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Legal Pathways for Environmental Justice in Indigenous Territories

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ABSTRACT

This study aimed to explore the human rights impact of biometric surveillance through the lived experiences and perceptions of community members in Tehran. A qualitative research design was employed, utilizing semi-structured interviews with 27 participants recruited purposively from Tehran. Data collection continued until theoretical saturation was achieved. Interview transcripts were analyzed thematically using NVivo software to identify key themes related to privacy concerns, legal and ethical issues, social and community impacts, and technological factors. Four main themes emerged from the analysis. Privacy concerns dominated, with participants highlighting limited awareness of data collection, fears about data security breaches, surveillance-induced anxiety, behavioral modifications, and distrust of authorities. Legal and ethical issues revealed perceived regulatory gaps, challenges in obtaining genuine consent, and calls for accountable and ethical technology use. Socially, biometric surveillance was associated with discrimination, social exclusion, erosion of trust, low public awareness, and disproportionate effects on vulnerable groups. Technological factors, including accuracy limitations, data management practices, technological accessibility, system integration, user control deficits, and lack of transparency, further shaped participants' perceptions. These findings underscore the multifaceted human rights challenges posed by biometric surveillance in a context with evolving technological adoption but insufficient legal safeguards. The study demonstrates that biometric surveillance significantly impacts individuals' privacy, autonomy, and social well-being, particularly in settings lacking robust regulation and public engagement. Addressing these issues requires comprehensive legal frameworks, transparent and ethical technology deployment, enhanced public awareness, and inclusive governance models to safeguard human rights in the digital age.

Keywords: *Biometric surveillance, human rights, privacy, qualitative study, Tehran, data security, discrimination, technological ethics*

Introduction

Environmental justice has emerged as a vital framework addressing the disproportionate burden of environmental harms borne by marginalized communities worldwide. At its core, environmental justice seeks equitable distribution of environmental benefits and burdens, meaningful participation in environmental decision-making, and recognition of diverse social and cultural identities (Schlosberg, 2007). Indigenous peoples, as custodians of extensive lands rich in biodiversity, face unique environmental challenges stemming from historical marginalization, resource extraction, and legal invisibility. Ensuring environmental justice within Indigenous territories necessitates an intersectional understanding of legal frameworks, socio-political dynamics, and cultural contexts.



Indigenous communities have historically suffered the consequences of environmental degradation, including pollution, deforestation, and climate change impacts, which directly threaten their livelihoods, health, and cultural survival (Whyte, 2017). These environmental harms are frequently compounded by systemic exclusion from decision-making processes and weak enforcement of existing environmental regulations (Shrader-Frechette, 2002). As environmental justice scholarship increasingly recognizes, Indigenous struggles are inseparable from their quest for legal recognition and self-determination, which provide the foundation for protecting their lands and rights (Martinez-Alier, 2003; Schlosberg & Carruthers, 2010).

Legal pathways for environmental justice in Indigenous territories have garnered growing scholarly and policy attention, particularly in the wake of international instruments such as the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and the International Labour Organization's Convention 169 (ILO, 1989; UN, 2007). These frameworks underscore the right of Indigenous peoples to maintain control over their lands, territories, and natural resources, and to participate freely in environmental governance (Anaya, 2009). Nonetheless, translating these international commitments into effective national legal regimes remains a significant challenge, often hindered by conflicting laws, weak institutional capacity, and political resistance (Coates, 2015).

In many states, the coexistence of formal state legal systems with Indigenous customary laws creates a complex legal pluralism that can both empower and complicate Indigenous environmental claims (Merry, 2006). Legal pluralism acknowledges the legitimacy of multiple legal orders but can also generate conflicts and uncertainty when state and Indigenous laws diverge or clash (Benda-Beckmann, 2002). The recognition of customary land tenure and environmental stewardship practices is therefore crucial for advancing environmental justice, yet many Indigenous communities continue to lack secure legal title to their ancestral lands (Peluso & Lund, 2011). This legal insecurity renders Indigenous territories vulnerable to external encroachment, resource extraction, and environmental harm.

Access to justice, including legal aid and effective remedies, is a critical dimension of environmental justice in Indigenous contexts (Garrett et al., 2018). Indigenous peoples often face procedural barriers such as language difficulties, high legal costs, and bureaucratic complexities that limit their ability to seek legal redress (Alfred & Corntassel, 2005). Moreover, environmental harms in Indigenous territories are frequently linked to broader patterns of socio-political marginalization and economic deprivation, which intersect to exacerbate vulnerabilities (Robbins, 2012). Addressing these barriers requires holistic strategies that encompass legal reform, capacity building, and participatory governance.

Scholars emphasize that strengthening legal recognition of Indigenous rights and enhancing institutional support are vital strategies for promoting environmental justice (Schlosberg, 2013). Capacity building initiatives that empower Indigenous leaders and communities through legal education and training foster greater autonomy and resilience (Whyte, 2018). Advocacy and mobilization, both locally and internationally, have proven effective in pressuring governments to uphold environmental and Indigenous rights (Mansell, 2019). Participatory policy-making approaches, which integrate Indigenous knowledge and prioritize inclusive consultation, have gained prominence as mechanisms to legitimize Indigenous voices in environmental governance (Berkes, 2017).

Environmental monitoring and reporting, particularly community-based monitoring systems, serve as practical tools to enhance transparency and accountability in resource management (Danielsen et al., 2009). These initiatives enable Indigenous communities to document environmental changes and assert their rights, thereby supporting

legal claims and policy advocacy (Gadgil et al., 1993). However, sustained access to financial and technical resources remains a persistent challenge that limits the effectiveness of such strategies (Kipuri & Engle, 2016).

Despite the growing recognition of Indigenous environmental justice, considerable gaps persist in scholarly understanding and practical implementation. Legal frameworks often remain fragmented and inadequately enforced, while Indigenous communities continue to experience environmental injustices (Sikor et al., 2013). There is a pressing need for in-depth qualitative research to elucidate the lived experiences of Indigenous peoples navigating legal systems, to identify effective legal pathways, and to inform policy reforms that enhance environmental justice.

This study seeks to address this gap by exploring the legal pathways for environmental justice in Indigenous territories through a qualitative investigation involving key stakeholders knowledgeable about Indigenous rights and environmental law. The research aims to identify prevailing legal frameworks, barriers to justice, and strategies to enhance the realization of environmental justice for Indigenous peoples. By centering the voices and experiences of participants, this study contributes to the broader discourse on environmental justice and Indigenous legal empowerment.

In summary, environmental justice in Indigenous territories is an urgent and complex issue that requires integrated legal, social, and political approaches. International legal instruments provide important normative foundations, yet national legal systems must better recognize and enforce Indigenous rights. Overcoming barriers such as legal complexity, marginalization, and economic constraints demands capacity building, advocacy, and inclusive governance. This study offers a comprehensive examination of these issues, providing valuable insights to inform legal reforms and policy innovations that promote environmental justice for Indigenous peoples.

Methods and Materials

This study employed a qualitative research design to explore the legal pathways for achieving environmental justice in Indigenous territories. Qualitative methodology was selected to gain in-depth understanding of the participants' perspectives and experiences regarding legal frameworks, challenges, and opportunities related to environmental justice in these contexts.

The study involved 19 participants selected through purposive sampling to ensure a diverse range of insights from experts and stakeholders familiar with Indigenous rights, environmental law, and justice issues. Participants included legal scholars, Indigenous rights advocates, environmental activists, and policymakers. All participants were residents of Tehran, Iran, and had relevant experience or academic background related to Indigenous environmental justice.

Data were collected through semi-structured interviews, which allowed for flexibility in exploring key themes while maintaining consistency across interviews. The interview guide was developed based on a review of relevant literature and preliminary consultations with experts. Interviews focused on participants' views on existing legal pathways, barriers to justice, and potential reforms or strategies to enhance environmental justice in Indigenous territories. Each interview lasted approximately 45 to 60 minutes and was audio-recorded with participants' consent. Data collection continued until theoretical saturation was achieved, meaning no new themes or insights emerged from additional interviews.

All interviews were transcribed verbatim and imported into NVivo software for qualitative data management and analysis. Thematic analysis was conducted following Braun and Clarke's approach, involving familiarization with

data, generation of initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the final report. Coding was performed iteratively to ensure accuracy and depth, with constant comparison to identify patterns and relationships across participant responses. The use of NVivo facilitated systematic organization of codes and enhanced rigor in data interpretation.

Findings and Results

Legal Frameworks for Environmental Justice emerged as a primary theme encompassing several critical subthemes. The first subtheme, Indigenous Land Rights, included concepts such as customary law recognition, land tenure security, and legal title gaps. Participants highlighted challenges in legal land demarcation and overlapping jurisdictions that undermine Indigenous claims. As one participant noted, “The lack of formal recognition of customary lands leaves Indigenous communities vulnerable to external exploitation” (P7). The second subtheme, Environmental Regulations, involved compliance mechanisms, enforcement challenges, and regulatory loopholes. Participants pointed out that environmental impact assessments are often superficial or ignored, with one expert stating, “Regulations exist on paper but are rarely enforced in Indigenous territories” (P12). Thirdly, International Legal Instruments such as the UN Declaration on the Rights of Indigenous Peoples (UNDRIP) and ILO Convention 169 were discussed. Despite ratification by some states, participants observed a disconnect between international commitments and national implementation: “International treaties sound promising but lack teeth in local contexts” (P3). The fourth subtheme, Access to Justice, included legal aid availability and procedural barriers. Language difficulties and court delays were significant obstacles, as described by a participant: “Many Indigenous people cannot navigate the legal system due to language and procedural complexities” (P15). Finally, Policy Integration and Legal Pluralism were identified as subthemes highlighting gaps in cross-sectoral coordination and conflicts between customary and formal legal systems. The recognition of environmental rights as human rights was also emphasized, with participants stressing the need for constitutional protections and enforcement mechanisms.

The second major theme, Barriers to Environmental Justice in Indigenous Territories, revealed multifaceted challenges. Socio-political Marginalization was a prominent subtheme, encompassing discrimination, exclusion from decision-making, and political invisibility. Participants frequently referred to Indigenous peoples being sidelined in environmental governance: “Our voices are ignored in national dialogues; decisions are made without us” (P9). Economic Constraints were also emphasized, including poverty and lack of funding, which limit community capacity to pursue justice. As one interviewee explained, “Without resources, legal battles are nearly impossible for Indigenous groups” (P18). Legal Complexity was another barrier, with overlapping laws and bureaucratic obstacles creating confusion and delays. The subtheme of Lack of Awareness highlighted issues with limited legal literacy and cultural misunderstandings within both Indigenous and state actors. Environmental degradation such as pollution and resource depletion was widely acknowledged as a pressing concern. Participants described how Weak Institutional Support, including corruption and inadequate enforcement, further exacerbates these barriers: “Institutions meant to protect the environment are often complicit in its destruction” (P5).

The third main theme, Strategies and Pathways to Enhance Environmental Justice, outlined actionable solutions. The subtheme Strengthening Legal Recognition focused on formalizing customary rights through legal reforms and institutional acknowledgment. One participant asserted, “Only by legally recognizing our systems can justice be achieved” (P14). Capacity Building through legal training and community education was highlighted as vital, with participants advocating for empowering Indigenous leaders. Advocacy and Mobilization involved Indigenous

movements, NGO collaborations, and leveraging international pressure to advance rights. The importance of Participatory Policy-Making was underscored by calls for inclusive consultations and co-management agreements: “When communities participate, policies become more just and effective” (P11). Ensuring Access to Resources, including financial and technical aid, was repeatedly emphasized as essential to sustain these efforts. Finally, Environmental Monitoring and Reporting through community-based initiatives and transparency mechanisms was proposed to enhance accountability and protection of Indigenous territories.

Discussion and Conclusion

This qualitative study explored legal pathways for environmental justice in Indigenous territories by examining existing legal frameworks, barriers faced by Indigenous communities, and strategies to enhance justice. The findings underscore the multifaceted nature of environmental justice in Indigenous contexts, highlighting the interplay between legal recognition, socio-political dynamics, and institutional support.

The theme Legal Frameworks for Environmental Justice revealed critical gaps in the recognition and enforcement of Indigenous land rights. Participants emphasized the persistent challenge posed by insecure land tenure and limited acknowledgment of customary laws. This finding aligns with prior research indicating that Indigenous communities globally face legal invisibility regarding land ownership, which undermines their capacity to defend their territories against exploitation (Peluso & Lund, 2011; Coates, 2015). The coexistence of state and Indigenous legal systems, as identified through the subtheme of legal pluralism, further complicates access to justice and the harmonization of environmental protections (Merry, 2006; Benda-Beckmann, 2002). Our results echo Merry’s (2006) argument that legal pluralism, while recognizing multiple normative orders, often produces ambiguities that Indigenous peoples must navigate in pursuit of environmental justice.

The inadequacies of environmental regulations surfaced as a significant barrier. Participants described a gap between formal regulations and their implementation on the ground, which concurs with Shrader-Frechette’s (2002) critique of regulatory failures in protecting marginalized populations from environmental harm. The weak enforcement of environmental impact assessments in Indigenous territories underscores a systemic challenge documented in other contexts, where state regulatory frameworks prioritize economic development over Indigenous rights (Robbins, 2012). Moreover, the limited effectiveness of international legal instruments such as UNDRIP and ILO Convention 169, as highlighted by participants, reflects well-documented struggles in operationalizing international norms within domestic legal frameworks (Anaya, 2009; Coates, 2015). This gap between international commitments and local realities confirms the need for stronger legal mechanisms and political will to translate global standards into enforceable rights.

Access to justice remains a critical impediment, with procedural barriers, language difficulties, and bureaucratic complexities limiting Indigenous peoples’ ability to seek remedies. These findings corroborate Alfred and Corntassel’s (2005) assertion that Indigenous communities face structural exclusion from formal legal systems. The lack of legal aid and procedural accessibility undermines the principle of environmental justice as an equitable right, reinforcing calls by Garnett et al. (2018) for targeted legal empowerment interventions. The subtheme of policy integration also reveals fragmentation in governance, where lack of cross-sectoral coordination dilutes efforts to protect Indigenous territories. This is consistent with Sikor et al.’s (2013) observations that policy incoherence can marginalize Indigenous voices and weaken environmental governance outcomes.

The theme Barriers to Environmental Justice in Indigenous Territories elucidates the deep-rooted socio-political and economic obstacles Indigenous peoples face. Marginalization, discrimination, and political invisibility emerged as pervasive issues, mirroring Alfred and Cornthassel's (2005) analysis of Indigenous struggles against settler colonial structures. Economic constraints, including poverty and resource dependency, further exacerbate vulnerabilities, confirming Martinez-Alier's (2003) argument about the intertwined nature of environmental and economic injustices. Legal complexity and bureaucratic obstacles highlighted in our study resonate with Merry's (2006) discussion on the challenges posed by overlapping jurisdictions and regulatory fragmentation. The findings also highlight a pervasive lack of awareness and legal literacy within Indigenous communities and state actors, a barrier similarly identified by Kipuri and Engle (2016) as critical in limiting Indigenous participation in environmental governance.

Environmental degradation and weak institutional support were identified as both causes and consequences of environmental injustice. Participants reported ongoing pollution, resource depletion, and habitat loss, consistent with Whyte's (2017) emphasis on Indigenous peoples as frontline victims of environmental crises. Institutional weaknesses, including corruption and lack of political will, undermine regulatory frameworks and enforcement, a challenge also documented by Robbins (2012) in various Indigenous contexts. These institutional deficits perpetuate cycles of environmental harm and legal marginalization, underscoring the importance of structural reforms.

The third theme, Strategies and Pathways to Enhance Environmental Justice, offers hopeful avenues grounded in legal recognition, capacity building, advocacy, and participatory governance. Strengthening legal recognition through formalization of customary rights and reforms was viewed as fundamental. This aligns with Anaya's (2009) assertion that legal acknowledgment of Indigenous institutions is a prerequisite for justice. Capacity building initiatives emerged as essential for empowering Indigenous communities with knowledge and skills, confirming Whyte's (2018) focus on Indigenous-led legal education and leadership development. Advocacy and mobilization through Indigenous movements and NGO partnerships reflect documented successes in leveraging international support to pressure governments for rights recognition (Mansell, 2019).

Participatory policy-making, incorporating inclusive consultations and co-management agreements, was strongly advocated by participants. This corresponds with Berkes' (2017) findings that collaborative governance enhances legitimacy and effectiveness in environmental management. The importance of access to financial and technical resources echoes Kipuri and Engle's (2016) emphasis on sustained support as crucial for Indigenous-led environmental initiatives. Finally, community-based environmental monitoring and transparent reporting were identified as practical mechanisms to improve accountability and assert Indigenous rights. Danielsen et al. (2009) and Gadgil et al. (1993) similarly emphasize the effectiveness of local knowledge in monitoring environmental changes and informing policy.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adhered in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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