

The Mud Went Through my Soul

voices of women
affected by the
Brumadinho dam
rupture



Contributors:

This report was prepared by Movimento dos Atingidos por Barragens (MAB) and Christian Aid as part of the project 'Beyond Brumadinho: Containing the Force of the Extractive Industry in Brazil', funded by the SAGE Fund.

Special thanks to MAB Women's Collective, as well as to Emma Burgisser, Juan Carlos Ochoa-Sánchez, Oliver Pearce, Sandy Picken, Nadia Saracini and Fionna Smyth for their contributions and expert advice.

Below: Movimento dos Atingidos por Barragens (MAB) is a Brazilian social movement of people affected by dams, active in 19 Brazilian states over the last 30 years. It builds solidarity and organises people to fight for their rights.



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

Cover: An arpillera depicting events following the Brumadinho dam rupture.
Photographs: MAB Women's Collective.

Introduction	4
A note on methodology	6
Findings and analysis of impact	7
The life of the community: right to water	8
Unequal consequences: freedom from gender discrimination and violence	12
Losses to livelihoods: rights to decent work and income	17
Fighting to remain standing: impacts on health	20
Conclusions and recommendations	22
Recommendations for Minas Gerais State and other state actors	23
Recommendations for Vale	23
Recommendations to international bodies	24
Bibliography	25
End notes	26

Introduction

On the 25th of January 2019, dam I of the Córrego do Feijão Mina Complex in the city of Brumadinho, owned by the company Vale SA,¹ ruptured, spilling 11.7 m³ of toxic waste and mud. The slurry spread downhill to the Paraopeba river, with environmental impacts throughout the 300km Paraopeba river basin and beyond², affecting rural communities, traditional peoples and urban neighbourhoods in 26 municipalities in the Brazilian state of Minas Gerais.³ The rupture contaminated the Paraopeba River, a source of water for drinking and agriculture, and a resource for fishing, leisure and tourism. This report documents how, three years on, the devastating environmental and social impacts continue to undermine the achievement of human rights, particularly of women in affected communities.

The Brumadinho disaster has been emblematic of how large-scale mining and extractive industries can have widespread detrimental impacts, particularly for poor and marginalised communities whose human rights are often directly affected. It was not the first such disaster in Brazil in recent years – the collapse of the Fundão dam in 2015 released 43 million m³ of toxic iron ore tailings or waste materials resulting from mining, polluting 668 km of watercourses from the Doce River Basin to the Atlantic Ocean.⁴ Despite the negative impacts on human rights and the environment often resulting from mineral extraction through large-scale mining, this remains one of Brazil's main economic activities. According to data from the Brazilian Mining Institute (IBRAM), there was a 98% increase in mineral production in 2021's first semester compared to the same period in 2020.⁵ Yet, the costs to people and the environment remain insufficiently documented and redressed.

Globally there are many other examples, such as Shell's oil operations in the Ogoni River Delta in south-east Nigeria, which, according to local communities, led to long-term pollution of soil and waterways;⁶ and the contamination of water, farmlands and forests in Ecuador resulting, according to local communities, from the release of millions of gallons of toxic waste by Texaco.⁷

These impacts tend to be portrayed primarily as 'environmental' disasters and 'technical' failures, while the human rights implications are less well considered or documented. Movimento dos Atingidos por Barragens (MAB), a Brazilian social movement of people affected by dams, have documented how the impacts of the rupture of Brumadinho's

Dams and human rights

Hydroelectric dams, water supply dams and tailings dams have impacts throughout their lifecycles, including in their location, construction, operation, closure and decommissioning. In some cases, they rupture with disastrous consequences. Research carried out in areas surrounding dams in Brazil revealed how these often violate rights to:

1. Information and participation
2. Freedom of assembly, association and expression
3. Work and a decent standard of living
4. Adequate housing
5. Education
6. A healthy environment and health
7. Continuous improvement of living conditions
8. Full compensation for losses
9. Fair negotiation, equal treatment, according to transparent and collectively agreed criteria
10. Freedom of movement
11. Traditional practices and ways of life
12. Rights of indigenous, Quilombola and traditional peoples
13. Special protection of vulnerable groups
14. Access to effective judicial remedies
15. Compensation for past losses
16. Protection of the family and the bonds of social or community solidarity.

Source: Conselho de Defesa dos Direitos da Pessoa Humana. Comissão Especial "Atingidos por Barragens". Brasília, 2010.

dam correspond to a historic pattern human rights violations in regions affected by dams in Brazil.⁸

In this report, we focus on how the Brumadinho tailings dam rupture has undermined women's rights, specifically, in relation to access to water and to a healthy environment, gender equality and freedom from violence, decent work and income, and mental health; and we demonstrate how these impacts have exacerbated gender inequalities by disproportionately affecting women in poor and marginalised communities who already faced multiple and intersecting barriers to achieving their rights. Christian Aid has previously highlighted how concentration of political and economic power and often lack of accountable institutions contribute to inequalities and human rights abuses;⁹ as well as the importance of women's collective action in tackling environmental challenges that affect their rights.¹⁰ Our aim now, together with MAB, is to highlight the concerns of women affected by the Brumadinho dam rupture, who have been marginalised in the response, and to support the women's collective action in accessing effective remedies.

According to the Association of Families of Victims and People Affected by the Rupture of the Mina Córrego do Feijão Dam in Brumadinho (AVABRUM), 272 people (218 men and 54 women) died in the disaster, a figure which includes the babies of two pregnant women among the initial 270 victims. 131 victims were employed by Vale.¹¹ The majority of those who died were men, yet many women also suffered in the aftermath, and the impacts on women and men are distinctly differentiated in many ways. In general, the impacts of dam disasters on women's human rights remain understudied both in the Paraopeba Basin and other regions in Brazil. Existing studies on the rights violations of populations affected by dams largely lack robust gender analysis and do not identify specific issues related to women.

This report documents the human rights violations against women directly caused by the collapse of the Brumadinho tailings dam as well as violations that have followed during repair works, how multiple forms of discrimination women face present barriers to comprehensive and effective reparation, and how reparation efforts led by Vale have been insufficient to guarantee women's rights. Specifically, it examines the impacts of the Brumadinho dam's collapse and subsequent repair works on women's rights to water and a healthy environment, to gender equality and freedom from violence, to decent work and income, and to health, as well as related human rights. Lastly, it makes recommendations for the state of Minas Gerais, Brazil's federal authorities, international human rights bodies

In general, the impacts of dam disasters on women's human rights remain understudied both in the Paraopeba Basin and other regions in Brazil. Existing studies on the rights violations of populations affected by dams largely lack robust gender analysis and do not identify specific issues related to women.

and international networks involved in the development of a legally binding treaty on business and human rights.

A note on methodology

The research was guided by MAB and mostly undertaken between April and September 2021 in six of the 26 municipalities affected by the rupture of the Brumadinho dam (Brumadinho, Mário Campos, Juatuba, São Joaquim de Bicas, Betim, and Curvelo). The methodology was based on premises of participatory action research, to enable women to identify problems and collectively create and document diverse knowledges and lived experiences, and to overcome 'subject/object' opposition within the process. Crucially, this approach aims to give voice to men and women of marginalised communities who are normally silenced.¹²

Purposive sampling was used. The choice of women for in-depth interviews was informed by community leaders and the MAB's Women's Collective and aimed to ensure representation in ethnicity, leadership status, and location of women whose rights have been affected. Data was collected through face to face and online meetings, and in-depth and semi-structured interviews. Altogether 64 women were involved in the study. Also included were insights from *arpilleras* (artworks in appliqué and embroidery) made in the 2nd half of 2019. These are both a popular tradition and an approach that MAB has used since 2013 to bring women together to communicate their experiences of resistance and oppression and their denunciation of injustices. In all cases, fictional names have been used to protect the identities of respondents. Participants gave prior and informed consent to the use of their narratives. Alongside this, a light literature review was conducted.

Below: Map of Brazil, locating Minas Gerais and the city of Brumadinho. Source: BBC.com



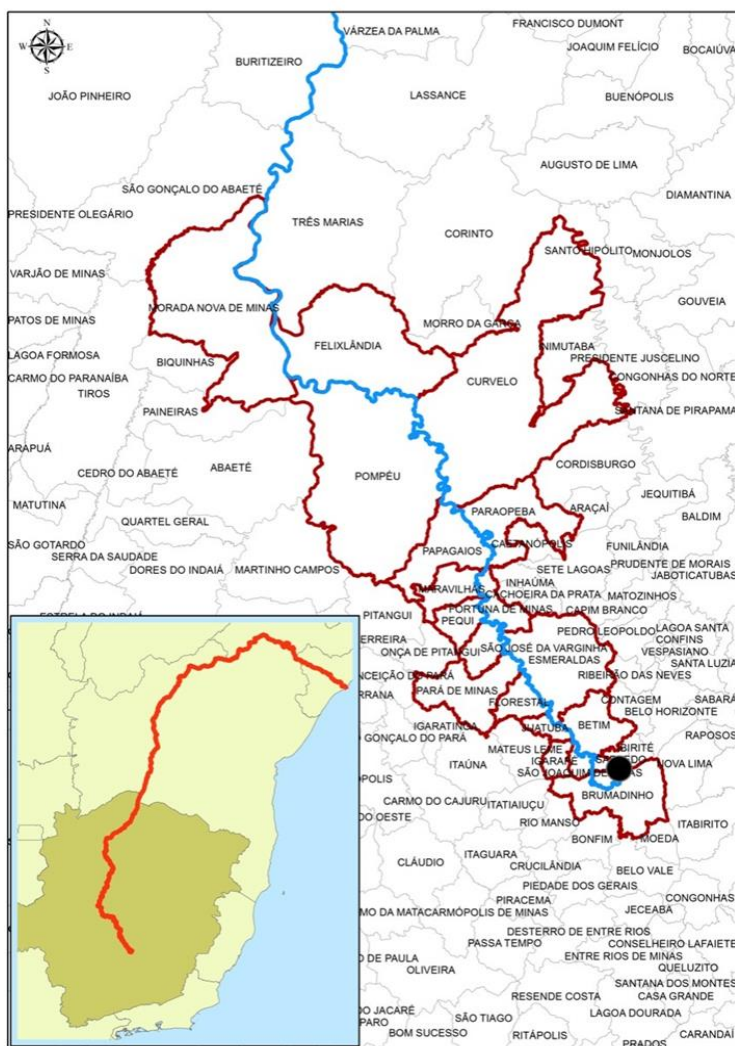
Findings and analysis of impact

This section presents women's accounts of the impacts of the Brumadinho dam's collapse, and of violations that have occurred during repair works, on their rights to water and a healthy environment, to gender equality and freedom from violence, to decent work and income, and to health, as well as to related human rights.

'We are not heard as people affected by the dam, not to mention as women'

Rosa, aged 31, resident in the municipality of São Joaquim de Bicas

Below: The Paraopeba river shown in blue. Municipalities affected by the Brumadinho dam rupture are within the area outlined in dark red. The black circle represents the location of the dam. The course of the Paraopeba in Minas Gerais and Bahia is shown in red in the insert bottom left. Source: Jornal Brasil de Fato.



The life of the community: right to water

The region affected by the rupture of dam I at the Córrego do Feijão mine is bathed by the Paraopeba River. The immediate impacts were on the mine's facilities, staff and nearby communities and infrastructure that were buried under the wave of mud and ore tailings as it travelled seven kilometres downhill before reaching the Paraopeba river. Ore tailings then contaminated the river water and made the river unusable. After the rupture, water supplies to the municipalities of Brumadinho, Betim, São Joaquim de Bicas, Juatuba, Esmeraldas, Mário Campos, Igarapé, and Pará de Minas were compromised for approximately 600,000 people. The environmental damage and pollution caused contributed to very significant economic disruption, undermining local people's close relationship with the river. This had profound impacts on the lives of affected women, many of whom are caregivers and providers for their families and depended on the river and its environs. Since the whole region depended on the river for daily activities, this has affected an entire way of life and culture and limited the possibilities for local communities to resume their quality of life in future. For women, as has been described in other contexts, lack of water and access to the river has interacted with gender norms and the division of household labour to reinforce deep gender inequalities.¹³

The women's accounts evidence how the river played a central role in the social and economic relations of their families and communities. Violeta (aged 52) is a resident in Curvelo. She described the importance of the river for herself and for the women of the Cachoeira do Choro Community: *'The river was a source of income... of food and leisure...so we, the women, always had a lot of autonomy, with fish, with productive back-yards'*. She also reported that before the rupture, the water from the Paraopeba was of good quality and was even used for drinking. Rosa, from the municipality of São Joaquim de Bicas, described how, before the rupture, the riverside communities also had artesian wells and cisterns with quality water that supplied their needs, so much so that they didn't need to rely on the public water supply network.

The rupture of the dam and the dumping of ore tailings into the riverbed changed this, immediately interrupting public distribution of water in the eight municipalities that depended on the Paraopeba and preventing other uses of the river, for a long period. Even since some supplies were restored, there have been difficulties. Rosa reported: *'When the dam broke, we didn't have, in my community, any tap water for 16 days... Sometime after that period, the water started to arrive, but it came*

'The river was a source of income... of food and leisure...so we, the women, always had a lot of autonomy, with fish, with productive backyards'.

Violeta, aged 52, a resident in the municipality of Curvelo

muddy, it came with red mud, and even today, it still comes that way – not always, but once in a while we still get that red mud from the faucet. Depending on the day, sometimes the water pours so red that we don't even use it'.

Fishing became impossible, and the use of the river for irrigation, animals, tourism and leisure activities was paralysed. Under pressure from organisations from affected communities, Vale, together with the State of Minas Gerais' water supply company, Copasa, tried to find solutions. Margarida (51) who is resident in the municipality of Betim stated: *'In the beginning we spent a long time drinking dirty water...and then when we started to form the commissions, we started fighting Vale and speaking up. The company then started to bring some mineral water for us, to bring drinking water for the animals. And it was a struggle because they didn't like to provide it'.*

According to company data, Vale provided 360 alternative sources of surface and underground water, including artesian wells.¹⁴ However, these have been insufficient, as thousands of families continue to be supplied by water trucks and with mineral water bundles. According to Vale, 55 water trucks on average travel a total of 11,000 km a day, bringing water to eligible people and to maintain productive activities (animal watering and irrigation) in addition to the distribution of mineral water for domestic use.¹⁵ These supplies are irregular and only serve families deemed by the company to have been affected. Rosa said: *'The water truck brings drinking water, water for the vegetable garden, bathing, washing clothes and all kinds of stuff. One has to schedule the water supply; it's not like having water on the tap...If you forget to schedule it, you'll run out of water. If you receive visitors, you'll run out of water because...they set a limit on drinking water'.*

The loss of access to water has increased women's workloads. Rosa complained: *'You can't do the dishes, you can't do anything...I still have stained clothes because we didn't know the water was going to be dirty. We don't know if it was rust or ore, the stains have a reddish colour and they don't come out'.* In Betim, women who are housewives and/or traders said they were forced to look for water further away from their homes when they could not access the water distribution, and reported having to be very careful to save scarce water. Cleaning their houses using less water increases time needed to complete the work.

The women also commented on the quality of the supplied water, including water supplied by Copasa. Violeta described the steps women had to take to address this: *'After the rupture, in addition to the network interruption, we started to receive poor quality water. Water with a shiny powder in it. However, they say*

'In the beginning we spent a long time drinking dirty water...and then when we started to form the commissions, we started fighting Vale and speaking up. The company then started to bring some mineral water for us, to bring drinking water for the animals. And it was a struggle because they didn't like to provide it'

Margarida, aged 51, resident in the municipality of Betim

the water is good. And when we complain that the water is dirty (the day before yesterday it still arrived like that)...they cut the supply off. We've gone five days without a drop of water in the tap. And we were going after Copasa, we were knocking every door, we had to make a protest to be received'.

The problems with water supply and quality are compounded by increased dust and pollution. According to the women interviewed, the tailings dust has a greasy consistency, necessitating more frequent cleaning. The COVID-19 pandemic has been an aggravating factor, contributing further to the need for water for hygiene purposes and increasing domestic workloads. The lack of water leaves people more vulnerable to the spread of the virus.

Contamination of the river has given rise to anxiety about the safety of water and food produced locally. This is particularly acute among women who have more contact with contaminated water through domestic work, homestead agriculture and fishing, and carry the main responsibility for providing care when family members fall sick. In addition to the resulting stress and anxiety, women reported physical symptoms generated or aggravated by the water issues. Diarrhoea, nausea, vomiting, headaches, stomach aches, open sores and skin blemishes were frequently mentioned. Rosa said: *'I try to buy mineral water myself because I can't drink Copasa water...it gives me a stomach-ache...Then the diseases came up. And the itching...we have skin allergies'.*

The interviewees also complained that a lack of up-to-date and reliable information on the contamination of the river, air and soil is preventing informed decisions on whether or not to resume their activities on the river and its waters. This has important implications for the local economy and livelihoods. In a meeting in São Joaquim de Bicas, affected women described shortages of water for agricultural irrigation and livestock and raised concerns about contamination and soil fertility close to the riverbanks, as well as loss of fish. In Mário Campos, Juatuba and Brumadinho, where agriculture is particularly important in local economies, and in São Joaquim de Bicas, Curvelo and Pompéu, where fishing is important, women reported lost incomes and as a result, impacts on their socioeconomic relations, both within the family and externally. Furthermore, food security of women, their families and the entire region has been undermined by the dam's collapse. Women reported that their reduced ability to grow food means they must now purchase food further afield for family meals, and that the lack of homegrown vegetables, fruits and fish is affecting the health of their communities.¹⁶

The COVID-19 pandemic has been an aggravating factor, contributing further to the need for water for hygiene purposes and increasing domestic workloads. The lack of water leaves people more vulnerable to the spread of the virus

The social aspects of the river, and the impact of its loss on leisure and other activities have also been profound. Women reported that the river had been an integral part of their children's socialisation, a place to play peacefully and go swimming. After the rupture, the children could no longer go near the river and were kept indoors to reduce their exposure to the mud and dust. Mothers reported increased workloads, as they needed to be aware of their children's whereabouts all the time, and the negative impacts on children's health and wellbeing. Fishing, as well as being a source of food and income, used to be an occasion for social and family interaction. Margarida described this: *'I used to like fishing so much. I would exchange any chore for it. I was so addicted to fishing that I couldn't stay a single day away from the river. I would manage to do everything swiftly to go sooner to the riverside. Now it has been three years that we can't do this. In the day of the rupture, I was fishing in the river, my sister-in-law, my nephew and I. The mud arrived here one day after.'*

The right to water is an element of 'the right of everyone to an adequate standard of living for himself and his family'.¹⁷ From the women's accounts it is easy to see how water is a precondition for realising other rights, including the right to food, the right to health, the right to a decent life, the right to a healthy environment, and the right to gender equality. Despite the actions taken by the State and Vale to alleviate the lack of water, access and quality remain problematic.

From the women's accounts it is easy to see how water is a precondition for realising other rights, including the right to food, the right to health, the right to a decent life, the right to a healthy environment, and the right to gender equality.

Below: Arpillera created in the Francelinos neighbourhood, Juatuba, in August 2019. It portrays fear of using and accessing the Paraopeba River. A question mark symbolises women's doubt about the fish and nearby fruit trees and their safety for human consumption. Source: MAB Women's collective.



Unequal consequences: freedom from gender discrimination and violence

The impacts of the Brumadinho dam collapse on women's rights need to be understood within a broader societal context shaped by patriarchy, racism and neoliberalism, in which gender-based violence acts as a form of control over resources and over female bodies, and as a means to perpetuate gender and other structural inequalities.

Gender-based violence was present in the lives of the affected women before the disaster, but it has intensified since, affecting various aspects of women's lives. This lived experience was reflected in the women's accounts in all the meetings conducted in producing this study. For example, concerns were raised about Vale co-opting women in the affected territories and, when these women were not easily swayed, refusing to recognise them as legitimate representatives of the affected communities. Violeta said, *'Vale is even a little chauvinist in its treatment towards women. It is very interesting. When the company doesn't get to sway a female leader, they stop recognising her as a leader. I myself, when I had a clash with them, they asked me who the main leadership was and, soon afterwards, they cut off my emergency aid'*.

There is evidence that Vale has failed to recognise the specificities of women's lives when addressing the impacts: Margarida claimed that: *'In my point of view, the company doesn't do a thing to assist the women. They do it their way, same thing for all. They treat us the same way, man or woman. There are no specific initiatives for women'*. There were also reports that the company invisibilises and harasses women. Íris, who is 38 years old and resident in the municipality of Brumadinho described it thus: *'The harassment towards these women is also huge. When a woman speaks in a public assembly, they try to erase her as much as they try to harass her. Unfortunately, that old chauvinist saying persists: "women, as the gentle sex, need someone to take care of them"'*.

The affected women describe a scenario of disrespect and failure on the part of Vale to take seriously their suffering. Íris, referring to Vale's community engagement mechanism said: *'In the Relacionamento com a Comunidade (RCs) we are used to seeing them stalling. They trample on these women's patience, because the majority of people demanding the supply of basic rights items are women. The RCs treat those people as functional illiterates, as if we have blindfolds on and don't know the truth'*. Violeta also reported inappropriate actions: *'Yesterday I came to know about yet another kind of violence. Someone from Vale, a man, came inside*

'In the Relacionamento com a Comunidade (RCs) we are used to seeing them stalling; they trample on these women's patience, because the majority of people demanding the supply of basic rights items are women. The RCs treat those people as functional illiterates, as if we have blindfolds on and don't know the truth'

Íris aged 38, a resident of Brumadinho, referring to Vale's engagement with local communities

the territory, went to an affected woman's house (one who is very angry, like me), and made a covert recording of her anger. He called her lots of names and then went to the leader of the community to show the woman's [re]actions, playing that recording to someone else. Aside from being abusive, he also violated that woman's image'.

Before the rupture, women's lives in the affected communities were already characterised by labour exploitation, especially in unpaid domestic and care tasks, but also in paid employment in which women earn lower wages for doing the same work as men. However, the women's reports demonstrate how the disaster has compounded these injustices. For example, Íris explained how disruption to roads and transport made children's journeys to school much longer, adding to women's childcare responsibilities: *'All inhabitants were affected. However, the consequences in the women's daily routine were heavier. Right after the rupture, for example, it changed the whole district's dynamics. The children couldn't go to school and [then] for around four months we had to take them to school and back home, there was no transportation, so the women had to organise a lift system'.*

The change in women's routine and the additional mental load resulting from it can be seen as yet another form of violence. Women are overburdened, including in the struggle to replace lost income. Rosa described the pressures: *'Everyone tried to pursue other areas, but...it is common not to succeed in a new area. I know an angler who used to fish for over forty years in this river and just can't evolve in other areas. Many women have to endure it, adapting to other functions, and many get depressed because of it'.*

Women feel these additional pressures, not only for themselves, but also for their families and communities. Particularly in relation to childcare, they have in common the fact of being there for others and not for themselves. Rosa for example said: *'Women are responsible for taking care of everything around them. I speak from experience. I was traumatised because my girl, at the time of the rupture, was only seven and kept asking me if the mud was going to reach her. We needed psychological treatment all the time'.* Margarida explained the impacts on mothers: *'Mothers have it harder when it comes to the children. Before the rupture, they were strolling everywhere, they would swim, study...they'd just get a fishing rod to play by the river. Nowadays, there is nowhere we can take them, and the mothers lost their joy'.*

'Mothers have it harder when it comes to the children. Before the rupture, they were strolling everywhere, they would swim, study...they'd just get a fishing rod to play by the river. Nowadays, there is nowhere we can take them, and the mothers lost their joy.'

Margarida

The women's responses suggest a lack of recognition of the full range of material and intangible losses they have experienced, including in their relationships and roles within their communities, their 'joy of living' and their right to a decent standard of living. Íris described this: *'When someone asks me this question, if I've been affected, I recall immediately the first months after the rupture. I used to be a very active person, and the rupture paralysed my every move: a project for the market, the inn where I was a partner, the horticulture classes I taught...life came slowly to a halt, and I started to look for help. The first door I knocked on was the Agriculture Department of Brumadinho and I heard exactly the following question: "did the mud pass through your backyard?" I took a deep breath and said: "No. The mud did not pass through my backyard, it passed through my soul" '.*

The risks of physical violence and harassment in the wider community have also been heightened for women, restricting their freedoms. During an online meeting on 31 July 2021, participants described how the arrival of many additional male workers associated with repair and construction work following the rupture has reduced women's and girls' freedom and safety. For example, Violeta stated that: *'A serious issue is...harassment suffered by the women in the territory from Vale employees. There were marriages broken due to such advances by outsourced and Vale employees. There are cases of women who suffer violence from people at home and from Vale employees as well'.* Íris described this situation as *'alarming'*. In the face-to-face meeting of affected women in the municipality of São Joaquim de Bicas, on 18 September 2021, the women described how lack of infrastructure (such as paved streets, street lighting and policing) in their communities puts them at additional risk of violence and insecurity and combines with other aggravating issues, such as drug use (which also contributes to violence and insecurity) with two crucial consequences for women: reduced access to public services (especially healthcare) and more limited access to public spaces for leisure and other aspects of social life. Women, for fear of being harassed and raped, reported leaving the public sphere and locking themselves in their homes.

A backlash against women's leadership and organisation in response to the disaster has also contributed to an increase in intimate partner violence. As gender norms have been challenged by women's activism and leadership within the community, physical violence and aggression against women has increased. Violeta explained that: *'Since the rupture, this issue is growing...Now it's terrifying, listening to the stories of many women, especially those who come to the fight. Those who speak*

The women's responses suggest a lack of recognition of the full range of material and immaterial losses they have experienced, including in their relationships and roles within their communities, their 'joy of living' and their right to a decent standard of living.

A backlash against women's leadership and organisation in response to the disaster has also contributed to an increase in intimate partner violence. As gender norms have been challenged by women's activism and leadership within the community, physical violence and aggression against women has increased.

up their indignation, besides being deemed as “crazy”, “quarrelsome” or “unbearable”, are also severely punished by many husbands who can’t stand their women fighting for their rights. Many women call me in tears, to say they can’t keep coming to protest, they give excuses, but you see there’s something else there through their crying’. Rosa said: ‘Yes, domestic violence has increased awfully, with actual physical aggression. Because many women started to fight for their rights...’.

The women also linked an increase in intimate partner violence with drug and alcohol misuse, which they see as a response to suffering caused by loss of income and leisure opportunities and disruption of community and family spaces. Íris described how these impacts affect men: *‘Domestic violence, in the homes, worsened a lot. Many husbands lost their jobs, had income issues, they gave in to drinking because of depression. And they refuse to get psychological treatment. It’s machismo, they just cannot see the psychological issues becoming a reality’.* These issues, reported nearly three years after the rupture, show that community and work relations have not yet recovered in the affected communities.

The research found a very strong relationship between income, intimate partner violence and women’s financial dependence. Violeta described the effects of lack of income on women: *‘The impact is huge for everyone, but for us women, the lack of income is a prison. Because our income gave us some freedom, meaning a certain level of control over our own lives’.* In many cases, intimate partner violence is still not understood as a crime or an aggression, often even by survivors. Íris explained: *‘Many women still normalise maltreatment, seeing it as something normal and natural. There is also a normalisation regarding race and social class. The violence against black women is normalised, against lower class women, against women in rural areas. This is a reality in our society’.*

Faced with an alarming increase in violence against women, there has been an apparent failure of duty bearers to deliver their obligations to resolve or mitigate the situation. The women expressed that even existing laws protecting women against violence are not being complied with and protection networks are not being strengthened. Only two of the cities, Betim and Curvelo, have police stations and facilities to address this type of case.

The links between gender-based violence, environmental degradation and competition over scarce resources, including in the oppression and silencing of female environmental activists, have been well documented.¹⁸ However, the connection between the dam’s rupture and the increase in

The impact is huge for everyone, but for us women, the lack of income is a prison. Because our income gave us some freedom, meaning a certain level of control over our own lives

Violeta, aged 52, a resident in Curvelo

Faced with an alarming increase in violence against women, there has been an apparent failure of duty bearers to deliver their obligations to resolve or mitigate the situation.

violence against women appears not to have been adequately addressed. The affected interviewees report with indignation the discrepancy between Vale's rhetoric and the reality as they see it. As Íris put it: *'In theory, according to their advertising, we've had full reparation. They even created a new program for hiring women. The ads are beautiful. I wanted to live in a Vale ad! But reality is different. In fact, Vale treats us as agitators – everyone's the same and valueless. If our lives were ever taken into consideration, this crime would never have happened'*. Margarida added: *'From what we see and feel, we're the ones to blame, not Vale'*.

Below: Arpillera created at the August 2019 meeting in the municipality of Mário Campos portrays situations experienced before and after the dam rupture, such as the increased flow of vehicles and ore trucks, the increase in dust, and the organisation of the women to seek the protection of their rights.



Losses to livelihoods: rights to decent work and income

Margarida told us: *'I made my living from fishing. I had my own income. And today I don't have it anymore...Nowadays I don't have in my house what I used to have then...The abundance I had is gone...Nowadays I'm trying to raise chickens, but it's not working out, they always die. In 2019, we had a life, today we can't really call it a life...Today, if I want to eat, I have to wait for my husband to earn money to buy it.'*

Margarida's experience illustrates the importance of informal sources of income to the women. As compared to men, women were disproportionately affected by loss of income. The time and energy they had to invest, following the rupture, in seeking recognition of this and claiming their rights were additional burdens. Rosa explained: *'Women had to go after everything: papers, documents, being acknowledged by Vale as an affected person. They had this overload; they had to pursue all that while men kept working'*.

At the online meeting of affected women in the Paraopeba River basin on 31 July 2021, the women spoke of how livelihoods, particularly in agriculture and fishing, had been *'extinguished'* because of contamination, shortages of water or lack of funds to invest in production. Violeta complained: *'Today I have a mini vegetable garden. Back then, I had pure breed hens, swine, and horses. Now I have just a few chickens'*. And Rosa: *'This area produced vegetables, but many gardens are now closed. The little existing production depends on Vale's water supply'*. The result is that some families now depend on food aid. Violeta said: *'We often see, in the community, women who [previously] had incomes go searching for green papayas on trees to feed themselves and their families'*. Rosa again: *'Nobody eats fish anymore. I'm afraid of eating fish. Sometimes we eat our produce, when they get to grow, but the plants [often] die before they bear fruits'*.

Other sources of employment, such as tourism and cleaning, have also been affected. Disruption of transport between cities and rural areas made it harder for cleaners and domestic workers to reach their jobs. In the municipality of Brumadinho, women traders experienced a direct impact as sales decreased to the point of completely excluding this source of income, in many cases. As Íris explained, entire supply and production chains were broken: *'It caused a chain reaction. For example, the female crop grower had her little stand and her garden...She would share her income with people who helped her...those also lost income. Women who had greengroceries, small farmers who sold*

As compared to men, women were disproportionately affected by loss of income. The time and energy they had to invest, following the rupture, in seeking recognition of this and claiming their rights were additional burdens.

their produce to inns and restaurants, those income sources are gone...It's hard for people to get the whole picture, because it goes from aluminium can collectors...the housewife who used recycled materials for producing handicraft goods she'd sell on the weekends...up to the business owners. In Piedade do Paraopeba, a touristic village, every woman...developing an activity such as growing produce, arts and crafts, cooking, cleaning...lost their job'.

As income-generating work decreased, unpaid and domestic work increased. Margarida explained how transportation of ore in open trucks has increased the dust problem: *'Domestic work has changed because the dust rises high when the weather is hot...Half or one hour after cleaning up the house, it's all dirty again, as if you didn't take good care. Nowadays, with the kids staying at home because we can't let them stroll around, it's always a big mess, the house is always dirty, and there's more dirty laundry. Whenever you go to the kitchen, you'll find dirty dishes on the sink. Back then, you'd serve lunch, tidy up the house, and everyone would go to the riverside'.*

The failure to recognise the work performed by women is part of the system of oppression and exploitation of women in the capitalist and patriarchal system. In the wake of the rupture, affected women noticed that much of the informal work they had previously carried out was unrecognised. As Íris explained: *'When it comes to the greengrocers by the Pereira Stream, those who had a little bamboo stand on the corner, or the can collectors...who knows them? This way, we were watching a process of invisibilisation and violence against those women that's just too cruel. Who will recognise this informality? At least 70% of the economic activities are informal'.* While support and solidarity provided by civil society organisations that donated water, food and financial resources mitigated some of the impacts, the women say that they have not experienced any sufficient action by the State or by Vale. Finding alternative sources of employment is now a significant challenge for affected women, including because of increased domestic and care work, increased risk of violence and reduced financial independence.

The women felt that sufficient reparations for the impacts of the dam rupture on rights and living conditions in affected communities have yet to be delivered. In February 2021, Vale, the Minas Gerais State and other State institutions reached an agreement that provides for a series of socio-economic, environmental and humanitarian reparation measures for the 26 affected municipalities.¹⁹ The agreement seeks to compensate for collective damages and thus, specifically provides that "it does not cover individual damages."²⁰ However the Minas Gerais government specified that "[the agreement]

The failure to recognise the work performed by women is part of the system of oppression and exploitation of women in the capitalist and patriarchal system. In the wake of the rupture, affected women noticed that much of the informal work they had previously carried out was unrecognised.

respects all the individual rights of the people affected.”²¹ Vale committed to pay 37.6 bn reais (approximately £5 bn) to fund the actions and programmes set out in the annexes. Those affected did not participate in the elaboration and conclusion of this agreement because Vale demanded confidentiality about the negotiation proceedings.²² Despite this, the agreement provides that the affected people will be able to participate in the design, execution, monitoring and evaluation of plans, programmes and projects.²³ In this regard, it should be mentioned that a *Consulta Popular* (popular vote) was held in the 26 affected municipalities in November 2021 to ask people to select priority areas for the design and implementation of projects to improve public services as part of the reparation process.²⁴ Currently, most of the plans, programmes and projects envisaged in the agreement are still in the planning stage. It is important that the situation of the affected women be taken into account during the design and execution of the planned activities.

This process must establish the links between the damage to women’s lives and the rupture of the dam. However, women are concerned that informal workers have in the past been excluded from access to compensation. After the collapse of the Fundão dam which led to the Doce River Basin disaster, Vale implemented agreements that required formal documents to establish proof of work, which excluded domestic workers, day labourers, recyclable material collectors, small vendors, artisans, and many informal business workers, among which women are disproportionately represented.

Below: Arpillera created in Satélite Juatuba in August 2019 portrays women’s loss of opportunities to engage in agricultural work. Loss of financial autonomy and their autonomy over the production of healthy food has contributed to food insecurity. Source: MAB Women’s Collective.



Fighting to remain standing: impacts on health

With the increased amounts of dust, respiratory illnesses are now more frequent and severe. As previously mentioned, there have also been negative dietary changes and other impacts of water contamination. Alongside the physical health implications, mental health was a key theme of the online regional meeting of affected women in the Paraopeba River Basin, held on 31 July 2021. Among the 40 women who joined, many spoke of “fighting” for their family's health and wellbeing, and of the stress, depression, pain and sadness this has caused. There are additional burdens and preoccupations associated with the care of sick family members. Women reported increased illness among children and grandchildren, concerns about the quality of water available for bathing them, and children's deteriorating mental health. Rosa said: *'Our children's lives are our responsibility. We have to look for psychologists, these things are all left to the woman'*. These issues are compounded by reduced means to access health services. Violeta said: *'Getting to the hospital today is very difficult...Back then, we could easily pay for transportation, we got money from the river, but now we cannot afford to help our children'*. This overload of concerns contributes to mental health issues for the women themselves, particularly for those who have also lost family members and loved ones.

A variety of details regarding mental health emerged during the interviews. Women reported observing an increase in suicidal ideas among people in their communities, increases in suicide cases and in cases of depression, and people having difficulty sleeping. Loss of work outside the home, which was important for women to socialise as well as for income, has left some women more isolated and reduced many women's financial autonomy. These factors are contributing to mental ill health and render women more vulnerable to other rights violations, such as intimate partner violence. The impossibility of resuming work was a huge concern expressed by the interviewees, as it entirely precludes the restoration of their lives. Violeta said: *'The first thing I felt intensely after the rupture was insomnia. From where I'm sitting now, in my porch, I can hear the river; the river always sang me lullabies. For a long time, I couldn't sleep, I developed bruxism...Aside from fear, insecurity, anguish, I feel a growing rage, a huge indignation. When I open my eyes in the morning, I can't be thankful for the rising day anymore'*.

Rosa called for action to address widespread trauma within the communities and highlighted the effects on children and their mothers: *'Our leisure was seeing our children swim and play by the*

'Our children's lives are our responsibility. We have to look for psychologists, these things are all left to the woman'

Rosa

river. Today the children can't go to the riverside and we're a lot more locked inside, we have nothing to do...There are many children taking antidepressants...a mother gets desperate'. Many women reported changes in children's behaviour. Iris told us that in Brumadinho, many young people refused to cross a bridge rebuilt by Vale because the bodies of people who died on the day of the rupture were found under that bridge. As a result, some of the children gave up going to school. Other women reported signs of forgetfulness and trauma. Rosa reported that many children and youth are taking antidepressants. Data from the Brumadinho municipal health department indicates that, one year after the rupture, the use of antidepressants had grown by 56% and that of anxiolytics by 79%. Recorded suicide attempts jumped from 29 to 47.²⁵

Collective organisation and mutual support have enabled women to keep going since the disaster, but many have lost hope. They find it impossible to forget what has happened or quantify the impacts on their lives. As Íris put it: *'I lost my right to a future, to everyone's futures, our children's futures. Women, specifically, are the ones who worry about the future. This cannot be measured'*. One woman described the rupture as "a crime marking life forever". Clearly, affected women are still dealing intense feelings that have shaken them deeply, indicating a lack of appropriate psychosocial support. Violeta described this: *'I've been crying for three years; my community has been crying for three years'*.

Without adequate reparations, women's future will remain painful and uncertain. Their suffering is intensified when remedial or reparation actions are not taken or are delivered in an unsatisfactory manner. Insufficient action by Vale to restore water supplies and local economies has been compounded by the State's failure to intensify health care efforts after the rupture, or to guarantee basic health care to the affected population. The interviewees specifically highlighted the lack of State attention to mental health and women's health care needs. While Vale did hire professionals in the field of psychology to provide support to the affected population, these did not inspire confidence, as many people felt uncomfortable talking to professionals paid directly by the company. This hampered adequate treatment and follow-up. While Vale has a responsibility to finance effective treatment of mental ill health, interventions should be delivered independently of the company, through the State health system, *Sistema Único de Saúde*. In the case of women, mental health treatment must also address the specific rights violations they've experienced.

Conclusions and recommendations

Much more effective accountability mechanisms are needed to address serious and widespread human rights abuses perpetrated by companies, alongside more effective regulation of large-scale mining operations, including tailings dams and other methods of extractive waste storage and disposal. This case also confirms the need for a legally binding international instrument on business and human rights.

The research with the affected women demonstrates that the Brumadinho dam's collapse significantly affected the most basic living conditions, causing serious violations of a wide range of human rights of women and local communities as a whole.²⁶ These impacts have generated specific concerns and differential burdens on women which, if not adequately addressed, will contribute to a 'vicious cycle' of poor health, gender-based violence and poverty.

The situation of affected women can only be overcome through reparative measures that are gender transformative and address intersecting inequalities. These should not only address the differential impacts of the disaster on women and men but also support affected women's leadership and agency, increase their access to resources, and guarantee their freedom from discrimination and violence.

However, the research findings clearly point to an absence of gender differentiated response by Vale and attention to the harm caused to women. *Assessoria Técnica Independente aos Atingidos da Associação Estadual de Defesa Ambiental e Social (AEDAS)* acknowledges that there are no specific measures for women in any of the agreements, reports, or decisions in the lawsuits against Vale.²⁷ This ignores the suffering of the affected women, and at the same time reproduces structural gender inequalities.

The women's accounts indicate a lack of recognition of, and an inadequate response to a wide range of rights violations that have immeasurably damaged women's lives, on the part of both Vale and the State.

As Íris put it: *'For things that cannot be measured, Vale should have at least the dignity and morality of not aggressing us through deceptive advertising or fake communal perspectives as they invade our community with promises of actions or projects. The State should also show some respect and dignity by forcing the mining*

The situation of affected women can only be overcome through reparative measures that are gender transformative and address intersecting inequalities. These should not only address the differential impacts of the disaster on women and men but also support affected women's leadership and agency, increase their access to resources, and guarantee their freedom from discrimination and violence.

company to comply with what's been defined by the Brazilian legal system'. Regarding State actions, the main complaints by the affected women are the lack of access to essential services such as potable water and health care and the lack of legal enforcement to prevent and punish violence against women. The affected women demand specific actions from the State and Vale in order to mitigate and repair the damage caused by the dam collapse:

Recommendations for Minas Gerais State and other state actors

- **Address immediate needs as quickly as possible**, including lack of access to water and loss of income. An emergency damage mitigation plan and a clear reparation plan that recognises and addresses differentiated gender needs are required, with deadlines that are met, so that they can generate more certainty for the affected women and men.
- **Punish Vale and those in charge of the company** and ensure companies like Vale comply with established laws and recognised international standards, especially those dealing with violence against women, the rights of traditional peoples and communities, and the rights of populations affected by dams.²⁸
- **Minas Gerais State should provide adequate and independent information regarding Vale and ensure that the development of remedial action is informed by independent studies** about Vale's actions and the damage caused by these.
- **Design and implement adequate public policies to guarantee the basic rights of the population**, namely access to quality water for domestic and livelihood uses, adequate physical and mental health care, right to gender equality, right to a dignified life, and right to work. These should include access to up-to-date information about air, soil and water contamination.
- **Address the lack of a legal framework recognising the rights of communities affected by dams**, which makes human rights violations a recurrent pattern. It should design and adopt legislation in this regard, in consultations with these communities.
- **Ensure the rehabilitation of the Paraopeba River**

Recommendations for Vale

- **Deliver compensation that meets affected communities' needs, ensure that all support and**

reparation actions are decided, defined and implemented with the participation of the affected communities, and more specifically of the affected women, and respect the opinions and act on the proposals of those affected.

- **Provide adequate reparations, including by acknowledging women as affected people and addressing the specific damage caused to them.** Vale should also provide adequate information about their reparation actions.
- **Take action against employees accused of harassment or gender-based violence.**

Recommendations to international bodies

This report offers evidence that the Brumadinho dam rupture caused particularly serious violations of the human rights of women and affected local communities. Given the seriousness of these violations, United Nations and Inter-American human rights bodies should closely monitor and take action within their differentiated mandates to address this case. They should:

- **View the testimonies in this report as emblematic of the risks of large-scale mining operations to human rights and 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 serious and widespread human rights abuses perpetrated by companies, (ii) effective regulation of large-scale mining operations, including tailings dams and other methods of extractive waste storage and disposal, (iii) mandatory gender impact assessments of business activities, (iv) gender-sensitive justice and remedy mechanisms, and (v) ensuring respect, protection and an enabling environment for women human rights defenders.
- **Evaluate whether Brazil is taking sufficient measures to bring justice and ensure effective reparations to victims in compliance with its international human rights obligations,** particularly under the Convention on the Elimination of All Forms of Discrimination against Women, Convention on the Rights of the Child, International Covenant on Economic, Social and Cultural Rights, and the UN Declaration on the Rights of Indigenous People.
- **Provide space for affected communities to be heard within their respective bodies**

Bibliography

- Associação dos Familiares de Vítimas e Atingidos do Rompimento da Barragem Mina Córrego Feijão Brumadinho, Nossas Joias, 2021, <https://avabrum.org.br/nossas-joias>.
- Christian Aid; Movimento dos Atingidos por Barragens. Mulheres Defensoras de Direitos Humanos na Amazônia construindo alternativas à violência, 2019.
- Conselho de Defesa dos Direitos da Pessoa Humana. Comissão Especial 'Atingidos por Barragens', 2010, <http://www.mpf.mp.br/atuacao-tematica/ccr6/dados-da-atuacao/encontros-nacionais-e-regionais/xi-encontro-nacional/xi-encontro/legislacao/relatorio-sintese-cddph>.
- Costa, Débora; Pimentel, Thais. Governo de MG aponta que água retirada de poços em Brumadinho e região não é potável. 2021, <https://g1.globo.com/mg/minas-gerais/noticia/2021/02/03/governo-de-mg-aponta-que-agua-retirada-de-pocos-em-brumadinho-e-regiao-nao-e-potavel.ghtml>.
- Defensoria Pública do Espírito Santo. Relatório Preliminar sobre a situação da mulher atingida pelo desastre do Rio Doce no Espírito Santo, 2021, <http://www.defensoria.es.def.br/site/wp-content/uploads/2016/10/Relato%CC%81rio-questao-de-genero-5-de-nov-de-2018-2.pdf>.
- Fernandes, Leonardo. Onda de lama da Vale deve atingir 19 municípios de MG, afirmam especialistas. Brasil de Fato. 2011, <https://www.brasildefato.com.br/2019/01/25/onda-de-lama-da-vale-deve-atingir-19-municipios-de-mg-afirmam-especialistas>.
- Freitas, Raquel; Almeida Fabiana. Brumadinho convive com adoecimento mental um ano após tragédia da Vale, 2020, <https://g1.globo.com/mg/minas-gerais/noticia/2020/01/21/brumadinho-convive-com-adoecimento-mental-um-ano-apos-tragedia-da-vale.ghtml>.
- Governo do Estado de Minas Gerais. Cidades atingidas por tragédia de Brumadinho apresentam mais de 3 mil propostas de projetos para reparação. 2021, <https://www.mg.gov.br/noticias/pro-brumadinho/cidades-atingidas-por-tragedia-de-brumadinho-apresentam-mais-de-3-mil>.
- Movimento dos Atingidos por Barragens. Atingidas por barragens costurando direitos. 2015.
- Movimento dos Atingidos por Barragens. Impactos do modelo energético e a violação dos direitos humanos na vida das mulheres atingidas por barragens, 2011.
- Movimento dos Atingidos por Barragens; United Nations Development Fund for Women. Diagnóstico de Impacto territorial com enfoque de gênero em Rondônia. Porto Velho, 2021.
- Oliveira, Wallace. Adoecimento mental e tentativas de suicídio aumentaram após o rompimento da barragem. Brasil de Fato MG. 2011, <https://www.brasildefatomg.com.br/2021/02/01/adoecimento-mental-e-tentativas-de-suicidio-aumentaram-depois-do-rompimento-da-barrag>.
- Pimentel, Thais. 2 anos após tragédia da Vale, quatro cidades do entorno de Brumadinho ainda sofrem com impactos. <https://g1.globo.com/mg/minas-gerais/noticia/2021/01/25/2-anos-apos-tragedia-da-vale-quatro-cidades-do-entorno-de-brumadinho-ainda-sofrem-com-impactos.ghtml>.
- Revista Eletrônica de Comunicação, Informação & Inovação em Saúde, Rio de Janeiro, v. 15, n. 2, p. 319-332, abr./jun. 2021. Interseccionalidade e rupturas dos modos de vida pelos rompimentos de barragem: reflexões a partir de uma mídia em aderência. www.reciis.icict.fiocruz.br
- Brazil/Minas Gerais, Brazilian government portal, <https://cidades.ibge.gov.br/brasil/mg>. 2021

End notes

- 1 Hereinafter 'Vale'.
- 2 *Metal concentrations and biological effects from one of the largest mining disasters in the world (Brumadinho, Minas Gerais, Brazil)*, Cristiane dos Santos Vergilio, Diego Lacerda, Braulio Chereze Vaz de Oliveira, Echily Sartori, Gabriela Munis Campos, Anna Luiza de Souza Pereira, Diego Borges de Aguiar, Tatiana da Silva Souza, Marcelo Gomes de Almeida, Fabiano Thompson & Carlos Eduardo de Rezende, Scientific Reports 10, 5936, 2020. <https://doi.org/10.1038/s41598-020-62700-w>
- 3 The 26 municipalities are: Abaeté, Betim, Biquinhas, Brumadinho, Caetanópolis, Curvelo, Esmeraldas, Felixlândia, Florestal, Fortuna de Minas, Igarapé, Juatuba, Maravilhas, Mário Campos, Morada Nova de Minas, Paineiras, Papagaios, Pará de Minas, Paraopeba, Pequi, Pompéu, São Gonçalo do Abaeté, São Joaquim de Bicas, São José da Varginha and Três Marias.
- 4 *Fundão tailings dam failures: the environment tragedy of the largest technological disaster of Brazilian mining in global context*, Flávio Fonseca do Carmo, Luciana Hiromi Yoshino Kamino, Rogério Tobias Junior, Lara Christina de Campos, Felipe Fonseca do Carmo, Guilherme Silvino, Kenedy Junio da Silva Xavier de Castro, Mateus Leite Mauro, Nelson Uchoa Alonso Rodrigues, Marcos Paulo de Souza Miranda, Carlos Eduardo Ferreira Pinto, Perspectives in Ecology and Conservation, Vol. 15 (3), 2017, pages 145-151. <https://cyberleninka.org/article/n/105652>
- 5 'Mineração em Números'. The Brazilian Mining Institute (IBRAM). <https://ibram.org.br/mineracao-em-numeros/>
- 6 *An analysis and practical application of the Guiding Principles on providing remedies with special reference to case studies related to oil companies*. Tineke Lambooy, Aikaterini Argyrou and Mary Varner, p336 in S. Deva & D. Bilchitz (eds.), Human Rights Obligations of Business: Beyond the Corporate Responsibility to Respect? pp. 329-377 2013 <https://www.cambridge.org/core/books/abs/human-rights-obligations-of-business/an-analysis-and-practical-application-of-the-guiding-principles-on-providing-remedies-with-special-reference-to-case-studies-related-to-oil-companies/AEEC09E13C6E52D1BFA9C96C9795EBF6>
- 7 Ibid. p. 343
- 8 See for example: *Criminalização contra defensores de direitos humanos na implantação de hidrelétricas na Bacia do Rio Uruguai*. MAB, 2005; *O modelo energético e a violação de Direitos Humanos na vida das mulheres atingidas por barragens*. Movimento dos Atingidos por Barragens, 2011. <https://www.mab.org.br/publicacao/o-modelo-energetico-e-a-violacao-dos-direitos-humanos-na-vida-das-mulheres-atingidas-por-barragens/>
As lutas dos atingidos por barragens por direitos humanos. Movimento dos Atingidos por Barragens, 2013. https://issuu.com/mabnacional/docs/carti_lha_dh_mab_2013web
- 9 *The Scandal of Inequality: The multiple faces of inequality in Latin America and the Caribbean*, Christian Aid, 2017, www.christianaid.org.uk/resources/about-us/scandal-inequality-2-english
- 10 *Women on the Front Line: healing the Earth, seeking justice*, Christian Aid, 2021 <https://www.christianaid.org.uk/sites/default/files/2021-10/Women%20on%20the%20Front%20Line%20Final%20report.pdf>
- 11 'Vale sees expenses with Brumadinho disaster at \$2.7bn to \$3.2bn in 2021' <https://www.mining.com/web/vale-sees-expenses-with-brumadinho-disaster-at-2-7bn-to-3-2bn-in-2021/>
Anderson Rocha, Justiça manda Vale pagar R\$1 milhão para herdeiros de trabalhadores mortos em Brumadinho, 2021, <https://www.fojeemdia.com.br/horizonte/justica-manda-vale-pagar-r-1-milhao-para-herdeiros-de-trabalhadores-mortos-em-brumadinho-1.840857><https://www.fojeemdia.com.br/horizontes/justica-manda-vale-pagar-r-1-milhao-para-herdeiros-de-trabalhadores-mortos-em-brumadinho-1.840857>
- 12 *Pesquisa Participante: O Saber da Partilha*. Carlos Rodrigues Brandão, and Danilo R. Streck, (Organisers). Aparecida, SP: Ideias & Letras, 2006.
- 13 *Water is Life - Women's human rights in national and local water governance in Southern and Eastern Africa*. Anne Hellum, Patricia Kameri-Mbote, and Barbara Koppen, 2015. Weaver Press.
- 14 'Com avanço da pandemia, Vale reforça medidas de proteção e mantém cronograma para reparação integral em Brumadinho'. <http://www.vale.com/brasil/PT/aboutvale/news/Paginas/com-avanco-da-pandemia-vale-reforca-medidas-de-protecao-e-mantem-cronograma-para-reparacao-integral-em-brumadinho.aspx>
- 15 Ibid
- 16 Evidence is emerging of public health impacts. See for example: *First year after the Brumadinho tailings' dam collapse: Spatial and seasonal variation of trace elements in sediments, fishes and macrophytes from the Paraopeba River, Brazil*, Cláudio E.T. Parente, Adan S. Lino, Gabriel O. Carvalho, Ana C. Pizzochero, Claudio E. Azevedo-Silva, Matheus O. Freitas, Cláudia Teixeira, Rodrigo L. Moura, Virgílio José M. Ferreira Filho, Olaf Malm, Environmental Research, Volume 193, 2021. <https://www.sciencedirect.com/science/article/pii/S0013935120314237><https://www.sciencedirect.com/science/article/abs/pii/S0013935120314237>
- 17 Article 11 of the International Covenant on Economic, Social and Cultural Rights. <https://www.ohchr.org/en/professionalinterest/pages/cescr.aspx>
- 18 *Gender-based violence and environmental linkages*, International Union for the Conservation of Nature, 2020 <https://portals.iucn.org/library/node/48969>
- 19 *Acórdão Judicial Para Reparação Integral Relativa ao Rompimento das Barragens B-I, B-IV E B-IVA / Córrego do Feijão Processo de Mediação SEI n. 0122201-59.2020.8.13.0000 TJMG / CEJUSC 2º GRAU*, 2021 <https://www.tjmg.jus.br/data/files/8D/20/B5/1A/87D67710AAE827676ECB08A8/Minuta%20versao%20final.pdf.pdf>
- 20 Ibid. Sections 3.1. and 3.6).
- 21 Perguntas e respostas sobre o termo de Medidas de Reparação dos danos causados pelo rompimento da barragem em Brumadinho, Minas Gerais Government press release, 2021 <https://www.agenciaminas.mg.gov.br/noticia/perguntas-e-respostas-sobre-o-termo-de-medidas-de-reparacao-dos-danos-causados-pelo-rompimento-da-barragem-em-brumadinho>
- 22 'Brazil mining giant agrees to pay \$7bn for collapse that killed 272 people' <https://www.theguardian.com/world/2021/feb/04/brazil-mining-collapse-vale-agrees-compensation#:~:text=The%20Brazilian%20mining%20giant%20Vale,collapse%20that%20killed%20272%20people.&text=The%20Brumadinho%20disaster%2C%20on%2025,environmental%20tragedies%20in%20Brazilian%20history>
- 23 See note 19, Section 3.3.
- 24 'Popular consultation on reparations in Brumadinho and affected municipalities is concluded with the participation of more than ten thousand people', Minas Gerais Government press release, 2021, <https://www.agenciaminas.mg.gov.br/noticia/consulta-popular-sobre-reparacoes-em-brumadinho-e-municipios-atingidos-e-concluida-com-participacao-de-mais-de-dez-mil-pessoas>
- 25 'Brumadinho convive com adoecimento mental um ano após tragédia da Vale'. Raquel Freitas; Almeida Fabiana. 2020. <https://g1.globo.com/mg/minas-gerais/noticia/2020/01/21/brumadinho->

[convive-com-adoecimento-mental-um-ano-apos-tragedia-da-vale.ghml](#).

- ²⁶ For the proposition that human rights violations that significantly affect the most basic living conditions of a community are particularly serious, see the Inter-American Court of Human Rights, the case of the Massacres of El Mozote and Nearby Places v. El Salvador, Judgment of 25 October 2012, para. 180; Inter-American Court of Human Rights, Ituango Massacres v. Colombia, Judgment

of 1 July 2006, Series C No. 148, para. 182. <https://www.corteidh.or.cr/estatuto.cfm?lang=en#:~:text=The%20Inter%2DAmerican%20Court%20of,Convention%20and%20the%20present%20Statute>.

- ²⁷ Matriz Emergencial: Matriz de Medidas Reparatórias Emergenciais, 2021, p. 285. <https://aedasmg.org/post/matriz-de-medidas-emergenciais-reparat%C3%B3rias-da-r1-e-r2-identificaprioridades-das-pessoas-atingidas>

- ²⁸ *Brazil police right to bring criminal charges against Vale for environmental crimes in relation to the Brumadinho dam disaster*, Christian Aid says, Christian Aid, 13 December 2021.

<https://mediacentre.christianaid.org.uk/brazil-police-right-to-bring-criminal-charges-against-vale-for-environmental-crimes-in-relation-to-the-brumadinho-dam-disaster-christian-aid-says>