



Review Article

Bangladesh Climate Change Research: The Role of IRBs

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Abstract: This review examines the critical role of Institutional Review Boards (IRBs) in facilitating ethical climate change and health research in Bangladesh, a nation highly vulnerable to climate-sensitive diseases. The inadequacy of reliable health impact data, coupled with disparities in public perception of climate change risks influenced by socioeconomic factors, underscores the urgency for ethically sound research. This study systematically reviewed peer-reviewed journals, conference papers, institutional reports, and policy documents published within the last decade, focusing on ethical challenges in climate studies and the function of IRBs. Thematic analysis revealed key areas: the paramount importance of research ethics (including informed consent and privacy), the multifaceted impacts of climate change and adaptation strategies, the complexities and challenges faced by IRBs (especially in developing countries). The critical consideration of vulnerability in research participants, the issue of corruption in adaptation efforts, and the necessity of effective stakeholder engagement. The findings emphasize the interconnectedness of ethical principles, climate change challenges, and institutional responsibilities, advocating for interdisciplinary approaches. The review concludes by highlighting the need to strengthen the capacity of IRB, promote stakeholder engagement, integrate ethics into climate change policies, prioritize addressing vulnerability, and enhance institutional integrity to ensure equitable and sustainable solutions in Bangladesh.

Key Words: Climate Change, research, IRB

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Introduction: In Bangladesh, the intersection of climate change and health concerns demands a comprehensive understanding of existing vulnerabilities and adaptive strategies, particularly concerning the role of Institutional Review Boards (IRBs) in facilitating research. One major limitation in addressing climate-sensitive diseases in Bangladesh is the inadequacy of reliable and accessible data on the health impacts related to climate change, which hinders accurate identification of associated risks¹. The public's perception of climate change and its health implications also reveals critical disparities stemming from socioeconomic factors². Research shows that many individuals in vulnerable communities have limited knowledge of the climate change impacts on health, and an increasing temperature alongside erratic rainfall patterns exacerbates these health risks^{3,4}. Moreover, the healthcare resilience in the face of climate stressors underscores the importance of IRBs in ensuring ethical research practices and community engagement in health studies aimed at addressing these vulnerabilities⁵.

The adaptive capacity of communities directly influences how they cope with climate-induced health challenges. Studies reveal that households are increasingly relying on out-of-pocket expenses for healthcare, reflecting systemic weaknesses in health governance and the role of social capital among rural populations affected by climate change⁶. Furthermore, women's participation in climate governance remains critically deficient, which affects the overall adaptive strategies at the community level⁷. Engaging these marginalized groups in research, facilitated by ethical oversight from IRBs, can enhance the relevance and impact of findings intended to support health adaptation strategies in Bangladesh. This article aims to analyze previous studies to understand trends, challenges, and ethical considerations in climate research by IRB.

Methodology: This systematic review focused on trends, difficulties, and ethical issues while adopting a methodical approach to examine the body of literature on climate studies. Peer-reviewed journals, conference papers, institutional reports, and policy documents are among the academic databases. Google Scholar, Scopus, Web of Science, and institutional repositories to identify articles

published between January 2000 and May 2025. Initially total 1831 articles were identified, after removing duplication, screening, and full-text availability, 16 studies were included for this rapid review. To find pertinent material, keywords were "climate research ethics," "institutional review boards in climate studies," and "ethical challenges in environmental research" were deemed crucial.

The study's inclusion criteria included research on ethical difficulties in climate studies, particularly that which deals with the role of Institutional Review Boards (IRBs). Additionally, to guarantee accuracy and relevance, only studies published within a given period, for example, the last ten years, were also included. Articles without empirical support or peer review, as well as research that did not concentrate on climate ethics or IRB regulations, were excluded from this study. Papers that exhibit inadequate methodological transparency or possible bias did also not included, as these studies only focus on the technical aspects of climate science without ethical considerations. Data extracted to journal matrix, and streamlined data extraction process was utilized. Thematic Analysis was done using NVivo.

Findings: The analysis reveals following themes have a strong emphasis on ethical considerations in research on the complexities of climate change impacts and adaptation, and the role of institutional frameworks in ensuring responsible practices.

- 1. Research Ethics:** Studies emphasize the importance of operational ethics, including the protection of participants' privacy⁹, obtaining informed consent⁸, and minimizing harm⁹. The ethical challenges are amplified in disaster situations due to the heightened vulnerability of affected populations and the urgency of research. Community involvement and ethical review processes are identified as crucial for upholding ethical standards and ensuring that research benefits the affected communities.
- 2. Climate Change:** The studies explore various dimensions of climate change,

from its effects on socio-ecological systems to the governance⁸ and policy frameworks^{9,10} aimed at addressing it. There is a recognition of the need for integrated approaches that combine strategic design, ethical governance, stakeholder engagement, and technological innovation to enhance the resilience and sustainability of climate adaptation initiatives¹⁰.

3. **Institutional Review Boards:** The role and responsibilities of Institutional Review Boards (IRBs) and Ethical Review Committees (ERCs) are highlighted, particularly in the context of international research collaborations^{8,9}. The literature points to the complexities of ethical review processes, especially in developing countries, and the challenges related to external influence, resource constraints^{9,10}, and the need for skilled reviewers¹¹. Ensuring the effective functioning of IRBs is crucial for protecting the rights of research participants and maintaining the integrity of research⁸⁻¹¹.
4. **Vulnerability:** The literature emphasizes the importance of carefully considering and evaluating the vulnerabilities of study participants, which can shift unexpectedly in disaster contexts¹². Addressing vulnerability requires ethical sensitivity and robust risk management strategies to safeguard the well-being of affected populations¹².
5. **Corruption:** The issue of corruption in the context of climate change adaptation highlights the importance of institutional integrity and governance. The literature suggests that strengthening anti-corruption measures is essential for ensuring the effectiveness and accountability of climate adaptation projects¹⁰.
6. **Stakeholder Engagement:** The literature emphasizes the importance of involving government officials, non-governmental organizations, community leaders, and climate experts to foster a sense of

ownership and align project goals with local needs¹⁰.

In Bangladesh, focusing on trends, challenges, and ethical considerations of IRB, with six interconnected themes such as research ethics, climate change impacts and adaptation, the role of Institutional Review Boards (IRBs), vulnerability, corruption, and stakeholder engagement highlight the complex intersection of scientific inquiry, humanitarian needs, and governance in a climate-vulnerable nation.

Literature stresses operational ethics, including privacy, informed consent, and harm minimization, which are amplified in post-disaster scenarios^{8,11}. Robust community involvement and ethical review processes are crucial for upholding standards and ensuring research benefits communities^{8,11}.

Nevertheless, Institutional Review Boards (IRBs) and Ethical Review Committees (ERCs) are indispensable for protecting participants' rights and research integrity, particularly in international collaborations^{8,9}. However, ethical review processes in developing countries like Bangladesh face complexities due to external influence, resource constraints, and the need for skilled reviewers⁸⁻¹¹. Strengthening IRBs is vital for their effective and equitable function¹⁷.

Integrated approaches combining strategic design, ethical governance, stakeholder engagement, and technological innovation are essential for resilient and sustainable adaptation. Ethical considerations regarding who benefits and how interventions are implemented are implicitly linked here¹⁰.

Climate change is making ethical review more complex, especially for IRBs in resource-limited settings like Bangladesh. Climate-related studies often involve displaced or vulnerable populations affected by floods, droughts, or disasters, raising new ethical challenges that many IRB members are not equipped to handle¹¹. These reviews now demand expertise in environmental health, informed consent in crisis contexts, and cross-cultural considerations for international research teams. As IRBs face increasing workloads with limited capacity, there is a clear need for expanded support and targeted training to ensure ethical oversight keeps pace

with the growing demands of climate research¹⁹.

Climate vulnerabilities heightened ethical sensitivity and robust risk management to protect affected populations, requiring agile and responsive ethical review¹⁰.

Corruption in climate change adaptation projects poses a significant challenge to their effectiveness and equitable distribution. Strengthening anti-corruption measures and promoting institutional integrity are crucial for accountability, impacts the ethical execution of climate action¹⁰.

Stakeholder engagement is critical for successful climate adaptation. Involving diverse actors like government, NGOs, community leaders, and experts fosters local ownership, ensures initiatives align with community needs, and promotes ethical practices such as informed decision-making to engage in research and avoiding top-down approaches.

Implications: This study highlights urgent implications for climate change research and policy in Bangladesh. Firstly, there is an urgent need to strengthen the capacity and independence of IRBs within the country. This involves not only providing adequate financial and infrastructural resources but also investing in comprehensive training for reviewers to navigate the complex ethical landscape of climate and disaster research, particularly in interdisciplinary and international collaborations⁸⁻¹⁰.

Secondly, the identified themes underscore that ethical considerations are not peripheral but central to effective climate action. Researchers and policymakers must adopt an integrated approach where ethical principles, vulnerability assessments, and anti-corruption measures are woven into the fabric of climate change adaptation planning and implementation. This requires greater transparency, accountability, and participatory approaches at all stages of research and project cycles⁹.

Thirdly, the emphasis on stakeholder engagement highlights a pathway for more impactful and equitable climate solutions.

Moving forward, research initiatives and adaptation projects must proactively involve local communities and diverse stakeholders from inception to evaluation, ensuring that their voices are heard and their needs are met. This also implies a greater focus on community-based participatory research methodologies that empower vulnerable populations¹⁰.

Limitations and Future Research: While this systematic review provides valuable insights, it is subject to certain limitations. As a literature review, its findings are dependent on the scope and quality of published research. There may be unquantified ethical challenges or best practices within grey literature or community-based initiatives that are not yet formally documented. The review's focus on Bangladesh, while providing contextual depth, means that some findings may not be directly generalizable to other regions without further investigation.

Future research should focus on empirical studies evaluating the effectiveness and challenges of IRB operations in Bangladesh, particularly concerning climate change projects. Investigations into specific ethical dilemmas encountered during climate adaptation implementations, and the efficacy of different stakeholder engagement models in mitigating corruption risks, would also be invaluable. Furthermore, research exploring how to effectively build research capacity within vulnerable communities to enable them to lead and shape their own climate resilience studies is a crucial next step⁷⁻¹⁰.

Overall, this review underscores the interconnectedness of ethical considerations, climate change challenges, and institutional responsibilities. It highlights the need for interdisciplinary approaches that integrate ethical principles, robust governance, and community engagement to address the complex issues of climate change and disasters.

Conclusion: The review highlights the need for research practices that prioritize the protection of vulnerable populations, ensure community involvement, and promote equitable and sustainable solutions.

Recommendations

1. For Policymakers and Government Agencies

- a. To better protect vulnerable populations, mandate and fund the creation of a National Ethical Guideline for climate and disaster research. This legally binding framework should be developed by a steering committee representing key ministries, research institutions, and civil society.
- b. To strengthen and standardize Institutional Review Boards (IRBs) to review the protocol specific to climate change. Establish a tiered review system that subjects high-risk research to enhanced scrutiny
- c. Provide climate-specific ethics training.
- d. Establish a national digital repository to serve as a public record of all approved climate and disaster research. This platform must share project summaries, key findings, and ethical considerations to enhance transparency, minimize duplication, and ensure communities can access research outcomes.

1. For Researchers and Practitioners

- a. Inclusion of public representative from climate vulnerable groups, for providing ongoing guidance and aligning project goals with climate protocol needs.
- b. Incorporate mandatory training on identifying and reporting corruption risks into the onboarding for all research team members to create a grassroots check and balance system within climate research projects.

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