

CLIMATE MIGRATION IN SOUTH ASIA: CHALLENGES, IMPACTS AND POLICY RESPONSES

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Executive Summary

South Asia is one of the regions most vulnerable to climate change, with rising temperatures, erratic monsoons, coastal erosion and extreme weather events intensifying environmental stress. These climate-induced disruptions have become a significant driver of migration, forcing millions to relocate in search of safety and livelihood opportunities. The displacement crisis is particularly severe in rural and coastal areas, where people face declining agricultural productivity, loss of arable land and worsening living conditions. Unplanned migration, in turn, exerts pressure on urban centers, overwhelming infrastructure, housing and essential services.

The economic impact of climate migration on South Asia is profound. Climate-induced displacement disrupts labor markets, reduces agricultural output and strains energy resources. Countries like India, Bangladesh and Pakistan face rising adaptation costs while struggling to balance economic growth with climate resilience. The financial burden of managing migration, alongside infrastructure damages and food insecurity, threatens long-term development goals. Additionally, climate-induced migration exacerbates socio-economic inequalities, disproportionately affecting the most vulnerable communities.

Given the scale and urgency of the crisis, immediate and coordinated climate action is imperative. Governments must implement robust climate adaptation policies, invest in sustainable infrastructure and strengthen disaster preparedness. Regional cooperation is essential to address transboundary climate challenges, ensuring that migration policies are integrated into broader climate resilience strategies. Enhancing social protection programs and creating alternative livelihood opportunities can help mitigate forced displacement.

This document outlines key recommendations to tackle climate-induced migration in South Asia, including:

- Strengthening climate adaptation policies to enhance resilience in high-risk areas.
- Investing in disaster risk management to minimize displacement and improve response strategies.
- Developing sustainable urban infrastructure to support migrant populations and ease pressure on cities.
- Promoting regional and international cooperation to facilitate safe and legal migration pathways.
- Integrating migration concerns into national economic planning to ensure an approach that balances development with climate resilience.

Addressing climate-induced migration requires a multi-faceted approach that combines policy reforms, economic investments and international collaboration. Without decisive action, South Asia risks facing an escalating migration crisis with severe humanitarian and economic consequences.

1

Introduction

South Asia comprises some of the most climate-vulnerable nations in the world. Over the past decade, nearly 700 million people—equivalent to half the region's population—have been impacted by at least one climate-related disaster. Looking ahead, shifting weather patterns are projected to directly affect over 800 million people by 2050, further straining the region's economies. Between 2000 and 2017, natural hazard-induced disasters in South Asia resulted in economic losses amounting to \$149.27 billion, according to calculations based on Em-Dat data (Fallesen, et al., 2019)

When considering climate vulnerability in South Asia, many tend to focus on Bangladesh—a low-lying, lower-riparian nation frequently affected by severe floods. However, the entire region is highly susceptible to climate change. Rising sea levels and flooding pose significant threats not only to Bangladesh but also to the coastal regions of India, Pakistan and Sri Lanka, where dense urban populations exacerbate the risks. Meanwhile, landlocked countries such as Afghanistan, Bhutan and Nepal are experiencing increasing temperatures, droughts and glacial melt. Additionally, the Maldives, the lowest-lying country in the world, faces the alarming possibility of complete submersion in the near future (Kugelman, 2020).

In recent years, the Global Climate Risk Index published by the Germanwatch think tank has consistently ranked India and Pakistan among the ten most climate-vulnerable countries (Eckstein, et al., 2018). Furthermore, a significant study by India's Ministry of Earth Sciences, released in June 2020 and based on extensive climate modelling, projects that in the coming decades, India—the most populous nation in South Asia—will experience increased aridity and rising temperatures, with average temperatures expected to rise by nearly 4 degrees Celsius by the end of the century. The study also anticipates prolonged monsoon seasons, accelerated glacial melt, warming in the Indian Ocean and sea level rises of nearly a foot (Krishnan, et al, 2020).

Thus, climate change is emerging as a potent driver of migration. Most of the climate-induced migration in South Asia occurs within national borders, primarily as rural populations relocate to urban centers. The report Groundswell: Preparing for Internal Climate Migration (2018) projects that, by 2050, without concrete climate and development action, just over 143 million people—or around 3% of the population across Sub-Saharan Africa, Latin America and South Asia—could be forced to move within their own countries to escape the slow-onset impacts of climate change. In South Asia, "internal climate migrants" could number over 40 million, representing up to 1.8% of the region's total population. The number of climate migrants is projected to increase by a factor of six between 2020 and 2050, possibly rising to constitute up to 25% of all internal migrants in the sub region. Climate migrants will move from less viable areas with lower water availability and crop productivity and from areas affected by rising sea levels and storm surges. The poorest and most climate-vulnerable areas will be the hardest hit. These trends, alongside the emergence of "hotspots" of climate in- and out-migration, will have major implications for climate-sensitive sectors and for the adequacy of infrastructure and social support systems in rural and urban areas (World Bank, n.d).

In addition, cross-border migration is also a possibility (Asian Development Bank, 2012). Recent studies suggest that in Bangladesh, climate-displaced individuals from rural areas are more likely to seek opportunities abroad, as overcrowding and limited employment prospects make Bangladeshi cities less viable destinations (Chen and Mueller, 2019).

This article examines migration patterns in South Asia, with a particular focus on climate-induced migration. It explores the economic implications and the impact of such migration on the development aspirations of South Asian nations. Furthermore, the study evaluates the existing policies and frameworks adopted by these countries to address climate change and their implementation. The article concludes by offering policy recommendations and strategic suggestions aimed at effectively managing climate-induced migration and addressing broader climate challenges in the region.

Migration flows in South Asia

In Asia and the Pacific, climate change should be viewed as an additional factor influencing migration alongside existing drivers. While a full analysis of migration trends is beyond this paper's scope, understanding current patterns is essential for assessing climate change's impact. Migration decisions—whether to move, for how long and where—will be shaped by these established trends, with climate change introducing new pressures into the mix (Asian Development Bank, 2012).

With its vast population, South Asia serves as a significant origin region for global migration. The Indian and Pakistani diasporas rank among the largest worldwide; Bangladesh, India, Nepal, Pakistan and Sri Lanka contribute substantial numbers of temporary unskilled laborers to the Middle East and beyond. Additionally, skilled migration, particularly from India to OECD countries, has surged in recent years. The region's migration flows are also substantial, notably from Bangladesh to India, especially to the eastern states of West Bengal and Assam. Some estimates suggest that this movement surpasses even the Mexico-United States migration flow in terms of sheer numbers (Ibid.).

Despite rapid urbanization, internal migration remains dominant in South Asia, with most people still residing in rural areas. Temporary and circular migration between rural and urban areas is increasing, as rural populations often rely on family members working in cities. Unlike East and Southeast Asia, South Asia has yet to experience large-scale rural-to-urban migration. Additionally, forced migration and refugee movements persist along historical corridors. In Nepal's Himalayan region, migration is highly gendered, with men frequently leaving their villages while women take on economic and household responsibilities. In some areas, up to 40% of men are absent, leading to the feminization of mountain economies

In addition to the aforementioned migration patterns, the region also experiences internal and international migration driven by climate change.

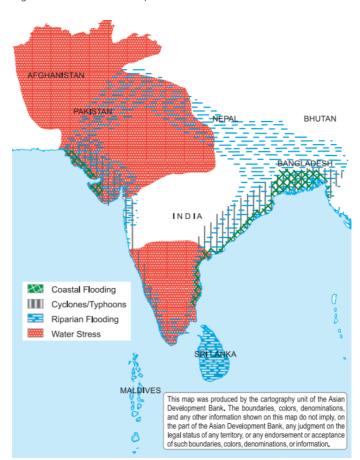


Figure 1: Environmental hotspots in South Asia

Source: National Centre for Social Applications of Geographic Information Systems, University of Adelaide, from multiple sources.

India

Large populations in India live in areas likely to experience greater riparian flooding and water stress as a result of climate change—major factors that will lead to lowered agricultural productivity. A significant number will also be affected by coastal flooding. Substantial parts of Mumbai, a city with a metropolitan population of around 20 million people, are below sea level and already subject to flooding. It is anticipated that, by 2050, 1.4 billion Indians will be living in areas experiencing negative climate change impacts. While most people will adapt in situ, the potential for redistribution of population through migration is substantial (lbid.).

Some of the recurrent environmental patterns that can be expected in India include increasing intensity and frequency of cyclones and floods along important rivers such as the Ganges and Brahmaputra in the north, the Mahanadi, Godavari and Krishna rivers in the south and the Indus in the west; the same may be expected in the north eastern and eastern regions from Assam and West Bengal to Andhra Pradesh and Tamil Nadu (Revi, 2008). Northern India, including the states of Bihar and West Bengal—and large cities such as Chennai, Kolkata and Mumbai—have already been exposed to frequent floods and tsunamis (De, Dube, and Prakasa, 2005). Longer and more frequent droughts and water stress have been recorded in several states, particularly those in western and central India (Mall, et al, 2006). Chennai and Mumbai are arguably the areas most vulnerable to sea-level rise (Kelkar and Bhadwal, 2007).

Most of India's population is employed in the agriculture sector and is heavily dependent on water for irrigation. It is predicted that, by 2050, annual runoff in the Brahmaputra and Indus basins will decline substantially (Ibid.). Considering the dependence on agriculture for daily subsistence and livelihoods, more floods, landslides, droughts and cyclones will increase vulnerability and lead to displacement (Ibid.).

Most migration in India is rural-urban, particularly to regional urban areas such as Delhi (north), Mumbai and Ahmedabad

(west), Kolkata (east), and Bangalore and Chennai (south), in search of better economic opportunities (Mitra and Murayama, 2008). Growing population pressures have put great stress on urban infrastructure. A major migration corridor lies between the poor northern state of Bihar and Delhi and Kolkata. While socioeconomic factors continue to be the primary motivator for migration, anecdotal evidence suggests that floods and loss of agricultural lands are playing an increasing role in migration decisions (Mitra and Murayama, 2008).

Over time, it is to be expected that India's coastal regions will witness a particularly nonlinear change in their vulnerability to climate change impacts due to high urbanization, rural—urban migration and dwindling agricultural productivity. The increase in population, infrastructure and industrial activity along India's coast—especially along its western seaboard and stretches along the Bay of Bengal—will heighten vulnerability to sea-level rise (Revi, 2008).

Bangladesh

Bangladesh figures prominently in global discussions of climate change because of the millions of poor living in its low-lying deltaic region who are already subject to severe environmental hazards. The country is already at high risk of flooding due to sea surges, river flow and local rainfall events and interactions between all three. Migration, internal and international (that of unskilled workers), is increasingly being used within Bangladesh as a coping mechanism in the face of environmental and economic challenges (Afsar, 2005). Forty percent of migrant workers originate from just five of 64 districts (Brahmanbaria, Chittagong, Comilla, Dhaka and Tangail), all in the south of the country (Siddiqui, 2005). These areas are especially prone to flooding and environmental events. It is clear that environmental processes and events, together with economic forces, have played an important role in shaping migration, with social and conflictrelated factors also involved. It seems inevitable that climate change will strengthen environmental forces; thus, the necessity for permanent and temporary migration out of the areas affected will remain (Siddigui, 2005). Temporary and permanent internal

migration due to environmental displacement has a long history in Bangladesh, but it is arguably the socioeconomic vulnerability of the rural population that has been the primary driver. It is times of famine, rather than extreme natural hazards, that have led to the greatest movements of people in recent history (Foresight, 2011). The projected climate change would significantly increase those movements' numbers and permanence. In rural regions facing loss of agricultural productivity due to desertification and river erosion, migration of landless farmers to other rural areas is already common (Foresight, 2011).

As elsewhere, a large proportion of internal migration in Bangladesh involves a shift from rural to urban regions. Greater congestion of urban areas has already led to severe health, security and resource issues for many of the urban poor. Metropolitan Dhaka is an important destination, but with more than 16 million residents, it is itself highly vulnerable to socioecological degradation and to the impacts of climate change (Alam & Rabbani, 2007). Indeed, Dhaka's vulnerability to flooding and cyclonic events brings into doubt its role as a destination for the displaced—temporary or permanent. Dhaka is 2–13 meters above mean sea level, with most of the urbanized areas at elevations of 6–8 meters (Alam & Rabbani, 2007). Nonetheless, it continues to attract large numbers of migrants.

As such urban centers grow, not only for the attractions of the city but also because of the underdevelopment and risks associated with life in rural areas, the infrastructure and planning needs of centers such as Dhaka will increase. A study notes that the coastal population in Bangladesh grew at about twice the national rate between 1990 and 2000, particularly in Dhaka and Chittagong. It suggests, "at the national level, measures to support previously disfavored inland urban settlements, away from the large cities on the coast, could not only reduce risks from climate change but also support a more balanced and equitable pattern of urban development" (McGranahan, Balk, and Anderson, 2007).

With changes in environmental and climatic conditions, Bangladesh will face, increasingly, the challenge of resettling and rehabilitating the affected population. The country's international networks will, therefore, play a vital role in times of future environmental crises. Bangladeshi migrants have moved abroad in three different broadly defined forms: (i) movement across the Bangladesh-India border via traditional kinship and cultural ties; (ii) as temporary working migrants, primarily to countries in the Association of Southeast Asian Nations (ASEAN) and the Middle East; and (iii) permanently to the United Kingdom and traditional immigrant-receiving countries such as Australia, Canada, New Zealand and the United States (McGranahan, Balk, and Anderson, 2007).

Nepal

A landlocked country within South Asia, Nepal has also experienced substantial environmental degradation and could see much more due to climate change. More extreme monsoonal rainfall and associated landslides and floods would impoverish many rural Nepalese in the hill and mountain valley regions. Nepal has experienced considerable rural—urban migration, primarily to Kathmandu and its environs. A long-standing open-border policy with India has facilitated movement across the country's southern frontier and swelled the ranks of a substantial Nepalese émigré population.

A major threshold for a nonlinear increase in migration could be crossed owing to increasing flood risk in the relatively lowlying Terai region, which is comparatively densely populated and already experiences regular flooding. More flooding could boost outward migration from this southern region as residents escape regular inundation, which leads to crop and stock losses, impoverishment and malnourishment. Climate change could reduce effective agricultural territory within the Terai region and shrink the buffer within the country absorbing those moving down from high hill and mountain valley regions (Asian Development Bank, 2012).

The Maldives

The Maldives, consisting of over 1,100 coral islands in the Indian Ocean, is the world's lowest-lying country. As a result, sea levels rising due to climate change pose a critical threat to its existence. Reports from NASA and the U.S. Geological Survey indicate that if global warming continues at its current pace, nearly 80% of the Maldives could become uninhabitable by 2050 (United Nations Environment Programme, 2024). The Small Island State (SIDS) stands to lose its very existence in the very foreseeable future. The incidence of climate change-induced migration has thus far been limited in the Maldives: however, migration in the Maldives can be traced back to as early as 1912. From migration-related studies, it is evident that common-form migration (from outer islands to the capital city), or internal migration, was associated with economic drivers such as education, health and employment opportunities. The islands that are home to local Maldivians (not the resort islands) stand to lose the most. Mohammed Nasheed. the former president of the Maldives and a leading voice for climate change equity, told ABC News that more than 90% of islands in the Maldives have severe erosion and that 97% of the country no longer has fresh groundwater (Manzo, Zee, Uddin and Jovanovic, 2021). It is estimated that approximately 2,200 residents migrate on an annual basis from the outer islands to the capital city. This number is expected to grow in the coming years. There is a lack of research on climate-induced migration in the Maldives and on the potential challenges and risks that such a phenomenon might pose in the future. Hence, there is a need for robust adaptation plans in the climate and development policies of the Maldives (United Nations Development Programme, 2024).

Sri Lanka

Sri Lanka faces significant vulnerability to climate change, experiencing a range of slow-onset, sudden-onset and extreme weather events across the country to varying extents. These climate impacts are closely linked to livelihoods, influencing people's decisions to migrate from rural areas to urban outskirts in search of better economic opportunities, as per existing research (International Organization for Migration, 2023). Floods,

storms and landslides are the most devastating sudden-onset events in Sri Lanka and affect hundreds of thousands of people every year. The country was hit by major floods in 2010, 2011, 2014, 2016 and 2018; flooding has caused more than USD 2 billion in damages between 1990 and 2018 alone (UNDRR 2019). The country has also been identified as having the highest relative risk of being displaced by disasters in South Asia (International Organization for Migration, 2023). While extreme weather events cause the highest direct losses and damages, slow-onset impacts such as droughts, saline intrusion and soil depletion affect larger numbers of people over extended periods of time. Temperature increases and changing precipitation patterns can trigger dry spells and prolonged droughts such as the ones that hit Sri Lanka in 2015/16 and 2016/17 (International Organization for Migration, 2023). This threatens agricultural livelihoods across Sri Lanka and imperils large segments of the rural population. With increasing environmental and economic pressure, many small-scale agricultural operators find themselves left with few alternative employment and income options. Depending on their household characteristics, they can find themselves in a "poverty trap" without a way out (International Organization for Migration, 2023).

Bhutan

Bhutan's 2017 Population and Housing Census revealed that nearly half (49.7%) of the population had relocated internally, driven by factors ranging from economic hardship to environmental pressures. International migration—particularly to Australia—has also surged in recent years, with young, highly educated Bhutanese seeking greener pastures abroad (Business Bhutan, 2025).

Afghanistan

Afghanistan is ranked eighth out of 170 countries for its vulnerability to climate change over the next 30 years, with 59% of the population affected by climate shocks, compared to 19% suffering from security-related shocks (International Bank for Reconstruction and Development, 2018). Out of every million, 1,150 people die in Afghanistan annually, half of them from weather-related and geophysical events, according to one natural disaster loss database (Munich Re NatCatSERVICE, 2016). As of 31 December 2019, Afghanistan had 2,993,000 people internally displaced by conflict and violence and 1,198,000 by disasters, the highest numbers on record (Internal Displacement Monitoring Centre, 2020).

Pakistan

Approximately 2 million people in Pakistan (Hayat, 2021) are expected to become climate migrants by 2050 due to climate disasters. Another report by Action Aid suggests that even with emission reduction, 600,000 people will get displaced due to climate events by 2030 (Climate Refugees, 2021). The patterns of forced climate displacement and migration can be observed in every province of Pakistan, with varying causes. Khyber Pakhtunkhwa and Gilgit Baltistan residents migrate seasonally or permanently due to Glacial Lake Outburst Floods (GLOF) or flash or riverine flooding. The floods of 2010 in the northern belt of Pakistan were one of the worst climate disasters caused by flash and riverine flooding. More than 20 million people fell under the umbrella of climate-displaced persons, while the death toll climbed to 2000 (Nisar, 2022). The following year, torrential rains led to flash floods in southern Sindh and adjoining areas of Punjab and Balochistan, affecting the lives of 9.6 million people (World Bank, 2014). 2012 was no different from the preceding two years as monsoon flooding affected the lives of 4.5 million residents of Sindh and Balochistan. Sea intrusion in the coastal areas of Sindh is also destroying arable land due to deforestation, causing migration of local communities (BBC, 2012). According to various reports, Thatta and Badin, cities of Sindh, will be submerged in the sea by 2050. This will lead to a massive internal displacement

of climate victims (Durrani, 2021). Drought and water shortage are other causal factors behind climate-induced migration, especially in Balochistan and Sindh. Since 2000, droughts and dry spells have affected the livelihood of millions of locals. amplifying food insecurity to the level of famine and mortality. Water scarcity has also become fatal for the locals' livestock. This has led to the seasonal migration by the residents to other cities to earn their living. Two patterns have been observed in seasonal migration (Ajani & van der Geest, 2021): first, entire families migrate to areas where basic necessities and economic opportunities are available, as seen with the Kholi and Bheel communities; second, only men of families migrate to find job opportunities to feed their families. In 2018, 33,000 residents of Noshki village of Balochistan had to migrate to other districts due to severe drought and water shortage (Shah, 2018). In 2022, the United Nations Convention to Combat Desertification (UNCCD) listed Pakistan among 23 countries facing drought emergencies in the preceding two years. The condition has worsened due to unsustainable land management practices that have resulted in desertification and land degradation (The News International, 2022).

The combined effects of climate change and migration will heavily impact the economy, placing stress on the agriculture and energy sectors. The next section will explore in brief the economic consequences of these challenges in South Asia.

3 Economic impact of climate migration

Agriculture is one of the most important sectors in South Asia. It provides a stable food source, income and livelihoods and a social safety net for rural populations. Higher temperatures and elevated carbon dioxide (CO2) levels will initially cause increased photosynthesis, but beyond the physiological limits of crops, productivity will be reduced. Higher temperatures also affect precipitation, impacting the availability of water for farming. Under extreme conditions, warming will lead to severe droughts, floods, storms and damage to crops. Increases in temperature and CO2 levels are projected to cause a rise in rice production in the colder hills and mountains of Nepal by as much as 16% by the 2080s. The rice yield in Bhutan and India is projected to increase by the 2030s but will begin to decline by the 2050s. Under these elevated temperature and CO2 conditions, the tropical and subtropical regions of Bangladesh, Bhutan, India and Sri Lanka will experience a 23% decline in rice yield by the 2080s (Asian Development Bank, 2013).

Further, achieving developmental goals will increase energy consumption in these countries. The demand for energy is expected to grow fourfold by 2030 to support economic growth, as well as to provide electricity to 400 million people who still lack access to energy (World Bank, 2009). Energy supply in the region is constrained by volatile world oil prices and impacted by droughts (affecting hydropower generation), high temperatures (an increased demand for cooling systems), insufficient installed capacity and inefficiencies in power plants (Asian Development Bank, 2013). Figure 2 summarizes the highest demand and supply gap in South Asia and percentage values with respect to the baseline power demand.

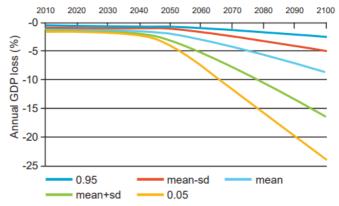
Table 1: Projected demand-supply gap based on Baseline Power Demand in South Asian countries

	2030 Demand-Supply		2050 Demand-Supply	
Country	In Terawatt- Hours	As % of the Baseline Demand	In Terawatt- Hours	As % of the Baseline Demand
Bangladesh	4.3	1.6	13.1	6.2
Bhutan	0.7	20.0	2.2	27.0
India	147.5	7.8	370.6	7.0
The Maldives	0.03	2.7	0.13	4.03
Nepal	1.6	25.8	4.2	31.8
Sri Lanka	1.3	1.9	1.9	4.2

Source: World Bank. 2009. South Asia: Shared Views on Development and Climate Change. World Bank South Asia Region Sustainable Development Department and the International Bank for Reconstruction and Development, Washington D.C.

Economic findings suggest that South Asia's total climate change cost will increase over time and will be prohibitively high in the long term. Without global deviation from the fossil fuel-intensive path, South Asia could lose an equivalent of 1.8% of its annual gross domestic product (GDP) by 2050, this loss increasing to 8.8% by 2100 on average (Asian Development Bank, 2013).

Figure 2: Total economic cost of climate change in South Asia under business-as-usual scenario



GDP = gross domestic product, sd = standard deviation.

Source: ADB Report 'The Economics of Climate Change in South Asia Adaptation and Impact Assessment', March 2013.

All these climate change impacts will have a detrimental effect on the developmental aspirations of the South Asian region. These pressures are exaggerated because of climate-induced migration and put further stress on the economy and development. It is imperative for the governments of the region to integrate climate policies into their developmental plans. Adopting a regional climate action plan can improve the effectiveness of climate efforts, as seen in ASEAN's strong mechanisms for addressing climate change impacts on trade and related sectors. The next section will discuss the existing policies for climate change and will provide further policy recommendations.

4 Existing framework and policies on climate action in South Asia

South Asian governments have long been formulating laws and policies to address climate change and climate-induced migration. Efforts date back to 2005 when, following the devastating Indian Ocean tsunami, the Maldives introduced a strategy to relocate its population to higher ground. In recent years, this initiative has evolved further, focusing on the construction of entirely new islands to adapt to rising sea levels (Dauenhauer, 2013). However, the effectiveness of these policies is hindered by various challenges, including weak enforcement, inadequate infrastructure, corruption and limited funding. Although South Asian authorities recognize the risks of climate-induced migration and have begun addressing them, the scale of climate change and displacement highlights the region's lack of preparedness. Therefore, increased international support is crucial (Dauenhauer, 2013). National responses vary from punitive measures, such as fines for illegal tree cutting, to proactive initiatives like building shelters, mud and concrete walls and embankments to protect against cyclones. A broad range of policies is also in place.

India

India's National Action Plan on Climate Change promotes renewable energy, energy efficiency, sustainable agriculture (including climate-resilient crops) and water management (Kugelman, 2020). The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) provides 100 days of paid work annually to manual laborers, helping mitigate migration risks caused by climate-related job losses (Ministry of Rural Development, Government of India, n.d.). In urban areas, the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) has allocated \$10 billion to upgrade infrastructure in 60 major cities, enhancing their ability to accommodate climate migrants from rural regions (Ministry of Urban Employment and Poverty Alleviation & Ministry of Urban Development, 2005). Additionally, micro-insurance programs have provided financial aid to disaster-affected communities for a small annual premium, with initiatives like AfatVimo covering losses from earthquakes, floods, cyclones and landslides (Bhatt, 2012). India's National Action Plan on Climate Change has faced criticism for lacking clear strategies and specificity. Research on MGNREGA suggests that low public awareness has led to limited participation among rural adults; though it has improved economic security, its benefits have been more pronounced in wealthier states than in poorer rural areas (Bhatia, et al, 2016). A 2019 study by the International Food Policy Research Institute found that although MGNREGA has increased incomes for vulnerable populations, recipients have not invested this income in making their farms more climate-resilient (Godfrey-Wood, & Flower, 2017). Similarly, the JNNURM fell short of completing several initiatives, including housing projects, and was discontinued in 2014 (Godfrey-Wood, & Flower, 2017). Additionally, government efforts to assess water supplies have been hampered by unreliable data and weak coordination between states.

Pakistan

Pakistan has implemented a climate change policy with action plans to address rural-to-urban migration, along with a national food security policy aimed at strengthening agricultural resilience against climate change (Islamic Republic of Pakistan, 2012). Pakistan's national climate change policy includes an implementation framework, but many adaptation plans remain unexecuted (Kugelman, 2020). The framework has also been criticized for lacking proper monitoring and evaluation mechanisms (Parry, 2016). Environmentalists argue that Islamabad prioritizes passing new climate laws rather than enforcing existing ones (Khan, 2017). Compounding the issue, provincial officials—who bear primary responsibility for implementation—often lack the technical expertise and financial resources needed to execute climate policies effectively. This challenge has been a persistent issue in Pakistani policymaking since 2010, when a constitutional amendment transferred many policy responsibilities to provinces that were not adequately prepared for the shift (Islamic Republic of Pakistan, 2010).

Bangladesh

Bangladesh has introduced several key initiatives specifically targeting climate migration. These include a National Strategy on the Management of Disaster and Climate-Induced International Displacement and a framework within the Ministry of Disaster Management and Relief to address climate-driven internal displacement. Additionally, Bangladesh has made significant progress in promoting sustainable production of forest, fruit and fish resources in coastal regions. More broadly, the country has been a regional leader in integrating climate change into its governmental framework. Plans are underway to establish climate change agencies in every government ministry, and the Planning Commission—a key government advisory body regularly issues five- and ten-year climate change action plans (Ministry of Disaster Management and Relief, 2015). Despite its notable achievements, Bangladesh still lacks a national climate change policy. Its closest equivalent, the Climate Change Strategy and Action Plan, has faced significant budgetary and

implementation challenges (Parry, 2016). Climate resilience efforts in the Sunderbans, crucial for reducing climate-induced migration, have lagged due to poor infrastructure. Issues include inaccessible water aquifers, non-rainwater-harvesting homes, weak embankments, uncoordinated disaster responses and inadequate funding for concrete structures and mangrove bioshields (World Bank, 2014).

The Maldives

At present, matters related to climate change are governed by the Ministry of Environment. In this regard, the main policies that govern climate action are demonstrated in the Strategic Action Plan (SAP) 2019-2023, Nationally Determined Contribution (NDC) and Maldives Climate Change Policy Framework (MCCPF), as well as the Sendai Framework. On 15 February 2024, The Maldivian government, in collaboration with the United Nations Environment Programme (UNEP), set out to enhance the country's climate resilience by formulating a National Adaptation Plan (NAP) (United Nations Environment Programme, 2024). The NAP process aims to reduce the country's vulnerability to the impacts of climate change by identifying and addressing long-term adaptation needs through strategic planning that is guided by the latest climate science and projections. Key components of the NAP include strengthening institutional arrangements and enhancing technical capacity, building a basis to generate high quality climate information for adaptation planning and developing a funding strategy for the implementation of the plan and its solutions. Crucially, the process will integrate climate change adaptation into new and existing policies and programmes across various sectors (United Nations Environment Programme, 2024). The future of the Maldives could also take the form of a floating city. In 2022, just a few miles from the dense, capital city of Male, construction and assembly began on the world's first true floating city. The project is being developed and led by Dutch Docklands in the Netherlands (Manzo, Zee, Uddin and Jovanovic, 2021). The notion of climate-induced migration is not referenced directly in the SAP. However, implementation of the SAP, as it stands, would result in the improvement of environmental conditions, enhancement

of livelihood opportunities and reduction of habitat destruction. Therefore, the problems associated with climate-induced migration can be addressed through the implementation of the SAP. Like the SAP and NDC, as discussed above, the MCCPF does not have a strong understanding of climate-induced migration and how to effectively address it. However, the MCCPF stresses the importance of addressing adaptation challenges as opportunities, allowing islands to reduce their exposure to climate hazards (United Nations Development Programme, 2024). The implementation and efficiency of its NAP policy and floating city project remain to be seen.

Bhutan

Bhutan's climate policies focus on adaptation and resilience but do not explicitly address climate-induced migration. The country's Initial National Communication to the UNFCCC (2000) and the National Adaptation Programme of Action (NAPA) (2006) identify key climate concerns, emphasizing Bhutan's carbon sequestration potential and vulnerability to climate change. The NAPA process, led by the National Environment Commission, involved regional and grassroots consultations, ensuring a participatory approach to identifying national priorities. However, due to limited hydro-meteorological data, vulnerability assessments lacked scientific precision. While Bhutan's NAPA is designed to be a dynamic framework for adaptation, it does not include provisions for climate-induced displacement or migration, leaving a policy gap in addressing population movements triggered by climate change (United Nations Development Programme, n.d.).

Sri Lanka

Sri Lanka has a range of laws and policies addressing climate change and its impacts, but the issue of climate-induced migration remains inadequately addressed. The National Environmental Act (1980) mentions resettlement but does not explicitly consider climate change or migration. While the Disaster Management Act (2005) was amended in 2011 to include climate change considerations, it primarily focuses on disaster risk

reduction rather than migration. Policies such as the National Labor Migration Policy (2008) and the National Migration Health Policy (2013) fail to address climate-induced displacement. Although the National Policy on Disaster Management (2010) and the National Climate Change Policy (2012) emphasize disaster risk reduction and adaptation, they lack provisions specifically targeting climate migration. The National Disaster Management Plan (2013-2017) and the Comprehensive Disaster Management Programme (2014-2018) acknowledge links between climate change and displacement but do not directly address migration. Sri Lanka's Nationally Determined Contributions (2016) and National Adaptation Plan (2016-2025) recognize climate change as a migration driver, yet policy responses remain fragmented. Despite these frameworks, the absence of robust research and concrete mechanisms to manage climate-induced migration limits the country's ability to effectively address the growing challenge (International Organization for Migration, 2020).

Nepal

Nepal's Climate Change Policy (2011, revised in 2019) focuses on climate justice, resilience and sustainability but does not address climate-induced migration. While it emphasizes adaptation through the National Adaptation Programme of Action (NAPA) and Local Adaptation Plans for Action (LAPA), migration remains overlooked. The Nepal Climate Change Support Programme (NCCSP) and National Adaptation Plan (NAP) aim to build resilience but lack explicit migration strategies. The country's Nationally Determined Contributions (NDC) highlight loss and damage from climate change, yet institutional arrangements to address migration remain unclear. Despite efforts in disaster risk reduction and climate adaptation, Nepal's policies fail to integrate climate migration, leaving gaps in addressing displacement caused by climate change.

Thus, it is evident that the outcomes of these key policies have been mixed. South Asian nations struggle with preparedness and resources to implement climate resilience policies while pursuing development goals. Therefore, strong climate-resilient policies are needed to address migration challenges linked to climate change. The next section presents policy recommendations for managing climate-induced migration.

Towards resilient climate policies: Lessons and future directions

Climate change migration in South Asia has distinct characteristics. While not the primary driver of migration, climate change intensifies existing socio-economic vulnerabilities, significantly increasing migration risks. Evidence suggests that climate change is already disrupting economic stability by threatening social and livelihood security. Additionally, it is directly impacting ecosystem, food security, public health and agricultural productivity, further affecting subsistence livelihoods across the region.

Migration in South Asia is primarily driven by economic factors, while transnational migration results from a mix of political and economic conditions, both of which are exacerbated by climate change. Identifying climate migrants remains challenging due to diverse mobility patterns used to cope with the climate and other threats. A comprehensive framework integrating economic, political and climate-related migration is needed.

Data on climate change and migration interactions is severely lacking, hindering effective policymaking. Climate change mainly triggers internal migration, often beginning as temporary or seasonal movement before becoming permanent, with most migrants heading to urban areas.

Transnational climate migration remains a contentious and politicized issue, with no regional consensus on its nature or future trends. South Asia is a key source of cheap labor for developed economies, often through bilateral agreements, but this labor migration is not a true climate adaptation strategy.

The success of migration depends on migrant capacity and host society preparedness. However, urban areas in South Asia struggle to accommodate climate migrants, forcing many to the margins of society. Migration policies in the region primarily aim to deter climate-induced movement due to resource constraints in cities, rather than enhancing migrant capacity or support.

India and Bangladesh have initiated efforts to develop migrantfriendly secondary cities, but these policies often fall short due to social injustice, poor planning, elite capture and corruption. Addressing these governance issues is crucial for sustainable climate migration management (Siddiqui, 2020).

Thus, addressing migration necessitates immediate and long-term strategies. As environmental changes increasingly impact communities across South Asia, comprehensive adaptation measures are essential. Governments must take proactive steps, including implementing early warning systems, promoting sustainable livelihoods and ensuring legal protection and the availability of essential services for displaced populations. Strengthening community resilience, enhancing infrastructure and integrating climate adaptation into national development strategies should be prioritized.

By tackling the root causes of climate-induced migration—such as loss of livelihoods, resource scarcity and environmental degradation—South Asian nations can mitigate displacement and foster long-term resilience. Effective management will require international cooperation, shared resources and coordinated policies. Stronger regional partnerships and support from international organizations will provide the financial and technical assistance necessary to build adaptive capacity. Ultimately, sustained commitment, collective action and a focus on long-term solutions are crucial to safeguarding vulnerable populations, ensuring equitable access to resources and promoting sustainable development.

Climate change response policies, whether focused on adaptation or mitigation, are most effective when seamlessly integrated into a country's broader national development strategy. Moreover, the urgency of region-wide initiatives in South Asia is increasingly evident. Addressing climate challenges requires enhanced cooperation and coordination within and among nations to strengthen capacity building, advance research and development and facilitate the exchange of best practices. Proactive measures are essential to ensure that South Asian countries are adequately prepared to mitigate and adapt to the severe impacts of climate change.

The following recommendations and suggestions are proposed in this article for effective climate action.

Advance climate adaptation and sustainable development: To effectively address climate-induced migration while promoting sustainable development, several key actions are essential. Governments should conduct national assessments of disaster risks and systematically track losses to improve investment in disaster risk management. Strengthening local disaster preparedness through improved early warning systems and post-disaster shelter planning is crucial. Social protection, skills training and alternative livelihood programs must be provided for those remaining in environmentally vulnerable areas. Additionally, investing in sustainable infrastructure and essential services in migrant-receiving cities, using vulnerability mapping for future planning, and involving local communities in constructing storm-resistant housing will enhance resilience. Lastly, climate-induced migration should be systematically integrated into national adaptation policies and action plans to ensure a comprehensive response.

Better the conditions of a migrant: To address climate-induced migration and support sustainable development, governments should assess disaster risks, track losses and enhance local disaster preparedness. Strengthening early warning systems, post-disaster shelter planning and social protection programs is crucial. Investing in resilient infrastructure, essential services in migrant-receiving cities and community-led housing projects will improve adaptation. Additionally, integrating climate migration into national policies and adaptation plans ensures a comprehensive, long-term response.

Regional cooperation: Promote dialogue and exchange to boost regional cooperation in tackling climate change and displacement. Diplomatic tensions, weak infrastructure and low intraregional trade hinder collaboration, while SAARC remains ineffective due to India-Pakistan conflicts. Neutral external actors should lead forums to foster consensus on climate action, leveraging existing but underutilized frameworks like the SAARC Dhaka Declaration (SAARC, 2008) and Food Security Reserve (SAARC, 1987). The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), the Association of Southeast Asian Nations (ASEAN) and the Indian Ocean Rim Association (IORA), all of whom include South Asian member countries, can play a crucial role in addressing the challenges of climate change and migration. Strengthening cooperation and collaboration among these organizations will be essential for effectively managing these issues.

Enhance international cooperation: Addressing climate-induced migration requires strong international cooperation among nations. Bilateral and multilateral agreements should establish legal frameworks for managing cross-border migration. Key actions include expanding visa-free movement and mutual recognition of qualifications, increasing opportunities for seasonal and long-term labor migrations that benefit both source and destination countries, and strengthening coordination among intergovernmental organizations to tackle migration challenges effectively.

6 Conclusion

Responses to climate-induced migration should be integrated into development strategies and climate adaptation plans. Vulnerable communities need options, whether to stay and adapt or relocate to safer areas. Effective action requires increased public investment in urban infrastructure, disaster risk management, social protection and livelihood development. The private sector can also play a key role in risk reduction. The nature of climate-induced migration—whether as forced displacement or a planned adaptation strategy—will largely depend on today's policies and investments. Governments, regional bodies and international organizations must act urgently. They have a crucial opportunity to shape a future of human mobility that ensures more inclusive and improved living conditions in the world's most populous region.

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