

MINING AND MINE TAILINGS IN ASIA

Moving towards adoption of the Global Industry Standard
on Tailings Management



A UNEP Partner

Supervision and coordination:

Georgina Lloyd, UNEP Bangkok

Project Management

Kristina Thygesen, GRID-Arendal

Authors

Elaine Baker, GRID-Arendal at the University of Sydney

Kristina Thygesen, GRID-Arendal

Billy Haworth, University of Sydney

Data analysis

Billy Haworth, University of Sydney

Alex Jones, University of Sydney

Copy Editing

Janet Skaalvik

Layout

GRID-Arendal

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Introduction

Mining is important in supporting progress towards sustainable development goals. However, improper mine tailings storage causes environmental and social impacts that can be devastating, resulting in loss of lives, livelihoods, and damage to the environment. The impacts of climate change, coupled with aging facilities and the number of unmanaged legacy sites put additional pressure on safely managing mine tailings. Globally, it has been found that tailings pond failures occur almost every year, with an average of 4.4 accidents per year (1947-2021), with the frequency significantly higher in Asia and the Americas and increasing in recent years (Lin et al 2022). In response to a number of devastating failures of mine tailings storage facilities (TSF), UNEP, UNPRI¹ and ICMM² co-convened the development of the Global Industry Standard on Tailings Management (GISTM 2020). Just under 50% of mining companies by market capitalisation have

formally agreed to implement the standard, with a further 18% currently reviewing its application (IMTSI 2022).

This report is a preliminary examination of mining and the management of mine tailings in five target countries – Papua New Guinea, Mongolia, the Philippines, India, and Indonesia. It is being prepared in response to the UNEA resolution 4/19 highlighting UNEP's role in supporting governments to improve mining governance and in particular mine tailings management. Following the recent highly publicized TSFs failures, governments, communities, and investors are keen to understand where these facilities are located and how they come to fail. The report compiles available information to locate and verify mines with TSFs (mines that may have TSFs but were unable to be verified are also included). It has made use of the GRID-Arendal Global Tailings Portal and publicly available data and information. The verification of TSFs presence was done using this data, in conjunction with Google Earth satellite imagery. As part of the initial data gathering methodology, requests were sent to mining companies in the region using the data template formulated by the Investor Mining and Tailings Safety Initiative (Church of England Pensions Board 2019). It should be noted that none of the mining companies approached responded to the request for information. Hence only information from publicly accessible sources was used. The geographic visualisation of the mines examined in this study have been added to the Global Tailings Portal and can be accessed here.

In general, there is very little peer reviewed research being undertaken on mine tailings in the region. Most of the available information is related to mining impacts on communities documented by NGOs and reported in the media.

Global Industry Standard on Tailings Management (GISTM)

The standard is directed at mine operators and applies to both existing and future TSFs. Operators must have zero tolerance for human harm and strive to protect the environment at all phases of the mine, from the earliest development to post-closure. Operators must follow specified guidelines, implementing best practices in planning, design, construction, operation, maintenance, monitoring, closure, and post closure activities. As highlighted by Kemp et al (2021), compliance with the standard requires unprecedented levels of public disclosure by the operators. Universal adoption of the standard (or an equivalent standard) should be a priority for industry and governments.

1. United Nations Principles for Responsible Investment – www.unpri.org
2. International Council on Mining and Metals – www.icmm.com

Benefits of the Global Industry Standard on Tailings Management (GISTM)

Improper mine tailings storage causes environmental and social impacts that can be devastating, resulting in loss of lives, livelihoods, and damage to the environment. The impacts of climate change, coupled with aging facilities puts additional pressure on safely managing mine tailings. The GISTM is designed to assist mine operators in safely managing tailings facilities. It provides specific measures to implement best practices through the life of the mine, from planning to post closure. Implementation of the GISTM can support mining companies in managing key environmental, social, and economic risks. It provides a rigorous auditable standard that ensures that stakeholders, including potentially impacted communities living near the mine site, regulators, and the general community, can have confidence that mine tailings management is being undertaken with safety as the highest priority through all phases of a facilities lifecycle. Initial and ongoing meaningful consultation with stakeholders is required, steps that will improve trust in an industry that has in many places

been battling to maintain public approval and the social license to operate. Companies that adopt the standard will provide a level of disclosure and transparency that has previously been uncommon in the industry. Stakeholders will be able to access summary information on all aspects of tailings management.

Conformance with the GISTM does not replace the necessity to adhere to specific national or local regulations. Since the release of the GISTM some national standard providers have updated their standards to be equivalent with the GISTM and some such as the Mining Association of Canada are also endeavoring to have their standard applied to inactive and closed mine sites. It is envisaged that widespread adoption of the GISTM (or equivalent standard) will increase innovation and have a positive impact on the global mining industry. On an individual company level, it demonstrates to financiers, insurers, customers, and other stakeholders the company's commitment to embedded best practice.

Background

Mining companies working in Asia range from small and medium single-size companies (less than 200 employees) to global corporations operating multiple mines. In general, the risks for local communities living in proximity to TSFs are not effectively communicated to communities – these might include loss of access to land and water and in some locations, potential catastrophic impacts from tailings dam failure. In many places, improving the safety of TSFs requires improvements in management that not only focus on technical issues but also on worker training, community consultation and increased transparency.

Indigenous communities have historically gained little from mining on their traditional lands, and generally face social disruption and long-term environmental damage (Ballard and Banks 2003). Land acquisition can also impact access to resources including food, water supplies, biodiversity, forest cover and cultural sites. Communities and NGOs often try to hold companies to account with campaigns that may go on for many years and can include direct

action as well as legal and political approaches (Kemp and Owen 2013). There have been some successes reported in the media - examples include Manicani Islanders in the Philippines who managed to stop the removal of nickel stockpiles from villages in 2016 (EarthBeat 2016) and the water defenders of El Salvador who stopped mining on their lands (Broad and Cavanagh 2021), but the financial and social costs are often very high.

Mining should be undertaken in a sustainable way for all stakeholders including communities and the environment. The Extractives Industries Transparency Initiative (EITI) promotes sustainable and just resource management. Member countries commit to providing information throughout the value chain, including the processes established to award extraction rights, the government revenue from natural resources and how the revenue is used to support the SDGs. Indonesia, Mongolia, Papua New Guinea, and the Philippines have committed to implementing the EITI standard. India is not a member of EITI (EITI 2023).



Protestors rally in 2019 against renewal of Ocean Gold's mining licence at the Didipio gold and copper mine in Nueva Vizcaya, Philippines (Alyansa ng Novo Vizcayano para sa Kalikasan). Despite the protest, the license was renewed in July 2021, securing the company 25 more years of operation.

Social and Environmental Impacts of Mine Tailings

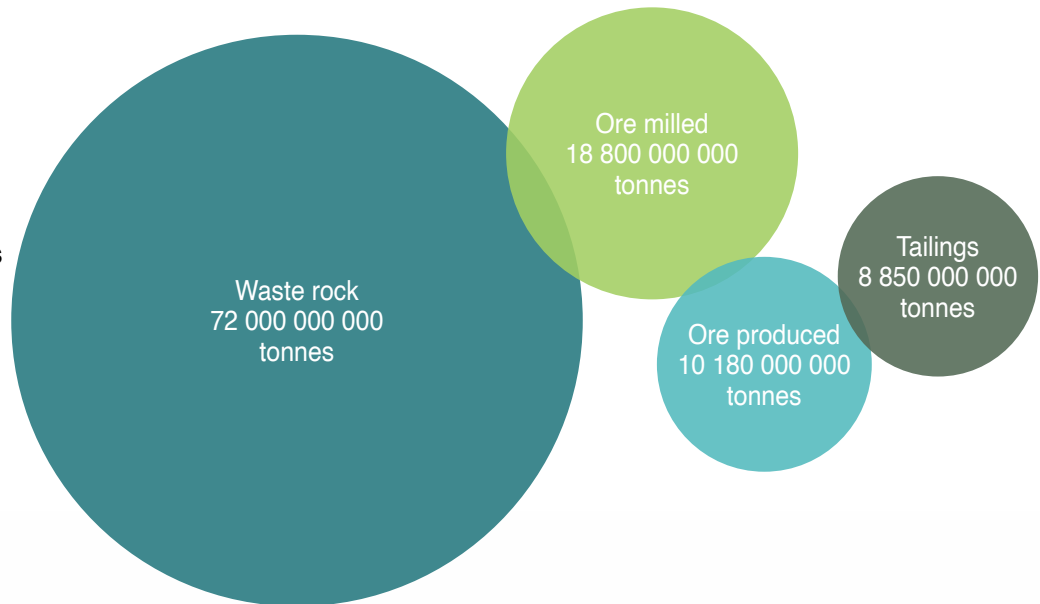
Mine tailings are the waste material from mining, produced when the economically valuable material has been removed. They are generally made up of ground-up rock or sand, non-economic minerals and the chemical reagents and process

water used to extract the commodity. Tailings dams, also referred to as TSFs, are the most common method used to store this material, although riverine and marine disposal are used at some mines (for example Roche et al 2017).

Global estimate of the volume of waste rock, ore and tailings produced in 2016

Commodities

- Copper
- Gold
- Iron ore
- Coal
- Phosphate
- Lead-zinc
- Nickel
- Platinum group elements
- Bauxite
- Uranium
- Chromium
- Molybdenum
- Tin
- Vanadium
- Manganese
- Niobium
- Rare Earths
- Lithium



Source: USGS 2016, Mudd 2020

Global estimate of the volume of tailings and waste rock, ore and tailings produced in 2016 (from Oberle et al 2020)



Direct impacts

PEOPLE

19 people died, 600 families were displaced and at least 400 000 people had their water supply disrupted.

FAUNA

Entire fish populations- at least 11 tons- were killed immediately when the slurry buried them or clogged their gills.

HERITAGE

Numerous colonial monuments dating back to the 1700s were destroyed.

INFRASTRUCTURE

The slurry filled 650 km of hydrologic networks.

VEGETATION

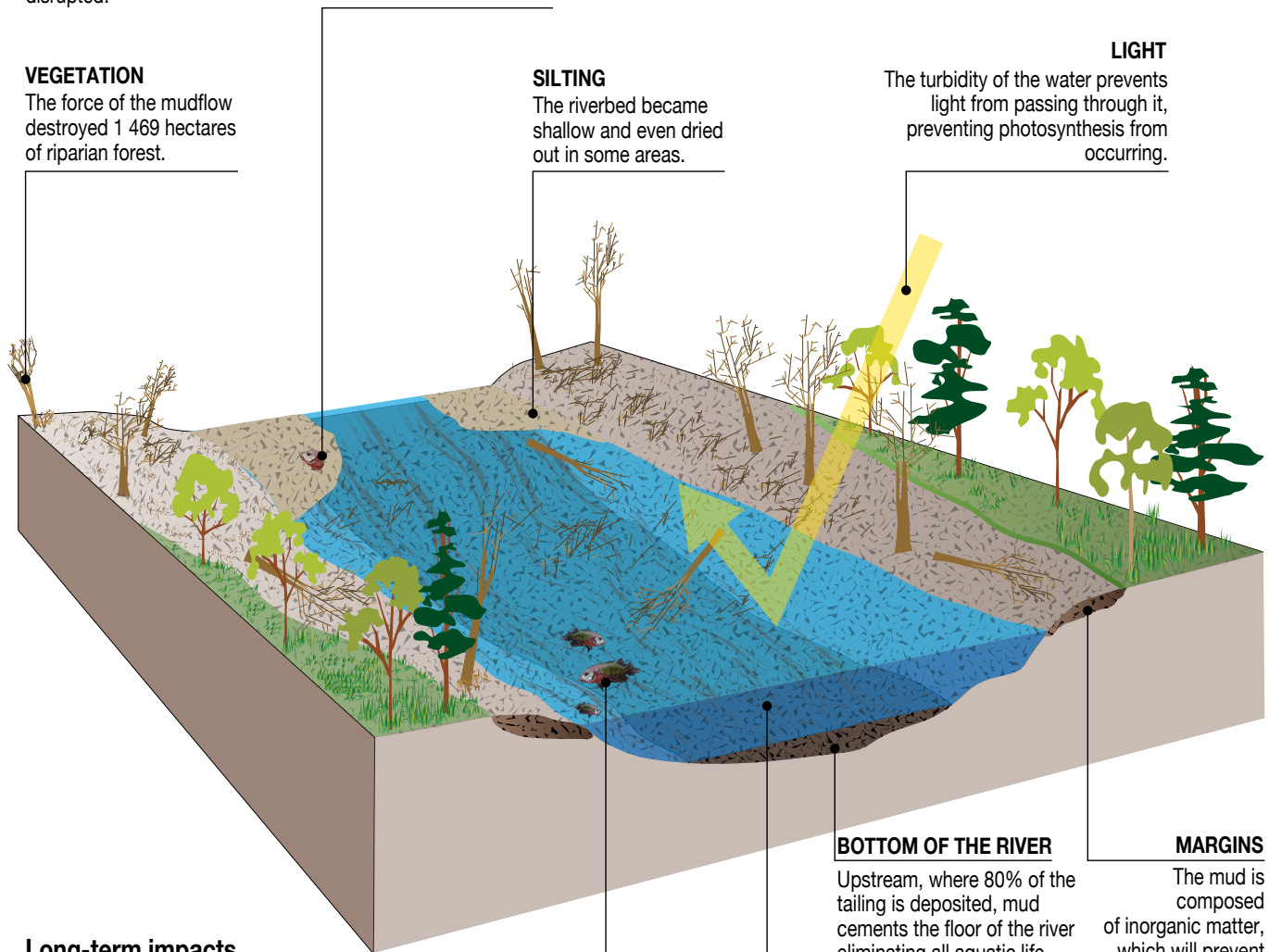
The force of the mudflow destroyed 1 469 hectares of riparian forest.

SILTING

The riverbed became shallow and even dried out in some areas.

LIGHT

The turbidity of the water prevents light from passing through it, preventing photosynthesis from occurring.



Long-term impacts

PEOPLE

The destruction of riparian, freshwater and marine ecosystems eliminated irreplaceable natural resources and ecological processes that support traditional livelihoods, disrupting fisheries, agriculture, tourism and freshwater resources. The interruption of the mining activity will severely affect the local economies of 37 villages and cities. Fishing and agriculture are banned across affected areas for an indefinite period and misguided future use and restoration designs may increase human exposure to heavy metals.

Sources: Roche, C., Thygesen, K., and Baker, E., 2017

pH AND TEMPERATURE

The sediment altered the acidity and the temperature of the water, killing aquatic life.

TURBIDITY

Downstream and close to the river mouth, when the river level rises after the rainy season, turbidity increases and metal levels in the water column return to the same level as in November 2015.

BOTTOM OF THE RIVER

Upstream, where 80% of the tailing is deposited, mud cements the floor of the river eliminating all aquatic life.

MARGINS

The mud is composed of inorganic matter, which will prevent plants from growing where it has settled.

Impacts of the mine tailings storage-facility failure at the Samarco mine in Brazil, November 2015 (Roche et al 2017)

Due to the physical and chemical nature of tailings, they pose potential risks to people and the environment, which means they require proper treatment and dedicated, safe storage locations. Unfortunately, tailings dams can leak and fail. Leaks can cause long-term chronic environmental

problems and failures can release vast quantities of water and sediment, often capable of devastating downstream communities and the environment (for example Roche et al 2017). Because of these acknowledged risks communities located near mine sites are understandably concerned.

Papua New Guinea

Papua New Guinea is classified as having a developing economy (United Nations 2022) and has a population of over 9 million. The country is a significant producer of gold, copper, silver, and nickel. The extractive industry sector provides significant employment and generates 28% of GDP and 88% of total exports (EITI 2021). However, there is a long history of conflict surrounding the impacts of mining, land use, revenue sharing and state participation in extractive industries.

Many mining projects in PNG controversially dispose of tailings into river systems (for example Panguna, Pogera, Ok Tedi) or into the marine environment (for example Misima, Lihir, Simberi) (Mudd et al 2020). For most of PNG's mining history no large-scale mining operation has been required to develop an engineered and actively managed tailings storage facility such as a dam (considered minimum mining practice in other mining countries; Mudd et al 2020). The reasons for this are generally related to the engineering and cost challenges of building stable dams in areas of steep terrain, seismic activity, and extremely high rainfall. It is only in the last decade that the Hidden Valley mine built an engineered tailings dam. The Global Industry Standard on Tailings Management does not cover riverine or marine disposal of tailings so at present there is no standard for this mode of disposal (GISTM 2020). In 2008 the London Dumping Convention and Protocol (the Convention) (designed to prevent pollution of the sea by dumping of wastes) noted that pipeline discharges of tailings into the marine environment did not constitute "dumping" and therefore did not come under the direct jurisdiction of the Convention. An assessment report (IMO/UNEP-GPA 2013) suggested further work was required.

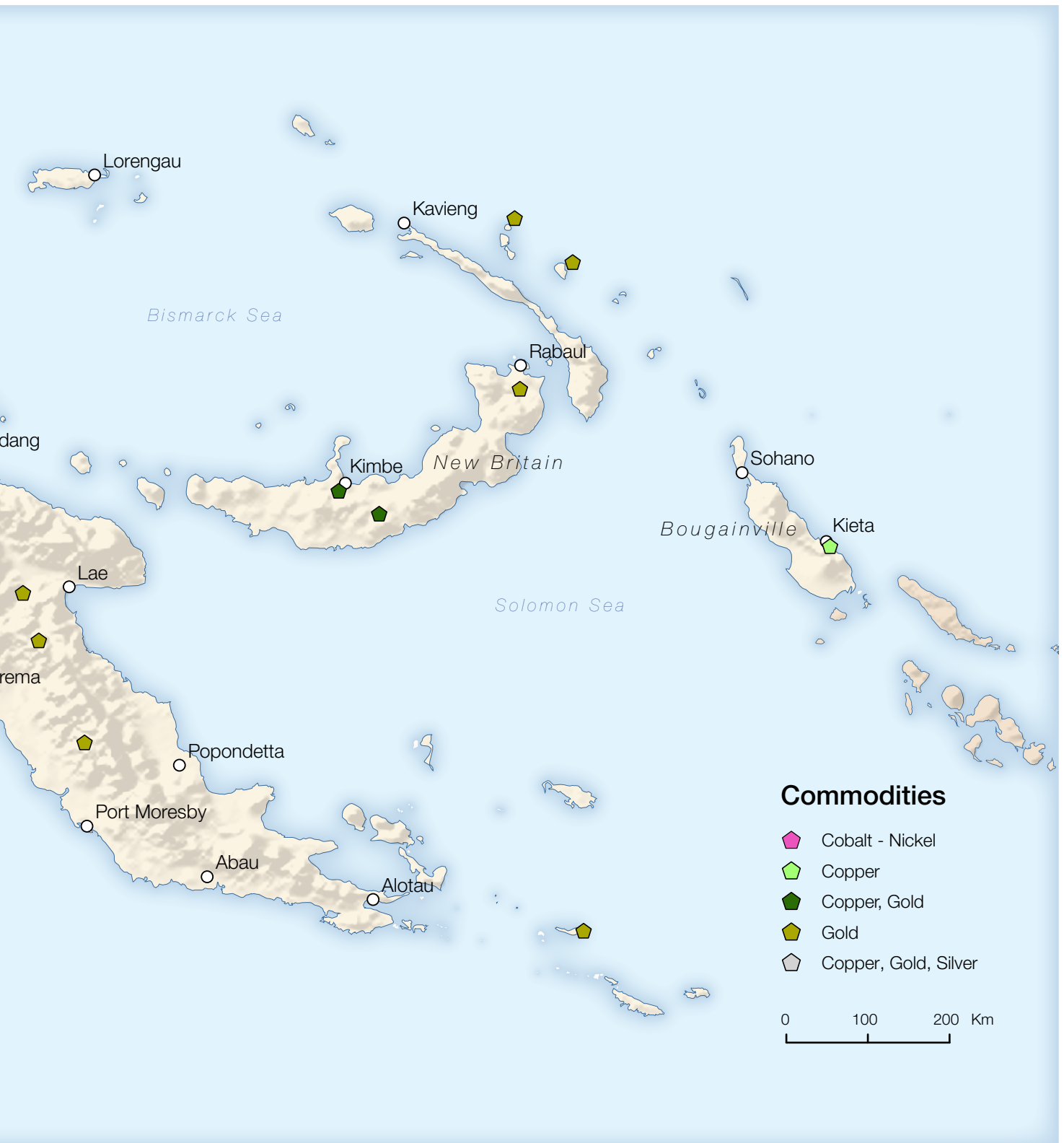
The tailings dam at the Hidden Valley Au-Ag project, Wau-Bulolo gold field, Papua New Guinea (February 2012; from Mudd et al 2020)

Verified mine locations in Papua New Guinea



Figure 1. Location of mines and mines in development in Papua New Guinea.





Both the Convention and UNEP-Global Programme of Action have expressed concern regarding the adverse impacts on the environment from marine and riverine discharge of mine tailings (GESAMP 2016).

Sixteen mines with verified tailings dams were identified in the study. Of these 16 only 6 were found to be currently operational – 4 were in development and 6 were closed. An additional 26 mines were identified, but no information was found regarding mine waste disposal (Table 1 and

Figure 1). Information was sourced from publicly available company websites and the Mineral Resources Authority of PNG (2022).

Although there have been no catastrophic dam failures in PNG (there are very few engineered dams and most of these are currently small scale) there is major ongoing concern regarding environmental damage from tailings and conflict between local communities and mining companies - some examples are detailed below.

Table 1. Mine Tailings Summary**Papua New Guinea**

Mines	16
<i>10 Gold, 1 Copper, 3 Copper and Gold, 1 Copper, Gold and Silver, 1 Cobalt and Nickel</i>	
Verified operating	6
In development/planned/proposed	4
Closed/abandoned/shelved/mothballed	6
Unknown status	0
Verified No of companies that are member of ICMM	3
Not verified for operation/location or presence of TSF	26
<i>15 Gold, 3 Copper, 3 Copper and Gold, 2 Nickel, 1 Copper, Gold and Silver, 1 Cobalt and Nickel, 1 Iron and industrial sands</i>	

Panguna Mine

One of the most widely publicised cases of environmental damage from mine waste occurred on the island of Bougainville. The giant copper and gold Panguna mine began operation in 1972 and during peak output was one of the largest copper and gold producers in the world, providing significant revenue for the government of Papua New Guinea and other investors. However, there was little return for the local people. This inequity, compounded by environmental damage led to a decade long war between the people of Bougainville and the PNG government (Regan 2017). The mine closed in 1989 but not before an estimated 20,000 people had been killed in the conflict or died from related hardship (Allen 2020).

There are numerous villages downstream of the mine and in surrounding areas.



The Panguna copper mine Bougainville PNG – copper-stained water in the mine pit (photo Natasha Harth 2009).

Following the closure of the mine these communities, housing approximately 12,000 to 14,000 people were left with a legacy of millions of tonnes of contaminated mine tailings and chronic pollution affecting the Kawerong and Jaba rivers. There was no closure plan to deal with the contamination or rehabilitate the site (Lowen 2021). There is currently a debate on the reopening of the mine. While the community is divided on reopening, all agree that the environmental degradation caused by the mine needs to be cleaned up and that the former owner Rio Tinto has an obligation to be involved (Boege 2022). Rio Tinto has distanced itself from responsibility and in 2016 transferred its shares in the operation (53.8%) to the PNG government and the Autonomous Bougainville Government at no cost (the remainder of the company is owned by public shareholders). Rio Tinto states that it complied with all relevant laws during the period of operation. Other commentators suggest the company is not only liable for the clean-up but is also implicated in human rights violations (death due to the hazardous environment created by the mine, exposure to toxic and dangerous products, loss of access to clean water; loss of access to food, shelter and an adequate standard of living, loss of culture, impacts on the rights of women, girls and children; Human Rights Law Centre 2020; Boege 2022) that occurred in the region.

Tolukuma Mine

Recently there has been concern regarding the reopening of the bankrupt Tolukuma gold mine in the Central Province. The mine is located 100 kilometres north of Port Moresby in the Goilala District. In 2004 Tolukuma gold mine was the subject of an investigation by the OXFAM Community Aid Abroad mining ombudsman (Oxfam 2004) – the ombudsman was set up to assist local and indigenous communities impacted by the operations of Australian mining companies. At the time of the report the mine was owned and operated by Durban Roodepoort Deep Ltd, a South African company, listed in Australia. The initial request to the ombudsman was made by local community members in 2001 following an incident when a helicopter accidentally dropped 1 tonne of cyanide into dense jungle. The company successfully cleaned the area (Noller and Saulep 2004), but there was little communication with local people, and they were not warned about the potential contamination of drinking water until sometime after the spill. The OXFAM report (2004) found that grievances expressed by the community in 2001, including the disposal of toxic tailings into the local river system had not been addressed by the company.

The mine closed in 2015. A report from the owner at the time, Petromin (a PNG government owned company), stated they were working on a closure plan. However, before the closure plan was completed the mine was sold to an Asian finance company, Asidokona Mining Resources - a company with no reported mining experience. Papua New Guinea Mine Watch (2018) described the sale as having significant

inconsistencies that required investigation. In 2018 the mine went into liquidation owing USD 233,000. The mine has been granted an extension licence for 10 years and in October 2022 Lole Mining (a PNG based company) paid the liquidator 20 million Kina (approximately USD 6 million) to purchase the mine (PNG Business News 2022). Although the purchase was reported as a win for the people of PNG with ownership returning to a local company, it had previously been reported in the Australian press (The Market Herald August 2022) that Lole had been sold to Tempest Minerals, an Australian based company, for AUS 25.7 million. At present the mine is flooded – Lole Mining had previously estimated the cost to restart the mine would be between USD 220 -250 million (PNG Business News 2022a).

Frieda River Mine

A proposed copper-gold mine at Frieda River (one of the largest known copper deposits in the world) being developed by PanAust (a Chinese owned company registered in Australia, that acquired the company from Xstrata Frieda limited in 2014) has come into conflict with local landowners (Bainton and Banks 2018). Landowners state that PanAust has failed to obtain consent for the mine from the Sepik River communities, which violates their right as Indigenous peoples to give their free, prior, and informed consent to developments that affect them (Environmental Law Alliance 2022). If the mine goes ahead, it will be the largest in PNG, with a tailings dam embankment 187 m high and a capacity twice the size of Sydney Harbour (Frieda River Limited 2018). A recent report by the NGOs Jubilee Australia Research Centre and Project Sepik (2021) the mine should be reconsidered on safety grounds. Reasons indicated include:

- the legally required environmental impact statement is inadequate as it does not comprehensively consider risk of dam failure. This is supported by an independent expert review of the environmental impact statement, commissioned by Save the Sepik (2020), which details numerous shortcomings, including poor risk assessment and lack of scientific evidence to support assumptions on environmental impact.



Local women protest against the Frieda River mine (photo Project Sepik 2021)

- The mine is in a seismically active area of extremely high rainfall (around 8 m/yr) that is unsuitable for the development of a TSF.

In addition, the consequence of dam failure is extreme with 30 villages directly affected (Cherniak 2020) and potentially 80,000 people living along the Sepik suffering negative consequences (Supreme Sukundimi Declaration 2020; AUSNCP 2022).

Lihir Gold Mine

The Lihir mine is located on Lihir island, New Ireland Province (Figure 2). Tailings from the mine are pumped a short distance offshore through a discharge pipe into 128 m deep water, while much of the waste rock is disposed of in the shallow bay (barge dump zone shown in the map below). A study on the impact of mine tailings on the deeper marine environment (800–2020 m) found major decreases in the abundance of sediment infauna (Hughes et al 2015). The presence of the waste rock in the shallow water also has a negative impact. The increased turbidity and sedimentation have resulted in a significant decrease in coral cover and a reduction in biodiversity within a 2 km radius of the disposal site (Haywood et al 2016).

A feasibility study (Phase 14A) has been carried out to investigate the expansion of the mine (Newcrest Mining 2023). The expansion plan began in 2022 and includes steepening the walls of the mine to access higher grade ore. It also includes the construction of a seepage barrier along the shoreline of the existing harbour.

Recently in PNG there have been positive changes in mining governance legislation that could see improved environmental and social performance of mining companies. Mudd et al (2020) list these developments, which include a ban on riverine tailings disposal for any new mining developments and the incorporation of health impact assessments into the approvals process for new mining projects.



Figure 2. Lihir mine site on the north end of Lihir Island (from McKinnon 2002)

Mongolia

Mongolia is classified as having a developing economy (United Nations 2022) and has a population of approximately 3.2 million. The country has significant reserves of gold, copper and coal with the extractives sector providing 20-30% of Mongolia's GDP (in 2019 this equated to USD 6.7 billion in exports; EITI 2020). The economy is dependent on the copper-gold mine, Oyu Tolgoi (OT), and the Erdenes Tavan Tolgoi (TT) coking coalmine. In 2007 the State Great Khural Decree No.27 identified 39 potentially strategically important mineral deposits (Ariuntuya 2012; Figure 3).

Mongolia's state-owned investment company Erdenes Mongol LLC, established in 2006, has numerous subsidiaries

with interests in a wide range of activities including mining. The latest reports show that Erdenes Mongol owns, or part owns four mining operations – copper producer Oyu Tolgoi (34%) and three coal operations, Tavan Tolgoi (65%), Baganuur (75%), and Shivee Ovoo (90%). The company also has an interest in gold, silver, and uranium exploration. In 2017, Erdenes Mongol paid USD 131 million in taxes, royalties, and fees to the Government for its share in the four mines (Natural Resources Governance Institute 2019). There are additional government owned mines including the Erdenet copper and molybdenum mine and the Bor-Undur fluorspar mine. These are managed by separate state-owned enterprises.

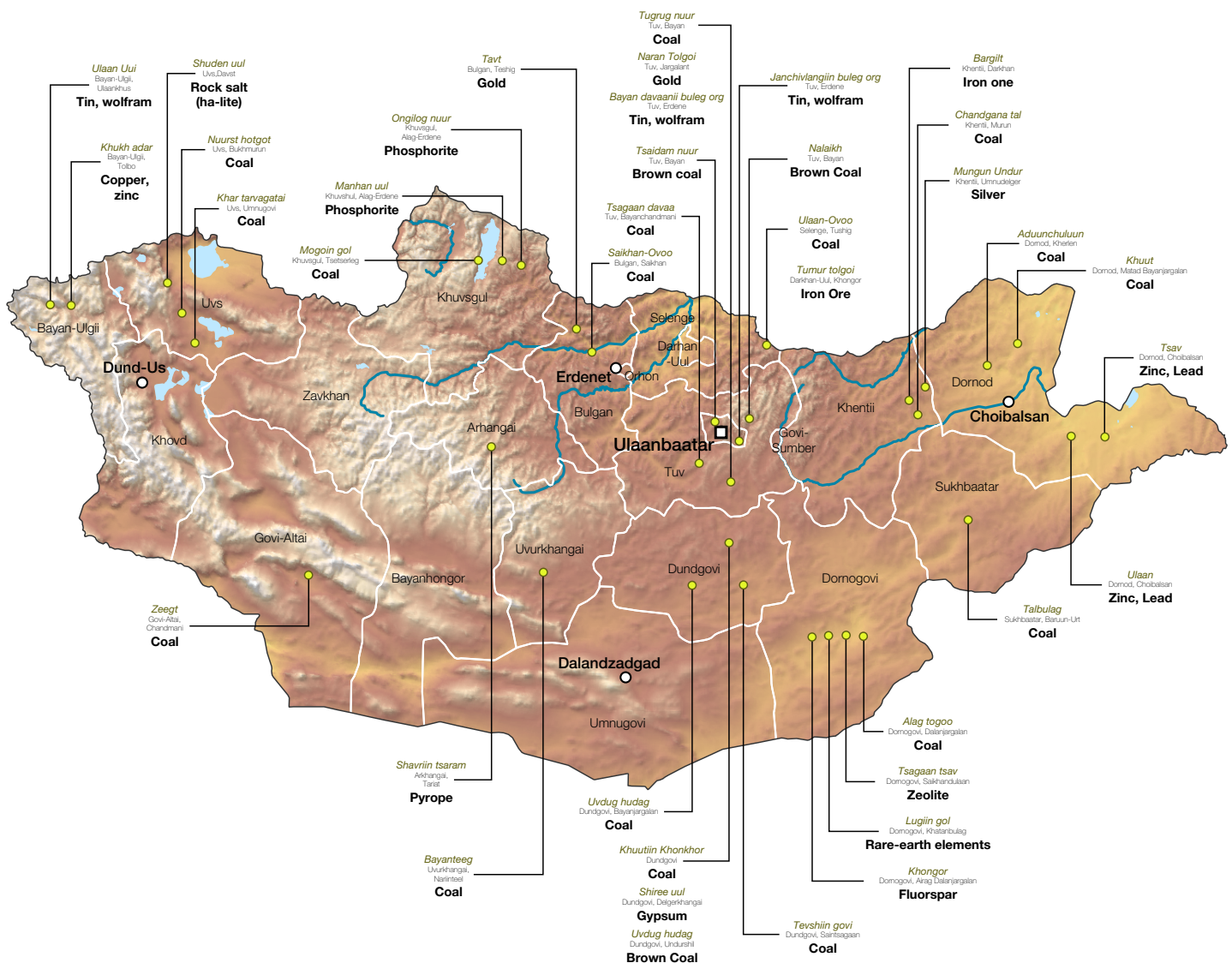


Figure 3. Thirty-nine strategic mineral deposits identified in the State Great Khural Decree No.27 (from Ariuntuya 2012).

Table 2. Mine Tailings Summary**Mongolia**

Mines	32
<i>22 Coal, 1 Copper and Gold, 3 Copper, 3 Gold, 3 Tungsten</i>	
Verified operating	21
In development/planned/proposed	8
Closed/abandoned/shelved/mothballed	3
Unknown status	0
Verified No of companies that are member of ICMM	1

There has been some criticism of the operation, governance, and profitability of the state-owned mines (Natural Resources Governance Institute 2019a; Kiezebrink et al 2018). However, in 2018 Mongolia was found to have met all the requirements of the EITI standard (EITI 2020).

Thirty-two mines with verified tailings dams were identified in this study. Of these 32, 21 were found to be currently operational – 8 were in development and 3 were closed (Table 2 and Figure 4). Information was sourced from publicly available company websites.

There is very little information available regarding tailings management in Mongolia. There have been no catastrophic dam failures recorded in Mongolia, however there are recorded disputes between traditional herders



and both legal and illegal miners over access to land (Cane et al 2015). Details of mine management and some of the reported issues impacting communities are noted below.

Oyu Tolgoi

Oyu Tolgoi is one of the largest copper and gold deposits in the world. Located in the Gobi Desert, the mine is jointly owned by the government of Mongolia (34%) and Turquoise

Hill Resources (66%). Rio Tinto owns 50.8% of Turquoise Hill Resources and manages the mining operation. The mine started life as an open pit in 2011. In January 2022 the Oyu Tolgoi Board approved the development of underground operations with an expected 200 km of tunnels. Underground mining began in 2023.

In 2012 a consortium of NGOs produced a report critical of the Environmental and Social Impact Assessment

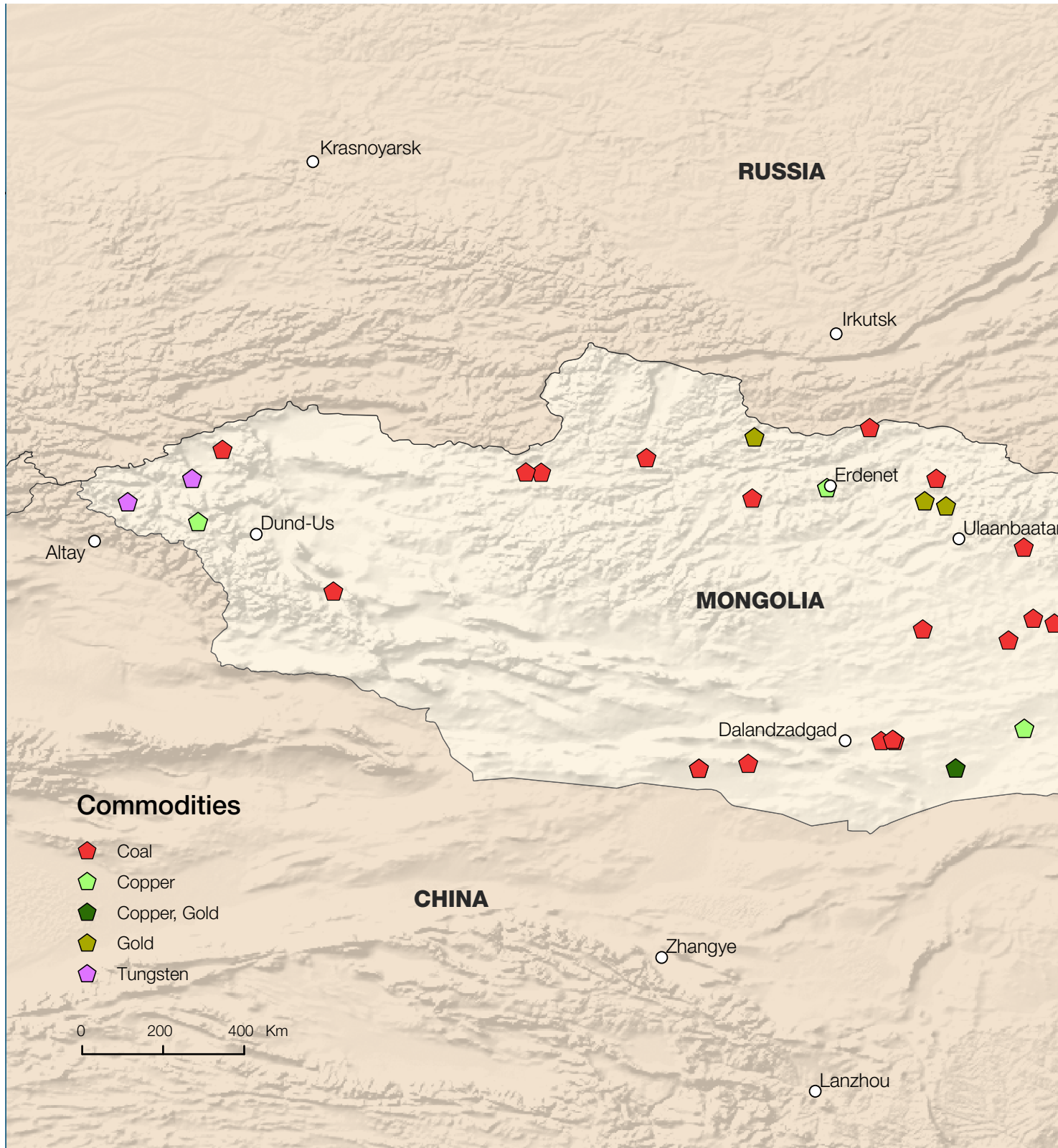


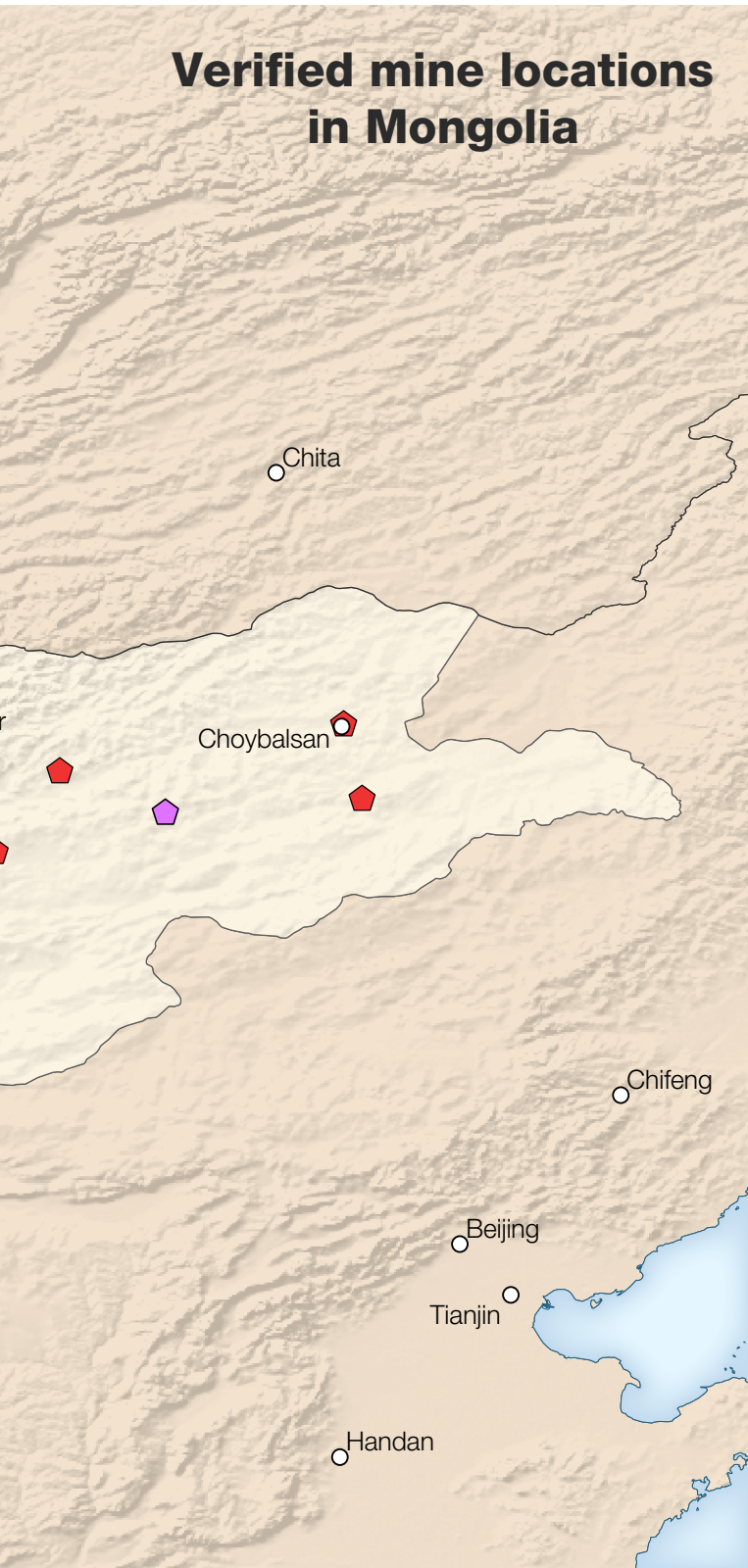
Figure 4. Location of mines and mines in development in Mongolia.

conducted by the company suggesting that it did not comply with international standards or best practices (Oyu Tolgoi Watch 2012). Since then there has been continuous criticism of the project, which in 2017 prompted the Tripartite Council (TPC), representing the mine, herders, and the local government to facilitate a process to resolve issues. To date almost two thirds of the commitments developed by TPC have been completed or are progressing. However, some of the most difficult



Trucks collecting water for the mine from the Untai river. Herders say that the mine diverted water from the Untai river to an underground well dug at the mine causing the herder's wells to dry up (source The Guardian 2019).

Verified mine locations in Mongolia



challenges have not been addressed. These include increasing herder access to pasture and water (water being the most contested area) and connecting herders to markets. Herders are concerned that their traditional livelihood is becoming untenable as a result of mining (Accountability Council 2020). However, a recent study (Enkhbayar 2019), which included interviews with 19 herders, found that in general those interviewed were in favour of the mine due to the increased employment opportunities and perceived economic benefits.

Tavan Tolgoi

Tavan Tolgoi mines are located close to the Chinese border (Figure 5). They are considered one of the largest coal deposits in the world with an estimated 7.4 billion tonnes of coal (predominantly coking coal which is a type of coal used in the production of iron and steel) (Erdenetsogt and Jargal 2021). Currently, three



Coal trucks heading to Gashuun Sukhait on the Chinese border (source Reuters 2017). A 2018 report estimated there are 9,000 licensed coal trucks operating from the mines (Byambajav et al 2018).

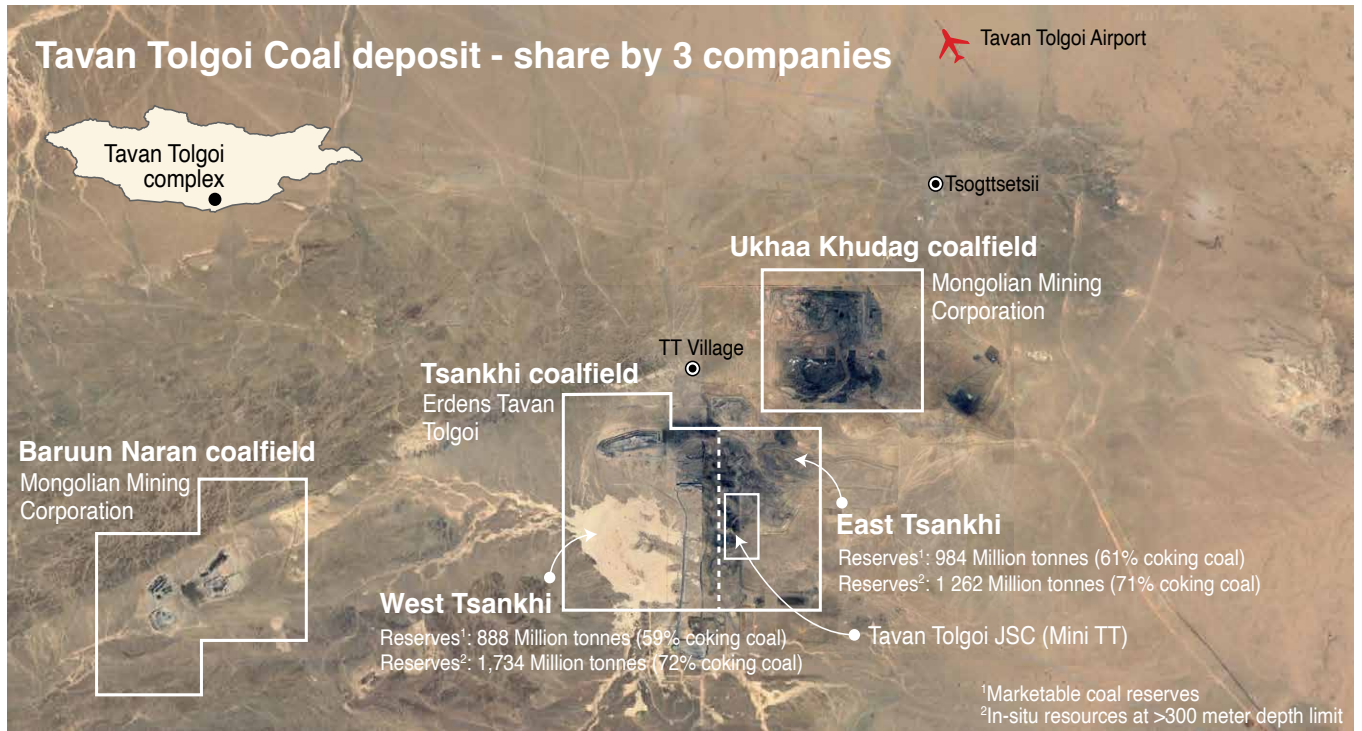


Figure 5. The Tavan Talgoi coal fields (source Economic Research Institute 2014)



companies hold mining licenses to operate at the Tavan Tolgoi deposit - the state-owned Erdenes Tavan Tolgoi JSC, and Tavan Tolgoi JSC, and privately company Energy Resources LLC.

Local herders have identified dust and air pollution (Jackson 2015) as the biggest impact from the mines, followed by access to drinking water and traffic safety related to coal trucks. Dust levels routinely exceed the national air quality standard. Herders believe that high dust levels adversely affect their own health as well as the health of livestock. The coal mine uses large amounts of water and there is no transparency regarding current and future water demand from the mine and coal washing facility (Azzaya et al 2016). Herders are concerned that the aquifers that are important for drinking water and agriculture will be depleted by the mine. Road accidents are frequent – between 2016 and 2017 there were 4-5 accidents per day with an average of 1 death per month. A survey of coal truck drivers put the high rate of accidents down to poor road conditions, and rule breaking by drivers (speeding and driving on the wrong side of the road to

avoid potholes; Byambajav et al 2018). Fatalities are likely to decrease with the introduction of a railway (completed in September 2022) which extends from the mine to the Chinese border checkpoint at Gashuun Sukhait as well as Zuunbayan in Dornogovi Province (there are 37 licensed mineral deposits within a 30 km radius along the line; Montsame 2022).



Open pit coal mine Tavan Tolgoi (from Claire Harbage NPR)



Indonesia

Indonesia is classified as having a developing economy (United Nations 2022) and has a population of over 273 million. The country is a significant producer of gold, copper, tin, nickel, and bauxite. The mineral and coal

sector accounted for 5% of GDP in 2019 and 7% of total exports. Indonesia was the first ASEAN state to meet the requirements of the Extractives Industries Transparency Initiative (EITI).

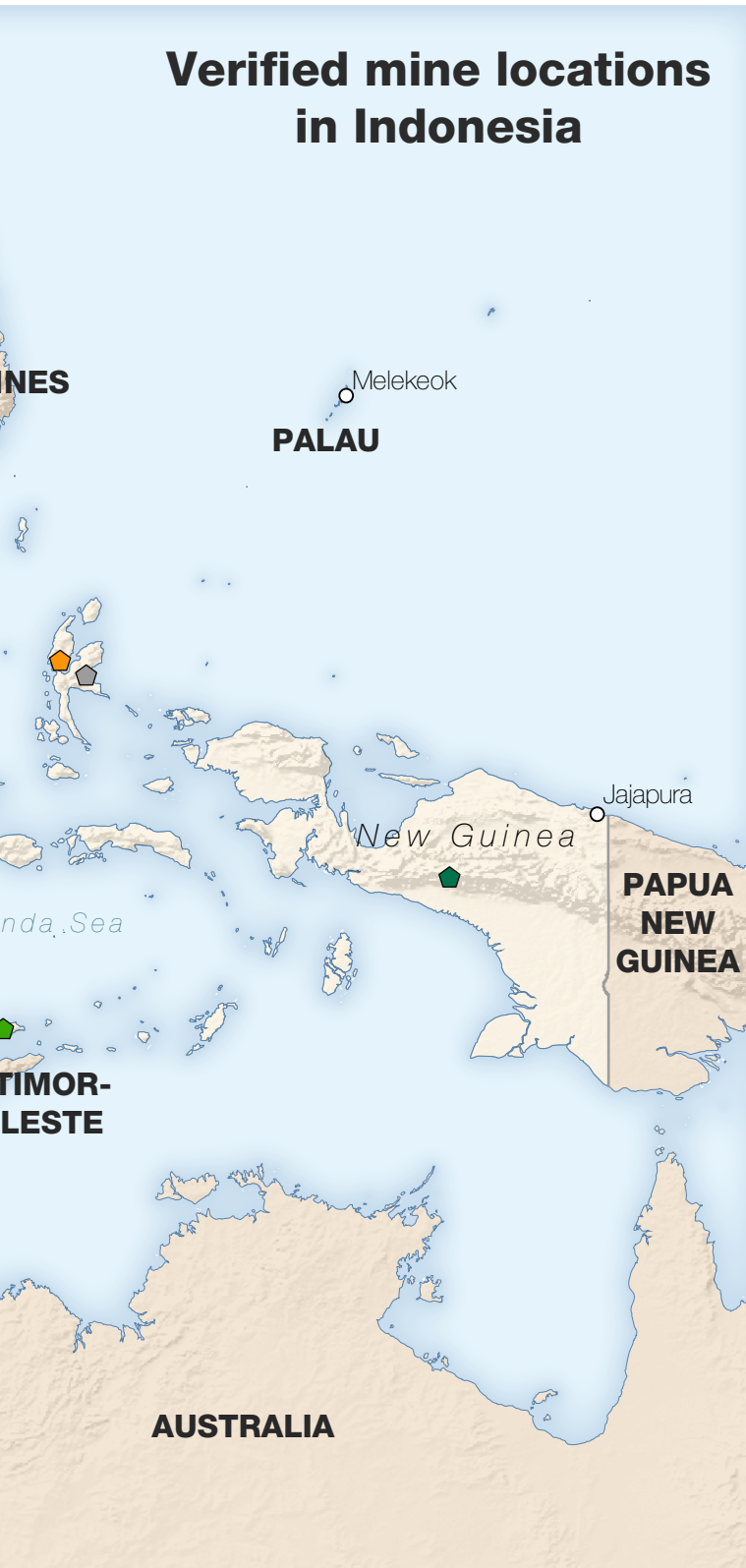


Figure 6. Location of mines and mines in development in the Indonesia.

In 2020 the Indonesian Government revised mining legislation, removing the limit on the size of a single-permit mining operation (previously capped at 15,000 hectares) and allowing for the automatic renewal of mining permits (Mongabay

2020). These changes have been strenuously opposed by civil society groups in Indonesia. A review of coal mining governance (Nasir et al 2022) found that legal uncertainty due to the complexity and ambiguity of mining law coupled with the different levels of government involved is a major driver of conflict both between companies and between companies and communities. Legal uncertainties have specifically been shown to have negative consequences for the supervision of environmental management of coal mines, with resulting destruction of settlements and agricultural areas, pollution, and environmental damage also triggering conflict between companies and communities (Nasir et al 2023)

Verified mine locations in Indonesia



Many of the mines in Indonesia are located in areas of tropical rainforest. There are government regulations and policies as well as a reclamation fund to ensure effective post mining reclamation and restoration (Pratiwi et al 2021). However, there is a history of poor compliance with these post mining obligations (Narendra et al 2021). More than 60% of companies holding a mining concession license (known as an Izin Usaha Pertambangan (IUP)) in 2018 had not lodged the required reclamation or post mining guarantee funds. Despite being a legal requirement of a mining license, non-compliance generally has little adverse impact on mining companies (Sinaga et al 2020). A report by the NGO, Bersihkan Indonesia (2020), included an evaluation of corruption vulnerability within post-mining guarantee fund policies. It had 4 major conclusions:

- Licensing mechanisms do not audit reclamation and post mining guarantee fund deposit compliance.
- Reclamation and post mining obligations are not considered by mining companies to be an integral part of business operations.
- The scope of reclamation activities provides opportunities to evade responsibility for rectifying the environment to its original condition.
- The guarantee fund is set up in a way that does not provide environmental protection.

Recognising these shortcomings, the report makes several recommendations:

- Make compliance mandatory prior to upgrading a license from exploration to production.
- Include reclamation guarantee funds in state budgets.
- Develop a mechanism for billing companies when reclamation costs exceed deposited funds.
- Institute harsher penalties for non-compliance.

In 2022 Indonesian President Joko Widodo revoked many mining and forestry permits due to non-compliance across a range of areas. Companies who lost their permits included



Table 3. Mine Tailings Summary

Indonesia

Mines	60
<i>45 Coal, 15 other: 7 Gold, 1 Copper, 1 Copper and Gold, 1 Copper, Gold and Silver, 2 Iron Ore, 2 Nickel, 1 Oil and Gas</i>	
Verified operating	60
In development/planned/proposed	0
Closed/abandoned/shelved/mothballed	0
Unknown status	0
Verified No of companies that are member of ICMM	3
Not verified for operation/location or presence of TSF	155
<i>120 Coal, 35 other: 9 Gold, 2 Copper, 3 Copper and Gold, 1 Copper, Gold and Silver, 3 Iron Ore, 4 Nickel, 6 Oil and Gas, 2 oil, 2 gas, 1 Diamond, 1 Tin, 1 Gold and Silver</i>	



1776 mineral and 302 coal mining operations. There has been some confusion surrounding the cancellations with legal experts warning of the potential for widespread legal action.

Sixty mines with verified tailings dams were identified in the study. An additional 155 mines were identified, but no information was found regarding mine waste disposal (Table 3 and Figure 6). Information was sourced from publicly available company websites and the Indonesian Ministry of Energy and Mineral Resources (2022).

Indonesia has a checkered record of mine safety. Anggoro et al (2019) reported that 146 mine workers were fatally injured in accidents at legal mine sites from 2014-2019. Fatalities are even more common at illegal mining sites. It is estimated that there could be as many as 9,000 illegal mining operations, many of which are abandoned gold mines. Local people prospect at these unrehabilitated sites



Open pit on gold mining. Central Sulawesi, Indonesia (photo iStock 2022).

in dangerous conditions, despite the potential for heavy fines and even jail for illegal mining.

The Indonesian islands of Bangka and Belitung, off the coast of Sumatra, are known as the “tin islands” and are part of a tin and tungsten mineralization zone that extends to northern Burma. Indonesia is one of the largest exporters of tin and 90% of the country’s production comes from these alluvial deposits (Sulista and Rosyid 2022). Artisanal miners work the water filled pits abandoned by the state-owned PT TIMAH and other companies or marginal deposits close to the shore. They use floating platforms equipped with diesel-powered generators to suck up the tin bearing sediment. The generator also pumps unfiltered air to the divers. The work is extremely dangerous, accidents are frequent, and miners suffer long term health problems from breathing the contaminated air. Many children work alongside their parents, panning for tin in the sand that is dredged up. In July 2022 illegal miners were ordered to stop their activities in the Bangka district (Antara 2022).



Homemade dredges operating offshore Bangka Island Indonesia (Photo Rachel Kent, The Forest Trust).

Grasberg mine

The Grasberg mine is a copper and gold mine, located in West Papua (Figure 7). It is currently owned and operated by PT Freeport Indonesia (PT-FI), a joint venture between Freeport-McMoRan (48.8%) and PT Indonesia Asahan Aluminum, a state-owned company (51.2%). The mine began in 1989 as an open pit mine. Extraction from the pit ended in 2019. During this phase of operation more than 1.4 billion tonnes of ore and 3.4 billion tonnes of overburden were removed, resulting in crater almost 2 km wide and more than 0.5 km deep. Mining has now shifted to underground cave operations targeting deeper copper - gold ore located under the open pit.

The mine has a history of controversy especially surrounding the disposal of mine tailings (Banks 2002). In 2017 the Indonesian state auditor calculated that the operation had caused USD 13.25 billion in environmental damage (BPK 2017). Tailings are dumped into the Ajkwa River deposition area (ADA) which has led to the inundation of adjacent forest and pollution of the waterway. Alonso et al (2016) used historical Landsat

imagery to assess mine related forest loss and changes in sediment concentration in the estuary. They found 138 km² of forest had been lost between 1987 and 2014. They also recorded higher suspended sediment in the Ajkwa Estuary compared to neighbouring estuaries, especially following mine expansion and levee construction in the mid-1990s.

The environmental damage has impacted the lives and livelihoods of local people. In 2016 a Dutch Human rights law firm submitted a formal complaint to the UN Human Rights Council citing “vast and continuing human rights violations committed by the State of Indonesia against the people of West Papua”. Some of these violations related to the treatment of indigenous people impacted by the Grasberg mine (Prakken d’Oliveira 2016). In 2022 the UN Human Rights Council called for immediate humanitarian access to the provinces of Papua and West Papua and an investigation by the Indonesian government into the abuse of indigenous peoples’ rights (United Nations Human Rights 2022). The Indonesian government dismissed the claims stating that they had previously investigated the situation (The Diplomat 2022).

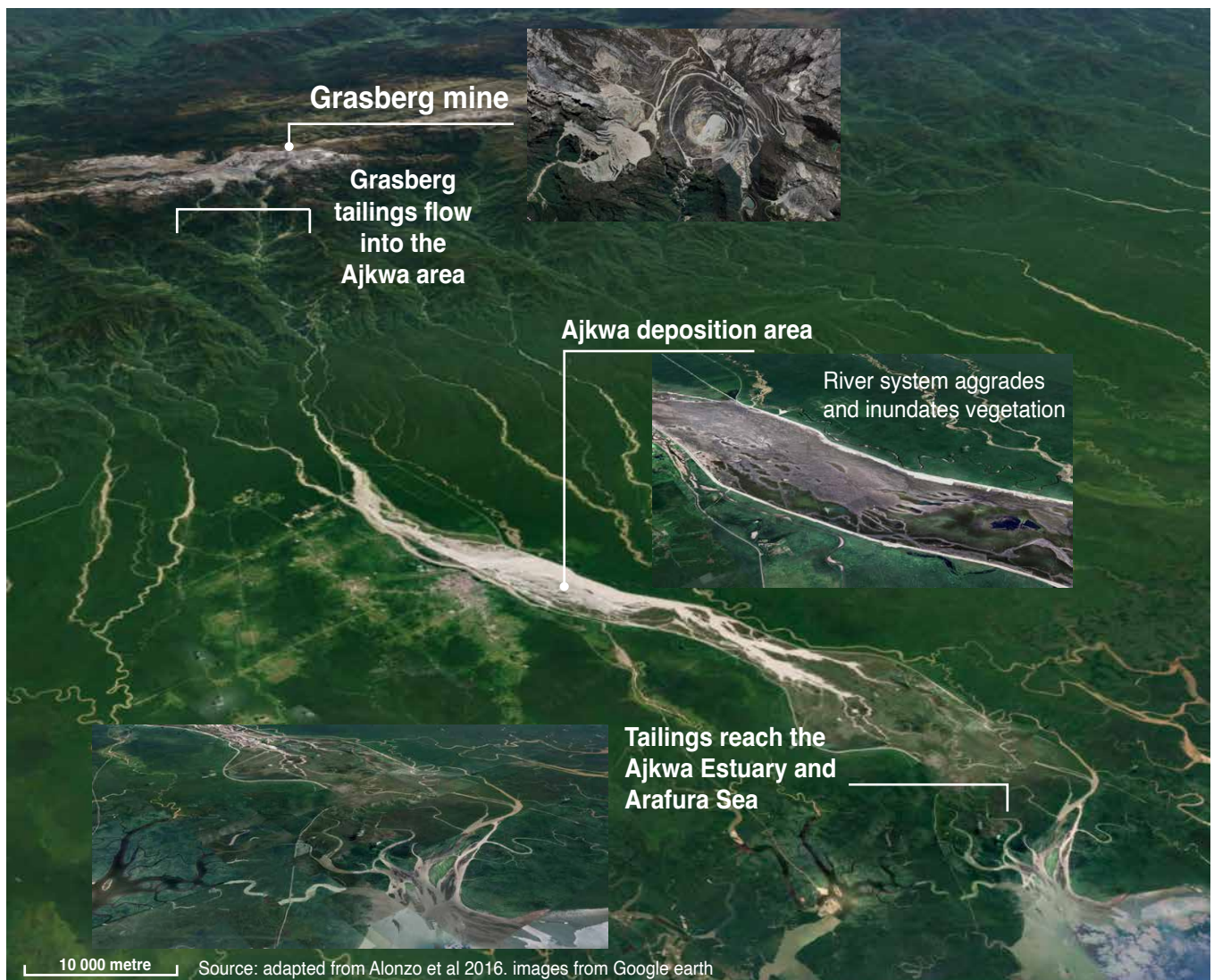


Figure 7. The Ajkwa deposition area showing the extent of tailings (from Alonso et al 2016).



Philippines

The Philippines is classified as having a developing economy (United Nations 2022) and has a population of over 109 million. The Philippines has some of the world's largest deposits of gold, copper, nickel, and chromite. According to the Philippines Centre for Investigative Journalism (2022) there are currently 55 operating metallic mines in the country. GDP from mining in 2021 was approximately USD 1.9 billion (National GDP USD 361 billion) which equals just over 0.5% of the economy (Trade Economics 2022).

In response to concern around environmental damage the Philippine government banned open pit mining and closed or suspended the permits for 26 mining operations in 2017 (Domingo et al 2022). The recommendation was the result of an audit carried out on 41 metallic mining operators. The violation of environmental laws recorded included the siltation of rivers and coastal areas, destruction of functional watersheds and the illegal removal of trees. At the end of 2021 the ban was lifted, and the permits reinstated. The reversal has paved the way for approval of nearly 300

mining applications. The nickel industry has been driving an upswing in mining revenue, mostly due to increased exports to China (following a ban by Indonesia on nickel exports in January 2020). The Philippine government also plans to privatise several government owned nickel mines (PhilStar Global 2022).

Fifteen mines with verified tailings dams were identified in the study. An additional 24 mines were identified, but no information was found regarding mine waste disposal (Table 4 and Figure 8). Information was sourced from publicly available company websites and the Australian Trade and Investment Commission (2022).

There is a long history of anti-mining activism in the country with often dire consequences for those involved (Simbulan 2016; Dressler and Smith 2022). The NGO Global Witness has been collecting data on lethal attacks on land and environmental defenders since 2012. The Philippines has the 5th highest per capita death rate of activists



Verified mine locations in the Philippines

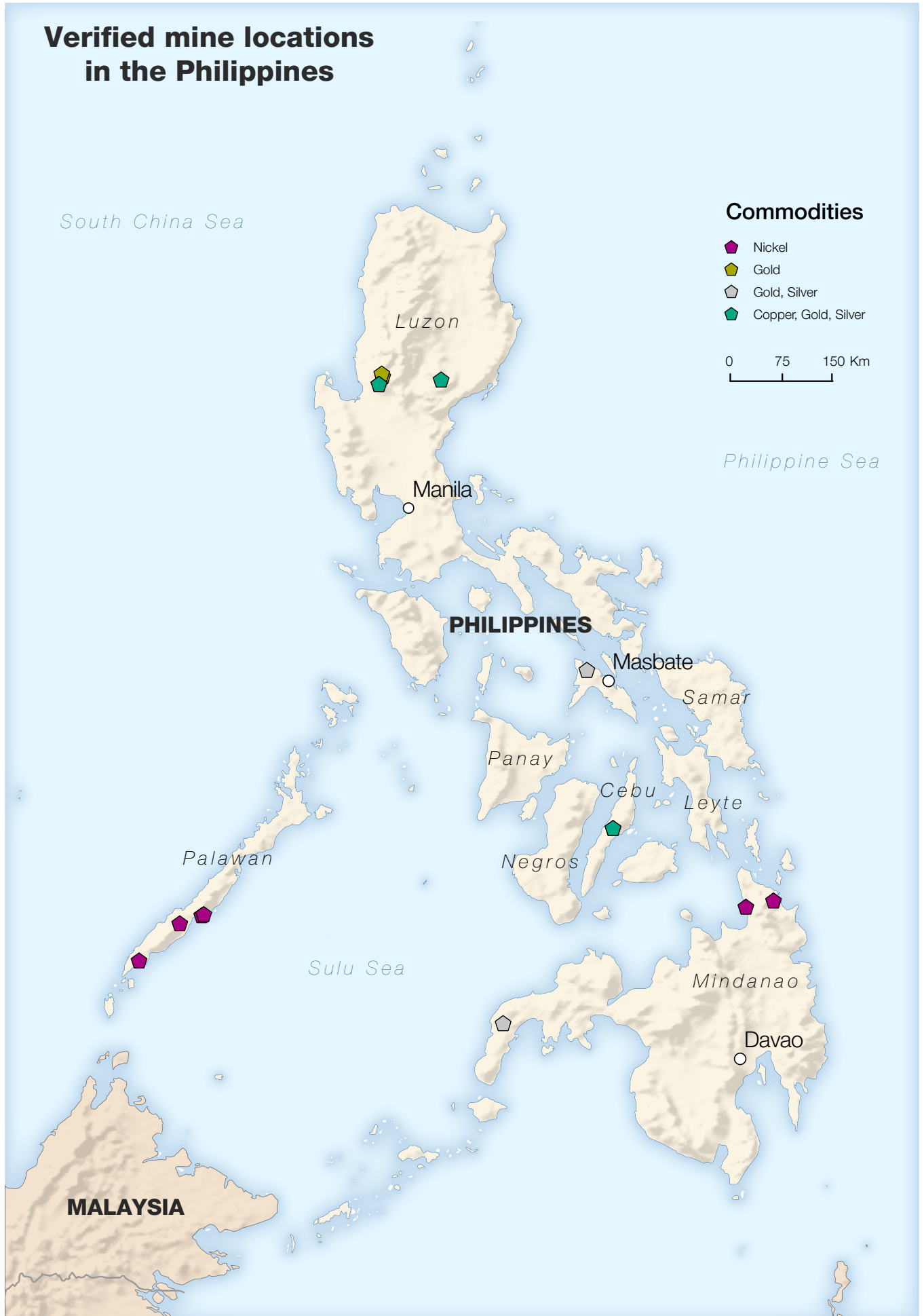


Figure 8. Location of mines and mines in development in the Philippines (there are likely many more but no information was available on the status of the over 300 mining applications approved since the 2021 ban was lifted).

Table 4. Mine Tailings Summary**Philippines**

Mines	15
<i>6 Nickel, 5 Gold, Copper and Silver, 2 Gold, 2 Gold and Silver</i>	
Verified operating	9
In development/planned/proposed	0
Closed/abandoned/shelved/mothballed	3
Unknown status	3
Verified No of companies that are member of ICMM	0
Not verified for operation/location or presence of TSF	24
<i>9 Nickel, 6 Gold, Copper and Silver, 3 Gold, 2 Gold and Silver, 1 Copper, 1 Silver, 2 mixed nickel-cobalt sulphide</i>	

globally. In 2020 29 people were killed with approximately half of these protesting against mining, logging, and dam building (Global Witness 2020). Alyansa Tigil Mina (ATM), a coalition of almost 100 organisations, has been fighting mining injustice since 2004. They work to challenge the expansion of large-scale mining and the group has been pushing the government to enact a law protecting the rights of nature.



Protesting the reopening of the Didipio mine in Nueva Vizcaya, Philippines (Alyansa ng Novo Vizcayano para sa Kalikasan).



Marcopper Mine

In 1996 a significant tailings disaster occurred at the mine and 28 years later the impacts are still yet to be resolved. At the time the mine was operated by the Marcopper Mining Corporation, which was 39.9% owned by Canadian company Placer Dome (the maximum amount allowed a foreign owned company at the time). The company's Marinduque Island operation was granted a 10-year certificate to deposit tailings into the mined-out Tapani pit (the site of a closed mine owned by the company 3 km away). Tunnels that had previously been used to drain the pit were sealed with concrete to contain the tailings. In 1996, after four years of tailings disposal, a plug in the drainage tunnel failed releasing tailings into the Boac River. Millions of tonnes of tailings contaminated the 26-kilometre-long river, flooding villages and agricultural land. It is estimated that 20,000 people from 20 villages were impacted (PMPI 2022). A follow-up investigation by the United Nations questioned why an environmental impact assessment of the disposal method was not carried out and why no monitoring occurred even though tailings had



been observed leaking for some time (United Nations Environment Programme 1996). Placer Dome claimed it met all environmental standards required at the time (the government has since improved mining legislation) and denied responsibility for the disaster.

The damage to the Boac River impacted local livelihoods. Two years after the disaster, affected communities received approximately USD 426,000 from the government's Environmental Guarantee Fund – this equates to around USD 124 per household (Bennagen 1998). Placer Dome pledged to clean up the river and installed a new plug in the drainage tunnel in 1996. The company built levees along the river to stop the possibility of any additional tailings entering the river and collected tailings at the mouth of the river. In 2005 the Marinduque provincial government filed a USD 100 million damages case against Placer Dome in a District Court in Nevada. In 2006 Placer Dome was bought out by Barrick Gold who offered USD 20 million to settle the case but the conditions attached were not acceptable to the government or local people (Cinco 2013). In 2017 the case was dismissed on the grounds that the United States court had no jurisdiction over the case.

The Catholic Church is now supporting a push to have the case heard in Canada where Placer Dome was registered (Asia Pacific Post 2015).

A previous incident occurred in 1993 when a typhoon caused the company's Maguila-guila tailings dam to burst, depositing waste into the Mogpog River, flooding villages and croplands and killing two people (Lindon et al 2014). Those impacted have had to wait almost 30 years to receive very modest compensation. In a recent court case (May 2022), the Marinduque Regional Trial Court ordered Marcopper to pay the 30 plaintiffs P 200,000 (USD 3,600) each plus P 100,000 (USD 1,800) as moral damages. The group was also awarded P 1 million (USD 18,000) for exemplary damages (MGB 2022).

A rapid assessment of the catchment of the Mogpog and Boac rivers was carried out in 2019. The authors found that areas of the river were highly acidic (4.1) and that sediments contained very high concentrations of iron, chromium, copper, and manganese. They concluded that remediation was urgent (Senoro et al 2019) but to date no action has occurred.

India

India is classified as having a developing economy (United Nations 2022) and has a population of over 1.3 billion. The Indian Government estimates the number of mines at 1,425 in 2022, with 525 of these recorded as metallic and 720 as non-metallic (Indian Brand Equity Foundation 2022; Figure 9). The largest non-metallic commodity is coal, with a production of nearly 800 million tonnes in the financial year 2021-2022. India is the second largest coal miner after China and along with China, and South Africa. Indian coal production rose by 14% (Prasad 2023). Up until 2020 coal mining in India was largely a state-owned enterprise managed by Coal India Ltd (CIL). In 2020 the government opened coal mining to private companies, issuing licenses for 42 mines, which collectively are expected to produce 86 million tonnes of coal per year (Times of India 2020). India is also the fourth largest iron ore and aluminium producer in the world. Government figures report 189 million tonnes of iron ore was produced in 2021 and 3.65 million tonnes of aluminium in 2020. It is estimated that only 20% of the mineral reserves identified in the country have been mined (FDI India 2022; Figure 10).

Three hundred and fourteen mines with verified tailings dams were identified in the study. Of these 18 were in development and 14 had closed. An additional 720 mines were identified, but no information was found regarding mine waste disposal (Table 5 and Figure 11). Information was sourced from publicly available company websites and the Indian Ministry of Mines (2022).

Concentration of major coal and iron deposits in India

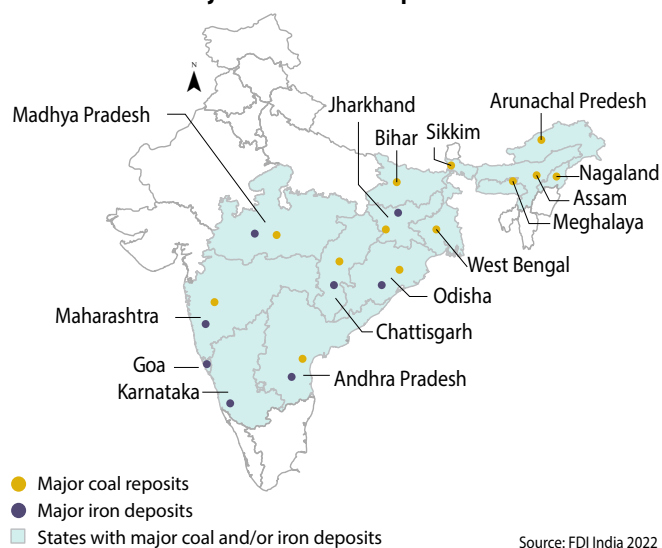
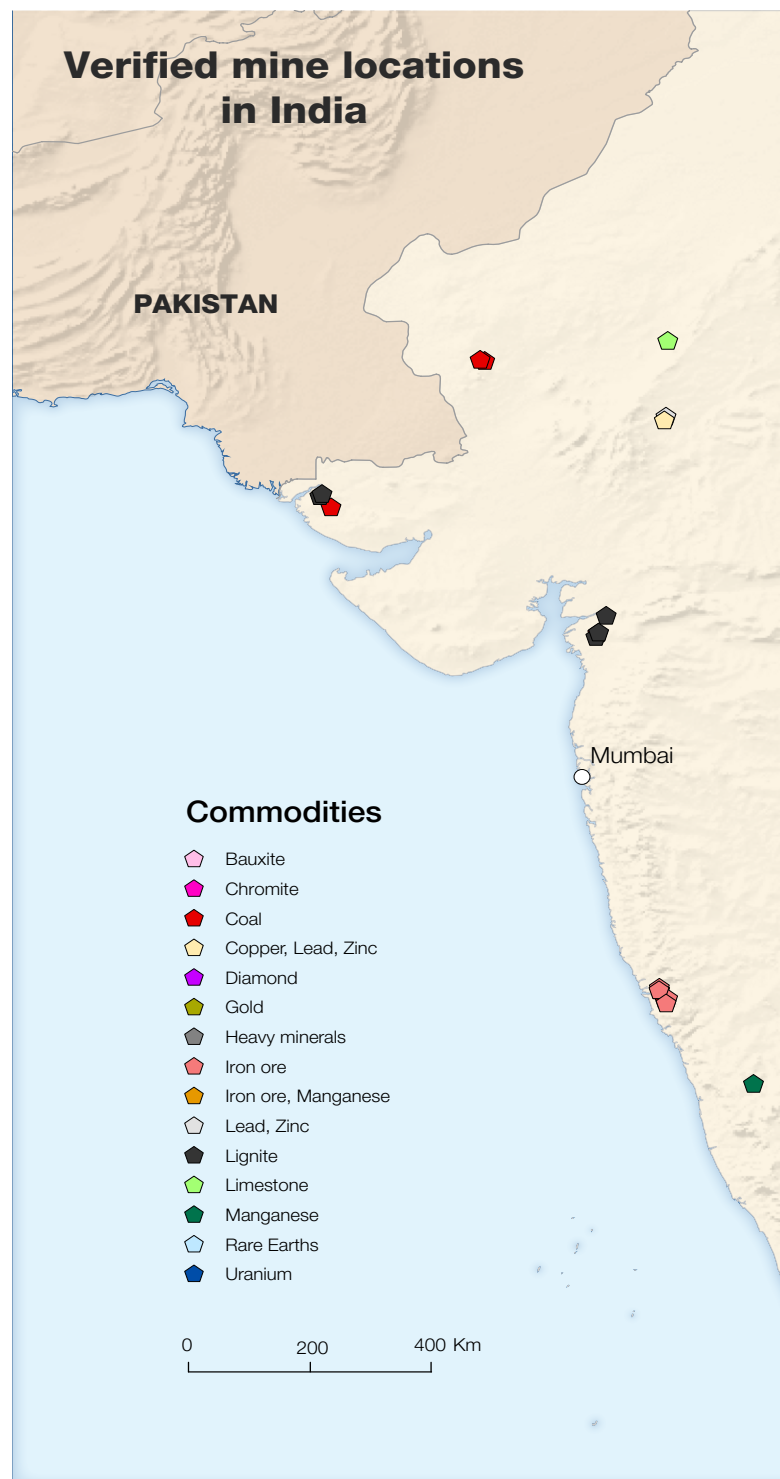


Figure 9. Concentration of major coal and iron deposits in India (FDI India 2022).

The mining sector in India is governed by both federal and state governments. Over the past decade there has been major criticism of the governance of the industry, citing poor compliance with environmental regulation, infringement of community rights, and over-exploitation and illegal mining and sale of ores (Banerjee 2020). For example, illegal mining of iron ore in the state of Karnataka has resulted in extensive



Value of metallic and non-metallic minerals in India in USD billions

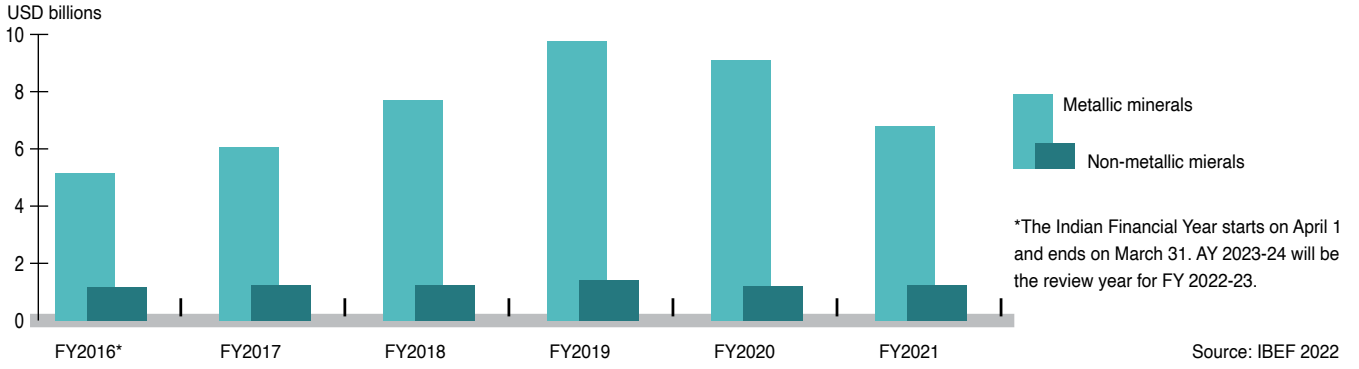


Figure 10. Value of metallic and non-metallic minerals in India in USD billions (IBEF 2022).

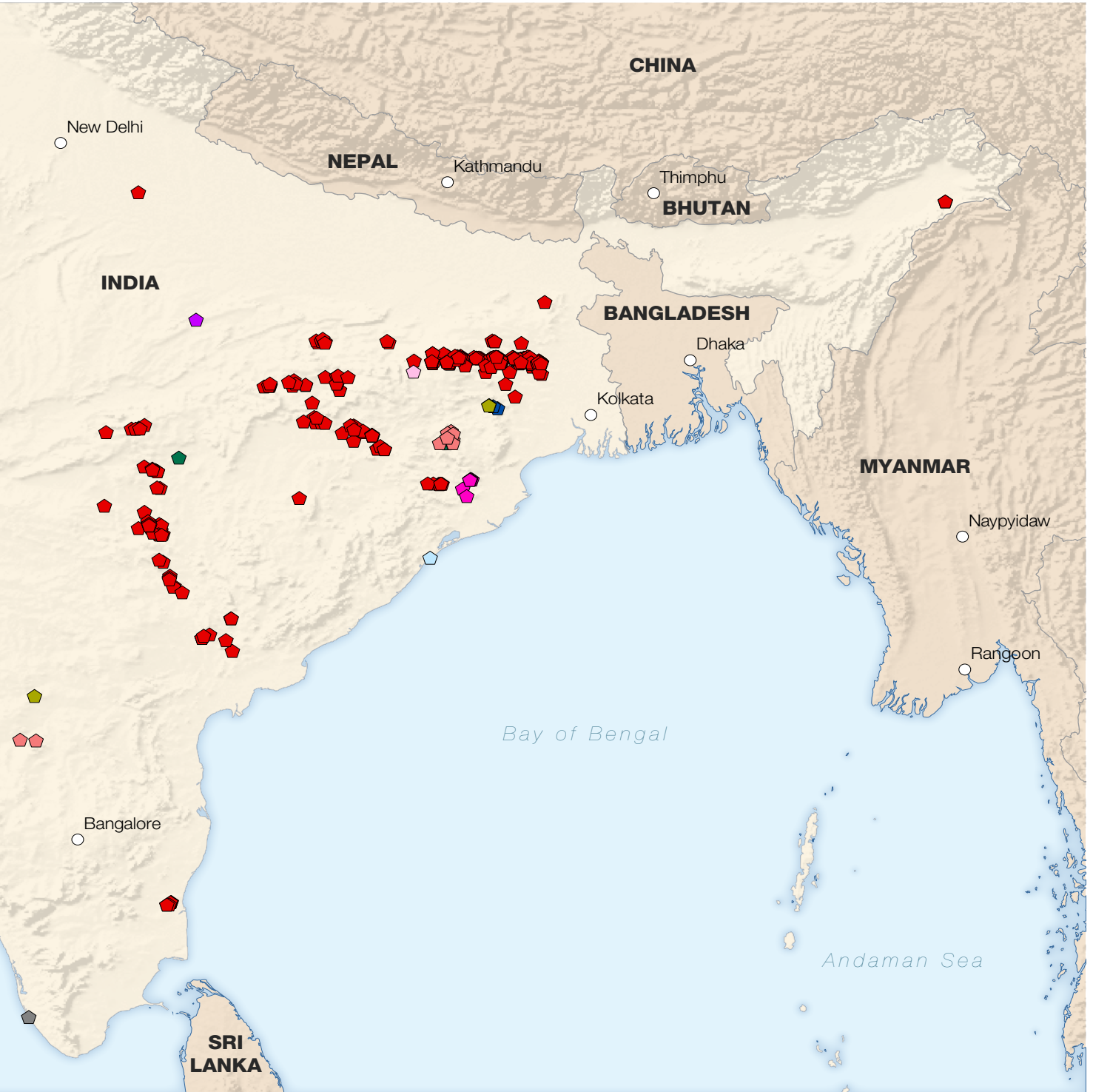


Figure 11. Location of verified mines in India.

Table 5. Mine Tailings Summary**India**

Mines	314
<i>271 Coal, 43 other: 1 Bauxite, 7 Chromite, 1 Copper, Lead and Zinc, 1 Diamond, 2 Gold, 1 Heavy Minerals, 15 Iron Ore, 1 Iron Ore and Manganese, 1 Lead and Zinc, 5 Lignite, 1 Limestone, 3 Manganese, 1 Rare Earths, 3 Uranium</i>	
Verified operating	271
In development/planned/proposed	18
Closed/abandoned/shelved/mothballed	14
Unknown status	1
Verified No of companies that are member of ICMM	0
Not verified for operation/location or presence of TSF	720
<i>592 Coal, 128 other: 5 Bauxite, 18 Chromite, 8 Copper, Lead and Zinc, 2 Diamond, 8 Gold, 1 Heavy Minerals, 47 Iron Ore, 1 Iron Ore and Manganese, 3 Lead and Zinc, 8 Lignite, 1 Limestone, 18 Manganese, 1 Rare Earths, 7 Uranium</i>	

environmental and social damage. A report released in 2011 (Karnataka Lokayukta 2011) detailed wide-spread corruption, mining without permits, illegal land clearing, and illegal transport of minerals. More than 700 government officials and 400 companies were named in the report. As a result, iron ore mining was banned in 3 districts. Mining resumed in 2013, but only for a select number of companies (45) whose operations had previously not extended significantly beyond their permitted lease area (Banerjee 2020). In order to curb illegal mining, the Ministry of Mines and Indian Bureau of Mines introduced legislation requiring all miners, traders, stockist, exporters, and end-users of minerals to register and report on the production, trade, and utilization of minerals to the state government(s) and the Indian Bureau of Mines (Rule 45 of the Mineral Conservation and Development Rules, 2017; Indian Government 2017). However, despite strengthening of legislation, corruption and human rights violations continue (Paltasingh and Satapathy 2021). Recently, members of the Bharatiya Janata Party demanded an investigation into the alleged involvement of Rajasthan government ministers and officials in illegal mining. The call for an investigation followed the self-immolation of one of the monks involved in a long-term protest against illegal mine expansion that had resulted in the destruction of sacred Hindu sites (The Hindu 2022).

In addition to governance failures, the Indian mining industry has a reputation for poor occupational health and safety. While mining related accidents appear to be decreasing (129

people died in 2017, while in 2021 31 deaths were recorded) mining is still a very dangerous occupation in India (ENVIS 2022). Many fatalities are associated with underground coal mining (which makes up approximately 20% of coal mining in the country). A British Safety Council Report (2021) found the concern from Unions that the recent privatisation of mines could further reduce safety standards. A shortage of trained employees, poor safety training, high production targets, unplanned coal extraction and outsourcing all contribute to the problem.

The WISE database of tailings dam safety reports two major TSF failures in recent years (WISE 2022). There are also widespread reports of environmental damage, especially in regard to coal mining. This includes pollution of surface and ground water and poor air quality from coal dust. Toxic metal pollution in agricultural soils from mica mines tailings in Giridih district have also recently been reported, with links to carcinogenic risk (Ghosh et al 2023).

Talcher coal field

The Talcher coal field is an area of approximately 1,800 km² located in the Odisha area (east coast of the Bay of Bengal). In this area there are 17 opencast and 7 underground coal mines operated by Mahanadi Coalfield Limited a subsidiary of the government owned CIL (Pradhan and Senapati 2018). A study of the environmental and social impact of the mines on surrounding villages (Mishra and Das 2017) found significant air quality problems due to dust released from overloaded and uncovered coal transport trucks. The study noted that air quality had declined in the last decade and that the company had a poor track record of dust control. The study also documented serious water quality issues. Polluted water is pumped out of the mine into settling ponds before being discharged into local waterways. Local villages surveyed as part of the study claim that the water is polluted with oily sludge and coal dust.



Landslide at the Bharatpur coal mine in the Talcher coal field that killed 4 workers and seriously injured 14 others.

An occupational health and safety survey of Mahanadi Coalfield Limited workers found that despite company policies there was a poor knowledge of safety procedures amongst workers. Nearly 30% of those surveyed acknowledged respiratory issues and almost 50% accused the company of under reporting accidents. The families of four mine workers killed in a 2019 landslide reportedly received approximately USD 6,000 each in compensation. The company suspended the senior manager of the mine. A similar accident occurred at the Lalmatia coal mine in Jharkhand (an adjacent state) in December 2016. In this case a waste rock dump collapsed releasing over 9 million m³ of material. Eighteen workers were killed and after the accident it was claimed that the mine was being operated in an unsafe manner (Industrial Global Union 2017).

Hasdeo Forest

The Hasdeo Forest is in Chhattisgarh state, in the central east of India. The area is home to the Adivasis indigenous group and is well known for its rich biodiversity. In 2010 the area was categorized as a no mining zone, but this was overturned in 2011. Twenty coal blocks have been designated with two mines operating in the area. Local villagers have repeatedly protested the expansion of mining with little effect. The Parsa East and Kanta Basan open pit coal mine, operated by Adani, started operation in 2013. In controversial circumstances, the company has been given approval for an additional 2 mines in the area (Quartz India 2019). In 2022 tree cutting began for this second phase.

Villagers have been protesting as the expansion of the Adani mine will displace 700 families and destroy large tracts of the forest (Kushwaha 2022). In June 2022 a private members bill to stop the development of new mines was passed by the Chhattisgarh Legislative Assembly (The Hindu 2022a). However, this will not help the villagers around the Parsa East and Kanta Basan mine, as it is considered to be an existing operation and is not covered by the bill. The protests are ongoing.



Villages protest the expansion of mining in the Hasdeo Forest (Kushwaha 2022).



Conclusions

Inadequate mine tailings storage can lead to devastating environmental and social impacts. Drawing on publicly available geographic information on mines with TSFs, this report presented a preliminary investigation of mining and management of tailings in Papua New Guinea, Mongolia, Indonesia, the Philippines, and India.

The study highlighted important challenges for reducing risks and moving towards adoption of the Global Industry Standard on Tailings Management (GISTM):

- Lack of consistent TSF requirements across countries and companies
- Legal uncertainty and regulatory inconsistencies are leading to unsafety and damage
- Where regulations do exist, often compliance is not mandatory, monitored, or penalised harshly enough
- Illegal mining (for example by local people at unrehabilitated sites) is ineffectively managed
- Currently the GISTM is not comprehensive, for example it does not cover riverine or marine tailings disposal
- The desire and need for development (and profit) outweighs concerns for safety and sustainability

A key finding across all countries studied is that insufficient peer-reviewed research and other available information on tailings management limits understanding. A first step to improvement may be increased information transparency and cooperation of mining companies. However, it is noted again that none of the mining companies approached for this study responded to the request for information. Hudson-Edwards and colleagues (2024) suggest that future research should connect tailings facility locations to situated risk factors, such as political instability or climate change, and improve spatial and time series analysis. This could reduce reliance on corporate disclosures and increase visibility of priority locations and risks (Kemp et al 2021; Hudson-Edwards et al 2024). Monitoring TSFs in real time with remote sensing technologies should be a priority of mining companies to promote improved transparency, management, warnings, and safety of communities and the environment (Cacciuttolo and Cano 2023). Without a complete picture of operational and planned mines and their waste outputs, TSFs, and government or company policies and practices, it remains difficult to adequately propose and implement interventions to ensure human safety and reduce environmental damage.

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Appendix

Non-exhaustive list of NGOs involved in mining related issues in Southeast Asia

Name	Area of Operation	Contact
Oakland Institute	Global	https://www.oaklandinstitute.org/
Conservation International	Global	https://www.conservation.org/
Mineral Policy Institute	Global	https://www.mpi.org.au/
Deep Sea Mining Campaign	Global	http://www.deepseaminingoutofourdepth.org/
Mission Blue	Global	https://mission-blue.org/
The Transparency Foundation	Global	
Jubilee Australia	Asia-Pacific	https://www.jubileeaustralia.org/
Act Now	Papua New Guinea	https://actnowpng.org/
Alliance of Solwara Warriors	Papua New Guinea	https://www.synchronicityearth.org/partner/alliance-of-solwara-warriors/
West Coast Development Foundation	Papua New Guinea	https://www.facebook.com/West-Coast-Development-Foundation-314632765866881/
Mongolian Nature and Environment Consortium (MNEC)	Mongolia	
Transparency Foundation	Mongolia	http://khamtdaa.mn
Oyu Tolgoi Watch	Mongolia	
Stichting Onderzoek Multinationale Ondernemingen	Global/ Mongolia	https://www.somo.nl/
Alyansa Tigil Mina (ATM)	Philippines	https://www.alyansatigilmina.net/about
Philippine Business for Environmental Stewardship (PBEST)	Philippines	https://pbest.org.ph/news/mining-industry-creates-employment/
Ecological Society of the Philippines	Philippines	https://www.facebook.com/esp.org.ph/
Haribon Foundation	Philippines	https://haribon.org.ph/
Marinduque Council for Environmental Concerns	Philippines	https://www.facebook.com/macecmarinduque1996/
The Center for Environmental Concerns–Philippines	Philippines	https://www.cecphils.org/
Philippine Center for Investigative Journalism	Philippines	https://pcij.org/about/history
Bantay Kita	Philippines	http://www.bantaykita.ph/
Philippine Sustainable Development Network	Philippines	https://www.psdn.org.ph/

Name	Area of Operation	Contact
Foundation for the Philippine Environment	Philippines	https://www.fpe.ph/
Legal Rights and Natural Center-Kasama sa Kalikasan/Friends of the Earth Philippines (LRC-KSK / FoE Phils.)	Philippines	https://www.lrcksk.org/
Mining Watch Canada	Philippines/ Canada	www.miningwatch.ca
Palawan NGO Network (PNNI)	Philippines	https://www.pnni.org/
People's Recovery, Empowerment Development Assistance Foundation (PREDA FOUNDATION)	Philippines	https://www.preda.org/
Philippine Human Rights Information Center (Philrights)	Philippines	https://www.philrights.org/
TEBTEBBA Foundation	Philippines	www.tebtebba.org
Mineral Inheritors Rights' Association	India	https://mineralinheritors.org/about-1/
Goa Foundation	India	http://goafoundation.org/
Mine Labour Protection Campaign	India	https://minelabour.org/
MKSS	India	http://mkssindia.org/
JATAM	Indonesia	https://www.jatam.org/en/about-us/
Wahana Lingkungan Hidup (Walhi)	Indonesia	https://www.walhi.or.id/

Papua New Guinea

Owner	Operator	Mine
Placer Dome Inc		Misima Gold Mine
Lola Mining Limited?	Asidokona Mining Resources Pty Ltd, transferred to LolePty Ltd in 2021	Tolukuma
Harmony Gold	Morobe Consolidated Goldfields Ltd	Hidden Valley
Newcrest/ Harmony Gold JV	Newcrest PNG 2 and Wafi Mining Ltd	Wafi-Golpu
Conzinc Rio Tinto		Panguna
K92 Mining Inc		Kainantu Gold Mine
Coppermoly		Mt Nakru
Coppermoly		Simuku
Indochine	Summit Gold	Mt Kare
MCC Metallurgical Company of China	Metallurgical Company of China	Ramu Co-Ni
Barrick Gold		Porgera
Ok Tedi Mining Company		Mt Fubilan
PanAust	PanAust Ltd	Frieda River
New Guinea Gold		Mt Sinivit (Wild Dog)
Newcrest	Newcrest	Lihir
St Barbara	Simberi Gold Co.	Simberi Island
Corcel		Kokoda
Highlands Pacific Resources		Mt Futik
Highlands Pacific Resources		Nong River
Harmony Gold		Hauwindi
Crater Gold Mining	Anomaly Ltd	Crater Mountain
Kingston resources		Misima Gold
Woodlark Mining (Geopacific)	Geopacific Resources Ltd/ Kula Gold Ltd	Woodlark
Mayur		Orokolo Bay
MCC Ramu NiCo		Kurumbukari
Corcel		Wowo Gap

Commodity	Latitude	Longitude	Status
Gold	-10,688493	152,796875	closed
Gold	-8,573606	147,142111	paused
Gold	-7,42478	146,64235	active
Gold	-6,8625	146,4533333	in development
Copper	-6,314531	155,4926	closed
Gold	-6,1067	145,89085	active
Gold, Copper	-5,983333	150,466667	in development
Gold, Copper	-5,733	150,033	in development
Gold	-5,566667	142,983333	paused
Cobalt, Nickel	-5,544841	146,136057	active
Gold	-5,463376	143,092705	inactive
Copper, Gold and Silver	-5,215545	141,143205	active
Gold, Copper	-4,699752	141,783835	in development
Gold	-4,6208	152,0478	closed
Gold	-3,12526	152,638743	active
Gold	-2,620396	152,003777	active
Copper			in development
Copper			in development
Gold			exploration?
Gold			not started
Gold			paused
Gold			in development
Gold			in development
Iron and industrial sands			in development
Nickel			
Nickel			in development

Mongolia

Owner	Operator	Mine
Asia Coal	Asia Coal	Saikhan-Ovoo
		Bürentsogt
EAM Khukh Adar		Khökh-Adar
Mongolyn Alt Corporation		Tsagaan Suvarga
Aduunchuluun Coal Mining Company	Aduunchuluun Coal Mining Company	Aduunchuluun
Baganuur JSC	Baganuur JSC	Baganuur
Mongolian Mining Corporation	Khangad Exploration	Baruun Naran
Bridge Resources	Bridge Resources	Baruun Noyon
MAK Corporation	MAK Corporation	Eldev
Mongolia Energy Corporation	Leighton Asia	Khushuut
Mogoin Gol JSC	Mogoin Gol JSC	Mogoin Gol
MAK Corporation	Mongolyn Alt Corporation	Nariin Sukhait
Korea Coal Corporation (KOCOAL) (51%), Khotgor Shanaga LLC (49%)	Korea Coal Corporation (51%), Khotgor Shanaga LLC (49%)	Nuurst Khotgor
South Gobi Resources	South Gobi Resources	Ovoot Tolgoi
Sharyn Gol JSC	Sharyn Gol JSC	Sharyn Gol
Shivee-Ovoo JSC	Shivee-Ovoo JSC	Shivee-Ovoo
Mogul Energy	Mogul Energy	Tevshin Govi
Mongolian Mining Corporation	Energy Resources	Ukhaa Khudag
Silver Elephant Mining Corporation	Silver Elephant Mining Corporation	Ulaan Ovoo
Rio Tinto, Government of Mongolia	Oyu Tolgoi LLC	Oyu Tolgoi
Government of Mongolia		Erdenet
AFK-Tavt LLC		Tavt
OZD ASIA PTE Ltd		Boroo
		Ulaan Uul
SS Mongolia Ltd.		Khovd Gol
OZD ASIA PTE Ltd		Gatsuurt
Bodi International Group	Tsetsens Mining & Energy	Buuruljuut
Buman-Olz	Buman-Olz	Khuut
Aspire Mining (90%), Others (10%)	Aspire Mining	Nuurstei
Aspire Mining	Aspire Mining	Ovoot
Erdenes MGL	Erdenes Tavan Tolgoi	Tavan Tolgoi
Guildford Coal Limited (50%), Prophecy Coal (50%)	Chandgana Coal	Chandgana Tal

Commodity	Latitude	Longitude	Status
Coal	48,805	102,419444	Cancelled
Tungsten	46,738611	111,700833	Closed
Copper	48,3	90,366667	In development
Copper	43,861111	108,336111	In development
Coal	48,127163	114,537802	Operating
Coal	47,75055	108,32485	Operating
Coal	43,597948	105,222627	Operating
Coal	43,109958	102,331317	Operating
Coal	46,120288	108,991519	Operating
Coal	46,807231	93,309621	Operating
Coal	49,358406	97,829641	Operating
Coal	43,002222	101,260556	Operating
Coal	49,849736	90,897888	Operating
Coal	43,002222	101,260556	Operating
Coal	49,227863	106,422361	Operating
Coal	46,223986	108,530746	Operating
Coal	45,993741	106,127732	Operating
Coal	43,597948	105,518056	Operating
Coal	50,317778	104,973611	Operating
Copper-Gold	43,008333	106,843056	Operating
Copper	49,027778	104,044444	Operating
Gold	50,116667	102,466667	Operating
Gold	48,745833	106,169444	Operating
Tungsten	49,226389	90,2375	Operating
Tungsten	48,724167	88,836944	Operating
Gold	48,635833	106,633889	Planned
Coal	45,756667	107,993056	Proposed
Coal	46,956572	114,830916	Proposed
Coal	49,671437	100,118621	Proposed
Coal	49,364115	97,496487	Proposed
Coal	43,625	105,474167	Proposed
Coal	47,389053	110,020866	Shelved

Owner	Operator	Mine
Anugerah Bara Kaltim	Anugerah Bara Kaltim	ABK Coal Mines
Toba Sejahtera	Adminitra Baratama Nusantara	ABN Coal Mine
Orpheus Energy (51%), Mega Coal Indomine (49%)	Alam Duta Kalimantan	ADK Coal Mine
Baramulti Suksessarana	Antang Gunung Meratus	AGM Coal Mine
Jardine Cycle & Carriage	Agung Bara Prima - United Tractors	Agung Bara Prima Coal Mine
Anzawara Satria	Petorsea	Anzawara Satria Coal Mine
Bumi Resources	Arutmin Indonesia	Asam-Asam Coal Mine
Astaka Dodol	Astaka Dodol	Astaka Dodol Coal Mine
Adaro Group	Balangan Coal Companies	Balangan Coal Mine
Bumi Resources	Arutmin Indonesia	Batulicin Coal Mine
Bangun Banua Persada Kalimantan	Rukun Makmur	BBPK Coal Mine
Berau Coal Energy - Sinar Mas Group	Berau Coal Energy	Binungan Coal Mine
Triputra Group (99%), Hanur Group (1%)	Bhumi Rantau Energi	BRE Coal Mine
Cipta Buana Seraya	Cipta Buana Seraya	Cipta Buana Seraya Coal Mine
Medco Energi International	Duta Tambang Rekayasa	DTR Coal Mine
Exploitasi Energi Batubara Indonesia	Exploitasi Energi Batubara Indonesia	EEl Coal Mine
Indo Tambangraya Megah - Banpu	Kitadin	Embalut Coal Mine
Bayan Resources	Bara Tabang	Fajar-Tabang-Brian Coal Mines
Toba Bumi Energi	Indomining	Indomining Coal Mine
Garda Sukses Mandiri (95%)	Interex Sacra Raya	ISR Coal Mine
Sakari Resources - PTT Public Company Limited	Jembayan Muarabara	Jembayan Coal Mine
Kencilo Coal (99.9%), Nippon Cake & Engineering Company (0.01%)	Kendilo Coal Indonesia	Kendilo Coal Indonesia Coal Mine
Bumi Resources	Arutmin Indonesia	Kintap Coal Mine
Lanna Resources Public Company	Lanna Harita Indonesia	Lanna Harita Coal Mine
Media Djaya Bersama	Mifa Bersaudara	Mifa Bersaudara Coal Mine
Harum Energy	Mahakam Sumber Jaya	MSJ Coal Mine
Nusa Alam Lestari	Nusa Alam Lestari	NAL Coal Mine
Indika Energy	Kideco Jaya Agung	Pasir Coal Mine
Bayan Resources	Perkasa Inakakerta	PIK Coal Mine
Bukit Asam (Persero)	Bukit Asam (Persero)	PTBA Coal Mines
Putri Ahdadia	Putri Ahdadia	Putri Ahdadia Coal Mine
Rimau Energy Mining	Rimau Energy Mining	REM Coal Mine
Bumi Resources	Arutmin Indonesia	Satui Coal Mine
Sakari Resources - PTT Public Company Limited	Bahari Cakrawala Sebuku	Sebuku Coal Mine

Commodity	Latitude	Longitude	Status
Coal	-0,430956	117,268994	Operating
Coal	-0,687029	117,243974	Operating
Coal	-3,845379	115,246478	Operating
Coal	-2,889157	115,259809	Operating
Coal	-1,120132	114,474622	Operating
Coal	-3,730729	115,611243	Operating
Coal	-3,877627	115,110224	Operating
Coal	-2,583189	103,390531	Operating
Coal	-2,354545	115,604525	Operating
Coal	-3,256975	116,019495	Operating
Coal	-3,129144	115,091728	Operating
Coal	2,036798	117,45344	Operating
Coal	-2,944753	115,225696	Operating
Coal	-3,75918	102,509461	Operating
Coal	4,13045	117,192819	Operating
Coal	-3,863435	115,194243	Operating
Coal	-0,32129	117,118326	Operating
Coal	0,550906	116,126335	Operating
Coal	-0,664038	117,257289	Operating
Coal	-2,175661	115,545327	Operating
Coal	-0,196807	117,132998	Operating
Coal	-1,961112	115,868493	Operating
Coal	-3,86281	115,186712	Operating
Coal	-0,408137	117,258252	Operating
Coal	4,202094	96,236746	Operating
Coal	-0,496832	117,229117	Operating
Coal	-2,945474	115,224	Operating
Coal	-1,890937	115,871586	Operating
Coal	0,788681	117,678449	Operating
Coal	-3,739981	103,768323	Operating
Coal	-3,826105	115,000448	Operating
Coal	-2,021052	115,154141	Operating
Coal	-3,766755	115,336046	Operating
Coal	-3,435313	116,391977	Operating

Owner	Operator	Mine
Senamas Energindo Mineral - Agritrade Res	Senamas Energindo Mineral	SEM Coal Mine
Sumber Kurnia Buana	Sumber Kurnia Buana	SKB Coal Mine
Sinar Kumala Naga	Sinar Kumala Naga	SKN Coal Mines
Timah (Persero)	Tanjung Alam Jaya	TAJ Coal Mine
Indo Tambangraya Megah - Banpu	Kitadin	Tanjung Mayang Coal Mine
ABM Investama	Tunas Inti Abadi	TIA Coal Mine
Indo Tambangraya Megah - Banpu	Trubaindo Coal Mining	Trubaindo Coal Mine
Pertamina [unknown %]	Pertamina Hulu Mahakam	Tunu
Adaro Group	Adaro Indonesia	Tutupan Coal Mine
Adaro Group	Adaro Indonesia	Wara Coal Mine
Bayan Resources	Wahana Baratama Mining	WBM Coal Mine
Indo Tambangraya Megah - Banpu	Bharinto Ekatama	Bharinto Ekatama Coal Mine
Vale S.A (44.34%), PT Indonesia Asahan Aluminium (205), Sumitomo Metal Mining Co. Ltd (15.03%), Sumitomo Corp. (0.14%)		Sorowako Mine
Government of Indonesia, government of Papua, and American company Freeport-McMoRan (FCX)	PT Freeport Indonesia	Grasberg Mine
Indotan Halmahera Bangkit (Indotan)		Gosowong mine
PT YIWAN MINING		Yiwan Mine
PT Aneka Tambang		Pomalaa Mine
Indonesia Asahan Aluminium		Pakal Island Mine
Amman Mineral Internasional		Batu Hijau Mine
PT Archi Indonesia Tbk	PT Meares Soputan Mining (PT MSM) and PT Tambang Tondano Nusajaya (PT TTN)	Toka Tindung Gold Project
Antam		Cibaliung Gold Mine
PT Merdeka Copper Gold Tbk	PT Bumi Suksesindo	Tujuh Bukit Gold Mine
PT Merdeka Copper Gold Tbk	PT Batutua Kharisma Permai	Wetar Copper Mine
PT United Tractors Tbk	PT Agincourt Resources	Martabe Gold Mine
PT J Resources Asia Pacific		Bolaang Mongondow
Bumi Resources Minerals Tbk	PT Citra Palu Minerals	Bumi Resources Minerals Tbk (BRMS) Gold Mine

Commodity	Latitude	Longitude	Status
Coal	-1,996049	115,153441	Operating
Coal	-3,164769	115,103014	Operating
Coal	-0,512412	117,314356	Operating
Coal	-3,236505	115,151495	Operating
Coal	-0,321902	117,086236	Operating
Coal	-3,580493	115,59542	Operating
Coal	-0,317194	115,85404	Operating
oil and gas	0,677	117,565	Operating
Coal	-2,204484	115,527798	Operating
Coal	-2,204484	115,527798	Operating
Coal	-3,737844	115,297344	Operating
Coal	-0,581028	115,706	Operating
Nickel	-2,5713379	121,382494	Operating
Copper, Gold, Silver	-4,0611677	137,1282975	Operating
Gold	1,1426484	127,6991378	Operating
Iron ore	-3,234588	116,006894	Operating
Nickel	-4,19834	121,64234	Operating
Iron ore	0,7899775	128,3308556	Operating
Copper	-8,9641745	116,8793605	Operating
Gold	1,5832236	125,1015079	Operating
Gold	-6,7513946	105,6329373	Operating
Gold	-8,6099624	114,0493216	Operating
Copper, Gold	-7,7054895	126,320184	Operating
Gold	1,5097684	99,0672965	Operating
Gold	0,5683816	124,3138266	Operating
Gold	-0,864888	119,9301818	Operating

Philippines

Owner	Operator	Mine
	Cit nickel Mines and Development Corp.	Pulot Sofronio
	Berong Corp.	Berong Mine
	Cit nickel Mines and Development Corp.	Toronto Narra
	Agata Mining Ventures Inc. (AMVI) – Operator	Agata DSO
	Carrascal Nickel Corp.	Carrascal Nickel
	Carmen Copper Corporation	Toledo Copper Mine
Atlas Consolidated Mining and Development Corporation	Carmen Copper Corporation	Toledo Copper Mine
	Philex Mining Corporation	Pacdal Mine
	Philex Mining Corporation	Pacdal Mine
Oceana Gold Philippines		Didipio Copper Gold Mine
	Benguet Corporation	Acupan Mine
	Benguet Corporation	Antomok Mine
		Canatuan Mine
	Filminera Resources Corporation	Arory (Masbate)
		Rio Tuba (Bulanjao)

Commodity	Latitude	Longitude	Status
Nickel	9,065699	117,962053	closed/abandoned?
Nickel	9,173032	118,256311	closed/abandoned?
Nickel	9,188114	118,282618	active
Nickel	9,287005	125,520098	active
Nickel	9,370051	125,888935	active
Copper, Gold, Silver	10,336745	123,746433	active
Copper, Gold, Silver	10,336745	123,746433	active
Copper, Gold, Silver	16,262281	120,621712	active
Copper, Gold, Silver	16,262281	120,621712	active
Copper, Gold, Silver	16,321519	121,45169	active
Gold	16,365219	120,672029	
Gold	16,401319	120,658952	closed/abandoned?
Gold, Silver	7,7325	122,279444	
Gold, Silver	12,446667	123,396944	
Nickel	8,57	117,419	active

Owner	Operator	Mine
Hindalco Industries Limited		Hindalco Hill Bauxite Mines
IMFA		Bangur Chromite Mine
IMFA		Chingudipal Chromite Mine
State of India		Kaliapani (Balasore) Chromite Mines
Mohanty & Sons		Kamarda Chromite Mine
Misrilal Jain		Saruabil Chromite Mine
Tata Steel		Sukinda (Tisco) Chrome Mine
Odisha Mining Corporation Ltd	KCCL	South Kaliapani Chromite Mines
Coal India	Western Coalfields Limited (WCL)	Adasa Coal Mine
Coal india	Singareni Collieries Company Limited (SCCL)	Adriyala Coal Mine
Coal India	Central Coalfields Limited (CCL)	AKK Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Amadand Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	Amaglmated Block IV-Kooridih-Govindpur Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	Amalgamated Keshalpur-West Mudidih (AKWMC) Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Amera Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Amlai Coal Mine
Coal India	Northern Coalfields Limited (NCL)	Amlohri Coal Mine
Coal India	Central Coalfields Limited (CCL)	Amrapali Coal Mine
Coal India	Central Coalfields Limited (CCL)	Ara Coal Mine
OCL Iron & Steel	OCL Iron & Steel	Ardhagram Coal Mine
Coal India	Central Coalfields Limited (CCL)	Ashoka Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Badjna Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Bagdeva Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Balgi Coal Mine
Coal India	Western Coalfields Limited (WCL)	Ballarpur OC Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Balrampur Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	Bansdeopur Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Bansra Coal Mine
Government of West Bengal	West Bengal Power Development Corporation	Barjore Coal Mine
Coal India	Western Coalfields Limited (WCL)	Barkui Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Barmuri Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Baroud Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Bartunga Hill Coal Mine

Commodity	Latitude	Longitude	Status
Bauxite	23,4752904	84,601445	Operating
Chromite	20,85	85,6333	Operating
Chromite	20,6833	85,7167	Operating
Chromite	21,0489	85,783	Operating
Chromite	21,0556	85,8278	Operating
Chromite	21,0667	85,8	Operating
Chromite	21,05	85,8	Operating
Chromite	21,04749304	85,78451135	Operating
Coal	21,347003	78,953545	Proposed
Coal	18,6648	79,579	Operating
Coal	23,7905	85,9198	Operating
Coal	23,157942	82,061533	Operating
Coal	23,800453	86,276944	Operating
Coal	23,8078	86,3221	Operating
Coal	23,065899	83,049535	Mothballed
Coal	23,167675	81,59593	Operating
Coal	24,134	82,593	Operating
Coal	23,889479	85,00171	Operating
Coal	23,80089	86,696883	Mothballed
Coal	23,587449	87,085853	Operating
Coal	23,724268	85,037525	Operating
Coal	23,800306	86,695665	Operating
Coal	22,455461	82,517654	Operating
Coal	22,353611	82,61666	Operating
Coal	19,832799	79,34613	Operating
Coal	23,229703	83,010222	Operating
Coal	23,799105	86,325068	Operating
Coal	23,642317	87,139259	Operating
Coal	23,424232	87,285137	Operating
Coal	22,1958	78,6875	Mothballed
Coal	23,782796	86,718731	Operating
Coal	22,268463	83,345538	Operating
Coal	23,174	82,335	Operating

Owner	Operator	Mine
Coal India	Bharat Coking Coal Limited (BCCL)	Basantimata Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	Bastacola Coal Mine
Coal India	Mahanadi Coalfields Limited (MCL)	Basundhara (West) Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Behraband Coal Mine
Sunflag Iron & Steel Company	Sunflag Iron & Steel Company	Belgaon Coal Mine
Coal India	Singareni Collieries Company Limited (SCCL)	Bellampalli OCP-II Coal Mine
Coal India	Western Coalfields Limited (WCL)	Bellora-Naigaon Coal Mine
Coal India	Mahanadi Coalfields Limited (MCL)	Belpahar Coal Mine
Government of India	Damodar Valley Corporation (DVC)	Bermo Coal Mine
Coal India	Western Coalfields Limited (WCL)	Bhanegaon Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Bhanora West OC Coal Mine
Coal India	Mahanadi Coalfields Limited (MCL)	Bharatpur Coal Mine
Prakash Industries Limited	Prakash Industries Limited	Bhaskarpara Coal Mine
Coal India	Western Coalfields Limited (WCL)	Bhatadi Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Bhatgaon Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	Bhowrah (North) Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	Bhowrah (South) Coal Mine
Coal India	Mahanadi Coalfields Limited (MCL)	Bhubaneswari Coal Mine
Coal India	Central Coalfields Limited (CCL)	Bhurkunda O/C Coal Mine
Coal India	Central Coalfields Limited (CCL)	Bhurkunda U/G Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Bijari Coal Mine
Coal India	Northern Coalfields Limited (NCL)	Bina Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Bisrampur Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	Block II (BOCP) Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	Block II Coal Mines
Coal India	Northern Coalfields Limited (NCL)	Block-B Coal Mine
Coal India	Central Coalfields Limited (CCL)	Bokaro Opencast Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Bonjemehari Coal Mine
Singareni SCCL		BPA Dorli OCP-1 Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Central Kajora Coal Mine
Coal India		Chandora Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Chapapur II Coal Mine
Steel Authority of India (SAIL)	IISCO	Chasnala Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Chhal Coal Mine
Coal India	Western Coalfields Limited (WCL)	Chhinda Coal Mine

Commodity	Latitude	Longitude	Status
Coal	23,730779	86,756071	Operating
Coal	23,769756	86,41471	Operating
Coal	22,059284	83,7304	Operating
Coal	23,282233	82,093922	Operating
Coal	20,329522	78,95774	Operating
Coal	19,2094444	79,34805556	Operating
Coal	19,976764	79,088501	Mothballed
Coal	21,75	83,8417	Operating
Coal	23,7843	85,9634	Operating
Coal	21,2685	79,1574	Operating
Coal	23,729521	86,993622	Operating
Coal	20,95753	85,128911	Operating
Coal	23,355536	82,751378	Proposed
Coal	20,05738	79,267357	Operating
Coal	23,37063	82,99223	Operating
Coal	23,681905	86,400533	Operating
Coal	23,681905	86,400533	Operating
Coal	20,961693	85,160099	Operating
Coal	23,657086	85,365226	Operating
Coal	23,657086	85,365226	Operating
Coal	22,2471	83,382797	Operating
Coal	24,1483	82,7476	Operating
Coal	23,20521	82,98523	Mothballed
Coal	23,75722302	86,79445561	Operating
Coal	23,781738	86,227241	Operating
Coal	24,17502419	82,56028175	Operating
Coal	23,787063	85,923633	Operating
Coal	23,769704	86,877669	Operating
Coal	17,5	80,1667	Operating, exp/plans
Coal	23,600612	87,187419	Operating
Coal	23,5833	86,2333	Operating
Coal	23,804826	86,675476	Operating
Coal	23,658882	86,449764	Operating
Coal	22,100202	83,110483	Operating
Coal	22,213831	78,843954	Mothballed

Owner	Operator	Mine
Coal India	South Eastern Coalfields Limited (SECL)	Chirimiri Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Chitra East Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Chora Incline and Chora 7, 9, & 10 Coal Mine
Vedanta	Bharat Aluminum Company Limited (BALCO)	Chotia Coal Mine
Vedanta		Codli Iron Ore Mines
Coal India	Eastern Coalfields Limited (ECL)	Dabor Coal Mine
Coal India	Central Coalfields Limited (CCL)	Dakra Bukbuka Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Dalurban Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	Damagoria Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Damini Coal Mine
Coal India		Damodar Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Dhanpuri Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Dhanpuri-Amlai Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	Dhansar Coal Mine
Coal India		Dhelwadi-Singhali Coal Mine
Coal India	Central Coalfields Limited (CCL)	Dhori- Khas Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Dubeshwari OC Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Dubeshwari UG Coal Mine
Coal India	Northern Coalfields Limited (NCL)	Dudhichua Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	East Bassuriya Coal Mine
Coal India		East Katras Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Egara Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	Ena Coal Mine
Gujarat State Electricity Corporation	Gujarat State Electricity Corporation	Gare Palma I Opencast Coal Mine
Jindal Group	Jindal Steel & Power (JSPL)	Gare Palma IV 1 Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Gare Palma IV 2&3 Coal Mine
Sarda Energy and Minerals	Sarda Energy and Minerals	Gare Palma IV 7 Coal Mine
Holcim	Ambuja Cements	Gare Palma IV 8 Coal Mine
Aditya Birla Group	HINDALCO (HIL)	Gare Palma V/4 Coal Mine
Coal India	Mahanadi Coalfields Limited (MCL)	Garjanbahal Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Gaurandih Begunia Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Gevra Coal Mine
Coal India	Western Coalfields Limited (WCL)	Ghonsa Coal Mine
Coal India	Central Coalfields Limited (CCL)	Gidi - A Open Cast Coal Mine

Commodity	Latitude	Longitude	Status
Coal	23,183958	82,336684	Operating
Coal	24,119	86,8636	Operating
Coal	23,672877	87,203167	Operating
Coal	22,780896	82,476655	Operating
Coal	15,3356	74,1369	Operating
Coal	23,789723	86,915206	Operating
Coal	23,663881	85,000762	Operating
Coal	23,713432	87,251973	Operating
Coal	23,768816	86,843796	Operating
Coal	23,141744	81,470502	Operating
Coal	23,4667	86,1167	Operating
Coal	23,1541	81,5843	Operating
Coal	23,158187	81,566508	Operating
Coal	23,773116	86,399933	Operating
Coal	22,35	82,6833	Operating
Coal	23,781699	86,013284	Operating
Coal	23,660393	86,821519	Operating
Coal	23,661297	86,823591	Mothballed
Coal	24,16474	82,67287	Operating
Coal	23,800946	86,371018	Operating
Coal	23,4667	86,6167	Operating
Coal	23,650069	87,071513	Operating
Coal	23,7568	86,4094	Operating
Coal	22,11866	83,53358	Proposed
Coal	22,11866	83,53358	Proposed
Coal	22,1199	83,5362	Operating
Coal	22,11866	83,53358	Proposed
Coal	22,11866	83,53358	Proposed
Coal	22,15	83,5415	Operating
Coal	22,034519	83,74266	Operating
Coal	23,805	87,02553	Operating
Coal	22,336312	82,545748	Operating
Coal	19,9647	78,8326	Operating
Coal	23,691251	85,359806	Operating

Owner	Operator	Mine
Coal India	Central Coalfields Limited (CCL)	Gidi - C Open Cast Coal Mine
Coal India	Central Coalfields Limited (CCL)	Giridih Coal Mine
Coal India	Singareni Collieries Company Limited (SCCL)	Godavarikhani-10 Incline
Coal India	Western Coalfields Limited (WCL)	Gondegaon-Ghatrohana Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	Gondudih Khas Kusunda Coal Mine
Adani Group	Adani Group	Gondulpara Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	Gopalichak Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Gourandih Begunia Coal Mine
West Bengal Mineral Development and Trading Corporation	West Bengal Mineral Development and Trading Corporation	Gourangdih ABC Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	Govindpur (BCCL) Coal Mine
Coal India	Central Coalfields Limited (CCL)	Govindpur Coal Mine
Coal India	Central Coalfields Limited (CCL)	Hesagara Coal Mine
Coal India	Mahanadi Coalfields Limited (MCL)	Hingula-II Coal Mine
Coal India	Western Coalfields Limited (WCL)	Inder Coal Mine
Coal India	Mahanadi Coalfields Limited (MCL)	Jagannath Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Jambad OC Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Jampali Coal Mine
Coal India	Western Coalfields Limited (WCL)	Jamuniya Coal Mine
Coal India	Central Coalfields Limited (CCL)	Jarangdih Coal Mine
Coal India	Singareni Collieries Company Limited (SCCL)	Jawaharkhani 5 Coal Mine
Coal India	Central Coalfields Limited (CCL)	Jharkhand Coal Mine
Coal India	Northern Coalfields Limited (NCL)	Jhingurda Coal Mine
Coal India	Western Coalfields Limited (WCL)	Juna Kunada Coal Mine
Coal India	Western Coalfields Limited (WCL)	Junad Coal Mine
Coal India	Singareni Collieries Company Limited (SCCL)	JVR I Coal Mine
Coal India	Central Coalfields Limited (CCL)	K. D. H. Coal Mine
Coal India	Central Coalfields Limited (CCL)	Kabribad Coal Mine
Coal India	Western Coalfields Limited (WCL)	Kamptee OC Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Kapasara Coal Mine
JSW Energy (49%), Rajasthan State Minerals and Mining (51%)	Barmer Lignite Mining Company	Kapurdi Coal Mine
Coal India	Central Coalfields Limited (CCL)	Karanpura Dewarkhand Hesalong (KDH) Coal Mine
Coal India	Central Coalfields Limited (CCL)	Kargali Open Cast Coal Mine
Coal India	Central Coalfields Limited (CCL)	Karo Coal Mine

Commodity	Latitude	Longitude	Status
Coal	23,693944	85,357747	Operating
Coal	24,1734	86,2539	Operating
Coal	18,6494444	79,56361111	Operating
Coal	21,26629731	79,19242476	Operating
Coal	23,804	86,3773	Operating
Coal	23,838673	85,305604	Proposed
Coal	23,77983	86,343243	Operating
Coal	23,805	87,02553	Operating
Coal	23,815331	86,994805	Proposed
Coal	23,800453	86,276944	Operating
Coal	23,8056	85,8694	Operating
Coal	23,7602	85,505	Mothballed
Coal	20,966051	85,01637	Operating
Coal	21,241388	79,229444	Operating
Coal	20,949857	85,147665	Operating
Coal	23,643161	87,182493	Operating
Coal	22,2713889	83,2811	Operating
Coal	22,1996567	78,8342559	Mothballed
Coal	23,775944	85,911907	Operating
Coal	17,5783	80,3225	Operating
Coal	23,798166	85,586162	Operating
Coal	24,212132	82,698427	Operating
Coal	20,051389	79,061667	Mothballed
Coal	20,058148	79,052317	Operating
Coal	17,208799	80,801703	Operating
Coal	23,663881	85,000762	Operating
Coal	24,1572	86,3006	Mothballed
Coal	21,241388	79,229444	Operating
Coal	23,7585	86,7545	Operating
Coal	25,9423	71,344253	Operating
Coal	23,66446	85,000819	Operating
Coal	23,7699	85,9904	Mothballed
Coal	23,791654	85,973236	Operating

Owner	Operator	Mine
Coal India	Central Coalfields Limited (CCL)	Kathara Coal Mine
Aditya Birla Group	HINDALCO (HIL)	Kathautia Coal Mine
Coal India		KD (Hsalong) Coal Mine
Coal India	Central Coalfields Limited (CCL)	Kedla Coal Mine
Coal India	Central Coalfields Limited (CCL)	Kedla OC Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	Kenduadih Coal Mine
Coal India	Singareni Collieries Company Limited (SCCL)	Khairagura Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	Kharkharee Colliery
Coal India	Eastern Coalfields Limited (ECL)	Khotadih Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	KOCP Kuya Coal Mine
Coal India	Western Coalfields Limited (WCL)	Kolarpimpri Coal Mine
Coal India	Central Coalfields Limited (CCL)	Konar Coal Mine
Coal India	Central Coalfields Limited (CCL)	Kotre Basantpur Pachmo Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Kottadih Coal Mine
Singareni SCCL		KTK Sector-I Coal Mine
Coal India	Mahanadi Coalfields Limited (MCL)	Kulda Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Kumardhubi Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Kusmunda Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	Kuya Coal Mine
Coal India	Central Coalfields Limited (CCL)	Laiyo Coal Mine
Coal India	Mahanadi Coalfields Limited (MCL)	Lakhanpur Coal Mine
Coal India	Maamba Collieries Limited (MCL)	Lilari Coal Mine
Coal India	Mahanadi Coalfields Limited (MCL)	Lingaraj Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Lower Kenda Coal Mine
Coal India	Central Coalfields Limited (CCL)	Magadh Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Mahan Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Mahan II Coal Mine
Coal India	Western Coalfields Limited (WCL)	Makardhokra I Coal Mine
Coal India	Western Coalfields Limited (WCL)	Makardhokra III Coal Mine
Government of Gujarat	Gujarat Industries Power Company	Mangrol Valia Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Manikpur Coal Mine
Coal India	Western Coalfields Limited (WCL)	Manna Incline Coal Mine
Government of Gujarat	Gujarat Mineral Development Corporation Limited	Mata No Madh Lignite Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Methani Coal Mine
Coal India	Northeastern Coalfields Limited (NCL)	Mine I A Coal Mine

Commodity	Latitude	Longitude	Status
Coal	23,775944	85,911907	Operating
Coal	24,132523	84,08231	Operating
Coal	23,7833	85,95	Operating
Coal	23,775944	85,911907	Operating
Coal	23,798166	85,586162	Operating
Coal	23,772585	86,398367	Operating
Coal	19,2555556	79,26666667	Operating
Coal	23,777233	86,239083	Operating
Coal	23,7244	87,233	Operating
Coal	23,7363	86,4498	Operating
Coal	20,0833	79,0333	Operating
Coal	24,155314	86,303182	Mothballed
Coal	23,83103	85,589764	Proposed
Coal	23,726772	87,228519	Operating
Coal	17,5	80,1667	Operating
Coal	22,033526	83,734846	Operating
Coal	23,7761	86,7274	Operating
Coal	22,332635	82,666666	Operating
Coal	23,757283	86,434763	Operating
Coal	23,7903	85,6253	Mothballed
Coal	21,7451	83,8401	Operating
Coal	22,059284	83,7304	Mothballed
Coal	20,960432	85,200747	Operating
Coal	23,650379	87,183894	Operating
Coal	23,889479	85,00171	Operating
Coal	23,3861	83,0183	Operating
Coal	23,352611	83,225911	Operating
Coal	20,865366	79,285604	Operating
Coal	20,8764	79,2235	Operating
Coal	21,4167	73,1	Operating
Coal	22,325	82,7416	Operating
Coal	19,9132	79,3019	Operating
Coal	23,510726	68,958531	Operating
Coal	23,6946	86,8902	Operating
Coal	11,57352	79,51781	Operating

Owner	Operator	Mine
NLC India Limited	NLC India Limited	Mine III
Coal India	Eastern Coalfields Limited (ECL)	Mohanpur Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	N.T.S.T. Jeenagora Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Nabakajora Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Nakrakonda Coal Mine
Coal India	Western Coalfields Limited (WCL)	Navin Kunada Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	New Kenda Coal Mine
Coal India	Western Coalfields Limited (WCL)	New Majri II A Coal Mine
Coal India	Western Coalfields Limited (WCL)	New Sethia Coal Mine
NLC India Limited	NLC India Limited	Neyveli I A Coal Mine
NLC India Limited	NLC India Limited	Neyveli I Coal Mine
NLC India Limited	NLC India Limited	Neyveli II Coal Mine
NLC India Limited	NLC India Limited	Neyveli III Coal Mine
Coal India		Nijai South OP Coal Mine
Coal India	Western Coalfields Limited (WCL)	Niljai Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Nimcha Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Nirsha OC Patch Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	North Searsole (East) Coal Mine
Coal India	Central Coalfields Limited (CCL)	North Urimari Birsa Coal Mine
Coal India	Western Coalfields Limited (WCL)	Padmapur Coal Mine
National Thermal Power Corporation	National Thermal Power Corporation	Pakri Barwadih Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Pandaveswar Coal Mine
Coal India	Western Coalfields Limited (WCL)	Paoni Coal Mine
Coal India	Western Coalfields Limited (WCL)	Paoni-II Coal Mine
Coal India	Central Coalfields Limited (CCL)	Parej East Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Patmohana Coal Mine
Coal India	Western Coalfields Limited (WCL)	Penganga Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	Phularitand Coal Mine
Coal India	Western Coalfields Limited (WCL)	Pimpalgaon Coal Mine
Coal India	Central Coalfields Limited (CCL)	Piparwar Coal Mines
Coal India	South Eastern Coalfields Limited (SECL)	Porda Chintapani Coal Mine
Coal India	Singareni Collieries Company Limited (SCCL)	Prakasham Khani II Coal Mine
Coal India	Singareni Collieries Company Limited (SCCL)	Prakasham Khani IV Coal Mine
Coal India	Central Coalfields Limited (CCL)	Pundi Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Pure Searsole Coal Mine

Commodity	Latitude	Longitude	Status
Coal	11,516278	79,429398	Proposed
Coal	23,786678	86,950299	Operating
Coal	23,7028	86,4403	Operating
Coal	23,634844	87,179251	Operating
Coal	23,679182	87,287229	Operating
Coal	20,086325	79,059422	Mothballed
Coal	23,6657	87,1624	Operating
Coal	20,119062	79,032223	Operating
Coal	22,21443936	78,84370064	Operating
Coal	11,57352	79,51781	Operating
Coal	11,571182	79,503738	Operating
Coal	11,520268	79,475537	Operating
Coal	11,516278	79,429398	Proposed
Coal	20,4667	78,1167	Operating
Coal	19,9957	79,0825	Operating
Coal	23,650069	87,071513	Operating
Coal	23,784425	86,718939	Operating
Coal	23,66169	87,114053	Operating
Coal	23,701948	85,293923	Operating
Coal	20,030397	79,314233	Operating
Coal	23,881918	85,233799	Operating
Coal	23,697576	87,253978	Operating
Coal	19,81759499	79,26932804	Operating
Coal	19,82705027	79,25526677	Operating
Coal	23,798166	85,586162	Operating
Coal	23,6853	86,8903	Operating
Coal	19,862222	79,139166	Operating
Coal	23,781738	86,227241	Operating
Coal	20,05	79,041667	Mothballed
Coal	23,724268	85,037525	Operating
Coal	20,639945	82,205202	Proposed
Coal	17,9406	80,772	Operating
Coal	17,9391	80,7784	Operating
Coal	23,8236	85,5218	Operating
Coal	23,645469	87,086766	Operating

Owner	Operator	Mine
Coal India	Central Coalfields Limited (CCL)	Purnadih Coal Mine
EMIL Mines and Minerals Resources	EMIL Mines and Minerals Resources	Radhikapur (East) Coal Mine
JSPL		Raigarh Coal Mines
Coal India	Central Coalfields Limited (CCL)	Rajappa Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	Rajapur-South Jharia Coal Mine
Coal India	Central Coalfields Limited (CCL)	Rajhara Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Rajmahal Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Rajnagar Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Rajpura Coal Mine
Coal India	Central Coalfields Limited (CCL)	Rajrappa Coal Mine
Coal India		Ramkanali Coal Mine
Steel Authority of India (SAIL)	International Coal Ventures Limited (ICVL)	Ramnagar Coal Mine
Coal India	Singareni Collieries Company Limited (SCCL)	Ravindrakhani 8 Coal Mine
Coal India	Central Coalfields Limited (CCL)	Rohini Coal Mine
Uttar Pradesh Rajya Vidyut	Rajya Vidyut Utpadan Nigam	Saharpur-Jamarpani Coal Mine
Coal India	Mahanadi Coalfields Limited (MCL)	Samaleswari Coal Mine
Coal India	Central Coalfields Limited (CCL)	Sanghmitra Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Sarapali Coal Mine
RPSG Group	CESC Limited (CESC)	Sarisatolli Coal Mine
Coal India	Western Coalfields Limited (WCL)	Sarni Coal Mine
Coal India	Western Coalfields Limited (WCL)	Sasti OC Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Satgram Coal Mine
Coal India	Central Coalfields Limited (CCL)	Saunda-D Coal Mine
Coal India	Central Coalfields Limited (CCL)	Selected Dhori Group of Mines
Coal India	Bharat Coking Coal Limited (BCCL)	Sendra Bansjora Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Shampur-B Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Shankarpur Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Shankarpur-Bonbahal-Chora Coal Mine
Coal India	South Eastern Coalfields Limited (SECL)	Sharda Coal Mine
Birla Corporation	RCCPL	Sial Gjogri Coal Mine
Coal India	Mahanadi Coalfields Limited (MCL)	Siarmal Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Siduli Coal Mine
Tata Steel		Sijua Coal Mine
Jharkhand State Mineral Development Corporation Limited (JSMDCL)	Jharkhand State Mineral Development Corporation Limited (JSMDCL)	Sikni Coal Mine

Commodity	Latitude	Longitude	Status
Coal	23,7083	84,9861	Operating
Coal	20,966577	84,900043	Proposed
Coal	21,9232	83,3453	Operating
Coal	23,621	85,6878	Operating
Coal	23,74879601	86,42139246	Operating
Coal	24,1642	84,0465	Operating
Coal	25,038	87,3538	Operating
Coal	23,208097	82,123782	Operating
Coal	23,75873451	86,7731741	Operating
Coal	23,615	85,682	Operating
Coal	23,8	86,2833	Operating
Coal	23,756027	86,835903	Operating
Coal	18,8958	79,4917	Operating
Coal	23,685074	84,989074	Operating
Coal	27,5	78,83	Proposed
Coal	21,805789	83,903847	Operating
Coal	23,889479	85,00171	Proposed
Coal	22,35732	82,296358	Mothballed
Coal	23,799677	87,045467	Operating
Coal	22,11790297	78,15174395	Operating
Coal	19,81311025	79,3183321	Operating
Coal	23,6827	87,0703	Operating
Coal	23,659463	85,337532	Mothballed
Coal	23,775	85,5417	Operating
Coal	23,793355	86,35049	Operating
Coal	23,77338093	86,71801871	Operating
Coal	23,66654149	87,20491618	Operating
Coal	23,659607	87,206925	Operating
Coal	23,208242	81,589781	Operating
Coal	22,192428	78,77264	Operating
Coal	22,043469	83,733619	Proposed
Coal	23,649929	87,2091	Operating
Coal	23,6167	86,1167	Operating
Coal	23,722988	84,611313	Operating

Owner	Operator	Mine
Coal India	Western Coalfields Limited (WCL)	Silewara Colliery
Coal India	South Eastern Coalfields Limited (SECL)	Singhali Coal Mine
Coal India	Western Coalfields Limited (WCL)	Singhori Coal Mine
Coal India	Central Coalfields Limited (CCL)	Sirka Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Sodepur Coal Mine
Government of Rajasthan	Rajasthan State Mines and Minerals limited (RSMML)	Sonari Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Sonepur Bazari Coal Mine
Coal India		South Jharia Coal Mine
Singareni SCCL		Sraavanapalli Coal Mine
Coal India	Singareni Collieries Company Limited (SCCL)	Srirampur-I Coal Mine
Coal India	Singareni Collieries Company Limited (SCCL)	Srirampur-II Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	Sudamdih Coal Mine
Telangana State Power Generation Corporation Limited	Telangana State Power Generation Corporation Limited	Tadicherla Coal Mine
Adani Group	Adani Mining	Talabira I Coal Mine
Neyveli Lignite Corporation (NCL India Limited)	Neyveli Lignite Corporation (NCL India Limited)	Talabira II & III Coal Mines
National Thermal Power Corporation	National Thermal Power Corporation	Talaipalli Coal Mine
Coal India	Maamba Collieries Limited (MCL)	Talcher (West) Coal Mine
Coal India	Central Coalfields Limited (CCL)	Tapin Coal Mine
Coal India	Central Coalfields Limited (CCL)	Tapin South Coal Mine
West Bengal Power Development Corporation Limited	West Bengal Power Development Corporation Limited	Tara (East & West) Coal Mine
Coal India	Western Coalfields Limited (WCL)	Telwasa Coal Mine
Coal India	Central Coalfields Limited (CCL)	Tetariakhar Coal Mine
Coal India	Bharat Coking Coal Limited (BCCL)	Tetulmari Coal Mine
Coal India	Eastern Coalfields Limited (ECL)	Tilaboni Coal Mine
Coal India	Northeastern Coalfields Limited (NCL)	Tipong Colliery
Coal India	Northeastern Coalfields Limited (NCL)	Tirap Colliery
Coal India		Tisra Coal Mine
Coal India	Central Coalfields Limited (CCL)	Topa Coal Mine
Coal India	Western Coalfields Limited (WCL)	Ukni Coal Mine
Coal India	Western Coalfields Limited (WCL)	Ukni Deep Coal Mine
Coal India	Western Coalfields Limited (WCL)	Urdhan Coal Mine
Coal India	Central Coalfields Limited (CCL)	Urimari Open Cast Coal Mine
Coal India	Central Coalfields Limited (CCL)	Urimari Underground Coal Mine
JMS Mining Private	JMS Mining Private	Urtan Coal Mine
Coal India	Singareni Collieries Company Limited (SCCL)	Venkateshkani-7 Coal Mine

Commodity	Latitude	Longitude	Status
Coal	21,2990357	79,12341847	Operating
Coal	22,440833	82,567983	Operating
Coal	21,276666	79,1275	Operating
Coal	23,691032	85,355135	Mothballed
Coal	23,6882	86,8545	Operating
Coal	25,96088325	71,27378395	Operating
Coal	23,688231	87,223763	Operating
Coal	23,5833	86,2333	Operating
Coal	17,5	80,1667	Operating
Coal	18,85	79,48333333	Operating
Coal	18,8177778	79,48055556	Operating
Coal	23,667299	86,417111	Operating
Coal	18,523763	79,749677	Operating
Coal	21,734804	83,989432	Operating
Coal	21,734804	83,989432	Operating
Coal	22,17758	83,355201	Operating
Coal	20,962009	85,178092	Mothballed
Coal	23,798166	85,586162	Operating
Coal	23,8329	85,4729	Operating
Coal	23,45338	87,23919	Proposed
Coal	20,0594694	79,0545886	Mothballed
Coal	23,708769	84,98655	Operating
Coal	23,80899177	86,34172062	Operating
Coal	23,661247	87,275026	Operating
Coal	27,293804	95,755447	Mothballed
Coal	27,293804	95,755447	Operating
Coal	22,9167	86,7333	Operating, exp/plans
Coal	23,739119	85,486353	Operating
Coal	20,020678	79,0678333	Operating
Coal	20,0292	79,0546	Operating
Coal	22,2786	78,9578	Mothballed
Coal	23,698717	85,293249	Operating
Coal	23,695404	85,30209	Operating
Coal	23,245516	81,985844	Proposed
Coal	17,4519444	80,66666667	Operating

Owner	Operator	Mine
Coal India	Western Coalfields Limited (WCL)	Vishnupuri Coal Mine
Tata Group (50%) Coal India (50%)	Tata Steel, Coal India	West Bokaro Coal Mine
Coal India		West Kenda Coal Mine
Singareni SCCL		Yellandu OC Coal Mine
Hindustan Zinc Ltd.		Rajpura Dariba Mine
State of India		Panna Diamond Mine
		Bhitar Dari Gold Reserve
State of India		Hutti Gold Mine
State of India		Chavara Heavy Minerals Mine
State of India		Barbil-Banspani Iron Ore Mines
Odisha Government	M/s. Serajuddin & Co.	Balda Block Iron Ore Mines
SAIL		Barsua Iron Ore Mine
SAIL		Bolani (SAIL) Iron Ore Mine
Chowgule		Chowgule Small Iron Ore Mines
Tata Steel		Khondbond Iron Ore Mine
Salgaocar		Sigao Iron Ore Mine
Vedanta		Sonshi Iron Ore Mine
OMDC		Thakurani Iron Ore Mine
JSW Steel, State of India		Toranagallu Iron Ore Mine
Essel		Unchabali Iron Ore Mine
Salgaocar		Velguem/Surla Iron Ore Mine
MSPL		Vyasanakere Iron Ore Mine
Odisha Mining Corporation (OMC)		Jilling-Langalota Iron & Manganese Mine
Odisha Mining Corporation (OMC)		Guali Iron Ore Mine
Vedanta		Sindesar Khurd Zinc/Lead Mine
Government of Gujarat	Government of Gujarat	Panandhro Lignite Mine
Government of Gujarat	Gujarat Mineral Development Corporation Limited	Rajparddi Lignite Mine
Gujarat Mineral Development Corporation	Gujarat Mineral Development Corporation	Tadkeshwar Lignite Mine
Gujarata Mineral Development Corporation Limited	Gujarat Mineral Development Corporation	Umarsar Lignite Mine
Gujarat Industries Power Company Limited	Surat Lignite Power Plant	Vastan Lignite Mine
Shree Cement Ltd		Nimbeti Limestone Mine
Mysore Minerals		Karnataka Manganese Mines
Adhunik Group		Patmunda Manganese Ore Mines
Manganese Ore India Ltd		Nagpur and Bhandara

Commodity	Latitude	Longitude	Status
Coal	22,199	78,8626	Operating
Coal	23,7927473	85,55423096	Operating
Coal	23,2	86,5333	Operating
Coal	17,55	80,2	Operating
Copper, Lead, Zinc	24,9545912	74,1329226	
Diamond	24,6408	80,04	Operating
Gold	22,7157658	86,1804759	Operating
Gold	16,1976885	76,6515044	Operating, exp/feasib
Heavy minerals	8,995	76,5311	Operating
Iron ore	22,1415	85,3894	Operating
Iron ore	21,8799642	85,415243	Operating
Iron ore	21,8708	85,15	Operating
Iron ore	22,1	85,3167	Operating
Iron ore	15,4867	74,0596	Operating
Iron ore	21,9379	85,4277	Operating
Iron ore	15,35	74,1836	Operating
Iron ore	15,5304	74,0554	Operating
Iron ore	22,0833	85,4333	Operating
Iron ore	15,2	76,6833	Operating
Iron ore	21,8711	85,425	Operating
Iron ore	15,4889	74,05	Operating
Iron ore	15,2167	76,35	Operating
Iron ore, Manganese	21,99281641	85,30928294	Operating
Iron ore	21,99281641	85,30928294	Operating
Lead, Zinc	25,0167	74,1583	Operating
Lignite	23,6961	68,786	Operating
Lignite	21,70897856	73,22994945	Operating
Lignite	21,357159	73,06986	Operating
Lignite	23,73149782	68,81926985	Operating
Lignite	21,43101702	73,11261772	Operating
Limestone	26,2751811	74,1858827	Operating
Manganese	13,9333	75,5167	Operating
Manganese	21,8667	85,3	Operating
Manganese	21,54667956	79,67899452	Operating

Owner	Operator	Mine
State of India	OSCOM	Orissa Sands Complex Rare Earths Mine
Uranium Corporation of India		Jaduguda Uranium Mine
Uranium Corporation of India		Narwapahar Mine
Uranium Corporation of India		Turamdih Uranium Mine
Coal India	Northern Coalfields Limited (NCL)	Krishnashila Coal Mine
Vedanta		Colomba/Corpem Iron Ore Mines

Commodity	Latitude	Longitude	Status
Rare Earths	19,3	84,95	Operating
Uranium	22,6545925	86,3642345	Operating
Uranium	22,6994457	86,2729425	Operating, exp/plans
Uranium	22,7238932	86,1873784	Operating
Coal	24,12435195	82,74250031	Operating
Iron ore	15,27	74,16	Operating

This report is a preliminary examination of the governance and transparency of operation (including access to information) related to mining and including the disposal of mine tailings in five target countries – Papua New Guinea, Mongolia, Philippines, India, and Indonesia. It is being prepared in response to the UNEA resolution 4/19 highlighting UNEP's role in supporting governments to improve mining governance and in particular mine tailings management.

Following the recent highly publicized TSFs failures, governments, communities, and investors are keen to understand where these facilities are located and how they come to fail. The report compiles available information to locate and verify mines with TSFs (mines that may have TSFs but were unable to be verified are also included). It has made use of the GRID-Arendal Global Tailings Portal and publicly available data and information. The verification of TSFs presence was done using this data and information in conjunction with Google Earth satellite imagery.

In general, there is very little peer reviewed research being undertaken on mine tailings in the region. Most of the available information is related to mining impacts on communities and is carried out by NGOs.