

The complex interconnectedness of climate change and social inequality



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Reinaldo Dias

Associate Researcher at the Brazil-China Socio-Cultural Institute IBRACHINA/IBRAWORK. Sociologist, Doctor in Social Sciences and Master in Political Science from UNICAMP. Specialist in Environmental Sciences from the University of São Francisco – USF. Author of several books by the main Brazilian publishers – Atlas (GEN Group), Pearson, Saraiva among others – several scientific articles published in Brazil and abroad with a focus on sustainability. He received an Honorable Mention certificate from Mackenzie Presbyterian University in recognition of the excellence of scientific production. On google Scholar your H=28 index (August 2023).

E-mail: reinaldias@gmail.com

LATTES: <http://lattes.cnpq.br/5937396816014363>

ORCID: <https://orcid.org/0000-0002-8621-2658>

ABSTRACT

This article addresses the interconnectedness between climate change and social inequality, highlighting how global warming exacerbates existing disparities. Climate change, driven by

anthropogenic emissions, disproportionately affects the poorest, increasing risks of natural disasters, health problems, and loss of agricultural production. Social inequality is exacerbated by climate change, with women and girls being particularly affected due to their reliance on climate-vulnerable resources and unequal access to opportunities. The phenomenon of climate refugees, resulting from climate-induced disasters, is a growing challenge, still without clear legal and political solutions. In addition, children face heightened risks due to their vulnerability to climate shocks. The article argues that mitigation policies and strategies should integrate social and economic development, with multisectoral approaches, green technological innovation, environmental education, climate finance focused on social justice, and inclusion and empowerment policies. The need for a holistic and integrated response is emphasized to effectively address both climate change and social inequality.

Keywords: Climate Change, Social Inequality, Vulnerability, Climate Refugees, Mitigation Policies.

1 INTRODUCTION

The phenomenon of climate change, driven primarily by anthropogenic greenhouse gas emissions, poses a significant threat to global environmental, economic, and social sustainability (IPCC, 2021). While the scientific literature has predominantly focused on environmental and economic impacts, it is crucial to understand how climate change affects social structure and contributes to inequality.

Climate change threatens the goal of eradicating poverty, as it disproportionately affects the poorest, who are most vulnerable to environmental disasters, climate-related health problems, and loss of agricultural production. These factors could force more than 100 million people back into poverty over the next 15 years. In addition, the unpredictable economic costs of climate change challenge the development of many countries. While rich countries are the largest emitters of greenhouse gases, it is



developing countries that face the greatest difficulties in dealing with the consequences of climate change (Khine & Langkulsen, 2023).

In developing countries, climate change is intensifying risks to livelihoods, access to water and food, and security. They exacerbate insecurity by interacting with vulnerabilities such as underdevelopment, dependence on natural resources, inequality, weak institutions, and marginalization, increasing the risk of conflict. Although they are not a direct cause of conflict, they influence living conditions and migration patterns, enhancing conflicts. Adaptation to climate change, which aims to adjust to its effects, is crucial to reducing vulnerabilities and improving livelihoods, water and food security. However, many adaptation initiatives have been technical, fragmented and top-down, with significant gaps in planning and implementation, and often ignore key societal factors that could improve adaptation and mitigate climate-related security risks (SIPRI, 2022).

2 SOCIAL INEQUALITY AND CLIMATE VULNERABILITY

Social inequality is exacerbated by climate change in a number of ways. Resource-constrained populations often inhabit areas that are more susceptible to extreme weather events, such as floods and droughts (Mearns & Norton, 2010). In addition, these communities often have a lower capacity to adapt and recover after natural disasters, further exacerbating socioeconomic disparity (Hallegatte et al., 2016).

As a recent example, in February 2023, an extreme weather event triggered a series of disasters on the North Coast of São Paulo, as widely reported by the media. The region, formed by São Sebastião, Ilhabela, Caraguatatuba, and Ubatuba, experienced unprecedented chaos, severely impacting communities, especially the most vulnerable. The tragedy resulted in 65 deaths, 2,251 homeless and 1,815 homeless, in addition to causing landslides, flooding and closure of major highways. The destruction led to a lack of basic services and the collapse of infrastructure, leading the state government to declare a state of public calamity in the affected areas, highlighting the region's vulnerability to extreme weather events.

According to the World Bank, climate change is intrinsically linked to global inequality. The poorest and most vulnerable, who contribute the least to the climate crisis, face its most severe impacts, such as extreme events, poor health, food and water insecurity, loss of livelihoods, forced migration, and loss of cultural identity. Groups such as female-headed households, children, persons with disabilities, indigenous peoples, ethnic minorities, migrant workers, and other marginalized groups are especially vulnerable due to their geographic location, socioeconomic status, and limited access to resources and justice. These groups call for stronger action against climate change, highlighting that this crisis transcends the environmental, profoundly touching social issues and inequalities between countries, within nations, between genders and generations (World Bank, 2023).



According to a recent 2021/2022 report by the United Nations Development Programme (UNDP), the growing recognition of climate change is raising uncertainties about the future and intensifying global concerns about long-term well-being. These climate effects, while universal, impact unequally, mainly affecting the poorest, especially children and young people in developing countries. People in poverty are more vulnerable to a variety of adversities, including ill health and the effects of global crises such as climate change and pandemics, and have fewer means to adapt or recover. Moreover, economic insecurity is not limited to the poor by national or international standards; Many in the middle class also feel this insecurity, especially informal workers, people in atypical contractual arrangements, individuals with lower educational attainment, women, young adults, racial and ethnic minorities, and heads of single-parent households. (UNDP, 2021/2022).

3 ECONOMIC AND SOCIAL IMPACTS

The economic impacts of climate change, such as loss of agricultural livelihoods and decreased productivity, tend to disproportionately affect low-income groups (World Bank, 2010). Not only does this intensify existing poverty, but it also creates new forms of inequality, as some regions and sectors are more affected than others.

Climate change is intensifying conflict, disasters and displacement, being the main cause of internal migration of an estimated 32 million people in 2022. They are also exacerbating hunger and forcing many, especially indigenous communities, to leave their homes and livelihoods due to extreme weather events and ongoing environmental stress. This elevates the need for urgent assistance and protection for those facing humanitarian crises (IDMC, 2023).

The social impacts of climate change are especially severe when it relates to gender inequality, the issue of climate refugees and children.

3.1 GENDER INEQUALITY

Climate change disproportionately impacts different groups, exacerbating existing inequalities, especially between men and women. In many regions, women, who often depend on climate-vulnerable sectors such as agriculture, are most affected by the climate crisis. This is due to the unequal distribution of power, gender differences in access to education and work opportunities, unpaid care burdens, gender-based violence and other entrenched forms of discrimination (UNDP, 2023).

Including women in climate policy decisions is crucial for developing effective mitigation and adaptation strategies, ensuring that they meet their specific needs. However, women's involvement is often limited due to the disproportionate volume of unpaid care they provide, accounting for more than 75% of this type of work globally. This imbalance is aggravated in situations of climate disasters, increasing the burden on women and hindering their access to education and the labor market. In



addition, in the aftermath of climate catastrophes, women face greater vulnerability to gender-based violence and require essential protection and services. Therefore, gender equality and women's empowerment are key to an effective and long-term response to climate change (UNDP, 2023).

3.2 CLIMATE REFUGEES

The term "climate refugees" is often used to describe people who are forced to leave their homes due to natural disasters caused by climate change, such as floods, droughts, and storms.

Climate change primarily affects populations in coastal and low-lying zones, as evidenced by recent disasters. In 2023, Storm Daniel caused 12,000 deaths in Libya, and record temperatures were recorded in the Mediterranean and the US. Severe flooding in Italy displaced thousands, while in Pakistan, 10 million were displaced and the Horn of Africa faced severe drought. In the U.S., 18 climate disasters in 2022 resulted in losses of more than \$165 billion. Hurricane Ian was particularly devastating, with \$113 billion in damage. Floods in Europe in 2021 also caused hundreds of deaths. These events are a reminder of the global nature of climate disasters. Sea level rise threatens global cities and can lead to the disappearance of entire countries, forcing massive displacement (APAP & HARJU, 2021).

Climate change is intensifying the frequency and severity of such natural disasters. This means that more people are being exposed to risks and are being forced to move. In addition to the immediate challenges of displacement, these populations also face long-term issues such as food insecurity, loss of livelihoods, and difficulties in accessing basic services.

As per recent data released by the Internal Displacement Monitoring Centre (IDMC, 2021), since 2008, more than 376 million individuals globally have been forcibly displaced due to natural disasters such as floods, cyclones, earthquakes, and droughts, reaching an all-time high of 32.6 million in 2022. As of 2020, there was an average annual growth of 41% in the total number of people displaced by disasters, compared to the average of the previous decade. This growing trend is deeply troubling. Driven by climate change, the number of people becoming "climate refugees" is expected to continue to rise.

Migration and its impact on sustainable development are rising topics on international agendas, as evidenced by the United Nations 2030 Agenda. However, the lack of legal definition and adequate protection for climate-displaced people is a significant concern, many of whom remain within their national borders, while others move internationally. Accurate data on climate-related cross-border migration is scarce, hindering the development of an international legal framework. The Nansen Initiative and the Global Compact for Safe, Orderly and Regular Migration, as well as COP conferences, have begun to address climate migration but have not yet offered legal status or official protection to those affected. COP27 in 2022 discussed policy solutions for climate mobility. Entities



such as UNHCR and the European Commission recognize the growing role of climate change in forced displacement, emphasizing the need for effective action and policies. (APAP & HARJU, 2021).

Climate change, closely linked to forced migration and conflict, could internally displace tens of millions in sub-Saharan Africa, Latin America and South Asia by 2050. More than 143 million could be displaced due to growing ecological threats. Poor and vulnerable regions will suffer the most, with rising sea levels forcing the evacuation of coastal areas. This phenomenon will intensify pressures on infrastructures and host communities. The concept of the "Climate-Security Nexus" highlights the connection between climate change, security and migration. Countries with high levels of internal displacement due to conflict and natural disasters will face additional challenges, with many citizens seeking refuge in other regions or countries (IEP, 2022).

3.3 CHILDREN AT SERIOUS RISK DUE TO CLIMATE CHANGE

The dire situation in which children live due to climate change is exposed in UNICEF's Child Climate Risk Index (CCRI) Report (2021) which reveals how billions of children face heightened risks due to the climate crisis. Children are particularly vulnerable to climate and environmental shocks for a variety of reasons: their greater physical and physiological vulnerability, higher risk of death from diseases exacerbated by climate change, and the prolonged impact of environmental deprivation on their future lives.

The UNICEF report (2021) also highlights that many children reside in areas subject to multiple climate and environmental risks. Natural disasters such as droughts and floods, coupled with other environmental stresses, not only mutually intensify, but also exacerbate social inequality and marginalization. In addition, the interaction of these hazards with other health and social risks creates a vicious cycle, deepening children's vulnerability and increasing their risk of experiencing the most severe effects of climate change.

Mitigation efforts will take decades to reverse the impacts of climate change. Without substantial investments in the adaptation and resilience of social services, future generations of children will face increasing risks. It is crucial to understand children's vulnerability in order to assess the potential impact of climate risks on their well-being and survival. In addition to reducing greenhouse gas emissions, specific actions can reduce children's exposure and vulnerability. Investments in resilient services such as Water, Sanitation and Hygiene (WASH), education, health, nutrition and social protection can significantly reduce climate risks for millions of children globally (UNICEF, 2021).

In a more recent report, UNICEF (2023) highlights how the climate crisis directly impacts children's health and development, affecting their brain, lungs, immune system, and other vital functions from conception to adulthood. It emphasizes that no region is immune to climate change,



and children around the world, including in developed countries, are vulnerable to its effects. Pollution, deadly diseases, and extreme weather events particularly affect children, who are more susceptible than adults to problems such as malnutrition and heat-related illnesses.

Every year, 40 million children have their education disrupted by climate disasters, and face an increased risk of mental health problems. Despite this vulnerability, the global response to climate change often ignores children's needs, with only a small fraction of climate finance going to age-sensitive projects. UNICEF argues that incorporating children's rights and opinions would lead to more effective environmental policies. The report also points to the water crisis as a central problem of climate change, affecting water security and exposing millions of children to water scarcity. (UNICEF, 2023).

4 HEALTH, EDUCATION AND INEQUALITY

The public health effects of climate change, including the rise in vector-borne diseases and heat-related problems, disproportionately affect the poorest and least educated. In addition, the need to reallocate resources to deal with climate disasters often results in reduced investments in education and health, deepening social inequality (UNDP, 2020).

Health and education are areas profoundly affected by climate change. Extreme weather can lead to disease outbreaks and affect health and education infrastructure, particularly in resource-limited regions (McMichael et al., 2006). Children, being more vulnerable, may face disruptions in education and long-term health problems due to extreme weather events.

Climate change, increasing exposure to pandemics and epidemics, is closely linked to poverty and poses a global health challenge. These changes adversely affect factors such as health, education, and food security, with the poorest facing the greatest impact. The lack of resilient and inclusive strategies can exacerbate problems such as health, poverty, hunger, and gender inequality, increasing disparities and perpetuating a vicious cycle of poverty and vulnerability. To combat this, it is essential to enhance community health and social services, aiming for a sustainable and inclusive reduction of inequalities exacerbated by climate change (Khine & Langkulsen, 2023).

5 MITIGATION POLICIES AND STRATEGIES

To address the interconnected challenges of climate change and social inequality, it is imperative to implement effective mitigation policies and strategies that address both issues in an integrated manner. These policies should focus on reducing greenhouse gas emissions while promoting social and economic justice.

Climate change mitigation policies need to be integrated with social and economic development strategies. Investments in renewable energy, energy efficiency, and sustainable transportation not only



reduce greenhouse gas emissions but can also offer economic and social benefits, such as job creation and improved air quality (Jacobson et al., 2018).

Among the mitigation policies and strategies that can be adopted are the following: Multisectoral and Integrated Approach; Innovation in Green Technology and Sustainable Jobs; Education and Awareness; Climate Finance and Social Justice; and Inclusion and Empowerment Policies.

5.1 MULTISECTORAL AND INTEGRATED APPROACH

A multisectoral approach is vital to address climate change and social inequality simultaneously. This includes sustainable development policies that integrate environmental, social and economic considerations. As highlighted by the UNDP Human Development Report (UNDP 2021/2022), it is critical for countries to incorporate environmental sustainability into their economic development models, ensuring that poverty reduction and social equity are central to their climate change mitigation strategies.

5.2 INNOVATION IN GREEN TECHNOLOGY AND SUSTAINABLE JOBS

Investing in technological innovation focused on clean energy and sustainable practices is an effective way to combat climate change while also creating jobs and reducing inequality. According to the International Renewable Energy Agency (IRENA, 2022), the transition to renewable energy could result in the creation of millions of jobs, offering opportunities particularly in underdeveloped regions. These jobs, often requiring new skills, can contribute to poverty reduction and improved social equality.

5.3 EDUCATION & AWARENESS

Education plays a key role in mitigating climate change and promoting social equality. Educational programs that focus on sustainability and environmental awareness can empower individuals, especially in vulnerable communities, to make informed decisions and actively participate in mitigation efforts. As reported by UNESCO (2021), education for sustainable development is essential to equip future generations with the skills and knowledge needed to address climate and social challenges.

5.4 CLIMATE FINANCE AND SOCIAL JUSTICE

Climate finance is another critical area, where funds should be directed not only towards reducing carbon emissions but also towards improving the resilience of communities most affected by climate change. The World Bank (World Bank, 2023) emphasizes the need for climate finance that is



accessible to developing countries and that prioritizes projects that promote social equity. This funding can support climate change adaptation in vulnerable areas, as well as initiatives aimed at reducing poverty and improving education and health.

5.5 INCLUSION AND EMPOWERMENT POLICIES

Climate action can hugely benefit people on low incomes and other disadvantaged communities, offering everything from cheaper clean energy to health improvements. However, these populations face difficulties in accessing these benefits. Substantial investments and equity-focused innovations can provide significant advantages to these communities, such as improved healthcare, affordable energy, transportation, decent jobs, and participation in public life. However, these communities often suffer injustices, contributing less to greenhouse gas emissions but being more affected by climate change and less benefited by climate action, as well as facing higher social costs (Bouyé & Waskow, 2021).

Policies that promote the inclusion and empowerment of marginalized groups are crucial. This includes ensuring that the voices of vulnerable communities are heard in decisions related to climate change and that they have equitable access to the resources they need to adapt to these changes. Including diverse perspectives in policymaking can lead to more effective and fair solutions.

Addressing climate change and social inequality requires a holistic and integrated approach, combining technological innovation, education, fair finance, and inclusive policies. It is essential that mitigation efforts are designed to benefit not only the environment but also to promote social and economic justice, creating a sustainable future for all.

6 CONCLUSION

The complex interconnectedness between climate change and social inequality underscores the urgent need for holistic and integrated approaches to global policy. This article highlighted how climate change exacerbates socio-economic disparities, disproportionately affecting the most vulnerable and marginalized populations, including the poor, women, children, indigenous peoples, and communities in high-risk regions.

The climate crisis is not only an environmental challenge, but also an issue deeply rooted in social and economic inequalities. Mitigation and adaptation policies need to be inclusive, ensuring that the most vulnerable not only survive but thrive in an ever-changing world. This entails acknowledging and addressing existing inequalities, ensuring that climate solutions are fair and accessible to all.

Climate change education and awareness play a crucial role in fostering resilient and informed communities. The inclusion of diverse perspectives in policymaking and the active participation of affected communities are essential to ensure that climate strategies are effective and equitable.



In addition, climate finance must be targeted in a way that supports not only reducing emissions but also improving the resilience of the most affected communities. This implies significant investments in areas such as education, health, and infrastructure, which are essential for building a more egalitarian society prepared to face the challenges of climate change.

Climate change and social inequality are intrinsically linked, with the effects of the former exacerbating the latter. The need for integrated approaches that consider both aspects are crucial for truly sustainable development. Effective policies and strategies require a deep understanding of the social, economic, and environmental dynamics involved. The literature suggests that the approach to tackling these challenges should be holistic, combining climate mitigation efforts with strategies aimed at reducing socioeconomic inequality. Future research should focus on specific adaptive strategies for vulnerable communities and on policies that integrate socioeconomic and environmental considerations to promote sustainable and equitable development.



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