
THE UNNATURAL DISASTER: INDIGENOUS KNOWLEDGE, CLIMATE JUSTICE, AND LAW

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ABSTRACT

Climate change is one of the most pressing challenges of our time, reshaping ecosystems, economies, and communities. It is more than an environmental crisis. However, its impact is not uniform. It poses a profound threat to the lives, livelihoods, and cultures of indigenous and tribal communities worldwide. These communities, despite contributing the least to global emissions, face disproportionate impacts from rising temperatures, erratic weather patterns, and environmental degradation. Traditional ways of living—deeply connected to forests, rivers, and land—are being disrupted, leading to food insecurity, forced displacement, and loss of cultural heritage.

This study explores the profound impact of climate change on indigenous populations, highlighting how their rights, resources, and resilience are increasingly under threat. It critically assesses the effectiveness of existing legal frameworks in safeguarding these communities. Also, this research underscores the vital role of indigenous knowledge systems in climate adaptation and mitigation. It advocates for the integration of traditional ecological knowledge into policy frameworks, emphasizing that sustainable climate policies must be inclusive of indigenous perspectives. Ultimately, this study seeks to bridge the gap between environmental justice and legal accountability, advocating for stronger, more inclusive policies that recognize and respect the invaluable wisdom of indigenous communities in addressing climate change.

Keywords: Climate Change, Laws, Indigenous People, Environment, Traditional knowledge

INTRODUCTION

Climate change is one of the most pressing challenges of our time, reshaping ecosystems, economies, and communities. It is not just an environmental crisis but a deeply human one, affecting millions of lives across the globe. The increasing frequency of extreme weather events, rising sea levels, and shifting climate patterns pose unprecedented risks. For example, the devastating wildfires in Australia in 2019-2020 burned 24.3 million hectares of land¹, displaced thousands of people, and wiped out significant wildlife populations. Such disasters are becoming more common, highlighting the urgency of climate action. However, the impact of climate change is not uniform—some communities bear a far greater burden than others, despite having contributed the least to the problem. The effects of climate change are deeply intertwined with social and economic factors. Marginalized communities, particularly indigenous and tribal populations, are among the most affected. These communities rely on the land and natural resources for their sustenance, cultural identity, and economic survival. However, as climate change accelerates, their way of life is under threat. Rising temperatures, erratic weather patterns, deforestation, and resource depletion have led to food insecurity, forced displacement, and loss of cultural heritage. The irony is that these communities, which have lived sustainably for centuries, are now facing the most severe consequences of a crisis they did not create.

Indigenous people worldwide, from the Arctic to the Amazon, are witnessing first-hand the destructive effects of climate change. In the Arctic, the Inuit people face challenges as melting ice disrupts their traditional hunting patterns, endangering their food security and way of life. Similarly, in the Amazon rainforest, indigenous communities are struggling against deforestation, which not only exacerbates climate change but also destroys their homes and sacred lands. In India, tribes like the **Dongria Kondh**², who depend on the Niyamgiri hills for their livelihood, are experiencing water shortages and soil degradation due to changing climate patterns. These examples illustrate the disproportionate impact of climate change on indigenous populations, who are often left without adequate legal protection or government support.

¹ Binskin, Mark et.al. "Royal Commission into Natural Disaster Arrangements. Commonwealth of Australia". p. 115. 2020 ISBN 978-1-921091-46-9. OCLC 1237798510.

² <https://www.survivalinternational.org/tribes/dongria>

To tackle these challenges, international and domestic legal frameworks have been developed to safeguard the rights of indigenous communities. One of the most significant legal instruments is the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), which recognizes indigenous peoples' rights to land, resources, and self-determination. Various national laws also exist to protect indigenous rights, such as India's Forest Rights Act, which grants forest-dwelling communities legal rights over their land. Similarly, in the United States, laws like the Native American Graves Protection and Repatriation Act (NAGPRA) provide some protections for indigenous cultural heritage. However, the effectiveness of these legal frameworks remains questionable. Many laws are not enforced properly and some laws itself has some loopholes that lead to exploitation of indigenous people, and moreover, indigenous communities often face bureaucratic hurdles when trying to assert their rights. Governments and corporations frequently ignore indigenous land rights in favour of large-scale industrial projects, such as mining and deforestation, which further exacerbate climate vulnerabilities. Legal loopholes and weak enforcement mechanisms allow these violations to continue unchecked, leaving indigenous communities with little recourse for justice.

Beyond legal protections, indigenous knowledge and traditional practices offer valuable solutions for climate resilience. Indigenous communities have long practiced sustainable land management, such as controlled burning to prevent wildfires and agroforestry techniques that enhance biodiversity³. Legal systems should integrate these traditional practices. Policies that recognize and incorporate indigenous wisdom could enhance climate adaptation strategies and provide a more inclusive approach to environmental conservation.

This paper critically examines the intersection of climate change, indigenous rights, and legal frameworks, focusing on the effectiveness of existing laws in safeguarding indigenous communities from the disproportionate impacts of environmental degradation. It emphasizes the need for stronger, more inclusive policies that go beyond merely recognizing indigenous rights to actively empowering these communities as essential partners in climate adaptation and mitigation. This research advocates for integrating traditional ecological knowledge into legal and policy frameworks to ensure sustainable, community-driven solutions to climate challenges.

³ Dorji, T., et al. "Understanding How Indigenous Knowledge Contributes to Climate Change Adaptation and Resilience: A Systematic Literature Review.", *Environmental Management* 74, 1101–1123 (2024). <https://doi.org/10.1007/s00267-024-02032->

LITERATURE REVIEW

The disproportionate impacts of climate change on indigenous communities have been extensively documented in recent scholarship. Indigenous populations, though contributing minimally to global greenhouse gas emissions, face existential threats to their livelihoods, cultural heritage, and traditional ecosystems due to rising temperatures, erratic weather patterns, and environmental degradation (Faizi & Nair, 2017; Dorji et al., 2024). The vulnerability of these communities is exacerbated by historical dispossession, neoliberal extractivism, and systemic marginalization, as seen in cases such as the Dongria Kondh in India and the Inuit in the Arctic (Barberstock, 2024; Munro et al., 2021).

Legal frameworks designed to protect indigenous rights, such as India's Forest Rights Act (2006) and the Biological Diversity Act (2002), often fail in implementation due to bureaucratic inefficiencies, corporate interference, and lack of political will (Gopalakrishnan & Udayan, 2005; Samatha v. State of Andhra Pradesh, 1997). The Environmental Impact Assessment (EIA) process, intended to incorporate indigenous voices, frequently excludes meaningful participation, as evidenced by the Vedanta project in Odisha (Environmental Impact Assessment Notification, 2006).

Traditional Ecological Knowledge (TEK) offers critical solutions for climate resilience, yet remains undervalued in mainstream policy. Indigenous communities steward 25% of global land and 80% of biodiversity, demonstrating sustainable practices such as controlled burning and agroforestry (Reyes-García et al., 2022; Ottenhoff, 2021). However, Western scientific institutions, including the IPCC, often marginalize TEK due to its qualitative and holistic nature, which contrasts with empirical scientific methodologies (Alexander et al., 2011).

Efforts to integrate indigenous perspectives, such as Canada's Indigenous-led climate initiatives (Marsden & Curran, 2021), highlight the need for legal reforms that prioritize indigenous sovereignty and direct funding. The ongoing violence against indigenous environmental defenders—over 1,733 killed between 2012–2021 (Global Witness, 2022)—underscores the urgency of systemic change.

THE UNNATURAL DISASTERS: CLIMATE CHANGE AND INDIGENOUS VULNERABILITY

Climate change is not a distant threat for indigenous peoples; it is a present and intensifying

reality that disrupts their lives, livelihoods, and cultural heritage. Indigenous communities, who have lived in harmony with their environments for centuries, are now on the frontlines of a crisis they did little to create. In India, the Adivasi communities, who constitute nearly 8.6% of the population, are among the most vulnerable to the impacts of climate change⁴. For instance, the Gond and Baiga tribes in central India, who rely heavily on forests for their sustenance, are facing unprecedented challenges due to erratic rainfall, prolonged droughts, and declining forest productivity⁵. The Gond and Baiga tribes' struggles with erratic rainfall exemplify how climate risks are amplified by state prioritization of mining over FRA implementation. Similarly, in the Sundarbans, home to indigenous communities like the Munda and Santhal, rising sea levels and increasing salinity are destroying farmland and freshwater sources, forcing many to migrate in search of livelihoods. This displacement not only severs their connection to ancestral lands but also erodes their cultural identity, which is deeply intertwined with their environment⁶.

Beyond India, the impact of climate change on indigenous peoples is equally devastating. In the Arctic, the Inuit communities are witnessing the rapid melting of sea ice, which threatens their traditional hunting practices and food security. The loss of ice has made it dangerous to hunt seals and other marine animals, a practice that has sustained them for generations⁷. In the Amazon rainforest, indigenous tribes like the Yanomami and Kayapó are grappling with deforestation, wildfires, and changing weather patterns. These disruptions have not only reduced biodiversity but also undermined their ability to practice traditional agriculture and gather medicinal plants. In Australia, the Aboriginal peoples are experiencing the destruction of sacred sites and ecosystems due to rising temperatures and extreme weather events, such as bushfire. These examples underscore a grim reality: indigenous communities, who contribute the least to global greenhouse gas emissions, are bearing the brunt of climate change.

⁴ S. Faizi and Priya K. Nair, "Adivasis: The World's Largest Population of Indigenous People", Society for International Development, DOI 10.1057/s41301-017-0115-8, 2017

⁵ Arjjumend and Hasrat, "Baiga and Gond Tribes in Chhattisgarh, India: Comparative Study of Community Behaviours in Development Context", 2017, Grassroots India Trust, https://www.academia.edu/34758791/Baiga_and_Gond_Tribes_in_Chhattisgarh_India_Comparative_Study_of_Community_Behaviors_in_Development_Context

⁶ Nicholas Muller, "In the Indian Sundarbans, the Sea Is Coming: Across the world's largest delta, island communities bear the brunt of the climate crisis" The Diplomat, 2020, <https://thediplomat.com/2020/05/in-the-indian-sundarbans-the-sea-is-coming/>

⁷ Rye Karonhiowanen Barberstock, "Arctic Resilience: Inuit Communities at the Forefront of Climate Change Adaptation", Indigenous Climate Hub, 2024, <https://indigenousclimatehub.ca/2024/07/arctic-resilience-inuit-communities-at-the-forefront-of-climate-change-adaptation/>

The impact of climate change on indigenous peoples is not limited to environmental degradation; it also exacerbates social and economic inequalities. For instance, in the Himalayan region of India, indigenous communities like the Bhotiya and Monpa are facing the dual threats of glacial melt and unpredictable weather. The melting of glaciers has led to the formation of glacial lakes, which pose a constant risk of outburst floods, endangering lives and livelihoods. At the same time, changing weather patterns have disrupted traditional farming and pastoral practices, pushing many into poverty. In the Pacific Islands, indigenous communities are confronting the existential threat of rising sea levels, which could submerge entire islands and displace thousands of people. This loss of land is not just a physical displacement; it is a cultural catastrophe; as indigenous identities are deeply rooted in their connection to the land.

Through these examples, the widely used notion of a “**natural disaster**.” can and is challenged. When examined from an Indigenous community perspective, and bearing in mind targeted long-term risk creation through colonial land dispossession combined with anthropogenic climate change, there is very little that is “natural” about disasters such as floods, droughts, or wildfires. For instance, the flooding disasters in First Nation communities in Canada are often attributed to natural causes, but they are deeply rooted in historical injustices, such as the forced relocation of communities to flood-prone areas and the destruction of natural flood barriers through industrial development⁸. Similarly, in India, the displacement of Adivasi communities from their ancestral lands for mining and infrastructure projects has exacerbated their vulnerability to climate-induced disasters like floods and landslides. These examples reveal that disasters are not merely natural phenomena but are often the result of systemic inequalities and environmental mismanagement. Also, from a political ecology lens, climate vulnerability among indigenous communities is not accidental but rooted in historical dispossession and neoliberal extractivism. States and corporations often frame indigenous lands as ‘undeveloped’ to justify resource extraction, exacerbating ecological and social precarity. For example, India’s ‘ease of doing business’ policies prioritize mining leases in Scheduled Areas, directly undermining FRA protections.

Despite these challenges, indigenous communities are not passive victims; they are active

⁸ -MunroLilia YumagulovaEmily et. al., “Unnatural Disasters Colonialism, climate displacement, and Indigenous sovereignty in Siksika Nation’s disaster recovery efforts.”, Canadian Climate Institute, 2021, <https://climatechoices.ca/publications/unnatural-disasters/>

agents of resilience and adaptation. In India, the Dongria Kondh tribe in Odisha has successfully resisted mining projects in the Niyamgiri Hills, protecting their sacred forests and biodiversity. Similarly, in the Philippines, the Ifugao people have preserved their ancient rice terraces, which are not only a UNESCO World Heritage Site but also a model of sustainable agriculture. These examples highlight the importance of recognizing and supporting indigenous knowledge and practices in the fight against climate change. However, the lack of legal recognition and support for indigenous rights often undermines their efforts. For instance, in Brazil, the Guarani-Kaiowá people have faced violent evictions from their ancestral lands to make way for agribusiness, despite their proven ability to manage forests sustainably.

The stories of indigenous communities from India and around the world reveal a stark truth: climate change is not just an environmental crisis; it is a crisis of justice. Indigenous peoples, who have safeguarded biodiversity and ecosystems for generations, are now facing the loss of their homes, cultures, and ways of life. Their experiences underscore the urgent need for inclusive climate policies that recognize their rights, knowledge, and contributions. As the world grapples with the escalating impacts of climate change, the wisdom of indigenous peoples offers a beacon of hope. By centring their voices and experiences, we can forge a path toward a more just and sustainable future.

LEGAL FRAMEWORKS AND IMPLEMENTATION GAPS: RIGHTS V. REALITY

India has a complex legal framework addressing climate change and its impact on indigenous communities, but these laws often fall short in ensuring the protection of indigenous rights and environmental sustainability. The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (FRA) is a landmark legislation aimed at recognizing the rights of forest-dwelling communities, including indigenous groups, over forest lands and resources. The Act provides for individual and community rights to forest land, as well as the right to manage and conserve forest resources⁹. However, despite the progressive intent of the FRA, its implementation remains uneven and ineffective. The process of recognizing forest rights is often delayed due to bureaucratic hurdles and the lack of political will. For instance, in states like Chhattisgarh and Jharkhand, where a significant portion of the population depends on forest resources, large-scale mining projects and industrial activities have led to the

⁹ The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, No. 2, Acts of Parliament, 2007 (India), available at <https://tribal.nic.in/FRA/data/FRARulesBook.pdf>.

displacement of indigenous communities despite the legal protections provided under the FRA. The Gram Sabha, which is empowered under the Act to make decisions regarding land and resource management, is frequently bypassed or ignored when decisions about industrial projects are made.

The Environmental Impact Assessment (EIA) Notification, 2006, under the Environment Protection Act, 1986, is another crucial legal mechanism intended to evaluate the environmental consequences of development projects. The EIA process mandates public consultations to involve affected communities, including indigenous groups, in decision-making¹⁰. However, this mechanism has been criticized for its ineffectiveness in genuinely incorporating indigenous concerns. Public hearings are often conducted in a perfunctory manner, with limited participation from affected communities. Moreover, in several cases, public consultations have been conducted in languages unfamiliar to indigenous communities, undermining their ability to express concerns effectively. The Vedanta project in Odisha's Niyamgiri Hills epitomizes EIA failures: consultations were held in non-tribal languages, and the Dongria Kondh's sacred geography was ignored until Supreme Court intervention.

The Biological Diversity Act, 2002, aims to protect biodiversity and promote the equitable sharing of benefits arising from the use of biological resources. It recognizes the role of indigenous and local communities in conserving biodiversity and mandates the prior informed consent of these communities before granting access to biological resources¹¹. However, the implementation of this law has been weak, with limited awareness and understanding among indigenous communities about their rights under the Act. In many cases, benefit-sharing agreements have been inadequately enforced or have bypassed indigenous communities altogether. An example of this is the case of the Kani tribe in Kerala, who were involved in the development of a medicinal plant-based drug, but the promised benefit-sharing arrangements were delayed and poorly implemented, leaving the community without the rightful share of benefits¹².

The Panchayats (Extension to the Scheduled Areas) Act, 1996 (PESA) is another legislative

¹⁰ Environmental Impact Assessment Notification, 2006, Gazette of India, pt. II, sec. 3(ii), S.O. 1533 (Sept. 14, 2006), available at <https://www.moef.gov.in/>.

¹¹ The Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003 (India), available at <https://nbaindia.org/content/25/19/1/act.html>.

¹² P.K. Gopalakrishnan, & K. Udayan, "Traditional Knowledge and Benefit Sharing: The Case of Kani Tribes in Kerala, 4 J. Intell. Prop. Rts. 1, 45-50, 2005

measure intended to empower indigenous communities by extending self-governance to Scheduled Areas. PESA grants Gram Sabhas the authority to manage natural resources and safeguard the traditions and cultural identity of indigenous communities¹³. However, the implementation of PESA has been inconsistent, with many states failing to fully operationalize the provisions of the Act. The lack of clarity in the division of powers between state authorities and Gram Sabhas has resulted in the marginalization of indigenous voices in decision-making processes. In several cases, state authorities have overridden Gram Sabha decisions, as seen in the case of bauxite mining projects in Andhra Pradesh, where local community opposition was disregarded to facilitate corporate interests¹⁴.

Despite these legal frameworks, indigenous communities in India continue to face displacement, loss of livelihoods, and environmental degradation due to large-scale infrastructure projects and resource extraction. The lack of effective implementation, combined with weak enforcement mechanisms and inadequate grievance redressal systems, has led to widespread violations of indigenous rights.

TRADITIONAL KNOWLEDGE AND WESTERN KNOWLEDGE

Traditional knowledge (TK), also known as indigenous knowledge or local knowledge, refers to the deep-rooted wisdom, practices, and traditions of indigenous peoples and local communities. This knowledge has often been passed down orally from one generation to the next over centuries. It can take many forms, such as stories, legends, folklore, rituals, songs, art, and even community laws. In other cases, traditional knowledge is shared through different methods, reflecting the unique ways communities understand and interact with their environment. This knowledge is not just information—it's a vital part of **cultural identity and survival**.

Traditional ecological knowledge (TEK) constitutes a subset of indigenous knowledge, defined as a **cumulative** and **dynamic** body of knowledge, practices, and beliefs that evolve through adaptive processes and are transmitted across generations via cultural means. It encompasses

¹³ The Panchayats (Extension to the Scheduled Areas) Act, 1996, No. 40, Acts of Parliament, 1996 (India), available at <https://tribal.nic.in/downloads/CLM/PESA.pdf>.

¹⁴ Samatha v. State of Andhra Pradesh, (1997) 8 S.C.C. 191.

the intricate relationships between living beings, including humans, and their environments¹⁵. TEK is deeply embedded in the cultural and ecological contexts of local communities, often incorporating resource management strategies tailored to specific regions. This knowledge is frequently expressed through diverse **narratives**, observations, and accounts shared by indigenous individuals or groups. Such narratives serve as **repositories of intergenerational wisdom**, providing detailed and context-specific insights into natural resource patterns and environmental phenomena¹⁶.

The potential for integrating indigenous observations of climate change into global assessments, such as those conducted by the Intergovernmental Panel on Climate Change (IPCC), warrants deeper exploration. Historically, the IPCC, due to its **reliance on peer reviewed scientific studies** and the **intense public scrutiny** it faces, has largely excluded traditional indigenous knowledge (TK) as a credible source of information¹⁷. This exclusion stems from a broader bias against non-peer-reviewed evidence, as scientific rigor—defined by statistically analysed data, instrumental records, and precise empirical measurements—often contrasts with the qualitative and holistic nature of TK. Unlike Western scientific knowledge, which separates secular, rational knowledge from spiritual and intuitive wisdom, TK is deeply embedded in a cosmology that intertwines intangible knowledge with physical realities. Indigenous knowledge holders often emphasize that their wisdom cannot be divorced from the natural and cultural contexts in which it arises, including their ancestral lands, resources, and community relationships. Traditional Ecological Knowledge (TEK) represents knowledge systems that have frequently been undervalued or dismissed by mainstream scientists and policymakers. Definitions of TEK are often shaped by external scholars or professionals, who may prioritize their own agendas for environmental stewardship, further marginalizing indigenous perspectives. This dynamic positions TEK as a competing authority to Western science, creating a divide between indigenous and scientific experts. The emotive nature of this subject can polarize opinions, highlighting the need for a more inclusive and respectful dialogue that bridges these knowledge systems while recognizing their unique strengths and

¹⁵ Berkes F, “Traditional ecological knowledge in perspective”. Pages 1–9 in Inglis JT, ed. Traditional Ecological Knowledge: Concepts and Cases. Canadian Museum of Nature and the International Development Research Centre, 1993

¹⁶ Menzies CR and Butler C., “Introduction: Understanding ecological knowledge”. Pages 1–17 in Menzies CR, ed. Traditional Ecological Knowledge and Natural Resource Management. University of Nebraska Press, 2006

¹⁷ ClarenCe alexander et.al., “BioScience 477 Linking Indigenous and Scientific Knowledge of Climate Change ClarenCe alexander,

contexts.

THE TRANSFORMATIVE POWER OF INDIGENOUS KNOWLEDGE IN CLIMATE POLICY AND PRACTICE

Indigenous knowledge and communities hold immense potential in the global fight against climate change, offering unique insights and practices that have sustained ecosystems for centuries. Rooted in a deep understanding of local environments, Traditional Ecological Knowledge (TEK) encompasses time-tested strategies for resource management, biodiversity conservation, and climate adaptation. Indigenous peoples, who steward approximately 25% of the world's land surface, play a critical role in maintaining carbon-rich forests, wetlands, and other vital ecosystems. Indigenous territories safeguard an astonishing 80 percent of the planet's biodiversity¹⁸. Additionally, these lands are home to approximately 36 percent of the world's remaining intact forests¹⁹. Their holistic approach, which integrates spiritual, cultural, and ecological values, provides a model for sustainable living that aligns with the principles of resilience and intergenerational equity. Despite contributing minimally to global emissions, indigenous communities are disproportionately affected by climate change, making their inclusion in climate policies not only a matter of justice but also a practical necessity.

There are researches that show that Forests that are essential for life on Earth as they produce oxygen and help regulate the balance of carbon dioxide and oxygen in the atmosphere, thrive when indigenous people have legal stewardship of their land. In a 2021 article published in the journal *Ambio*, over 20 researchers emphasized that biodiversity is declining at a slower rate in areas managed by Indigenous peoples and local communities compared to other regions²⁰. Numerous studies further corroborate that forests under the stewardship of Indigenous and local communities with secure land rights exhibit lower deforestation rates, higher biodiversity, enhanced livelihoods, and reduced greenhouse gas emissions²¹. These findings underscore the

¹⁸ Ottenhoff, L., "Indigenous conservation can get Canada to climate goals: former MP Ethel Blondin-Andrew to Trudeau." *Canada's National Observer*, 2021.

¹⁹ <https://www.ran.org/the-understory/indigenous-land-stewardship-keeps-forests-standing/#:~:text=Despite%20only%20stewarding%2022%20percent,the%20world's%20remaining%20intact%20forests.>

²⁰ Reyes-García, et al. "Recognizing Indigenous peoples' and local communities' rights and agency in the post-2020 Biodiversity Agenda", *Ambio* 51, 84–92 (2022). <https://doi.org/10.1007/s13280-021-01561-7>

²¹ <https://rainforestfoundation.org/scientific-evidence-points-to-indigenous-peoples-forest-management-as-key-to-climate-change-mitigation/#:~:text=Here's%20an%20insight%20at%20the,reduction%20in%20forest%20cover%20loss.>

vital role of Indigenous and community-led management in achieving sustainable environmental outcomes.

To amplify Indigenous perspectives, research, and worldviews, the Canadian Climate Institute launched an open call in fall 2020 for Indigenous case studies on climate change and policy responses²². Among the submissions, two compelling case studies highlight the transformative role of Indigenous knowledge and governance in addressing climate challenges. The first, titled **“Seed Sowing”**²³ by Elisabeth Mittenburg, Hannah Tait Neufeld, Laura Peach, Sarina Perchak, and Dave Skene, examines an Indigenous-led grassroots initiative in the Grand River Territory of southern Ontario. This initiative focuses on food sovereignty as a means to restore Indigenous Peoples’ relationships with the land while promoting pathways to wellness. By revitalizing traditional agricultural practices and fostering community resilience, the project demonstrates how Indigenous-led efforts can simultaneously address climate change and advance reconciliation. The second case study, **“Ayookxw Responding to Climate Change”**²⁴ by Tara Marsden and Deborah Curran, explores the intersection of climate adaptation and Wilp law within the Gitanyow Lax’yip Land Use Plan in northeastern British Columbia. This study highlights how Indigenous legal and policy frameworks, rooted in traditional knowledge, can guide sustainable land management and establish ecological baselines. Together, these case studies illustrate the transformative potential of Indigenous-led initiatives in shaping climate policy, fostering environmental stewardship, and upholding Indigenous rights within broader legal and governance systems. Also, the exclusion of these knowledge systems perpetuates a false dichotomy between **'development' and 'conservation'**—one that indigenous leadership can resolve.

INDIGENOUS VOICES IN CLIMATE ACTION: BRIDGING TRADITIONAL KNOWLEDGE AND LEGAL FRAMEWORKS

Despite overwhelming scientific evidence demonstrating that recognizing Indigenous land rights is essential to halting deforestation, governments and corporations frequently fail to act on this knowledge. Indigenous communities, who are often on the front lines of defending their natural habitats, face relentless threats from logging, development, and extractive industries. These communities endure violence, intimidation, and criminalization for protecting their

²² <https://climateinstitute.ca/indigenous-perspectives-intro/>

²³ <https://climatechoices.ca/publications/seed-sowing-indigenous-relationship-building/>

²⁴ <https://climatechoices.ca/publications/ayookxw-responding-to-climate-change/>

lands, with tragic examples like the 2016 assassination of Honduran Indigenous leader Berta Cáceres highlighting the extreme dangers they face. Between 2012 and 2021, at least 1,733 environmental defenders were killed globally, with Brazil accounting for the highest number of deaths. A third of the 342 activists killed in Brazil were Indigenous or Afro-descendant²⁵, according to a report by the non-profit Global Witness. In 2021 alone, 200 land defenders were murdered worldwide²⁶, with over 75% of these attacks occurring in Latin America. Despite these challenges, Indigenous resistance has proven powerful, successfully halting pipelines, coal plants, and deforestation projects. From Standing Rock to the Amazon²⁷, Indigenous communities have consistently challenged corporate exploitation and environmental destruction. Supporting these front-line communities is not only a moral imperative but also a practical necessity. By securing legal rights to their lands, Indigenous peoples can protect and sustainably manage these territories, preserving their way of life, safeguarding biodiversity, and contributing significantly to global climate solutions.

The Convention on Biological Diversity (CBD) is one such international framework aimed at preserving forests and biodiversity, which plays a critical role in mitigating the effects of climate change. As the CBD defines goals to shape future global biodiversity policy amidst rapid biodiversity decline, there is increasing need to adopt transformative approaches. Drawing on the work of Indigenous and non-Indigenous scholars, it is evident that transformative change necessitates prioritizing the rights and agency of Indigenous peoples and local communities in biodiversity policy. This argument is supported by four key points. First, Indigenous peoples and local communities hold essential knowledge for setting realistic and effective biodiversity targets, which can simultaneously improve local livelihoods and ecological sustainability. Second, their conceptualizations of nature, which emphasize harmony and interconnectedness, sustain and manifest the CBD's 2050 vision of "Living in harmony with nature." Third, their participation in biodiversity policy contributes to the recognition and protection of human and Indigenous rights. Fourth, engagement in biodiversity policy is crucial for Indigenous peoples and local communities to exercise their legally recognized rights to territories and resources. By integrating these perspectives into global

²⁵ By Ali Hines, "Ten years of reporting land and environmental activism worldwide", 2022, <https://globalwitness.org/en/campaigns/land-and-environmental-defenders/decade-of-defiance/>

²⁶ *ibid*

²⁷ Thais Borges and Sue Branford, "Alcoa vs. the Amazon: How the ribeirinhos won their collective land rights", <https://news.mongabay.com/2020/10/alcoa-vs-the-amazon-how-the-ribeirinhos-won-their-collective-land-rights/>

biodiversity strategies, transformative change can be achieved, ensuring both environmental conservation and social justice

In India, the legal and policy frameworks addressing climate change have made limited progress in adequately including the voices of indigenous peoples, often referred to as Adivasis or Scheduled Tribes, and their traditional knowledge. Despite constitutional provisions and specific laws like the Forest Rights Act (2006) and the Biological Diversity Act (2002), which recognize the rights of indigenous communities to land, forests, and resources, their integration into climate policies remains superficial and inconsistent. For instance, the National Action Plan on Climate Change (NAPCC), India's flagship climate policy, does not explicitly incorporate indigenous knowledge or prioritize the role of tribal communities in climate adaptation and mitigation strategies²⁸. While some state-level action plans, such as those in Odisha and Chhattisgarh, have begun to acknowledge the importance of traditional practices in forest conservation and sustainable agriculture, these efforts are often fragmented and lack a cohesive national framework²⁹.

One of the key challenges lies in the **marginalization of indigenous voices** in decision-making processes. Indigenous communities, who have historically been stewards of biodiversity-rich ecosystems, are rarely consulted or included in the formulation of climate policies. Their traditional knowledge, which includes sustainable agricultural practices, water management techniques, and biodiversity conservation methods, is often overlooked in favour of technological or scientific solutions³⁰. This exclusion not only undermines the potential of indigenous knowledge to contribute to climate resilience but also perpetuates a top-down approach to policy-making that fails to address the unique vulnerabilities of indigenous communities. For example, the National Mission for Sustainable Agriculture (NMSA) under the NAPCC acknowledges traditional practices but does not provide a clear mechanism for integrating indigenous knowledge into mainstream agricultural policies³¹.

²⁸ - Ministry of Environment, Forest and Climate Change (MoEFCC), National Action Plan on Climate Change. Government of India, 2008

²⁹ - Dash, T., & Kothari, A., "Traditional Knowledge and Climate Change: An Overview". Economic and Political Weekly, 47(7), 45-52, 2015

³⁰ Menon et al., Climate Change and Indigenous Knowledge in India: A Review. Journal of Environmental Studies and Sciences, 7(1), 1-12.

³¹ Government of India (GoI), National Mission for Sustainable Agriculture: Operational Guidelines. Ministry of Agriculture, 2010

Moreover, indigenous communities face significant barriers in defending their rights and resources, which are critical to their ability to adapt to climate change. Laws like the Forest Rights Act, while progressive on paper, are often poorly implemented, leaving many communities without legal recognition of their land and resource rights. This lack of enforcement exacerbates conflicts over land and resources, particularly in the context of large-scale development projects, mining, and deforestation, which disproportionately affect indigenous territories. For instance, the resistance of the Dongria Kondh tribe in Odisha against mining projects in the Niyamgiri Hills highlights the ongoing struggle of indigenous communities to protect their lands and livelihoods in the face of external pressures³².

The exclusion of indigenous knowledge and voices from climate policies also raises concerns about climate justice. Indigenous communities, who contribute the least to global greenhouse gas emissions, are among the most vulnerable to the impacts of climate change, such as erratic weather patterns, loss of biodiversity, and food insecurity. Yet, climate policies often fail to address these inequities or provide adequate support for indigenous-led adaptation and mitigation efforts. For example, a study by Lele et al. found that indigenous communities in central India, who rely on forests for their livelihoods, are increasingly vulnerable to climate-induced changes in forest ecosystems, but their traditional knowledge and practices are rarely incorporated into state or national climate strategies³³.

While Indian laws provide a foundation for recognizing indigenous rights and their role in environmental stewardship, significant gaps remain in integrating indigenous knowledge and communities into climate change policies.

CONCLUSION

The climate crisis has laid bare a fundamental injustice: indigenous communities, despite their minimal ecological footprint and proven stewardship of biodiverse lands, face existential threats from both environmental degradation and systemic marginalization. While legal frameworks acknowledge indigenous rights, their implementation remains hollow without structural reforms. To bridge this gap, climate policies must move beyond symbolic recognition

³² Padel, F., & Das, S., “Out of This Earth: East India Adivasis and the Aluminium Cartel”. Orient BlackSwan, 2010

³³ Lele, S. et. al., “Forests, Rights, and Development in India: A Review of the Forest Rights Act of 2006”. *International Forestry Review*, 20(2), 217-230, 2018

to **transformative action**. First, **mandatory indigenous representation** in climate governance bodies—from local Gram Sabhas to national climate committees—is non-negotiable. This ensures their knowledge shapes decisions rather than being retrofitted into top-down agendas. Second, legal systems must **criminalize land grabs** and corporate coercion, drawing lessons from Brazil’s flawed *Marco Temporal* doctrine, which weaponizes legal loopholes to erase territorial rights. Third, **direct funding mechanisms**—such as grants for indigenous-led forest conservation or climate adaptation projects—must bypass bureaucratic bottlenecks to empower communities as equal partners.

The path forward demands more than inclusivity; it requires dismantling colonial legacies of resource extraction and centring indigenous sovereignty as the cornerstone of climate resilience. Their knowledge systems—honed over millennia—are not merely alternatives but essential blueprints for survival. By aligning legal accountability with ecological wisdom, we can forge a future where climate justice is neither aspirational nor deferred, but lived reality.

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