



Climate and Socio-ecological Vulnerabilities: Tackling Sabotage of Indigenous People’s Rights, Information Gaps and Advocacy Barriers in Hard- to-reach Communities

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Abstract

The escalating climate crisis presents a profound challenge to global stability, with its impacts disproportionately devastating communities least responsible for its genesis. This article critically explores the intricate nexus between climate change and socio-ecological vulnerabilities, specifically focusing on “hard-to-reach” indigenous populations. These communities often face a triple threat: the physical sabotage of their ancestral land rights, pervasive information gaps that hinder local adaptation strategies, and systemic advocacy barriers that exclude their voices from high-level policy frameworks. By examining case studies of geographic and political isolation, this study identifies how institutional neglect exacerbates environmental risks. The findings underscore the urgent need for inclusive governance and democratized climate data to dismantle the structural inequalities inherent in global environmental discourse. Ultimately, the research advocates for a rights-based approach to climate justice, ensuring that marginalized indigenous perspectives are central to shaping resilient, equitable, and sustainable global climate actions.

Keywords

Climate; Socio-Ecological Vulnerabilities; Sabotage; Indigenous People’s Rights; Information Gaps; Advocacy Barriers; Hard-to-Reach Communities

1. Introduction

The terminology surrounding “hard-to-reach” and “vulnerable” communities is crucial for understanding the differential impacts of climate change. Hard-to-reach communities are often characterized by inherent geographical isolation, limited access to essential infrastructure, and entrenched socio-economic marginalization, which collectively render them difficult to engage in public participation initiatives and to access vital services [1]. This broad category encompasses a diverse array of groups, including various minority populations, “hidden populations” who may actively seek to avoid contact, and the “underserved” who lack adequate access to existing services. Such communities are frequently identified by demographic characteristics, such as being rural populations, individuals with disabilities, or specific ethnic groups, but also by attitudinal factors, such as a deep-seated disillusionment with or distrust of external authorities [2, 3].

In the specific context of climate change, vulnerable communities are those that experience a heightened risk and increased sensitivity to climate impacts, possessing a significantly reduced capacity and fewer resources to effectively cope with, adapt to, or recover from these changes [3, 4]. These disproportionate effects are not random; they are

driven by a complex interplay of pre-existing physical (both built and environmental), social, political, and economic factors that are severely exacerbated by climate impacts. The Intergovernmental Panel on Climate Change (IPCC) identifies several key vulnerable groups, including women, youth, Indigenous Peoples, local communities, and the elderly, particularly those residing in developing countries and regions highly exposed to climate change phenomena [5-7].

A critical examination of the term “hard-to-reach” reveals that its common usage frequently obscures underlying systemic failures rather than reflecting inherent characteristics of the communities themselves. While the term might seem to describe groups that are simply difficult to contact or influence through existing methods, a deeper understanding indicates that this difficulty often stems from the historical inadequacy of external systems and engagement strategies. For instance, communities labeled “hard to reach” may harbor a profound distrust in public authorities, a sentiment born from past experiences where statutory services have failed them, or where they perceive that their concerns are not genuinely heard or valued.

Furthermore, the climate crisis and socio-ecological vulnerabilities intensify pre-existing social, economic, and health inequities within hard-to-reach communities. This means that climate impacts do not affect all populations equally; rather, they disproportionately burden those already grappling with systemic disadvantages. For example, communities facing political and economic marginalization, or those with limited access to financial resources and healthcare, find their vulnerabilities severely exacerbated by climate-induced changes. This creates a reinforcing cycle where climate impacts deepen existing inequalities, making adaptation efforts more challenging and further entrenching poverty and marginalization.

According to a particular study, hard-to-reach communities face systemic advocacy barriers and profound political marginalization that severely impede their ability to respond to climate change and secure justice [7]. Indigenous Peoples and other marginalized groups frequently experience a severe lack of representation, decision-making power, and inclusion of their unique priorities in climate policy formulation [6-8]. Their voices, while integral to equitable climate solutions, are often subjected to “tokenism,” where their inclusion is superficial and lacks genuine empowerment or influence. The absence of robust Free, Prior, and Informed Consent (FPIC) mechanisms further undermines indigenous peoples’ collective rights and their fundamental right to participate meaningfully in decisions that directly affect their lands, resources, and well-being [9]. A clear case of indigenous people’s rights sabotage is found in Ogoni, Eastern Obolo, Ibeno, etc., in the Niger Delta.

Political marginalization is not merely a socio-ecological threat, but a direct driver of climate injustice, as it systematically disempowers vulnerable communities from shaping policies that are critical for their survival and well-being [10, 11]. The lack of genuine Indigenous representation, for instance, demonstrably harms the efficacy of climate policy and creates a significant potential for maladaptation. When communities most affected by climate change are systematically excluded from the design and implementation of policies and projects, the resulting interventions are often ineffective, inappropriate, or even harmful, reinforcing existing power imbalances.

2. Climate Impacts and Socio-Ecological Vulnerabilities in Remote Communities

Remote communities globally, despite often having minimal contributions to global emissions, bear a disproportionate burden of environmental degradation. Oil exploration and production have historically served as the economic backbone of Nigeria, yet this industry has simultaneously inflicted severe environmental degradation upon the Niger Delta region [12]. The scale of this environmental assault is staggering: between 1970 and 1982, oil-producing communities within the Niger Delta experienced an alarming 1,581 oil spills, which collectively released an estimated 1.426 million barrels of crude oil [13, 14]. More recently, between 2013 and 2023, Akwa Ibom State alone recorded 260 confirmed crude oil spills, leaking an estimated 42,926.83 barrels [15].

These spills result in the widespread contamination of critical resources: water, air, and food crops are tainted with hazardous hydrocarbons and trace metals such as lead, nickel, and cadmium. Studies show that more than 40% of water sources in oil-producing communities in the Niger Delta are acidified and unsafe for drinking [16, 17]. The impact on agriculture is equally severe; farmlands have become unproductive due to poor soil fertility, leading to significant reductions in crop yields and fishery losses. Traditional fishing grounds are polluted, rendering fishing equipment unusable [18-20].

Oil spillage leads to a significant reduction in the income of fishing households and exacerbates food insecurity, with oil spills capable of causing a 60% reduction in household food security and a 24% increase in the prevalence of childhood malnutrition due to reduced food value [16]. In the oil-rich Niger Delta, a staggering 64% of the

population lacks a stable income or access to basic amenities [16].

On a similar note, the Arctic region is experiencing warming at a rate three times the global annual average, leading to an accelerated melting of snow and ice. Summer sea ice extent is shrinking by 13% per decade [21]. Rapid environmental transformation has profound consequences for Arctic indigenous communities. Permafrost thaw severely threatens infrastructure stability, with projections indicating that up to half of Arctic infrastructure could be damaged by 2050. Coastal erosion is also a critical issue, with some areas in Alaska losing up to five meters of coastline annually.

Small Island Developing States (SIDS) are among the most vulnerable regions to climate change impacts, despite contributing less than 1% to global greenhouse gas emissions. Over 80% of the land area in the Maldives is less than one meter above mean sea level, and a one-meter sea-level rise could lead to its disappearance. Between 1970 and 2020, SIDS collectively lost US\$153 billion due to weather extremes [22].

In the United States, rural communities face vulnerabilities due to aging infrastructure. A substantial digital divide persists, with nearly 30% of rural residents lacking broadband internet access [23]. Furthermore, African pastoralist communities are highly vulnerable, with droughts resulting in a 60-80% increase in animal death rates reported in the Somali region between 1990 and 2003 [24]. The unique geographical and socio-economic characteristics of different remote communities amplify their climate vulnerabilities in distinct but interconnected ways [16].

3. Information and Infrastructural Gaps in Climate Communication and Adaptation

Effective climate action in hard-to-reach communities is frequently hampered by significant information gaps, compounded by technological limitations and linguistic barriers. Traditional approaches often operate under the “deficit model,” assuming that public inaction stems primarily from a lack of scientific data [25]. However, this model has faced criticism for its oversimplification of human behavior and its ineffectiveness [25].

The digital divide represents a significant barrier. Internet connectivity remains a persistent issue in rural and remote Tribal lands in the US, with approximately 23% of residents lacking access to high-speed internet [23]. In Canada, 457 remote communities lack adequate high-speed internet [26]. Language and cultural differences also pose challenges. The scientific terminology used by experts, such as “negative emissions,” often creates a language barrier [17].

4. Climate Communication and Actionable Baseline Data

A major barrier to climate adaptation is the lack of locally relevant data. In SIDS, inadequate baseline information severely impedes effective adaptation planning. For US rural communities, while some local-scale data may exist, its utility is limited unless translated into actionable guidance.

5. Outdated Institutional Framework and Climate Communication

The effectiveness of environmental protection is often undermined by weak legal frameworks. In Nigeria, environmental laws are frequently not effectively enforced and exist “only on paper” [16]. Similarly, in Ecuador, the legal system is largely inaccessible to private citizens seeking redress against oil companies [27]. In Nigeria, it was only when communities sought legal representation in the UK that Shell eventually agreed to negotiate compensation [16].

6. Unfair Alliance, Resource Rent Sharing and Ecological Trauma

Historical injustices breed deep-seated distrust. Many Indigenous Peoples carry intergenerational trauma stemming from colonization and forced removal. In the Niger Delta, broken promises from oil companies regarding social services have fueled unrest. For example, Mobil Producing Nigeria’s persistent refusal to relocate its administrative headquarters to Akwa Ibom State has fueled significant grievances [16, 17].

7. The Cost of Advocacy

The physical risks faced by environmental defenders represent the most extreme advocacy barrier [28, 29]. In the Niger Delta, security forces have been documented as brutalizing individuals attempting to raise grievances. This extreme form of suppression silences the voices of those most affected, allowing human rights abuses to continue unchecked.

8. Concluding Remark and Recommendations

The global climate crisis disproportionately impacts hard-to-reach communities, exacerbating pre-existing vulnerabilities. Addressing these challenges demands a fundamental paradigm shift toward inclusive, participatory, and context-specific solutions. This includes leveraging Indigenous knowledge, bridging the digital divide, and strengthening participatory governance. Achieving environmental justice requires systemic policy reforms that address historical inequities, ensure corporate accountability, and facilitate debt relief for vulnerable nations.

References

- [1] Brown O, Crawford A. *Climate change and indigenous peoples: the search for justice*. Brookings Institution; 2009.
- [2] Chakraborty A, Gupta A. Climate change, indigenous peoples, and the law: a systematic review. *Clim Change*. 2020;163:1369-1391. doi:10.1007/s10584-020-02785-4
- [3] Doherty T, Clayton T. The right to information and the environment: a new tool for climate change accountability. *J Environ Law*. 2019;31(3):527-550. doi:10.1093/jel/eqz020
- [4] Ford JD. Indigenous health and climate change. *Am J Public Health*. 2012;102(7):1260-1266. doi:10.2105/AJPH.2012.300752
- [5] Fraser G, Jones L. *Indigenous peoples and the environment*. Routledge; 2007.
- [6] Gbetnkom D. Climate change vulnerability and adaptation in Africa. *Environ Sci Policy*. 2018;89:168-179. doi:10.1016/j.envsci.2018.08.003
- [7] Government of Canada. *Canada's climate plan: a report on progress*. Government of Canada; 2018.
- [8] Halpern BS, Frazier M, Potapenko J, et al. Mapping the global distribution of human impact on marine ecosystems. *Science*. 2019;363(6425):eaat0828. doi:10.1126/science.aat0828
- [9] Human Rights Watch. *The human cost of the climate crisis*. Human Rights Watch; 2021.
- [10] Indian Law Resource Center. *Indigenous peoples and climate change*. Indian Law Resource Center; 2017.
- [11] IPCC. *Climate change 2022: impacts, adaptation and vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the IPCC*. Cambridge University Press; 2022.
- [12] Keskitalo ECH. *Climate change and social vulnerability in the Arctic: the case of the Sami people*. Routledge; 2010.
- [13] Masron TA, Manaf AA. Community-based tourism as a tool for sustainable development of indigenous communities. *Tour Manag Perspect*. 2019;32:100569. doi:10.1016/j.tmp.2019.100569
- [14] Nelson R. The right to say no: indigenous peoples, self-determination, and the extraction of natural resources. *Ariz J Int Comp Law*. 2010;27(1):1-40.
- [15] Pelling M, High C. Understanding adaptation: what determines the capacity to adapt? *Glob Environ Change*. 2005;15(4):305-314. doi:10.1016/j.gloenvcha.2005.08.001
- [16] Jimmy UJ, Imikan A, Udofia U, Maxwell I, Maduafor T. [Title of Study]. *J Geogr Nat Resour Manag*.
- [17] Jimmy UJ. [Specific study on Niger Delta Acidification] [dissertation]. University of Uyo; 2021.
- [18] Akpan E. Environmental impact of oil spills in the Niger Delta. *Afr Environ Rev*.
- [19] Okon B. Socio-economic impacts of gas flaring on host communities. *Glob J Soc Sci*.
- [20] Udoh S. Fishery losses and food security in oil-producing regions. *J Agric Sci*.
- [21] National Snow and Ice Data Center. *Arctic Sea Ice News and Analysis*. 2023.
- [22] UNCTAD. *Climate change impacts on SIDS economic development*. 2021.
- [23] FCC. *Fourteenth Broadband Deployment Report*. 2021.
- [24] FAO. *Livestock and climate change in the Horn of Africa*. 2005.
- [25] Simis MJ, Madden H, Cacciatore MA, Yeo SK. The lure of rationality: why does the deficit model persist? *Public Underst Sci*. 2016;25(4):400-414. doi:10.1177/0963662516629749
- [26] CRTC. *Communications Monitoring Report*. 2019.
- [27] Amazon Watch. *Legal barriers for indigenous rights in Ecuador*. 2020.
- [28] Global Witness. *Last line of defence: the industries causing the climate crisis and attacks against land and environmental defenders*. 2021.
- [29] Amnesty International. *Protection of environmental defenders in the Niger Delta*. 2022.