

# Undermining resilience: climate change, rights and mining in the Brazilian Amazon

January 2023



christian  
aid

**Authors:**

Nadia Saracini, Christian Aid

**Acknowledgements:**

This report is based on research by Maurício Angelo of Observatório da Mineração and Comissão Pró-Índio de São Paulo (CPI-SP).

We would like to thank Mineração Rio do Norte (MRN) and Vale for comments provided in response to earlier drafts of this report, which we have done our best to address herein. Thanks also to Mary Friel, Juan Carlos Ochoa, Oliver Pearce, Melanie Simons and Fionna Smyth for expert advice.

**Cover image: Going to school. Riverside community Boa Nova, Oriximiná, Pará, Brazil. Carlos Penteado.**

**Christian Aid exists to create a world where everyone can live a full life, free from poverty. We are a global movement of people, churches and local organisations who passionately champion dignity, equality and justice worldwide. We are the change makers, the peacemakers, the mighty of heart.**

**caid.org.uk**

**Contact us**

Christian Aid  
35 Lower Marsh  
Waterloo  
London  
SE1 7RL  
T: +44 (0) 20 7620 4444  
E: info@christian-aid.org  
W: caid.org.uk

## Contents

<b>List of acronyms</b>	<b>4</b>
<b>Executive summary</b>	<b>5</b>
<b>Introduction</b>	<b>6</b>
<b>Mining in Brazil</b>	<b>8</b>
Implications for climate resilience	14
<b>Mining in Pará</b>	<b>16</b>
Voices from Oriximiná	18
<b>In search of accountability</b>	<b>26</b>
<b>Conclusions and recommendations</b>	<b>31</b>
<b>End notes</b>	<b>35</b>

## List of acronyms

ANM	National Mining Agency
CFEM	Financial Compensation for Mineral Resource Exploitation
COIAB	Coordinating Body of Indigenous Organizations of the Brazilian Amazon
COP	Conference of the Parties
CPI-SP	Comissão Pró-Índio de São Paulo
FNMA	National Environment Fund
FPIC	Free, Prior and Informed Consent
HDI	Human Development Index
IBAMA	Brazil's Institute of Environment and Renewable Resources
ILO	International Labour Organisation
MMA	Ministry of the Environment
MME	Ministry of Mines and Energy
MRN	Mineração Rio do Norte
OECD	Organisation for Economic Co-operation and Development
PMD	Mining and Development Programme
PPCDAm	Action Plan for the Prevention and Control of Deforestation in the Legal Amazon
UNFCCC	United Nations Framework Convention on Climate Change

## Executive summary

Mining industries in the Brazilian Amazon contribute to climate change and the degradation of ecosystems that play a key role in regulating the global climate. Their impacts particularly affect the resilience of traditional communities who inhabit the region yet are often marginalised from the economic benefits of mining and other extractive industries. Mining companies operating legally are taking steps to mitigate the environmental and social impacts of their operations, but the effects on local communities and ecosystems are nevertheless profound, and recent deregulatory trends threaten to worsen these.

Traditional communities have been protecting the Amazon's forests for centuries. They have the right to live on their land, to prosper and to enjoy a healthy and sustainable environment. They also have important skills and knowledge which can contribute to human capacities for climate change adaptation, the protection and restoration of vital ecosystems and sustainable economic development of the region. However, Quilombola and riverine communities in Oriximiná Municipality in the Brazilian State of Pará report how their ways of living and means of livelihood have been eroded by mining activity, reducing their ability to survive on their land and adapt to changing conditions.

Industrial policies, including those governing mining, need to be coherent with Paris Agreement commitments to rapidly end carbon emissions, as well as Agenda 2030 commitments to the Sustainable Development Goals, tackling inequality and ensuring human rights for all.

Federal and state governments in Brazil need to regulate the mining industry more effectively and plan for more sustainable development in the region – with the meaningful participation of marginalised communities. Investors and companies also have responsibilities, to ensure their activities are compliant with climate goals and do not increase the vulnerability of – but rather strengthen the resilience of – people living in poverty.

The Brazilian Amazon is critical for the regulation of the regional and global climates, but mining (both legal and illegal) has been contributing to its destruction. Fuelled by rising demand for minerals, deforestation associated with mining is accelerating. While mining in the region poses serious risks now, these risks will be heightened in future because of the greater likelihood of more frequent and intense extreme weather events. In the context of climate crisis, more independent research is needed to understand these impacts on the resilience of people and the ecosystems they depend on.

## Introduction

This report highlights the concerns of Quilombola and riverine communities in the municipality of Oriximiná, in the Brazilian state of Pará, to support them in their struggles to adapt to a changing environment and nurture the ecosystems on which we all depend. This report calls for a more sustainable vision of the Brazilian Amazon's economic development, and for a genuinely green and equitable future.

Brazil has a history of engagement in international forums on climate change, and at the Glasgow Summit in November 2021 it claimed it had a 'green future'.<sup>1</sup> However, the extraction of the Brazilian Amazon's resources is accelerating the destruction of the region's greatest assets – its forest ecosystems and the peoples who have long protected and nurtured these.

The environmental and social impacts of the Brazilian Amazon's burgeoning mining industries have implications both for climate change and for resilience (of both people and ecosystems) to its inevitable effects. This report highlights how mining industries and the policies that support them are not always coherent with the Paris Agreement commitments to quickly end carbon emissions and strengthen climate resilience, or Agenda 2030 commitments to sustainable development, which also include reducing inequality and fulfilling human rights for all.<sup>2</sup> It calls for the economic benefits of mining industries to be weighed against the very significant environmental and social costs<sup>3</sup> and for regulation to minimise damage done while ensuring economic gains are fairly distributed to promote sustainable and equitable development and climate resilience.

Alongside governments, investors and companies engaged in extractive industries have responsibilities to ensure their activities are compliant with climate goals to keep global warming below 1.5°C and to reduce the vulnerability and strengthen the resilience of people living in poverty. Too often, however, their operations run counter to these aims. This should be a concern, as low- and middle-income countries are increasingly dependent on extractive industries for growth.<sup>4</sup> Brazil has significant deposits of metals and minerals required for clean energy technologies and other sustainable infrastructure. Yet, as the climate crisis worsens, the sustainability of Brazil's mining industries and the impacts of mining on climate vulnerable communities need urgent attention.

The exploitation of the Amazon's mineral wealth is rooted in colonial injustices<sup>5</sup> and continues to reflect the global hierarchy

The exploitation of the Amazon's mineral wealth is rooted in colonial injustices and continues to reflect the global hierarchy of power these injustices have created, including in the denial of rights of Quilombola communities.



of power these injustices have created.<sup>6</sup> In illegal mines, enslavement and other forms of labour exploitation continue to be reported.<sup>7</sup> In the development of mining, Quilombola, riverine and indigenous communities continue to be marginalised in decision making while disproportionately affected by the adverse impacts of a development pathway which is not necessarily sustainable or welcomed by them. Many of these communities are defending the region's forests and biodiversity in the face of violence and threats. Yet they retain vital skills and knowledge that could support the Brazilian Amazon's food security, ecosystems restoration and sustainable economic development in future. Supporting their struggles is a priority for social and environmental justice, and critical for saving our planet. This report aims to contribute in a small way.

To provide a snapshot of perspectives and challenges faced by traditional communities affected by mining, testimonies from Quilombola and riverine communities living in parts of Oriximiná municipality were gathered by Comissão Pró-Índio de São Paulo (CPI-SP) during the summer of 2022. These comment on the very significant impacts of Bauxite mining being conducted by the company Mineração Rio do Norte (MRN) in Oriximiná. However, they are not intended to imply that MRN is directly responsible for all the issues mentioned in this report.

**Below:** Deforestation caused by mining in Oriximiná. Photo by Carlos Penteadó.



## Mining in Brazil

Among the Amazonian countries, Brazil has the largest area affected by the expansion of industrial (legal) mining conducted generally by large- and medium-sized mining companies. Since 2010 it has also seen a sharp growth in *garimpo* (artisanal) mining (which may or may not be licenced<sup>8</sup>) as well as illegal 'wildcat' mining. These forms of mining, which are mostly associated with gold extraction so tend to be concentrated in certain areas, are also environmentally destructive, and are now responsible for just over half the land area affected by mining in Brazil.<sup>9</sup>

By 2020, three out of every four acres mined in Brazil were in the endangered Amazon biome<sup>10</sup> presenting what is perhaps a unique set of interrelated environmental, social and economic risks to local communities, the Amazon region and the world. A recent study that compared mining's domestic economic benefits with environmental costs across countries found that the environmental impacts in Brazil were particularly high.<sup>11</sup> These environmental impacts also have global implications, because the region is critical to mitigating the effects of climate change.

Rising commodity prices since the Covid-19 pandemic and compounded by war in Ukraine have boosted the value of mining industries to an estimated record-breaking \$63bn<sup>12</sup> in 2021, compared with approximately \$38bn in 2020.<sup>13</sup> This could explain why – although mining contributes just 2.4% of Brazil's GDP<sup>14</sup> and appears to bring limited public benefits while incurring huge environmental costs – facilitating investment in the sector continues to be a national priority.

### The climate impacts

Mining industries are among the main drivers of deforestation and other land use changes that are eroding the resilience of Amazonian forests to climate change.<sup>15</sup> The Amazon is a critical element of the Earth's climate system. Its forests exert a strong influence on the atmosphere and circulation patterns within and outside the region, helping to lower surface temperatures and generate rainfall through transpiration. Deforestation of the Brazilian Amazon, therefore, presents a grave threat. Satellite monitoring revealed a rapid increase between 2020–21, with 13,235 km<sup>2</sup> of forests lost. This loss is 22% more than in the previous period and almost three times the 2012 total of 4,571 km<sup>2</sup>.

## The Amazon, its lands and peoples

Almost two-thirds of 'Pan-Amazonia' or 'Gran Amazonía' lies in the Brazilian Amazon which also covers most of the Amazon River basin. Within Brazil, the 'Legal Amazon' is defined as an area encompassing the States of Acre, Amapá, Amazonas, Pará, Rondônia, Roraima, Tocantins, Mato Grosso and part of Maranhão. This area is home to 29 million people, 14% of Brazil's population.

Development in the region threatens communities who depend directly on nature for subsistence. In Brazil, the legal category 'traditional peoples and communities' encompasses a wide range of different peoples who recognise themselves as such.

This category includes indigenous peoples; the Quilombola (descendants of enslaved African peoples who, in colonial times, fled their captors and sought shelter in isolated regions, retaining their identities and cultures) and many Ribereños (riverine communities).

A 2021 Amazon Assessment Report, published by the Science Panel for the Amazon, describes Brazil as a 'cradle for agrobiodiversity production' embedded in systems of knowledge developed by indigenous and other traditional communities – many of which are still in use in the present day. Women play a key role in the retention, development and transmission of such knowledge systems. However, deforestation and conversion of forests to other uses is contributing to cultural loss and loss of indigenous knowledge and practice.



The Amazon, as a whole, has already lost about 17% of its forest cover. The 'point of no return' is estimated to be around 20-25%. Reaching that point would be a disaster for the planet. There are already signs that this catastrophic tipping point is approaching.<sup>16</sup> When this happens, the rainforest will no longer sustain the local climatic conditions it needs to survive, leading to its replacement by savannahs and bushlands.

Mining was estimated to have caused 9% of the Amazon's deforestation between 2005-15, a greater proportion than previously thought, when its many ancillary activities beyond clearance for mine sites themselves were taken into account.<sup>17</sup> In Brazil, more than 1 million square kilometres of Amazon – the equivalent of almost twice the area of Spain – are affected by different phases of the mining process.<sup>18</sup> Satellite monitoring reveals that, in the Legal Amazon, deforestation rates are greatest in the state of Pará, which is also the state where industrial mining is now most prevalent.<sup>19</sup> Across the region the main drivers of deforestation continue to be cattle ranching and industrial agriculture, but in Pará especially, there has been a significant increase in deforestation associated with mining activities which could accelerate if pending regulatory changes allow the expansion of legal mining in conservation zones and indigenous lands.<sup>20</sup>

Undisturbed regions of the Amazon lowland forest are a net carbon sink. Human-induced warming of the region – at about 1.2°C on average (but much more in some locations) – is already higher than the global average of 1.1°C. Increased frequency of climate extremes is affecting forests susceptible to drought, fires and changes to flood regimes. Deforestation and other land use changes are exacerbating the exposure, risk and impact of climate-related hazards on people and communities, and increasing the danger that the Amazon could turn into an overall net carbon source, which ultimately could undermine efforts to limit the impacts of climate change globally.<sup>21</sup> Already, there is an increased frequency of drought. Some species that are dependent on moist conditions are in decline. There are also concerns that lack of rainfall, or increased spatial and temporal variability in rainfall, will increase other risks, such as forest fires and increased rainwater runoff and erosion, which will contribute further to this degradation,<sup>22</sup> as well as undermining water supplies.

### **Reduced water quality and health impacts**

Mining exacerbates the risks posed by climate change in several ways. Deforestation can increase the risk of flash flooding

following heavy rains and reduce the amount of water that filters back into soils and groundwater stores.

Contamination by toxic waste and by-products poses health risks<sup>23</sup> and reduces access to clean water in a region where water treatment and sanitation are often inadequate and people in many areas rely on rivers and other surface water for survival. Contamination of soils and groundwater aquifers is also a risk.<sup>24</sup> As many rivers in the Amazon basin naturally carry sediment, many people rely instead on groundwater or springs for drinking. As the Amazon basin is an interconnected network of waterways, contamination easily spreads, facilitated in some cases by flooding.

Mineral processing involves vast quantities of water, which is often discarded, along with waste materials (tailings), in tailings basins held in by dams. These dams must be serviced and maintained for decades after the end of extraction activities. However, maintenance is often inadequate and tailings dams pose very significant risks of rupture, which could have catastrophic and long-term impacts on surrounding areas and particularly on rivers and downstream communities who depend on rivers.

### **Greenhouse gas emissions**

Mineral extraction and related operations (such as transportation and extraction of metals from ores) are directly responsible for 4–7% of greenhouse gas emitted globally due to their use of fossil fuels.<sup>25</sup> In the Brazilian Amazon these industries rely heavily on hydroelectric power generated by large dams. At least 32 hydroelectric power plants are currently operating in the region and many more are in the planning stages.<sup>26</sup> The devastating impacts of large hydroelectric dams on the people they displace, and on local and downstream ecology, have been widely documented. There are important questions about whether these are a sustainable source of renewable energy.<sup>27</sup> In the Brazilian Amazon, the impacts can be particularly acute because the region's flat topography means much larger areas may be flooded to generate similar amounts of power as could be achieved with upland dams. This results in greater loss of ecosystems and contributes to more methane emissions as the remains of vast areas of forest vegetation decompose at the bottom of the reservoir. In lowland hydroelectric dams, greenhouse gas emissions per unit of electricity generated can thus exceed those of coal-fired power stations.<sup>28</sup>

## **The tailings disaster in Brumadinho - gendered impacts**

Mining operations pose largely unrecognised risks to women, who are also least likely to benefit from any jobs they create. Pollution and reduced access to water and other resources affect health, domestic workloads, recreation and childcare, and the informal livelihoods on which most women depend.

The Brumadinho tailings dam rupture in 2019 released a surge of toxic mud, burying people and infrastructure and contaminating the Paraopebas River and its surroundings. In the aftermath, there has been an increase of violence against women, due to pressures linked to the impacts on the local economy and to the influx of people responding to the disaster.

Three years on, women in affected communities still faced water shortages and uncertainty over the safety of water and local produce.

Many women complained that Vale, the company responsible, had not offered adequate compensation, and reported that their protests were not taken seriously, were silenced or that they were denied entitlements because the tailings did not pass directly through land they owned.

The strength of feeling is illustrated by one woman's response to being questioned by Vale regarding this: 'No, the mud did not pass through my land, it passed through my soul.'

*Source: The Mud Went Through my Soul, Christian Aid, 2021.*

Emissions from fires are another source of carbon, and forest fires also contribute to forest degradation. In the Amazon, these do not commonly occur naturally or accidentally, but are more often the result of land use changes. Fires may be set deliberately to clear land, particularly where new roads have opened access to previously remote areas. Intensely burned areas offer less forest cover, exposing soils and damaging biodiversity. In these areas, regeneration processes and vegetation succession are affected, often resulting in forests being permanently scarred.<sup>29</sup> In 2021, solid evidence began to emerge that some parts of the Brazilian Amazon have switched from being a net carbon sink, to a net carbon source, with increased incidence of forest fires, linked to increased dryness and deforestation as the main causes.<sup>30</sup> While these changes cannot be attributed solely to mining activities, it is clear that policies governing mining and other forms of industrial development must protect ecosystems and minimise the impacts (on local people and on nature) associated with increased access to previously remote areas.

### **Rights and ways of living under threat**

The encroachment of extractive industries into Brazil's indigenous territories has a long and brutal history. During the period of military dictatorship (1964-85) it resulted in the deaths of over 8,000 indigenous people and the expulsion, confinement, and forced removal of entire communities.<sup>31</sup> Protections have since been put in place, including the recognition of rights to ancestral lands of indigenous and Quilombola communities in Brazil's Federal Constitution.<sup>32</sup> In the growing cities of the Amazon basin, however, many displaced indigenous, Quilombola and riverine peoples live in poverty.<sup>33</sup>

New legislation poses an additional threat. In February 2020, President Bolsonaro signed Bill PL 191/2020 to permit mining inside indigenous lands and protected areas. The bill could deny traditional occupants their right to give (or deny) free, prior and informed consent (FPIC) to these activities as provided for by ILO Convention 169<sup>34</sup>. The Coordinating Body of Indigenous Organizations of the Brazilian Amazon (COIAB) raised concerns that the bill 'permits exploitation that will benefit only national and international hegemonic, economic interests, by handing over our heritage, instead of protecting it, and leaving us in poverty.'<sup>35</sup> Although not yet passed by parliament, there are concerns that states may already be taking steps to loosen licensing procedures. In a response to a draft of this report (see Appendix 1), the Brazilian mining

It has been estimated that Bill 191/2020 could lead to \$5bn in annual losses in ecosystem services due to the destruction of forests' critical production of food and raw materials, while impacting their ability to capture greenhouse gasses and regulate the global climate.

company Vale told Christian Aid it has published a position statement opposing Bill 191/2020 and 'reinforcing that the company understands that no mining activity can occur without respecting the FPIC'. It has been estimated that the bill could lead to \$5bn in annual losses in ecosystem services due to the destruction of forests' critical production of food and raw materials, while impacting their ability to capture greenhouse gasses and regulate the global climate.<sup>36</sup>

Another bill, 490/2007, approved in 2021 but awaiting a vote in the Lower House of Congress, is being contested.<sup>37</sup> The bill erodes indigenous land demarcation standards by limiting claims to land in possession on 5 October 1988 when the federal constitution was enacted. This ignores the historical displacement that peoples have suffered since colonisation, and the fact that the constitution recognises indigenous peoples' right to lands they traditionally occupy without any time limits.<sup>38</sup>

Mining activity can be a threat to the physical and mental health, self-governance and self-sufficiency of traditional communities. New diseases may be introduced, and social and cultural practices eroded when sacred places are desecrated or access to these is reduced. Negotiating with mining companies (e.g., for reparations) can be disempowering, exhausting and divisive. Leaders chosen by the community may not be recognised or have their authority questioned by representatives of the company and attempts by mining companies to co-opt leaders can lead to breakdowns within the communities.

Civil society organisations have also accused mining industries of complicity in rights violations perpetrated against traditional peoples and environmental defenders, and of being the source of many conflicts – particularly over land and water. In 2020, there were 722 registered cases of conflict – often involving major foreign companies – affecting over 1 million people, with 57,662 people affected by forced displacement, and cases of slave labour, death threats and other aggressions, false imprisonment and deaths of mining workers.<sup>39</sup>

### **A driver of inequality**

As one of the world's most unequal countries<sup>40</sup> Brazil needs to ensure its industries deliver benefits to the people who most need them. Currently however, mining industries appear to do little to lessen wealth inequality. Industrial mining in the Brazilian Amazon continues to be regarded as central to national development, yet its products are mainly destined for

international markets. The sector is driven to a large extent by funding from some of the world's largest banks and investment managers, with the economic gains accruing mainly to private interests.<sup>41</sup>

At the same time, the sector is contributing to the transfer of precious commons – forests, water supplies and ancestral lands collectively managed – into private hands. The effects of this are strongly gendered. It is women, and others who are marginalised from the economic benefits, who lose out most while profits are mostly siphoned away from local communities. States where mining takes place in Brazil do, in some cases, score higher on the Human Development Index (HDI), but this measure often masks inequality and gender disparities.

Legislation and policies are allowing industrial mining to operate with limited regulation while frequently failing to prevent illegal 'wildcat' mining, which also has serious adverse impacts. At the same time, the legal mining industry enjoys generous tax incentives which arguably are not needed to attract investment in an industry<sup>42</sup> that can only operate where resources are located. In the absence of a system to ensure companies adequately contribute to local communities that are displaced or otherwise affected (such as through measures to control pollution, safeguard water supplies or provide energy access or public health facilities), are effectively a 'give-away' of revenues that could be better invested in much-needed public goods.

Tax avoidance has also been found to be common in the sector.<sup>43</sup> While these practices may be within the law, they nevertheless further reduce the potential public gains. The main mechanism to ensure mining contributes to public benefits is the Financial Compensation for Mineral Resource Exploitation (CFEM) tax paid on net income, which does contribute to the public coffers of affected municipalities, but in the state of Pará, there are concerns that the CFEM and other sources of revenues from mining are not effective in redistributing the benefits of the industry to address inequalities.<sup>44</sup> Clearly, more could be done to increase the contribution of Brazil's mining industries to public coffers, considering their enormous profits.

Even where mining revenues have had some positive effects on development indicators such as health, education and GDP per capita, these have been found to be short-lived.<sup>45</sup> The industry's contribution to decent work is also limited. Jobs in the sector are often low paid, lack security or are subject to poor health and safety standards – something which has been particularly contentious in negotiations around revisions to Brazil's Mining



Code.<sup>46</sup> Mortality rates in Brazil's mining sector (due to accidents at work) are larger compared to other economic sectors.<sup>47</sup>

### **Irreversible changes**

In the long term, mines are eventually exhausted of their ores and need to close, leaving behind a degraded environment. Regeneration of forests and restoration of ecosystems is by no means guaranteed. In the case of bauxite extraction in Oriximiná (the focus of this report), soils to the depth of, on average, 8m are removed.<sup>48</sup> As well as the complete removal of local vegetation, mining significantly affects local topography and results in a long-term loss of habitat and food for local wildlife, as well as significant soil erosion.<sup>49</sup>

### **Implications for climate resilience**

Building resilience is important to support people to withstand and thrive in the face of climate shocks and stresses. The United Nations recognise climate resilience as an essential component of sustainable development. This hinges on addressing the structural inequalities that perpetuate poverty, marginalisation and social exclusion and thus increase vulnerability to climate hazards. It must also incorporate measures to protect the environment, reduce risks and deliver social protection and further adaptation. The need to shift power to people who are marginalised is central.<sup>50</sup> Christian Aid has described resilience as: the capacity people have to anticipate, organise for and adapt to change – recognising the importance of power, knowledge and resources.<sup>51</sup>

In many parts of the world, investment in climate adaptation and resilience is not keeping pace with the growing need, while poverty and inequality are making people more vulnerable by reducing their capacities to cope and adapt. The 2021 Adaptation Gap report estimated that costs in 'developing' countries are 5–10 times greater than current public adaptation finance flows – and this adaptation finance gap is widening.<sup>52</sup>

The climate risks in the Brazilian Amazon are significant, as we have seen. The need to prevent deforestation, protect land rights and address inequalities is urgent to both mitigate and adapt to climate change. As things currently stand, none of these requirements seem to be served by the expansion of mining.

The loss of knowledge and capacities of traditional peoples is a threat to climate resilience, which is intrinsically linked to how we use land and relate to ecosystems that sustain us.

The loss of knowledge and capacities of traditional peoples is a threat to climate resilience, which is intrinsically linked to how we use land and relate to ecosystems that sustain us.

Traditional communities whose livelihoods are directly dependent on a healthy ecosystem have developed knowledge and ways of living rooted in their relationship to land. Over millennia, communities have domesticated landscapes to increase food supplies, protected selected and cultivated specific useful plant varieties, managed forest fires and increased soil fertility. Thus, while these communities stand to be among the worst affected by climate change and other forms of environmental degradation which exacerbate it, they also have the potential to lead appropriate solutions.

The expansion of mining in the Brazilian Amazon is both worsening climate change and undermining resilience to its impacts. Mining tends to be concentrated in more intact ecosystems where there is most to lose in terms of biodiversity and carbon stocks. It also threatens traditional communities who play a critical role in the generation, conservation and management of Amazonian agricultural and biological diversity – displacing communities and destroying resources they depend on, so they are less able to survive on their land. This in turn contributes to a loss of indigenous and local knowledge that could support future efforts to protect or restore the Amazonian ecosystems and maximise food supplies.

There is also a danger that, by failing to do enough to help reduce Brazil's high levels of inequality and opening the country to the influence of external investors, mining industries could also contribute to a weakening of democratic processes in policy making – making it less likely that policies for sustainable and equitable development will be adopted or enforced.

In the long term, the ways climate change and other environmental impacts of mining interact and reinforce one another will need to be better understood. While mining poses serious environmental risks now, these risks will be heightened in the future because of the greater likelihood of more extreme weather events. Unprecedented heavy rainfall, unexpectedly severe flooding and associated landslides, for example, not only cause significant loss and damage by themselves, but may also greatly increase the risks associated with mining activity by increasing the likelihood of tailings dams collapse or mining related pollution of watercourses.

While mining poses serious environmental risks now, these risks will be heightened in future because of the greater likelihood of more extreme weather events.

## Mining in Pará

Pará state in northern Brazil is a centre for mining, oil extraction, hydropower, agribusiness and biofuel plantations. Main roads serving these industries have opened access to remote forest areas.<sup>53</sup> Mining for iron ore, bauxite, tin, copper and other metals has been expanding quickly. Between 2000–20 the value of mineral production in Pará grew rapidly. As of 2020, mining concessions in Pará covered over 511,500 acres.<sup>54</sup> In 2019, Pará's income from the Financial Compensation for Operating Mineral Resources (CFEM), a tax designed to compensate municipalities for mining activities, surpassed the income of Minas Gerais, the state at the heart of Brazilian mining since the colonial era. Despite this, at least 31% of Pará's inhabitants live below the poverty line and Pará ranks 24 out of 27 states on the Human Development Index.<sup>55</sup>

Alongside industrial mining, very significant amounts of artisanal mining take place in Pará. These activities are mostly concentrated in the municipalities of Itaituba, Jacareacanga, São Félix do Xingu, Cumaru do Norte, and Ourilândia do Norte.

The following sections primarily discuss industrial mining, with a focus on the municipality of Oriximiná, which, of all Brazil's municipalities, is second only to Parauapebas (also in Pará) in land area affected by industrial mining.<sup>56</sup>

### **Economic benefits, but for whom?**

Mining now accounts for more than 26% of Pará's GDP and 90% of its exports, but the number of people directly employed in industrial mining in the state, although increasing, was just 3.3% of people formally employed in 2014. The extractive process is capital-intensive and creates relatively few jobs. There is greater potential for increasing formal employment in associated processing industries, but Pará remains, on the whole, an exporter of unprocessed minerals.<sup>57</sup> The exemption from tax of primary products including mineral ores destined for export may be among the main reasons for this. It has also been criticised for reducing Pará's potential state revenues by approximately \$1.7bn (R \$9.4bn) between 1997–2013.<sup>58</sup>

## Sites of struggle in Oriximiná

People's struggles against damaging mining practices in Oriximiná are multiple, diverse and often located in remote and hard to reach areas. CPI-SP have produced an interactive map which allows the reader to view the locations of Quilombola settlements, indigenous lands, mining operations (including tailings dams) and hydroelectric dams in the municipality and surrounding areas:

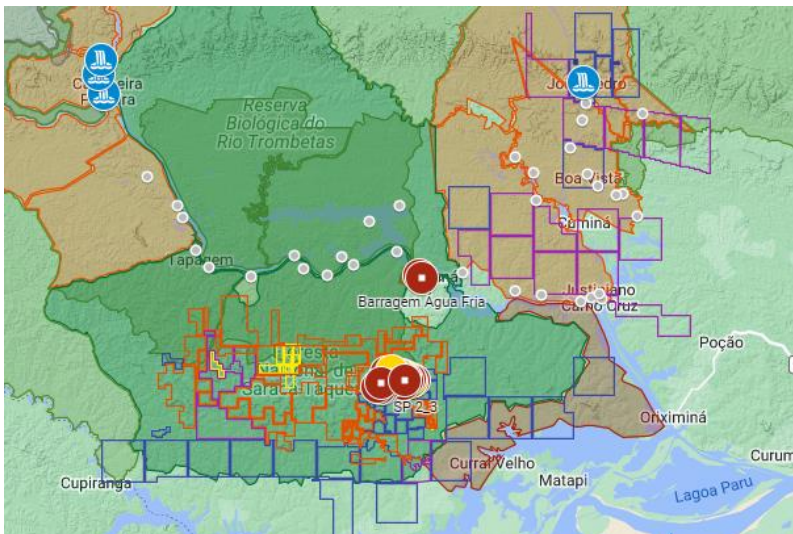
[Terras Quilombolas em Oriximiná \(Pará - Brasil\) Map](#)

Below: Oriximiná in the state of Pará.



The issue of tax incentives provided to mining companies is to be addressed in more detail in a new report, based on recent research led by Christian Aid. The report, *Private profits before people and planet: how public economic policies and corporate profit maximisation perpetuate the unsustainable exploitation of the Brazilian Amazon and its people*, demonstrates how tax policies reduce the potential for federal and state budgets to benefit from mining revenues, while increasing the profits of mining companies and shareholders; thus contributing to unsustainable exploitation of the Brazilian Amazon.

Below: Map of Quilombola lands in Oriximiná indicating land tenure situation, overlap with Conservation Units and mining processes. Grey circles denote settlements, blue circles denote hydropower dams and red circles denote tailings dams. ([google.com/maps/d/u/0/viewer?mid=1oY01aW4ItyaYdMziMRK0V05WXiy&ll=1.2002530054144207,-56.426684701171894&z=10](https://www.google.com/maps/d/u/0/viewer?mid=1oY01aW4ItyaYdMziMRK0V05WXiy&ll=1.2002530054144207,-56.426684701171894&z=10))



## Voices from Oriximiná

In north-western Pará lies the Municipality of Oriximiná, a region slightly bigger than Portugal, which includes a large mosaic of protected areas, including the Trombetas River biological reserve, Saracá-Taquera national forest, and Trombetas state forest. Oriximiná is home to many traditional communities including Quilombola, indigenous people and riverine communities. Exact numbers are not confirmed but an estimated 10,000 Quilombola inhabit 35 settlements in eight<sup>59</sup> territories along the banks of the Trombetas, Erepecuru, Acapu and Cuminá rivers.

Oriximiná was the first place where a collective Quilombola land titling occurred when, in 1995, the Boa Vista Community was recognised. But the pace of land titling has been slow, particularly where Quilombola lands overlap protected areas.<sup>60</sup> To this day, only five of the territories are fully titled. The Quilombola are particularly vulnerable to external pressure and threats, including incursions into their lands, deforestation and loss of other biodiversity on which they depend, while riverine settlements are particularly affected by the pollution and obstruction of rivers.

Oriximiná is the source of 40% of Brazil's bauxite production and in 2020 was the municipality with the second largest area affected by industrial mining in Brazil.<sup>61</sup> MRN is the only large mining company operating in the municipality and began operating there in 1979. It is the biggest producer and exporter of bauxite in Brazil. Between 1979–2019, MRN increased its extraction of bauxite from 620,000 tonnes to 450 million tonnes.<sup>62</sup> MRN is connected to other large mining companies which are its shareholders – Vale, for example, owns a 40% share.<sup>63</sup> Both companies have been accused of expanding mining operations in or near protected areas or territories claimed by local communities.<sup>64</sup> MRN's mining concessions, which cover 305,800 acres,<sup>65</sup> are located in the Saracá-Taquera National Forest adjacent to the Trombetas River<sup>66</sup> territory and inhabited by Quilombola and riverine communities since the late 19<sup>th</sup> and early 20<sup>th</sup> centuries.<sup>67</sup> Two Quilombola territories, home to approximately 656 families, partially overlap the national forest – Alto Trombetas lands 1 and Alto Trombetas lands 2 – which together amount to approximately 94,000 acres or 35% of the national forest.<sup>68</sup>

Over the last 10 years, MRN has obtained successive licenses to expand its operations, which has progressively increased the speed of deforestation within the national forest from 272 acres per year between 1986–90 to almost 1,000 acres per year between 2016–20.<sup>69</sup>

## Minerals, land rights and the Quilombola

The International Labour Organisation (ILO) Convention 169 on Indigenous and Tribal Peoples (1989), stipulates that in cases of state ownership of mineral or subsurface resources on land belonging to indigenous and tribal peoples, governments shall establish or maintain procedures to consult these peoples to ascertain whether and to what degree their interests would be prejudiced, before undertaking or permitting any programmes for the exploration or exploitation of such resources. The convention also recognises the rights of indigenous peoples to participate in the benefits of development on their territories and to fair compensation for any damages which they may sustain as a result of development.

The UN Declaration on the Rights of Indigenous People establishes the right to give (or deny) Free Prior and Informed Consent (FPIC) to mining or other extractive activities on ancestral lands.

In Brazil, Quilombola as well as indigenous communities are considered to have FPIC rights. Discussions continue on whether these rights apply to other traditional communities.

In line with these provisions, mining companies are required to undertake specific impact studies and prior consultation with indigenous and Quilombola communities before mining projects can go ahead. In reality however, traditional communities have struggled to their claim rights.



MRN is now preparing for a further expansion of its mining area, scheduled to commence in 2023 with extraction due to commence in 2026. Projeto Novas Minas will cover 25,240 acres and impinge on Alto Trombetas II Quilombo, a territory already affected by mining on the Monte Branco plateau. It is likely to result in more deforestation – the total planned ‘vegetation suppression’ for the plateau is 6,446 hectares<sup>70</sup> - and installation of new support structures. However, at time of writing, the licence had still not been granted<sup>74</sup>

Communities who live near mining areas continue to struggle for their rights to land, clean water and a healthy environment. CPI-SP estimates there are 811 Quilombola families, with an estimated 6,490 members, affected by mining in Oriximiná. The number of riverine communities affected by mining in the municipality is estimated at 289 families totalling about 1,735 people.<sup>72</sup> The next sections are based on recent discussions conducted in the summer of 2022 with a small sample of people from Quilombola and riverine communities and several bibliographic sources<sup>73</sup> that corroborate the testimonies.

### Experiences of climate and environmental impacts

While there is limited technical understanding of climate change among communities consulted for this report, the respondents’ perceptions were very much in line with the concerns of scientists – that the forests of the Amazon are becoming hotter and drier, with increased variability in rainfall. Respondents reported experiencing rising temperatures and changes in weather patterns. It seems likely that both human-induced global warming as well as the more localised effects of deforestation in the region are contributing factors.

Antonio Carlos Printes (Carlos), a member of the Quilombola Abuí community, was quite emphatic: ‘Undoubtedly, the climate has changed a lot. Now it is hot. Even inside the forest, we realise that it is very hot, that the temperature has changed. And in the city even more. Over time, it has been changing, getting a lot warmer. We feel bad, we see many people suffering from high blood pressure.’

Carlos also reported changes in the cycle of rains, supporting predictions that climate change will increase rainfall variability in the Brazilian Amazon: ‘There have been changes in rain. I remember when I was a kid, it always rained a lot, and we got prepared. After a while, the rains stopped, it hardly ever rained. This year there has been a change, in January it rained a lot.’

‘Undoubtedly, the climate has changed a lot. Now it is hot. Even inside the forest, we realise that it is very hot, that the temperature has changed. And in the city even more. Over time, it has been changing, getting a lot warmer. We feel bad, we see many people suffering from high blood pressure’

Antonio Carlos Printes

### **Reduced access to water and food**

The impacts of mining, which include more limited access to sources of water and food on which communities depend, are occurring against the backdrop of climate change and are likely to worsen its effects on people. Quilombola and riverine communities in Oriximiná report that alterations to watercourses have restricted access to drinking water and overburdened women who carry most of the responsibility for ensuring potable water for the family. In a region where there are practically no roads, the rivers, lakes and streams are also important for transport and access to food. In the Boa Vista Quilombo, installation of MRN facilities blocked watercourses that had been used for generations to access fishing grounds and chestnut groves. For years, residents also complained of compromised availability of water for drinking and domestic use. And although they are neighbours of the MRN facility, they have yet to enjoy an adequate sanitation network.<sup>74</sup> Residents also report the occurrence of new diseases affecting especially to children and women, as well as a decrease in fish.

Although MRN now regularly reports on actions it is taking to ensure sustainability of operations and compliance with local legislation,<sup>75</sup> there is a lack of independent studies on these and similar issues. MRN's commissioned environmental impact study, submitted to the Brazilian government in 2022, did however document community complaints regarding alleged contamination of water supplies, some of which have apparently had long term consequences. These included the direct disposal of tailings (from bauxite washing) into the Batata lake between 1979 and 1989, resulting in depletion of fish species; the construction of a dam in the Água Fria creek which overflowed in 2018 during a flood, spilling materials into the Trombetas River; and disposal of waste materials near Lago do Glória, which may have contaminated the soil, and surface and underground waters. Communities reported a lack of confidence in the safety of their water supplies because of these and other events.<sup>76</sup> Along with better regulation of mining and disposal of resulting waste, more independent monitoring of toxicity in soils, rivers, lakes and springs affected by mining would help ensure affected communities' have adequate information about water and environmental safety.

Cristiane Cohen, from the riverine Saracá community told us: 'We always mention the issue of water among the impacts of mining. We had a lot of fish here, but it has reduced a great deal. The water – I remember well – was very clean. We could even see the fish at the bottom of the stream. Today, we no longer see this clarity. And the fish, too, they went away. Water

is an essential thing for our life, and we can't live without it. For example, here, women wash clothes in the river water. When you get in that water, you get an itch. A water that harms our skin and is not as good as before. I believe that these are the impacts of the mining company on us.'

Loss of food supplies resulting from mining impacts are also commonly reported. Carlene Patrícia Santos Printes Cabral of the Quilombola Boa Vista Community said: 'After the mining company started working, there was a shortage of fruits that we used to harvest and that are essential for us. We don't buy, we reap what is of nature. We have this freedom, different from the city. So, today this became difficult because the trees were cut down and the hunts no longer exist. Certainly, mining has caused this impact on our supply. We, riverside people, depend a lot on nature. And we are, now, without these things that we had before, that we were used to. So, it's really hard.'

MRN's commissioned impact assessments in Alto Trombetas also report community concerns about loss or scaring away of forest fauna which previously provided sources of food.<sup>77</sup>

### **Lost homes and lands**

Traditional communities make their homes near or accessible to where they find food and water and generally depend on a much larger territory than their settlements occupy. Protection and recognition of their rights must therefore extend to these territories, which are held as commons, and not be limited to the sites where they build their homes. The effective privatisation of vast areas through the granting of mining licences has therefore been devastating. Carlos explained: 'In Quilombo Boa Vista, the land where people practiced agriculture and hunted for their livelihoods is where the company is located. Where the mining port is, used to be the area families used for agriculture. The lake where families used to fish was reclaimed, affecting the community of Boa Vista.'

Carlene added: 'Basically, the Quilombo Boa Vista was left without territory for agriculture or extractive activities. There, in the mining port, was where we used to fish. The mining village was where our great-grandfathers used to plant and go fishing and hunting. All was occupied by the mining company. If all the families of Boa Vista still depended on these activities and cultivation, we wouldn't have enough territory for everyone. We wouldn't have land for everyone. When we want to fish, we have to go to other territories as our creek was reclaimed. We

used to eat fish but nowadays, everything we need to eat or feed, we need to buy.'

MRN's mining activities have created jobs, and the company has also provided some facilities for local communities, but most residents reportedly say the social and environmental harms experienced over decades, including pollution of lakes and river and loss of skills and knowledge for subsistence, far outweigh the benefits.<sup>78</sup>

### **How mining disempowers communities**

Displacement from land and sources of sustenance has made traditional communities more fearful and less confident of their rights, as well as dispossessing them of their independence. Carlene said: 'We are afraid to go to some places because there is a rule of the mining company that we cannot walk in certain areas of the forest, so we are distrustful. From the moment you take away the territory of a traditional people, you make them dependent. In this case, dependent on the mining company. You take away all the possibilities of a traditional people to live in a genuine way.'

The promise of much-needed infrastructure, jobs and services was an incentive for some communities to accept the intrusion of mining companies. MRN runs a 'Sustainable Territories Programme' including a range of initiatives to promote growth, improve the Human Development Index, advance access to education and health, and improve income distribution. MRN also advertises special programmes to support Quilombola and environmental organisations.<sup>79</sup> There is, however, a feeling that the reality has not lived up to expectations, and in many cases the incentives have only reinforced structural inequalities. Carlene shared: 'The mining company offered us a hospital and a school. They offered crumbs for us to open the doors. And, in fact, we opened the doors for them there, in our Boa Vista community. Now we've become dependent on them. Today, we depend on that mining company for everything. And that's very, very serious. Around 80% of the Boa Vista community works for the mining company or in the mining village. But all the positions offered to the community are subordinate ones: to clean bathrooms, sweep or clean up their dirt. You will hardly ever see a Black Quilombola from the Boa Vista community in a decision-making position. You'll see most of them there, cleaning up for them, washing up. And it upsets me even more.'

Community consultations also revealed how people's concerns are often not taken seriously. Carlos reported: 'What we always see is that in these meetings that the mining company

**'From the moment you take away the territory of a traditional people, you make them dependent. In this case, dependent on the mining company. You take away all the possibilities of a traditional people to live in a genuine way'**

Carlene Patrícia Santos Printes Cabral,  
of the Quilombola Boa Vista  
Community

arranges, they send some representative who has no power of decision. Not even the person who decides the things that the community is claiming. They just stall and don't solve the problem. The people are suffering. This is unwillingness to help. Mineração Rio do Norte owes a lot to our Quilombola communities. One day, God willing, we will get the company to pay for what it did and does to the Quilombolas in Oriximiná.'

Cristiane called for improvements: 'I want the mining company to care a little about the families. This year (2022), we are already in the middle of the year, and we haven't had contact with them. I don't get it. What I wanted was for us to have an improvement to be able to rejoice and live better here in this place. Because here is still a good place to live. I don't see myself in a city, I'm used to it here. So, for me, I wanted things to improve so that I would stay here and grow old here. That's what I wish from my heart.'

### Traditional knowledge at risk

All this is amounting to an erosion of ways of life and the accumulated knowledge that goes with them. Many Quilombola of Oriximiná associate the natural environment of their territories, and particularly watercourses, with freedom from slavery, remembered in songs.<sup>80</sup> Today, the Quilombola mourn their loss; and also report that mining in their territories has disrupted transmission of their traditional knowledge and ways of living, something also documented in the impact assessment commissioned by MRN for the Projeto Novas Minas project.<sup>81</sup>

Carlene said: 'Our traditional way of life is being erased because practically all the people of Quilombo Boa Vista work in mining. And then, they end up prioritising the work there and leave aside our traditions, including cultural ones, parties...our way of life. We suffer a lot with this. If you are working daily for mining, you end up not looking at and valuing your territory. Because you leave home at 5am and come back at 6pm. You just come home to sleep, exhausted, and still have to give a little attention to your child, do the house chores and make dinner. Then you end up not having time to look around, to observe the nature, how the birds are, the forest. Anyway, we really lost all that sensitivity. I am deeply concerned. Because if we are not aware, if we don't know the stories of struggle, of the resistance of our people that made it possible for us to be here, reaping these fruits today, you will never give them due value. If I don't know where I come from, I don't know where I'm going.'

Loss of forests and biodiversity has also changed the practices of traditional communities including the use of natural remedies. Cristiane shared: 'We always remember the Serra dos

'You will hardly ever see a Black Quilombola from the Boa Vista community in a decision-making position. You'll see most of them there, cleaning up for them, washing up'

Carlene Patrícia Santos Printes Cabral,  
of the Quilombola Boa Vista  
Community

'I am deeply concerned... if we are not aware, if we don't know the stories of struggle, of the resistance of our people that made it possible for us to be here, reaping these fruits today, you will never give them due value. If I don't know where I come from, I don't know where I'm going'

Carlene Patrícia Santos Printes Cabral,  
of the Quilombola Boa Vista  
Community



Almeidas, a place that had many Brazil nut trees that the riverside people used. This whole forest was cleared by the mining company. It harmed the collecting of the fruits of the Brazil nut as well as the hunting, because the game fled and disappeared. We can no longer work in the areas occupied by the mining company. We no longer have the freedom to collect seeds. Here in the riverside communities, we still use many natural remedies. But now we can't look for those trees with which we prepare our home remedies.'

The loss of Brazil nut trees resulting from mineral exploration of the Almeidas plateau has been documented by the researcher Hugo Gravina, who found that as far back as 2002 MRN's own environmental impact studies had anticipated the significant loss of income for local communities.<sup>82</sup>

### **Tailings dam risks**

More than 1,200 families live in the area surrounding the MRN mine. MRN's 27 tailings dams, which these days are constructed to store waste generated by mining activities instead of releasing the waste directly into rivers and lakes, now comprise the largest complex of tailings dams in the Brazilian Amazon. The Boa Vista Quilombo is less than half a kilometre from two of these dams.

Tailings dams are a constant cause for concern for nearby communities, particularly since the devastating release of toxic mud from two tailings dams in the Brazilian state of Minas Gerais, at Mariana in 2015 and Brumadinho in 2019, which renewed questions about dam safety. Quilombola and riverine communities are concerned about the risks these dams pose in case of rupture and the absence of agreements that clearly set out MRN's obligations in case of such a dam burst. The Boa Nova and Saracá riverine communities are located downstream from the tailings disposal system installed in the Saracá-Taquera national forest. The system currently consists of 25 tailings dams. The community centres of Boa Nova and Saracá are located just 19km from one of the dams –TP 01– which is classified as high risk.<sup>83</sup>

Commentators have highlighted how it is primarily communities living in poverty who face the greatest risks associated with tailings dams. These include people who, if displaced by a dam failure, would struggle to find alternative homes or jobs<sup>84</sup>. Although MRN do monitor dam safety, information is often not made public. More independent monitoring and scrutiny of tailings dam safety are needed, with information made accessible to affected communities, alongside adequate emergency preparedness and measures for compensation for when things go wrong.

Below: Tailings dams owned by MRN neighbouring the Boa Vista Quilombo. Picture: Carlos Penteadó



### Further research needed

**Covid-19 and other constraints limited the scope of primary research in the preparation of this report. An in-depth study of the impacts of mining in Oriximiná would require much more time than we had available, as well as a multidisciplinary team and considerable resources.**

**More independent research is needed to shed light on how climate change and environmental degradation caused by extractive industries such as mining interact, and what this means for the survival of the forests and the ability of traditional communities to survive on their lands.**

**Such research should be conducted with the participation of traditional communities who also have the right to be much more effectively consulted and kept informed about the risks. The experiences of communities need to inform and influence more effective policies for progressing their rights and building resilience and climate adaptation in the region and beyond.**

**Finally, although indigenous and local knowledge systems are at risk, they may also be evolving in the face of changing conditions. New knowledge and coping mechanisms are likely emerging, and a better understanding of what remains possible under current conditions could inform the future sustainable development and protection or restoration of the Brazilian Amazon's ecosystems.**

## **In search of accountability**

The evidence presented in this report demonstrates how mining in the Brazilian Amazon contributes to climate change, degrades ecosystems and undermines resilience by disempowering and impoverishing traditional communities, who are marginalised from the economic benefits. These communities have the right to live on their land, to prosper and to enjoy a healthy and sustainable environment. They also have rights, skills and knowledge to contribute to the protection and restoration of vital ecosystems and sustainable economic development of the region.

There is a question about whether mining in the Amazon region should take place at all. However, some of the adverse environmental and human rights impacts could be mitigated through more effective policies for regulating the industry and redistributing the economic benefits to help tackle inequality, protect and restore ecosystems and strengthening climate resilience.

This section explores the relevant policy and regulatory frameworks that provide opportunities for, or present barriers to progress and outlines actions by civil society to promote a more rights-based and sustainable agenda.

### **Policy coherence with climate and environmental goals**

In 2016, Brazil ratified the Paris Agreement which sets out pathways to keep average global warming within 1.5°C, including by cutting greenhouse gas emissions, protecting forests, fostering resilience and adaptation and reducing vulnerability to adverse impacts of climate change.<sup>85</sup> Brazil has some progressive climate and environmental policies, including a National Adaptation Plan in which it commits to promoting ecosystems based adaptation and reducing vulnerability to climate risk.<sup>86</sup> It is, indeed, critical that Brazil finds ways to reduce the vulnerability and exposure of its ecosystems and the people that inhabit these ecosystems to the inevitable effects of climate change. A recent report by the Intergovernmental Panel on Climate Change highlights the need for climate resilient development. This requires that we cut greenhouse emissions at the same time as advancing adaptation and sustainable development. To do this successfully, we need integrated approaches, inclusive governance and action to restore ecosystems.<sup>87</sup>

Unfortunately, Brazil seems to have taken many backward steps in these key areas. For example, the Bolsonaro

administration has been accused of disrupting the implementation of the 2004 Action Plan for the Prevention and Control of Deforestation in the Legal Amazon (PPCDAm).<sup>88</sup> Furthermore, Brazil's 2022 update to its Nationally Determined Contribution (a climate action plan to cut emissions and adapt to climate impacts under the UNFCCC) has been criticised for weakening commitments originally made in 2016 by changing baseline emissions data to allow more emissions in progressing towards its emission reduction targets for 2025 and 2030 – suggesting a decline in the country's mitigation ambition.<sup>89</sup>

Climate campaigners in Latin America have pointed out that Brazil is well placed to take advantage of the economic and social justice opportunities that the transition to a clean economy offers. Brazil has huge potential to become a more sustainable economy. However, achieving this would require a reversal of recent damaging policy changes implemented under the Bolsonaro administration to deregulate mining licensing – withdrawal of Law 191 and improvements in government transparency and social accountability.<sup>90</sup>

There is also a need to address a lack of coherence across government sectors. Even Brazil's Institute of Environment and Renewable Resources (IBAMA), has been criticised for decisions that run counter to climate goals, having recently approved a new road through pristine rainforests between Manaus (in Amazonas state) and Porto Velho (in neighbouring Rondonia). This decision – which climate activists claim was politically motivated – goes against IBAMA's own recommendations because of the risk that this development will accelerate deforestation.<sup>91</sup>

In July 2022, the United Nations General Assembly recognised the universal right to live in a clean, healthy and sustainable environment. This decision provides an opportunity to demand better coordinated action across sectors to ensure a safe and stable climate, a toxic-free environment, clean air, access to safe water and adequate sanitation, healthy and sustainably produced food and thriving biodiversity and ecosystems. As we have seen, this right is being undermined in Oriximiná and other municipalities affected by mining.

### **Human rights and mining policy**

It appears that governance of the Brazilian mining sector is strongly influenced by perceived economic benefits rather than by democratic decision-making, climate action and environmental protection, or the need to prioritise human rights and sustainable development.

The overarching frameworks governing mining are the Mining Code of 1967 (and subsequent updates) and the Federal Constitution of 1988, which establishes that subsurface mineral resources belong to the federal government while the products of mining are owned by the concessionaire.

Ownership of land and resources above ground are considered separately. The Ministry of Mines and Energy (MME) sets mining policy and is responsible for establishing the locations and conditions for mining. However, both federal and state agencies can establish different and often overlapping layers of regulations, so that the lines of accountability are blurred. This can make it difficult to establish who is responsible for upholding the land rights of local communities and for enforcing safety, labour and environmental standards.

There are also institutional weaknesses. The Agência Nacional de Mineração and Ministério de Minas e Energia (National Mining Agency, ANM) is responsible for granting and registering exploration permits and concessions. It has been accused of accepting applications for mineral research and prospective mining even on indigenous lands where this remains illegal.<sup>92</sup> ANM is also responsible for enforcing safety regulations and collecting income from the CFEM and is tasked with promoting the management of mineral resources in a socially sustainable way. However, a recent Organisation for Economic Co-operation and Development (OECD) report found it faces budget, staffing and culture limitations to its ability to do this successfully and identified a need for more coordination with other institutions such as IBAMA, the Labour Inspectorate and subnational agencies to reduce the risk of accidents and prevent other negative environmental and social impacts.<sup>93</sup> Furthermore, ANM does not supervise safety in all relevant aspects of mining sector, including – critically – water management. As well, ANM shares the regulation of occupational safety and hygiene standards with the Ministry of Economy's Special Secretariat for Social Security and Labour.

Planning and policy making often marginalises local people and lacks coherence with human rights. Despite acknowledging the need for social, economic and environmental sustainability, the MME's Mining and Development Programme (PMD) 2020-23 includes goals to advance mining in new areas and promote the regulation of mining on indigenous land.<sup>94</sup> The PMD has been criticised for having been influenced by private sector entities and associations that represent Brazil's mining sector, while civil society organisations working for the protection of the environment, representatives of Brazil's indigenous movement,

labour unions and representatives of affected communities were not invited to contribute.<sup>95</sup>

The prioritisation of private profit over public benefit is also apparent in licensing processes. These do not evaluate mining projects on the basis of contributions they could make to the plans or aspirations of local communities, but rather on the basis of profitability of the business. Ecological conditions in the locations being proposed are given little attention. Environmental impact assessments consider some of the risks in and around local settlements, but largely ignore the risks to the more extensive territories on which traditional communities depend for survival. The potential harm to ecosystem services is thus underestimated.<sup>96</sup>

### Accelerating deregulation

As part of a partnership between ANM and OECD, there have been calls for deregulation of the mining sector. The proposed changes to mining regulations have been described as a 'regulatory guillotine.'<sup>97</sup> Already there has been a reduction in on-site safety inspections of tailings dams, which have fallen more than 90% since 2019.<sup>98</sup> But this is not the only threat. Alongside this threat, a Law of Economic Freedom (Law No. 13.874), enacted in 2019, facilitates increased freedoms for business activity generally – enabling more potentially damaging changes in areas such as company law, tax and labour standards.<sup>99</sup>

IBAMA is part of the Ministry of the Environment and responsible for enforcing national environmental policies. It shares responsibility with ANM for environmental and safety controls. However, with the simplification of ANM's licensing requirements, including the introduction of automated processes, 'remote inspection', instant online authorisation for projects and reduced bureaucracy overall; monitoring of compliance with environmental standards is at risk of being eroded.

Some recent legislation has responded to some of the worst environmental impacts. A 2019 bylaw of the Mining Code addresses the closure of mines, making mining companies responsible for environmental recovery of degraded areas and dealing with mining waste and tailings. Likewise, Law No. 14.066, enacted in 2020, increases the requirements for companies in terms of tailings dam safety – including risk assessments and emergency action plans, and for prioritisation of resources from the National Environment Fund (FNMA) for areas degraded by environmental accidents or disasters. OECD

## Community action and civil society responses

### The work of Comissão Pró-Índio de São Paulo

Social movements in Brazil and particularly indigenous movements continue to take a strong stand against mining. Supporting their collective action is essential to strengthen their own agency in the struggle for rights.

Comissão Pró-Índio de São Paulo (CPI-SP) works with Quilombolas in Oriximiná, strengthening groups to defend land titling processes and against the impacts caused by MRN.

CPI-SP, founded in 1978 to protect the rights of indigenous peoples in the contexts of military dictatorship, works with indigenous peoples and Quilombolas to enable them to claim their territorial, cultural and political right.

To achieve its objectives, CPI-SP works with organisations of traditional communities to offer training and advice, produce accessible information and materials, develop research, disseminate information on and to beneficiaries, monitor the actions of the government, support community actions and implement economic inclusion projects.

Source: [cpisp.org.br](http://cpisp.org.br)



has noted the need for these new laws to be adequately enforced, but it has also recommended and commended the deregulatory trend in the Brazilian mining sector.<sup>100</sup>

### **Civil society and communities side-lined**

Technical and regulatory measures could certainly be improved to mitigate the adverse environmental and social impacts of mining. But in this effort, the voices of affected citizens should be at the forefront. Although there is some level of dialogue between local communities on one hand, and companies and governmental bodies on the other, the opportunities for communities to effectively influence decisions remain very limited. This community influence, however, is recognised as important in several international instruments, including the Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean (the 'Escazú Agreement' adopted in 2018). This provides for access to environmental information as well as for the participation of the public in decision-making processes and in any revisions, re-examinations or updates with respect to projects and activities.<sup>101</sup>

Spaces of dialogue and negotiation need to be ensured during the entire life cycle of a mining project, which may last decades and have long-term impacts. Promotion of negotiation channels by state bodies is especially important because of the situation of vulnerability of Quilombola and riverine communities in Oriximiná, and the power asymmetry that characterises their relationship with MRN. More transparent and balanced relationships are needed to promote an environment of freedom and security where the affected communities can express themselves without fear of reprisals.

While Brazil has recognised the right of indigenous peoples to be consulted and give (or refuse) free, prior and informed consent, this right is not always put into practice. The concept of *oitiva indígena*, 'indigenous hearing,' (which has its origins in the 1988 Constitution) is sometimes treated as an equivalent process, but it is not. *Oitiva indígena*, only obliges government to listen to indigenous peoples, without binding government to act on what has been heard. It is essential that any consultation process meet the standards, content and scope of ILO Convention and other international legal instruments.

## Conclusions and recommendations

The protection of the Brazilian Amazon should go hand in hand with protecting the rights of its traditional inhabitants and be a cornerstone of climate action. Christian Aid works to address extreme poverty and enable marginalised people and communities to claim their rights and voice their concerns. Our experience has affirmed the importance of limiting climate change, protecting the environments that sustain us and exposing and transforming the power structures which contribute to unsustainable and inequitable 'development' and will ultimately undermine our resilience and our capacity to thrive on our planet.

The Brazilian mining industry appears to be characterised by the pursuit of profit at all costs to meet seemingly insatiable international demand with apparent disregard for rights to a healthy and sustainable environment. The industry has brought few benefits to the people worst affected and is driven to a large extent by international private interests. It could be better regulated, as part of a more diversified industrial policy to support the creation of more decent jobs, minimise detrimental impacts and progress a just transition to more sustainable and equitable types of development in the region.

Instead, deregulation in mining policy stands to undermine human rights, environmental safety and employment protections – an approach which appears to be influenced by private interests and deprives traditional communities of the power of decision-making over their own lands, resources and lives. These interrelated problems require systemic solutions. Brazil's 'green future' will demand deep changes.

### Recommendations

More effective accountability and regulatory mechanisms are needed to prevent and address negative impacts caused by mining companies together with policies to ensure that traditional peoples can benefit from, exercise their rights to and contribute to future sustainable development in the Brazilian Amazon. Climate negotiations under the UNFCCC should do more to encourage national industrial policies coherent with the Paris Agreement; while the Convention on Biodiversity 15th COP taking place in December 2022 is an important opportunity to ensure that the rights of indigenous and other traditional peoples to determine their own development and continue to act as custodians of forest and other ecosystems are upheld.<sup>102</sup>

**Recommendations for Brazil's federal and state authorities:**

- 1. Take immediate action to prevent further deforestation of the Brazilian Amazon.** End unnecessary incursions into intact ecosystems, including infrastructure and concessions for mining or other extractive industries. Prioritise ecosystems restoration.
- 2. Strengthen and implement plans to address climate change,** including for the prevention and control of deforestation, mitigation and adaptation. Evaluate the regulation of mining industries for its coherence with these, and ensure climate action is integrated across government policies.
- 3. Ensure the effective protection of the rights of mining affected communities,** particularly Quilombola and riverine communities. This includes rights to a clean, healthy and sustainable environment; title to their territories; and participation in decision-making regarding large-scale mining operations and other policies related to the operations of the private sector in their territories.
- 4. Ensure compliance of mining companies with established laws and recognised international standards,** especially those dealing with the rights of traditional peoples and communities, environmental protection and commitments under the Paris Agreement.
- 5. Commission and ensure access to comprehensive and independent information regarding the impacts of mining operations** from their commencement, including comprehensive environmental and social impact assessments. Monitoring information about air, soil and water contamination and the risks and impacts of tailings dams should continue to be provided where needed after operations have closed.
- 6. Ensure free, prior and informed consent for any mining operations** through meaningful consultations with riverine and Quilombola communities, as determined by ILO Convention No. 169. Ensure that channels are created for dialogue and negotiation between local communities throughout the life cycle of mining projects.
- 7. Comprehensively and transparently evaluate and compare the costs as well as the benefits of mining activities** to citizens' rights, environmental integrity and ecosystem services. Assess risks in the light of climate data and predicted trends.

8. **Rationalise mining regulations to put citizens first, clarify rights and entitlements, and ensure clear lines of accountability.** Ensure coherence between federal and state policies and with climate change, biodiversity and human rights commitments.
9. **Prioritise sustainable economic development of the Brazilian Amazon.** Maximise mining tax revenues and use these to incentivise sustainable use of forests and projects for environmental services; and to finance public services, social protection, sustainable renewable energy and other measures to create green jobs. Eliminate existing large tax exemptions to mining companies.
10. **Ensure full social accountability for mining policy making and implementation, and for how mining revenues are used.** Include human rights and other civil society organisations in all discussions concerning mining policy and ensure their work with, and among, traditional communities facing the effects of climate change and extractive industries is supported.
11. **Promote a just energy transition.** Establish legislation requiring companies to publish their emissions. Allocate public resources to provide sustainable renewable energy technology including all segments of the population, without burdening the most vulnerable groups. Veto the implementation of large hydroelectric plants in the Amazon region.

#### **Recommendations for mining companies:**

1. **Address existing and prevent further negative social and environmental impacts.** Comply with laws and recognised international standards, especially those dealing with the rights of traditional peoples and communities.
2. **Assess and address climate risks** across all operations and installations, and in affected communities. Put into place effective measures to reduce risks and support resilience and adaptation, particularly among traditional communities and people living in poverty.
3. **Take effective measures to combat environmental degradation and support ecosystems restoration** in areas of operation. Support wider efforts towards sustainable development and climate action.
4. **Ensure spaces of dialogue and negotiation with local communities during the entire life cycle of mining projects.** As part of this, revise the Emergency Action Plan

for Dams in consultation with Quilombola and riverine communities, and informed by additional research on the potential socio-environmental impacts of a disaster.

5. **Guarantee access to information related to environmental monitoring** through regular dissemination in an accessible format and support independent and complementary studies.
6. **Reduce greenhouse gas emissions across all operations by switching wherever possible to sustainable sources of renewable energy.** In the case of the Brazilian Amazon, these sustainable sources of renewable energy do not include large dams.

**Recommendations for international bodies:**

1. **Consider the findings of this report as part of the drafting process of a legally binding treaty on business and human rights,** incorporating: (i) effective accountability mechanisms to address human rights abuses perpetrated by companies, (ii) effective regulation of large-scale mining (iii) respect, protection and an enabling environment for human rights defenders and (iv) gender impact assessments of business activities.
2. **Evaluate whether Brazil is taking sufficient measures to comply with rights to live in a clean, healthy and sustainable environment,** including in the context of mining operations, and other international human rights obligations, particularly under the International Covenant on Economic, Social and Cultural Rights and the UN Declaration on the Rights of Indigenous Peoples.
3. **Ensure accountability for human rights abuses,** including extraterritorial impacts associated with international mining companies, and provide accessible means for complaints and access to redress.
4. **UNFCCC COP 27 should urgently scale up finance for adaptation,** at least doubling climate adaptation finance as set out in the Glasgow Climate Pact<sup>103</sup> and should accelerate and enhance action to keep the 1.5°C target alive to avert irreversible tipping points.
5. **The Convention on Biodiversity COP 15 should ensure the rights of indigenous people are protected** as part of setting new target to protect land and ecosystems.

## Endnotes

- 1 'Green future in Brazil's objective. Minister of the Environment leads Brazilian delegation at COP 26 and defends international financing for low-carbon economy', Juliana Nunes, Coverage of COP 26, [Brazil - High-level Segment Statement COP 26 \(unfccc.int\)](#)
- 2 *Transforming our world: the 2030 Agenda for Sustainable Development*, United Nations General Assembly, 2015, [un.org/ga/search/view\\_doc.asp?symbol=A/RES/70/1&Lang=E](#)
- 3 Economic gains were found to be greater, compared with domestic environmental costs, through a life cycle assessment of 38 raw materials, in all but the most vulnerable countries. However, countries processing minerals (rather than simply exporting the raw materials) enjoyed greater benefits. Brazil mostly exports ores. It was also found to be one of the countries that bears the largest environmental costs. Although the economic benefits were found to be greater, the study did not consider how these were distributed and the implications for sustainability and equity. See: *The global environmental costs of mining and processing abiotic raw materials and their geographic distribution*, Rosalie Arendt, Vanessa Bach, Matthias Finkbeiner, Journal of Cleaner Production, volume 361, August 2022, [sciencedirect.com/science/article/abs/pii/S0959652622018376](#)
- 4 *Transforming Extractive Industries for Sustainable Development*, United Nations, May 2021, [un.org/sites/un2.un.org/files/sg\\_policy\\_brief\\_extractives.pdf](#)
- 5 'Historical analysis: The Amazon's mineral wealth — curse or blessing?', Thais Borges and Sue Branford, 21 December 2020, [news.mongabay.com/2020/12/historical-analysis-the-amazons-mineral-wealth-curse-or-blessing](#)
- 6 'Descendants of former slaves in the Brazilian Amazon are still waiting for their land rights', *Climate Home News*, March 2021, [climatechangenews.com/2021/03/05/descendants-former-slaves-brazilian-amazon-still-waiting-land-rights/](#)
- 7 'Persistence of slave labor exposes lawlessness of Amazon gold mines', Mongabay, March 2021, [news.mongabay.com/2021/03/persistence-of-slave-labor-exposes-lawlessness-of-amazon-gold-mines/](#)
- 8 The Artisanal Mining Permit Regime is ruled by Law No. 7.805/1989 and regulates the extraction of specific mineral substances (such as gold and precious gems). Its main characteristic is that it is intended to support a category of miners known as garimpeiros. These artisanal miners can work individually or associated in cooperatives. The permit is granted for five years and can be successively renewed at the discretion of ANM, Item I, Article 50 of Law No 7.805/1989.
- 9 A EXPANSÃO DA MINERAÇÃO E DO GARIMPO NO BRASIL NOS ÚLTIMOS 36 ANOS Destaques do Mapeamento Anual de Mineração e Garimpo no Brasil entre 1985 a 2020 Para saber mais: [mapbiomas.org/Fact\\_Sheet\\_1.pdf](#) ([mapbiomas-br-site.s3.amazonaws.com](#))
- 10 *Amazon Under Pressure 2020*. The Amazonian Georeferenced Socio-environmental Information Network (RAISG), 2020, [raisg.org/en/publication/amazonia-under-pressure-2020/](#)
- 11 See note 3
- 12 'Good prices boost mineral production value in 2021', Francisco Alves, 3 August 2022, [brasilmineral.com.br/noticias/bons-precos-impulsionam-valor-da-producao-mineral-em-2021](#)
- 13 'Industrial mining has positive balance in 2020', IBRAM Communication Advisory, 2021, [ibram.org.br/noticia/mineracao-industrial-tem-saldo-positivo-em-2020/](#)
- 14 *Regulatory Governance of the Mining Sector in Brazil*, Chapter 2, Recent Performance of the mining sector in Brazil, OECD, 2022, [oecd-ilibrary.org/governance/regulatory-governance-in-the-mining-sector-in-brazil\\_63d60aa8-en](#)
- 15 Pronounced loss of Amazon rainforest resilience since the early 2000s, Chris A Boulton, Timothy M Lenton and Niklas Boers, [nature.com/articles/s41558-022-01287-8 - Sec3](#)
- 16 'Growing Amazon Deforestation a Grave Threat to Global Climate', Mario Osava, IPS, [ipsnews.net/2021/11/growing-amazon-deforestation-grave-threat-global-climate/?utm\\_source=rss&utm\\_medium=ss&utm\\_campaign=growing-amazon-deforestation-grave-threat-global-climate](#)
- 17 Mining drives extensive deforestation in the Brazilian Amazon, Laura J Sonter, Diego Herrera, Damian J Barrett, et al, Nature Communications, 2017, [nature.com/articles/s41467-017-00557-w.epdf?author\\_access\\_token=0zkGGf08nzKvzWR59YoKx9RgN0jAjWel9jnR3ZvT0Px aSsLyPxdt4mBwruIzKNSYm-akEL7-BllhZoszC4NGVL1lpcmv2RkLUYJgNP4lRq WM00zXzXWl-y1dN5khtjB0ABGc8EEUkJENz9j4ETwA==](#)
- 18 *Amazônia Under Pressure 2020*, Amazon Geo-referenced socio-environmental information network (RAISG), 2020. [Amazonia Under Pressure 2020 - RAISG](#)
- 19 INPE/PRODES data, TerraBrasilis, [inpe.br](#)
- 20 'Surge in forest loss seen if Brazil indigenous reserves opened to mining', Mauricio Angelo, *Thomson Reuters Foundation*, 18 September 2020, [news.trust.org/item/20200918140924-qtu59/](#)
- 21 'Amazon Assessment Report', *Science Panel for the Amazon*, 2021, p26, [google.com/url?sa=t&rc=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiZp66U68v6AhWuSkEAHZL7Bs8QFnoECBgQAQ&url=https%3A%2F%2Fwww.theamazonwewant.org%2Famazon-assessment-report-2021%2F&usq=AovVaw37zQuZouOTU2Q1elt4ieSY](#)
- 22 'Amazon tipping point: Last chance for action', Thomas E Lovejoy and Carlos Nobre, *Science Advances*, December 2019, [science.org/doi/10.1126/sciadv.aba2949](#)
- 23 Relatório Parical de Monitoramento do Rion Catatê das Terras Indígenas dos Xirins, Dezembro de 2019 a Março de 2020, Prof. Dr. Reginaldo Saboia de Paiva, Universidade Federal do Pará/UFPA, p25, [apublica.org/wp-content/uploads/2020/06/relat-fev-20-novas-evidencias-2-1.pdf](#)
- 24 *Water for life: ecumenical action for rights and common goods in Brazil and Latin America*, Christian Aid Brazil's Programme and National Council of Churches of Brazil (Conic), 2020, [creas.org/wp-content/uploads/2021/02/Water\\_for\\_life\\_Web-1.pdf](#)
- 25 'Climate risk and decarbonization: What every mining CEO needs to know', McKinsey Sustainability, 28 January 2020, [mckinsey.com/business-functions/sustainability/our-insights/climate-risk-and-decarbonization-what-every-mining-ceo-needs-to-know](#)
- 26 'Is hydropower making a comeback in the Amazon? Brazil's government authorises studies for plants in the Amazon after a decade without new projects, rekindling energy debates in an election year, Fernanda Wenzel, Naira Hofmeister, Pedro Papini, et al, 17 March 2022, [dialogochino.net/en/climate-energy/51950-is-hydropower-making-a-comeback-in-the-amazon/](#)
- 27 'Should the Green Climate Fund flow to hydropower?', Jamie Skinner, IIED, [iied.org/should-green-climate-fund-flow-hydropower](#)
- 28 'Reducing greenhouse gas emissions of Amazon hydropower with strategic dam planning', R M Almeida, Q Shi, J M Gomes-Selman, et al, *Nature Communications* 10, 4281, 2019, [doi.org/10.1038/s41467-019-12179-5](#)
- 29 'DTER-B: The New Amazon Near Real-Time Deforestation Detection System', Cesar Guerreiro Diniz, Arleson Antonio de Almeida Souza, Diogo Corrêa Santos, et al, *IEEE Journal of Selected Topics in Applied*





- 60 *Quilombola Lands in Oriximiná: Pressure and Threats*, Comissão Pró-Índio de São Paulo, 2011, [academia.edu/34341855/Quilombola\\_lands\\_in\\_Oriximiná\\_Pressure\\_and\\_Threats?auto=download](https://academia.edu/34341855/Quilombola_lands_in_Oriximiná_Pressure_and_Threats?auto=download)
- 61 *A EXPANSÃO DA MINERAÇÃO E DO GARIMPO NO BRASIL NOS ÚLTIMOS 36 ANOS Destaques do Mapeamento Anual de Mineração e Garimpo no Brasil entre 1985 a 2020 Para saber mais: mapbiomas.org* [https://mapbiomas-br-site.s3.amazonaws.com/Fact\\_Sheet\\_1.pdf](https://mapbiomas-br-site.s3.amazonaws.com/Fact_Sheet_1.pdf) page 13.
- 62 Brazilian Association of Aluminium Estatísticas, [abal.org.br/estatisticas/nacionais/bauxita](http://abal.org.br/estatisticas/nacionais/bauxita)
- 63 *Shareholding Structure*, Vale, [mrn.com.br/index.php/en/who-we-are](http://mrn.com.br/index.php/en/who-we-are)
- 64 See *2020-complicity-in-destruction-3.pdf* ([amazonwatch.org](http://amazonwatch.org)) regarding Vale's operations in Para
- 65 *Antes a água era cristalina, pura e sadia: percepções quilombolas e ribeirinhas dos impactos e riscos da mineração em Oriximiná, Pará*. Comissão Pró-Índio de São Paulo, 2018, [cpisp.org.br/wp-content/uploads/2019/02/Antes\\_agua\\_era\\_cristalina.pdf](http://cpisp.org.br/wp-content/uploads/2019/02/Antes_agua_era_cristalina.pdf)
- 66 *Flona Saracá-Taquera (Oriximiná – Pará): pressões e ameaças*, Comissão Pró-Índio de São Paulo, [cpisp.org.br/publicacao/flona-saraca-taquera-e-processos-minerarios-oriximina-para/?portfolioCats=271,272,20,21,22](http://cpisp.org.br/publicacao/flona-saraca-taquera-e-processos-minerarios-oriximina-para/?portfolioCats=271,272,20,21,22)
- 67 NEPOMUCENO, Ítala, Floresta Nacional de Saracá-Taquera: a quem se destina? Conflitos entre uso tradicional e exploração empresarial — São Paulo: Comissão Pró-Índio de São Paulo, 2021, Disponível em, [cpisp.org.br/wp-content/uploads/2021/09/SerieEstudos\\_SaracaTaquera.pdf](http://cpisp.org.br/wp-content/uploads/2021/09/SerieEstudos_SaracaTaquera.pdf)
- 68 *Floresta Nacional de Saracá-Taquera: a quem se destina? Conflitos entre uso tradicional e exploração empresarial*, Ítala Nepomuceno, Comissão Pró-Índio de São Paulo, 2021, [cpisp.org.br/wp-content/uploads/2021/09/SerieEstudos\\_SaracaTaquera.pdf](http://cpisp.org.br/wp-content/uploads/2021/09/SerieEstudos_SaracaTaquera.pdf)
- Publications of the Brazilian government that contain information about the overlapping of the Quilombola territory and the national forest include: <https://pesquisa.in.gov.br/imprensa/jsp/visualiza/index.jsp?journal=515&pagina=1&data=19/07/2018> <https://pesquisa.in.gov.br/imprensa/jsp/visualiza/index.jsp?journal=515&pagina=2&data=19/07/2018>
- 69 *Barragens de mineração na Amazônia: o rejeito e seus riscos associados em Oriximiná*, Luiz Jardim Wanderley, Comissão Pró-Índio de São Paulo, 2021, P30, [cpisp.org.br/wp-content/uploads/2021/04/SerieEstudos\\_BarragensMineracao.pdf](http://cpisp.org.br/wp-content/uploads/2021/04/SerieEstudos_BarragensMineracao.pdf)
- 70 *Mineração Rio do Norte Anexo CI. Estudo do Componente Quilombola (ECQ) do Projeto Novas Minas (PNM), Estudo de Impacto Ambiental PNM Volume II, 2022, p35* [http://licenciamento.ibama.gov.br/Mineracao/MRN%20-%20Projeto%20Novas%20Minas%20PNM/5%20-%20EIA\\_\\_Volume\\_II\\_\\_Parte\\_3.pdf](http://licenciamento.ibama.gov.br/Mineracao/MRN%20-%20Projeto%20Novas%20Minas%20PNM/5%20-%20EIA__Volume_II__Parte_3.pdf)
- 71 *Mining in Oriximiná*, Data collected by the Pro-Indian Commission with the National Mining Agency in July 2019, accessed October 2022, [cpisp.org.br/quilombolas-em-oriximina/luta-pela-terra/mineracao/](http://cpisp.org.br/quilombolas-em-oriximina/luta-pela-terra/mineracao/)
- 72 *Quilombolas in Oriximiná, History*. [cpisp.org.br/quilombolas-em-oriximina/quem-sao-como-vivem/historia/](http://cpisp.org.br/quilombolas-em-oriximina/quem-sao-como-vivem/historia/)
- 73 See also: A disputa das unidades de conservação como territórios tradicionalmente ocupados e espaço destinado a concessões minerais e madeiras: estudo de caso a partir dos conflitos na Floresta Nacional de Saracá-Taquera, Oriximiná, Pará. 2018. Dissertação de Mestrado em Ciências Ambientais. Área de concentração: Estudo e Manejo de Ecossistemas Amazônicos – Programa de Pós-Graduação em Recursos Naturais da Amazônia. Universidade Federal do Oeste do Pará – UFOPA, Santarém, Hugo AFFONSO. 2018. *Portal de Programas de Pós-Graduação (UFOPA)*
- 74 *Água era Cristalina, Pura e Sadia – Percepções quilombolas e ribeirinhas dos impactos e riscos da mineração em Oriximiná, Pará*, Comissão Pró-Índio de São Paulo, 2018, [cpisp.org.br/wp-content/uploads/2019/02/Antes\\_agua\\_era\\_cristalina.pdf](http://cpisp.org.br/wp-content/uploads/2019/02/Antes_agua_era_cristalina.pdf)
- 75 *Our Reports*, Mineração Rio do Norte, [mrn.com.br](http://mrn.com.br)
- 76 Annex CI. Study of the Quilombola Component (ECQ) of the Novas Minas Project (PNM) p215 - 216 8.3.1.9 Environmental impacts on the Batata, Ajudante, Glória and Otávio, in the Água Fria creek, in the Furo da Piranha and in the Furo da Brasília, September 2022 [http://licenciamento.ibama.gov.br/Mineracao/MRN%20-%20Projeto%20Novas%20Minas%20PNM/5%20-%20EIA\\_\\_Volume\\_II\\_\\_Parte\\_3.pdf](http://licenciamento.ibama.gov.br/Mineracao/MRN%20-%20Projeto%20Novas%20Minas%20PNM/5%20-%20EIA__Volume_II__Parte_3.pdf)
- 77 Ibid, p554
- 78 'MRN bauxite mine leaves legacy of pollution, poverty in Brazilian Amazon', Thais Borges and Sue Branford, Mongabay, 2020, [MRN\\_bauxite\\_mine\\_leaves\\_legacy\\_of\\_pollution\\_poverty\\_in\\_Brazilian\\_Amazon\\_\(mongabay.com\)](http://MRN_bauxite_mine_leaves_legacy_of_pollution_poverty_in_Brazilian_Amazon_(mongabay.com))
- 79 *Sustainability*, Mineração Rio do Norte, [mrn.com.br](http://mrn.com.br)
- 80 *Mineração em Oriximiná: o embate histórico de 30 anos entre quilombolas e a riqueza da bauxite*, Por Amazônia Real, 2019, *Mineração em Oriximiná: o embate histórico de 30 anos entre quilombolas e a riqueza da bauxita - Amazônia Real* ([amazoniareal.com.br](http://amazoniareal.com.br))
- 81 See note 76, pp.1617 - 1618
- 82 *Emancipatory rural politics against the green grab: Forest peoples' resistance and negotiation with industrial resource extraction in the Saracá-Taquera National Forest, Brazilian Amazonia*, Ítala Nepomuceno Rodrigues, Hugo Gravina Affonso, James Angus Fraser & Maurício Gonsalves Torres. International Institute of Social Studies (ISS) in The Hague, Netherland, 2018, [erpi\\_cp\\_21\\_rodrigues\\_0.pdf](http://erpi_cp_21_rodrigues_0.pdf) ([tni.org](http://tni.org))
- 83 *Barragens de mineração na Amazônia: o rejeito e seus riscos associados em Oriximiná*, Luiz Jardim Wanderley, Comissão Pró-Índio de São Paulo, 2021, [cpisp.org.br/wp-content/uploads/2021/04/SerieEstudos\\_BarragensMineracao.pdf](http://cpisp.org.br/wp-content/uploads/2021/04/SerieEstudos_BarragensMineracao.pdf)
- 84 'Traditional villages dread living in the shadow of Amazon tailings dams', Thais Borges and Sue Branford, July 2020 Mongabay [https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&act=8&ved=2ahUKEwjUu--Fmtj7AhWpD8AKHW\\_vDJQqFnoECBcQAQ&url=https%3A%2F%2Fnews.mongabay.com%2F2020%2F07%2Ftraditional-villages-dread-living-in-shadow-of-amazon-tailings-dams%2F&usq=AOvVaw3l-9ew4p-iIWtnv0AIVlCR](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&act=8&ved=2ahUKEwjUu--Fmtj7AhWpD8AKHW_vDJQqFnoECBcQAQ&url=https%3A%2F%2Fnews.mongabay.com%2F2020%2F07%2Ftraditional-villages-dread-living-in-shadow-of-amazon-tailings-dams%2F&usq=AOvVaw3l-9ew4p-iIWtnv0AIVlCR)
- 85 *Paris Agreement*, United Nations, 2015, [unfccc.int/sites/default/files/english\\_paris\\_agreement.pdf](http://unfccc.int/sites/default/files/english_paris_agreement.pdf)
- 86 'National Adaptation Plan to Climate Change', Volume 1, *General Strategy Ministry of Environment*, 2016, [Brazil-NAP-English.pdf](http://Brazil-NAP-English.pdf) ([unfccc.int](http://unfccc.int))
- 87 *Summary for policymakers, Intergovernmental Panel on Climate Change 6<sup>th</sup> Assessment Report*, 2022, [IPCC\\_AR6\\_WGII\\_SummaryForPolicymakers.pdf](http://IPCC_AR6_WGII_SummaryForPolicymakers.pdf)
- 88 *Brazil 2045: building an environmental powerhouse*, Observatório do Clima 20 Anos, 2020, [oc.eco.br/wp-content/uploads/2022/05/2045-EN-VF.pdf](http://oc.eco.br/wp-content/uploads/2022/05/2045-EN-VF.pdf)
- 89 *Brazil Climate Action Tracker*, September 2022, [Brazil | Climate Action Tracker](http://Brazil | Climate Action Tracker)
- 90 See note 78
- 91 'License for BR-319 ignores recommendations of Ibama itself', *Climate Observatory*, August 2022, [oc.eco.br/licenca-para-br-319-ignora-recomendacoes-do-proprio-ibama/](http://oc.eco.br/licenca-para-br-319-ignora-recomendacoes-do-proprio-ibama/)
- 92 *Complicity In destruction IV: how mining companies and international investors drive indigenous land rights violations and threaten the future of the Amazon*, Maurício Angelo and Amazon Watch, 2022, P34, [2022-Complicity-in-destruction-IV.pdf](http://2022-Complicity-in-destruction-IV.pdf) ([complicityindestruction.org](http://complicityindestruction.org))
- 93 *Regulatory Governance in the Mining Sector in Brazil*, OECD, 2022 [oecd-ilibrary.org/sites/63d60aa8-en/index.html?itemId=/content/publication/n/63d60aa8-en&csp\\_8577da039186f5e5e9992693653316&itemIGO=oecd&itemContentType=book](http://oecd-ilibrary.org/sites/63d60aa8-en/index.html?itemId=/content/publication/n/63d60aa8-en&csp_8577da039186f5e5e9992693653316&itemIGO=oecd&itemContentType=book)

- <sup>94</sup> *Mining and Development Program Goals and Action Plan 2020/2030*, Ministry of Mines and Energy, 2020, [gov.br/mme/pt-br/assuntos/secretarias/geologia-mineracao-e-transformacao-mineral/publicacoes-1/programa-mineracao-e-desenvolvimento/programa-mineracao-e-desenvolvimento-2020-2023-english-version.pdf](http://gov.br/mme/pt-br/assuntos/secretarias/geologia-mineracao-e-transformacao-mineral/publicacoes-1/programa-mineracao-e-desenvolvimento/programa-mineracao-e-desenvolvimento-2020-2023-english-version.pdf)
- <sup>95</sup> *Open for business: the roles of Brazil's Ministry of Mines and Energy and National Mining Agency in handing over Brazilian minerals*, 2022-Complicity-in-destruction-IV.pdf (complicityindestruction.org)
- <sup>96</sup> *The Amazon's mineral wealth — curse or blessing?* Klean Industries, 2020, [kleanindustries.com/resources/environmental-industry-market-analysis-research/the-amazons-mineral-wealth-curse-or-blessing](https://kleanindustries.com/resources/environmental-industry-market-analysis-research/the-amazons-mineral-wealth-curse-or-blessing)
- <sup>97</sup> *Mining director in Brazil plans 'regulatory guillotine'*, Mauricio Angelo/Unearthed, 2020, [Mining Observatory \(observatoriodamineracao.com.br\)](http://MiningObservatory(observatoriodamineracao.com.br))
- <sup>98</sup> 'Field inspection of dams in Brazil has fallen more than 90% since Brumadinho', *Mining Observatory*, July 2022, [observatoriodamineracao.com.br/fiscalizacao-em-campo-de-barragens-no-brasil-caiu-mais-de-90-desde-brumadinho/](http://observatoriodamineracao.com.br/fiscalizacao-em-campo-de-barragens-no-brasil-caiu-mais-de-90-desde-brumadinho/)
- <sup>99</sup> Brazil: 2019 Brazilian Economic Freedom Act reduces the state intervention in the economy, L&E Global, September 2019, [Brazil: 2019 Brazilian Economic Freedom Act reduces the state intervention in the economy - L&E Global Knowledge Centre \(leglobal.org\)](http://Brazil:2019BrazilianEconomicFreedomActreduces-thestateinterventionintheeconomy-L&EGlobalKnowledgeCentre(leglobal.org))
- <sup>100</sup> *Regulatory Governance of the Mining Sector in Brazil*, chapter 2, Recent Performance of the mining sector in Brazil, OECD, 2022, [oecd-ilibrary.org/governance/regulatory-governance-in-the-mining-sector-in-brazil\\_63d60aa8-en](http://oecd-ilibrary.org/governance/regulatory-governance-in-the-mining-sector-in-brazil_63d60aa8-en)
- <sup>101</sup> Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean, United Nations Economic and Social Council for Latin America and the Caribbean, 2018, [repositorio.cepal.org/bitstream/handle/11362/43583/1/S1800428\\_en.pdf](http://repositorio.cepal.org/bitstream/handle/11362/43583/1/S1800428_en.pdf)
- <sup>102</sup> *COP15: Key outcomes for nature loss and climate change from UN talks in Geneva - Carbon Brief*, [carbonbrief.org/cop15-key-outcomes-for-nature-loss-and-climate-change-from-un-talks-in-geneva/](http://carbonbrief.org/cop15-key-outcomes-for-nature-loss-and-climate-change-from-un-talks-in-geneva/)
- <sup>103</sup> *Glasgow Climate Pact*, UNFCCC, 2021, [COP26 cover decision \(unfccc.int\)](http://COP26coverdecision(unfccc.int))