Rethinking Resilience and Vulnerability in Adaptation Studies

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Reviewed works:

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Introduction

Thinking about the plight of environmentally displaced communities from one of the most ecologically vulnerable areas of the world- the Sundarbans Delta at the mouth of Bay of Bengal covering southern parts of West Bengal, India and Bangladesh- has been one of the primary concerns of my academic pursuit for the last few years. The myriad ways in which these communities are subject to forces of nature, whose vagaries and rapidly changing behaviour are a product of processes way beyond their control, have forced me to contemplate and innovate paths that might help in navigating the complexities characterizing their contemporary predicament. The complexities consist not only in understanding the dynamics of physical forces affecting these communities, but also delving into the details of the interaction of climatic forces with questions of social marginality, politic-economic structures within which such marginality operates and questions of indigenous religio-cultural practices.

My overall positioning within the Western academia currently is constructed at the intersections of various problematic identities: A South Asian first-generation foreign MA alumnus of Global History (Freie Universität / Humboldt-Universität, Germany) and an earlier undergrad of History, Jadavpur University, Kolkata and graduate in Politics, Jawaharlal University, New Delhi, India. Having this opportunity, along with financial support from a German foundation that is within a supportive, liberal, social science environment has defined my academic positioning within critical, interpretive methodological work regarding the globalizing circumstances in South Asia; all the other intersectionalities have strengthened my commitment to social justice, equality, and advancing gender equity. My identity as an Indian Bengali woman has been constructed under excruciating pressures, dis-avowals of feminine agency within the patriarchal and elite conceptions of the Indian upper-middle-class woman.[1]

Conducting research on natural disasters have contained very sensitive feelings and personal findings, including questions of mourning and trauma. Problem-centred interviews asking about the effects of floods on families have triggered hard feelings and even increased trauma for interviewees who have lost beloved family members. It is crucial to intensively deal with relevant literature on ethical research questions, by conducting the interviews with sensitivity following a subaltern, intersectional and gendered approach. I am a native speaker of Bengali/Bangla which is the same language spoken by my interviewees albeit there being regional dialects spoken in West Bengal, India and

Khulna division in Bangladesh. In my previous fieldwork, I have repeatedly faced questions from my respondents regarding the import of my project for them. This has alerted me to the possibilities of extractive knowledge production that academic work (especially those produced from Global North on the Global South) might entail. I have remained sensitive to processes that result in potentially extractive practices and attempt to place my work on a basis that would accord equal respect to multiple knowledge paradigms.[2]

This apparent digression before entering into details of my project was in order to indicate the quantum of affective investment that my academic investment has demanded of me. Working with people in the most abject of economic and social conditions can often lead to a blurring of scholarly distance from the 'object' of study and a desire to 'change' conditions of those real people in flesh and blood whom I otherwise would refer to as the 'cross section of my sample interviewees'. My work, so far, has primarily been based on interviews I conducted at the Island of Sagar, the Island which hosts colonies of people uprooted from neighbouring submerged islands of Lohachora and Ghoramara. Once bustling centres of social and economic activity, these islands have now been partially or completely devoured by the Bay of Bengal, leading to its inhabitants scrambling for refuge in neighbouring islands.

I interviewed women from displaced families in the main, hoping to find out how the marginal within the marginal, 'women' in 'refugee' homes responds to new life in their new-found shelters. At the same time, I have endeavoured to seek the avenues through which women have sought to cope with their losses, i.e. their adaptive strategies and modes of resilience. In doing so, I focused on how memories and ideas of home, attitudes towards livelihood opportunities and ways of tackling poverty, their quotidian religious practices contributed to defining a new life in a new island.

Though, it would not be possible to discuss the results of my findings within the space of this introductory section, three aspects of my findings appear to be of vital import in discussions around climate adaptability and resilience. I shall discuss them briefly here as a way of justifying the choice of the essays I have selected for review. To begin with, my findings revealed that most attempts at coming to terms with the harsh realities of existence in an apparently hostile new island were underpinned by an abiding concern with poverty. The political structures have provided these families with meagre amounts of land whose productivity is severely undercut by repeated inflows of saline water from nearby estuarine water bodies. Low productivity is made worse by lack of proper price for agricultural produce as local markets fail to pay them

adequately and these cultivators have little access to urban markets located in faraway urban centres. Fishing, trade in dairy commodities and employment in lower ranks of government offices also provide little respite to poverty as these sectors are often syndicated and oligarchised by a handful of local strong men and people from the marginal refugee colonies can only take up employment in these areas as labourers.

No conceptualisation of resilience frameworks can thus proceed here by neglect of these economic factors. Furthermore, as there is little scope for these people to develop their own lot economically without the support of the state, discussions on the role of the state in developing infrastructure and protecting citizens from myriad climatic calamities affecting this island also become important. Thus, the policy paradigm of climate resilience stands out as a very important category by which to understand the conditions of the affected communities as well as to look for ways by which their present condition can be alleviated. It is, however, not by economic factors alone that one can understand resilience in these colonies.

As one moves away from questions of livelyhood, it seems that remembrances of hearth in the now lost islands, efforts to eke out a sense of belonging in the newly settled neighborhoods and the perennial search for constancy in a veritably peripatetic existence are bases on which the communities imagine their homes. 'Homes', it seems, are not the physical spaces in which they reside but are located somewhere in-between the lost hearths of erstwhile islands and imagined prosperity of an unknown future. Thus, temporality here, as perhaps elsewhere, is tempered by numerous affective components and mnemonic elements which critically inform their resilience to climatic forces.

This brings us to a problem of communication. It might be very difficult to develop an eye for discerning such diffuse ideas, as that of the home discussed above, while one is equipped with theoretical tools and conceptual apparatuses that have been developed in specifically western contexts. The language, vocabulary and the frameworks of thought which we inhabit in western academia might often be impervious to addressing the consciousness of the marginalized people with whom researchers deal with. Thus, there is always a possibility of policy prescriptions which might be drawn up without any impact on the ground and a great dissonance between what researchers think and how their subjects of study actually exist.

While this raises grave ethical concerns, it also points to the complex question of knowledge, its diversity and the issue of acceptance of diversity of knowledge systems. It also indicates the need to dismantle any linear understanding of notions of belonging, suffering and such aspects

of quotidian existence. At the same time, questions on attitudes towards what might be blandly termed as 'superstition', on questions of the impact of religion, in short of the exhaustive content of indigenous traditions of knowledge become very important. The exercise of identifying resilience then becomes a full-fledged humanistic exercise involving comprehensive enquiries into holistic aspects of what constitutes the life-worlds of indigenous populations. A good way of embarking upon this exercise is to acknowledge the necessity of cross-disciplinary approach towards studying locales impacted by climate change.

Sedimenting learnings from different disciplines shall create an infrastructure on which to build up epistemological edifices of this emerging field of studies on climatologically impacted communities. For the purpose of this essay, I have tried to concentrate on this aspect and have selected essays for review that focus on different ways to approach this problem. While one typifies a policy centric approach the other goes on to state the importance of decolonialising approaches to climate resilience. The essay ends with an article that summarizes multiple approaches to this present problem. I shall begin with a preliminary definition and discussion of key concepts encapsulated in these essays – namely 'vulnerability', 'resilience' and 'adaptability'. This shall be followed up by thorough analysis of the arguments in the essays and an attempt to situate these three concepts in the different contexts provided by the essays under review.

The contemporary discourse on climate change encompasses a wide array of themes, among which 'resilience', 'vulnerability', and 'adaptability' stand out due to their pivotal role in understanding and mitigating the impacts of climatic disruptions. These concepts, while interconnected, offer unique perspectives and frameworks for analysing the responses of societies and ecosystems to environmental stresses. This essay aims to provide a comprehensive review of three significant papers that delve into these critical themes: "Resilience and vulnerability: A decolonized approach" by Camellia Biswas, "Vulnerability and adaptive response in the context of climate and climate change" by Ian Burton, and "Social dimensions of resilience and climate change: A rapid review of theoretical approaches" by Azher Hameed Qamar. Each of these works contributes valuable insights into the multifaceted nature of 'resilience', 'vulnerability', and 'adaptability', highlighting both theoretical advancements and practical implications.

The selected papers offer a diverse range of perspectives that are critical for a holistic understanding of climate resilience and adaptation. Biswas's work challenges the conventional Western-centric frameworks, advocating for a decolonised approach that respects and integrates

indigenous knowledge systems. Burton's research provides a pragmatic look at the economic and policy dimensions of climate adaptation, emphasising the importance of addressing both current climate variability and future climate change. Qamar's review underscores the social dimensions of resilience, focusing on the role of social capital in fostering community resilience.

This introductory section will define and contextualise the key concepts of vulnerability, resilience, and adaptability, setting the stage for a detailed analysis of the selected papers. Understanding these concepts is essential for grasping the complex dynamics at play in climate change adaptation and mitigation.

Definitions of key concepts

Vulnerability

Vulnerability is a multifaceted concept that encompasses the degree to which a system, community, or individual is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. According to Wisner et al. (2004), vulnerability is primarily employed as a cumulative indicator of the unequal distribution of certain populations in proximity to environmental and technological hazards. It reflects the extent to which a community or individual is likely to experience harm due to exposure to hazards and their inherent capacity to anticipate, cope with, resist, and recover from the impact of these hazards. Key aspects of vulnerability include:

Exposure: The degree to which a system or population is physically exposed to climatic or environmental hazards. This includes the frequency, duration, and magnitude of hazardous events.

Sensitivity: The degree to which a system or population is affected by climate-related stimuli. Sensitivity can be influenced by various factors, including socio-economic conditions, health, infrastructure, and environmental factors.

Adaptive Capacity: The ability of a system or population to adjust to climatic changes, to moderate potential damages, to take advantage of opportunities, or to cope with the consequences. Adaptive capacity is influenced by resources, technology, information, and governance structures.

The interplay of these factors determines the overall vulnerability of a system or population. For instance, a community with high exposure and sensitivity but low adaptive capacity is highly vulnerable to climate change impacts.

Resilience

Resilience refers to the capacity of a system, community, or individual to absorb, withstand, and recover from the impacts of hazardous events, shocks, or stresses without significant alteration to its fundamental structure or function. The United Nations International Strategy for Disaster Reduction (UNISDR, 2009) defines resilience as the ability of a system (socio-ecological), community, or society exposed to hazards to resist, absorb, accommodate, and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions. Core elements of resilience include:

Robustness: The strength and stability of a system to withstand external shocks. Robust systems are designed to endure and function effectively under stress.

Redundancy: The presence of backup components and systems to ensure functionality during disruptions. Redundancy provides alternative options and pathways to maintain operations.

Resourcefulness: The ability to mobilize resources and skills to respond to and manage crises. Resourcefulness involves creativity, flexibility, and innovation in problem-solving.

Rapidity: The speed at which a system can recover from disruptions. Rapid recovery minimizes the duration of negative impacts and facilitates a return to normalcy.

Resilience is not just about bouncing back to the pre-disaster state but also about learning, adapting, and improving to better handle future stresses. This dynamic aspect of resilience is crucial for long-term sustainability.

Adaptability

Adaptability is the capacity of a system, community, or individual to adjust and modify its processes, structures, and behaviours in response to actual or anticipated changes in the environment. Adaptation involves both reactive and proactive strategies to cope with immediate impacts and to prepare for future changes. In the context of climate change, adaptability encompasses a range of actions, from altering agricultural practices to developing infrastructure that can withstand extreme weather events. Key dimensions of adaptability include:

Anticipatory Adaptation: Actions taken in advance of climate impacts to reduce potential damages and enhance resilience. This includes

measures such as early warning systems, climate-resilient infrastructure, and pre-emptive policy changes.

Reactive Adaptation: Responses initiated after the occurrence of climatic events to mitigate impacts and facilitate recovery. Reactive adaptation involves emergency response, disaster relief, and rebuilding efforts.

Transformational Adaptation: Fundamental changes in systems or processes that enhance long-term resilience and reduce vulnerability to future climatic shifts. Transformational adaptation may involve relocating communities, altering economic activities, and redesigning urban landscapes.

Adaptability requires flexibility, innovation, and a forward-looking perspective. It involves recognizing the inevitability of change and proactively managing risks to minimize adverse outcomes.

Interrelationship among the concepts

The interplay between vulnerability, resilience, and adaptability is crucial for understanding the dynamics of climate change impacts and responses. Vulnerability highlights the susceptibilities and weaknesses within a system, while resilience focuses on the strengths and capacities that enable recovery and continuation of functions despite disruptions. Adaptability bridges the gap between vulnerability and resilience by providing the means through which systems can adjust and transform in response to both current and future climatic conditions.

Analytical frameworks

To effectively analyse the impacts of climate change and develop robust strategies for mitigation and adaptation, it is essential to integrate these concepts into comprehensive analytical frameworks. Such frameworks allow for a holistic assessment of climate risks, incorporating the various dimensions of exposure, sensitivity, adaptive capacity, robustness, and resourcefulness. This integration facilitates the identification of key vulnerabilities, the enhancement of resilience through targeted interventions, and the development of adaptive strategies that are both flexible and sustainable.

For instance, a coastal city might use an analytical framework to assess its vulnerability to sea level rise by examining its exposure (proximity to the coast), sensitivity (density of population and infrastructure), and adaptive capacity (availability of resources and governance structures). Based on this assessment, the city can develop resilience strategies such as building sea walls (robustness), creating evacuation plans

(resourcefulness), and ensuring backup power supplies (redundancy). Additionally, the city can implement adaptive measures such as revising zoning laws to prevent new construction in high-risk areas (anticipatory adaptation) and redesigning public spaces to absorb floodwaters (transformational adaptation).

The concepts of resilience, vulnerability, and adaptability are central to understanding the dynamics of climate change impacts and the development of effective strategies for mitigation and adaptation. Despite their distinct definitions and applications, these concepts share several commonalities that are crucial for a comprehensive understanding of how systems, communities, and individuals respond to climatic disruptions. This section explores the interconnectedness of these concepts and reviews relevant literature to highlight their overlapping themes and synergistic relationships.

Interconnectedness of resilience, vulnerability, and adaptability

Systemic Perspective: All three concepts emphasize a systemic perspective, recognising that climate impacts and responses are part of complex socio- ecological systems. These systems include interactions between human and natural components, where changes in one part can influence the whole system. Literature on socio-ecological resilience (Folke 2006) underscores the importance of understanding these interactions to build resilient systems that can absorb shocks and maintain functionality.

Dynamic Processes: Resilience, vulnerability, and adaptability all view responses to climate change as dynamic processes rather than static states. This dynamic nature is highlighted in the concept of adaptive capacity, which involves the continuous ability to learn, adjust, and transform in response to changing conditions (Adger et al. 2005). Resilience theory (Holling 1973) also emphasizes the ability of systems to undergo transformations and reorganizations following disturbances.

Focus on Adaptation: Adaptation is a core theme in all three concepts. Vulnerability assessments often lead to the identification of adaptive needs and capacities (IPCC 2007). Resilience involves both the ability to withstand immediate shocks and the capacity to adapt to longer-term changes. Adaptability itself is explicitly concerned with the processes and strategies that enable systems to adjust to climate impacts (Smit & Wandel 2006).

Human and Social Dimensions: Each concept acknowledges the significant role of human and social factors in shaping responses to climate

change. Vulnerability is often influenced by socio-economic conditions, governance, and institutional capacity (Wisner et al. 2004). Resilience is enhanced by social capital, community networks, and collective action (Adger 2003). Adaptability depends on the flexibility of social systems and the ability to implement adaptive strategies at various levels (Pelling 2011).

Equity and Justice: Equity and justice considerations are integral to the understanding and application of these concepts. Vulnerability assessments highlight the disproportionate impacts of climate change on marginalised and disadvantaged groups (Cutter et al. 2003). Resilience frameworks call for inclusive approaches that consider the needs and capacities of all community members (Cutter et al. 2008). Adaptability also requires attention to the equitable distribution of resources and opportunities for adaptation (O'Brien et al. 2006).

The literature on resilience, vulnerability, and adaptability is extensive and interdisciplinary, encompassing fields like environmental science, sociology, economics, and public policy. Key contributions to this body of work include:

Vulnerability: The seminal work by Wisner et al. (2004), "At risk: Natural hazards, people's vulnerability, and disasters", provides a comprehensive framework for understanding vulnerability as a product of social, economic, and political processes. It emphasizes the need to address underlying causes of vulnerability to enhance adaptive capacity.

Resilience: Holling's (1973) introduction of resilience in ecological systems has been foundational. His work highlights the ability of ecosystems to absorb disturbances and reorganise while undergoing change. The concept has since been expanded to socio-ecological resilience, which integrates human and ecological dimensions (Folke, 2006).

Adaptability: Smit and Wandel's (2006) "Adaptation, adaptive capacity and vulnerability" explores the concept of adaptability within the context of climate change. They define adaptive capacity as the ability of a system to adjust to climate change, to moderate potential damages, and to take advantage of opportunities.

Integrated Approaches: The Intergovernmental Panel on Climate Change (IPCC) has played a crucial role in synthesising research on these concepts. The IPCC's assessment reports (e.g., IPCC 2007) provide comprehensive overviews of vulnerability, resilience, and adaptability, emphasising the need for integrated approaches to climate change adaptation.

Equity and Justice: The work of Adger (2003) on social resilience highlights the importance of social capital and community networks in building resilience. Similarly, O'Brien et al. (2006) emphasise the role of equity in adaptation processes, arguing that fair distribution of resources and opportunities is essential for effective adaptation.

The literature consistently calls for holistic approaches that integrate environmental, social, and economic dimensions. This is essential for understanding the multifaceted nature of climate impacts and for developing comprehensive adaptation strategies.

Participatory Processes: Effective adaptation and resilience-building require participatory processes that involve stakeholders at all levels. This ensures that diverse perspectives and knowledge systems are incorporated into decision- making (Reed 2008).

Flexibility and Learning: Adaptive management and continuous learning are emphasised across the literature. These approaches allow systems to remain flexible and responsive to changing conditions, which is critical for long-term resilience and adaptability (Armitage et al. 2009).

Interdisciplinary Research: The complexity of climate change impacts and responses necessitates interdisciplinary research. Collaboration across disciplines enhances the understanding of resilience, vulnerability, and adaptability and supports the development of innovative solutions (Berkes et al. 2003).

In summary, the concepts of resilience, vulnerability, and adaptability are deeply interconnected, sharing common themes of systemic perspective, dynamic processes, adaptation, social dimensions, and equity. The literature highlights the importance of holistic, participatory, flexible, and interdisciplinary approaches to address the challenges posed by climate change. The following sections of this review essay will delve into the detailed analyses of the three papers mentioned earlier, each of which offers a unique perspective on resilience, vulnerability, and adaptability. Through these analyses, we will explore the theoretical foundations, empirical findings, and policy implications presented by the authors, providing a thorough understanding of how these concepts are applied and interpreted in the context of climate change.

Hence, the subsequent sections will provide an in-depth review and critical analysis of each paper, starting with Camellia Biswas's "Resilience and vulnerability: A decolonized approach", followed by Ian Burton's "Vulnerability and adaptive response in the context of climate and climate change", and concluding with Azher Hameed Qamar's "Social dimensions of resilience and climate change: A rapid review of

theoretical approaches", and lastly R.M. Wise et al. "Reconceptualising adaptation to climate change as part of pathways of change and response".

Detailed review of "Resilience and vulnerability: A decolonized approach" by Camellia Biswas

Camellia Biswas's paper, titled "Nature and dynamics of resilience and vulnerability: A decolonized approach", presents an in-depth analysis of resilience and vulnerability within the context of climate disasters. The paper critically examines the prevailing Western-centric frameworks and proposes a decolonised perspective that incorporates indigenous and local knowledge systems. The focus is on two case studies: the Sahelian droughts and cyclonic events in the Indian-Bangladeshi Sundarbans.

Key concepts and theoretical framework

1. Resilience: Defined by UNISDR (2009) as the ability of a system, community, or society exposed to hazards to resist, absorb, accommodate, and recover from the effects of a hazard in a timely and efficient manner.
2. Vulnerability: Described by Wisner et al. (2004) as a cumulative indicator of the unequal distribution of certain populations in proximity to environmental and technological hazards and their ability to anticipate, cope with, resist, and recover from disasters.

The paper critiques the separation of these two concepts by different academic communities, arguing for a more integrated approach that considers the dynamics of both resilience and vulnerability.

Decolonised approach

The decolonised approach advocated by Biswas challenges the traditional Western paradigms that often portray disaster-affected populations, particularly in the Global South, as passive victims. The paper emphasises the importance of recognizing and integrating local and indigenous knowledge into resilience strategies. This approach seeks to empower marginalised communities and involve them actively in the decision-making process.

Case studies

Sahelian Droughts:

Historical context: The Sahel region has experienced recurrent droughts from the Little Ice Age to the present day. These

droughts have had significant socio-economic impacts on the pastoralist and farming communities in the region.
Western interventions: The first colonial intervention aimed to transform the landscape and agricultural practices in the Sahel. However, these efforts were short-lived and often increased the vulnerability of local populations to drought and famine.

Decolonised interventions: More recent interventions have adopted a decolonised approach, focusing on regreening and sustainability. These efforts have involved local communities in decision-making processes and have shown more promising results in terms of resilience.

Cyclones in the Sundarbans:

Historical Cyclones: The Sundarbans region has been repeatedly hit by devastating cyclones, including the 1876 Great Backergunj cyclone, the 1970 Bhola cyclone, and the 2020 Super Cyclone Amphan.

Local Resilience: Despite the lack of national recognition of these events as emergencies, local communities have developed robust resilience strategies. These include traditional knowledge and practices that enable them to recover and adapt to repeated cyclonic events.

Western vs. indigenous Narratives: The paper critiques the tendency of Western scholars to impose their frameworks on these communities, often overlooking the effectiveness of indigenous resilience strategies.

Camellia Biswas's paper, "Resilience and vulnerability: A decolonized approach", is set against the backdrop of ongoing debates about the efficacy and inclusivity of Western-centric frameworks in disaster resilience and vulnerability studies. The importance of this research lies in its critical examination of how traditional Western approaches may inadvertently marginalise or overlook the resilience strategies of indigenous and local communities, particularly in the Global South. The paper's focus on decolonising these concepts is timely, given the increasing recognition of the value of indigenous knowledge systems in global climate policy discussions.

Biswas employs a qualitative methodology, utilising case studies to illustrate the dynamics of resilience and vulnerability in the Sahel region

of Africa and the Sundarbans in India and Bangladesh. The paper draws on historical data, policy analysis, and existing literature to build its arguments. This approach allows for a nuanced understanding of the socio-economic and political contexts that shape local resilience and vulnerability. The methodology's strength lies in its in-depth exploration of specific case studies, though it may be limited by its focus on qualitative data, which can be subjective.

The paper focuses on the limitations of Western-centric resilience frameworks. Biswas argues that these frameworks often fail to account for the socio-economic and political factors that contribute to vulnerability. By adopting a decolonised approach, researchers and policymakers can develop more effective and equitable resilience strategies. Western domination in vulnerability discourses:

> Portrayal of Global South: Western scholars have often portrayed people in the Global South as passive victims of natural disasters. This perspective justifies perpetual interventions into marginal populations without acknowledging their agency and adaptive capacities.
>
> Decolonising minds: The paper emphasizes the need to decolonize academic and policy frameworks to make them more inclusive and reflective of local realities. This involves recognising the agency of affected communities and incorporating their knowledge into resilience strategies.

Integration of local knowledge:

> Community involvement: Effective resilience strategies require the active involvement of local communities in decision-making processes. This ensures that their knowledge and practices are recognised and valued.
>
> Sustainability: Decolonised interventions that prioritise local knowledge and practices tend to be more sustainable and effective in the long term.

The paper finds that Western interventions in the Sahel and Sundarbans have often exacerbated local vulnerabilities rather than alleviating them. For example, colonial and post-colonial policies in the Sahel have increased dependence on external aid and undermined local agricultural practices. In contrast, the paper highlights how local knowledge and community-based practices have contributed to resilience in the Sundarbans, enabling communities to recover and adapt to recurrent cyclones. These findings challenge the dominant narrative of vulnerability in the Global South and underscore the importance of integrating local

knowledge into resilience strategies.

Biswas's discussion emphasises the need for a decolonized approach to resilience and vulnerability, one that prioritizes local voices and knowledge systems. The paper argues that Western-centric frameworks often fail to capture the complexity of local contexts and can perpetuate dependency and marginalisation. By contrast, a decolonised approach recognises the agency and ingenuity of local communities, fostering more sustainable and equitable resilience strategies. The discussion also highlights the importance of interdisciplinary research and policy-making that bridges the gap between global frameworks and local realities.

The paper offers several policy recommendations for developing more inclusive and effective resilience strategies:

1. Inclusive Decision-Making: Policies should involve local communities in decision-making processes, ensuring that their knowledge and perspectives are incorporated.
2. Recognition of Indigenous Knowledge: Policymakers should recognise and value indigenous knowledge systems, integrating them into resilience strategies.
3. Equity and Justice: Resilience frameworks should address the socio-economic and political factors that contribute to vulnerability, promoting equity and justice for marginalized communities.

These recommendations aim to promote a more inclusive and effective approach to resilience and vulnerability, one that empowers local communities and respects their knowledge systems. The paper's strengths lie in its critical perspective and its focus on decolonising resilience and vulnerability frameworks. By highlighting the limitations of Western-centric approaches and advocating for the inclusion of local knowledge, Biswas makes a significant contribution to the field. However, the study could benefit from a more detailed examination of specific local practices and their outcomes. Additionally, while the qualitative approach provides depth, incorporating quantitative data could strengthen the analysis and provide a more comprehensive picture.

In conclusion, Camellia Biswas's paper offers a compelling critique of traditional resilience and vulnerability frameworks and makes a strong case for a decolonised approach. The study's findings underscore the value of local knowledge and the importance of inclusive, context-sensitive policies. As climate change continues to pose significant challenges, integrating diverse perspectives and practices will be crucial for developing effective and equitable resilience strategies. Future research should

continue to explore these themes, with a focus on empirical evidence and interdisciplinary collaboration.

Detailed review of "Vulnerability and adaptive Response in the context of climate and climate change" by Ian Burton

Ian Burton's paper, titled "Vulnerability and adaptive response in the context of climate and climate change", explores the relationship between current climate variability and long-term climate change. The paper emphasises the importance of improving adaptation to present climate conditions as a step towards preparing for future climate changes. Burton argues that a dual focus on adapting to current climate extremes and preparing for long-term changes is essential for effective climate change adaptation.

Key concepts and theoretical framework

1. Climate and climate change: The paper differentiates between the variability of current climate conditions and long-term changes in climate. Burton emphasises that while current climate variability presents immediate challenges, long-term climate change poses significant future risks.

2. Adaptation: Burton proposes that improving adaptation to current climate variability can serve as preparation for adapting to long-term climate change. This involves developing strategies that enhance the resilience of communities and ecosystems to both current and future climate risks.

The paper discusses various international programs focused on climate change and natural disasters, including:

1. Intergovernmental Panel on Climate Change (IPCC): The IPCC assesses the science of climate change, its impacts, and potential adaptation and mitigation responses.
2. International Decade on Natural Disaster Reduction (IDNDR): The IDNDR aims to improve understanding of natural disasters and promote actions to reduce their impacts.

Burton highlights the need for these programs to work more closely together to address both current climate variability and long-term climate change.

1. Current climate variability: Burton emphasizes the importance of adapting to current climate extremes, such as floods, droughts, and hurricanes. By improving adaptation to these events, communities can reduce their vulnerability to future climate changes.

2. Future climate change: Burton suggests that better adaptation to current climate conditions can also help prepare for long-term climate changes. This involves developing strategies that enhance resilience to both current and future climate risks.

The paper presents data on the economic costs of adapting to climate change, drawing on studies from Canada. Key points include:

1. Adaptation Costs: The paper presents a preliminary analysis of the costs of adapting to Canada's current climate, estimating an annual expenditure of $11.6 billion CAD. These costs include expenditures related to transportation, construction, agriculture, forestry, water management, household expenses, emergency preparedness, and weather services.
2. Cost-Benefit Analysis: Burton argues that proactive adaptation measures can be more cost-effective than post-disaster recovery. By investing in adaptation now, communities can reduce future losses from climate-related disasters.

Case Studies

Canadian Context:

Adaptation costs: The paper provides a detailed analysis of the costs of adapting to Canada's current climate, highlighting the significant expenditures required to cope with climate variability.

Economic impacts: The analysis includes data on economic and insured losses from natural disasters in Canada, illustrating the financial burden of climate-related events.

Policy recommendations: Burton suggests that policymakers should prioritize investments in adaptation to reduce future losses and enhance resilience to both current and future climate risks.

Global Context:

Different challenges: The paper discusses how different countries face unique challenges and adaptation needs based on their specific climate risks. For example, small island nations are particularly vulnerable to sea level rise, while other regions may face increased risks from droughts, floods, or hurricanes.

Integrated approach: Burton advocates for a more integrated approach to adaptation that considers both current climate varia-

bility and long-term climate change. This involves developing strategies that are tailored to the specific needs and risks of different regions.

Burton offers several policy recommendations for developing more effective adaptation strategies:

1. Integrated research programmes: The paper calls for integrated research programmes that combine efforts to address both current climate variability and long-term climate change. By working together, researchers can develop more comprehensive and effective adaptation strategies.
2. Economic assessments: Policymakers should conduct economic assessments of adaptation strategies to identify the most cost-effective measures. This involves analysing the costs and benefits of different adaptation options and prioritizing investments that provide the greatest return.
3. Proactive adaptation: Burton emphasizes the importance of proactive adaptation measures that reduce vulnerability to both current and future climate risks. By investing in adaptation now, communities can reduce future losses and enhance their resilience.

Ian Burton's paper provides a comprehensive analysis of the relationship between current climate variability and long-term climate change. The paper highlights the importance of improving adaptation to present climate conditions as a step towards preparing for future climate changes. By adopting a dual focus on current and future climate risks, researchers and policymakers can develop more effective adaptation strategies that enhance resilience and reduce vulnerability.

Detailed review of "Social dimensions of resilience and climate change: A rapid review of theoretical approaches" by Azher Hameed Qamar

Azher Hameed Qamar's paper, "Social dimensions of resilience and climate change: A rapid review of theoretical approaches", investigates the role of social capital in building resilience to climate change. The paper provides a comprehensive review of published studies on the social dimensions of resilience, emphasising the importance of social capital in community resilience strategies. Qamar's work highlights the need for a more nuanced understanding of the interplay between social

capital and resilience in the context of climate change.

Key Concepts and Theoretical Framework

1. Social resilience: Defined as the capacity of communities to withstand and recover from environmental threats, facilitated by social capital.
2. Social capital: Explored through three dimensions—structural, cognitive, and human rights-based—each contributing to community resilience.

The paper utilises a multidisciplinary approach to examine how social capital influences resilience. It integrates structural, cognitive, and human rights-based perspectives to provide a holistic understanding of social resilience. The rapid review identifies 26 articles related to the social dimensions of resilience. Key findings include:

1. Structural capital: Involves social systems and networks that facilitate resource exchange and support during crises. Structural capital is foundational for building resilience as it provides the infrastructure for community support and collective action.
2. Cognitive capital: Pertains to shared values, trust, and reciprocity within communities, enhancing collective actions and social cohesion. Cognitive capital fosters a sense of belonging and mutual support, which are crucial for effective resilience strategies.
3. Human rights-based approach: Focuses on equity and power dynamics, emphasizing the need for inclusive social actions to build resilience. This approach highlights the importance of addressing social inequalities and ensuring that all community members have a voice in resilience-building efforts.

The paper reviews various case studies demonstrating the role of social capital in enhancing community resilience. Key examples include:

1. Community networks: Studies show that strong community networks play a crucial role in disaster recovery and resilience. For instance, communities with robust social networks are better able to mobilise resources and support during and after crises.
2. Trust and reciprocity: Trust and reciprocity within communities contribute to collective resilience. Communities where members trust each other and engage in reciprocal support are more likely to recover quickly from environmental threats.
3. Inclusive social actions: Inclusive social actions that address power dynamics and promote equity are essential for building resilience. Policies and practices that empower marginalised

groups and ensure their participation in decision-making processes are more effective in enhancing community resilience.

Qamar offers several policy recommendations for developing more effective resilience strategies:

1. Fostering social capital: Policymakers should prioritise building social capital as part of climate change adaptation strategies. This includes fostering strong social networks, promoting trust and reciprocity, and ensuring equitable participation in resilience-building efforts.
2. Inclusive policies: Policies should be inclusive and address social inequalities to enhance community resilience. This involves recognising and addressing the unique vulnerabilities of marginalized groups and ensuring their participation in resilience strategies.
3. Integrated approaches: An integrated approach that combines structural, cognitive, and human rights-based perspectives is essential for effective resilience-building. By considering the interplay between these dimensions, policymakers can develop more comprehensive and effective strategies.

The paper concludes that understanding and strengthening the social dimensions of resilience are crucial for effective climate change adaptation. By fostering social capital and adopting inclusive policies, communities can enhance their resilience to environmental threats. Qamar's work highlights the importance of a multidisciplinary approach that integrates structural, cognitive, and human rights-based perspectives to build more effective and equitable resilience strategies. The paper is extensively referenced, drawing on a range of sources including, Adger et al. (2003) on the impacts of climate change on food security, Aldrich and Meyer (2015) on the role of social capital in disaster recovery and IPCC reports on climate change impacts and adaptation.

Review of "Reconceptualising adaptation to climate change as part of pathways of change and response"

"Reconceptualising adaptation to climate change as part of pathways of change and response" by R.M. Wise, I. Fazey, M. Stafford Smith, S.E. Park, H.C. Eakin, E.R.M. Archer Van Garderen, and B. Campbell, published in Global Environmental Change (2014), explores the need for a broader conceptualisation of climate change adaptation. The paper critiques the predominantly incremental adaptation efforts and advocates for a transformative approach that integrates systemic changes in societal values, governance, and practices.

The authors highlight the significant contributions of the climate adaptation community in improving the understanding of climate-change-related issues. Traditional efforts have focused on quantifying climate change impacts, assessing vulnerabilities, and providing adaptation strategies. However, these efforts have largely resulted in incremental changes that address proximate causes rather than systemic transformations. The paper introduces the concept of "adaptation pathways", emphasising the importance of robust decision-making processes in the face of uncertainty and complexity. The pathways metaphor is used to illustrate how adaptation decisions can be sequenced over time to respond to changing conditions. This approach contrasts with traditional methods that often assume stable governance and clear goals, which limit responses to immediate vulnerabilities.

The authors propose a broader conceptualisation of adaptation pathways that draws from sustainable development and pathways thinking. This approach considers path dependency, interactions between adaptation plans, vested interests, and global changes, aiming to integrate incremental actions with transformative societal changes. The paper reviews the current status of adaptation research and practice, identifying three broad types of studies:

1. Direct assessments of adaptation practice: These studies primarily focus on developed countries and highlight limited evidence of on-ground adaptation actions. Most actions have been incremental and motivated by extreme events rather than climate change itself. Adaptation mechanisms have typically been institutional and financial, with limited attention to marginalized groups.
2. Barriers and opportunities for adaptation: This body of literature explores the reasons for the limited translation of adaptation plans into action, including behavioral, cognitive, governance, and financial barriers. The authors argue that identifying specific barriers in different contexts is crucial for effective adaptation.
3. On-ground adaptation practices: These studies report actual adaptation actions, mostly in agricultural settings and community-based initiatives in developing countries. The actions often address proximate causes of problems and build resilience in existing systems rather than fostering systemic transformations.

The authors discuss how the framing of adaptation influences the nature and effectiveness of responses. They identify seven different framings of adaptation, reflecting the diversity of contexts and perspectives. The dominant "predict-and-provide" approach, based on risk assessments

and linear decision-making, is critiqued for its limited scope and tendency to favour incremental changes. The paper argues for a shift towards framing adaptation as part of pathways of change and response, which considers the complex interplay of knowledge, values, power, and agency. This broader perspective encourages decision-makers to integrate incremental and transformative actions, addressing both proximate and root causes of vulnerability.

The paper presents several case studies to illustrate the proposed pathways approach:

Local Governments in the US and Australia: These cases highlight the challenges of limited national leadership, stakeholder participation, and financing mechanisms. Adaptation actions have been incremental, focusing on proximate causes rather than systemic changes.

National Adaptation Programmes of Action (NAPA) in Least-Developing Countries: Despite participatory processes and multidisciplinary approaches, the implementation of NAPAs has been limited. The paper suggests that a broader pathways perspective could enhance the effectiveness of these programs.

Adaptation in the Solomon Islands: This case underscores the need for community-based adaptation strategies that address underlying vulnerabilities. The authors advocate for a more integrated approach to adaptation planning.

Biodiversity Sector in South Africa: Ecosystem-based adaptation (EBA) efforts have shown some success, but local and provincial government support remains weak. The pathways approach can help scale up successful EBA initiatives.

The authors point out the need for adaptation research and practice to move beyond incremental actions and address systemic drivers of vulnerability. They propose several key focus areas—a) Critical consciousness and actor reflection: Building the capacity for reflection on established institutions and power distributions, b) Innovation and experimentation: Creating space for new collaborations and experimenttation within protected niches, c) Participatory deliberation and negotiation: Providing forums for actors with different power levels to negotiate changes to resource distribution and governance structures, d) Shadow networks: Supporting networks to disseminate and mainstream successful adaptation practices.

The paper concludes with a call for further exploration of the proposed pathways conceptualisation, recognising the need for a paradigm shift in

adaptation research and practice to achieve more meaningful and effective responses to climate change. "Reconceptualising adaptation to climate change as part of pathways of change and response" provides a compelling argument for rethinking climate change adaptation. By integrating incremental actions with transformative societal changes, the proposed pathways approach offers a more comprehensive and adaptive framework for addressing the complex and uncertain challenges of climate change. The paper's insights and recommendations are valuable for researchers, policymakers, and practitioners seeking to enhance the effectiveness of adaptation efforts.

Conclusion

The exploration of resilience, vulnerability, and adaptive responses to climate change through various academic works highlights the complexity and multidimensional nature of these concepts. This conclusion synthesises the insights from the reviewed works to provide a cohesive understanding of these critical themes. As discussed in the introduction and as has been elaborated in some length throughout the course of the reviews, the three essays represent three different ways of approaching the problem of displacement due to climatic factors and a lone essay trying to summarize approaches towards such problems. The essays chosen here in no way exhausts the scope of what can be done to mitigate and minimise adverse impacts of climate change on vulnerable populations and landscapes. Yet they are representative of the gamut and diversity of scholarly endeavours directed towards this end and the necessity of interdisciplinary, multidimensional efforts to come round to the manifold problems, questions and challenges thrown up by environment induced displacements.

Climate change is a global problem and requires global solutions. However, the communities they impact are local, with the effect that the nature in which such calamities are received are keenly particularistic. While, it can be said that this attribution of particularism may hold true for all communities, the impacted communities are marginal, with very limited access to 'global' communication, finance, knowledge and so on. Thus, resilience built up by these communities would invariably have tinges of the local and shall be acutely particular.

It is important to bear in mind that such strategies of resilience have built up over years of experimented knowledge on local environment, culture, society, political structures and economic arrangements. Scholars are, at times, driven towards finding patterns and erecting models. While such drives have their use, models might on occasions tend to ride roughshod over local experience. Attentiveness to the local

can be achieved through efforts at decolonialising adaptive mechanisms, challenging state driven plans to prop up resilience, thereby underscoring the role of local initiatives. These approaches sometimes assume that whatever that might be imposed are of western provenance reeking of post Enlightenment notions of universality and hence to be abjured in favour of decolonial approaches. It needs to be mentioned here that the hegemony of the 'global' that I am referring to is essentially not western. It is a product of appropriation of many locals into a narrative that can be understood by the industry and a largely English-speaking academia without perhaps a dedicated understanding of the myriad life worlds of marginal communities across the globe.

I am referring to a problem of communication that seems difficult to surmount at present. Resilience rests, among other factors, on the aggregates of everyday life experiences of impacted communities. The critical question is to bring the 'global' phenomenon of climate change induced displacements into meaningful conversation with the everyday life worlds. Concepts such as 'empathy', the 'ethics of care' and related ones might help scholars in this endeavour. While, difficult to concretise, rigorous experimenting and innovative applications might go a long way in determining the value of such concepts in resilience and adaptability studies. Hope, the diversity presented by the reviewed works opens up discussions about limitations of communication with impacted communities and chart avenues of creative engagement with such questions.

Endnotes

[1] This has been cited in previous work carried out in lieu of conducting research for MA thesis, submitted in 2023.

[2] This has been cited by the author in previous work carried out in lieu of conducting research for MA thesis, submitted in 2023.

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