Forum: Environment and Sustainable Development

Agenda: On measures to install and promote sustainable mining practices

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Introduction

Mining practices have been dated back to roughly more than 40,000 years ago to provide access for more abundance in resources. Mining did not become significant in society until more liberal civilizations progressively developed around 10,000 to 7,000 years ago. Resources throughout the world that are mined include but not limited to coal, oil shale, metals, limestone, chalk, gravel, and clay. Projects in the mining industry are divided into 2 stages - exploration and feasibility stage and the planning and construction stage. The stage of exploration and feasibility paved way to finding economically viable mines while planning and construction stage paved way to obtaining resources in which thereafter put into implementation. Economic studies of the surrounding environment, obtaining permits, refining plans and infrastructure development happen during this stage.

Sustainable mining entails minimizing the detrimental effects that mining operations have on the environment, society, and governance. In order to meet society's current resource demands while also ensuring that the needs of future generations may be addressed, sustainable miners should engage and committed in good environmental management. Mining becomes considered unsustainable when current progress puts future generations at risk. For instance, poor planning and resource exploitation can degrade the environment and harm ecosystems by producing waste and pollution. These actions cannot be sustained over time.

Despite the fact that mining is essential, mining brings lots of negative impacts that we need to take efficient and immediate measures on. Unsustainable mining practices throughout the world perceptibly causes harsher negative impacts on living organisms and the nature in and around it, directly and indirectly. Negative impacts on the nature around it include but not limit to mine tailings, acid mine drainage, removal of vegetation and topsoil, water pollution, erosion, and even the production of mine overburden. In addition to impacts on nature, unsustainable mining also leads to miners' multiple health consequences including respiratory complications, injuries, cancers and poisoning due to exposure of toxic chemicals. Other than the harms that mining has done to humans and nature, negative impacts that have been caused by mining also influences and brings economic, environmental and social conflicts to countries and macro-economy.

Although mining provides great impact to countries, mining accumulates larger and harsher negative impacts that takes greater tolls on the environmental, economic, and social factors of resource-abundant countries. Thus, immediate measures should be taken to alter factors that create unsustainable mining to decrease the negative impacts that unsustainable mining is taking on our planet.

Key Terms

Acid mine drainage - Acidic run-off water from mine waste dumps and mill tailings ponds containing Sulphide minerals. Also refers to ground water pumped to surface from mines.

Mines - An excavation in the Earth for extracting coal or other minerals such as diamonds and gold.

Extract - Remove or take out, usually using effort or physical force

Abundant - Lots of, usually regarding resources in a specific area

Invasive practice - Human activities that impacts the natural environment, this may be both direct and indirect: direct including urbanization and indirect including government corruption.

Government corruption - The misuse of authority granted to one for personal benefit. Corruption destroys confidence, undermines democracy, stifles economic growth, and makes inequality, poverty, social division, and the environmental problem worse.

Urbanization - The process by which substantial populations permanently congregate in very small regions to build cities.

Resource exploitation - excessively consuming abundant resources in an area which leads to environmental degradation, ecological disturbances, pollution, global warming, desertification, deforestation and even extinction of species.

General Overview

In general, the main victims of the consequences that come with invasive mining practices are in resource abundant countries' environment surrounding mines. The environment surrounding also includes children, whether regarding the harms of harsh child labor, exposure to toxic chemicals, or unsafe machinery/worksites. The United Nations International Children's Emergency Fund (UNICEF) are starting to enforce a "word-first better mining program" which will be used to mitigate child rights and infringements in artisanal and small-scale mining (ASM). Measures like UNICEF have been recently being made to continuously support the impacted environment around unsustainable mines.

Countries have worked close with "The responsible mining foundation (RMF)", a foundation that works closely with mining companies' policies and practices on economic, environmental, social and governance (EESG) issues.

There are multiple measures that countries have come together to create that may help prevent or at most regulate the invasive practices. Government intervention in the market is also considered to be useful ways that governments could use to regulate the use of invasive practices of mining. The mining production industry and the RMF had released a report in 2020 with updates on how large-scale companies are working closely with the UN's SDGs in their business plans to support accomplishing the goals by its respected deadline, 2030.

Africa nations

The mining industry of Africa is the 2nd largest in the world. Africa has 30.37 million square kilometers of land with a plethora of resources, including but not limited to: bauxite, cobalt, industrial

diamond, phosphate rock, platinum-group metals (PGM), vermiculite, and zirconium. In 15 resource-intensive sub-Saharan African nations, the mining industry makes up about 10% of the GDP. Mining exports are the primary source of foreign direct investment in the majority of these nations, accounting for, on average, 50% of all exports. The mining industry in Africa has been notorious for its highly invasive mining practices, requiring large amounts of energy and the movement of large rocks and patches of soil, developing massive local pollution in the process of extraction and transportation. Countries in Africa have already started to utilize a strategy regarding the concern of protected area downsizing, downsizing and DE gazettement (PADDD) to permit mining exploration and development. Instances of PADDD include but not limit to, the Mount Nimba Biosphere Reserve, a World Heritage Site in the Republic of Guinea, was reduced in size by 1,550 ha to make room for iron-ore mining. Additionally, compared to Asia and South America, where the percentage is 25%, 44% of Africa's major metal mines are located inside or within 10 kilometers of a protected area.

Europe nations

The mining industry in Europe is one fundamental factor for the countries in Europe's' economic stability. Minerals and metals mining in Europe has increased drastically over the past decade, making it one of the most important net-importer of most metals and metal-ores. The main consumer for the minerals being extracted in Europe are the electric car companies. Many countries in Europe have been working towards a goal of reducing carbon emissions by implementing the increased use of electric vehicles. The batteries used for these vehicles are mainly extracted from the mines in Europe. Minerals including significant amounts of cobalt and lithium are sufficient in Europe, therefore providing lots of business to the mines of Europe.

South America nations

South America is home to the reserves of critical resources for the future of global energy transmission throughout the world. The main resources exploited from South America's mines include copper, iron ore, gold, silver, oil, coal, natural gas, uranium, and hydroelectric power. South America has major export related alliances with other countries due to their resource availability. The mining industry in south America is in path to be successful throughout the next decade, with studies showing more than $60 billion going to be pumped in and out of countries in South America's economy.

South America currently deals with a mass in illegal gold mining. This continues to devastate the environment, causing deforestation, biodiversity. This also leads to habitat loss and water, air and soil pollution through the seeping of toxic chemicals in the surrounding land, water, and air.

Namibia

Mining is Namibia's leading economic sector; it accounts for 10% of Namibia's GDP every year, and 25% of the overall income. Namibia has the world's fourth-largest producer of uranium oxide, and is a leading producer of zinc. As of 2015, mining in Namibia has accounted for approximately more than 19,000 jobs per year. These resources are being extracted out of two operational mines, Skorpion Zinc

(operated by Vedanta Resources), and Rosh Pinah (owned by various shareholders, with Exxaro Base Metals owning the largest interest at 46 percent).

Namibia faces the main conflicts of drainage in the scarce water sources of its arid/semi dry areas where the mines are located. The noise and the dirt of mines in Namibia have also created soil, water, and air pollution in its area. The mining industry in Namibia has regulations relating to the health and safety of those working in mines. The health and safety of miners have become more formal and are enforced by the Ministry of Mines and Energy, proven to show a decrease in fatal injuries and deaths after the collaboration in 2015.

Although the harms that mining pushes on Namibia, Namibia deeply relies on the industry to continue to uphold the country's economic stability and GDP, and also providing occupations towards their citizens in poverty.

Tanzania

The mining industry in Tanzania has shown great increases in profit over the past few years. Mining held a significant contribution to Tanzania's GDP in the first quarter of 2021, recording 10.2% of the countries GDP. Tanzania has a plethora of exports in resources such as metals (gold, iron ore, nickel, copper, cobalt, silver), industrial minerals (diamonds, tanzanite, ruby, garnet, limestone, gypsum, salt, phosphate) and fuel minerals (coal, uranium). More than 25 mines are currently active in Tanzania, with local investment already surpassing $1 billion.

Despite the profit Tanzania is accumulating from the mines they manage, the still developing country faces many major complications due to its mines. It is said that the main contributor to the pollution in Tanzania is accumulated by the exploitation of mines. As a result, an example, the gold mining industry in Tanzania has deeply affected an important, scarce water source in Tanzania, the Mara River. Although other factors such as damming and extreme weather patterns already affect it, mining for gold has also seeped harmful toxins and metals into the water creating high arsenic waters that have caused skin rashes, miscarriages and cervical cancer amongst the locals that rely on the water source.

The Tanzanian government has taken upon themselves to protect their land from the pollution that mining causes. In 2019, the Tanzanian government had enforced the need to discontinue waste water pollution into the Mara River by the Acacia Mining PLC gold mine. They pushed closing the mine down if this pollution were not to stop, thus clearing one of the main polluters of an important water source for Tanzanian citizens.

Australia

The mining industry in Australia recounted for approximately 10% of the country's GDP in 2020. The industry is strongly export-orientated, and the industry has again started to regain its revenue as the pandemic clears. Australia is home to more than 350 mines throughout the whole country, and is the world's largest producer of lithium and a world-wide top 5 producer of gold, iron ore, lead, zinc, and nickel. It also has the world's largest uranium. Australia's government strongly supports the mining industry and plans to expand Australia's mining science technology capability, create occupations, and

enforce a better share of raw materials that are processed in Australia, through Labor's $1 billion Value-Adding in Resources Fund.

Australia has already faced and considered the conflicts and solutions to impacts caused by mining. As a result, in 2022, the Western Australian Government announced funding for a new bill to allow carbon capture, utilization and storage (CCUS) to be largely enforced in Western Australia (WA). The Australian government, the International Energy Agency (IEA), and UN's lead agency for assessing climate science, the Intergovernmental Panel on Climate Change (IPCC) agree that the advancements will be critical to meeting near zero carbon emissions goals to then slow the trajectory of global warming. Measures by the Australian government also include having 4 major mining companies- BHP, Fortescue, Anglo American and Hatch to form the "Green Hydrogen Consortium", pledging to work together to increase renewable energy-powered hydrogen production in mining and in other large heavy productions.

Brazil

Brazil's mining sector has drastically increased over the past few years. As of 2021, the revenue collected increased 62%. Brazil is the world's second largest producer of iron ore, manganese, tantalite, and bauxite. Other resources available for mine in Brazil include gold, kaolin, nickel, coal and phosphates. Brazil works closely with the U.S. as the main relationship amongst them is that the American companies continuously supply the mining sector in Brazil.

Mining in Brazil have repeatedly contributed to the already growing deforestation and water contamination as well as violence and misplacement towards indigenous tribes living in the Amazon. Explained further, in 2020, Vale (a global mining company headquartered in Rio de Janeiro, Brazil) had 236 applications in the Brazilian Amazon registered with the National Mining Agency (ANM). Of the 236 applications, 214 directly on Indigenous lands. Although announcing in September 2021 their decision to drop all applications interfering with indigenous lands, the next month Vale filed for rights to work on two areas that border Indigenous lands that will most likely end up causing impacts on them. By November 2021, Vale had 75 active mining applications interfering Amazonian Indigenous lands registered in the ANM system (National Mining Agency).

The Brazilian government had not managed to continue with the suggestions given by the U.N., thus a group, the UPR Brazil Coalition, was created by civil society organizations to monitor the adoption of the recommendations. It includes but not limited to organizations like the Articulation of Indigenous Peoples of Brazil (APIB), the Indigenist Missionary Council (CIMI), and the Indigenous Research and Training Institute (Iepé). The UPR Brazil Coalition helped pave the way for the Brazilian government to sustainably keep its mining industry but to not harm the environment surrounding.

Timeline of Events

Date	Description of event
1859	A mining boom brought in North America increased mining rates times 10 even though mining had already been a practice used in early homo sapiens, 40,000 years

1872	The general mining act controls the mining of specific minerals on federal public lands. The statute enables people and businesses to prospect on public domain areas and stake claims to any minerals they locate.
1967	Massive oil spill of the supertanker Torrey Canyon at the Cornwall coast, English Channel creating wide concerns for marine/ecological disasters.
1980	Superfund project created to deal with industrial legacy through clean up, remediation, and rehabilitation projects. It was mainly implemented in North America and West Europe
Late 1900's - 2000's	Depletion and destruction of phosphate mines in Nauru leaving environmental catastrophe on the destroyed islands
2004	Observation shown that the extraction of major metals grew by more than 75% within a 35-year period
2005	The start of another mining boom, mainly in Australia. Mining exports in Australia tripled while also increasing investment spending by the mining sector from 2% of GDP to 8%
2008	Global extraction of industrial minerals increased by 53% within a 35-year period
2015	83rd edition of the PDAC (Prospectors & Developers Association of Canada) International Convention in Toronto was held to support the industry in identifying original solutions to the problems it faces. The convention featured a variety of workshops on how to make the most of existing resources and search for fresh opportunities, such as alternative finance.
2019	270 people killed in the Brumadinho mines by the Dam I at the Córrego do Feijão iron ore mine, 9 kilometres east of Brumadinho, Minas Gerais, Brazil. The Dam was owned by Vale, a company also in the mining industry.
2020	The 46,000-year-old Aboriginal settlement at the Juukan Gorge, belonging to the Puutu Kunti Kurrama and Pinikura groups were demolished by the company Rio Tinto in search for access to higher grade iron ore with approval of Western Australia's (WA) government.

UN Involvement, Relevant Resolutions, Treaties and Events

- A UN conference held in 2012 on sustainable development (Rio+20), “The Future we want”, acknowledged the significance of the outcomes of unsustainable mining but these gatherings never demanded the creation of an all-encompassing global agreement. There are, however, agreements with clauses that can aid in regulating the sector. International investment treaties, international human rights legislation, and environmental conventions and treaties are three types of international law that have bearing on mining (Pring et al., 1999). Treaties regarding environmental aspects of mining include the 1979 Bonn Convention on the Conservation of Migratory Species of Wild Animals, the 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage, and the 1971 Ramsar Convention on Wetlands of International Importance. Beyond the purview of state law, mining on the seabed and subsoil is governed by the 1982 UN Convention on the Law of the Sea. The International Seabed Authority is in charge of regulating these activities. Mining companies who are committed to the SDGs will gain stronger rapport with governments and communities as well as easier access to financial resources; those that fail to engage meaningfully with the SDGs will put both their short- and long-term operations at risk. The World Economic Forum, UNDP, UN Sustainable Development Solutions Network (SDSN), and the Columbia Center for Sustainable Investment (CCSI) have been collaborating over the past few months to develop a clear understanding of how the mining industry can most significantly support the SDGs.

Possible Solutions

Due to the temptation that every nation faces to increase its own GDP and the increase in world population and power, mining has become a much more difficult conflict to handle. Nonetheless, there are still steps that may be taken to halt the process of unsustainable mining.

Enforcing laws upon states regarding unsustainability throughout the region is the foundation to creating a more sustainable environment. Actions can be taken such as encouraging countries to amend laws to regulate sustainable mining practices. Amending laws to regulate sustainable mining include mining industry companies required to file for environmental impact study (EIS) with the enforcement authority, and only allowing the enforcement authority to issue an environmental impact declaration (EID) approving the development of the proposed operations, then the mining activity may be carried out.

Trial and error regarding possible solutions to causes of unsustainable mining may also provide states with more efficient results relating to deterring unsustainable mining. Another possible solution to take measures on installing and promoting unsustainable mining practices include utilizing polluted areas to investigate and experiment considered unsustainable mining practices to further educate the causes and possible solutions to outcomes. Promoting this solution allows regions to acknowledge the most efficient solutions to causes from unsustainable mining practices without harming other ‘healthy’ land.

Green Mining technology had been looked upon mainly to discontinue unsustainability in mining. Prosecuting investing in research and development of Green Mining Technology will allow nations to mine in feasible methods. In order to collect minerals and metals while minimizing their negative effects on the environment, "green mining" refers to a combination of technology advancements and industry best practices.

Illegal or unregulated mines create loads of impacts on environment surrounding the source. Closing illegal and unregulated mines leads to environmental precedents in the industry. Illegal or unregulated mines create the releasing of harmful substances/toxins into the air, soil, and water resulting in water pollution, deforestation, poor

soil fertility and limited access to land for agriculture productivity. Discontinuing the left illegal or unregulated mines would lessen the effect on the environment through abandoned or illegal mines.

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