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Braskem's Salt Mines, Maceió's Ground Subsidence, and the Pitfalls of Corporate Sustainability Discourse

Marginalised populations are asymmetrically affected at all stages of the plastics production cycle – especially the extraction of raw materials. Such environmental impacts reproduce and reinforce pre-existing racial and socioeconomic inequalities. This is clearly illustrated in Maceió, the capital of Brazil's north-eastern state of Alagoas: Since 2019, around 60,000 people have been forced to leave their communities after earth tremors and ground subsidence started to endanger the structures of houses and other buildings surrounding Mundaú Lagoon. Entire neighbourhoods have subsequently been abandoned.

"Can you imagine being in a neighbourhood and the whole neighbourhood disappears?" asked Mateus Costa, a local entrepreneur who lost two businesses to the earthquakes, in an interview with Gésio Passos of Rádio Nacional. "The neighbourhood no longer exists. There's nothing left. Business has fallen by 80%. Once your revenue drops, you can no longer maintain the same standard you had. It affects you in every way. Psychologically, I'm devastated. They say that men don't cry, but you have to cry a little."

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Cleber Bezerra, a pensioner who lived near the lagoon his entire life, “had to leave when the tremors started.” Bezerra also owns a home further away, but his commute to Maceió city centre has quadrupled in length and he is now based far from loved ones. “You're born in the neighbourhood; you grow up in the neighbourhood; you make friends. When you move to another neighbourhood, you start all over again from scratch. It's not the same,” Bezerra explained on Rádio Nacional.

These are glimpses of a broader tragedy associated with the extraction of rock salt, a key input for polyvinyl chloride (PVC) and other plastic products.

1 Rock salt in Brazilian trade

In 2018, Brazil's largest petrochemical firm, Braskem, exported over 1.3 million metric tons of polymers, with almost half of that volume destined for Argentina, Paraguay, and Uruguay. In recent years, polyethylene – the most common type of plastic, mainly used for packaging – emerged as the company's leading polymer export. The Maceió chlor-alkali plant is a significant producer of chlorine and caustic soda, essential inputs for various industries, including PVC production. PVC is desirable due to its low production cost, high chemical resistance, favourable mechanical characteristics, and resilience to water and weather conditions.

Similarly to other commodities, plastics can be a significant source of export revenues and therefore of major economic importance to a country's balance of payments. Plastic articles (in the form of plates, sheets, films, tapes, and strips) were among Brazil's most valuable exports in 2022. Brazil exports most of its processed plastics (rubber gloves, polyester, etc.) to the United States, Peru, and Paraguay.

2 Legal troubles

Braskem faces potential liabilities totalling 34 billion reais (\$6.9 billion) arising from its rock salt mining activities. A significant portion of this liability – roughly 17.7 billion reais (\$3.6 billion) – is owed to the state of Alagoas, with which Braskem has yet to agree a settlement. The company's extraction of rock salt involved drilling 35 wells over several decades in the vicinity of Mundaú Lagoon, Maceió.

Braskem is facing new claims amounting to 997 million reais (\$203 million) over damages caused by its salt mines. It has already allocated 14.4 billion reais (\$2.9 billion) to address issues related to ground subsidence, attributed to its 40-year-long salt mining activities in Maceió. Of the total funds set aside, 9.2 billion reais (\$1.9 billion) have been disbursed since 2018, when the crisis intensified with the formation of cracks in streets and buildings in five neighbourhoods. In 2019, the company subsequently halted its salt mining activities in the region.

3 A tragedy foretold

Professors emeriti Abel Galindo and José Geraldo Marques first warned in 1980 that mining in the area could threaten entire neighbourhoods. Galindo was environmental chief during the 1970s, under the then unelected Governor of Alagoas Divaldo Suruagy, during Brazil's civil-military dictatorship. Galindo authored a report opposing the installation of rock salt extraction mines in Maceió. All of the potential problems highlighted in that report have since materialised.

In the 1980s, researchers from the Federal University of Alagoas (UFAL) were already warning of ground subsidence in Maceió neighbourhoods caused by the mining of rock salt; and warned of subsidence due to rising water tables subsuming low-lying caves and holes. In 2011, another study published in the scientific journal *Engineering Geology* predicted that the ground could sink by as much as 1.5 meters in some areas of the city.

From the outset, Maceió's civil society criticised the inappropriate location of the mines, which are very close to populated neighbourhoods and meters from Mundaú Lagoon – a hub of biodiversity. Following a chemical accident in December 1984 at the Union Carbide pesticide plant in Bhopal, India, journalists Érico Abreu and Mário Lima warned that a similar incident could occur in Maceió. Nevertheless, Braskem commenced expansion in 1985, resulting in renewed public backlash, organised at that time by left-wing city council members and the NGO Movimento Pela Vida (Movement for Life).

These issues are now coming to a head. In December 2023, Brazil's Federal Police (PF) served 14 search-and-seizure warrants in Maceió, Rio de Janeiro, and Aracaju. Their investigations found evidence that mining activities carried out at the Maceió site did not “follow the safety parameters

set out in the scientific literature and in the respective mining plans, which were intended to guarantee the stability of the mines and the safety of the population living on the surface.” Moreover, activists have denounced agreements reached between Braskem and local authorities for not adequately compensating the populations in the affected areas. Activists also assert that Braskem should only be allowed to own land where properties have been damaged once it has paid adequate reparations.

4 Environmental racism

It cannot be emphasised enough that this story is not an outlier; instead, it is the rule. Marginalised populations are asymmetrically affected at all stages of the plastics production cycle – especially during the extraction of raw materials. Such environmental disasters – a misnomer if ever there was one, since the impacts in this case are not only anthropogenic but were also perfectly predicted – reproduce and reinforce pre-existing racial and socioeconomic inequalities.

Studies in the United States indicate heightened risk of chemical accidents and toxic exposure in areas with higher poverty levels and populations of colour, as corporate polluters disproportionately site facilities in low-income and minority communities. “It’s no coincidence,” explains Marcos Bernardino de Carvalho, professor of environmental management at the University of São Paulo, “that ... the people who end up being victimised by this process of degradation are not only vulnerable and impoverished, but [also] Black.”

Since the 1950s, extractive industries have expanded in the Global South. Their products – buildings, machines, energy infrastructure, etc. – permeate our lives. These industries harm the environment by impounding rivers, clearing forests, and polluting air and water, damaging the health of humans and non-humans alike. Capitalism externalises this damage, treating it as a negligible cost of production. Such attitudes are reinforced by the spatial disconnect between producers and consumers. In a globalised economy, consumers are often physically distant from the production process, which can insulate them from the destruction inherent to production.

Further problematising that dynamic is the racial component. The biggest consumers are located in the Global North and predominantly white. Meanwhile, extractivist production and its environmental costs most acutely affect frontline communities in the Global South. In short, under global capitalism, poor people of colour suffer so that rich (predominantly white) countries can enjoy creature comforts.

5 Extractivist destruction

Maceió is just the latest in a long list of Brazilian communities ravaged by extractivist exploitation. For example, in 2019 the Brumadinho tailings dam in Minas Gerais – which held waste from the Córrego do Feijão iron ore mine – failed, killing 272 people, poisoning the Doce River, and releasing toxic waste that was transported hundreds of kilometres, all the way to the Atlantic Ocean. So far, no-one has been held accountable for what was considered to be the country's worst environmental disaster prior to that caused by the Maceió rock salt mines.

The Brumadinho tailings dam was central to Brazil's iron ore industry, which is the third-largest in the world by production volume. The German auto industry depends on imports of Brazilian iron ore. This is but one example of people in the Global South suffering so that their richer Northern counterparts can enjoy luxuries.

Brazil is not alone in enduring these tragedies. Worldwide, countless communities endure deleterious effects long after mining operations cease. From Gabon to Papua New Guinea, mining continues to leave unmitigated legacies of environmental degradation and socio-economic hardship in affected localities.

A recent study revealed that extractivist activities “are responsible for 60% of global heating impacts, including ... 40% of air pollution impact, and more than 90% of global water stress and land-related biodiversity loss.” Despite these dire figures, worldwide extraction of raw materials is projected to rise 60% by 2060.

6 Conclusion

Braskem claims to have an ambitious sustainability plan, aligned with the United Nations Sustainable Development Goals and the Paris Climate Agreement, focusing on seven dimensions: Health and safety; Financial and economic results; Plastic waste elimination; Climate change mitigation; Operational eco-efficiency; Social responsibility; Human rights; and Sustainable innovation. In September 2022, Marcelo Arantes de Carvalho, one of Braskem's global vice presidents, boasted on LinkedIn that Brazil's leading financial paper named Braskem as Brazil's "best company in the chemical and petrochemical sector" due to its ESG (environmental, social, and corporate governance) practices.

While tens of thousands of people in Maceió were forced to evacuate their communities, Braskem distributed all of its profits as dividends to shareholders. It also launched a new logo to "mark the beginning of a new phase," in which the letter B is shaped like an arrow, indicating the company's future-oriented strategy, while its blue and yellow colours "represent aspects such as global reach, a focus on sustainability and the strength of human relationships."

Scientists at the German Research Centre for Geosciences have studied the subsidence in Maceió since the mid-aughts using satellite data, identifying the onset of subsidence in 2004–2005 and an increased rate since 2018. Their research, published in *Scientific Reports*, attributes the subsidence primarily to salt-mining activities.

Let this be a stark reminder that claims of corporate sustainability may be little more than fig leaves intended to mask "business as usual". The pursuit of profit is incompatible with any real attempt to ensure a planet capable of sustaining life. Extractive industries are hard-wired into capitalism, which requires the exploitation of environments and communities. The conversion of raw materials into money is "at the heart of the modern capitalist economy." Hence, environmental degradation and its social costs are not incidental. The pressures of climate change are intensified by the global economy. We cannot save the former without fundamentally changing the latter.

