Vulnerability and environmental racism in the social construction of disaster risk

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ABSTRACT

This research examined the intersection of vulnerability and environmental racism in the social construction of disaster risk, highlighting how discriminatory practices have exacerbated the exposure of marginalized populations to environmental hazards. Based on a literature review, the research allowed us to reflect on the disproportionate impacts of environmental racism on racialized communities, as well as the effectiveness of existing public policies. Specific interventions were proposed to mitigate vulnerability and promote environmental justice, emphasizing the importance of community participation, strengthening infrastructure, and reformulating zoning policies. The analysis highlighted the need for more inclusive and effective public policies to reduce inequalities and strengthen the resilience of affected communities.

Keywords: Vulnerability, Environmental racism, Risk, Environmental justice, Public Policies.

INTRODUCTION

The social construction of disaster risk involves a complex interplay of environmental, social, economic and political factors that determine the vulnerability and resilience of communities in the face of adverse events. This concept considers that risks are not only natural phenomena but are also the result of social processes that unequally distribute vulnerabilities among different social groups.

Within this context, environmental vulnerability and racism emerge as critical elements that directly influence the exposure and impact of disasters on marginalized communities. Vulnerability, in this sense, can be understood as the propensity of a group or individual to suffer damage as a result of disasters, determined by the interaction of factors such as geographic location, socioeconomic conditions, and response and recovery capacity. On the other hand, environmental racism refers to racial discrimination that results in the disproportionate exposure of minority communities to environmental hazards, whether through ineffective public policies, exclusionary urbanization practices, or failures to implement environmental protection measures.

This paper aimed to review the existing literature on how vulnerability and environmental racism interact in the construction of disaster risk, with a focus on marginalized communities in Brazil. The

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methodology used was a literature review during the months of January to June. Academic articles, reports from non-governmental organizations and relevant public policy documents were analyzed to achieve the proposed objectives, enabling the identification of gaps in current knowledge, in order to assist in the creation of a solid theoretical base. The discussion presented below is organized into topics: Environmental Vulnerability and Racism, Discussion on Policies and Practices, Social Construction of Disaster Risk, Social Inequalities and Impacts of Disasters, Public Policies and Interventions.

VULNERABILITY AND ENVIRONMENTAL RACISM

Vulnerability refers to the ability of a community or individual to withstand and recover from adverse events. According to the United Nations, vulnerability involves a series of conditions determined by physical, social, economic and environmental factors that increase the susceptibility of a community, system or property to the impacts of a potentially hazardous event (UNISDR, 2007a). Marchezini (2009) points out that vulnerability is a social construction, reflecting the inequality in the distribution of risks and resources. This means that it's not just about the possibility of suffering physical harm, but also about a community's ability to respond and recover. Factors such as infrastructure, access to health services, social cohesion, and economic support are crucial in determining the vulnerability of a social group. According to Acselrad (2006):

> Vulnerability is a multifaceted concept that involves the exposure to environmental risks, responsiveness, and resilience of communities. It is essential to understand that vulnerability is not only a physical condition, but also a social, economic, and political one. Vulnerable communities are often those that have less access to resources, less political and social power, and face significant barriers to disaster recovery. Vulnerability, therefore, is an expression of social inequality and environmental injustice, reflecting the precarious living conditions and social exclusion that many communities face.

In this context, it is essential to understand how environmental racism intensifies this vulnerability: it exacerbates inequality in the distribution of risks, disproportionately exposing minority communities to adverse and dangerous environmental conditions. These communities, often located in less favored areas that are more susceptible to environmental disasters, face not only a higher likelihood of exposure to pollutants and other hazards, but also additional barriers in recovering from and accessing post-disaster resources. The lack of adequate infrastructure, coupled with social and economic marginalization, places these communities in a position of greater fragility (Acselrad, 2006). Thus, environmental racism not only puts these populations at risk, but also perpetuates a cycle of vulnerability and exclusion that hinders long-term recovery and resilience (Santos and Acselrad, 2006).

According to Gonçalves (2006), environmental racism can be understood as the unequal distribution of environmental risks and benefits, where black, indigenous and low-income populations are

systematically placed in situations of greater vulnerability. This term was coined in the 1980s by Dr. Benjamin Franklin Chavis Jr., a leader of the black civil rights movement in the United States. Herculano (2002) defines environmental racism as the deliberate allocation of racialized communities in areas of greater environmental risk, showing how urban and environmental policies often disregard the needs and rights of these populations. According to Almeida (2019), environmental racism is a manifestation of structural racism that permeates institutions and public policies, perpetuating historical and social inequalities. In this way, vulnerability is intensified by environmental racism, which further marginalizes already vulnerable communities, hindering their access to resources and their ability to recover.

Almeida (2020) states that structural racism manifests itself in several ways, from spatial segregation to inequalities in access to basic rights, such as education, health, and housing. He points out that these disparities are not accidental, but rather the result of historical and contemporary policies that favor certain racial groups over others. This type of racism negatively impacts the lives of Black people and other racial minorities. Almeida (2020) points out that these differences in access to basic resources and economic opportunities are the result of policies that, intentionally or not, perpetuate the advantage of some groups over others. He emphasizes that understanding structural racism is crucial to addressing and correcting these deep-rooted inequalities in society.

Social vulnerability is amplified by environmental racism, as racialized communities often face greater exposure to risks and lower responsiveness due to historical, economic, and social factors. Historically, these communities have been systematically excluded from urban development and environmental planning processes, resulting in their concentration in areas with poor infrastructure and increased susceptibility to natural disasters and pollution (Acselrad, 2006). Economically, these populations tend to have lower incomes, which limits their access to the resources needed to address and respond to environmental hazards. This includes a lack of access to insurance, credit, and the financial capacity to invest in housing improvements or move to safer areas (Santos and Acselrad, 2006). Socially, these groups face persistent discrimination, resulting in fewer educational and employment opportunities, as well as less political representation. This hinders the mobilization and implementation of public policies that meet their specific needs (Acselrad, 2006). These factors interact in complex ways, perpetuating a cycle of vulnerability and exclusion that hinders long-term recovery and resilience.

The socio-spatial segregation and economic marginalization of these communities increase their vulnerability. Economic marginalization, for example, prevents many racialized communities from accessing safe and adequate housing, forcing them to live in at-risk areas such as hillsides or flood-prone regions. The occupation of environmentally fragile areas, such as hillsides and riverbanks, by the construction of favelas is a clear manifestation of environmental racism. In this context, urban planning policies often exclude these populations from safer regions with better infrastructure (Acselrad, 2004).

Environmental racism is also perpetuated through practices such as the location of polluting industries and landfills near low-income neighborhoods where predominantly racial minorities live. This increases the vulnerability of these populations. Studies by Porto et al. (2013) show that polluting industries, lack of basic sanitation, and housing precariousness are more common in areas inhabited by black and indigenous populations, highlighting their vulnerability to disasters. Not only are these practices unjust, but they also reflect a profound disconnect between development policies and the lived reality of these communities.

Wanderley (2015) demonstrated in a preliminary report how the most vulnerable populations, many of them black and indigenous, were the most affected by the disaster of the collapse of the Fundão damin Mariana, Minas Gerais, in 2015. These communities suffered not only from the physical destruction of their lands and homes, but also from the loss of natural resources essential for their livelihoods and culture (MARCHEZINI, 2009).

Table: Population by Race/Color in the communities affected by the collapse of the Samarco dams in Minas Gerais

Localidade	Situação do Domicílio	Pop. Total	Raça / Cor					Proporção Pardos/ Pretos
			Branca	Amarela	Preta	Parda	Indígena	
Povoado de Bento Rodrigues*	Rural	492	76	2	80	335	-	84,3
Distrito de Santa Rita Durão	Total	1956	323	72	196	1365	-	79,8
	Urbano	1.456	246	70	115	1.025	-	78,3
	Rural	500	77	2	81	340	-	84,2
Povoado de Paracatu de Baixo*	Rural	300	59	-	29	211	1	80,0
Distrito de Monsenhor Horta	Total	1.740	317	17	327	1.072	7	80,4
	Urbano	1.319	234	17	286	776	6	80,5
	Rural	421	83	-	41	296	1	80,0
Município de Mariana-MG	Total	54.219	16.340	1.279	9.874	26.593	133	67,3
	Urbano	47.642	14.997	1.188	8.384	22.949	124	65,8
	Rural	6.577	1.343	91	1.490	3.644	9	78,1
Povoado de Gesteira	Rural	115	32	2	23	58	-	70,4
Cidade de Barra Longa	Urbano	2253	865	30	371	988	-	60,3
Município de Barra Longa-MG	Total	6.143	1.930	98	1.035	3.080	-	67,0
	Urbano	2.313	871	31	382	1.029	-	61,0
	Rural	3.830	1.059	67	653	2.051	-	70,6

Fonte: IBGE, Censo 2010.
* Cálculo da população por raça ou cor estimado a partir de projeção

Source: Wanderley (2015)

According to the UN, about 70% of the areas most affected by natural disasters in Brazil are inhabited by black or indigenous populations (United Nations, 2015). This disparity is evident in the geographic location of these communities, who often live in less valued areas with less infrastructure,

making them more susceptible to natural and human-caused disasters. This data helps to understand that racialized communities are more likely to live in at-risk areas and have less access to resources to mitigate and recover from disasters. This reveals significant discrepancies in exposure to pollution, flooding, and other environmental hazards.

It is important to emphasize that discussing racial issues related to a territory in Brazil does not mean focusing exclusively on a specific racial group, but rather on the racial majority present in that area. When dealing with a neighborhood, village, hamlet, or community majority-occupied by an ethnic or racial group, we are addressing the vulnerabilities to which the entire territory is exposed, and not just the individuals of that specific group (ROCHA, 2022).

DISCUSSION OF POLICIES AND PRACTICES

Discussing public policies and practices in the context of environmental racism is essential for several reasons that connect and highlight the importance of a broad and inclusive approach to tackling this complex problem. Some of these reasons are: addressing inequalities, protecting public health, promoting environmental justice, strengthening community resilience, ensuring representation, and achieving long-term sustainability.

Different population groups face different problems when it comes to rainfall disasters. Therefore, it is essential to use tools that communicate these particularities effectively, both to those responsible for official decision-making and to community organizations. While a comprehensive reformulation of the city is not possible, it is essential to improve emergency policies to provide adequate support to the communities most directly exposed to risks (Valêncio, 2004).

Public policies often fail to address the specific needs of marginalized communities, perpetuating and enhancing inequalities. This reveals a disconnect between the real needs of these communities and the solutions formulated by policymakers. Urbanization and development practices often neglect or disadvantage these communities, increasing their vulnerability. Herculano (2022) points out that the lack of representation and participation of these communities in political decision-making further aggravates the situation. Urban development policies play a crucial role in the quality of life in cities. However, these policies often fail to adequately consider the need for resilient infrastructure in areas inhabited by racialized populations. This can result in the perpetuation of unhealthy and dangerous living conditions, a reality documented by several Brazilian authors who investigate the intersection between race, urban poverty, and planning.

The way urban planning has been conducted often ignores the needs of these populations, prioritizing areas that are more valued and inhabited by the middle and upper classes (MARICATO,

2000). This factor often outlines the issue of urban segregation and the lack of adequate infrastructure in peripheral neighborhoods, where a large portion of the country's black and poor population resides.

It is important to highlight that the perpetuation of discriminatory and exclusionary practices in public policies reflects a broader structural problem. Institutional racism and socioeconomic inequalities are deeply rooted in power structures and political dynamics. Overcoming these challenges requires a firm commitment to social and environmental justice and the implementation of deep reforms that promote equality and inclusion.

In Brazil, there are still gaps regarding the topic of environmental racism: there is a lack of detailed research that shows, with numbers, the specific impacts of environmental racism in different communities in Brazil. Studies using solid data and comparisons are needed to better understand the extent and nuances of this problem. It is also possible to note the absence or fragility of studies that evaluate the effectiveness of educational and awareness programs on environmental racism, research that examines how these initiatives can mobilize society and change attitudes are essential to build a more just society.

SOCIAL CONSTRUCTION OF DISASTER RISK

The social construction concept of disaster risk suggests that these are not just natural phenomena but are shaped by human social structures and practices. Hogan (2010) argues that vulnerability is the result of social processes and is geographically situated, highlighting the importance of a detailed analysis of vulnerabilities and how they are socially constructed.

Different social groups perceive and experience risks in different ways. Marginalized communities often have more acute perceptions of risks due to their exposure and vulnerability. This perception is shaped by their everyday experiences of environmental injustice and social exclusion. Acselrad (2006) argues that risk perception is influenced by social and cultural factors, and that the most vulnerable communities tend to have a more acute awareness of risks due to their frequent exposure to adverse situations.

The experience of risk is deeply personal and contextual. Memories of past disasters and collective narratives about adverse events shape the way communities perceive and respond to risks. In marginalized communities, where disasters often have more severe and prolonged impacts, these memories can generate a sense of ongoing vulnerability and an increased perception of risk. This perception, in turn, can influence decisions about where to live, work, and how to prepare for future disasters. In the face of intense rains, for example, urban dwellers are forced to quickly reinterpret their routines and movements due to the potential for human, material, and environmental damage they may face and witness. (VALÊNCIO, 2004)

Risk perception is dynamic and can change over time. High-impact events, changes in socioeconomic conditions, and policy interventions can influence how risks are perceived and experienced. Monitoring these changes and adapting mitigation and response strategies accordingly is essential for effective and inclusive risk management.

SOCIAL INEQUALITIES AND IMPACTS OF DISASTERS

Social inequalities amplify the impacts of disasters, with the most vulnerable groups suffering the greatest damage. The lack of infrastructure, resources, and government support exacerbates the situation of these communities during and after disasters. Studies show that racialized communities have less access to recovery resources and face greater obstacles in post-disaster reconstruction (PORTO et al., 2013).

In addition to a lack of infrastructure and resources, uneven recovery can be observed in the distribution of post-disaster aid and support. In many cases, marginalized communities face significant difficulties in accessing assistance due to bureaucratic barriers, lack of information, and direct discrimination. Recovery policies are often not tailored to meet the specific needs of these communities, resulting in a slower and less effective recovery.

Disasters such as the Mariana dam collapse in 2015, for example, illustrate how racial and social inequalities influence the impacts of disasters. Poor and racialized communities suffered disproportionately from the aftermath of the disaster, facing significant difficulties in recovery due to a lack of government support and adequate infrastructure (MARCHEZINI, 2009). Another example is the environmental disaster in Barcarena, Pará, where quilombola and riverine communities were severely affected by spills of toxic waste from industries, revealing vulnerability exacerbated by social and racial inequalities.

PUBLIC POLICIES AND INTERVENTIONS

A critical assessment of public policies reveals significant flaws in addressing environmental vulnerability and racism: many policies lack a focus on the specific needs of the most affected communities. According to Herculano (2002), public policies often neglect the racial dimension of environmental injustices, resulting in inadequate interventions. Urban and environmental planning policies often fail to consider the need for environmental justice, leaving out the most important element for effective resolution, resulting in actions that perpetuate the vulnerability of these communities.

In Brazilian cities, the socio-environmental impacts resulting from the contrast between the legal city and the real city intensify social conflicts. This mismatch directly affects urban planning, which is often relegated to a secondary role, weakening the effectiveness of the Master Plan as a tool for urban regulation and control. The perception that the Master Plan is ineffective prevents significant changes in

the organization of urban space, making it difficult for planning to become an influential process capable of promoting new management practices in Brazilian cities. In addition, this situation contributes to the stigmatization of the most vulnerable populations, who end up being unfairly blamed for the impacts of socio-environmental disasters, a phenomenon that scholars call environmental injustice (Souza, 2015). To mitigate the vulnerability of these communities and combat environmental racism, it is essential to adopt a comprehensive and inclusive approach that integrates social and environmental justice into all phases of risk and disaster management. Only in this way will we be able to build fairer, more resilient cities capable of offering a dignified quality of life for all their inhabitants.

In Brazil, initiatives such as the Map of Environmental Conflicts show how the documentation and visibility of environmental injustices can promote political and social change. It is a crucial tool for the planning and execution of fairer and more effective public policies in the environmental field. This online platform, developed by the Oswaldo Cruz Foundation (Fiocruz) in partnership with other institutions, is an example of how technology and inter-institutional collaboration can be used to promote environmental justice and strengthen communities in the defense of their rights and a healthy environment.

Some proposals for interventions to mitigate vulnerability and promote environmental justice: inclusive urban planning, creating zoning policies that integrate marginalized communities into areas with adequate infrastructure and essential services, ensuring access to transportation, health, and education; improvement of basic sanitation, allocating resources for the construction of basic sanitation networks in favelas and peripheral areas, ensuring access to drinking water and sewage systems; Increasing political representation by establishing community councils with representatives of racialized populations to ensure their voices are heard in decision-making processes.

Furthermore, the implementation and integration of public policies should promote environmental and social justice, ensuring sustainable development and community inclusion, addressing not only the symptoms but also the root causes of environmental inequalities in Brazil.

CONCLUSION

The intersection of vulnerability and environmental racism in the social construction of disaster risk requires a multifaceted and inclusive approach. Public policies that consider social inequalities and promote environmental justice are essential to mitigate the impacts of disasters and strengthen the resilience of marginalized communities. The promotion of community participation and the implementation of specific interventions for vulnerable populations are key to achieving these goals.

This research highlighted the urgent need for recognition and action regarding environmental injustices that disproportionately affect racialized communities. Integrating environmental justice principles into public policies can not only reduce the vulnerability of these communities, but also

contribute to a more equitable and resilient society. The analysis presented the intersections between vulnerability and environmental racism, contributing to the academic debate and informing the formulation of more inclusive and effective public policies.

Through a combination of research, advocacy, and well-informed policy, it is possible to move towards a future where everyone, regardless of their race or socioeconomic background, can live in safe and sustainable environments.

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