a region in Peru, also shows great potential to be a major lithium mine. Companies who can provide efficient mining equipment, technology and services in these countries to help further extraction will benefit from it.

Another factor that may positively impact the South American mining sector is an improvement in the legal backdrop. Change in the mining policies, particularly in Argentina and Ecuador, are likely to open up avenues for the investors. Certain countries in the region are also improving their ability to regulate the relationship between investors and the citizens. This is likely to invite exploration projects in the coming future. With the reduction in the mining taxes, Argentina is probably to attract foreign investment in the mining sector.

Furthermore, lucrative opportunities exist for the investors in Colombia due to the country offering low operational costs, limited capital controls and a comparatively attractive company tax rate. Although Chile is currently undergoing water and energy scarcity issues, it presents prospects for the companies that can provide energy efficient systems and best practice water management systems to improve mining productivity.

Asset turning into a liability?

Although an abundant presence of natural resources is considered a strong point of South America, it has also proved to be a weakness for the region. Over the last few years, as a result of the growing demand for gold, the rate of small-scale gold mining has increased significantly. This has eventually caused the destruction of over 200 000 acres of the Peruvian Amazon rainforest.

Along with deforestation and environmental degradation, it has given rise to potential threats including illegal mining, human trafficking, health issues and a violation of human and labour rights. During mining, adverse effects on digestive, lungs, kidneys, nervous and immune systems have been observed among the workers due to the inhalation of mercury vapour. Besides that, the reproduction of mosquitoes from the mining wells has resulted in the occurrences of diseases like malaria and dengue fever among the communities.

Illicit mining and its impact

The US Department of State has recently shared an article regarding the illicit mining taking place in South America and its global impact. Certain drug trafficking organisations are deploying gold excavated through illegal means in South America in order to gain profits.

Illicit mining has proved to be a menace for the national security and prosperity of the US as it misuses the US financial system for illegal gain. Besides that, illicit mining gives rise to sex and labour trafficking and environmental degradation.

To combat this scourge, in February 2019, the government of Peru introduced 'Operation Mercury' with an objective to fight against illegal mining that was happening in La Pampa and Madre de Dios, which is the central point for illicit gold mining in Peru.



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Revolutionising the speed of loading trucks, the Surge Loader stockpiles material and then delivers a regulated flow on demand. With trucks no longer needing to reverse into position, the shovel and Surge Loader work together continuously as the trucks queue. Optimised truck utilisation and increased fill factor mean fewer trucks are needed to move the same amount of dirt, driving down your cost per tonne.

With reasonable capital investment and reduced OPEX costs, the Surge Loader system quickly outperforms traditional loading methods. Based on simulation data, MMD believes a shovel's utilisation will rapidly rise from an average of 60% to nearly 95%.

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Figure 4. Illegal gold mining along the Madre de Dios River by local Peruvians.



Figure 5. Indigenous communities of the Salinas Grandes, Argentina, protest against lithium mining on their territory.

Further, in August 2019, the Bureau of International Narcotics and Law Enforcement Affairs (INL) established a 3 year project with the Organization of American States (OAS) to reinforce the national as well as regional systems that tackle unlawful mining financial structures and to strengthen regional relationship.

According to sources, in order to address environmental crimes, the US Agency for International Development is planning to introduce a new initiative to combat illegal activities including gold mining, logging and wildlife trafficking in the Peruvian Amazon.

They aim to achieve this by lending a helping hand to the Peruvian authorities and communities. This plan is also likely to support the efforts of national and regional government efforts to put a stop to these crimes.

South American mining to get challenged

Infrastructural concerns and political and economic turbulence are among the most significant factors challenging the mining industry in South America. For instance, Chile, the world's largest copper producer, is facing infrastructural issues including water scarcity and a lack of proper electricity supply and access to ports. Moreover, regulatory and policy decision uncertainty has become a key challenge for countries like Argentina and Bolivia. Political instability is hampering extensive exploration and mining investment in South America as an investor needs a stable state to create a fair mechanism for the transaction between the citizens and the mining company. However, the mining industry seems promising as change in the mining policies are likely to generate vast investment opportunities in the region.

What will South American mining leaders focus on?

Brazilian mining company Vale and Chilean state-owned copper mining company Codelco are among key South American mining leaders. For the 9 month period ending September 2019, Vale posted net operating revenue of more than US\$27 billion. For the same period, Codelco reached total revenues of over US\$8 billion. For the full year 2018, Vale's total net operating revenues reached over US\$36 billion whilst Codelco earned total revenues of more than US\$14 billion in the same year.

Leading mining companies in South America are expected to become more cautious of their environmental footprint. However, at the same time, they could avoid shying away from tapping into lucrative mining sites. Another strategy they are anticipated to adopt in the future is to prioritise high-quality ore bodies. At the Vale Day New York 2019, Vale presented its roadmap for de-risking the company and ensuring safe growth in the coming years. In its presentation, the company announced its goal to lead the transition to carbon neutral mining. By 2030, it plans to restore and protect an additional 500 000 ha. of forest, mostly in the Amazon, while continuing its iron ore mining in the rainforest.

South American miners could feel the need to implement transformative business plans to further improve their sustainability, transparency, profitability and productivity. Industry experts anticipate they will focus on increasing their surpluses as a support measure to improve their chances of survival during industry downturns and finance their future projects. From 2021, Codelco plans to increase its surpluses by US\$1 billion/yr.

Ensuring a 100% autonomous operation and personnel safety could be other important focuses of leaders in the South American mining business. In December 2019, Codelco announced the deployment of a GPS system that reduces exposure to equipment and most importantly, worker risk during leaching activities at its Gabriela Mistral opencast copper mine. The technology is also said to help with optimised monitoring in the leaching process.

Foreign direct investment

As observed over the years, foreign direct investment (FDI) serves as a key supportive factor for South America's growth and development, where the contribution of mining cannot be ignored. FDI flows may remain steady in the region as economic conditions and commodity prices show stability in major countries such as Paraguay, Peru, Ecuador, Brazil and Argentina. Investors are expected to continue to show interest in natural resources, which could benefit the region's mining industry.

According to the United Nations Conference on Trade and Development's World Investment Report 2019, mining, along with energy, was predicted to strengthen FDI in Argentina last year. Here, three major driving factors were considered, including the rising interest of foreign companies in the development of Argentinean lithium projects. According to industry pundits, this trend may continue to positively impact mining in the country.

Sitting on an estimated 21 million t of lithium reserves, Bolivia could be another recipient of FDI going forward. In February 2019, Chinese consortium Xinjiang TBEA Group Co.

Ltd won a bid to become a strategic partner of Bolivia's state-owned lithium company Yacimientos de Lito Bolivianos. The partnership is aimed at building eight lithium factories in Bolivia with the help of a more than US\$2 billion investment.

Ecuador is expected to create a favourable FDI environment in the future as the government looks to expand the mining industry to 4% gross domestic product by 2021. The Ecuadorian government has already eliminated the 70% windfall tax on mining profits. In November 2019, Canada's Lundin Gold inaugurated its Fruta del Norte large-scale gold mine in Ecuador. In July 2019, Ecuador witnessed the launch of the Mirador copper mining project led by Chinese consortium CRCC-Tongguan's subsidiary Ecuacorriente.

Peru is also anticipated to create opportunities for mining investors considering the addition of its new mining projects. In November 2019, a representative of the Peruvian Ministry of Energy and Mines announced that the country is in a position to responsibly exploit uranium.

Hopes still high

Continual anti-government unrest and anti-mining protests in Chile, Peru, Ecuador and Argentina have brought enough bad news to mining companies interested in South America. However, South American mining is still predicted to continue to lure foreign investors.

The switch to electromobility, further increasing lithium mining activities in South America's lithium triangle, is looked on as a serious problem for the indigenous people of the region. Fresh water contamination resulting from the unwanted mixing of fresh water and salt water is one of the major complaints of the indigenous populations in the Lithium Triangle. Protests and a decline in mining activity took a toll on Chile's economy in November 2019. The country's monthly economic activity index Imacec for November 2019 fell more than 3% over the same month of the previous year.

The selfish hunt for gold and illegal mining in South America has attracted joint police actions, legal analyses by international law and advocacy organisations and surveys that highlight the ill effects of mining on the environment.

There is no denying that the mining industry in South America is feeling the heat amid escalating internal tensions and international pressure. A lawsuit was filed against the licensing of the Argentine state after former President Mauricio Macri announced the plan to extract about 100 000 t of lithium in the country's Puna region. Despite this though, foreign mining companies are observed to show interest in the region, which is good news for South American miners.

Khanij Bidesh India Ltd (KABIL), a joint venture between three companies operating under India's Ministry of Mines, has already started to explore opportunities to secure lithium sites in South America's ABC countries. In May 2019, Metso completed its acquisition of HighService Service, a part of Chile's mining services provider HighService Corp. Metso is a Finnish industrial machinery company serving the mining and other industries.

Expert opinions

South American mining hotspots such as Peru are quickly becoming major points of focus to some of the world's largest economies.

Michael McGuinness, Partner in the M&A Practice at Jones Day, wrote in his article INSIGHT: Watching China's continuing investment push in Latin America, "Due to its enormous mining potential, Peru tops China's strategic investment priorities. The Peruvian mining industry is a crucial avenue for fueling China's fast-paced growth in the construction sector and steel production. Peru's top export to China is copper ore, followed by animal meal and pellets and refined copper."

Often criticised for its environmental footprint, South American mining may wipe out its criticism by helping to make available the natural resources required to combat certain environmental problems.

"E-mobility needs copper. Today's traditional cars use around 23 kg of copper but electric vehicles need 83 kg. Chile also has the capability to provide the lithium and cobalt required. We're currently pushing to cooperate in environmental issues to try and combat global warming, also in the reduction of greenhouse gases. It's something Chile has long been fighting for after China, we have the most electric buses in service with 500 running in Santiago public transit system alone," Baldo Prokuriča, Minister of Mining of Chile, told Mining Global at the Prospectors and Developers Association of Canada 2019 convention.

South American mining to stand firm on shaky ground

Political and social unease in South America due to protests against new mining projects is no more a news to the rest of the world. However, it could be said that the region has managed to cut through various challenges in its mining industry and magnetise investments from its own countries and even outside. Chile is home to the world's largest copper mine by capacity and tops the list of leading copper ore exporters in the world. In Peru, annual mining investment increased for the third time in a row in 2019. South America has over 70% of global lithium reserves.

Set to dominate the next industrial revolution, China is expected to continue to expand its reserves of minerals and metals that are crucial for building modern technologies. It would not be a surprise if the world's largest economy acquires mineral reserves, establishes private and state-owned mining companies, and inks long-term strategic mining partnerships in South America.

In January 2020, Brazil's Atlantic Nickel announced the first sale of nickel concentrate from its Santa Rita opencast nickel-copper-cobalt sulfide operation. In the same month, Canadian gold and silver mining and exploration company, Great Panther announced that it will receive an over US\$11 million prepayment from Samsung. The prepayment will be for the sale and delivery of gold doré from Great Panther's Tucano Gold Mine in Brazil. Late in 2019, Peru gave the go-ahead for the Tia Maria copper project operated by Southern Copper Corporation. The project was previously suspended after incidents of violent protests took place.

Mining is an inseparable element of the economic growth of almost all South American countries. Growing foreign interest, increasing mining exploration activities, mining acquisitions, and recommencement of important mining projects could all contribute to the flourish of South America's mining industry in future. **GMR**

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