NET ZERO – MINING PERSPECTIVE

Date: October 19, 2023

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Contents

NET ZERO – New Normal/New Age in Mining practices due to Climate Change

Climate change is a real and serious threat that requires substantial effort to address. Global carbon emissions continue to rise. In fact, since 1850, global CO2 levels have risen over 30%, from 284 ppm to ~417 ppm in 2023.

Reasons:

1. Approx. 35 billion tons of CO2 released into the atmosphere annually, primarily by human activity.
2. A report by CDP (formerly known as the Carbon Disclosure Project) shows that in 2015, half of worldwide industrial greenhouse gas emissions could be traced back to just 50 companies (called carbon majors) working in heavy fossil fuel industries. These companies includes Mining companies, particularly those involved in coal extraction, ranked high on the list, taking two of the top five spots, and 20 spots overall.

Paris Agreement:

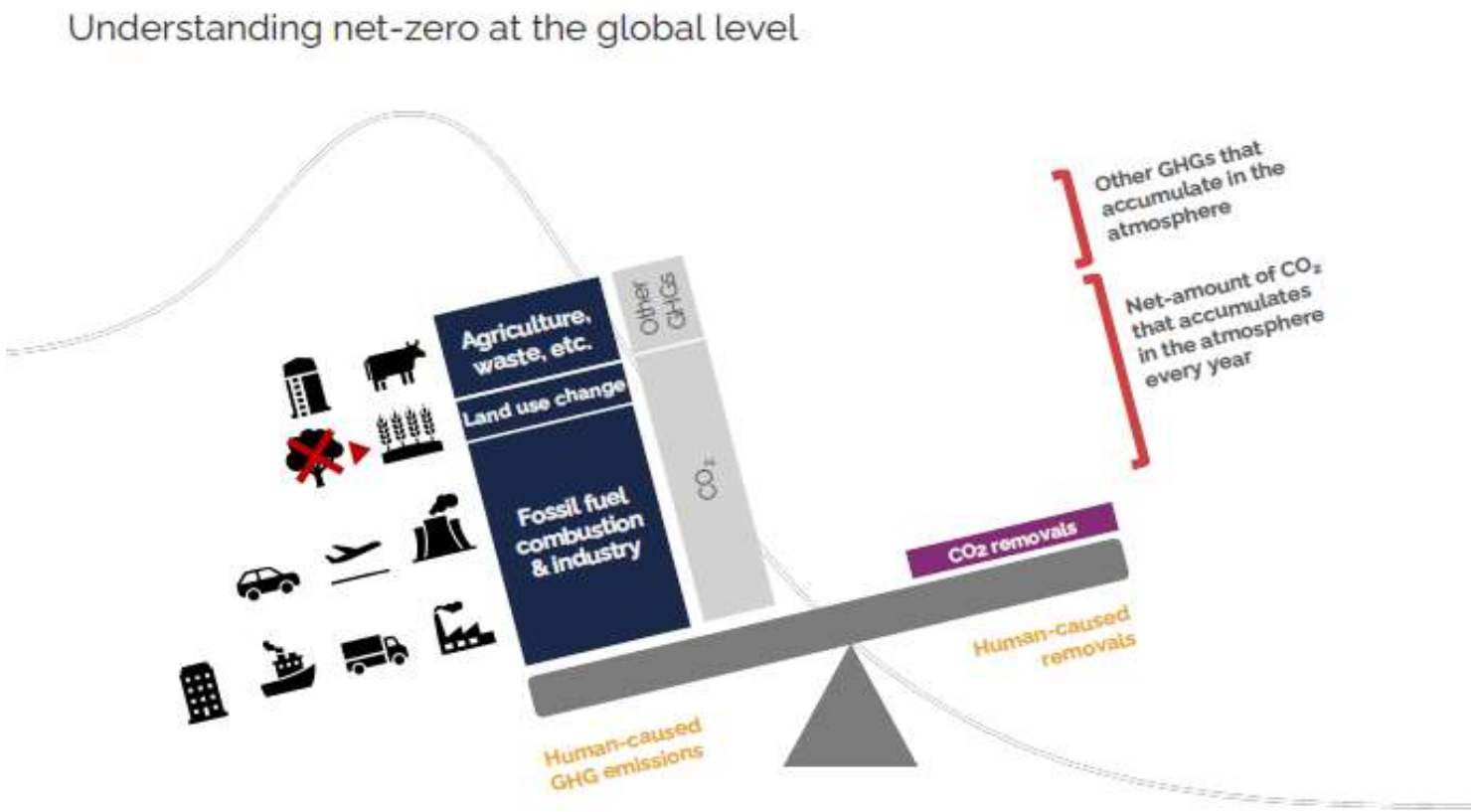
Under the Agreement, 195 countries pledged to limit global warming to well <2.0°C, and ideally not more than 1.5°C above pre-industrial levels.

That target, if pursued, would manifest in decarbonization across industries, creating major shifts in commodity demand for the mining industry and likely resulting in declining global mining revenue pools.

The planet is in a warning state

+1.1°C	-68%	8M	-25%	11M
• Current Global temperature vs. pre-industrial averages	• Decline in animal population sizes since 1970 according to WWF Living Planet Report	• People displaced by flooding per year	• Loss in GDP/capita by 2100 on current climate trajectory	• Metric tons of plastic flowing into the ocean every year

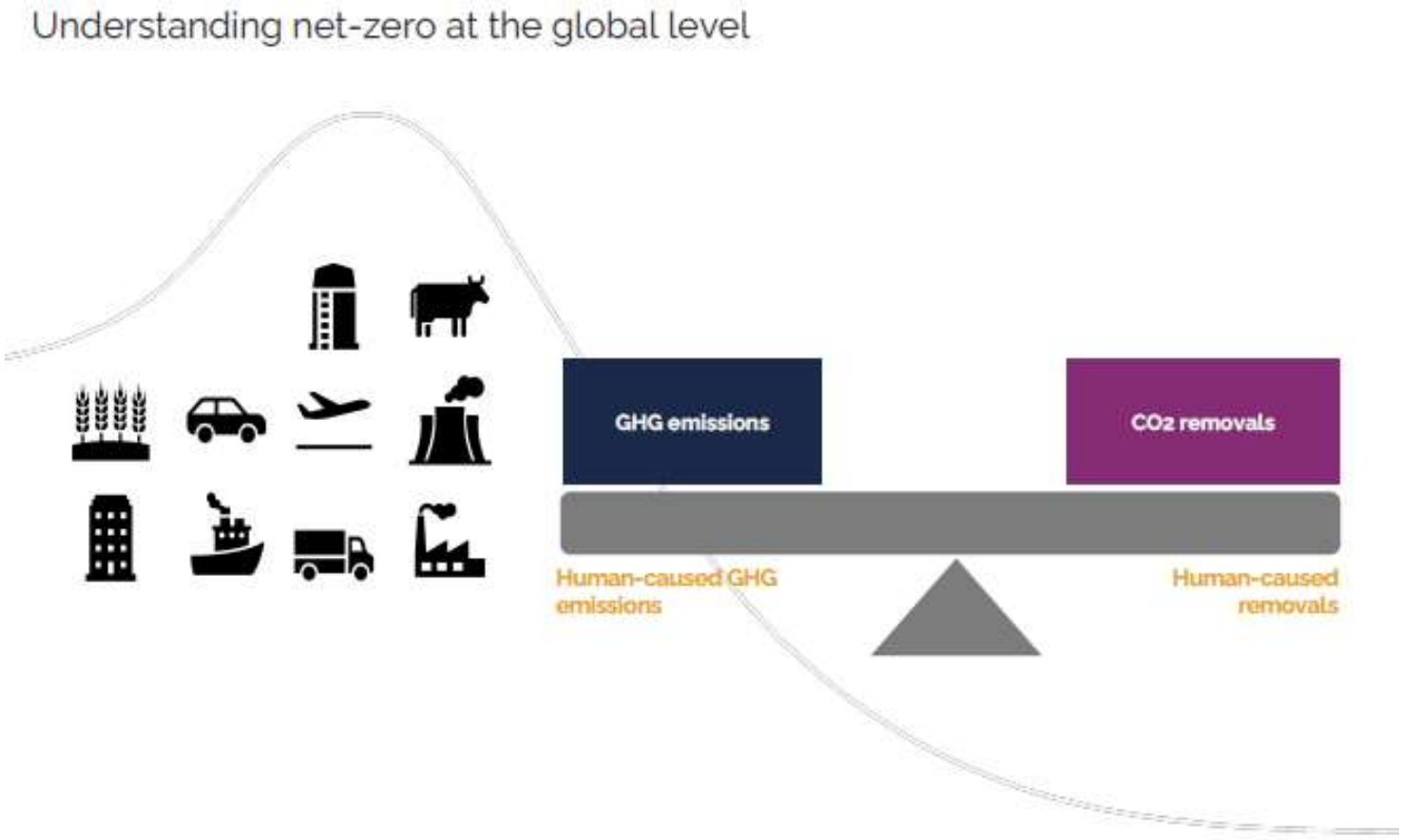
What does net-zero mean?



The **imbalance** between the amount of greenhouse gases (GHGs) released into the atmosphere by humans and the amount of carbon absorbed by natural sinks, results in a net accumulation of GHGs in the atmosphere.

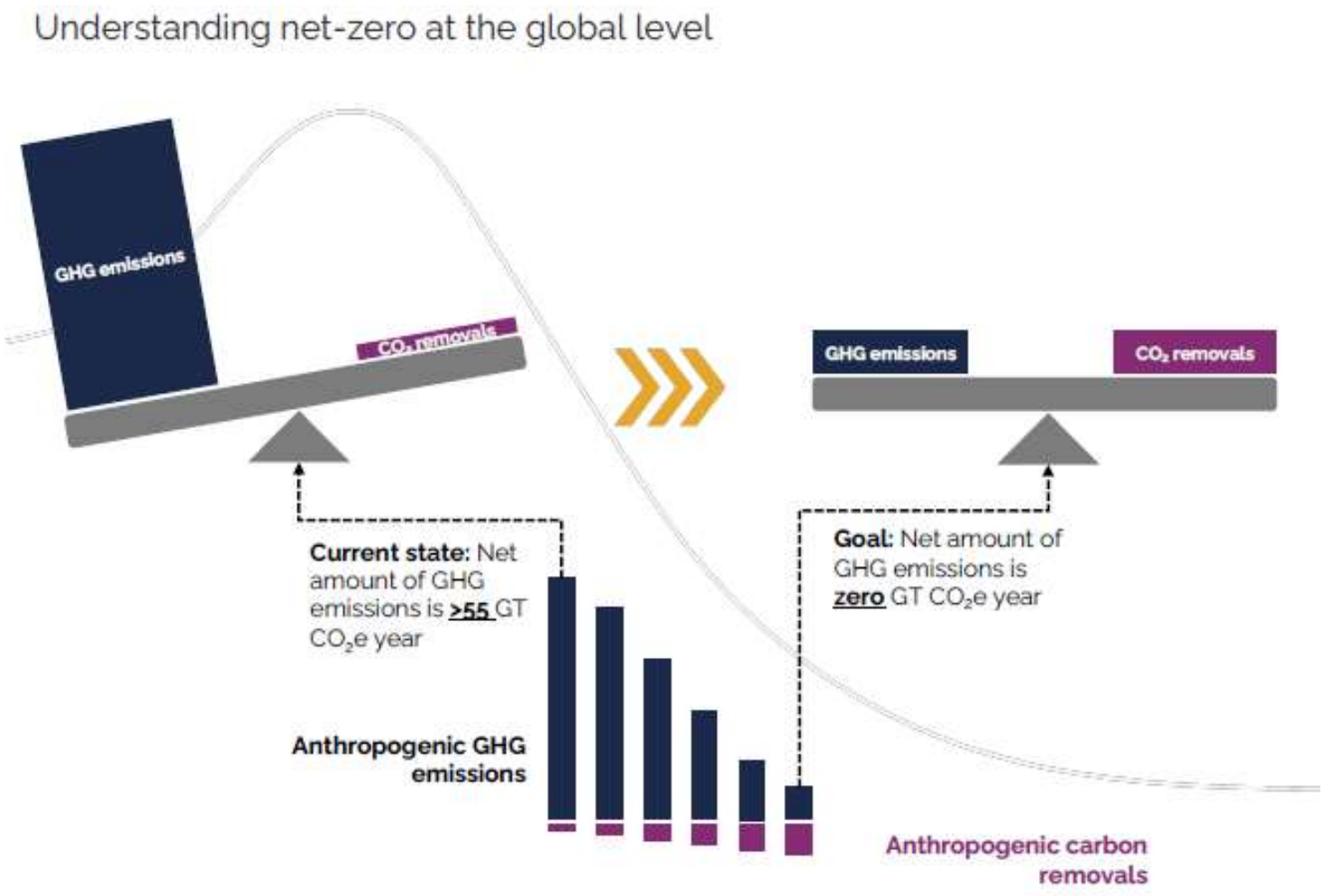
Accumulation of GHGs in the atmosphere is the main driver of anthropogenic climate change.

What does net-zero mean?



To halt global warming, we need to reach a **balance** between anthropogenic emissions sources and removals. A state known as **net-zero emissions**.

What does net-zero mean?



To limit global warming to 1.5°C, we must reach net-zero carbon emissions **no later than 2050**.

Net Zero - Understanding the Concept

This is certainly likely unless some countries become net-negative rather than just net-zero.

- Emissions Gap Report 2019 (EGR-2019) of the United Nations Environment Programme (UNEP) mentions that **G20 countries are accountable for 78% of the total greenhouse gas (GHG)** emissions as of November 2019.
- G20 nations in greater role in determining extent to which 2030 emission gaps can be closed.
- EGR-2019 further mentions that phase out of **coal-fired power plants alone has annual GHG reduction potential of 4 gigatonnes of CO2 by 2050**; just this would be about 13.1% of 2010 total emission levels.
- Contrary to their plan of phasing out fossil fuels agreed upon in 2009, G20 countries have continued to finance coal-fired power plants, mostly abroad.
- In October 2019, the Bank of England's governor remarked that global financial system is financing activities and industries that can ramp up the global temperature by more than 4°C and that financing worth USD 85 trillion had already been secured by carbon intensive industries.
- Coal mining, coal based power generation and transmission industries - ramping up global temperatures by release of GHGs. So, continued financial support to these industries is great obstacle to arresting the global temperature rise.

Net Zero - Understanding the Concept & Strategies

Net Zero means consuming only as much energy as is produced, achieving a sustainable balance between water availability and demand, and eliminating solid waste sent to landfills.

Achieving **Net Zero Water** means limiting the consumption of water resources and returning it back to the same watershed so as not to deplete the resources of that region in quantity or quality over the course of the year

Achieving **Net Zero Energy** means producing, from renewable resources, as much energy on site as is used over the course of a year.

Achieving **Net Zero Waste** means reducing, reusing, and recovering waste streams to convert them to valuable resources with zero solid waste sent to landfills over the course of the year.

'Net Zero'

Strategies

Emphasize on adopting a systemic approach

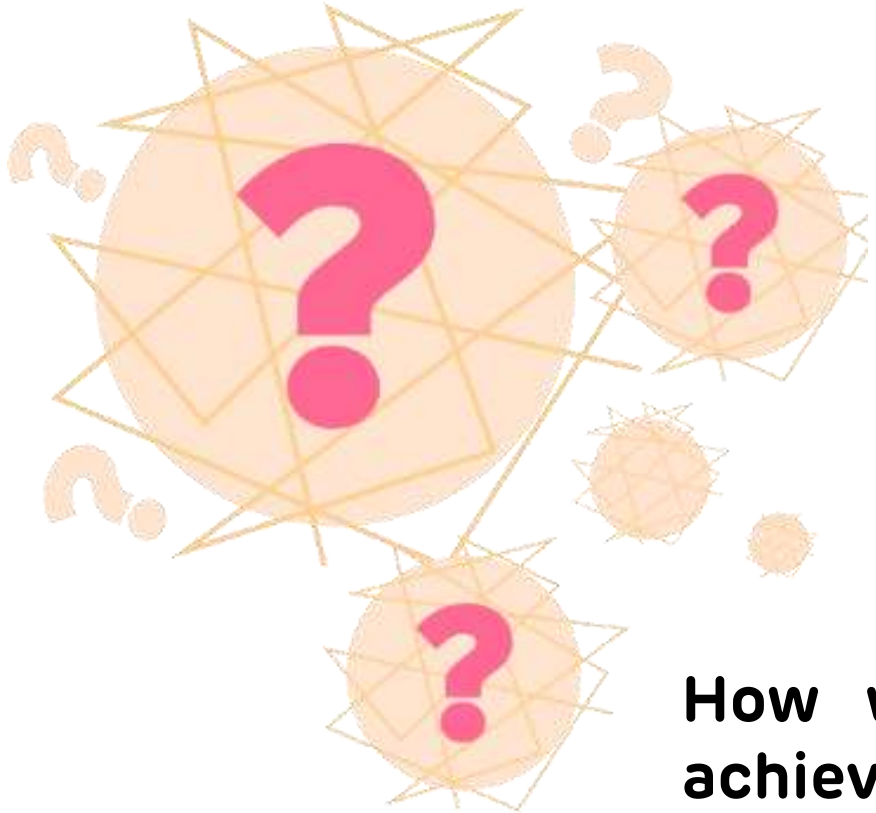
Provide long-term solutions for sustainability and resilience

At their core represent "Sustainability in action"

Explaining Scope 1, 2 & 3

Net Zero – Applicability

Is 'Net Zero' applicable to Mining sector?



How will the Mining sector contribute to 'Net Zero'?

How will the Mining sector achieve 'Net Zero'?

Net Zero – Applicability to Mining Industry

- Mining is responsible for **4% to 7% of global greenhouse gas emissions** in terms of the sector's Scope 1 and Scope 2 emissions. Including Scope 3 emissions links the sector to around 28% of global emissions.

- Starting point in the supply chain for much of the global economy and decarbonizing in this sector will be critical in meeting global emissions targets, particularly as energy transition increases demand for number of clean energy raw materials.

- Mining companies will play critical role in the energy transition, providing the clean energy raw materials needed.

- On the other hand, they are vulnerable to both social pressure and policy changes.

- Tendency to exploit more remote and inaccessible mineral and ore bodies as the sites with easier-to-reach resources are mined and emptied first.

Impact of Mining on Climate Change -

High Impact Industrials

Oil and Gas
Electricity
Mining
Industrial Metals

Large footprints and significant risks
Social and regulatory pressure to reduce impacts
Well-developed internal systems
Investing into innovation

Highly exposed to:

Mining is clubbed with sectors like Oil and gas, electricity & industrial metals under 'High Impact' industrials

Potentially exposed to:

"It is increasingly important for mining industries to be seen not only as levers for national economic growth but also as making a meaningful contribution to socio-economic wellbeing of local economy

"Meeting demand is a critical issue due to risk pressures including dwindling global reserves, increasing project complexity and government intervention"

Net Zero - Mining: Efforts of Mining companies worldwide towards Climate Change

- Hitting that target will require substantial decarbonization across the mining sector.
- Mining companies around the world are working to slash greenhouse gas emissions, but many of the largest have yet to align their goals with international targets to reach net-zero emissions by 2050.
- Certain governments such as Europe are solidifying net-zero goals in laws and regulations, investors worldwide are pushing corporations to take greater action on climate change.
- **Only eight largest mining companies have committed to reaching net-zero emissions by 2050 or sooner**, or already tout carbon neutrality as per S&P Global report. Many of remaining companies have set less ambitious targets or have different climate-related aims.
- Several big mining companies have installed their own sustainability committees, signaling that mining is joining the wave of corporate sustainability reporting and activity.
- Reporting emissions and understanding decarbonization pathways are the first steps.

Mining faces pressure for net-zero targets as demand rises for clean energy raw materials

- Companies are thinking strategically and operationally to address the challenge.
- **Dropping exposure to commodities with a substantial carbon footprint and increasing exposure to commodities used in batteries or other renewable energy sectors**.
- Also looking at things like reducing water usage or swapping diesel trucks for electric vehicles.
- Many of the largest mining companies will need to rebalance their portfolios as the world shifts to an economy with reduced emissions.
- Coal miners may see demand rapidly decline, **new technologies supporting decarbonization efforts, including wind turbines, solar photovoltaics, electric vehicles and energy storage, will increase demand for other mined materials.**
- Some miners in well placed to access new green-focused sources of capital; however, **the pressure is on miners to prove they are running their business with limited environmental impact**
- Lowering exposure to fossil fuels, localizing supply chains, increasing technological innovation and recycling more materials, However, once a product leaves the mine, companies no longer have control of future emissions.
- Electric vehicles and battery storage are likely to create growth markets for lithium, nickel and cobalt. At the same time, emerging technologies in hydrogen fuel cells and carbon capture may boost demand for platinum, palladium and other catalyst materials.
- Setting and meeting environmental, social and governance targets will become the "new normal" for mining companies.

Global Mining Companies Target Greenhouse Gas Reduction

Institution name	Market cap	Climate goal
Existing net-zero target		
BHP Group *Diversified metals and mining*	116.1	BHP has committed to reaching net-zero emissions by 2050.
Rio Tinto *Diversified metals and mining*	95.2	Rio Tinto has committed to reaching net-zero emissions by 2050.
Vale S.A. *Steel*	52.4	Vale has committed to reaching net-zero Scope 1 and Scope 2 emissions by 2050 and announced ambitions to reduce Scope 3 emissions.
Fortescue Metals Group Ltd. *Steel*	29.4	Fortescue has committed to reaching net-zero emissions by 2040.
Anglo American Plc. *Diversified metals and mining*	28.6	Anglo American has committed to reaching net-zero emissions by 2040.
Wheaton Precious Metals Corp. *Diversified metals and mining*	19.7	Wheaton Precious Metals, a royalty and streaming company, touts its operations are already carbon neutral.
Sumitomo Metal Mining Co. Ltd. *Diversified metals and mining*	7.7	Sumitomo has said it is formulating a plan to reduce emissions in the second half of the century.
South32 Ltd. *Diversified metals and mining*	6.8	South32 has committed to reaching net-zero emissions by 2050.

Global Mining Companies Target Greenhouse Gas Reduction

No net-zero target*		
Newmont Corp. *Gold*	49.6	Newmont set out a multiyear process to reduce its carbon intensity by 16.5% by 2020. It is in the process of updating future targets that are expected to be revealed at the end of this year.
Barrick Gold Corp. *Gold*	47.8	Barrick has committed to reduce its emissions by 10% by 2030 and is updating its emissions baseline to include new assets.
PJSC Norilsk Nickel Co. *Diversified metals and mining*	41.4	NorNickel claims to have the lowest CO2 intensity among its peers and aims to stabilze greenhouse gas emissions near current levels.
Southern Copper Corp.** *Copper*	30.7	Southern Copper's parent, Grupo Mexico, identifies climate change as a challenge and is "taking significant action" to reduce its emissions. Research from Transition Pathway Initiative identified the parent company as aligned with Paris goals.
Franco-Nevada Corp. *Gold*	26.5	As a royalty and streaming company that does not operate mines, a Franco-Nevada spokesman said a net-zero target was not appropriate, but the company does report emissions for its relatively small workforce and office and tries to reduce emissions.
Glencore Plc *Diversified metals and mining*	25.1	Glencore has committed to a 30% reduction in absolute Scope 3 emissions by 2035 and plans to announce details on longer-term Scope 1 and 2 targets that support goals of the Paris climate accord in 2020.
PJSC Polyus *Gold*	22.6	Polyus said it plans to reduce its emissions by increasing use of renewable energy and is in the process of defining a new emissions reduction goal for the next few years.
Anglo American Platinum Ltd.*** *Precious metals and gemstones*	19.0	Anglo American Platinum has set out to reduce net greenhouse gas emissions by 30% against a 2016 baseline.
Grupo México S.A.B. de C.V. *Diversified metals and mining*	18.1	Grupo Mexico identifies climate change as a challenge and is "taking significant action" to reduce its emissions. Research from Transition Pathway Initiative identified company as aligned with Paris goals.
Newcrest Mining Ltd. *Gold*	17.8	Newcrest has committed to a greenhouse gas intensity target – a 30% reduction in GHG emissions per tonne of ore treated by 2030 against a 2018 baseline.
Freeport McMoran Inc. *Copper*	16.8	Freeport McMoran, which has reduced greenhouse gas emissions 15% globally from a 2018 baseline, is aiming to reduce emissions by 15% per ton of copper cathode in the Americas by 2030. Research from Transition Pathway Initiative identified company as aligned with Paris goals.
Agnico Eagle Mines Ltd. *Gold*	15.4	Agnico Eagle is reducing greenhouse gas emissions at all of its sites and is working on its first Climate Action Plan in line with Task Force on Climate-related Financial Disclosures.

Global Mining Companies Target Greenhouse Gas Reduction

AngloGold Ashanti Ltd. *Gold*	12.1	AngloGold Ashanti has reported it is working to update goals around climate change, including setting emissions targets.
Antofagasta Plc *Copper*	11.4	Antofagasta has identified climate change as a risk and has reported it is working to set emissions reductions targets in 2020.
Saudi Arabian Mining Co. (Ma'aden) *Diversified metals and mining*	11.4	As of early 2019, Ma'aden has reported it is working on finalizing a greenhouse gas emissions reductions strategy.
Kirkland Lake Gold Ltd. *Gold*	11.4	Kirkland Lake has said it is "actively working" to reduce its environmental and carbon footprint and currently tracks emissions at all operations.
Hindustan Zinc Ltd. *Diversified metals and mining*	11.0	Hindustan Zinc has reported it is committed to reduce absolute Scope 1 and 2 greenhouse gas emissions by 14% and absolute Scope 3 GHG emissions by 20% by 2026 from a 2016 base-year.
PAO Severstal *Steel*	9.8	Severstal has reported it is working on setting carbon reduction targets.
Polymetal International Plc *Gold*	9.4	Polymetal aims to cut greenhouse emissions intensity by 5% by 2023 compared to 2018.
Royal Gold Inc. *Gold*	8.2	Royal Gold primarily acquires passive interests in mineral production and generally does not have direct influence over operations, but does support efforts to promote sustainable gold mining and awknowledges international concerns related to climate change.
Fresnillo Plc *Precious metals and gemstones*	7.7	Fresnillo reported its greenhouse gas emissions increased 4.9% in 2019 as electricity demand for its operations rose, but the company is targeting 75% of its electricity to come from renewables.
PJSC ALROSA *Precious metals and gemstones*	6.5	Alrosa has stated its emissions intensity is well below the industry level and has plans to further reduce its CO2 emissions as renewables are expected to account for a signifcant part of its energy consumption by 2024.

Data compiled July 20, 2020

Company list is based on the largest miners as of March 31, 2020. The list is obtained from mining-focused companies included in the most recent Industry Monitor.

Shenzhen, Hong Kong, or Shanghai Stock Exchanges were excluded from the list of top mining companies.

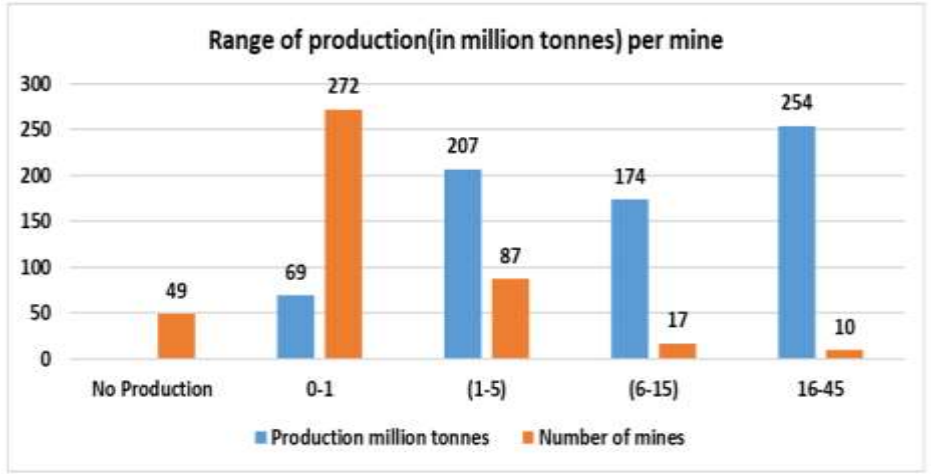
Climate goal details include select goals and may not be comprehensive

*Companies were designated as not having a net-zero emissions goal if they were not responsive to a request for their emissions policies and no indication of such policy was readily avaialble. **88.9% owned by Grupo México SAB de CV. ***79.5% owned by Anglo American PLC.

Source: S&P Global Market Intelligence, S&P Global Platts, company reports

Net Zero Mining – Indian Scenario (Coal Mining Scenario)

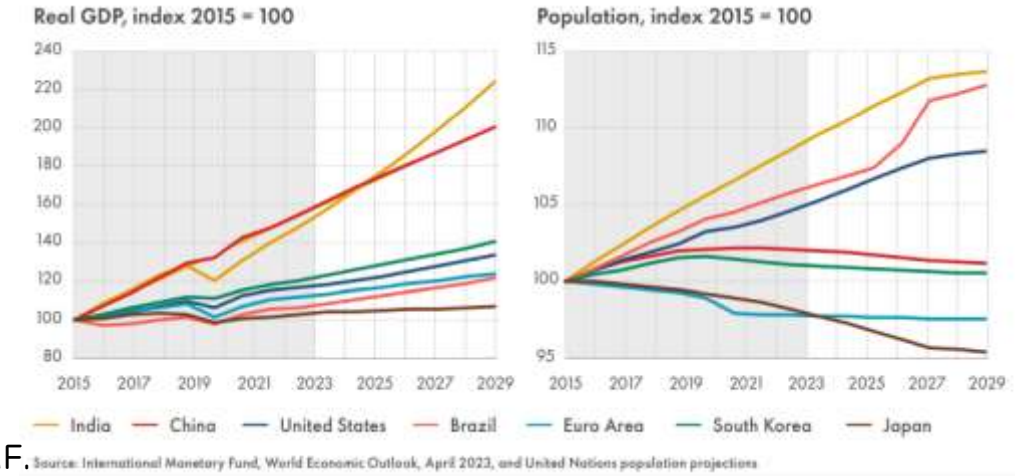
- As per IPCC report, to limit temperature to 1.5°C would require reduction of CO2 emission by about 45% from 2010 levels.
- India – 4th largest emitter of GHGs and a member of the G20 group.
- India's coal consumption for coal-fired power plants has more than doubled in the last 15 years.
- CO2 emissions from coal-based electricity generation has risen by 1.8 times in last 10 years period.
- In India, coal mining and coal based power generation and transmission have traditionally been public enterprises funded and operated by the state (central and state governments).
- Out of 205 gigawatt (GW) of installed capacity of coal-fired power plants in India (as on 31 October 2023), 64.13% is owned and operated by the state.
- **73% of the total coal mines produced less than 1 million tons per mine annually**
- The mining industry generates between 1.9 and 5.1 gigatons of CO2 equivalent (CO2e) of GHG emissions annually.
- Major emissions in this sector originate from fugitive coal-bed methane released during coal mining (1.5 to 4.6 gigatons), mainly at underground operations. Power consumption in the mining industry contributes 0.4 gigaton of CO2e.
- Down the value chain considered Scope 3 emissions, the metal industry contributes roughly 4.2 gigatons, mainly through steel and aluminium production.
- EGR-2019 shows, for India, most important step towards zero carbon future is phase out of coal based power plants that further expands to other industries that are carbon intensive.
- Financing for renewable energy will see a boost with regulatory and policy support from the central and state governments as the public sector banks and insurers are still averse to investing big in this sector.



Net Zero Mining – Indian Scenario for the action taken

- At COP26 in Glasgow in 2021, India **pledged to achieve net-zero emissions by 2070**
- It commits with three specific quantitative targets for 2030:
  - increasing installed non-fossil power generation capacity to 50%
  - reducing the emissions intensity of GDP by 45% compared to 2005 levels and
  - creating cumulative additional carbon sink of 2.5-3 billion tons of CO2 equivalent through additional forest and tree cover

- In 2022, country became the **fifth largest economy** in the world
- In 2023, India is estimated to have surpassed China in terms of population.
- Economic growth projected to average around 6% per year this decade, according to IMF.
- Climate change also offers new growth opportunities for India in manufacture and supply of low-carbon goods and services
- Already taking steps to seize these opportunities and create new jobs, economic growth and more sustainable natural environment.
- Govt. has set ambitious targets for deploying renewable energy and improving energy efficiency, which creates domestic demand for these products
- India is seeking to find **balance between energy security (reducing its dependence on imported energy), energy equity (ensuring access to affordable and modern sources of energy), and environmental sustainability (clean energy that reduces greenhouse gas emissions and protects the natural environment).**
- Already achieved its commitments to reduce emissions intensity of the economy by **33-35% compared to 2005 levels** (34% lower emissions intensity was achieved in 2021) and to produce **40% of its electricity from non-fossil fuel-based energy sources** (42% non-fossil electricity was achieved in 2022).



India's economic performance and outlook compared to other major economies

Strategy and Effective steps - Net Zero approach

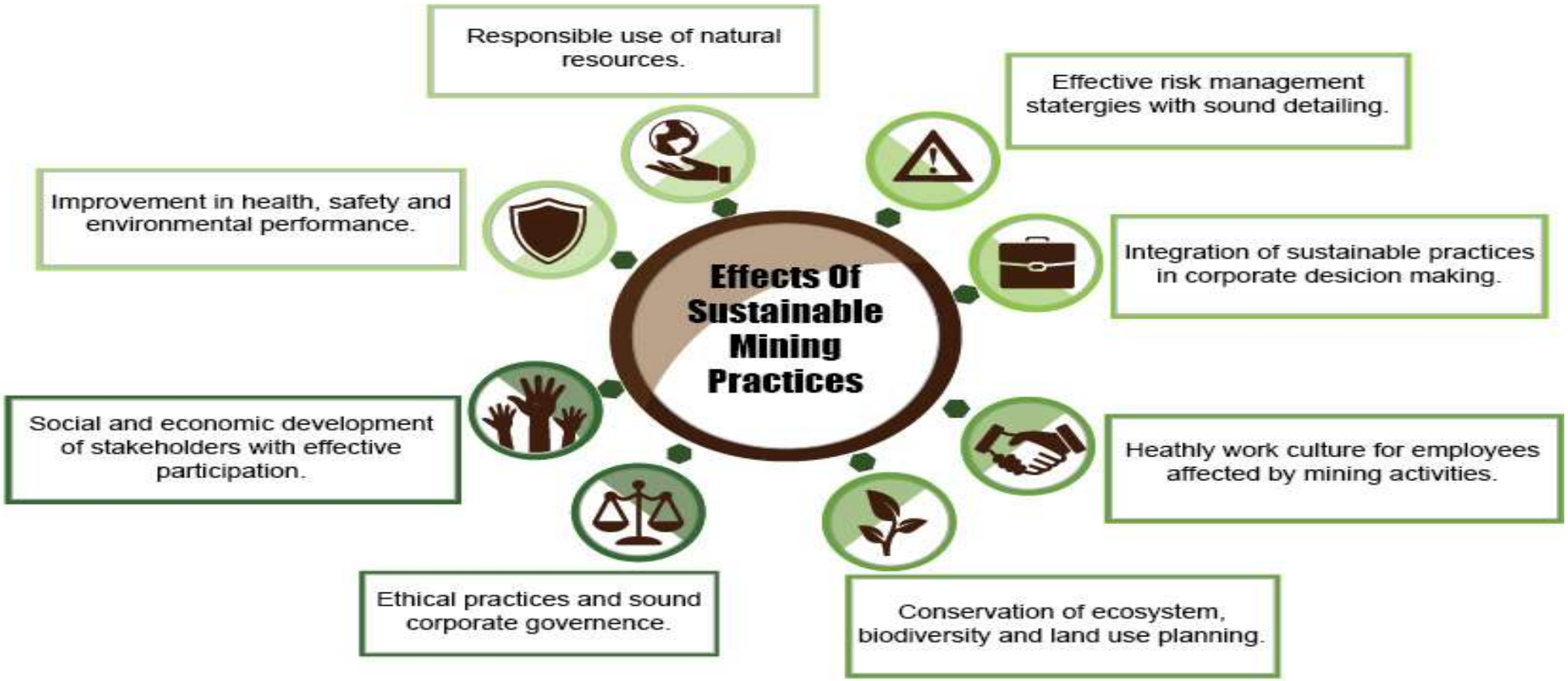
While there's no single silver bullet, there are many strategies companies can take depending on their unique circumstances. These include followings –

- ✓ Leveraging new technologies and innovations to add renewables to electricity supply
- ✓ Improving mining processes
- ✓ Switching from fossil fuels to renewable fuels
- ✓ Reducing waste, and
- ✓ Optimizing transportation

- Mining companies need to evaluate these options internally and choose the most beneficial and cost-effective approach for their unique circumstances, **but every plan must have an appropriate target as well as public disclosure of progress**.
- Many mining companies are making progress toward decarbonisation, but their focus has primarily been on incremental targets instead of planning with the desired end in mind.
- will be part of the decarbonisation solution by providing the raw materials needed for these technologies.

- Effect on Coal Mining - currently about 50% of global mining market, would be the most obvious victim of such shifts. Decarbonization of the power sector would mean taking net GHG emissions to zero, implying an almost complete reduction in the combustion of coal.
- Effect of Metal Mining - metal companies switch to hydrogen and biofuels as energy sources, demand for metallurgical coal will weaken.
- Coal demand is still rising, capital investments in coal mines have become more difficult, with public opinion hardening and some banks pulling away from the industry in certain regions.
- Some decarbonization actions will benefit the bottom line, while others will prioritize social responsibility. Future regulatory and technological developments may change the viability of certain actions,
- Sustainability mostly through a local lens but achieving a 1.5°C to 2.0°C pathway will require significant global action. Several big mining companies have installed their own sustainability committees, signalling that mining is joining the wave of corporate sustainability reporting and activity. Reporting emissions and understanding decarbonization pathways are the first steps toward setting targets and taking actions.

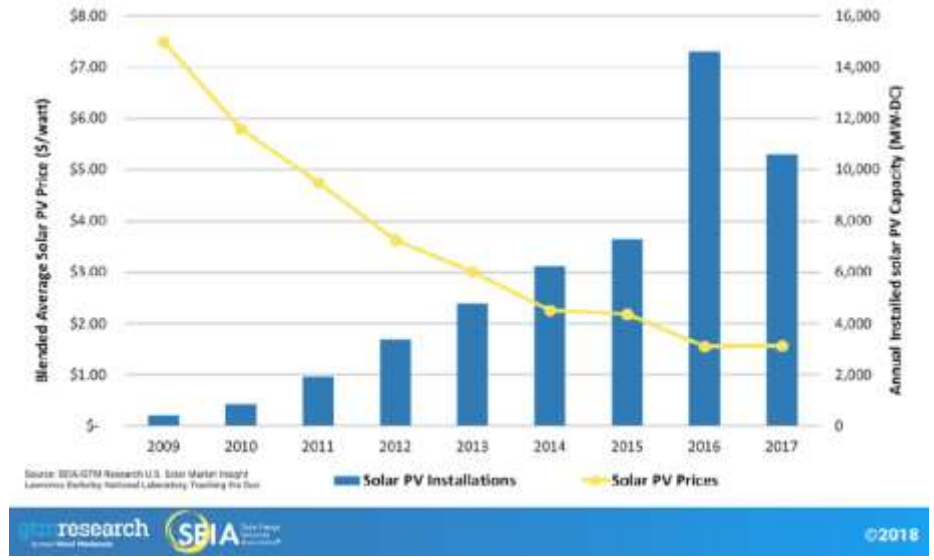
Sustainable levers that Drive Mining companies in Future



Effective steps by mining companies towards Net Zero approach

Leveraging new technologies and innovations to add renewables to their electricity supply:

- New technologies support decarbonisation include **wind turbines, solar photovoltaics, electric vehicles, energy storage, metal recycling, hydrogen fuel cells, and carbon capture and storage**.
- For carbon reduction, cleaning up electricity supply.
- Harder in some regions than others due to regulatory barriers, **excellent option for those mines currently powered by on-site diesel generation.**
- Compared to other heavy industries - cement, steel, and chemicals; mining is at an advantage because a large proportion of mining industry emissions are driven by electricity supply.
- One renewable resource is **PV (Photo Voltic Solar panels)** - costs for it fallen dramatically, averaging a 10–15% reduction each year from 2010 to 2016.
- Depending on local utility tariffs, power generation sources, taxes, and other incentives, solar is at or below cost parity with the electric grid as an energy source in many parts of the world.
- **Energy Storage (ES)** - frequently mentioned technology, commercially viable for certain markets and applications, expected to continue decreasing in cost.
- Game changer for renewables integration, as ES has the potential to offset much of the need for baseload power.
- ES also includes pumped-hydro energy storage (PHES), compressed-air energy storage (CAES), flywheels, and other forms. Energy storage can provide several advantages to mines, including:
  - ✓Smoothing renewable intermittency
  - ✓Lowering peak demand
  - ✓Providing backup power/increasing reliability



Effective steps by mining companies towards Net Zero approach

Reclamation & Restoration of Land in Mining Areas:

- Renewable energy, especially achieved through large-scale systems, is attractive not just for active mines, but for old mines as well.
- These sites typically have large amount of unused land - limited direct economic value, but mining company must stay engaged with site during reclamation process and assuming site is grid connected & excess transmission capacity to help wheel power away, for which the mine can be compensated.

- Development of renewable resources offers value in asset conversion by providing a second productive life to a closing mine site.
- Sites typically have range of applicable technologies that can be developed,
- To allow degree of flexibility in matching the different electricity market's demands and constraints.
- For successful project, renewables on site need to be considered and planned well before the expected mine closure.
- Mines can simultaneously explore power purchase agreements (PPA) or virtual PPAs (VPPA) as well.
- Generally PPAs and VPPAs reduce project risk **(because a third party builds, owns, and operates the renewable system, which may be located on- or off-site), but increase project costs to cover the third party's margins. Large companies with concentrated operations may find these to be an attractive option with only a small premium.**

Effective steps by mining companies towards Net Zero approach

Improving mining processes:

- Not all carbon reduction strategies involve electricity.
- Able to lower carbon emissions through process changes designed to increase efficiency.
- finding of new ways to obtain and leverage data to make their operations more efficient. Some examples include:
  - ✓ Advanced asset management strategies for operational and inspection data with predictive analytics to show what equipment needs to be serviced or replaced and when.
  - ✓ Drones surveys able to provide several different services to mines - pit and stockpile assessments, site surveying, and operations planning for blasting and rehabilitation.
  - ✓ Optimisation of Haul roads and mine layouts.
  - ✓ Accurate Planning of Mine to avoid wastage of resources i.e. Man, Machinery and Material etc.
  - ✓ Reducing water stress - To improve resiliency, companies can reduce the water intensity of their mining processes. It can also recycle used water and reduce water loss from evaporation, leaks and waste.

Effective steps by mining companies towards Net Zero approach

Optimisation of Transportation:

- Transport innovations are based on two different converging trends, electrification and automation. Several vendors are leading the way toward electrification. For example:
  - Liebherr has developed diesel-electric truck, commercially available (Trial taken in Austrian Iron Ore producer VA Erzberg and German-Swiss equipment manufactured)
  - Komatsu is developing 45T all electric dump truck with regenerative braking to take advantage of moving heavy loads downhill.
  - Artisan is smaller company specializing in electric vehicles for underground use. It recently unveiled a 40T underground hauler.
- For, EVs challenges include long charging times, availability of charging infrastructure etc.
- Need to improvisation in quick charging, battery swap stations
- Alongside the shift to electric vehicles is a move toward automation.
  - Rio Tinto operates autonomous haulage trucks at mines in Australia and plans to expand it further. Also working on an autonomous rail system.
  - Other mining companies are developing autonomous capabilities as well, such as Fortescue mining, which has the world's first fully autonomous hauling fleet at an iron ore mine.

Effective steps by mining companies towards Net Zero approach

Electrification:

- Environmentally beneficial electrification refers to the "**electrification of energy end uses that have been powered by fossil fuels** in order to reduce GHG emissions.'"
- **Use of Electric Vehicles** tend to be more emissions efficient (assuming the electricity source is cleaner as well) and quiet and require less maintenance than similar diesel-powered machines. (lower O&M cost)
- Evs don't exhaust noxious fumes or diesel particulate matter and produce less heat than diesel equivalents.
- Companies such as Sandvik, MacLean Engineering etc.are developing battery or electric-powered drills, bolters, and other mining machines.

Electric mining technology is mature enough that the dream of an all-electric mine is becoming a reality at Goldcorp's Borden Lake gold mine in Canada. The goal is to have no diesel equipment underground. By using electric machines instead of diesel, Goldcorp **expects to save 7,000 tons of CO2, 2 million litters of diesel, and 1 million litres of propane annually**. Not only will this help Goldcorp's bottom line, but it will help its social license as well; operating a cleaner mine makes obtaining the necessary environmental permits easier.

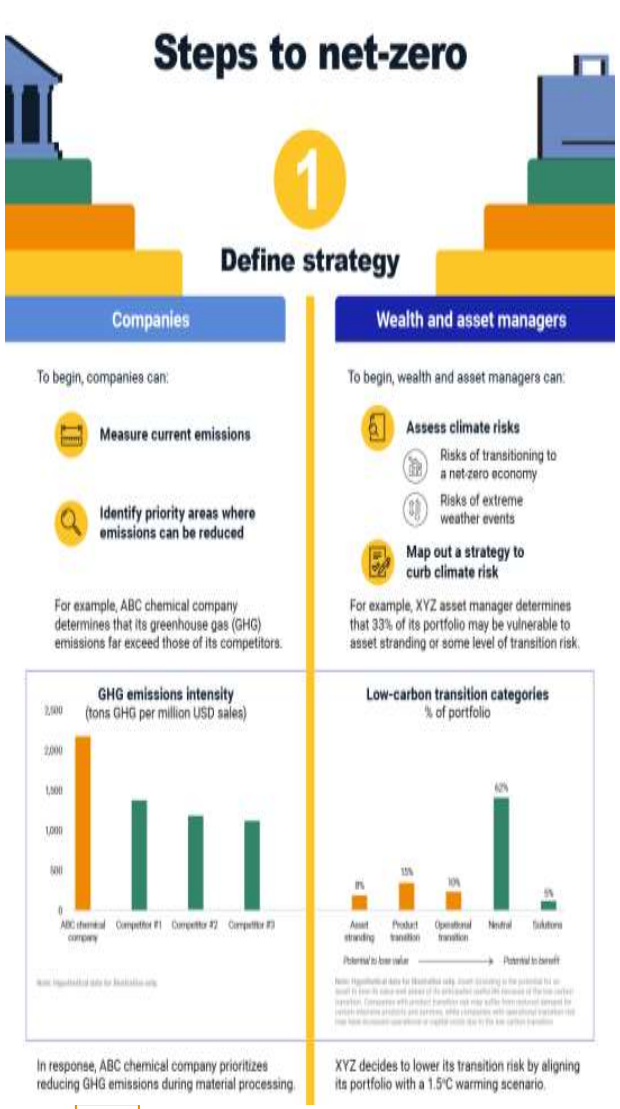
Recycling of Metals – Say No to mining fresh & add to Linear Economy

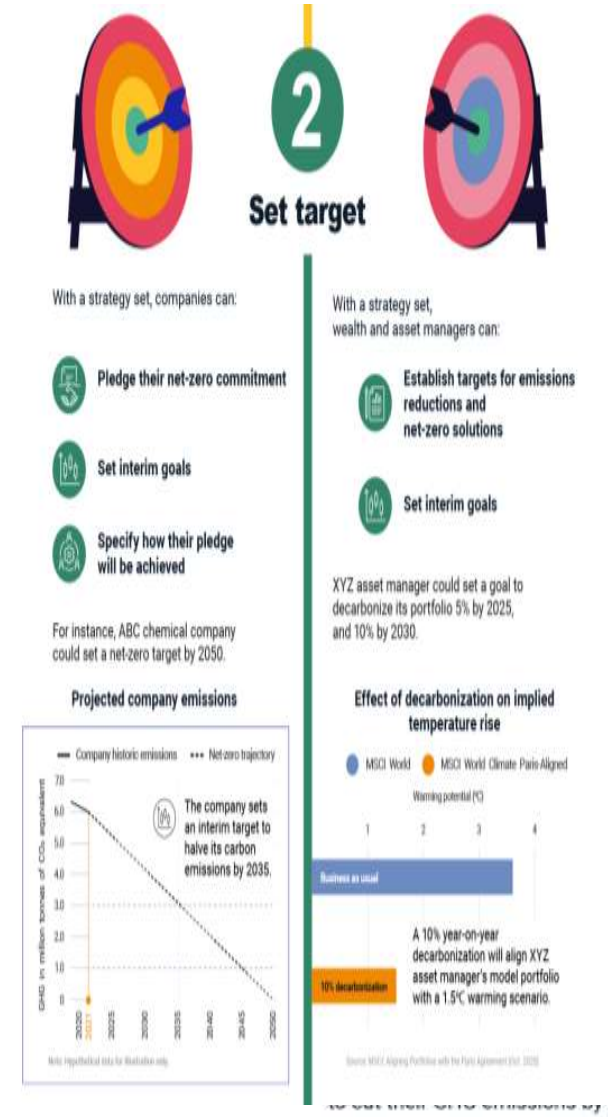
Mining Companies are considering two more fundamental shifts -

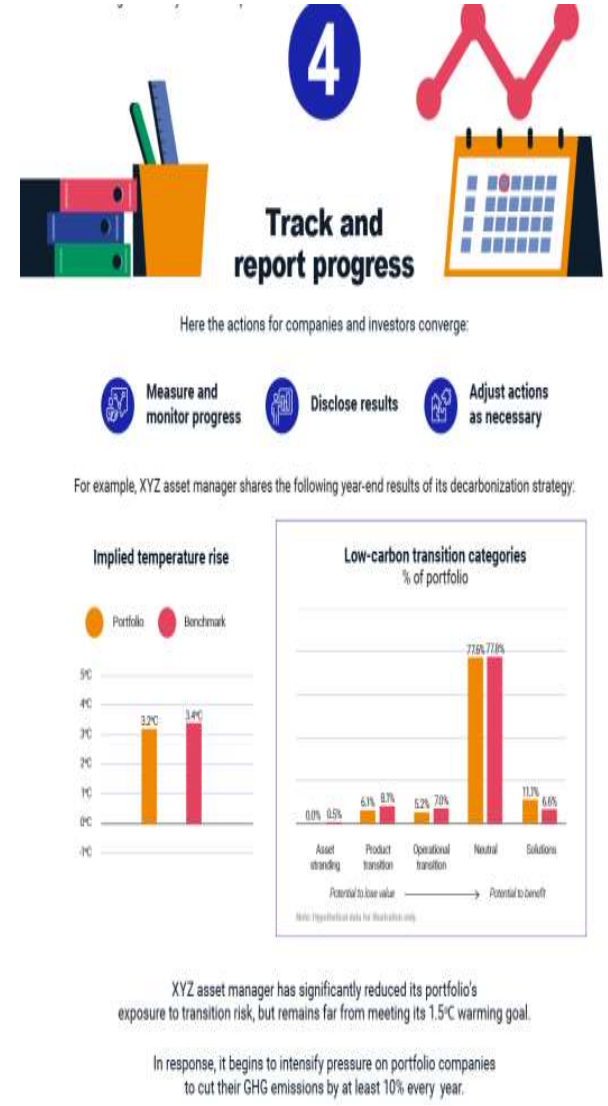
1) the mining industry needs to recycle more to reduce the quantity of new resources needed.
2) extraction and production methods need to be designed to optimize on-site resource productivity rather than separating functions.

- ✓ Metals are **eternally recyclable and can be indefinitely recycled,** maintaining their quality and functionality.
- ✓ **At their end-of-life (EoL) stage**, products made of metals can be re-processed via **recycling by adopting right treatment and reprocessing.**
- ✓ **Metal recycling** closes the loop within the production process,
  - ✓ therefore **reducing the amount of waste that goes into landfill**
  - ✓ **Saves Energy** and significantly **reduces CO_2 emission**
  - ✓ the amount of primary raw materials required.
  - ✓ metal recycling value chain contributes to reduce dependency on imported materials.
- ✓ Recycling of metals is **labour intensive** and **creates** a wide variety of **job opportunities.**

Steps to Net Zero - Approach







Way Forward

‘Net Zero’

Social Harmony

- Secure Social license to operate
- Build long term relationships
- Creating Employment opportunities
- Increase accessibility to energy
- Investment in community development projects

Circular Economy

- Reducing raw materials in the mining process, reusing resources such as water and waste and recycling water and metal products, including accommodating higher rates of scrap
- Increasing pressure from the downstream

Reclamation

- Reclamation and restoration of land
- Establishing an environmentally safe area in the form of reforestation, adding vegetation and ensuring no remains of environmentally unfriendly agents

Zero Discharge Water Programs

- Making the waste water viable for reuse
- Developing waterbodies like ponds at the site which could be treated as a source of water

Low Carbon Economy

- Streamlining energy consumption
- Explore how renewables and technology can work to defray costs and decrease GHG emissions
- Operational Changes

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THANK YOU