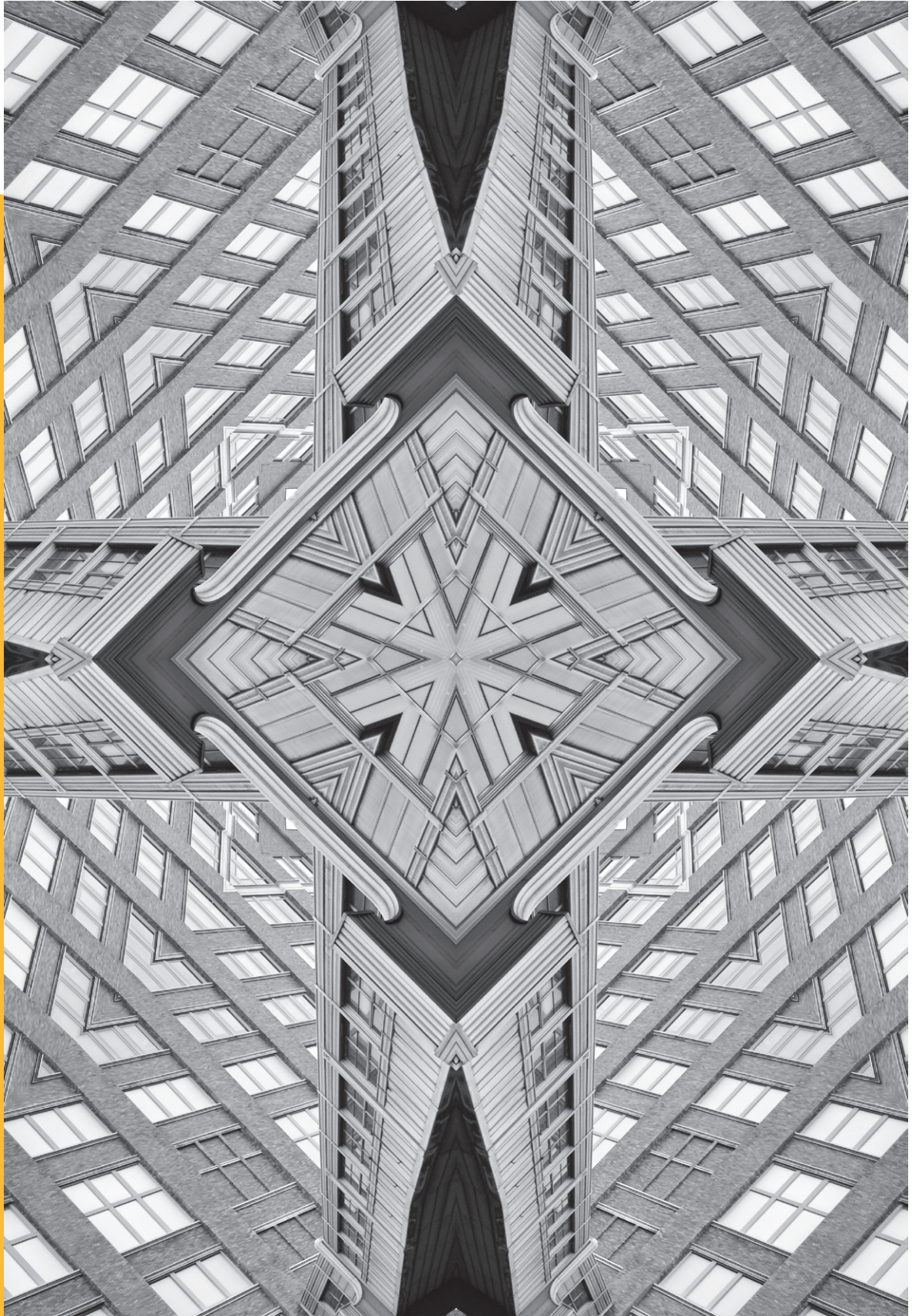


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Confronting Cascading Disasters, Building Resilience: Lessons from the Indian Sundarbans

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Abstract

The intersecting impacts of COVID-19 and climate change are compounding the vulnerabilities of coastal communities. This paper examines the disastrous effects of cyclone *Amphan* in the Bengal delta region of the Indian Sundarbans amidst a nationwide lockdown triggered by the pandemic, and their cascading consequences for a rural community inhabiting this climate hotspot. It highlights the livelihood crisis experienced by internal rural-urban migrant workers who returned to their villages in the Sundarbans from other Indian states under challenging conditions. Triangulating data from interviews with return migrants, literature, and policy documents, the paper argues for a move beyond the traditional short-term, relief-based responses. It proposes integrating a rural community's long-term economic recovery and self-reliance as a pillar of policy dialogues on climate change and mobility at national and regional scales.

Introduction: Contextualising the crises

The series of countrywide lockdowns that were imposed starting from the end of March 2020 to contain the spread of COVID-19 in India, drastically affected the lives of inter-state rural-urban migrant workers across the country. These migrant workers lost their jobs and were left stranded in urban centres without adequate food, shelter, and income support. State governments were hardly afforded the time to take any necessary action for coping with the crisis, nor could the migrants survive in the states of their workplace without employment. Many of them were left with little choice but to cross state boundaries on foot to reach their villages.¹

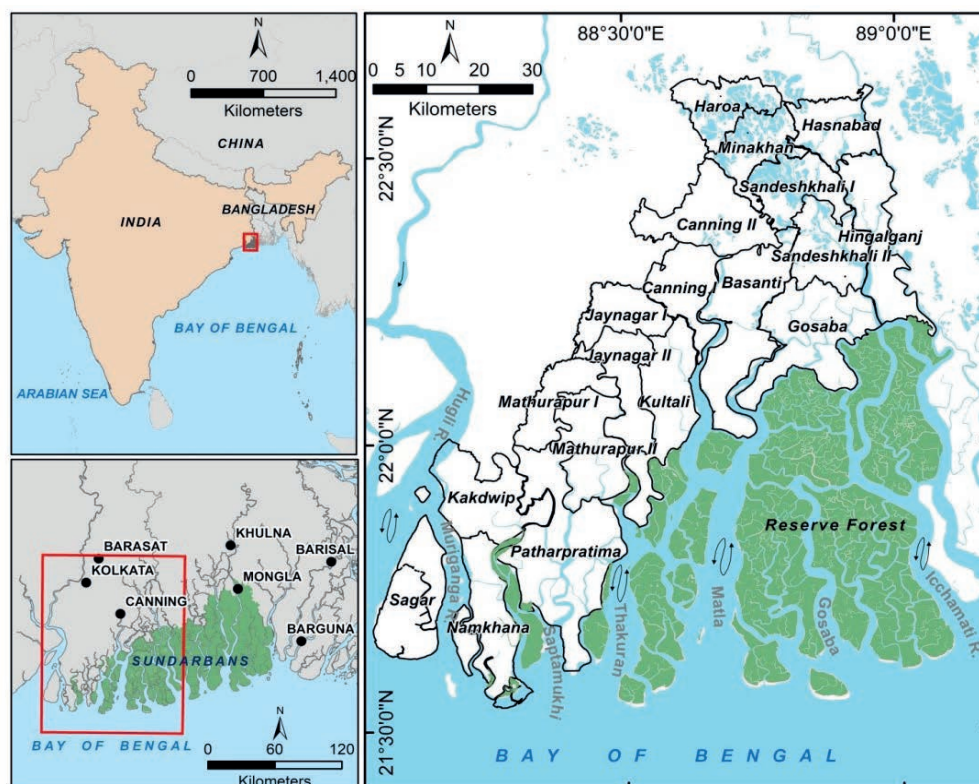
Estimates reveal that there are more than 100 million internal migrants in India, engaging in circular and seasonal migration.² Contributing to more than one-third of India's urban population, they move from rural areas to urban destinations to work in the informal sector of urban economies.³ Census 2011 counted 139 million internal migrants in India, moving both within and between states.⁴ This paper focuses on the experiences of migrant workers who had returned to the delta region of the Indian Sundarbans, and the massive consequences brought upon their lives and livelihoods by the pandemic-induced lockdown, and cyclone *Amphan* which made landfall in May, during the lockdown.

The Indian Sundarbans is part of the larger Sundarbans region located in the tidally active lower deltaic plain of the Ganges-Brahmaputra-Meghna river basin that spans south-western Bangladesh and southern West Bengal (See Figure 1). It hosts the largest contiguous mangrove ecosystem in the world and is designated a UNESCO World Heritage site. A climate hotspot facing protracted adverse effects of climate change, this ecoregion also acts as carbon sink.^a The migration of inhabitants from this Bengal delta region to urban areas in other states can be considered as an adaptation strategy of households striving to diversify resources and income base. Discussing the climate vulnerability and associated dynamics of population movement from this region requires an understanding of its colonial history of human settlement.

a "Sunderbans absorb over 4 cr tonnes of CO2", *The Hindu*, April 26, 2011, <https://www.thehindu.com/sci-tech/energy-and-environment/Sunderbans-absorb-over-4-cr-tonnes-of-CO2/article14697777.ece>

Introduction: Contextualising the crises

**Figure 1:
Indian Sundarbans ecoregion**



Source: ORF Issue Brief No. 387⁵

When the systematic deforestation of the Indian Sundarbans began in the 1770s, there were a hundred-odd deltaic islands in the region. Today 46 of those islands are still forested, accounting for about 42.45 percent of all mangrove habitats found in India.⁶ The other islands were deforested at different times until 1943 (with a couple of exceptions) and settled as villages practicing agriculture. According to the 2011 Census, more than 4.5 million people^b inhabit the districts of North and South 24 Parganas, West Bengal, subdivided into 19 sub-districts.

^b In the absence of updated Census data and lack of reliable estimates, this paper uses this figure as the most relevant official statistic of population count in the region.

Introduction: Contextualising the crises

This densely populated region^c has been experiencing increasingly devastating tropical cyclones.^d Of the region's population, about 0.1 million are exposed to sea-level rise and loss of land, exacerbated by the fact the Indian side of the ecoregion receives less freshwater and sediment from upstream sources due to an easterly tilt in the Bengal Basin.⁷ Absent any state mechanism to ameliorate the loss of land, the negative consequences for the affected people are dire.⁸

From colonial times, rain-fed paddy agriculture has been the main occupation of this region.⁹ In the best of times, prospects of farming are poor in the region due to low irrigation intensity between 2.36 and 19.05 percent, and cropping intensity between 101.31 and 171.05 percent.¹⁰ Indeed, agriculture is unable to sustain the population, with person-cropland ratio at 14 persons per hectare of gross cropped area.¹¹ Economic necessity therefore drives 18 percent of working adults to seek employment outside their village.¹² Other livelihood options except fishing and fishery are practically non-existent, especially in the sub-districts that adjoin the forest. As there is lack of access to modern energy services in the Indian Sundarbans, the basket of possible productive activities of this region is limited.

Human development measures across the Indian Sundarbans remain low with 34 percent of the population below the poverty line.¹³ The south-western sub-districts in the region, both inhabited and forested parts, are experiencing rapid erosion. From 2001 to 2008, the region suffered net land loss of 4,400 ha (or 550 ha per year).¹⁴ Where land is not yet lost, frequent breaches in embankment result in brackish water inundation, rendering affected land unproductive for multiple seasons.¹⁵

“The Sundarbans is a climate hotspot: it suffers devastating cyclones, sea-level rise, and loss of land.”

c Human population density in the Indian Sundarbans at over 1100 persons per sq. km is higher than the West Bengal state average which itself is the second-most densely populated state in India. https://censusindia.gov.in/2011-prov-results/data_files/india/Final_PPT_2011chapter7.pdf

d “The intensification rate during November, which accounts for highest number of intense cyclones in the north Indian Ocean, has registered a steep rise of 26% per hundred years, implying that a tropical depression forming in the Bay of Bengal during November has a high probability to reach to severe cyclone stage.” (O. P. Singh, “Long-term trends in the frequency of severe cyclones of Bay of Bengal: observations and simulations.” *Mausam* 58, no. 1 (2007): 59-66.).

Introduction: Contextualising the crises

To be sure, climate risk varies across the region. In the south-western sub-districts of Sagar, Namkhana and Patharpratima, for example, there are villages that no longer support agriculture at all because of recurrent brackish water inundation or the loss of land parcels to erosion or submergence. Landowners and possessors are thus unable to monetise their asset. While such households are sometimes displaced, occupationally and physically, they are largely trapped in place because of their inability to move away in the absence of appropriate financial and social capital.¹⁶

The rest of the paper examines literature to consider the relationship between climate change and migration, documents the cascading impacts of the intersecting crises on lives and livelihoods of the return migrants, and reflects on the effectiveness of current policies, highlighting the Inter-State Migrant Workmen Act, 1979. The paper offers specific recommendations to initiate a dialogue on imagining more inclusive and economically self-reliant climate futures for regions like the Sundarbans.

“Even in the best of times, agriculture is unable to sustain the communities inhabiting the Indian Sundarbans.”

Sea-level rise and intensifying cyclones in the Sundarbans

In the Bay of Bengal (BoB) region where the Sundarbans is situated, the annual mean near-surface air temperature has warmed by around 0.7°C during 1901-2018. Sea surface temperature (SST) has risen by 1°C on average over 1951-2015.¹⁷ The largest sea-level changes within the North Indian Ocean (NIO) were observed along the northern and eastern coasts of the BoB.

Although there has been a significant reduction (-0.26 per decade) in annual frequency of tropical cyclones (TC) in the BoB during 1951-2018, a significant rise (+0.86 per decade) in the frequency of very severe cyclonic storms (VSCS) has been observed in the post-monsoon season (October-December) from 2000 to 2018. This implies that of the storms in the BoB region, more are of 'very severe' category. Scientists project an increase of about 50 percent in the post-monsoonal cyclogenesis by 2041-2060 because of warming of the sea surface due to increased greenhouse gas concentrations in the atmosphere.¹⁸

More than 60 percent of BoB TCs make landfall in various parts of India's east coast, 30 percent experience recurvature and make landfall over other littoral states, while 10 percent generally dissipate over the oceanic regions. The highest-impact zones are found in northern Odisha and the Sundarbans region of West Bengal.¹⁹ "During the passage of a single tropical cyclone, the loss and damage inflicted by a few hours' battering by waves, winds, and surges can undo the gains from many years of accumulative processes."²⁰

Environmental impacts of climate change in the region are expected to disrupt the complex hydrological balance of the Sundarbans, resulting in a range of water management challenges. Salinity intrusion into watercourses has already led to reduction of cropland and an ongoing transition to aquaculture.^{21,e} Coastal areas become threatened when high tides coincide with extreme weather events as in the case of cyclone Aila in 2009, and drive extreme sea levels (ESL).²² Ocean warming affects ESL and intensifies coastal flood risk.²³ Extreme sea-level projections for the Ganga-Brahmaputra-Meghna delta show an increased likelihood of high-water events through the 21st century²⁴ partly due to the delta not having enough sediment for maintenance of its current elevation relative to sea level.^{25,f}

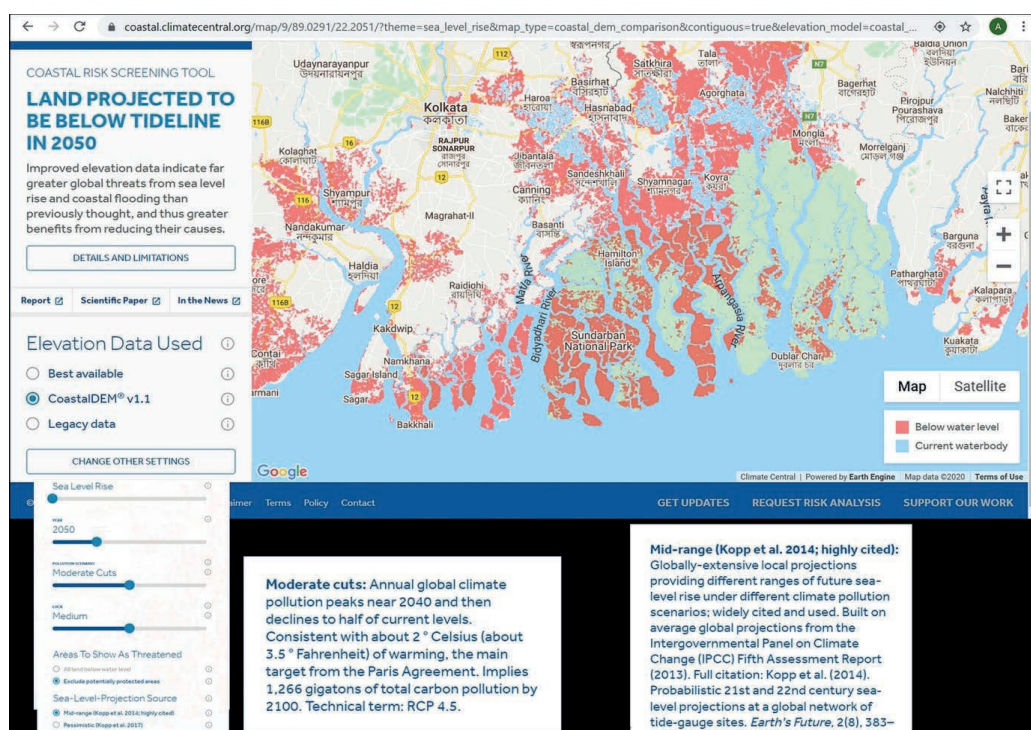
e In the Indian Sundarbans, area under aquaculture has increased from 34,310 ha at the beginning of this century to 51,080 ha until 2019.

f Higher sea levels and receding coastlines escalate the destructive potential of storm surge associated with cyclones. These impacts of sea level rise are compounded by land subsidence: ground surface in the inhabited islands is below high tide level, which makes flood drainage difficult and expensive.

Sea-level rise and intensifying cyclones in the Sundarbans

Potential coastal risks in the region include loss of land due to increased erosion, damage to coastal infrastructure, salinisation of freshwater supplies, and a heightened vulnerability to flooding. Estimates reveal that about a quarter of a million could be exposed to flooding around the middle of the century (Figure 2).

Figure 2:
Land projected to be below tide line in 2050



Source: Climate Central (Open access)²⁶

The risks posed by climate change can be magnified when hazards overlap or follow one another. Increase in cyclonic intensities will likely result in more inundation from accompanying storm surges that turn proximate agricultural lands saline, forcing people to out-migrate for a living. Together with the threat posed by a gradually rising sea level, such environmental impacts may be mediated through economic, social, and political factors to explain migration as a response to a changing climate. While permanent relocation from the Sundarbans may become an eventuality for its inhabitants in the long run, temporary circular migration is witnessed as shorter-term response.

Sea-level rise and intensifying cyclones in the Sundarbans

Climate-induced migration in the Indian Sundarbans

Land loss due to submergence and increasing soil salinity, along with land fragmentation, are resulting in challenges for delta livelihoods. This in turn drives population movement from the region.²⁷ After cyclone Aila made landfall in the Sundarbans in 2009, almost all the agricultural land owned by villagers in a study area was unfit for cultivation for a few years.²⁸ This led to migration, as the villagers searched for alternative sources of livelihood. The study found that the smaller the land owned by a family, the greater chance there was of finding migrant workers in the family.⁸

The role played by mobility as a response to climate events depends heavily on the duration, intensity, and nature of the stimulus. Other factors are the composition and assets of households, previous experience, social networks, and adaptation responses.^{29,30,h} A DECCMA (Deltas, vulnerability & Climate Change: Migration & Adaptation) study found that economic reasons dominate people's perception as important drivers of migration,³¹ although environmental reasons are also viewed as a component driver.^{32,33,i}

Rather than solely placing the spotlight on environmental factors, research-policy scholarship has focused on interrelated economic, social, demographic, and political factors³⁴ mediating longer-term climate change impacts for communities inhabiting low-lying coastal and island regions. The resulting gradual out-migration forms a part of the region's economy, culture, and everyday life,³⁵ interspersed with sudden temporary displacements directly attributed to events like tropical cyclones and coastal flooding.³⁶

“Mobility is key: People leave the Sundarbans to find other sources of livelihood.”

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- g The study revealed the precariousness of a tribal community practicing subsistence strategies in a difficult environment, with higher probability of their younger generation to migrate outside the village and the state.
 - h In other words, migration decisions involve complex interactions among families, perceptions of opportunity and risk, and social expectations.
 - i About 3 percent of the population cited environmental stresses as the direct cause of migration. That environmental stresses often precipitate economic stresses suggest that people do not always clearly perceive the causes of economic stress. Environmental factors might be playing a bigger role than the numbers indicate.

Sea-level rise and intensifying cyclones in the Sundarbans

Migration as an adaptation strategy not only supports those who can move but also those who cannot. The flow of remittances between urban and rural areas is an important and stable economic resource that supports communities in rural areas. Remittances sent by migrants have the potential to enable rural households to overcome credit and risk constraints by spatial diversification of labour and income.³⁷

Migration from the Sundarbans not only aids economic development, but also contributes to nature conservation by reducing pressure on natural areas. Households employ different forms of mobility to diversify their portfolio through access to distant labour markets to ensure survival or to improve standards of living.³⁸ The DECCMA study found that intentions to migrate in the future are high (among two-thirds of all households): to seek jobs and better education, and alleviate environmental stresses. Perceived environmental and economic impacts including flooding, cyclone, erosion, and loss of seasonal income, are apparent in areas more exposed to hazards, indicating a higher probability of future migration from these areas.³⁹ The aspirations of the people in the Sundarbans and their social networks in terms of finding employment also promote migration.⁴⁰

“Migration also contributes to environmental conservation by easing the pressure on natural areas.”

Intersecting crises: COVID-19 and cyclone Amphan

This paper examines how the cascading impacts of COVID-19 and cyclone *Amphan* as overlapping crises exacerbate the precariousness of the lives of migrants from the rural community of the Indian Sundarbans. Migration as a response to climate change from a coastal ecoregion like the Indian Sundarbans cannot be entirely separated from the process of irregular labour migration from this region which has for decades been witnessing circular patterns^j of seasonal and longer-term movement of internal migrants.⁴¹ Typically, it is the male members of the family who migrate to urban destinations for work, alone or with others of their kin, with the plan to send remittances back to their families. Inter-state migration is often preferred over intra-state migration.⁴² Together with the push from rural areas associated with waning traditional livelihoods, there is the pull from informal labour markets in other states that promise relatively higher wages.⁴³ The cascading impacts of the pandemic-induced lockdown, coinciding with cyclone *Amphan* from 20 May 2020, offer a window to view the costs and consequences of migration from this climate-vulnerable region that could otherwise remain absent in public understanding and policy considerations.

Methodology

This analysis triangulates data from secondary sources including literature and newspaper reports, policy documents, and in-depth interviews conducted over phone with 19 migrants.^k At the time of the interviews, 17 of these migrants had

“As the effects of the lockdown and Amphan cascaded, the people’s lives became more precarious.”

j “The circular pattern characterises migration from Sundarban... The workers neither permanently migrate from Sundarban nor permanently return. They return home only to migrate again” (see endnote 40, Mistri, pp.202).

k The in-depth interviews were conducted over phone from May to July 2020. Follow-up interviews were carried out with those initially contacted and interviewed in May before *Amphan* made landfall. Conducted remotely from Kolkata, interviews were semi-structured, comprising one or more phone conversations, and ranging from 15 minutes to over 80 minutes. Participants were male and, in their 20s and 30s, with a few exceptions. For example, one is 54 years old, and another participant, who was still in Kerala at the time of the interview, is in his 40s.

Intersecting crises: COVID-19 and cyclone *Amphan*

returned to their villages in the Sundarbans. All the participants experienced the twin impacts of the cyclone and the lockdown. Participants were recruited specifically from the Community Development (CD) blocks of Patharpratima, South 24 Parganas and Sandeshkhali II, North 24 Parganas, with the help of a network of key informants from local community-based organisations and other organisational actors immersed in the community through their work. Both the blocks were heavily affected by storm surge during cyclone *Amphan* as well as during cyclone Aila in May 2009.^l

Though agriculture is still a fundamental source of livelihood for people in the region, coastal erosion, breaching of embankments and the resulting increase in soil salinity, especially during a cyclonic event, have damaged agricultural productivity. Associated with this can be noticed a shift in livelihood from agriculture to fishing. As reported after *Amphan*, many freshwater ponds and fish farms across Patharpratima were inundated with saltwater, and fishes were killed.⁴⁴ At the time of the post-*Amphan* follow-up interviews in June and early July, participants from Patharpratima relayed that electricity had still not been restored in those parts. Like Patharpratima, the CD block of Sandeshkhali II is also entirely rural.⁴⁵ Compared to its more remote southern counterpart, the northern block of Sandeshkhali II has been more dependent on agriculture as a source of livelihood.⁴⁶ Furthermore, along with Patharpratima, it was one of the blocks reported to be heavily affected due to the breaching of embankments.⁴⁷

Key questions for interviews focused on the migrants' experiences in destination areas, specifically in the context of the lockdown, and their experiences of returning to their villages in the Sundarbans. A significant part of the conversation revolved around their living conditions since return, how they and their families have been affected by the lockdown and cyclone *Amphan*, and their most pressing needs during this time. They were also asked about any relief and support they might have received from the government and non-governmental organisations.^m

l Although participants recruited from these two blocks may not be entirely representative of the diverse population of migrants from the Sundarbans, they represent a specific juxtaposition of phenomena, as their lives and livelihoods remain impacted by the converging crises.

m Informal telephonic conversations with the participants before and after the formal interviews helped build rapport and gain their consent and trust. Conducting the interviews remotely in the middle of a pandemic posed more challenges than usual, and the data gathered could not contain visual observations of the participants' location, living situation or body language during the interviews.

COVID-19 lockdown, and the return of migrants

As the Indian government responded to COVID-19 with a countrywide lockdown from 24 March 2020ⁿ to 31 May 2020, the world witnessed the plight of migrant workers in India, forced to walk hundreds of miles to their villages,⁴⁸ sprayed with disinfectants and subjected to other forms of inhumane treatment;⁴⁹ in one incident, 16 of them were run over by a train as they slept on the tracks.⁵⁰ Ajitesh,^o in his early 20s, recalls his experience of returning to his village in Patharpratima block immediately after the lockdown came to effect. Ajitesh had come from his workplace in Bihar and was in Kolkata when the single day curfew was observed on Sunday, March 22, right before the lockdown was announced. Since local train services had almost ceased and only a few trains were running, he and his friends had to change multiple local trains from Garia station in Kolkata to Kakdwip station, waiting for several hours at night in Sonarpur and Lakkhikantapur stations to board connecting trains. Reaching Kakdwip late at night, Ajitesh, along with his friends, visited a hospital for health check-up, to comply with local regulations for those coming from outside the state. Ajitesh recalls further difficulties encountered on the way:^p

We could not find any vehicles in the morning, and after waiting for a long time, we rented a small toto vehicle. The toto met with an accident on the way and we suffered minor bruises and tore our bags. We found ferry boat services had been stopped by local police stations to avoid crowding. After much difficulty, we managed to hire a boat for which we spent a lot of money. We crossed several islands on the way.

Ajitesh's experience is echoed in those of other interviewees, who were unable to plan their return on such short notice, especially those living far in big cities like Mumbai. Suresh, also in his 20s, said he was completely caught by surprise.

We could not have returned then. My home is in a remote area. It is not possible to quickly leave Mumbai, even if I wanted to. We also do not have that much money with us that we could easily buy tickets to return home.

Suresh was part of a group of eight migrant workers staying together in one room in a chawl in Mumbai. Had it not been for his employer, who provided

n The state of West Bengal went under lockdown from 5 pm on Monday, March 23, 2020 as reported by The Hindu. See <https://www.thehindu.com/news/national/west-bengal-under-lock-down-from-march-23/article31135554.ece>

o Pseudonyms have been used for all participants to maintain confidentiality.

p The authors have translated the interviews from the vernacular.

COVID-19 lockdown, and the return of migrants

him and his colleagues with the place to stay and some rice and lentils they could cook, he could not have survived the lockdown. Still, living in those conditions has taken a toll on his health. “If I cannot earn, I cannot stay well. Then I am not able to go out anywhere. Is it possible for eight to ten people to always stay in one room?” Being the only son and earning member in the family, he had been worried about his parents who were alone during the crisis. Suresh was aware that conditions in his village were difficult as markets were closed, people could not leave their homes, and there was fear of police beating if they violated the lockdown. “There is no income there, just like there is no income here, though I have heard they are providing food grains in the village.”

The lockdown, as a national level “one size fits all” policy approach, was not only at odds with the people’s needs and responses at local regional scales, but also magnified the economic disadvantages for the inter-state labour migrants. As 23-year-old Kailash, who was able to return from Tamil Nadu to his village in Sandeshkhali shares:

We did not have access to any kind of support; we did not have enough food. We had to ask our family back home to send us money just so we could eat. That’s how we survived.

The migrants’ return to their villages in the Sundarbans have involved stigma, mistrust, and alienation. In contrast to how they were usually received as individuals sending remittances back home, the migrants were now being regarded as potential carriers of the virus. Bikash, 30, returned from Kerala to Sandeshkhali and had to be quarantined in a school near his house.

“Immobile because of the lockdown, the people of Sundarbans could not leave to find work after the cyclone destroyed their land.”

COVID-19 lockdown, and the return of migrants

We did not entirely understand the situation. For instance, those who had come from outside, they were not treated like before. This is what I felt bad about. We are being avoided somewhat. But we must accept this reality, since we have come from outside and the virus is coming from outside.

Such perceptions of “being treated differently” can translate to serious psychological impacts for the return migrants. Beyond the physical isolation, feeling socially excluded in their own community can intensify the burden of economic precarity brought upon them by the lockdown. A December 2020 study on health challenges during COVID-19 have identified India’s internal migrant workers as one of the most vulnerable groups during the pandemic, not only because of the increased threat to their physical health, augmented by their limited ability to observe safety protocols in crowded living conditions, but also because they are susceptible to psychological distress.⁵¹ On a larger scale, this can have further implications in the form of loss of social cohesion in a community at a time when it is needed most for post-disaster response and recovery.

Cascading impacts of lockdown and cyclone *Amphan*

It was during the lockdown that cyclone *Amphan* made landfall on 20 May 2020 in the Indian Sundarbans region. Among the strongest cyclones to develop in the BoB region,^{52,4} its effects were magnified amidst the COVID-19 lockdown, especially for the people of the Bengal delta region. Returning to his village after *Amphan*, Kailash had to stay in mandatory quarantine in a school building for two weeks. He was without work, and with no prospect of going back to Tamil Nadu where he had a job. He would for some time prefer to find work within the state of West Bengal, in and around Kolkata, instead of travelling to another state.

The losses and damages wrought by the cyclone added to the already formidable burden of the migrants. Anil, 54, returned from Tamil Nadu by bus to his village in Jaygopalpur, Sandeshkhali after *Amphan*.^r He sounded dejected while remembering what he had to witness after coming back.

Everything had become like a desert. Ravaged by the storm, the whole place was entirely barren. It was not our village anymore. There was devastation everywhere.

q Cyclones are increasing in intensity due to rising ocean surface temperatures, in turn attributed to human-induced climate change.

r Anil came back to see his house broken, and parts filled with rainwater. He was able to repair the space tentatively and was staying there at the time of the interview.

COVID-19 lockdown, and the return of migrants

Like Anil, the returning migrants were faced with increasing costs for repairing damages to their houses and assets; at the same time, they are unable to find employment and means of income support nearby in the rural areas. Pallab, 27, worked in a garment factory in Tamil Nadu; there was no work during the lockdown. He was forced to shell out INR 7000 for a single bus seat for coming home to his village in Sandeshkhali. He came to Kolkata one week after the countrywide lockdown was lifted.

I came to Kolkata to work with a cement truck. Now I am here in Chitpore. In the village we had almost nothing to eat. So I came.

Pallab was living inside the cement truck as it was difficult for him to find affordable housing. He said he would prefer to go back to Tamil Nadu whenever possible. In Chitpore, he could manage to send only INR 1000 back home to his village.^s

Had *Amphan* happened in a non-COVID world, people without income support in rural areas of the Sundarbans could have moved out to find work elsewhere and survive. It is what happened after cyclone Aila in 2009.

Paritosh, 22, was working as a tailor in a garment factory in Tamil Nadu when the lockdown was declared. His father was forced to take a loan during the lockdown and send him some money. Facing insecurity around food and water for days during the lockdown, he had no option but to return to Khulna, Sandeshkhali with his wife, aboard a Shramik Special train.^t Today, without a source of income, huddled in a makeshift room inside a house damaged by *Amphan*, Paritosh's family continue to lack food and water. The tube-well near

^s Pallab's experience of having to engage in work he was not used to doing resonates with another participant's anxiety. Malay, the only participant who was in Kerala at the time of both the initial interview and follow-up interview after *Amphan*, had not returned to his village in the Sundarbans. He was not sure when he would have been able to leave had he gone back. After the lockdown, he joined work in Kerala, and feels he is in a better condition compared to those at home. Malay shares that had he gone back, he would have had no other option but to catch fish, something he has not done in a long time. As reported by Krishnendu Mukherjee in a Times of India article on August 24, 2020, over-dependence on natural resources in the Sundarbans due to the lockdown and *Amphan*, together with a higher incidence of tiger attacks on fishermen this year, coincide with the return of migrant workers in the region. This underlines the phenomenon of human-wildlife conflict in the Sundarbans as another consequence of overlapping crises.

^t These special trains were operated by the Indian Railways to move people, especially migrant workers stranded in various parts of the country due to the lockdown. It is reported that between May and August 2020, over 4,000 Shramik Special trains have carried lakhs of migrant workers home across 23 Indian states (The Economic Times, "2020: A glimpse of life without trains as Railways battled odds to keep India's lifeline running." Dec 25, 2020).

COVID-19 lockdown, and the return of migrants

their house has not been repaired for over a year, and they must fetch water from a well a kilometre or so away.

When Aila happened, I was very young. The water washed away everything, there was nothing. Then there was no cyclone shelter. We stayed on the roof of a primary school.

Paritosh recalls how his parents had to find work as domestic helper and construction worker in Kolkata to survive the aftermath of Aila, as rural livelihoods dependent on agriculture were destroyed by the disaster. He remembers that up to almost five years after Aila, there were areas near the river that still could not be cultivated as they had turned saline. Like many other families in the Sundarbans, they did not own any land and had to depend on migration for survival.

My entire childhood was spent in my maternal uncle's place. My parents would come home for a month or so, and then leave again. They faced a lot of hardship to raise me.

The ability to move out of the delta region in response to disastrous events such as cyclones, storm surges, and associated saltwater intrusion, has become seriously limited in the present context. Anil explains his reluctance in looking for work in Kolkata:

I do not know about work in Kolkata. I am searching for work nearby, but I am not finding any. I hear that more cases of the virus are happening in Kolkata. That is why it is not possible to go now.

It is clear that the intersection of COVID-19 and *Amphan* as two hazardous events has resulted in a paradoxical interplay between mobility and immobility. Spatial mobility (whether temporary, over shorter distance, or longer-term) would have been an expected strategic response for coping with an event like cyclone *Amphan* and the more gradual impacts of anthropogenic climate change. However, its coincidence with a global pandemic has presented a peculiar situation where immobility is expected, even enforced, as the norm. This inverted outcome, along with the cascading effects for return migrants, have culminated in an ongoing livelihood crisis for the Sundarbans region—a situation also faced by many other rural communities across India.

Current relief-based policy

Mobility dynamics during the pandemic-induced lockdown also affected post-*Amphan* aid and relief efforts by both government agencies and non-governmental organisations (NGOs). Akash, from Khulna, Sandeshkhali, 25, reported that some organisations were giving relief including food items like rice in the immediate aftermath of the cyclone, while he and his family were still in quarantine for 14 days after their return. “They have stopped for now. Also, since roads are *kutchra* [unpaved], it is difficult for them to reach us here.”

Akash boarded a Shramik Special train with his family from Tamil Nadu on the day of the cyclone, which came till Maldah in North Bengal. From there they had to make a long journey to their village in Sandeshkhali. He was unable to bring all his family members, and his father and brother had to remain in Tamil Nadu. They have a small land in the village, but there is no immediate prospect for cultivating that land, as it is flooded with saltwater. Their house in the village was destroyed.

We did not get any help from the government, so we could not do anything yet. We have submitted the required forms. We somehow made a new makeshift space in one of the broken rooms, so we can stay in some way.

For Biswajit, 37, from the Indrapur village of Patharpratima block, although his house was not entirely damaged by *Amphan*, the roof tiles had to be replaced.

Around 100-200 of the roof tiles were broken during the storm. The rooms survived. An electric tower had collapsed during the storm, and we still do not have electricity.

“Missing from the relief-based support was a path to self-reliance.”

Current relief-based policy

Interview responses reveal that although relief efforts from the government and NGOs were mobilised almost immediately after cyclone *Amphan*, they have not been entirely effective in reaching those in need, nor in addressing the most pressing longer-term livelihood support. NGOs who had been working in their area and giving relief, could not do so independently and needed to have permission from the gram panchayat. Also missing from the relief-based support is a pathway to economic self-reliance. As Biswajit observes, “Those who could not go back and are out of livelihood options are in dire need of a source of income. No NGO is able to provide that.”

My family did not get anything from the government. Some people got polythene sheet [tarpaulin] or a package with rice, lentils, mustard oil, and soya bean. We did not get this package, nor any help with repairing the house. We submitted documents through the Panchayat—a copy of Aadhar card, bank account details and an identity card...

[What about the hundred days' employment scheme?]^u The area where the river embankment broke, people from villages in that area could get some work. But our side is the Indrapur village. We did not get any work like that.

Indeed, there is a mismatch between the timeline of the relief-based compensation model usually adopted in the wake of a disaster like *Amphan*, and that around which affected communities negotiate their survival and plan for possible futures. According to Anil:

I will not go back now, at least not in 2020. Next year I will think whether I will go or not. If I get good work here, I will stay. If I stay in an area adjacent to home, it will not take me too much time to come back. But if I stay in Tamil Nadu, it will take three to four days.

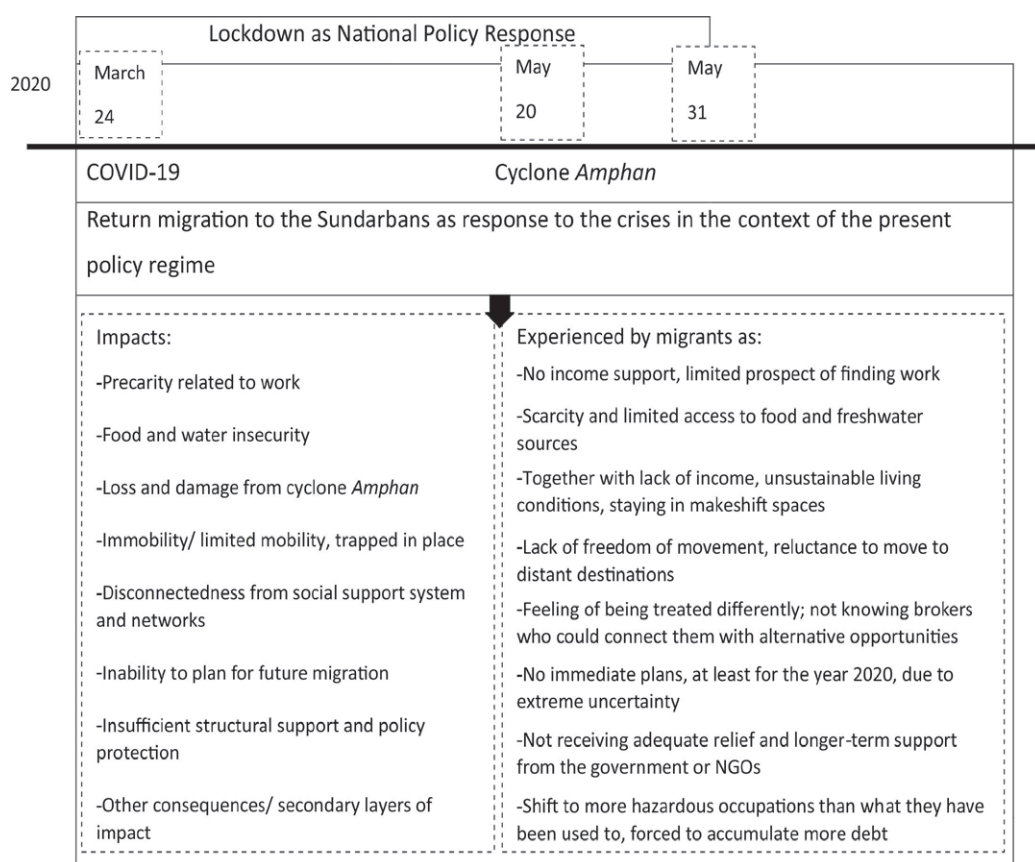
This reluctance to leave anytime soon comes from trepidation about an uncertain future. Anil's experience of his arduous return journey across state boundaries following cyclone *Amphan*, on a bus rented with others for INR 8,000 per person, acts as a deterrent for any immediate plans of migrating to another state.

Figure 3 illustrates the intersecting impacts of the COVID-19 lockdown and cyclone *Amphan* that heightened the precarity of the lives of migrants returning

^u This is a provision under the Mahatma Gandhi National Rural Employment Guarantee Act, 2005 (MGNREGA) that focuses on rural livelihood security.

to their homes in the Indian Sundarbans. The policy consequences of the prolonged lockdown amplified the challenges and further limited the people’s response options.

Figure 3:
Intersecting impacts of the COVID-19 lockdown and cyclone *Amphan*



When discussing migration in relation to climate change, therefore, the entire range of mobility—or the lack of it—needs to be considered, especially in the context of these present twin crises. Despite migration from the Indian Sundarbans being understood as an adaptation strategy and even inevitability, it is far from being the panacea for mitigating the community’s vulnerability to the impacts of a changing climate.⁵³

Acting as a lens, the pandemic—and the government’s immediate policy response of a lockdown—has illuminated how precarious and uncertain migrants’ lives and futures are in urban areas across the country. Though interviewees who returned from other states shared about earning relatively more than what they would have in their region of origin, they also expressed concerns about higher costs of living in those other states, especially for healthcare. Moreover, had they been able to achieve complete economic self-reliance and resilience after migration, they might not have felt this desperate need to return to their rural coastal home in the Sundarbans. They returned to the villages with the belief that they could at least survive there for a while by eating what could be grown and having a place to call home, despite the lack of a steady income.

The return of so many migrant workers to villages across India, largely driven by concerns about food security and survival during the lockdown, cannot be isolated from the economic precarity they were already facing in the urban destination regions. The COVID-19 lockdown and cyclone *Amphan* as two intertwined crises have therefore made visible serious weaknesses and gaps in existing policy frameworks operating at multiple levels. It has also highlighted that in the long run, rural community-based adaptation strategies to climate change-induced livelihood crises cannot be sustainable without being backed by robust policies that are implemented effectively at regional scales.

Despite the existence of labour welfare laws such as the Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979, translating it to practice remains a challenge.

The Inter-State Migrant Workmen Act (ISMWA), 1979

The Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act of 1979 is an example of an effort to formalise accountability for work-related welfare of inter-state migrant workers in India. The Act was introduced in Parliament following the recommendation of a Compact Committee to regulate working conditions of inter-state migrant workers who could not be adequately protected from exploitation by contractors even with amendments made in the Contract Labour (Regulation and Abolition) Act, 1970.⁵⁴

The main provisions of this Act include: 1) registration of establishments hiring inter-state migrant workers with registering officers appointed by the Central government or state governments, “depending on whether the establishment falls under the Central sphere or State sphere;”⁵⁵ 2) licensing requirement for contractors recruiting inter-state migrant workers from the workers’ home state

Current relief- based policy

as well as host state; 3) requirement of contractors to provide information about workers in designated forms prescribed by both the states, along with issuing a pass book to workers documenting their employment details; 4) specific guidelines regarding payment of wages; 5) entitlement to a displacement allowance (amounting to 50 percent of their monthly wage, to be paid at the time of recruitment) and journey allowance for workers to and from home states in addition to their wages; 6) provision of basic amenities and protection for migrant workers including residential accommodation, medical facilities, protective clothing as well as safe and suitable working conditions in consideration of their migrant status; and 7) appointment of inspectors to ensure compliance with provisions of the legislation.

As envisioned by this law, the mechanism of collecting official statistics involves: 1) the process of registration of establishments to registering officers (Form I and Form II) and maintenance of registers with data on registered establishments (Form III); 2) maintenance of registers on contractors (Form XII) by principal employers of registered establishments; and 3) maintenance of registers (Form XIII) on employees by principal employers and contractors for establishments employing migrant workers.^v The Act further mandates all registers and records kept be produced on demand before the Inspector, Deputy Chief Labour Commissioner (Central) or any personnel authorized by the Central government.⁵⁶

“Rural climate adaptation strategies need to be backed by policies at the regional scale.”

^v In the Occupational Safety, Health and Working Conditions Code, 2020, the mechanism of collection of statistics includes a portal for inter-state migrant workers, to be maintained by the Central government and the State governments, in electronic or other formats. The Code further provides that inter-state migrant workers may register themselves on this portal “on the basis of self-declaration and Aadhaar.” Migrant workers who are self-employed are also eligible to register in the portal. (“The Occupational Safety, Health and Working Conditions Code, 2020 No. 37 of 2020”)

Current relief-based policy

While the law is old, it has not been effectively implemented. Not all inter-state migrant workers have been registered by their employers and contractors as required by this law. The lack of data has become apparent in the present, with the pandemic-induced lockdown disproportionately impacting migrant workers across the country. The possible reasons include: 1) higher costs of hiring inter-state migrant workers through registered means for employers and contractors, thus lowering their incentives to maintain records for such workers; 2) desperation of migrant workers to be employed, despite precarious conditions of employment, and the fear of missing out on employment opportunities if they insist on being registered; 3) for a region like the Sundarbans, vulnerable to climate change impacts and development deficits, the presence of a mobile and surplus army of labourers can competitively drive down wages to meet labour market demands in other states, enabling employers and contractors to easily recruit them as cheap labour, bypassing norms about adequate welfare benefits and social security.

At the beginning of the 2020 Monsoon session of Parliament, queries posed to the Minister of Labour and Employment demanded details about migrant workers returning to their home states due to job loss, and any assistance provided to rehabilitate them. The official response to this query, presented in the Lok Sabha on September 14, revealed that more than 10 million migrant workers are estimated to have returned to their home states in the wake of the COVID-19 lockdown. Though the Ministry of Labour and Employment's reply cited the ISMWA as key legislation, it could not provide details, including the number of migrant workers registered under this Act.⁵⁷

Among the few states in India which has implemented this Act to some extent is Kerala. The introduction of the Kerala Migrant Workers Welfare Scheme 2010, offering health and retirement benefits for migrants, as well as grants for

“By September 2020, more than 10 million migrant workers have returned to their home states; the states know little else about them.”

their children's education was followed by the health insurance scheme *Awaaz* in 2017, with the aim to prepare a comprehensive database of migrant workers in Kerala.⁵⁸ As Malay, an interviewee in his 40s who was in Kerala during the lockdown explains:

I am in Kerala now. After six to seven days into the lockdown, the government provided us with some relief and support—rice, lentils, potatoes, and onions—for one month. We work under a contractor and they helped us a lot. Even now when there is no prospect of work here, we are still better off.

The way forward therefore could be in the form of similar welfare schemes for other states, with incentives for employers and contractors to comply with the process of registration. The extensive database can then be used in times of crisis to assess risks and ensure survival for those experiencing compounded vulnerabilities. As Bikash, who returned from Kerala on a Shramik Special train during the lockdown recalls:

We tried to return when the lockdown started. There was anyway no work, so returning was most important. Our employer helped us with arrangements for our stay, and with the registration of our details, following protocols of the local police station for the purpose of returning.

Bikash says the local government in Kerala was informed about the migrant workers as they had to register their information with the local authority, and since “it was not possible to travel without registering with the local police station.” This is an example of how data on migrant workers has been collected to some extent during the lockdown. However, there are caveats in creating and maintaining such a database, including concerns around data confidentiality, so that migrant workers, who are already marginalised, may not be further marginalised in the process of implementation of labour welfare laws. In the context of the present crises, a critical discussion of the ISMWA opens a window for imagining plausible interventions in the policy landscape, with the potential to be translated into effective praxis.

Towards more inclusive climate futures

This paper has attempted to examine the complex relationship between mobility and immobility in the context of return migration to the Indian Sundarbans—a climate hotspot. The analysis has pivoted around the converging crises of the COVID-19-induced lockdown and cyclone *Amphan*, which have magnified the frailties of the lives of India’s internal, rural-urban migrants.

Proposed approaches: national scale

In September 2020, Parliament amended India’s labour laws with the passing of three labour codes: the Occupational Safety, Health and Working Conditions Code, 2020; the Industrial Relations Code, 2020; and the Code on Social Security, 2020. Along with the Code on Wages 2019, these codes were introduced as Bills in 2019 and thereafter referred to the Standing Committee on Labour. Together they amalgamate 29 central labour laws, contributing to efforts on labour law reforms by the present government.⁵⁹ Some analysts have critiqued these reforms, saying they would not translate to actual benefits for workers, especially the migrant ones.^w Together, these labour codes make it easier for employers to shut down establishments and retrench workers, and they fail to universalise social sector benefits, nor provide any judicial mechanism for hearing disputes. They have also removed the provision on displacement allowance for inter-state migrant workers,⁶⁰ eroding what little protection they have been previously afforded.⁶¹

“Long-term investment in informal workers will benefit the Indian economy.”

w The labour reforms provide inter-state migrant workers with a few benefits, including the option to access public distribution system, either in their home state or in their state of employment.

Towards more inclusive climate futures

The government should correctly implement laws like the ISMWA to address the working conditions of millions of migrants crossing state boundaries in India. In the long run, India would do well to protect the interests of this massive army of workers, who have remained overlooked in national and regional policy frameworks. Longer-term investment in informal workers will be beneficial for India's economy as the workers themselves form a significant proportion of consumers in a billion-plus market.

The magnitude of internal migration in India is estimated to be two-and-a-half times that of international migration. World Bank identifies domestic remittances from internal migrants to “serve as a lifeline and insurance for families left behind” in rural areas. This is true for India, where the COVID-19-induced lockdown and its consequences—informal sector job loss, inadequate access to housing, water, sanitation, health, and social safety nets for migrant workers in urban areas—culminated in their chaotic mass return and plunge into a livelihood crisis. This has severed a crucial lifeline for rural communities dependent on domestic remittances.⁶²

Research has found that remittances from internal migration plays a greater role in poverty reduction compared to international migration, since internal migration is more likely to involve more socio-economically disadvantaged groups.^{63,64} Estimates pegged the domestic remittance market at around USD 10 billion in 2007-08.^x While less than 30 percent of this came from formal sector remitters, almost 80 percent of the domestic remittances were found to reach rural households. Along with formal institutions like post offices and banks, migrant workers also depend on informal pathways of sending remittances via friends and relatives.⁶⁵

“Creating safer, more integrated labour markets across states can aid in post-Covid recovery.”

Internal migration is more than just a short-term risk-minimising strategy by households; rather, it contributes significantly to the local and national economy

x Literature has recognized the dearth of official data about domestic remittances in India. What we know about the “importance and scale of these remittances” mostly comes from micro-level studies focusing on domestic migration and remittance arrangements (see Md Selim Reja and Bhaswati Das, “Remittance arrangements within India and Covid-19: Kerala’s Migrant Construction workers from West Bengal.” *South Asia Research* 41, no. 1 (2021): 22-34).

Towards more inclusive climate futures

over the long term. Investing in the quality of labour can foster more robust environment for capital. Creating safer, more integrated labour markets across states, promoting skilling and up-skilling of informal migrant workers, as well as providing them with better working and living conditions, can aid in post-pandemic recovery of the economy by attracting foreign investments. The United Nations Conference on Trade and Development (UNCTAD) forecasts a worldwide decline in Foreign Direct Investment (FDI) flows by almost 40 percent due to the pandemic.⁶⁶ While India has been identified as one of the countries with the potential to attract investments leaving China, adopting policies and practices for the benefit of migrant workers could be critical for sustaining a healthy productive climate for investments.

Moving the spotlight beyond shorter-term outlook towards dedicated policy focus on medium to longer-term approaches therefore becomes imperative. Instead of fostering more dependence on government-sanctioned relief and aid from NGOs for rural communities sending migrants to urban areas, policies uplifting such communities to become economically self-reliant can go a long way in supporting the process of response and recovery. Self-reliance can be envisioned here as enhanced employability and livelihood options for people in the community, along with flexible and transferrable skill development. This would also include self-employed people with access to resources such as credit, and information through digital literacy, as well as connectivity through embeddedness in social networks at multiple locations.

Proposed approaches: regional scale

When migrants, desperate to survive, have no other option but to return to one of the most climate-vulnerable regions in the world, amidst ongoing lockdown during a pandemic and following a disaster like the *Amphan*, it presents a need to evaluate the existing policy regime around the nexus between climate change and mobility. Relevant to this discussion is Paprocki's work on adaptation regime and possible climate futures that poses a vital question: does imagining climate-resilient urban futures entail "devaluation of rural lives and livelihoods" and ultimately the "demise of rural futures"?⁶⁷

The merit of this question is exemplified in empirical work on a small island community in the Philippines that challenges the assumption that in-situ adaptation and mass migration are mutually exclusive responses to climate change. The lesson is that ecosystem and community-based in-situ adaptation strategies may foster migration by reducing a community's vulnerability, enabling better access to socio-economic resources, and empowering them in decision-making around when and where to relocate.⁶⁸

Towards more inclusive climate futures

In small island communities of Tubigon, Philippines, ecosystem-based adaptation strategies such as mangrove plantation along the coast, as well as community-based adaptation techniques have helped the community address socio-economic and environmental problems including poor health and sanitation, limited water resources, and dilapidated infrastructure—all while also mitigating the impacts of tidal flooding on daily lives. The Municipality of Tubigon has also initiated a planned relocation programme for moving local people from the island in the event of a disaster. Initially, the construction of relocation sites in the mainland by the municipality was not accompanied by alternative livelihood opportunities. In the absence of livelihood options, the community was reluctant to leave. The government of Tubigon then focused on education as an integral driver for relocation through a scholarship programme providing its beneficiaries with quality education, university degrees and vocational skills. The education scholarship has been extended to both high school and college students of the island community to attract the youth to gradually move to the mainland. This education-based relocation programme is acting as a strong incentive for the youth and working-age population of the island community, who could now think of relocating to the mainland.

In the Indian Sundarbans, even as rural communities are not entirely disconnected from the mainland, experiences of local people in the region resonate with those living on islands. This became even more pronounced during the COVID-19 lockdown as boats stopped operating, making it extremely difficult for goods and people to commute to and from the mainland. Ecosystem and community-based adaptation strategies of this “tide country”, including mangrove conservation and rejuvenation, along with sustainable water management and agricultural practices, have long been recognised and facilitated through international and local NGOs working with this community.^y

“Sundarbans’ migrants have little option but to return to their homes, in one of the most climate-vulnerable regions in the world.”

^y Based on personal communication with NGOs, CBOs and local actors working in the region. Furthermore, see “Annual Report 2018-2019” by Tagore Society for Rural Development.

Towards more inclusive climate futures

To address the resultant livelihood crisis crippling the lives of people in this region, it is critical to shift the focus from shorter-term relief involving distribution of food grains and items like tarpaulin, or engineering solutions such as reconstruction of roads and embankments—to medium and longer-term approaches targeting economic self-reliance through skill building. Engaging the Sundarbans community through an education-based initiative with regional focus, similar to the one adopted by the local government in Tubigon in the Philippines, may be considered as a possible programme that can fulfil a threefold role: 1) diversify livelihood options for the younger generation in school, as well as the working-age population; 2) aid in the generation and transferability of skills that can be used in multiple settings, urban as well as rural; and thereby— 3) help facilitate the creation of mobile assets and human capital for those who decide to migrate elsewhere. The outcome of such an initiative may involve migration, but it may not necessarily result in permanent relocation for all.

Furthermore, the role and relevance of decentralised governance in crisis situations have been recognised as a core tenet of disaster response and recovery, particularly in developing countries. For instance, the need to recognise and integrate informal sector actors in “disaster governance” has been argued in the context of the 2005 Mumbai floods.⁶⁹ Research finds that the COVID-19 crisis has mobilised cross-sectoral and multi-scalar interactions between different levels of government in India, exemplified by the activities of local governments in states like Kerala.⁷⁰ To focus on the overlapping impacts of cyclone *Amphan* amidst a pandemic, a report from the World Health Organization (WHO) showed how the state of Odisha, also receiving a large number of returning migrants, has been managing the crises through effective governance in collaboration with Panchayati Raj Institutions and local communities.⁷¹ Nevertheless, challenges persist, in the form of tensions between multiple tiers of government, as well as gaps between formal institutions of the state and the informal worlds where policies are put into practice. The idea therefore is not to place additional burden of responsibility on local authorities, but effectively integrate policies and practices at multiple levels, with a view to serve and learn from local contexts.

“Decentralised
governance is key in
crisis situations.”

Towards more inclusive climate futures

Social media can become an effective tool in this context. The virtual space has both acted as a platform for dissemination of various government policies, along with launching of programmes and schemes, while at the same time being an outlet for monitoring effectiveness and accountability. Though social media has been used to spread rumours and fear about migrants embodying the disease, it has also served as a medium for the public to show solidarity and sympathy to the migrant workers. Furthermore, there is potential to effectively mobilise social media by NGOs and CBOs for post-disaster rescue, relief, and recovery. The utility of this virtual space may also be realised in raising awareness among local dwellers to undertake future preparedness and mitigation measures, facilitating faster identification of rescue centres and shelter belts. Further, this medium could be helpful for finding temporary jobs for return migrants by connecting and re-embedding them in local social networks of nearby towns. Contractors and employers can use it to hire labourers as well. The power of social media platforms in not only disseminating information, but also shaping public opinion and providing a possible channel for job search, is ultimately connected with effective COVID-19 governance.

For India, COVID-19 governance began with a lockdown as a national level policy response directed by the central government. The unintended consequences of this lockdown, especially for internal migrant workers, made it clear there is need to move towards a more decentralised approach. Though efforts have been put in place during various phases of the “Unlock”, it remains to be seen whether and how this may translate to potential benefits for affected communities. Questions of who benefits and how also become pertinent here, as the benefits can be contingent on factors such as accountability of local bodies and leaders, as well as mobility of people and services.⁷² For migrants calling the Sundarbans their home, the latter may become increasingly difficult, especially in the aftermath of a cyclone, during a crisis like this pandemic. The way forward can be shown by an integrative and adaptive governance approach that 1) effectively links different tiers of government, and 2) is flexible and sensitive to nuances and needs of specific local contexts involving multiple stakeholders.

To augment policy approaches at regional scale, a national level data bank can be created that ideally will include not only a database *of* migrant workers through the process of registration as reiterated in the recent labour laws, but also a database *for* the migrants. Such a data bank may combine the process of data gathering with data sharing, providing migrant workers with access to critical information about potential employment opportunities in destination regions, reliable agents and contractors, locations of subsidised facilities and more, thereby facilitating informed decision-making. By removing dependence on employers and intermediaries for labour market information and connections, access to

Towards more inclusive climate futures

this data through digital and other platforms can help enhance resilience of the migrant workers.

Such a data bank can further encourage multi-stakeholder partnerships involving a range of governmental and non-governmental actors at international, national, and local scales. This directly speaks to Goal 17 of the Sustainable Development Goals (SDGs) on developing critical partnerships, along with the potential to bridge policy frameworks on climate change and mobility with a focus on mitigating poverty, hunger and ensuring decent work under the 2030 Agenda.

Framing potential policy recommendations, Table 1 indicates how policies and practices addressing the convergence of crises for this region must be interrelated and adopted over short, medium, and long-term timelines. Considering the scope of this paper, our recommendations focus on the livelihood crisis experienced by return migrants in the Indian Sundarbans, with the goal to include experiences of this vulnerable group as central dimension in dialogues addressing immediate and longer-term future of this region.

For a vast majority of the human population of the Sundarbans, the possible outcomes of cyclonic storms are loss of homes and crops. Due to high incidence of poverty, most homes are of impermanent nature (*kutcha* houses) with thatched roofs (or tiled/sheet metal) that get blown away due to high wind speed, and mud walls that collapse in case of storm surge.^z In the medium term, building climate risk resilience would involve making all homes permanent. The Pradhan Mantri Awas Yojna-Gramin (PMAY-G), a housing programme of the Government of India for the rural poor could be leveraged for the purpose. The Resilience Fund could be mobilised for formal credit to supplement the PMAY-G to account for low elevation of the inhabited islands. When learning to live with water is the only option, floor level of homes and other buildings need to be of a certain height to avoid flooding.

“Policymaking for the Sundarbans will benefit from considering the experiences of return migrants.”

^z According to Socio Economic and Caste Census 2011, in West Bengal, about 60% of the houses are of impermanent nature. This figure in the Sundarbans region cannot be lower than the state average (<https://secc.gov.in/statewiseHousingDwellingWallTypeReport?reportType=Housing%20Dwelling%20Wall%20Type>)

Towards more inclusive climate futures

Storm surge inundates agricultural fields and freshwater ponds, rendering these assets unsuitable for freshwater paddy agriculture for several seasons. In the short-term, these need to be desalinated and utilised by introducing salt-tolerant paddy varieties or grain seeds treated for salinity tolerance. This would ensure harvest in subsequent seasons following a storm surge event. Additionally, drainage network would have to be enhanced and integrated with inland wetlands which could generate employment in the immediate aftermath of a high-intensity event. While Unconditional Cash Transfers (UCT) can reduce financial distress, administering such a scheme is challenging unless it can be made universal. It can also potentially erode political capital of elected officials as was witnessed in the aftermath of cyclone *Amphan*, owing to mismanagement or corruption by disbursing authorities.^{aa,bb}

In the long-term, certain areas in the Sundarbans would have to be relinquished pre-emptively. These places are experiencing rapid erosion. Maintaining embankments at these locations is increasingly becoming more challenging and expensive. These locations are prone to inundation by surge height of less than two metres.^{cc} Villages across 28 Gram Panchayats from eight of the sub-districts, with a total population of about 0.6 million as per Census 2011, are faced with this situation. Resilience of the communities in these villages is jeopardised and gains made over the years are often lost during the next high-intensity weather event. Therefore, the option to migrate as one of the pathways to a more resilient future needs to be available to the households of the Sundarbans in high-risk locations. The process should be viewed as the organic movement of people, in pursuit of individual and societal development objectives, facilitated by state and non-state actors.

“Inclusive climate futures for the Sundarbans must focus on both ecosystems and economic self-reliance.”

aa <https://www.anandabazar.com/state/cyclone-amphan-calcutta-high-court-orders-investigation-of-corruption-in-centre-s-relief-dgtl-1.1236971>

bb <https://www.opindia.com/2020/12/calcutta-hc-orders-cag-audit-of-amphan-relief-distribution-in-west-bengal/>

cc Storm surge of about 4-6 meters above Astronomical Tide was predicted by the India Meteorological Department in case of cyclone *Amphan* that made landfall in the Sundarbans region on 20 May 2020.

Towards more inclusive climate futures

Table 1:
Policy action time frames – short-term, medium- to long-term

Short-term (weeks to months)	Medium-term (months to couple of years)	Long-term (several years)
<p>Create and repair water management infrastructure for improved irrigation intensity, cropping intensity, and improved drainage capacity in the aftermath of natural calamity. Immediate efforts to include repair of embankments and desalinise ponds and fields by pumping salt water out. Use MNREGS to provide employment to all affected and in need of income support for creation and repair of water management infrastructure.</p>	<p>Establish a Resilience Fund (RF) with budget grants from state and central governments, Green Climate Fund, philanthropies, and cess on property tax in Kolkata and adjoining municipal areas that are beneficiaries of ecosystem services provided by the Sundarbans.</p> <p>RF to be mobilized to grant access to formal credit for asset creation/upgradation, micro enterprises and for milestone rituals like weddings, births, and deaths.</p>	<p>Provide access to socio-economic resources to those who wish to relinquish agricultural and or homestead land. These resources can include income-generating opportunities, assistance to improve their access to social services and finances at destination areas.</p>
<p>Introduce resilient agricultural practices and systems to reduce sensitivity of agricultural families to cyclone and flood damage. These could be in the form of salt-tolerant agriculture and soil-less agriculture.</p>	<p>Provide interest waiver on formal credit in case of loss of income occurs at destination due to calamities and disruptions, and damage to life, property, and livelihood in the Sundarbans.</p>	<p>Make necessary information available to population at high-risk locations to empower them for making decisions on when and where to relocate. This can be linked with educational initiative.</p>
<p>Facilitate mangrove regeneration at high-risk locations with monetary compensation for landowners (partly staggered and partly lump sum).</p>	<p>Make all homes permanent with raised floors and on stilts in case of low-lying areas to reduce sensitivity. Tap into Pradhan Mantri Awas Yojna-Gramin and the Resilience Fund.</p>	<p>Relinquish certain areas pre-emptively to reduce exposure and allow mangrove to regenerate.</p>

Towards more inclusive climate futures

Short-term (weeks to months)	Medium-term (months to couple of years)	Long-term (several years)
<p>Create voluntary data bank of migrants with incentives like unemployment insurance subject to furnishing of certified employment details by employer or contractor. Unemployment insurance should kick in if migrant loses income at destination due to calamities and disruptions. Insurance premium to be paid by migrants.</p>	<p>Establish scholarships through philanthropic organizations to provide access to quality education, university degrees and vocational skills based on aptitude of the candidate.</p>	<p>Enact retreat legislation that prevents the sale, transfer, reconstruction and bequeathing of existing properties in at-risk locations. Specify threshold level of mean sea level (or some other appropriate measure) when retreat legislation is invoked at these locations.</p>
	<p>As part of agriculture extension service introduce and propagate requisite knowledge of farming salt-tolerant paddy seeds or treated seeds for salinity tolerance for a range of soil salinity conditions.</p>	<p>Develop tourism with emphasis on community benefits, like income generation.</p>

Conclusion

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To grasp the notion of inclusive climate futures, it is crucial to understand the complex interdependence between the urban and the rural, through periodic mobility of labour and remittances, as well as immobility in the context of the present juxtaposition of crises. The first step towards envisioning such futures would be to include and learn from experiences of informal workers who migrate across the internal borders of India. Furthermore, inclusive climate futures for regions like the Sundarbans must not only focus on ecosystems but also on economic self-reliance of its people in the longer-term.

With rising sea levels driving the notion of permanent involuntary migration as a last resort for disappearing people from disappearing lands,^{dd} trends suggest that a growing number of internal migrants in India prefer to “keep one foot in the village” to maintain social safety nets and community ties, as well as a place to call home, should they return.⁷³ As seen in the return of migrant workers to the Indian Sundarbans, this part of the climate hotspot has remained their only refuge in this time of converging crises. A Janus-faced strategy that recognises migration from the region as part of its way of life and economy could thus make available alternate livelihood options if such a time may come when there would be no refuge to return to.

This paper’s recommendations are neither exhaustive nor are they prescribed as absolute solutions. The effort is to initiate a dialogue that can be sustained over time, beyond the context of the present crises. The imperative is to locate local knowledge and experiences of people who are disproportionately affected at the centre of this dialogue.

Overall, an integrated policy agenda at multiple scales, involving multiple stakeholders, that recognises the complex relationship between climate change and mobility, together with its intersection with a global crisis like the COVID-19, can advance a decisive step towards imagining possible climate futures not only for urban but also rural India. This would involve not merely considering compounded vulnerabilities, but also resilience of a region like the Sundarbans and its people. 

^{dd} This language is commonly used to address how island countries like The Marshall Islands are confronting impacts of climate change (John Sutter, “You’re Making this Island Disappear,” CNN).

- 1 Roli Srivastava and Anuradha Nagaraj, “No way back: Indian workers shun city jobs after lockdown ordeal,” *Reuters*, May 27, 2020, <https://www.reuters.com/article/us-health-coronavirus-india-migrants-trf-idUSKBN234054>
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