

Mimika's Coastal Dystopia: Besieged by Freeport Indonesia's Mine Tailings Slurry



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Introduction

From the use of electronics, electricity and telecommunications to transportation, all our infrastructure involves the use of copper. It was thanks to the use of copper that human civilization left the Stone Age and entered the Bronze Age. Initially, humans only mined copper ore when its copper content was high enough, including 'native copper' with 100% copper content, which produces very little mining waste. The tools were still simple, the need for copper was still relatively low, and it wasn't efficient to mine and process ore containing low copper content.

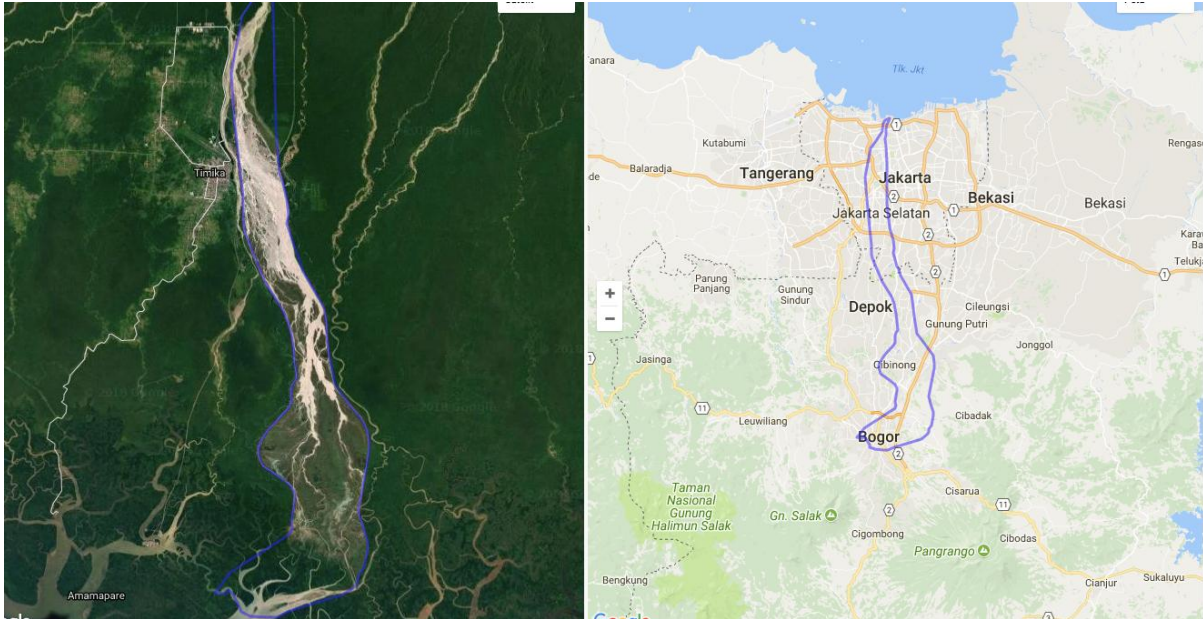
In modern times, particularly since the discovery of electricity, advancements in mining and extraction technology have enabled copper exploitation on a massive scale. With powerful modern equipment capable of large scale exploitation, copper mining now supports many aspects of modern life. Even ore containing less than 2% copper is now mined, generating much more slurry waste per metal unit recovered, and resulting in extensive environmental damage.

Meanwhile, mining has not helped local people around the mining sites and tailings zones to modernise in terms of their housing, or supporting their healthy traditional fishing and food gathering. The community's livelihoods at the mine site remain underdeveloped, and they live with deteriorating environmental conditions due to mine waste disposal. One of the communities experiencing severe negative impacts of mining is the coastal area of Mimika District, Papua Province, Indonesia.

This issue needs urgent public and government attention, so that the life of the local community can still develop within a healthy living environment. This report is an effort to raise public and government awareness of the lives of the local traditional communities around the tailings sites of Freeport Indonesia.

Mining waste vs valuable minerals

Freeport McMoran, together with its subsidiary PT. Freeport Indonesia, is the world's largest copper and gold producer, thanks to its operations in Papua Province, Indonesia. Although its reserves have very high mineral content (up to 2.33%) compared with copper mines elsewhere in the world, such large scale mining yields equally large scale waste in the form of slurry, or tailings. Freeport's slurry is discharged into the Aghawagon River basin, then meets with the Otomona River, and is then deposited in the former Ajkwa River area. The flow of the tailings doesn't fully spend itself in the 230 hectare deposition area, but continues flowing all the way to the shore.



Comparison of tailings deposition area with Jakarta area, (using <http://mapfrappe.com>)

PT. Freeport Indonesia started production using open pit mining in Mount Nemangkawi (Grasberg) in 1990, after previously mining the Ertzberg. A total of 200,000 to 280,000 tons per day of tailings slurry enters the Aikwa River stream, which has now become the deposition site.

Towards the end of the contract of work in 2021, the company is planning to continue production until 2041. There are 2,027 million tons of valuable minerals still to be mined (Freeport McMoran Annual Report 2017). With copper content ranging from 1% to 2.33%, mining waste will continue to be produced on a massive scale. Supposing the total valuable minerals of ore comprise 5% (copper, gold, silver, and other minerals), then as much as 38.513 billion tons of tailings slurry will be added to the existing deposition area.

The Government of Indonesia is in the process of negotiating to divest its shares from PT Freeport Indonesia. However, there has been little transparency or accountability around the environmental damage. How will coastal communities be affected if the post-2021 production process continues? And how will the tailings be dealt with, as the slurry keeps accumulating in the seas which provide livelihoods for traditional pole fishing communities?



Fishing village on Karaka Island

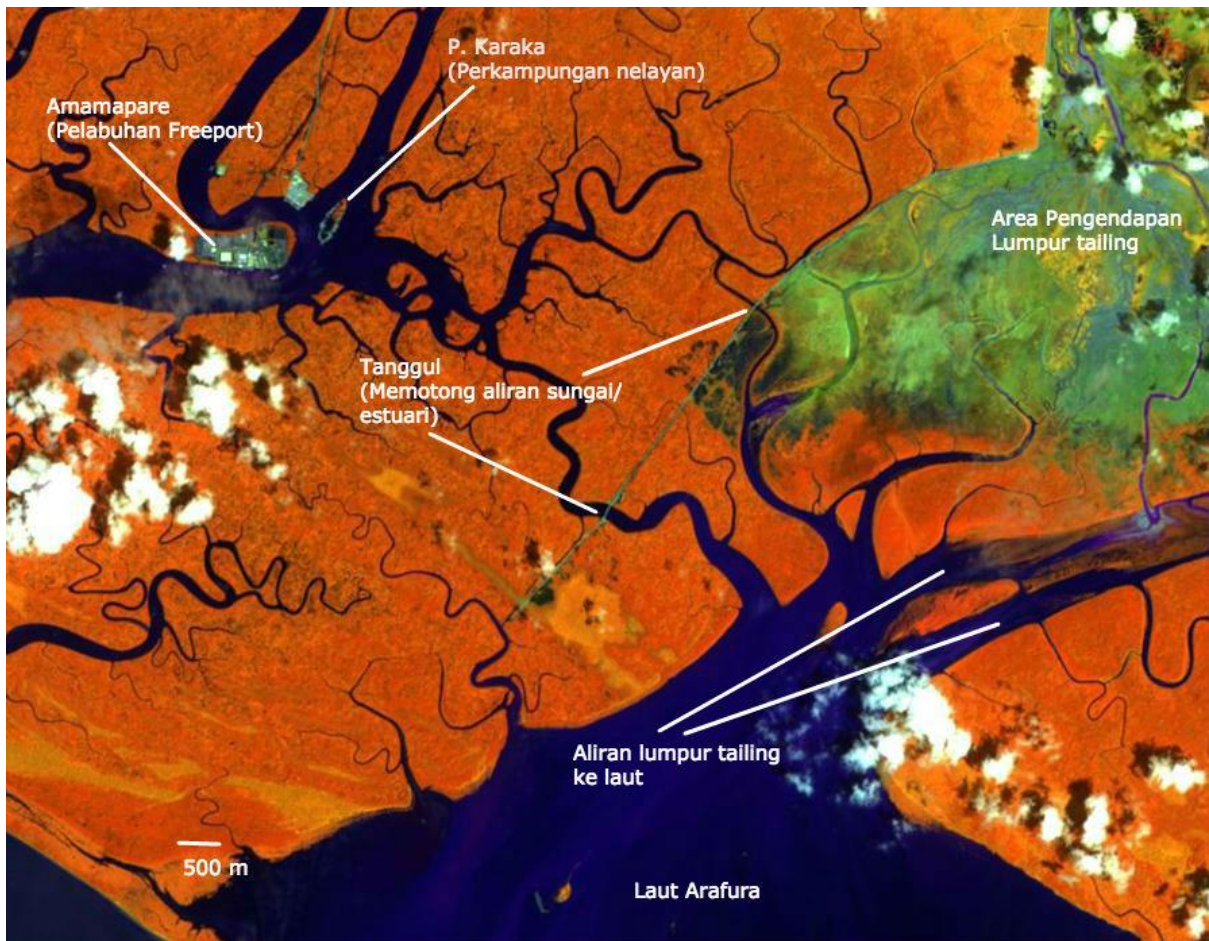
Mass ecological damage trail

What is now the deposition area was originally lowland forest. However, tailings slurry has caused the trees to wither. The community has been paid by the company to cut down these desolate trees. By eliminating the barren timber from view, the visual impact of deforestation caused by the tailings would be reduced. It is also hoped that it would reduce the rate of the slurry flow.



Withered trees in tailings slurry deposition area, and green trees outside of the deposition area, separated by a dyke.

The Ecological Risk Assessment made by Freeport states that vegetation in the tailings deposition area will undergo a smothering process. The death of vegetation will also affect relatively high trees. Estuary areas are usually one of most productive area, rich in biodiversity and important to the lives of local people. If the tailings slurry deposits are stopped, then with certain care plants could recover and re-vegetation may occur. But biodiversity would be greatly reduced.



Forest and tailing slurry deposition area (view from direction of mountain area)

Mud tailings in estuary

Not all tailings slurry has been deposited in the lowland forest areas that were designated to be sacrificed as deposition areas. Tailing slurry flows into the estuary then spreads to the coast. The movements of the tides wash tailings into the surrounding estuary rivers. Among them is Okorpa River. Okorpa River is important for the community as a place for fishing and gathering crabs. It is also a transport route from the western region around Pomako and Karaka Island to the east of deposition area, and vice versa. Its role has become even more important since a wider river, Yamaima River, was dammed by a dyke to the west side of the deposition area. Okorpa River.

Tailings slurry infiltrating the Okorpa River has affected the lower leaves of trees around the river, covering them with mud which is affecting the photosynthesis process. The tailings are threatening the livelihoods of the local fishing people.



Lower leaves covered by mud, upper leaves drying as a result



Fisherwoman in traditional palm boat, fishing for crabs in Okorpa River, near the estuary where tailings flow from the deposition area

A Freeport report (RKL-RPL 2009) stated that 80.7% of tailings are deposited in the deposition area. Therefore, at least 19.3% of tailings slurry has been flowing to coastal area and nearby estuary. During that year, between 200,000 and 280,000 tons flowed to the deposition area every day.

To continue mining until 2041, post-2021, will cause a major environmental burden. It will particularly affect this area.

Termination of the estuary flow to the embankment

Several estuary river channels were blocked to stop the tailings flowing into the surrounding areas and to lengthen the dykes for both the east and west sides of the deposition area. One of the estuary rivers that has been dammed is Yamaima River. One of the aims is to protect Freeport minerals shipping and logistics ports from siltation (PT Freeport, External Environmental Audit, 2014). But as a result, traditional fishing community routes have been reduced and diverted further away. They now pass through the Okorpa River.



An announcement sign states that Yamaima River has been cut off



Yamaima River cut off by dyke, so that tailings slurry sediment does not cause siltation at Freeport's port. Right side flows from tailings deposition, left side flows to the sea.

Heavy metal in tailings

Communities still use parts of the rivers that have been impacted by tailings for activities such as bathing. This includes the Yamaima River, which has been dammed. There are no signs warning of the dangers of heavy metals and other harmful substances in the water. Based on the company's own report (RKL-RPL 2009), the dissolved copper (Cu) in the tailings flow location exceeds the quality

standard of all water classes governed by Government Regulation No. 82, 2001 on Water Quality Management and Water Pollution Control.



Communities including children are bathing and swimming in Yamaima River, which has been dammed to prevent the tailings spreading

Siltation in the coastal area

Tailings slurry is not fully deposited in the deposition area. Some of the slurry flows to the coastal area of the Ajkwa estuary. One of the affected communities is Kampung Pasir Hitam. This village is located in the coastal area on the east side of the tailings disposal estuary.

If the tailings slurry volume is not reduced or stopped, the mud flow will cause more severe silting in the coastal areas. This will further reduce productivity of fisheries in surrounding estuaries. People who live in these areas generally use small boats made from a single coconut or sago trunk with hole for the engine to sit in. With such a small boat their catch area is limited; they cannot catch fish in the open seas as the waves are too big. Communities reported that their boats are now running aground on build-ups of silt, which are not visible below the surface of the murky coastal waters.

Communities say that before the silting, people never set foot on Puriri Island because it was a sacred island. But since severe silting, the community often have to wait on this small island for the water level to rise high enough for them to continue their passage along the coastal area in their boats. Their small boats cannot pass through open sea due to the relatively high waves.

In 2003 the community created a forum to respond to the coastal siltation. In 2014, environmental activists in the field helped the community of Pasir Hitam to file a complaint to the provincial government about silting of the coastal areas and

obstruction of water transportation. But to date (February 2018), there is still no adequate response.

Communities demand transport assistance so they can pass through deeper sea, avoiding the parts where siltation has occurred.

Right to a good and healthy environment

The Indonesia Constitution states that citizens have the right to a good and healthy environment (Article 28 H). The rights of coastal communities to a good and healthy environment has been neglected. Tailings slurry has been disrupting water transport and healthy estuaries for fish productivity.

Continued mining production without ensuring the sustainability of a healthy environment for fishing communities in Ajkwa River estuary and the nearby area contravenes the Constitution. Recovering coastal environments that have been impacted by tailings slurry disposal is urgently needed to support this community's needs. Governments of all levels, the media and environmental organisations must pay attention to communities residing in the coastal areas of Mimika Regency, whose environment has experienced widespread and long-lasting destruction.

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