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Editorial: New challenges and future perspectives in climate adaptation: 2022

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Editorial on the Research Topic

New challenges and future perspectives in climate adaptation: 2022

Climate change is widely recognized as one of the most pressing challenges facing human society today. In response to this threat, efforts have been focused on developing effective adaptation strategies that can help limit vulnerabilities and enhance coping capacity in the face of climate change impacts. The growing scholarly interest in adaptation stems from an enhanced awareness that, as a result of past emissions, specific degrees of climate change are unavoidable. Furthermore, uncertainties surrounding the efficacy of mitigation measures underscore the need to enhance our ability to adapt (Sharifi, 2021). The Intergovernmental Panel on Climate Change (IPCC) defines adaptation as “the process of adjustment to actual or expected changes in climate conditions and their effects (Mach et al., 2014)”. This entails developing strategies that enable individuals, organizations, and societies as a whole to effectively respond to changing climatic conditions while minimizing negative outcomes through targeted interventions designed to increase resilience across different scales.

Over the last decade, there have been growing interest and important developments in climate adaptation research. These advances have been fostered by major improvements in technology and research techniques, which enable us to gather insights from different approaches and support us in further understanding the field, to achieve our mission to live healthy lives on a healthy planet. Furthermore, the progression of climate change adaptation research is attributed to the shift in environmental, social, and political conditions as the consequences of climate change become more pronounced and demand for adaptation escalates. Among other things, there is now more focus on justice and transformative adaptation.

Climate change is a global phenomenon that will impact all regions of the world. Developing nations are expected to experience more significant consequences than their developed counterparts. The disparity in adaptive capacity between countries highlights the urgent need for equitable solutions that address climate change’s social, economic, and environmental impacts worldwide. Globally, models and technologies are being developed to enhance climate adaptation. Meanwhile, developing countries are prioritizing vulnerability reduction and promoting climate justice (Nalau and Verrall, 2021).

Against this backdrop, this article Research Topic, published in *Frontiers in Climate*, presents a comprehensive analysis of adaptation practices adopted by selected developing countries. The insights presented here offer valuable academic perspectives on the topic. The first article in the Research Topic is titled “An overview of climate change adaptation and mitigation

research in Africa” (Baninla et al.). This article improves our knowledge of the state of and developments in research on climate change adaptation and mitigation in Africa. Employing a bibliometric approach, the authors identify 3,316 articles utilizing keywords associated with Africa’s climate change adaptation and mitigation. Furthermore, they conduct a thematic evolution analysis spanning over different time periods. The study finding shows that, over time, priority Research Topics and themes have been fluid, with select fundamental concepts such as vulnerability along with food, water, and energy security garnering more attention. However, notably, not all African countries were analyzed by researchers—only South Africa, Ethiopia, and Ghana stood out, while other nations received limited coverage. The study highlights the need to prioritize assessing climate change risks and measures for various African countries that have remained overlooked in academia thus far. Similar issues have also been raised by previous research (Ford et al., 2015).

The second article, “Exploring adaptive capacity: Observations from the vulnerable human-coastal environmental system of the Bay of Bengal in India” (Datta and Roy), elucidates the factors that contribute to enhancing individuals’ adaptive capacity toward mitigating natural threats. The research draws upon primary data gathered from individuals belonging to various livelihood practices in the Digha–Sankarpur–Mandarmoni region located along the eastern coastline of India’s Bay of Bengal. Among other things, the authors show that income security can be attained through a diversified livelihood strategy. Furthermore, opportunities for personal savings creation and access to financial institutions bolstered by community collaborations help prevent multiple losses at an individual level and enhance adaptive capacity. Public investment in public goods and services also plays a critical role in promoting such adaptability efforts. This study builds on the growing literature on second- and third-generation adaptive capacity research that emphasizes the issues of scale, capacity building, and interactions between individuals and groups (Elrick-Barr et al., 2022).

The third article, “Indigenous people’s perception of indigenous agricultural knowledge for climate change adaptation in Khumbu, Nepal” (Sherpa), employs the protection motivation theory (PMT) to investigate how climate change risk perception and the perceived efficacy of adaptation through indigenous agricultural knowledge and practices were linked in Nepal’s Khumbu region. The findings demonstrate that indigenous knowledge effectively facilitates adaptation to changing climatic conditions. This is in line with arguments that indigenous knowledge is important in enhancing climate services, especially in regions where modern weather and climatic predictions are inaccessible (Petzold et al., 2020; Leal Filho et al., 2022). However, government authorities fail to officially recognize this type of information despite its value. Therefore, integrating indigenous knowledge into local climate

policies would be beneficial for devising cost-effective strategies for the generational succession of knowledge relevant toward tackling global warming challenges effectively.

Last but not least, the article titled “Between tinkering and transformation: a contemporary appraisal of climate change adaptation research on the world’s islands” focuses on climate change-related responses in the context of the world’s islands (Petzold et al.). This article presents a critical analysis of the climate change adaptation scientific literature, focusing on how issues related to islands are often generalized. The authors argue that such approaches may not be suitable for diverse island realities affected by climate change. Based on a systematic review of the existing literature, this study reveals significant variations among different types of islands in terms of cultural and political contexts, including Small Island Developing States. Despite some evidence regarding various island experiences related to transitions and transformations throughout history, there is still limited knowledge about transformational adaptation specific to islands. Therefore, more context-specific definitions should be developed based on a comprehensive understanding that reflects their needs and characteristics under varying circumstances as they prepare for the future challenges posed by global warming.

The detailed and context-specific insights reported in this Research Topic will certainly contribute toward formulating effective measures for climate change adaptation, especially in developing countries. Furthermore, it is hoped that there will be extensive follow-up research to explore and bridge the gaps highlighted by these four articles.

Author contributions

The article was conceptualized and written by AS.

Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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