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Addressing the Climate Change Adaptation Gap: Key Themes and Future Directions

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Abstract: Climate change adaptation is a critical response to the challenges posed by climate change and is important for building resilience. Progress in adaptation efforts has been made globally, nationally, and locally through international agreements, national plans, and community-based initiatives. However, significant gaps exist in knowledge, capacity, and finance. The Adaptation Gap Report 2023, published by the United Nations Environment Programme (UNEP), examines the status of climate change adaptation efforts globally. The report highlights the widening adaptation finance gap and the deepening climate crisis. We analyse the key themes of the report and incorporate an analysis of the wider literature and insights from COP28 to substantiate key points and identify gaps where more work is needed to develop an understanding of climate change adaptation. This paper focuses on the underfinanced and underprepared state of global climate change adaptation efforts, the widening adaptation finance gap, slow progress in adaptation, gender equality and social inclusion issues, and challenges in addressing loss and damage. We provide a way forward for climate change adaptation and offer recommendations for future actions.

Keywords: adaptation gap; climate change; equity; inclusion; COP28



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1. Introduction

The United Nations Environment Programme Adaptation Gap Report (AGR) series provides an annual science-based assessment of global progress in adaptation planning, financing, and implementation [1]. Since its inception in 2014, UNEP has consistently produced the AGR with the objective of providing insights to inform climate negotiations among United Nations Member States, and the AGR 2023 is the ninth report in the series. The Adaptation Gap Report 2023, titled “Underfinanced. Underprepared. Inadequate investment and planning on climate adaptation leaves world exposed”, was published on 2 November 2023 by the United Nations Environment Programme [1]. It highlights the “underfinanced” resources allocated to climate change adaptation and emphasises the “underprepared” state on a global scale. The report emphasises the significant implications of the failure to effectively address the severe consequences of climate change, particularly for the most vulnerable populations [1]. The discourse surrounding climate change adaptation is experiencing a surge in attention as the draft proposal for the Global Goal on Adaptation at the 28th Conference of the Parties (COP28) proposes to prioritise the development of climate-resilient food and agricultural systems, enhance resilience against health impacts arising from climate change, ensure the provision of climate-resilient health services, and mitigate climate-related morbidity [2]. The UAE Consensus at COP28 advocates for nations to demonstrate their commitment towards a just, orderly, and equitable shift away from fossil fuel reliance within their energy systems, with a particular emphasis on expediting efforts during the present pivotal decade. The ultimate objective is to attain a state of net zero greenhouse gas emissions by the year 2050, aligning with scientific findings and recommendations. It concluded with a historic agreement that, for the first time in three decades, incorporates provisions related to oil and gas [2].

The effects of climatic change are becoming increasingly evident in various regions across the world, making communities worldwide face increasing exposure to alterations and disruptions in weather patterns, wildlife and vegetation dynamics, and the quality, accessibility, and availability of water and food resources [3]. The increasing urgency of the climate crisis highlights the need for effective climate change adaptation measures and policies to address climate impacts. However, the global tracking of adaptation progress faces challenges, including a vast and diverse evidence base, reliance on proxies, and the ongoing debate on defining adaptation success [4–6]. Environmental justice plays a pivotal role in the context of climate change, as evidenced by the experiences of distributional, procedural, and recognition (in)justice observed at various levels [7]. The focus on equity and justice in climate change adaptation is unequal across geographical regions, topical sectors, and marginalised communities [8]. Certain aspects of justice, such as distributive and procedural concerns, receive more attention than others, and there is a need to incorporate ethics and justice theories into adaptation and resilience planning to address the vulnerabilities of those most affected by climate change and advance progress in social justice [8,9]. The injustices range from the global scale, where historically low-emitting countries bear a disproportionate burden of climate change impacts, to the local scale, where the most vulnerable members of society often endure the gravest impacts [10].

This paper aims to analyse the key themes covered in the Adaptation Gap Report 2023 and situate them in the broader literature. It provides an overview of the underfinanced and underprepared state of climate change adaptation efforts globally, emphasising the implications for vulnerable populations and the need for urgent action. It explores the widening adaptation finance gap, slow progress in adaptation, gender equality and social inclusion issues, and challenges in addressing loss and damage caused by climate change. This paper aims to provide insights and recommendations for addressing these challenges and calls for an international consensus and innovative funding sources to bridge the adaptation gap.

2. Methodology

The method employed in this study involved a systematic approach to analysing the key themes of the Adaptation Gap Report 2023, supplementing it with insights from a comprehensive literature review and discussions from COP28. The goal was to present a thorough overview of the global state of climate change adaptation, including issues of underfinancing, slow progress, gender equality, and challenges in addressing climate-induced losses. The methodology included steps such as a literature review, a detailed analysis of the Adaptation Gap Report 2023, the incorporation of COP28 insights, the identification of knowledge gaps, and outlining future research directions. A comprehensive review of the existing literature on climate change adaptation, equity, gender equality, and loss and damage was conducted. This review included academic papers, reports, and other relevant sources. The literature review aimed to gather information on the key themes covered in the Adaptation Gap Report 2023 and identify gaps in the existing knowledge and understanding of climate change adaptation. The Adaptation Gap Report 2023 was thoroughly analysed to identify the key themes and findings. The analysis focused on extracting relevant data, statistics, and case studies from the report to support the arguments made in this paper. Insights from COP28 were identified to contextualise the key themes discussed in this paper and provide additional evidence and examples to support the arguments. The paper is structured to integrate findings, statistics, and case studies to substantiate arguments and concludes with recommendations for enhancing climate change adaptation efforts. The combined methodology ensures a comprehensive understanding of the current situation and provides a roadmap for future actions in climate change adaptation.

3. Results and Discussion

3.1. Key Themes

3.1.1. Widening Adaptation Finance Gap

The Adaptation Gap Report (AGR) 2023 highlights that the adaptation finance gap is growing and estimates it to be between USD 194 billion and USD 366 billion per year, which indicates a deepening climate crisis [1]. Climate change adaptation finance is essential for supporting vulnerable communities and ecosystems in adapting to the impacts of global environmental change [11]. However, there is growing concern about the widening climate change adaptation finance gap. This gap is caused by the inadequate allocation of funds by governments and international institutions, as well as a misalignment between adaptation and mitigation funding [12–14]. The complex nature of climate change and its impacts also presents challenges in accurately estimating financial needs for adaptation [15]. The insufficiency of adaptation finance in adequately addressing the adaptation priorities of developing nations can be attributed primarily to the inherent design of guidance [16,17]. Overcoming this gap requires prioritizing adaptation funding, increasing financial commitments, improving access to funding, and developing innovative financial instruments [18,19].

Climate change adaptation is an urgent global challenge for which actions are urgently needed, necessitating collaborative endeavours across multiple disciplines and stakeholders to achieve effective and sustainable results [20,21]. However, a significant gap persists between the numerous expectations linked to these discussions and the current state of adaptation finance [22]. The climate change adaptation finance gap was between 5 and 10 times larger in 2022 [23], and it is now estimated to be 10 to 18 times greater than current international funding [1]. This estimation of the adaptation finance gap holds significance in the discourse surrounding the nature and magnitude of the newly established collective, quantified goal for climate finance [24]. This objective plays a crucial role in bridging the adaptation finance gap, particularly for countries that are highly vulnerable to climate change impacts, such as the Least Developed Countries (LDCs) and Small Island Developing States (SIDS). This estimation holds relevance to the decision (Decision CMA.3, COP26) [25] made at the 26th Conference of the Parties (COP 26) in Glasgow, which urged developed nations to increase their financial support for adaptation in developing countries to at least twice the amount provided in 2019 by the year 2025 [26].

Climate finance has consistently emerged as a crucial concern during United Nations climate negotiations, and the provision of assistance to developing nations in their efforts to mitigate climate change, such as by promoting the adoption of renewable energy sources or low-carbon transportation and aiding in their adaptation efforts, such as enhancing the resilience of agricultural and water sectors to physical climate effects, plays a crucial role in establishing and upholding trust among participating nations [27–29]. However, there are power struggles surrounding international climate adaptation finance and conflicts related to key questions such as the amount of finance, providers, delivery channels, allocation, prioritisation, compensation, and climate justice [30,31]. Limited progress has been made in integrating Indigenous Peoples into international climate change governance, and the material constraints and the designation of Indigenous Peoples as nonstate observers pose challenges for their meaningful participation [32]. Ethnic and racial minorities, migrants, and people with disabilities are seldom taken into consideration, and it is crucial to pay attention to how equity is integrated into adaptation research and practice to ensure fair and just adaptation [8]. The emergence of neoliberal characteristics in the present-day climate regime poses unique challenges in the pursuit of justice pertaining to adaptation finance [31]. The ambiguous definitions of climate finance, the shortcomings of the current USD 100 billion per year goal, allowing for multiple interpretations and reducing transparency and trust between countries, and the current objectives of doubling international finance flows to developing countries by 2025 are insufficient to effectively address the existing finance gap, which necessitates a need for a new collective, quantified goal for climate finance [33,34].

The increasing frequency of climatic anomalies, such as prolonged droughts in East Africa, floods in China and Europe, and the emergence of extreme temperatures and wild-fires in the United States and Canada and increasing hailstorms and extreme weather events in different parts of the world, underscores the urgency of addressing the disparity in adaptation finance [35,36]. This is particularly significant due to the substantial benefits that investments in adaptation can offer in terms of mitigating climate-related risks and promoting equity and climate justice [1]. The adaptation gap is widening and requires addressing both quantitative and qualitative factors, including access to finance and equity [31].

3.1.2. Slow Progress in Adaptation

Global progress in adaptation is slowing down instead of accelerating, despite the increasing climate risks and impacts worldwide [1]. There exist notable impediments affecting successful adaptation to climate risks, like the dearth of policies pertaining to climate change adaptation, as well as a deficiency in comprehensive climate vulnerability and risk assessments [37,38]. The state of progress towards climate adaptation is uncertain. Studies suggest that global adaptation is only halfway towards its full potential, with urban areas generally scoring higher than rural areas, and there is an imbalance in adaptation efforts across different dimensions and a limited focus on long-term strategies [11,39]. Assessing global progress in human adaptation to climate change is an urgent priority. Adaptations are mostly fragmented, local, and incremental, with limited evidence of transformational adaptation and risk reduction outcomes [40]. The current comprehension of policy instruments in adaptation remains limited as most studies have failed to establish a connection between the impacts and risks posed by climate change and the efficacy of policy instruments, thus rendering the evaluation of adaptation effectiveness a challenging task [41,42]. Public multilateral and bilateral adaptation finance flows to developing countries decreased by 15% in 2021. This lack of funding has implications for vulnerable populations and could lead to significant impacts [1].

The rate of adaptation progress is unequal, with lower-income population groups experiencing the greatest adaptation gaps [3]. Slowing progress in adaptation implementation is due to factors such as fluctuations driven by non-climate-related events, limited access to finance, a lack of knowledge about adaptation policies, institutional factors like the adoption of national climate change adaptation strategies, socioeconomic factors like population density, the GDP, unemployment rates, environmental factors like flood risk, and political factors like ineffective leadership [3,43,44]. Constraints and limits to adaptation are important to understand human and natural systems' responses to climate change [45]. Little is known about the extent to which national climate change adaptation plans are implemented [46]. Central and South America, along with the Small Islands, encounter significant constraints and limitations to adaptation, particularly in technological, infrastructural, and ecosystem-based approaches, while economic, socio-cultural, and governance constraints are prevalent globally [47].

Current climate action is inadequate to meet the goals of the Paris Agreement. The projected global temperature increase is already exceeding 1.1 °C above pre-industrial levels, and current plans put us on a path towards 2.4–2.6 °C by the end of the century [1]. Global greenhouse gas emissions and temperature have reached new highs, primarily due to fossil fuel combustion and industrial processes [48]. There is an uneven distribution of emissions among countries, with high-income nations needing to speed up their own emission reductions and assist low- and middle-income countries, and failure to reduce emissions and reliance on carbon dioxide removal (CDR) technologies will make it impossible to limit warming to 1.5 °C or 2 °C [49]. Growing evidence indicates that equity and justice are not incorporated much in climate adaptation responses, and these responses may exacerbate inequality and increase vulnerability [8].

Climate change is increasingly driving adaptation efforts, but there is limited focus on potential opportunities and benefits [50]. It poses significant risks, and adaptation

measures are necessary to mitigate these risks. However, the effectiveness and feasibility of adaptation in a changing world are still uncertain. Adaptation can be beneficial in reducing risks, but there are limits to adaptation, and even ambitious adaptation efforts may not be enough to offset the failure to mitigate greenhouse gas emissions [51,52]. The successful implementation of climate change adaptation depends on the capabilities of societies to create and mobilise the adaptive capacities of their socio-ecological systems [53].

Tracking global progress in adaptation poses various challenges, including a lack of comprehensive and coherent data sources and inconsistent reporting guidelines, necessitating a need for consistency, comparability, comprehensiveness, and coherency in adaptation tracking [54]. Further efforts are needed to integrate process and output indicators into tracking frameworks and to collect better data on adaptation [55]. There is a need to address the inclusion of vulnerable populations in adaptation policies and the durability of adaptation policies in the face of political transitions [55,56]. Global adaptation research needs to prioritise assessing the effectiveness of adaptation responses, understanding limits to adaptation, enabling individuals and civil society to adapt, and improving methods for synthesising different forms of evidence [40]. There is a need to refine adaptation targets, prioritise actions beyond development levels, and develop comprehensive and context-specific adaptation strategies [39]. The present estimation of adaptation finance needs indicates an increased necessity for the enhanced mobilisation and accessibility of financial resources to effectively implement adaptation measures and reduce adaptation gaps [10].

Current adaptation measures focus on physical infrastructure and short-term economic goals, neglecting the social aspects of vulnerability [57,58]. It is anticipated that key constraints will persist until well past 2050, impeding effective adaptation efforts, especially in vulnerable communities [59]. To enhance global adaptation efforts, it is important to evaluate the effectiveness of adaptation responses, deepen our understanding of the limitations of adaptation, empower individuals and civil society to adapt, and address overlooked areas [40].

3.1.3. Gender Equality and Social Inclusion

The AGR 2023 highlights the inadequate inclusion of gender equality and social inclusion in adaptation finance needs and flows. Only a small percentage of national plans have dedicated budgets for gender and social inclusion activities. The report reveals that only 20% of costed Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs) allocate a specific budget for gender equality and social inclusion, with an average allocation of 2%. In terms of international public finance for adaptation, only 2% is considered gender-responsive, while an additional 24% is considered gender-specific or integrative [1]. Although previous gap reports mentioned gender [23], this is the first instance in a gap report in which an examination of gender equality and social inclusion has been conducted.

Climate change significantly contributes to the exacerbation of inequality across various dimensions, such as gender, socioeconomic status, the loss of traditional knowledge and culture, and the perpetuation of colonial stigmas through the depletion of resources and the disruption of livelihoods. Conversely, the escalation of inequality also plays a pivotal role in intensifying climate-related risks [3]. Structurally disadvantaged people, who have historically faced discrimination, marginalisation, or disenfranchisement due to factors such as gender, age, ethnicity, class, language, ability, and/or sexual orientation are disproportionately susceptible to the adverse consequences of climate change [60,61]. Extreme weather events worldwide highlight the unequal effects of climate change on different populations due to a combination of social, economic, historical, and political factors [62] exacerbating the existing differential vulnerability across axes of social difference such as race, class, ethnicity, and gender [63]. Though adapting to climate change is important, understanding why certain communities face greater vulnerability to and consequences from climate hazards is crucial [62]. Understanding power and justice considerations is

important in making locally led adaptation effective [64]. Retrofitting adaptation into existing development agendas may lead to maladaptation, and to address these challenges, it is crucial to involve marginalised groups to enhance the use of climate finance [65].

Gender inequality and discrimination serve as significant obstacles to adaptation. A reduction in gender disparities can have a transformative impact on the pursuit of climate justice [66]. The gendered implications of climate change, especially in the Global South, are particularly poignant, as patriarchal norms, inequities, and inequalities often place women and men in differentiated positions in their abilities to respond to and cope with social and environmental changes and foreground the complex ways in which social power relations operate in communal responses to adaptation strategies [67]. Garcia et al. [68] elucidate the socio-political drivers behind gendered inequalities that generate discriminatory conditions for adaptation. Employing an intersectional subjectivities framework, they explore how entrenched power dynamics and social norms pertaining to gender give rise to barriers to adaptation, such as limited resources and agency. The analysis reveals a stark dichotomy as women bear the brunt of these obstacles and face a persistent power imbalance that positions them as less capable of adapting compared to men. There is a need for gender-responsive climate finance and adaptation funding, social inclusion, and improvements in integrating gender equality and women's empowerment in multilateral climate funds to support more equitable and effective adaptation [69]. The issue is gaining importance as Gender Day—Technical Dialogue: Financing for gender-responsive just transitions and climate action, held on 4 December 2023 during COP 28 in Dubai, stressed the gendered impacts of climate change and the need for gender-responsive financing to advance gender equality and women's empowerment in climate action. The technical dialogue focused on a common understanding of opportunities and gaps in financing gender-responsive just transitions and climate action. The COP28 Presidency announced the establishment of the COP28 Gender-Responsive Just Transitions and Climate Action Partnership, which received endorsement from 68 parties. The partnership involves various commitments, such as addressing data, finance, and equal opportunities. A review of the implementation will take place during a second meeting at COP31 [2].

3.1.4. Issues in Loss and Damage (L&D)

The AGR 2023 highlights the need to address loss and damage caused by climate change, particularly in vulnerable developing countries. It supports the establishment of a loss and damage fund and funding arrangements to assist these countries [1], and it is the first time that a chapter on loss and damage has been included in an AGR. The environmental justice lens emphasises that loss and damage are not solely results of climate hazards but are also influenced by differential vulnerabilities to climate change which are frequently shaped by a range of socio-political processes, including racism and histories of colonialism and exploitation [70]. Vulnerable people are currently experiencing loss and damage to their fundamental human rights, particularly in relation to the right to a healthy environment and the ability to own, use, develop, and control land [71]. This has led to significant impacts on property rights, communal assets, standards of living, and family and social cohesion, affecting interconnected rights such as customs, Indigenous knowledge, family, agency, and identity, which can transcend across generations [71,72]. The COP27 of the UN Framework Convention on Climate Change (UNFCCC) established a Transitional Committee to operationalise funding for loss and damage. However, tactical opposition is obstructing loss and damage finance, and the fund is unlikely to involve direct reparations from developed countries to the most vulnerable nations. Instead, it builds upon existing financing mechanisms within the UNFCCC, including loans, grants, and private investments [73,74]. The creation of a loss and damage fund has been seen as a positive development for Global South negotiators. However, there are concerns about how funding will be allocated to vulnerable developing countries [75]. The use of objective means to determine funding allocation may cause division and delay as vulnerability indicators are complex and politically influenced, and there is a need for transformation

in adaptation, extension, and liberation as a response to loss and damage for long-term climate change adaptation [75,76].

The concept of loss and damage (L&D) had prominence as a policy domain since 1991, when the Alliance of Small Island States (AOSIS) put forth a proposition to establish a fund and insurance mechanism to address the adverse effects of climate-induced sea-level rise [77]. However, its advancement within international frameworks has been impeded by conflicting viewpoints and varying interpretations. This has resulted in limited action in addressing losses and damages [78]. It has been a contentious topic in international climate policy for many years. While formal mechanisms have been established and conceptually, loss and damage considers the impacts that occur beyond the limits of adaptation [79], there is a lack of conceptual clarity and the language used is unclear, and this ambiguity is important politically [80]. It is important to provide adequate funding for loss and damage to support vulnerable nations that are unable to adapt to the impacts of climate change. Various innovative funding approaches like the Financial Transaction Tax (FTT), International Airline Passenger Levy (IAPAL), Solidarity Levy, Bunker Fuels Levy, Fossil Fuel Majors Carbon Levy, and Global Carbon Tax are important for funding loss and damage [81].

Noneconomic losses and damages (NELDs) encompass a wide spectrum of impacts that are not easily assigned a monetary value, such as the loss of life, health, or mobility; the loss of territory, cultural heritage, or Indigenous or local knowledge; and the loss of biodiversity [82]. It is important to consider people's lived experiences with climate-related loss, and many intangible aspects, such as culture and identity, are often overlooked and omitted in discussions about climate change that matter most to people [83]. Understanding ecological grief is important for understanding the mental health implications of climate change and identifying coping strategies, and there are three categories of ecological grief: grief associated with physical ecological losses, grief associated with the loss of environmental knowledge and identity, and grief associated with anticipated future losses. Confronting ecological grief is challenging but necessary to understand and address the emotional and psychological impacts of climate change [84,85].

The COP28 has achieved a major milestone by operationalizing the Loss and Damage Fund to assist developing countries vulnerable to the effects of climate change. The fund was agreed upon during COP27 and became operational following five transitional committee meetings. The UAE has committed USD 100 million to the fund, with other countries such as Germany, the UK, Japan, and the USA also making notable contributions. This action regarding loss and damage will allow the parties to focus on the Global Stocktake, which evaluates progress towards the goals of the Paris Agreement [2].

4. Where Do We Need to Go?

We argue that the discourse surrounding climate change adaptation is experiencing a surge in attention; the focus on equity and justice in climate change adaptation is unequal across geographical regions, topical sectors, and marginalised communities; the state of progress towards climate adaptation is uncertain; and little is known about the extent to which national climate change adaptation plans are implemented.

Understanding the factors that enable or limit adaptation is crucial for both improving adaptability and conducting risk assessments in the face of future climate change, and the impacts of future climate change not only rely on changing climate hazards and land use changes but also heavily depend on the level of adaptation achieved [86–88]. The AGR 2023 provides insights into where we need to go to enhance climate change adaptation ambition. Currently, only 25% of countries have legal instruments in place that require national governments to prepare national adaptation planning instruments [1]. It is important for more countries to adopt these instruments to prioritise adaptation planning and ensure regular updates. However, increasing international public adaptation finance alone is unlikely to bridge the finance gap. The information provided in national adaptation plans is diverse, making it challenging to estimate the finance needs of developing countries.

Financing mechanisms should be tailored to meet the needs of small- and medium-sized enterprises (SMEs) as they have the potential to unlock climate adaptation solutions [73,89]. Standardised reporting on climate resilience integration in investment decisions can help monitor progress. Identifying climate-related risks could negatively impact developing economies in the short term. Regional cooperation is needed to address loss and damage, and alternative models of finance disbursement should be developed to ensure funds reach affected communities promptly and effectively. Indigenous knowledge needs to drive climate change adaptation strategies to enable communities to cultivate sustainable practices that mitigate environmental consequences and uphold ecological balance while also integrating Indigenous knowledge and institutions into resource management. The report does not address adaptation efforts in highly susceptible regions like the Arctic, Himalayas, and Antarctic. Immediate action, increased financial support, and a focus on equity and inclusion are necessary to bridge the adaptation gap and mitigate the consequences of climate change, particularly in the most vulnerable regions and communities.

There is a need for conceptual clarity on loss and damage, an international consensus on key concepts, and increased coordination across global frameworks to strengthen loss and damage management approaches. The uncertainties in financial needs for addressing loss and damage call for innovative funding sources, institutional arrangements, and governance structures. The provision of access to the Loss and Damage Fund should be extended to encompass a broader range of communities, ensuring that Indigenous Peoples are granted access regardless of their geographical location. The Loss and Damage Fund for climate change should be spent on compensating direct losses, supporting adaptation measures, and investing in insurance mechanisms. The funds should be allocated for capacity building, research, and community-based initiatives, emphasising transparency, equity, and international cooperation. Regular monitoring and evaluation are crucial to ensure effective utilisation in addressing the specific needs of vulnerable communities. Bridging policy, research, and practice to support discussions on adaptation is important. Addressing the ethical connections between climate impacts and finance mechanisms is important, and developed nations should do more to assist developing nations in climate change adaptation through technology transfer and capital.

Future research directions include exploring the potential for transformational change; understanding the values and engagement of people with loss and grief and lived experiences; incorporating equity, gender equality, and social inclusion; incorporating the perspectives of vulnerable groups and Indigenous Peoples in decision making; incorporating equity and justice; and conducting policy-relevant research and critical analyses of climate change in the context of global capitalism and neoliberal development. To successfully monitor adaptation, methods must rapidly handle large datasets, recognise fine-grained distinctions, and consider context-dependent meanings in the face of the evolving climate crisis.

Climate change adaptation necessitates a comprehensive evaluation of the efficacy of nature-based solutions, the incorporation of socio-economic considerations into adaptation planning, the reinforcement of climate resilience in urban settings, the assessment of technological innovations, the exploration of Indigenous knowledge and traditional practices, the appraisal of financial mechanisms for adaptation effectiveness, the examination of governance and policy frameworks, the comprehensive analysis of the impacts of climate change on vulnerable populations, and the promotion of knowledge exchange and capacity sharing. It is important to note that the term “capacity building” may inadvertently perpetuate power dynamics and hierarchical structures; therefore, the emphasis should be placed on knowledge exchange and capacity sharing to foster equitable relationships among stakeholders.

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