

GEONESIS

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HOW ENDING
MINING WOULD
CHANGE THE
WORLD

10
YEARS
Of Geonesis

AUSTRALIAN
MINERAL
EXPLORATION
EXPENSE HITS
RECORD HIGH



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AUSTRALIAN MINERAL EXPLORATION EXPENSE HITS RECORD HIGH



Australia's spending on non-petroleum mineral exploration hit a record high of A\$1.08bn (\$739mn) in July-September, as firms continued to look for iron ore, base metals, battery minerals and coal, despite flooding along the east coast, and continuously rising costs.

Total spending on non-petroleum minerals across Australia during July-September was A\$1.08bn, up from A\$1.06bn in April-June and A\$997.6mn in July-September 2021, according to the latest release from the Australian Bureau of Statistics (ABS). Exploration spending rose to A\$3bn in January-September from A\$2.64bn a year earlier and from A\$1.02bn in the first nine months of 2016.

Exploration on what the ABS calls "other deposits" rose to a record A\$140.7mn in July-September from A\$103mn in April-June and from A\$83mn in July-September 2021. This category includes spending on exploration for lithium and other battery metals, which has increased markedly in the past five years as part of the push for increased electrification to reduce emissions.

Base metal exploration spending also hit a record high of A\$267mn in July-September, up from A\$241.2mn in April-June and A\$236.8mn in July-September 2021, driven by higher spending on copper, nickel, cobalt and zinc deposits. Spending on base metal exploration has been trending up wards and is

double of what it was two years ago and more than quadruple of what it was in 2016.

Iron ore exploration eased to A\$200.1mn from a nine-year record high of A\$201mn in April-June but was up from A\$174.5mn in July-September last year. Iron ore prices fell through July-September, but firms are increasingly looking for ore types that might lend themselves to green steelmaking, and large mining firms are still making significant margins, which are used for exploration to maintain production.

Firms spent A\$64.1mn on coal exploration in July-September, up from A\$61.7mn in April-June, but down from A\$66.5mn in July-September 2021. The flat spending reflects difficult operating conditions because of flooding, particularly in New South Wales. Coal mining firms are also attempting to manage near term gains from record-breaking coal prices and an uncertain medium- to long-term outlook as the world looks to decarbonise.

The Australian dollar eased from US\$0.69 on 1 July to US\$0.63 on 30 September, increasing the cost of imported goods for exploration, such as diesel and explosives. Exploration costs are also rising more broadly across Australia as a skills shortage pushes up wages and the sector faces economy-wide inflation that is being felt more intensely in the remote areas that it largely operates in.

By Jo Clarke

Source: argusmedia.com

INVESTOR CONCLAVE FOR OPPORTUNITIES IN COAL SECTOR

- MINISTRY OF MINES

The Ministry of Coal and Ministry of Mines jointly organized investor conclave on December 01, 2022, in Mumbai where Union Minister of Coal, Mines and Parliamentary Affairs, Shri Pralhad Joshi was the Chair, Chief Minister of Maharashtra, Shri Eknath Shinde was the Chief Guest, Minister of State for Coal, Mines and Railways, Shri Raosaheb Patil Danve and Minister of Mining for Maharashtra, Shri Dadaji Bhuse were the Guests of Honour for the event.

Ministry of Coal has completed the successful auction of 64 coal mines in the first five tranches and has launched the process for auction of 133 coal mines under 6th round of commercial auctions and 8 coal mines under 2nd attempt of 5th tranche of commercial auctions where single bids were received in the first attempt on November 03, 2022.

Additional Secretary & Nominated Authority, Mr. M. Nagaraju welcomed all the investors and informed the forum about the coal reforms undertaken by Ministry of Coal to improve the attractiveness of the coal auction process and make it more investor friendly. Mr. Amrit Lal Meena, Secretary, Ministry of Coal reiterated the commitment of Ministry of Coal in supporting the coal industry and informed that Ministry of Coal is there to extend any help required by the prospective bidders. He also emphasised that the investors should participate in the coal mine auctions as coal mining business is highly profitable which can be seen from the coal mines which have started coal production under commercial mining.

Shri Vivek Bharadwaj, Secretary, Mines welcomed all the investors and emphasized on exploration and production of minerals beyond iron ore, coal, bauxite and limestone. He emphasized on exploration of critical minerals such as palladium, tantalum and lithium etc., which are used in electronics, telecommunication and green energy.

Shri Raosaheb Patil Danve stated that the Ministry of Coal has transformed the entire auction process of coal mines under the guidance of Prime Minister, Shri Narendra Modi and informed that while ~70% of the power is generated through coal in India, the ministry has also taken various initiatives to reduce carbon footprint considering the environmental impact of coal mining. Shri Pralhad Joshi reaffirmed that the usage of coal is going to stay at least for the next 25-30 years and that India is currently having very low per capita consumption of power as compared to some of the other developed economies in the world and it is estimated that the per capita consumption is going to double by 2040 for which coal is the necessity. The focus of the present government under the guidance of Prime Minister, Shri Narendra Modi is to become net zero carbon emission country by adopting better technological processes. Shri Eknath Shinde ensured that the Government of Maharashtra will actively participate in ensuring timely exploration, auction and operationalisation of the coal mines and ensured full cooperation from the Government of Maharashtra in expanding coal mining related activities in the state.

Mr. Manoj Kumar, CMD, CMPDIL gave a presentation on the technical details of the coal blocks being offered in the largest ever auction process, Mr. Chiranjib Patra, GM, CMPDIL presented on the investment opportunities in the MDO sector and Mr. Shubham Goel, Vice President, SBI Capital Markets delivered a presentation on the terms and conditions of the auction process.

Key features of the auction process include reduction in upfront amount and bid security amount, permission to relinquish part of the coal mine in case of partially explored coal mines, introduction of National Coal Index and National Lignite Index, ease of participation with no entry barriers, full flexibility in coal utilisation, optimized payment structures, efficiency promotion through incentives for early production and use of clean coal technology.

The sale of tender document commenced on November 03, 2022. Details of the mines, auction terms, timelines etc. can be accessed on MSTC auction platform. The auction shall be held online through a transparent 2 stage process, on the basis of Percentage Revenue Share.

SBI Capital Markets Limited, the sole Transaction Advisor to Ministry of Coal for the commercial coal mine auctions, is assisting the Ministry of Coal in conduct of the auction.

Subsequently, Dr. Veena Kumari Dermal, Joint Secretary, Ministry of Mines gave a brief presentation on reforms in mineral sector which has brought in ease of doing business and transparency that helped in increase in mineral production and revenue generation to States. Further, she has informed that India is a 5th largest economy in the world whereas contribution of mineral sector in the GDP of India is only 2.67%. She also informed that 6.88 Lakh sq. Km OGP area has been covered as of 2020. India is currently producing 95 minerals and is second largest producer of coal and crude steel and 4th largest producer of iron ore.

She has informed about the major mining reforms that has been brought in MMDR Amendment Act, 2015 that mandates grant of mineral concession through e-auction to improve transparency and setting up of DMF and contribution to NMET. She also informed about the major reforms brought through the MMDR Amendment Act, 2021, that, inter-alia, includes auction of mineral blocks without end use restrictions and allowed transfer of all ML & CL without any charges and transfer of valid clearances.

Further, She has informed that so far, total 216 major mineral blocks including 168 MLs and 48 CL have been auctioned in 10 States, since introduction of auction regime in 2015. Currently, 68 NITs for different minerals are at different stages of auction in various states.

During the discussions, Secretary (Mines) assured the investors that the Ministry of Mines will provide all the possible support and cooperation.

JSW STEEL AMONG 10 COMPANIES IN RACE FOR 4 GOA IRON MINES



Overall, 28 bids have been placed for the mines put on auction. More than four years after mining was banned in Goa, about 10 companies including Sajjan Jindal-led JSW Steel have placed 28 bids for the four mines put on auction.

The last day for placing the bid for the three mines in Bicholim and one in Sanguem was on Tuesday. These mines have cumulative estimated reserve of about 135 million tonnes of low-grade iron ore resource.

These mines were previously operated by mining firms such as M/s Narvekar, M/s Rajaram Bandekar, M/s Chowgule & Co Pvt Ltd and Sesa Mining Corporation. Almost all the iron ore extracted from Goa mines were exported to China.

Intensive bidding expected

The Indian Bureau of Mines will set the base price for the e-auction being conducted by MSTC and bidders have to quote the premium they will pay over the base price, said a senior executive of steel company who has placed the bid in the auction.

Given the response, the auction will definitely see intense bidding given the fact all these mines have beneficiation plant which will improve the quality of iron ore for blending with high quality iron ore to make pellets, he added.

JSW Steel, which has shown interest in all the four Goa mines, can blend it with high quality iron ore sourced from its captive mines in Odisha at its 10 million tonne steel plant at Dolvi with an eight million tonne pellet unit and a jetty that can handle 15 mtpa of cargo.

JSW Steel has also set target to expand its capacity to 38 mtpa by 2024 from the present 23 mtpa (including the recently acquired Monnet Ispat and Bhushan Power and Steel).

Letter of Intent

As per the tender document, the names of successful bidders would be declared between December 13 and 21. Following which, the first instalment of the bid price will have to be paid to the government within 15 days after which the Letter of Intent will be issued.

In March 2018, mining operations in Goa was suspended after the Supreme Court cancelled the 88 iron ore mining leases in the State that were renewed by the government in 2014-2015 just before the Mines and Minerals (Regulation and Development) Act mandated the auction of leases.

Goa used to export about 20-25 million tonnes of iron ore a year. In 2004, Goa's mining sector became a free-for-all activity and exports jumped to a record 54 million tonnes.

Source: BusniessLine



MIO 2022: ODISHA TO PUT BEST MINERAL BLOCKS ON AUCTION

Highlighting Odisha's abundant minerals, Steel and Mines Minister Prafulla Kumar Mallik on Friday said the state offers immense opportunities for investors, but the industry must focus on environment-friendly mining.

Addressing a business leadership talk at 'Make in Odisha Conclave 2022' in Bhubaneswar, the Minister said the state has great opportunities for investors as it is endowed with abundant mineral resources.

He said that under the ST intervention of the state government, utmost transparency has been ensured through i3MS module.

Emphasising the need for adoption of technology to reduce adverse impact on environment, the Minister advised that the industry must focus on eco friendly mining.

Speaking at the talk on "Mineral Abundance: Opportunities for Industry and State", Principal Secretary, Steel and Mines, Deoranjana Kumar Singh told the delegates about mineral auction, exploration, revamped LTL Policy and raw material evacuation plans of the government to further attract investors in the sector.

Stating that the state has plans to put in the best resources of iron ore,

bauxite and manganese blocks in the next phase of auction, Singh said exploration is one of the prime focus areas now with the Odisha Mining Exploration Corporation (OMECL) going for a complete resource mapping.

He said the long term linkage policy of Odisha Mining Corporation (OMC) has been revamped and rewritten as per which 80% of the minerals produced by OMC shall be given to long term linkage players to ensure that the small and medium industry players are also benefited from this.

Singh further informed that the state government is formulating a very robust mechanism for raw material evacuation plan which will substantially reduce the road transportation by prioritising slurry pipe lines and rail network.

In the closing remarks, Managing Director of OMC Balwant Singh reiterated that with the adoption of technologies, advanced logistics and progressive policies, the state will attract interest from many investors at this flagship platform.

Source: 

Odisha

MINING COMPANIES SHOULD FORGE ALLIANCES TO ACHIEVE ECONOMIES OF SCALE

Mining companies should forge alliances with infrastructure players, technology and equipment suppliers and financiers in innovative ways, including the PPP model, Prafulla Kumar Mallick

Mining companies should look at forging strategic alliances to optimize risk-reward equations and achieve economies of scale, Odisha steel and mines and works minister Prafulla Kumar Mallick, said on Friday.

Addressing the Odisha Minerals and Metals Industry Conference organized by Assocham, the minister said the government is taking major steps towards modernization of its mining and metals industry and to enhance and optimize logistics configuration between mines, plants, railways and ports.

Mallik added that mining and metal industry has a significant multiplier effect in the economy. "It also contributes to employment generation, foreign exchange earnings, freight earned by railways and the earnings on export and import cargo handled by ports and tax revenue."

He said that the mining sector contributes about 8.98% of the real GSDP of Odisha. "To optimize risk-reward equations and achieve economies of scale, mining companies should forge alliances with infrastructure players, technology and equipment suppliers and financiers (including infrastructure financing) in innovative ways, including the PPP model."

Deoranjana Kumar Singh, principal secretary, Department of Steel & Mines, Government of Odisha said that mining is getting organized and fragmentation is going away. "Bigger blocks for mining not only fetch higher revenue but they are also more efficient. A committee has been constituted to amalgamate blocks which are co-terminus and do not have a natural boundary. More than 40 blocks have already been amalgamated and put for auction. About 300 million blocks that are there in the state will be re-organized to less than 100 blocks. This will pave the way for increased efficiency in the mining industry."

By: Swati Luthra
Source: Mint

INVESTORS CONCLAVE FOR MINING SECTOR HELD IN BENGALURU

The Ministry of Coal and the Ministry of Mines jointly held the Investors' conclave on commercial coal mines auction and opportunities in mining sector on 3 December, 2022 in Bengaluru.

The high-level meet was chaired by coal minister Pralhad Joshi and attended by Karnataka chief minister Basavaraj Bommai, minister of state for coal, mines and railways, Raosaheb Patil Danve, minister of Mines & Geology Halappa Basappa Achar and minister of Energy for Karnataka Vasudev Sunil Kumar, coal secretary Amrit Lal Meena and mines secretary Vivek Bhardwaj.

Union Minister of Coal, Mines and Parliamentary Affairs Pralhad Joshi emphasised on the importance of coal in securing energy security for the future of the country. He also assured the investors that the future outlook of the coal is positive, and the ministry is undertaking various reforms for ease of doing business in the coal sector

The minister stated that the current contribution of the mining sector in the country's GDP is 0.9% and submitted that the PM Narendra Modi has the vision to enhance this contribution to 2.5% by 2030 indicating that there is a huge potential in the mining sector and the investors are invited to participate in this opportunity.

Union Minister Joshi also stated that the government has made several reforms in mineral sector such as removing the distinction between captive and non-captive mines, transfer of clearances of the previous lessee to the successful bidder, etc.

He emphasised that sustainable production of minerals will meet the various needs of many sectors and fulfil the vision of the Prime Minister. He stressed that Karnataka has high quality iron ore and the State is guided by the Supreme Court and NGT guidelines in allocation and mining of iron ore mines. Karnataka is expected to be largest manufacturer of Steel in the Country and it will be fuelled by the high grade iron ore mines of the State.

He added that the country needs to explore adoption of best technology in the sector. The State also has rich reserves of tungsten, nickel, cobalt and gold which are in huge demand

According to the Ministry of Mines, the reforms brought in minerals sector in March 2021, the pace of exploration has increased. Since reforms brought in March 2021, 108 mineral blocks have been auctioned as compared to 108 blocks auctioned in 6 years from 2015 to 2021.

Further, auction of 70 blocks is under process in the country. Further, GSI has handed over more than 200 explored blocks to State Governments for auction. As such, more than 400 blocks are ready for auction in the country.

Ministry of Coal has till date concluded five tranches of commercial coal mines auction wherein Ministry has successfully allocated 64 coal mines. It has launched the sixth tranche of commercial coal mine auction on 3 November, 2022, wherein 141 coal mines are put on for offer including 8 coal mines under 2nd attempt of 5th tranche. This is the largest ever coal block auction till date launched in the country.

By: Sourav Anand
Source: Mint



HOW ENDING MINING WOULD CHANGE THE WORLD

Mining fuels the modern world, but it also causes vast environmental damage. What would happen if we tried to do without it?

“If you can’t grow it, you have to mine it” goes the miner’s credo. The extraction of minerals, metals and fuels from the ground is one of humankind’s oldest industries. And our appetite for it is growing. Society is more dependent on both greater variety and larger volumes of mined substances than ever before. If you live in a middle-income country, every year you use roughly 17 tonnes of raw materials – equivalent to the weight of three elephants and twice as much as 20 years ago. For a person in a high-income country, it is 26 tonnes – or four and a half elephants’ worth.

Extracting new materials continues to be cheaper than re-use for many substances, leading some experts to sound the warning about the increasing pressure of mines on the natural world. A growing chorus is concerned that environmental toll of mine-caused pollution and biodiversity loss, as well as the social impacts caused to local communities, could sometimes outweigh the benefits of mining.

But what if we stopped extraction of fossil fuels and minerals entirely? What if, in order to better protect the environment, humanity decided the contents of the Earth’s crust were off limits?

Workers in the Democratic Republic of Congo’s deep cobalt pits would drop their shovels, colossal bucket-wheels in Germany’s brown coal mines would cease to strip mine

It’s an unlikely scenario, to be sure, and one that would cause hardship for many people – particularly if it happened suddenly. But imagining a world without access to the underground allows us to examine how dependent we have become on this ongoing extraction. It also invites us to consider the frivolousness with which we often then throw these materials away, and to examine the overlooked potential in this waste as a source of new materials. So could considering the end of mining help to change how we use materials today?

Victor Maus, a researcher in geoinformatics and sustainability at the University of Economics and Business in Vienna, Austria, has spent the last three years poring over satellite images of the Earth’s surface to estimate the total area humans currently give over to mining. The results surprised him. “It’s a country-sized area, and that’s just with the mines that are reported,” he says.

he land size of mining had never been surveyed by satellite before, making it tricky to train a computer how to identify mines from thousands of photos. Maus and his team therefore had no choice but to make his estimates by eye, and spent hours tracing polygons around the shapes of open pits, shafts and waste tailings ponds. “I was seeing polygons in my sleep,” he says.

Above ground, he found, mining sites covered around 100,000 sq km (38,600 sq miles), larger than Austria or five times the size of Wales. “And that’s just the mines that are active,” says Maus.

Mining is also one of the most basic forms of enterprise, and many locations are unreported. “In reality, the world’s total mining area is even larger.”

Mining..

In a world of no mining, ghost towns would be created almost overnight

On the first day of a world that stopped mining, the activity across this collective expanse would grind to a halt. Workers in the Democratic Republic of Congo's deep cobalt pits would drop their shovels, colossal bucketwheels in Germany's brown coal mines would cease to strip mine, and the small boats in the Mekong delta would stop sucking up sands.

The first shockwave would be to jobs. Across the world, ending mining would terminate an estimated four million formal jobs in the industry. And the toll wouldn't stop there.

"There's a number of [further] people that rely indirectly on mining sites that would make it greater," says Eléonore Lèbre, who researches the social impacts of mining from the University of Queensland. More than 100 million livelihoods in work connected to artisanal mining – groups and individuals that mine on smaller scale, often informally – would be lost.

Lèbre's research has involved studying the effect of mine closure on towns in remote Australia. "In rural areas, where there might have been mining operations for decades, you have communities that have grown to depend on them." In a world of no mining, ghost towns would be created almost overnight.

These impacts wouldn't stay confined to those communities for long. By day seven, massive ripples would be felt in society. "Energy would be the chief worry," says John Thompson, a mining consultant and professor of sustainability based in Vancouver. "And coal would be the first to go."

Coal is heavy and bulky, so it moves around the world in short supply chains – often going straight from mine to power plant. "Because it takes up so much space, power stations don't have much to rely on in terms of stockpiles," he says. The constant conveyor belt would empty very quickly if mining came to an end.

With 35% of the world still relying on coal for electricity, few countries would escape a sudden energy crisis. However, coal use for electricity generation is not equal the world over – it is 15% in Europe, 63% in China and 84% in South Africa – so energy inequality between countries would soon be felt.

To cope with this cut off from electricity, governments might begin looking to the past. The UK's mining strikes of the 1970s, where rolling blackouts and electricity rations were enforced, could be used as a form of damage control. "The three-day-week policy could make a comeback," says Thompson, referring to how the UK government reduced working and manufacturing to three days instead of five to handle the electricity shortage from the strikes and the oil crisis of 1973.

An indirect, but crippling effect of such electricity drops in the modern day would be the cut to communications. The internet, many of whose servers still rely on coal-powered electricity, would be slashed or reduced. Mobile phone networks might hang on for longer, but with less electricity in the grid, charging devices could become a luxury. Corded land lines, which are connected to centralised telephone exchanges, would last longest – at least as long as back-up generators and batteries could keep them going.

We mine vastly more sand than anything – Aurora Torres

Soon after, bulky materials would become scarce. Stocks of sand and gravel, which are essential ingredients for making concrete, are relatively shallow. Reserves of the two would be depleted within two to three weeks, says Thompson.

"Sand and gravel are the most mined solid materials by mass," says Aurora Torres, who researches the environmental pressures of sand use at the Catholic University of Louvain, Belgium. "We mine vastly more sand than anything." The UN estimates we get through 40-50 billion tonnes of sand per year. (Read more about the world's extraordinary demand for sand.)

There is some capacity to recycle used concrete, but the rate at which we use fresh concrete far outstrips current recycling rates. There would also be quality concerns. "Most recycled concrete is 'downcycled' to lower-grade uses such as road building," says Torres. So while there would be a rush to implement better recycling processes, in the short-term, the building of new homes would plummet.

Meanwhile, the temperature in existing homes would become increasingly uncomfortable as gas stores began depleting after a handful of weeks, reducing power for heating and cooling. In economies that rely on gas-fired power stations for electricity such as the United Arab Emirates (95%), Russia (45%), the US (41%) and the UK (36%), blackouts would become more frequent. Any plastics production able to remain working would be restricted to recyclables as its gas feedstock disappeared.

But there is more to modern society than energy and buildings. "It's after about two months that things would get really interesting, as the mining halt would hit metals," says Thompson. Many mined metals are traded through exchanges in London and New York, where numbers and figures swapped over the trading floor denote the real-life movement of physical stockpiles between warehouses all over the world. For copper, an excellent conductor which is essential for almost all electronics, stockpiles would dwindle to nothing in around six to 10 weeks, Thompson estimates.

This would lead the price of metals to skyrocket. "It's not hard to imagine that theft would increase at this point," says Thompson. When the copper price rose to all-time highs in the 2010s, crime rose with it. Buildings, streetlamps, train lines – anything with copper in – were stripped of their cables for resale. Theft might increase for all the industrial metals – copper, iron, aluminium, zinc, lead and nickel – which by mass account for 98% of all mined metals. The shortage would reveal how much this handful of metals have become the lifeblood of society.

The production of petrol, diesel, plastics and road asphalt would come to end. And with them, the fossil fuel age

World

Most countries mine something. China, Australia and the US are the global leaders for production value of raw materials, but extraction makes up a far larger share of the economy for some other nations. In at least 18 countries, metallic minerals and coal account for more than half of all exports; for some of these, it's more than 80%. In a no-mining-of-metals scenario, the entire economies of countries such as Suriname with its industrial gold mining, the Democratic Republic of Congo, where cobalt is king, and Mongolia, a leading exporter of copper, would be at risk.

Simon Jowitt, an economic geologist at the University of Nevada, Las Vegas, does not mince words on what he thinks the end of metals mining would look like. "It would be the end of society as we recognise it today," he says, noting that we mine more now than we ever have before.

A good example of our increasing reliance on a wide array of metals is the average mobile phone, says Jowitt. In the 1980s, a mobile needed 20 or so different elements. A new smartphone today needs more than twice that. "Modern life is simply minerals- and metals-intensive. We wouldn't be having this conversation without them," he quips via video call from his home in Nevada.

Around three months after the end of mining, stockpiles of rare earth metals and other metals useful to technology would be finished, leading to worrying trends for the pharmaceutical, car, electronics and construction industries. This would lead to massive unemployment that on "a never-before-seen scale", says Thompson.

Pressure would soon increase to redirect all metals recycling into renewables

Just in time for the collapse of supply chains, oil reserves would finally run out. The US's strategic petroleum reserve, the largest fallback oil stockpile in the world, contains 730 million barrels of oil stored in salt caverns across the country – enough for three months at most. The production of petrol, diesel, plastics and road asphalt would come to end. And with them, the fossil fuel age.

After a handful of months, global food supplies would be in crisis. An estimated 50% of food production depends on synthetic fertilisers, which are made up of varying formulas of phosphorus, potassium and natural gas. Lower crop yields could lead to food shortages. "Particularly in countries where climate doesn't support food production," says Thompson

Nuclear fuel is stocked months in advance, so it could be up to a year before society ran out of nuclear power. Renewables, however, would be the ultimate kingmakers. Nations with the highest renewable power generation per person would be at a huge advantage. Iceland and Norway, which both source nearly all their power from hydroelectric and geothermal sources, would be among the best equipped nations to ride out the socio-economic storm.

In a cruel twist of fate, though, despite huge demand for new renewable power, deployment rates of wind and solar power would slump. The paradox of renewables is that, in their current form, they need unprecedented volumes of non-renewable mined materials.

"Increasing renewables, while it means fewer fossil fuels out of the ground, means large upticks in battery metals such as cobalt and nickel," says Thompson. Solar panels demand large amounts of silicon for the semiconductors in their cells. Wind turbines need rare earth metals such as neodymium for powerful magnets that generate electricity with the turn of the blades.

Pressure would soon increase to redirect all metals recycling into renewables. "We do recycle a fair amount already," says Jowitt. "Most of the base metals and a handful of other elements are already recycled at their end-of-life by a rate of more than 50%."

Other metals that are critical to renewables, however, such as rare earths, are "lost by design", he says. "The way we currently use them is inherently non-recyclable." This is because technologies use tiny amounts of more and more elements, all in different ways, making it difficult to separate them to get the individual metals out.

There may also be the development of new bio-material that could mimic or replace the role of metals – John Thompson

But even if technology developed to extract these tiny quantities of rare earth metals, it's unlikely that it would meet the amount needed to vastly expand renewable energy. "The metals demand is already set to exceed current production many times over," says Jowitt. According to the World Bank, in a world on track to keep global warming below 2C, the annual production of graphite, cobalt and lithium will be five times higher by 2050 than today's production.

There is also a huge inequality in the current distribution of already-extracted metals across the world. Most mined and processed metals are in use in the Global North, where they have been imported, meaning populations in the Global South would have less access to recyclable material. The richest 20% of the global population have access to 60-75% of the world's in-use metal stock per capita, according to one study, a spread even more unequal than carbon emissions inequality. A new world with no mining would have to think carefully about equal access to materials.

An unprecedented rush for research could lead to breakthroughs in recycling technology and circular design, however. "Products would be designed so that they last longer or so that they can be taken apart more easily, and the components returned into the system," says Thompson. This would be an about-face for the tech industry, which today creates produces batteries that are notoriously difficult to recycle. Research might be funnelled into methods of gleaning metals without mining, such as the electrolysis of seawater and brines. "There may also be the development of new biomaterial that could mimic or replace the role of metals," says Thompson. "Luckily these would probably be more recyclable. Meanwhile, energy production might need to adapt to smaller, more decentralised systems, probably using already-invented tech. Last year, the environmental campaign group Seas At Risk imagined a society in 2050 that had banned mining in 2020. Bereft of a constant supply of metals, the blueprint completely overhauls the electricity grid, with a transition from large, metals-heavy solar and wind farms to decentralised and low-tech distribution. "Direct hydro- and

wind-power were other age-old technologies that made their comeback, not only for industrial applications but even for water-powered household devices,” it says. Instead of large lithium-ion batteries, compressed-air systems, thermal energy storage and gravity batteries become the champions of energy storage.

A mine that is abandoned can have chronic pollution for hundreds if not thousands of years – Eléonore Lèbre

Seas At Risk argues for the importance of rethinking energy consumption in a no-mining scenario, as well as for careful environmental policy. Without a clear vision, controversial biofuel production might make up the energy shortfall, with vast areas of land given over to forestry practices to provide wood as a source of building materials, energy and biofuels.

But the work wouldn't stop there. For Lèbre, who researches mine closure, the closed mines themselves would be a huge source of concern. If all mining stopped there would still be an area at least the size of Austria with degrading and in some cases dangerous levels of heavy metals. “Mining is a process of entropy. We are bringing material from locked-up concentrations underground and letting them out into the world.”

Ensuring the clean-up and and rehabilitation of these areas would be vital. Mines usually operate at depths below the water table, which need to be constantly dewatered using pumps. When a mine is abandoned, the ground water gradually refloods underground passages and mineral seams over many months, creating acidic reservoirs of water. Above ground, meanwhile, tailings ponds and piles of low-grade ore with traces of heavy metals lie in wait. “All of this material is exposed to water and oxygen,” says Lèbre. Exposing such elements to, well, the elements, wreaks havoc on ecosystems, soils and water supplies through acid leaching. “A mine that is abandoned can have chronic pollution for hundreds if not thousands of years,” says Lèbre.

Cleaning up a mine consists of reducing water acidity, detoxifying the soil and treating waste before reintroducing flora and fauna to the site. It's a lengthy, expensive process and can cost billions for a single, large mine. Avoiding an environmental catastrophe, and cleaning all the world's mines at once, would cost hundreds of billions or even trillions.



Mining is not going anywhere anytime soon: in fact, experts predict a new surge in metals and aggregate mining over the coming decades

Global inequalities would be seen in this mining clean up too. Maus, in his tracing of polygons across the map, has discovered that the majority of reported mines are located in the tropics, one chapter of a larger shift of mining from the Global North to the Global South over the last century. In a world that ended mining, these regions would have the bigger burden of the clean-up projects.

With healthy soils and water re-established, though, eventually nature would return to mining sites. Wastes and tailings ponds, meanwhile, could present an opportunity to access metals. “Most of a mine's desired elements are [the very same] pollutants present in the waste,” says Lèbre.

Mining is not going anywhere anytime soon: in fact, experts predict a new surge in metals and aggregate mining over the coming decades. With the exception of a handful of elements, such as lead and tin, the extraction of all metals is even increasing on a per capita basis, notes Jowitt.

Warranting more concern, perhaps, is the fact that more mining will likely create more land impacts. Mining and biodiversity researcher Laura Sonter and her colleagues recently warned that mining the materials needed for renewable energy will increase the threats to biodiversity. Without careful planning, these new threats could surpass those avoided by climate change mitigation.

Perhaps in time, the concept of material footprints, as an addition to carbon footprints, will catch on with governments, as they increasingly realise how much care we need to take of all our non-renewable resources.

Source: BBC News

Mining exploration to be carried in Rajasthan

A comprehensive program for mineral exploration will be carried out in the Banswara-Nathdwara belt, Rajsamand belt, Barmer and Udaipur belts with the financial assistance of the Rajasthan State Mineral Exploration Trust (RSMET). Additional Chief Secretary Mines and Petroleum Dr. Subodh Agarwal said that according to preliminary surveys, deposits of mineral gold are possible in Banswara-Nathdwara belt, while deposits of mineral emerald in Rajsamand belt, mineral rare earth elements in Barmer belt and mineral phosphate in Udaipur have been identified. “It has been decided to run an extensive exploration program in these areas with the help of RSMET so that the availability, quality etc. of mineral deposits in these areas can be assessed so that blocks can be auctioned on the basis of available reserves,” he said.

Source: First India

INDIA, AUSTRALIA TO IDENTIFY COMPANIES IN CRITICAL MINERAL SPACE

In the critical minerals space, Australia is the world's largest producer of lithium and the second largest producer of rare-earth elements

In a bid to secure supply, the government of India and Australia would be working to identify companies in Australia in the critical mineral space for acquisition. "We expect to identify these companies in the next few months. We are willing to offer the opportunities to our private companies after having done due diligence," said Vivek Bharadwaj, secretary, ministry of mines, government of India. Bharadwaj was speaking on the sidelines of the Global Mining Summit organised by CII in partnership with the ministry of mines and coal.

As part of the Comprehensive Strategic Partnership between the two countries in June 2020, Australia's Department of Industry, Science, Energy and Resources and India's Ministry of Mines had signed a memorandum of understanding (MOU) on increasing trade, investment and research and development in critical minerals between the two countries.

In the critical minerals space, Australia is the world's largest producer of lithium and the second largest producer of rare-earth elements.

It also has large resources of battery minerals like cobalt and nickel.

Bharadwaj said that there are companies at different levels – in exploration, early stages of finding the mineral or those that have offtake arrangements. But he pointed out that today, the world is such that there is hardly any supply contract available till 2030.

Across the world, countries are looking to secure supply of critical minerals to support a growing demand for clean energy technologies – from wind turbines to electric vehicles.

Bharadwaj said that a team of geologists would be visiting Argentina this month to look for opportunities.

Argentina, it may be mentioned, is one of the top countries with identified lithium resource. Argentina, Bolivia and Chile – referred to as the "lithium triangle" account for about 56 per cent of world lithium resources.

Earlier in his speech, Bharadwaj said that the country's industry must inculcate strategic thinking going well into the future with a special thrust on innovation to flourish. He emphasised that in order to overcome challenges and develop capabilities, the industry should not shy away from going beyond the borders to acquire niche foreign organisations.

Vedanta group chief executive officer, Sunil Duggal, while addressing the summit, called for deregulation of critical mineral exploration, mining and processing to encourage private participation.

As India is embraced for a massive economic development, particularly for new-age areas like clean energy transition, electric mobility, digital economy, defence manufacturing and space programme, the country will require massive amount of critical minerals like lithium, cobalt, nickel, copper, rare earth element, platinum group minerals etc, Duggal pointed out. "India is almost 100 per cent import dependent in these minerals."

Source: Business Standards

India Australia



EXPLAINED: WHY INDUSTRY IS URGING GOVT TO ENCOURAGE PRIVATE MINING OF RARE EARTH METALS?

The Confederation of Indian Industry (CII) has urged the government to encourage private mining in the sector and diversify supply sources to reduce India's dependence on Chinese imports of rare earth minerals.

Even though India has 6% of the world's rare earth reserves, it only produces 1% of the world's supply, and China supplies most of its requirements for these minerals.

As a crucial component of the Deep Ocean Mission, CII suggested establishing a professional "India Rare Earths Mission," similar to the India Semiconductor Mission.

Further, the industry group has proposed including rare earth minerals in the "Make in India" campaign, citing China's "Made in China 2025" initiative, which focuses on new materials like rare earth mineral-based permanent magnets.

What are Rare Earth Metals?

They are a collection of seventeen metal parts that include fifteen lanthanides on the periodic table and scandium and yttrium which have similar chemical and physical properties to the lanthanides.

They are referred to as "rare earth" because it was initially difficult to technologically extract them from their oxide forms. They are found in a wide variety of minerals, but typically in low concentrations, making them economical to refine.

These minerals are utilised in numerous modern technologies, such as consumer electronics, computers and networks, communications, health care, national defence, clean energy technologies, and others, due to their distinctive magnetic, luminescent, and electrochemical properties.

The 17 Rare Earths are cerium (Ce), dysprosium (Dy), erbium (Er), europium (Eu), gadolinium (Gd), holmium (Ho), lanthanum (La), lutetium (Lu), neodymium (Nd), praseodymium (Pr), promethium (Pm), samarium (Sm), scandium (Sc), terbium (Tb), thulium (Tm), ytterbium (Yb), and yttrium (Y).

When China produced 90% of the rare earths the world needs

Over time, China has gained global dominance over rare earths; at one point, it even produced 90% of what the world needed. However, at present, only 60% of it is produced by other nations, including the Quad (India, Japan, Australia, and the United States).

Production units in Australia and the United States, in addition to smaller units in Asia, Africa, and Latin America, have emerged since 2010, when China stopped shipping Rare Earths to Japan, the United States, and Europe.

Current Rare Earths Policy in India

The Department of Atomic Energy and the Bureau of Mines has carried out exploration in India. IREL (India) Limited, formerly known as Indian Rare Earths Limited, is a Public Sector Undertaking under the Department of Atomic Energy. In the past, some minor private players carried out mining and processing.

Government corporations like IREL have been granted a monopoly in India over the primary mineral that contains REEs: monazite beach sand, found in many coastal states. The goal of IREL is to supply the Department of Energy with monazite-derived thorium.

Source: India Times

JAYPEE GROUP EXITS CEMENT, SELLS BIZ TO DALMIA BHARAT

The assets put together have a cement manufacturing capacity of 9.4 million tonnes per annum (MTPA), including clinker capacity of 6.7 million tonnes and thermal power plants of 280 megawatts and are situated in Madhya Pradesh, Uttar Pradesh, and Chhattisgarh.

Dalmia Bharat on Monday said it is acquiring the cement and power plants of cash strapped NSE 0.90 % (JAL) for an enterprise value of Rs. 5,666 crore, marking an end to months of speculation over potential suitors for the assets.

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It will also put the fourth-largest cement maker in India close to third-placed Shree Cements NSE -1.35 % in terms of manufacturing capacity. Ultratec Cement NSE -0.38 % and the Adani Group - which recently acquired NSE -0.40 % and NSE -0.41 % - are the leading cement makers in India.

Debt-laden Jaiprakash Associates had said in a regulatory filing earlier this year that it would be divesting its cement assets. Earlier, media reports claimed the Adani Group as the frontrunner for acquiring these assets.

"In order to repay the loans of lenders and concentrate in its other core areas of working, JAL has decided to divest from the cement business completely. With the sale of cement capacity of 9.4 mtpa ... JAL will further 'cement' its credentials of being a trustworthy organization in the infrastructure segment of the country in times to come," Manoj Gaur, executive chairman, JAL, said as part of the deal announcement.

The group flagship had in the last decade been taking steps to reduce its debt and

repay to lenders and meet its commitments. It had divested over 20 mtpa cement capacity to NSE -0.38 % Cement during 2014 and 2017, while selling its controlling stake of more than 2 mtpa capacity to Dalmia Group in 2015. According to Jaypee Group, Group in 2015. According to Jaypee Group, the present transaction with Dalmia Group yet again demonstrates the quality of its assets. Back in October, JAL and NSE 5.06 % had announced plans to divest their cement business as well as some non-core assets to reduce debt.

For Dalmia Cement, the acquisition will expand its footprint in the central region, furthering its target of being a pan-India player. The stock of Dalmia Bharat NSE -0.41 % climbed 3.3% to Rs 1,905.7 on BSE on Monday compared to a flatish Sensex.

The transaction is yet another major consolidation in India's highly fragmented cement sector. The acquisition of ACC and Ambuja Cements by the Adani Group earlier this year and Gautam Adani's subsequent announcement of aggressive expansion plans jolted the cement industry into action. Incumbent leading players have followed suit and announced similarly aggressive expansion plans.

Experts have said that the capacity expansion by large cement makers will impact the smaller players, leading to further consolidation in the sector. Large cement makers like UltraTech, Adani Group, Shree Cement and Dalmia Cement have better bargaining power given their scale, which helps them achieve lower cost of production compared to their smaller rivals. They also tend to have better distribution channels, which helps them improve their market share and capacity utilisation, experts said. They believe that a rapid expansion in manufacturing capacity by large cement makers will further tip the scales in their favour.

After Adani's entry into cement, UltraTech approved a new capex plan of Rs 12,886 crore to increase capacity by 22.6 million tonnes per annum (mtpa) through brownfield and greenfield projects. This would entail setting up integrated and grinding units as well as bulk terminals across the country, the company said, in June, with commercial production from these units going on stream in a phased manner by financial year 2024-25 (FY25).

GROWTH PLANS

Dalmia Cement, a wholly-owned subsidiary of Dalmia Bharat, to acquire the cement, clinker and power plants of JAL

New plants to take cement capacity of Dalmia Cement to **46.3 MTPA**

Capacity addition take the 4th Largest Cement Maker in India close 3rd Place Shree Cement in capacity

UltraTech Cement & the Adani Group-Which recently acquired Ambuja Cements and ACC are the leading cement makers in India



WE HAVE MORE CONTROL OVER CANCER THAN IT IS PERCEIVED.

The most powerful tool for cancer prevention is –healthy living.

Among one of the most feared health condition is cancer.

Throughout ages many cancers have been associated with environment and lifestyle factors, but recent studies and research only magnifies their importance.

Studies says that cancer is the most dreaded disease in most developed countries and perhaps among the most frightening words in the entire english language.

Some good reasons cancer carries this kind of scary reputation:

- Cancer can happen to anyone and at any age.
- In the modern times, although treatments have improved remarkably, yet the diagnosis carrying a name cancer is similar to a death sentence.
- The mere thought of cancer treatment itself is no less to provoke fear of losing immunity, hair loss, weight and many more.
- And perhaps the most disturbing thought in a person is the remote probability of success rate of the treatment.it means the cure is not guaranteed and in our control.

Which statement is more accurate regarding cancer risk..

- The cause of cancer is 90 % genetic and 10 % environmental.
- The cause of cancer is 50 % genetic and 50 % environmental.
- The cause of cancer is 10% genetic and 90 % environmental.

To the surprise of scientists, and non-scientists the best answer is -c.

Genes and genetic mutations are responsible for only 5-10 % of cancers.

List of cancers related to behaviour and environmental factors-lung cancer, skin cancer, liver cancer, colon cancer, breast cancer, ovarian cancer.

The above list of cancers are strongly affected by environmental factors

Two environments – one is internal and the other is external.

Internal environmental factors are – chronic stress, unhealthy sleep habits, smoking, lack of nutrition and exercise.

External factors are –excess sun exposure and air pollution.

The scientists revealed surprising outcomes that it's the environment factors that effect's the genes instead of genes acting independently in most cases.

While there maybe no immediate consequence to poor health habits or chronic stressors, but overtime they may reach a point where the cancer risk exceeds the body's natural defence mechanism powers.

Thus being aware of one's sleep patterns , regular meditation , and exercise , along with good nutritional habits genes can be modified into the best ever and giving healthy living a new level of importance and need of the hour.

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DISCLAIMER: This is a compilation of various news appeared in different sources. In this issue we have tried to do an honest compilation. This edition is exclusively for information purpose and not for any commercial use. Your suggestions are most valuable.

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