

CLIMATE-INDUCED DISPLACEMENT AND MIGRATION IN INDIA

Case studies from West Bengal, Maharashtra,
Odisha, Uttarakhand & Bihar.



ACKNOWLEDGEMENTS

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COVER PHOTO: Migrant Labourers, Chennai, India by Shailendra Yashwant

DATE: January 2021

ACKNOWLEDGEMENTS :

The authors are grateful to Ms. Pamela Metschar of South Asian desk of Bread for the World (BftW), Mr. Abhishek Dutta and Mr. Sandeep Sharma from Financial Management Service Foundation (FMSF) for their funding and support for execution of the project. This report has greatly benefitted from the feedback provided by Mr. Harjeet Singh (ActionAid).

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TABLE OF CONTENTS

Acknowledgements	
Table of Contents	
Abbreviations	1
Executive Summary	2
1. INTRODUCTION	5
1.1 Drivers of Migration	
1.2 Methodology	
1.3 References	
2. SUNDARBANS, WEST BENGAL – The frontlines of climate change	9
2.1 Climate change profile of the Sundarbans	
2.2 Migration profile of the Sundarbans.	
2.3 Drivers and Impacts of Migration: Community voices from Sagar Islands	
2.4 People's solutions	
2.5 References	
3. BEED, MAHARASHTRA – Driven out by Drought	18
3.1 Climate change profile of Beed District.	
3.2 Migration profile of Beed district.	
3.3 Drivers and Impacts of Migration: Community voices from Gaukhel village	
3.4 People's solutions	
3.5 References	
4. KENDRAPARA, ODISHA – Fleeing the rising seas	29
4.1 Climate change profile of Kendrapara district	
4.2 Migration profile of Kendrapara district	
4.3 Drivers and Impacts of Migration: Community voices from Satabhaya village	
4.4 People's solutions	
4.5 References	
5. ALMORA, UTTARAKHAND – Ghost villages of Himalayas	38
5.1 Climate change profile of Almora district	
5.2 Migration profile of Almora district	
5.3 Drivers and Impacts of Migration: Community voices from the Hill Districts	
5.4 People's Solutions	
5.5 References	

6. SAHARSA, BIHAR- Fear of floods	47
6.1 Climate change profile of Saharasa district	
6.2 Migration profile of Saharsa district.	
6.3 Community voices from Mahishi block of Saharsa district.	
6.4 People's solutions	
6.5 References	
7. DISASTERS AND DISPLACEMENT IN INDIA: A Policy Review	54
7.1 References	
8. CONCLUSIONS AND RECOMMENDATIONS	63
9. ANNEXURES	66
LIST OF FIGURES	
Figure 1 : India climate hotspots map with research locations	4
Figure 2 : Map of Sundarbans with research locations	9
Figure 3 : Map of Maharashtra with research location	18
Figure 4 : Rainfall variation in last 30 years in Ashti block	19
Figure 5 : Comparison of IMD data (1989- 2018) and near-century predictions for rainfall difference	20
Figure 6 : Causes and impacts of migration in Gaukhel village: problem tree generated with community participation	23
Figure 7 : Mobility map of the migrant population of Ashti village	24
Figure 8 : Assessment of support sought by community to reduce migration	27
Figure 9 : Map of Odisha with research locations	29
Figure 10 : Cyclone and flood prone areas of Odisha	30
Figure 11 : Problem Tree for Satabhaya village	33
Figure 12 : Map of Almora district	38
Figure 13 : Map of Saharsa district	47
Figure 14 : District Level increasing mean November minimum temperatures 1971-2015	48
Figure 15 : Matrix scoring of priorities for choosing migration destinations	50
Figure 16 : Problem tree of Saharsa district	52

ABBREVIATIONS

CanESM - The Canadian Earth System Models
CANSA – Climate Action Network South Asia
CMIP5 - Coupled Model Inter-comparison Project
COVID-19 - Coronavirus Disease of 2019
CVI - Coastal Vulnerability Index (CVI)
DECCMA – Deltas, Vulnerability and Climate Change: Migration and Adaptation
FAO – Food and Agricultural Organisation
ICZM – Integrated Coastal Zone Management
IDMC – Internal Displacement Monitoring Committee
ILO – International Labour Organisation
IMD – Indian Meteorological Department
INCOIS – Indian National Centre for Ocean Information Services
INM- Integrated Nutrition Management
IPCC - Intergovernmental Panel on Climate Change
IPM – Integrated Pest Management
MGNREGA – Mahatma Gandhi National Rural Employment Guarantee Act
MoU – Memorandum of Understanding
NDMA – National Disaster Management Authority
NSSO – National Sample Survey Office
PDS – Public Distribution Scheme
PMFBY - Pradhan Mantri Fasal Bima Yojana
RHS – Rural Household Survey
SC – Scheduled Castes
SHG – Self Help Group
SRCCL – Special Report on Climate Change and Land
ST – Scheduled Tribes
UNDP – United Nations Development Program
VPKAS - Vivekananda Parvatiya Krishi Anusandhan Sansthan
WOTR – Watershed Organisation Trust

EXECUTIVE SUMMARY

India is a large country, spread across several climatological and ecological zones, making its population particularly vulnerable to the worst impacts of climate change. 67% of India's population of 1.3 billion people live in rural areas and depend on climate-sensitive sectors such as agriculture, fisheries, and forestry for their livelihoods.

Over the last two decades, recurrent droughts, extreme weather events including heat-waves, floods, cyclones, and rising sea-levels, have destroyed the agricultural sector and led to a surge in migration from climate-impacted hinterlands to urban centers of India.

There is no universally agreed definition of climate-induced displacement and migration, but broadly, it refers to the movement of people driven by sudden or progressive changes in the weather or climate. This can include temporary and permanent, seasonal and singular, as well as voluntary and forced movement.

A recent study by ActionAid and Climate Action Network South Asia projects that even if the global community acts on their greenhouse gas (GHG) mitigation pledges and targets, about 37.5 million people will still be displaced by 2030 and an estimated 62.9 million by 2050 within the five South Asian countries. India alone will see 45 million people being forced to migrate from their homes by 2050 due to climate disasters, three times more than the present figures. Current global pledges and targets see us on track for between 2.1°C and 3.3°C.¹

In coastal Odisha, farmers migrate as they have gradually lost their agricultural land to sea-level rise, and the fishermen are migrating because they have lost their boats and other

accessories during cyclones. In the famed Sundarbans of West Bengal, people are escaping poverty, collapse of traditional livelihoods and the dismal infrastructure that is collapsing due to climate change. In the hilly districts of Uttarakhand, erratic rainfall patterns and a receding water table has forced people to abandon their homes and farms to migrate to the plains. In Saharsa district of Bihar, a relocated community continues to be overwhelmed by incessant floods.

Climate change-induced disasters, displacement, and migration increase the burden on women considerably. Agricultural work on top of their household chores and other domestic duties adds up to 12 to 14 hours per day of work burden for women. When a male member of the family migrates, women are burdened with the dual responsibility of agriculture and unpaid care of family members. The phenomenon of 'feminization of agriculture' has been observed at all research locations.

Climate-induced migration also affects social and public infrastructure, which further constrains the development index of the region. As families migrate, they also end their link with the land. Subsequently, the inter-linkage, efficiency, and economics of allied livelihood activities such as animal husbandry, poultry, dairy, etc., are adversely affected.

With over 60 percent of Indian agriculture being rain-fed and more than 80 percent of farmers being small-holder producers, the need for a climate-resilient approach to agriculture is identified as a critical need to reduce migration. Adoption of watershed approach, water harvesting and soil conservation activities, livelihood diversification, crop insurance, and promotion of climate-resilient

¹ <https://cansouthasia.net/costs-of-climate-inaction-displacement-and-distress-migration/>

varieties of food grains, forming farmers cooperatives, strengthening existing SHGs and women agriculture groups, access to credit, market and technical training to women farmers are basic expectations of people migrating due to climate events.

Discrimination at the source, low living standards in slums and urban areas, portability

of entitlements, lack of basic amenities, violence, and lack of legal support are common issues faced by migrants at their destination sites. Reforms in policies are required at destinations such as health, education, housing and public support for the migrants.

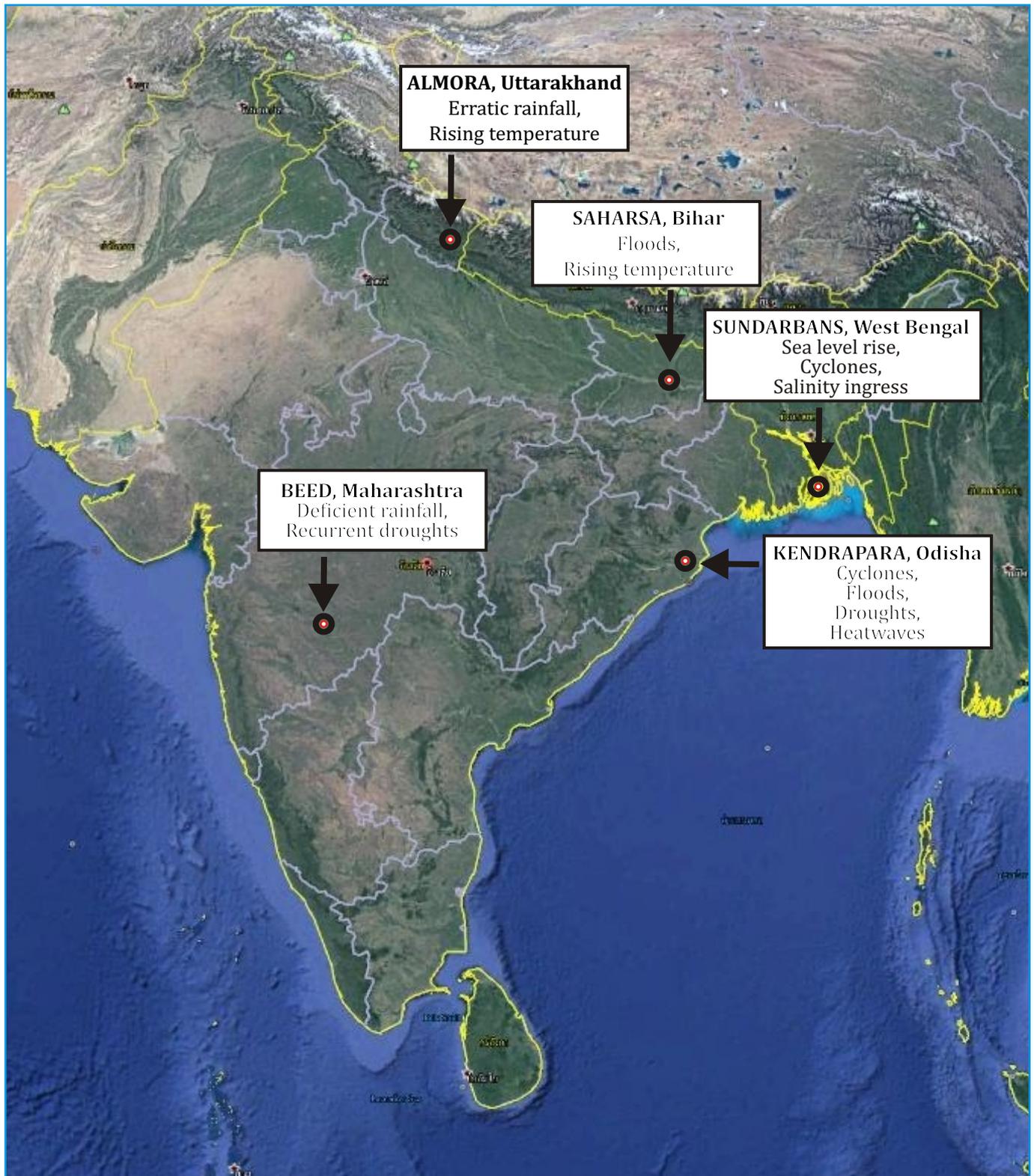


FIGURE 1: India climate hotspots map with research locations.

1

INTRODUCTION

Migration in India is a complex phenomenon intertwined and dependent on many factors, including social, cultural, environmental, economic, and regional dynamics.

One hundred million people in the country remain on the move for their livelihoods in any given year,¹ i.e., nearly one-fifth of India's labour force. These 100 million internal migrants send 'home' vast sums of money, eight times larger than the Government of India's healthcare and education budgets combined.²

Though migration has been a way of living, especially for households from semiarid- areas, the last two to three decades have witnessed a change in quantum and patterns. Moving is increasingly becoming a common strategy in rural India to manage risk, meet aspirations, and earn income (Singh & Basu, 2019).³ In the five years ended 2016, nine million people migrated between states every year for either education or work. That is almost double the inter-state migration recorded in 2001-2011 and captured by Census 2011, which pegs the total number of internal migrants in the country (accounting for inter and intra-state movement) at a staggering 139 million.⁴

Internal climate migrants are rapidly becoming the human face of climate change. According to a World Bank report, "Groundswell - Preparing for Internal Climate Migration," without urgent global and national climate action, Sub-Saharan Africa, South Asia, and Latin America could see more than 140 million people move within their countries' borders by 2050.⁵

India has the highest level of disaster displacement in South Asia in absolute terms and one of the world's highest. Around 3.6 million people a year were displaced between 2008 and 2019, most dur-

ing the monsoon (IDMC, 2020).⁶

India's East coast has experienced 200 cyclonic storms in 42 years, from 1970 to 2012, causing loss of lives and livelihoods. According to a report by Climate Central,⁷ Odisha and West Bengal are 'particularly vulnerable' to sea-level rise, and resulting floods could affect 36 million people living in the coastal areas. Since cyclone Aila hit the region in 2009, large-scale migration appears to be the primary coping mechanism for about 4.5 million people living in the Sundarbans delta region (Census, 2011).

Anecdotal evidence has repeatedly highlighted the links between displacement and low socioeconomic development levels and governments' need to invest in preventive solutions if they want to ensure inclusive and sustainable development (IDMC, 2020).⁸

A recent study by ActionAid and Climate Action Network South Asia projects that even if the global community acts on their greenhouse gas (GHG) mitigation pledges and targets, about 37.5 million people will still be displaced by 2030 and an estimated 62.9 million by 2050 within the five South Asian countries. India alone will see 45 million people being forced to migrate from their homes by 2050 due to climate disasters, three times more than the present figures. Current global pledges and targets see us on track for between 2.1°C and 3.3°C.⁹

According to the UN's Food and Agriculture Organization (FAO),¹⁰ agriculture is the first and most affected sector when there is a drought, absorbing around 80% of all direct impacts, with multiple effects on food production, food security, and rural livelihoods. Droughts can lead to famine and migration, loss of natural resources, and seriously undermine economic performance, causing widespread hardship for rural communities.

The India Human Development Survey highlights several socioeconomic factors associated with the migration decision: household income, the availability of information, and community networks in source and destination areas. There is also a possible administrative dimension to interstate migration barriers, owing to domicile provisions for work and study, lack of portability of social benefits, and legal and other entitlements upon relocation.¹¹

The impact is greater on smallholders and those without irrigation facilities. The World Bank has calculated that the real cost of natural disasters to the global economy is a staggering US\$ 520 billion per annum, with disasters pushing 26 million people into poverty every year.¹²

Migration due to climatic factors has been predicted to increase to 200 million by 2050. In the next 13 years, World Bank estimates indicate that 40 percent of Indians will be moving to urban areas or 300 million people adding to the almost 150 million currently scattered in 53 cities across India. By 2047, close to 65 percent of all Indians will be living in urban conglomerations. This massive urban migration can either be an intractable problem or an opportunity to transform India.¹³

However, the plight of migrants at their destination in events of crises had never gained so much public traction as it had in two recent events. First was the Kerala flood crisis in 2018, and second and more recent, the COVID-19 pandemic. Kerala, a destination for migrants from many parts of the country, witnessed unprecedented floods in 2018, which forced thousands of workers from states like Assam, Odisha, Chennai to flee the state overnight without any support except for the support provided by the respective state governments who paid for the train fare of the crises-hit fami-

lies and individuals.¹⁴

Similarly, in the aftermath of the announcement of a nation-wide lockdown in the wake of the COVID-19 pandemic, migrants' movement was seen from different destinations back to their homes. The media was agog with reports of hardships and trauma that many thousands of migrants had to face to return to their native villages. Many traveled hundreds of kilometres on foot in the absence of any transport facility in the scorching heat, often on empty stomachs. Some migrants even died on their way back home.

1.1 Drivers of Migration

Since times immemorial, a large part of India's population has been dependent on agriculture. Since its independence, the production of food grains has increased many times. From a food grain deficit country to an exporter of food grains, India's agriculture has come a long way. However, about three fourth of total land under cultivation is mostly rain-fed, and about three-fifths of the population is dependent on agriculture for livelihoods in some way or another. Therefore, monsoons have a significant role in determining the livelihoods of a substantial population of the country, i.e., about 600 million people.¹⁵

This is one of the main reasons why India's drought years see massive migration from rural areas with large parts under rain-fed agriculture to sites with a high percentage of land under irrigation.

Though the spread of migration is from across many parts of the country, some regions and states see more prominent migration patterns from one state or one region of the state. Most of the time, such migration patterns are caused by

climatic factors such as droughts, floods, and cyclones.

For many parts of the country and a large proportion of rural households with limited resources, seasonal migration is an annual phenomenon. To quote from Chinmay Tumbe's book, 'India Moving, A history of migration (2018)', "Seasonal migrants who are India's most vulnerable migration stream affecting 5% of households and over 10 million migrants in which generally poorer and landless households, Scheduled Tribes (STs) and Scheduled Castes (SCs) are over-represented, one-third of them work in construction, a fifth work in agriculture activities and one-sixth in manufacturing activities".

Increased number and frequency of climatic events, including the slow and fast onset of climatic events, can disrupt long-term adaptation and mitigation measures. Rural sectors that could be impacted by migration include agriculture, animal husbandry, horticulture, and fisheries. Under the growing challenges of resource degradation, escalating input crises, and costs with overarching effects of global climate change, the major gains in food production would largely depend in the future on a paradigm shift from integrated germplasm improvement to that of integrated natural resource management.¹⁶

According to the Intergovernmental Panel on Climate Change (IPCC)'s Special Report on Climate Change and Land, "land degradation and climate change act as threat multipliers for already precarious livelihoods, leaving them highly sensitive to extreme climatic events, with consequences such as poverty and food insecurity, and in some cases migration, conflict and loss of cultural heritage."¹⁷

The movement of people is changing the shape of household structures. This has implications on the household's risk management behavior, having implications for improving the effectiveness of climate change adaptation interventions.¹⁸

UN FAO calculated that at the current rate of soil erosion, only 60 years of harvesting is left. Twenty-four billion tonnes of fertile or 12 million hectares of topsoil are lost every year.¹⁹

Climate Change and Land (SRCCL, 2019) report of IPCC on land shows that better land management can contribute to tackling climate change, but it is not the only solution. Land must remain productive to maintain food security as the population and the negative impacts of climate change on vegetation intensifies. When land is degraded, it becomes less productive, restricting what can be grown and reducing the soil's ability to absorb carbon. This exacerbates climate change, while climate change, in turn, exacerbates land degradation in many different ways.

1.2 Methodology

This study draws heavily from the voices of the people and communities who have migrated or are affected by migration both at sources and destinations. A combination of methodologies, including interviews, testimonies, case study documentation, participatory research tools, surveys, media reports, open-source publications including census, National Sample Survey Office (NSSO) rounds, and Economic Survey reports, were used to substantiate policy outcomes and literature review.

During the selection of the hot spots, an effort was made to ensure that regions vulnerable to the following natural calamities, i.e., drought,

sea-level rise, floods, cyclone, were identified while also ensuring that there was a representation of migration patterns from across the country.

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A recent World Bank study shows that the transboundary Sundarbans has had a net loss of 450 sq. kms of land from 1904 to 2016.³ Lohachora, Bedford, and Suparibhanga islands were consumed by the river many decades ago. Ghoramara island is slowly eroding into the river, with 50 percent of it already submerged in the last five decades due to a combination of land erosion and rising water levels. Jammud-wip lost about 75 percent of its land area, while Mousuni island shrunk by 20 percent.

Interestingly, a World Wildlife Fund study reveals that during four of those decades, i.e., from 1970 to 2009, the net loss of land in the Indian Sundarbans was 210 square kilometres, an area larger than the city of Kolkata, with about one-third during the last decade underlining the enhanced impact of climate change in the region.⁴

Another study by the India Meteorological Department revealed that the number of severe cyclone storms in November, the period having the most high-intensity cyclones, has also increased by about 26 percent in Indian Sundarbans during the last century. The study used simulation models to predict that "the frequency of post-monsoon tropical disturbances in the Bay of Bengal will increase by 50 percent by the year 2050" and attributed the enhancement of high-intensity cyclones "due to the climate change arising from increased greenhouse gas concentrations in the atmosphere."⁵

The more disconcerting findings from the World Bank study about cyclone movement dynamics on the Bay of Bengal are "the median location of cyclones has shifted eastward over time, with the highest-impact zones currently found in northern Odisha and the Sundarbans region of West Bengal."⁶

In 2009, when cyclone Aila hit the Sundarbans, it washed away about 25 percent of the houses close to the forest area, where it hit hardest. Agricultural land became useless due to salt-water inundation, and drinking water sources were contaminated.⁷

The impact was even greater and more widespread when cyclone Bulbul struck in 2019. According to the West Bengal government's internal report, Bulbul affected 3.56 million people and damaged 0.5 million houses. On the livelihoods front, it damaged crops across almost 1.5 million hectares of land, triggered fishery damage to the tune of 100 million USD, and killed 13,286 livestock.⁸

2.2 Migration profile of the Sundarbans

According to India's 2011 census, half the Sundarbans population in both the South 24 Parganas and North 24 Parganas districts live below the poverty line,⁹ with 10 percent classified as extremely poor. The 2011 house-hold survey found that most live in poor housing conditions: the population is primarily rural, living in kutcha (thatched) (67.8 percent) houses of one room (72 percent) with mud floors (86 percent).

A Rural Household Survey (RHS) by World Bank of 2005-09 found that in a typical group of thousand Sundarbans residents, 190 get only one meal a day. Moreover, out of the thousand, 510 (mostly children) suffer from some form of malnutrition.¹⁰ The report further says that in the sample coming from the "richest" administrative block of the region, 310 of those thousand would still be below the poverty line. The same statistic, coming from the "poorest" block, was 650 within thousand.

The people and the productivity of their holdings are under increased threats from deltaic subsidence, salinity intrusion, sea-level rise, and increased cyclone intensity as climate change and decay of a 19th-century 3,500 km system of embankments take their toll.¹¹

A study by Hazra and Ghosh of the Oceanographic department at Jadavpur University, undertaken in the western part of the Sundarbans, shows that agricultural productivity has reduced by about 32 percent during 1991-2011.¹²

Gradual receding of per capita landholding – expansion of families, with no increase in landholding – adds to the agricultural sector's lack of stability. Sources from the State Agriculture department say that the combination of traditional bottlenecks like lack of adequate irrigation facilities and increasing salinization of land catered by the new-age problem of rising rivers due to climate change is responsible for the trend.

According to Professor Tuhin Ghosh of the Oceanographic Department of Jadavpur University and the National Lead of DECCMA (Deltas, Vulnerability & Climate Change: Migration & Adaptation) project, 70% of families from across the Sundarbans migrate out of the area in search of better livelihood options. Of these, 25 to 30% migrate outside the state of West Bengal.¹³

The traditional development deficit of Sundarbans is magnified with the ever-increasing impacts of climate change in the region, which acts as a driver to hasten out-migration, a dynamic ratified by most villagers interviewed as part of this case study. Hazra and Ghosh's study from Jadavpur University corroborates the trend, as it finds a significant positive asso-

ciation between a decrease in agricultural productivity and out-migration.¹⁴

The Rural Household Survey (RHS) also finds substantial out-migration from the Sundarbans, on a permanent, seasonal, or temporary basis. Over 25 percent of the principal earners of individual families in the RHS out-migrated temporarily searching for work and about the proportion of people did so on a seasonal basis. Temporary migration is the out-migration of a single male (or some-times female) member of a family, for a few days up to a year, to a particular location to work, save, and return home for a while, until their savings run out.

Many experts hold migration as a mode of adaptation and emphasize its impact on the Sundarbans' local economy.¹⁵ However, while admitting the positive impact of migrants contributing to the local economy by bringing money into the area, other experts point out the inherent insecurity and unsustainability associated with the arrangement in its present form. The latter was seen during the Kerala flood of 2018,¹⁶ and more recently, during COVID-19 driven reverse migration.¹⁷

When asked which of the families present had at least one family member working away from the islands, the response could not have been more spontaneous. Almost all fifteen villagers gathered in the partly thatched verandah of Momena Bibi's house in Jibontala village of Sagar island raised their hands in unison. The irony is, all the persons gathered in the house were once displaced people themselves.

Originally most of them hail from Lohachara and Ghoramara islands, but when their land started to sink in the 1970s due to sea-level rise and resultant erosion, many families were shifted to Sagar island under a state govern-



All participants confirming that they have at least one family member who has migrated during a focus group discussion at Jibontala village, Sagar Island. Photo: Jayanta Basu

ment-supported program, which provided land to these people.

However, since the 1990s, Sagar island is being ravaged by climate change, cyclones and storms and sinking land, just like they faced with their original home. Therefore, these Sagar island residents face similar risks from all those decades ago when they moved from Lohachara and Ghoramara.

The following observations of the community members from across the Sundarbans (see Annexure 1 for location sites that were visited) and experts in the field, either interviewed in person or over the telephone, are wide-ranging and revealing.

Many lost houses multiple times and were forced to migrate -

In discussions with community members, there was almost unanimous ratification that climate change is triggering high-intensity extreme weather events and slow-onset events like erosion, that are on the rise and have turned into the new normal, often forcing displacement and even migration, directly.

"We have lost our houses and property to the rising sea at least four times and have now built a house as far away from the riverbank as possible but still do not know how long it will last before it gets washed away too," said Tapan Jana of Shibpur village, Sagar island.

Kabita Maity whose house is currently the last one standing before the marauding sea at the eastern end of Ganga Sagar beach, has never been able to settle in a house for long. The middle-aged lady lives in her present house on



"Considering pre and post marriage, the current one is my fifth house as the rest have been consumed by sea ... even here, the sea is gradually coming closer, and high tide completely inundates my home. We will have to stay here till the sea forces us out, as we do not have resources to buy land and resettle inwards," Kabita Maity from Dhablaton, Sagar Island. Photo : Jayanta Basu

the edge of the sea, with her husband, sons, daughter in law and grand- daughter.

Such stories are shared throughout Sundarbans' human habited islands, though more from western parts like Sagar and Mousuni islands, closer to sea and, hence, more vulnerable.

Migration has become routine -

As mentioned earlier, the DECCMA project found that 60 to 70 percent of families located in the Sundarbans had at least one family member working outside the area. This was corroborated by the community members that were interviewed for this study. People are forced to migrate due to the severe impacts of climate change on their traditional livelihood opportunities like agriculture and fishing and

the lack of alternative livelihood opportunities to survive.

The migration pattern shows though the majority migrate closer to home, Kolkata city or its hinterland, mainly along the train line, almost 30 percent move outside West Bengal.

Most of the 'beyond state' migrants work as semi-skilled or non-skilled workers, mostly in the construction sector in southern states like Tamil Nadu and Kerala, where people reported that the pay is better than closer to home. Migrants also move to states like Maharashtra and Delhi, often to work in construction and other sectors. A small proportion, about 4 percent, migrate to international destinations like the Middle East.

In Kolkata and its hinterland, many migrants have chosen to shift permanently. One can find habitations named Basanti or Mollakhali in the city, named after islands in the Sundarbans, underlining the presence of a high proportion of migrated populations from those areas.

More men migrate and further away, the opposite is true for women-

More men migrate than women; 83 percent compared to 17 percent, according to the DECCMA study of Jadavpur University. Women migrate to areas close by, mostly within Kolkata or its urban hinterland; males migrate outside West Bengal or further afield. Often women work in daily jobs in nearby cities and return home after work.

The majority of the migrants are young, i.e., between the ages of 21 and 30. Whereas men are driven by the lack of employment opportunities and unsustainability in agriculture, most women migrate out of Sunderbans following their marriage, the need to join their spouse, or moving with the entire family.

Economic status, worsened by climate change, pushes migration-

The study done by DECCMA shows cyclone and flooding is responsible for about 7 percent of displacement, while aspirational factors drive about 28 percent. However, often, all the reasons collectively push one to migrate.

Community members confirmed that economic consideration is the dominant reason behind migration, which stems from, the increasing unsustainability of agriculture - a tell-tale impact of changing weather patterns and extreme weather events.

Interestingly despite agricultural returns being unreliable, 57 percent of migrants chose to come back during the rice cultivation period.

Hence, they generally travel back and forth, twice a year for 3 to 4 months at one go, to tend to their fields. Hence, they generally work closer to migration destination sites. In turn, 24 percent do not follow this model and generally spend six months or more away at one go. About 19 percent frequently travel between origin and destination points.

Migrant life at destination sites-

Destination locations are of two types:

- 1) permanent destinations with some form of legal protection for the people who are moving out, particularly land rights in newly settled areas; and
- 2) temporary destinations generally without legal protection.

People, who were forced to migrate from Lohachara and Ghoramara islands because the islands were sinking, were given land by the West Bengal government to build houses and carry out agriculture fall in the first category. Most have already received a legal Patta (land ownership document).

However, over time, the size of the families increased or spread out, and the per capita land holding got increasingly smaller, forcing migration. The present migrants are strictly driven by finding work and earning money, and in the process, most have to compromise with the quality of living at destination points.

The second category of migrant workers is forced to work in sub-optimal conditions, in ghetto-like surroundings with minimal facilities and low-quality life standards.

According to respondents, working outside, especially in other states, is not easy, with 70-80 people staying in a large room where they have to pay rent of about Rs 1500 per month. Apart from that, the local agent takes Rs 50 every day

from their daily wage. Additionally, as there is no system of protecting workers from any dangers at their worksites, such as adequately enforced health and safety standards, the risk magnifies.

As a result, migrants have low social and economic security at destination sites; and more often than not, they stand exploited but have no recourse to complain. As one community member calls it, "new age slavery" has taken hold in these areas.

A case in point; In 2009, in the aftermath of Cyclone Aila, about 200 males migrated from the Minakhan area of Sundarbans to the Asansol Durgapur area of West Bengal to work as labourers in stone crushing units. Many of them contracted fatal silicosis and silico-tuberculosis. More than 25 people, mostly from 18 to 30 years old, have lost their lives in the last few years.

Migration has a double-edged outcome –

The inward remittance coming from those who have migrated has bolstered the local economy. Around Rs. 8000 to Rs. 10000 per month is often sent home by migrant workers, who generally work for a period of 6 to 18 months at a stretch. The money is often used to strengthen existing houses or build a new one, or for educational purposes, marriage, or procuring land on the mainland within any peri-urban setup, if not urban. The promise of migration remittances often acts as a trigger to more migration..

COVID-19 and the lockdown expose people's vulnerability –

Migration, bolstered by its apparent economic gain, albeit at the expense of the social stress that it brings, is often touted as a mode of adaptation in the Sundarbans. While accepting its financial dividends, magnified due to lack of opportunities in situ, the claim needs to be

assessed in the long term. There have been at least two recent events, which expose the underbelly of such migration mechanism in no uncertain manner.

As the COVID-19 pandemic turned into an unprecedented global and national crisis and the country initiated a nation-wide lockdown with barely any warning, hundreds of thousands of migrant workers were pushed out from their destination sites with only a few hours' notice. Suddenly left with no jobs, no income, no shelter, and no food to eat, between 100,000 to 150,000 migrant workers desperately tried to move out from urban centers to return to their villages, most of them under extremely trying circumstances. One migrant worker, who came back from Kerala in the wake of the COVID-19 spread, said that their contractor – the person who takes the people to work in distant destinations- had made it clear that, considering the economic backlash, it looked extremely uncertain when or whether they would be able to return to Kerala for work, even after the lockdown was over or the COVID-19 threat had disappeared, and the world was back to normal.

"We want to go back, but the big question is, will there be jobs, and even if there will be; will they be financially as attractive as they happened to be in pre-COVID time?" asked one migrant. Experts say under such a situation, after an initial period when people try to sustain themselves with their saved up and pooled together money, the migrants would try to start working in the local area, creating competition, reducing the price of labour, and putting the local economy into chaos.

The experts drew parallels to a similar situation during Kerala's 2018 floods, albeit on a much smaller scale. At the time of the massive flooding situation, many Sundarbans migrants

returned home and survived in similar ways. However, the COVID curse seems much more profound, both vertically and horizontally, and raises a valid question about the modus operandi of migration in its present avatar; bereft of formalization and handholding of government both at the national and state level.

Self Help Group schemes are not properly functional here. Several factors ranging from lack of market to lack of business opportunities contribute to the lack of interest in developing these schemes.

2.4 People's solutions

"Sundarbans have reasonably high educational status, but lack of livelihood opportunities has been pushing people away. While our traditional livelihoods like fishing and agriculture have been severely affected due to climate change, we have so far failed to develop alternate livelihood options." - Anil Mistry, from Bali Island of Gosaba block in Eastern Sundarbans, who runs a non-profit and ecotourism center.

There is no structured policy or action plan from the administration to provide social protection vis-à-vis countering climate change and related migration. Panchayats barely have any policies or capacity to counter even small scale climatic impacts.

Various social schemes like Kendriya Abas Yojana, Geetanjali project (housing), Kanyasree & Rupasree (for girl child) scheme, and MGNREGA (provision of 100 days work), are available and officially accessible to common people. Unfortunately, it is evident from people's testimonies that large scale corruption, political hegemony, administrative callousness, delayed payment to beneficiaries, and most importantly, procedural lacunae often

combine to ensure that the advantages do not always reach the target population.

However, most of the population continues to receive highly subsidized rice called "Aila rice" as it was provided after cyclone Aila's devastating impact in 2009. Some money was allotted to work on damaged households, apart from some material support during/post the disasters. However, this support operates at a subsistence level only. It does not contribute to resilience development for the most vulnerable people.

Unemployment is the most significant problem. If more factories or small industries can be built in the area, in tune with local ecology and productivity, maybe people will stop migrating.

"In 2019, the monsoon was delayed by about 40 days and severely affected the paddy cultivation; and then, Bulbul (cyclone) happened. In Sundarbans, most agriculture is monsoon-reliant, as we have limited irrigational facilities. How can one depend on agriculture for sustenance? The current situation cannot be reversed unless traditional and salt-tolerant varieties of paddy seeds are used, instead of high yielding varieties as the, earlier is much more adaptive." - Amalesh Mishra, Agricultural Scientist.

Many in Sagar island and elsewhere feel that crop insurance may be critical, as uncertain and varied weather, particularly extreme weather phenomena, often impact agriculture. As crop insurance is generally found to be more impactful in the case of large landholding scenario; the formation of farmer cooperatives could be a game-changer for smallholder farmers. Such an arrangement would minimize land loss for land sharing and empower the peasants both in terms of market control and

introducing modern instruments in the agricultural process. Though such cooperatives run with much success elsewhere in West Bengal, it is yet to be adequately pursued in the Sundarbans. However, India's cooperative movement was born at Sundarbans under the aegis of Sir Daniel Hamilton in the Gosaba area of Sundarbans in the early twentieth century.

Despite fishing being the mainstay of a vast number of families in the Sundarbans, including the tribal population who were the first settlers in the Sundarbans – there has been hardly any cohesion between the government programmes and fishers' work. Fishermen often complain that they are being harassed by the forest department officials while fishing and complain of massive scale irregularity in

providing BLCs (Boat License Certificate), an obligatory requisite for fishing close to waters of forest areas where there are more fish available to catch.

The community members also said that the government needs to help people strengthen the houses, make them cyclone-resistant, and promote traditional and saline tolerant varieties of paddy.

Others stressed the need to make schemes under Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) functional with a regularized and time bound payment. People also identified the need for access to freshwater using rainwater harvesting methods and watershed management.

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3

BEED, MAHARASHTRA – Driven out by Drought

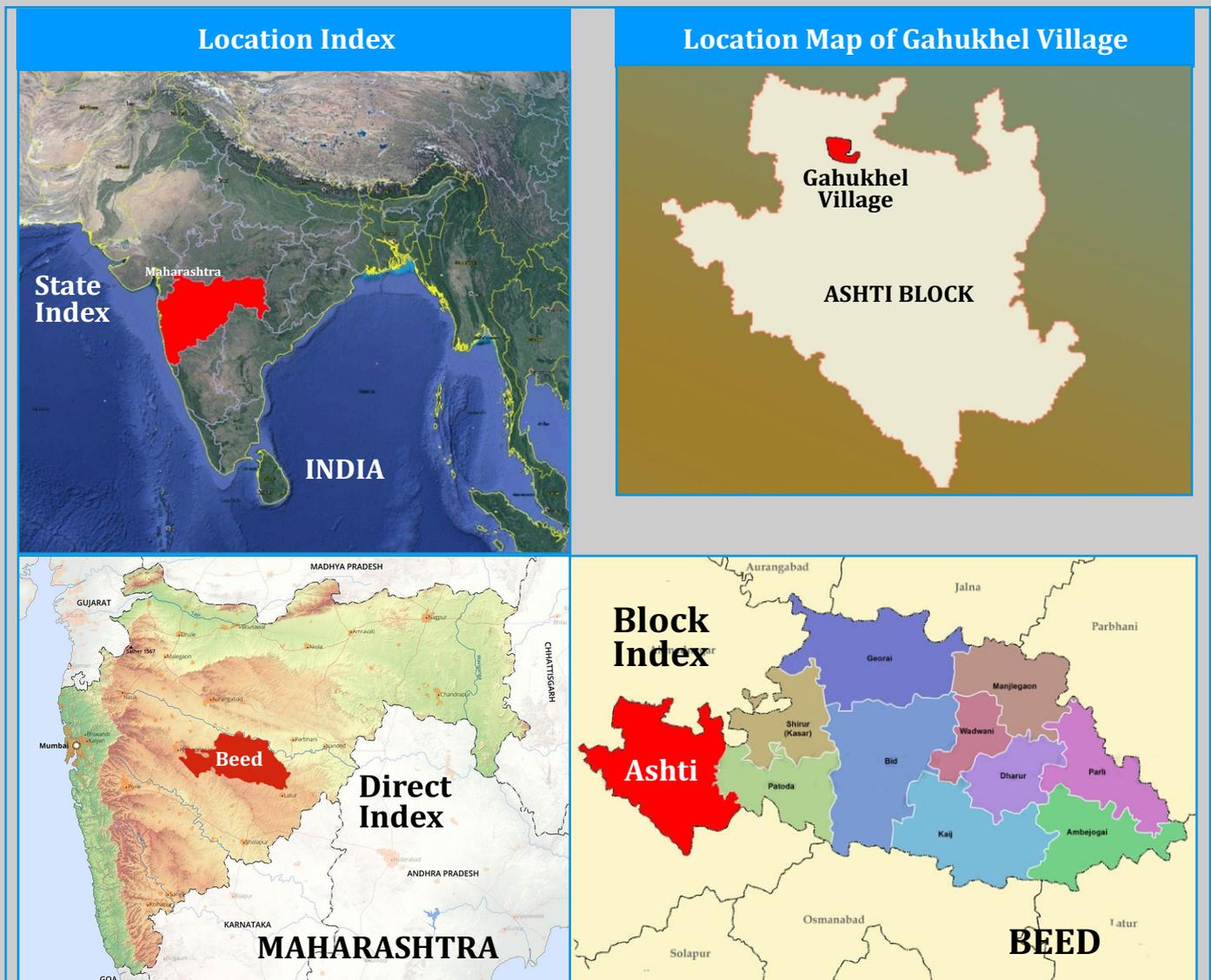


FIGURE 3: Map of Maharashtra with research location

Beed district is one of the eight districts of the Marathwada region of Maharashtra. The Marathwada region receives an average rainfall of less than 600 millimetres, 30% lower than the country as a whole, and, as a result, is susceptible to droughts and is generally characterized by extreme aridity, hot climate, and acute deficiency in water availability.¹ Droughts are a recurrent phenomenon in the State, and therefore migration from the region is a routine.

According to a study by the Indian Institute of Tropical Meteorology and the Indian Institute of

Science, between 1870 and 2015, the Marathwada region faced 22 droughts. There were five instances of two consecutive droughts, the most recent of which were in 2014-15 and 2015-16. Marathwada had a rain deficit of 40% in both 2014 and 2015.²

3.1 Climate change profile of Beed district.

Beed district has witnessed 22 instances of drought between 1871 and 2015. Back-to-back droughts occurred five times — in 1876-77, 1920-21, 1971-72, 1984-85, and 2014-15. Inte-

restingly, the region did not witness a single drought between 1940 and 1970. There were no droughts between 1999 and 2011 despite rainfall slumping below normal levels.³

This study focuses on the Ashti block of the Beed district. The average annual rainfall of the block is 800 mm, and it is one of the most water-scarce blocks in the district. Out of the total cultivable area in the block, only 20% is irrigated.⁴

Watershed Organisation Trust (WOTR) carried out an in-house analysis of historical climatic data (1989 – 2018) and future climatic projections (near-century, mid-century, and end-century) for two parameters- rainfall and temperature to understand the historical trends and future projections of the Ashti block in Beed District. The migration trends can be interpreted in this changing climate context.⁵

The historic analysis highlights that annual rainfall for 1989-2018 showed a decreasing trend along with the Kharif season, whereas the Rabi season shows an upward trend. In recent years 2004-2018, post-monsoon months of October and November have fewer rainy days than the past years 1989-2003. Rainy days in northeast monsoon has decreased in current years. Out of the past 30 years under consideration, deficit rainfall (i.e., when annual rainfall is below the nominal rainfall for the period) was seen in 17 years, as shown in Figure 4 below. Historical annual maximum and minimum temperatures are showing an upward trend.

Future Climate Projections:

To calculate future projections, WOTR has used a CanESM model output, one of the CMIP5 (coupled model inter-comparison project) model for analysis. Rainfall projections of the

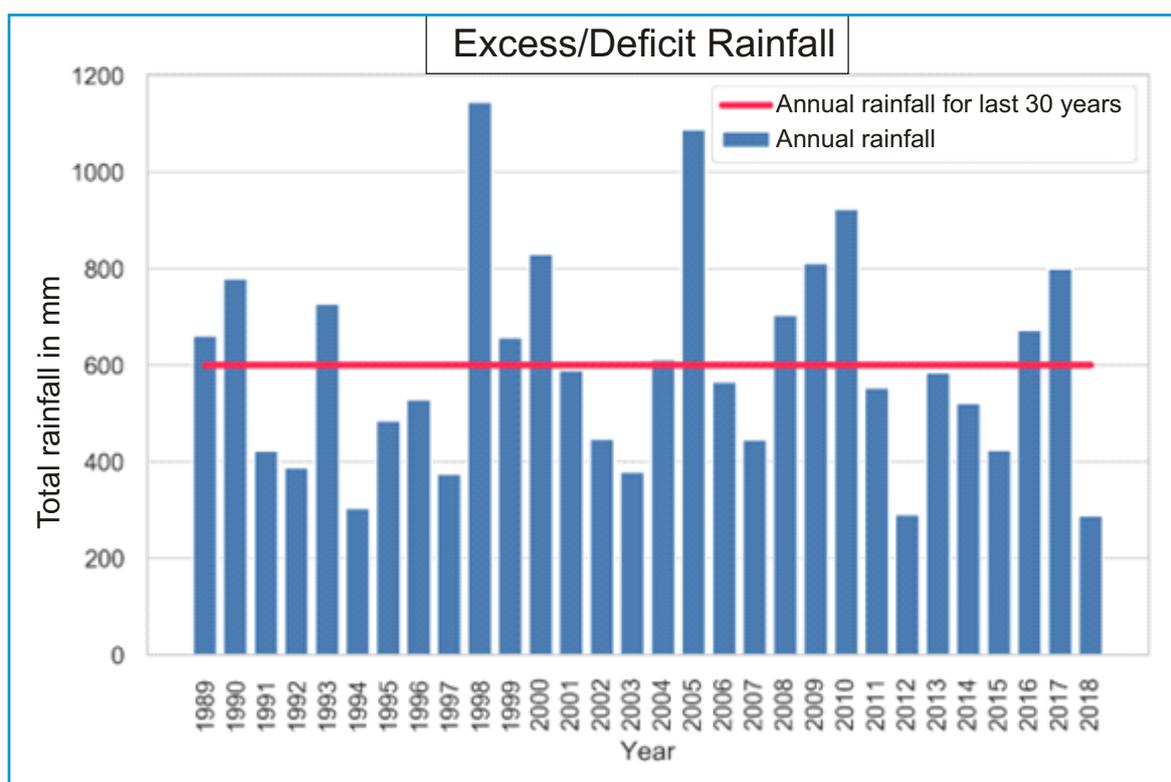


FIGURE 4: Rainfall variation in last 30 years in Ashti block

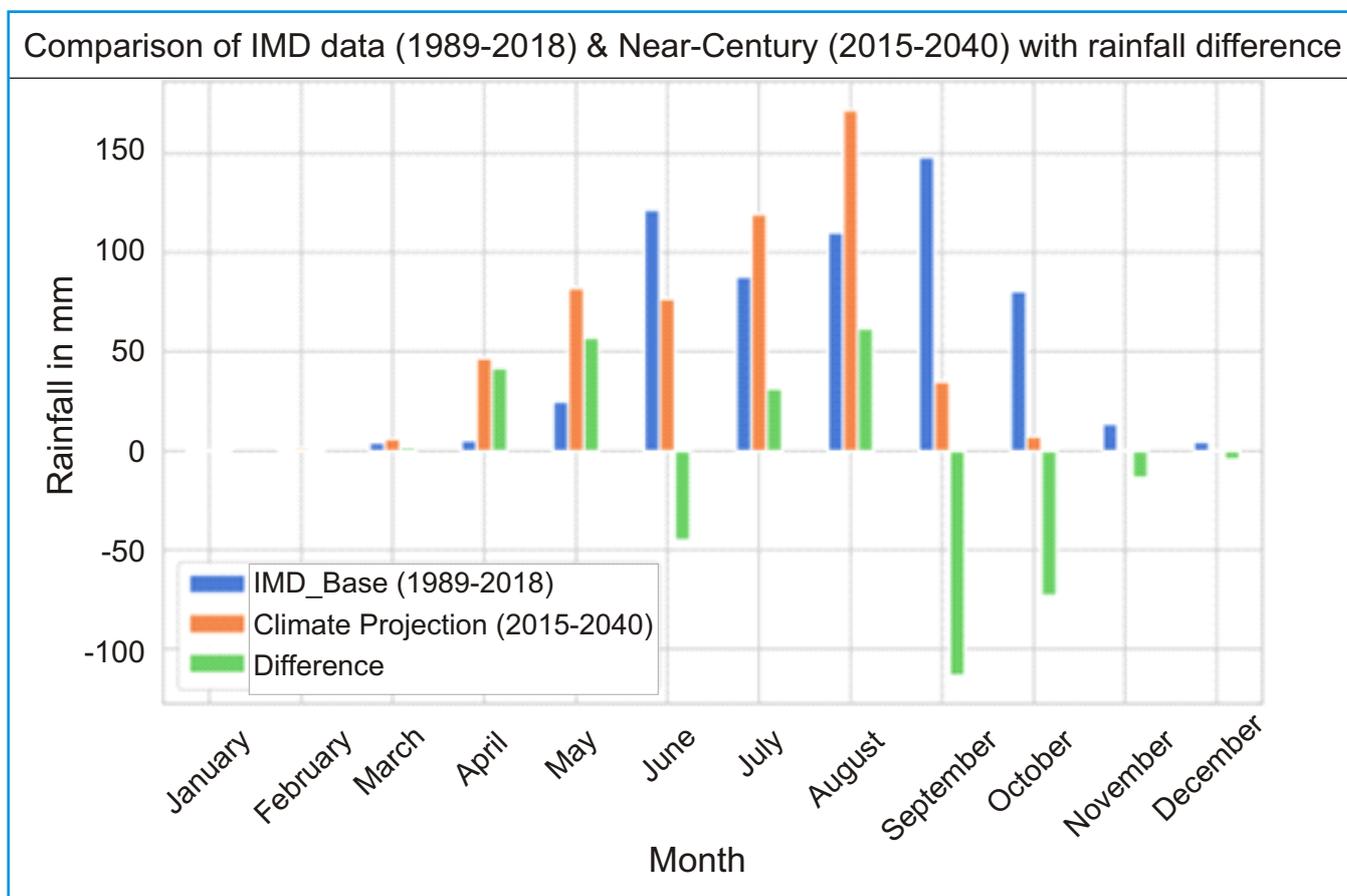


FIGURE 5: Comparison of IMD data (1989- 2018) and near-century predictions for rainfall difference

near-century (2015-2040), mid-century (2041-2070), and end-century (2071-2099) are projected to show a decreasing rainfall trend in June, September, and October months. Projected rainfall for monsoon months of July and August would face deficit rainfall in the future century compared to historical data (1989-2018).

Figure 5 highlights that June and September during the monsoon and October and November months in post-monsoon will have deficit rainfall in the near-century (2015-2040) compared to the past (1989- 2018). The projected minimum temperature for the future century is showing a substantial increase over the months. Expected highest positive changes

are observed in the winter months. Summer months (April and May) are projected to decrease in maximum temperature in all centuries. Winter months are showing similar findings as minimum temperature for future changes compared to historical temperature change.

An increase in temperature and decrease in rainfall in the Rabi season would affect the crop production and water availability. This may increase the climate-induced migration trend in the villages.

3.2 Migration profile of Beed district.



Participatory Research exercise with villagers. Photo credit: WOTR

Deficient rains and recurring droughts are the main drivers of migration in Maharashtra. Beed district is located in the foothills of the Sahayadri range, and most of the farmlands are rocky and not very fertile. In the absence of any rainwater harvesting structures in the Ashti Block, most monsoon water flows out of the village. As a result, the villagers face severe water scarcity.

According to the interviewed villagers using the participatory research module developed for this project - 2013, 2016, and 2018 were severe drought years when a significant number of households migrated out searching for work. Unseasonal and reduced rainfalls lead to reduced crops, and low-quality produce due to pest attacks and crop withering.

There is also an opinion that the number of houses in the village is increasing due to the

fragmentation of joint families. Thus, the land is further being divided into smaller parcels among siblings. These small parcels reduce the crops' profitability as the input costs are high compared to the market returns. There are also frequent crop losses due to attack by wild animals such as wild boars, peacocks, and foxes, that sometimes destroy entire standing crops. These crop losses are not covered under crop insurance.

These problems, coupled with irregular, unseasonal and reduced rainfall, further aggravate agricultural losses forcing at least one or two household members in the block to migrate every year. However, in years of severe drought, the number of members in a household migrating drastically increases, and so does the duration of their seasonal migration. Usually, they migrate for about six months, but this can extend to nine months in severe drought.

Preference Criterion	Advance payments (for sugarcane cutters)	More work opportunities	Distance from village	Presence of relatives and friends	Basic needs (Drinking water, Shelter, Health care)	Women safety
Migration destinations						
Mumbai	-	5	2	3	3	-
Pune	3	5	4	3	4	4
Ahmednagar, Solapur	4	5	4	3	1	2
Kolhapur, Satara, Sangli & Nandurbar	4	3	3	3	2	3
Raipur & Hyderabad	-	4	2	3	1	-
Total	11	22	15	15	11	9

TABLE 1: Matrix scoring of preferences for deciding a preferred destination

Referring to Table 1, which presents a matrix scoring of people's preferences for deciding the preferred destination for migration. In the case of migration for sugar cutting, the amount of advance money given by the labour contractor to the family was key determining their decision to migrate. People prefer the destinations for which they get higher advances. These advances are an important source of annual lump sum money for migrant households. The advance amount is generally used for major household expenses such as children's marriage, festivals, and agriculture inputs (seeds, fertilizers, etc.). The advance money can range anywhere between fifty thousand to exceeding one lakh rupees.

The next important factor is for better work opportunities. The younger population prefers migrating to places like Mumbai and Pune as they offer a plethora of options for all, including the illiterates. They can work in factories, companies for a range of work including driver, watchman, office boy, etc.

The presence of familiar persons/ villagers or relatives in the destination also affects the choice as their company provides a sense of security. They do not have to begin exploring everything again (such as a safe and affordable residence, markets, etc.).

Some households also prefer destinations that are not very far from their village or are within manageable travel time as they might have to travel back to the village in case of emergencies.

The communities also reported receiving basic housing amenities and sanitation facilities as a factor. The people also mentioned women's security; however, during the women's group discussion, they reported that they had not experienced any unpleasant incidences until now as male family members mostly accompany them.

3.3 Drivers and Impacts of Migration: Community Voices from Gaukhel village.

Gaukhel village is 32 kilometres from the nearest sub-district headquarter, Ashti in Beed district. According to the 2011 census, there are 351 households in the village. The village has about 6-7 hamlets, and the population is scattered among the main village and its hamlets.

The total population of Gaukhel is 1521, with 51% male and 49% females. As per social classification, nearly 10% of the population belongs to Scheduled Caste (SC), and 3% belong

to Scheduled Tribes (ST). The rest of the community is from the open class category. Maratha and Vanjari castes form the majority of the population.

During the participatory research process, multiple factors emerged that has led to families' migration to outside places. The village has been facing development issues and an agrarian crisis due to recurrent droughts and reduced agricultural subsidies. These are further aggravated by the changing climate over the years and other external factors such as uncertain and fluctuating markets.¹¹

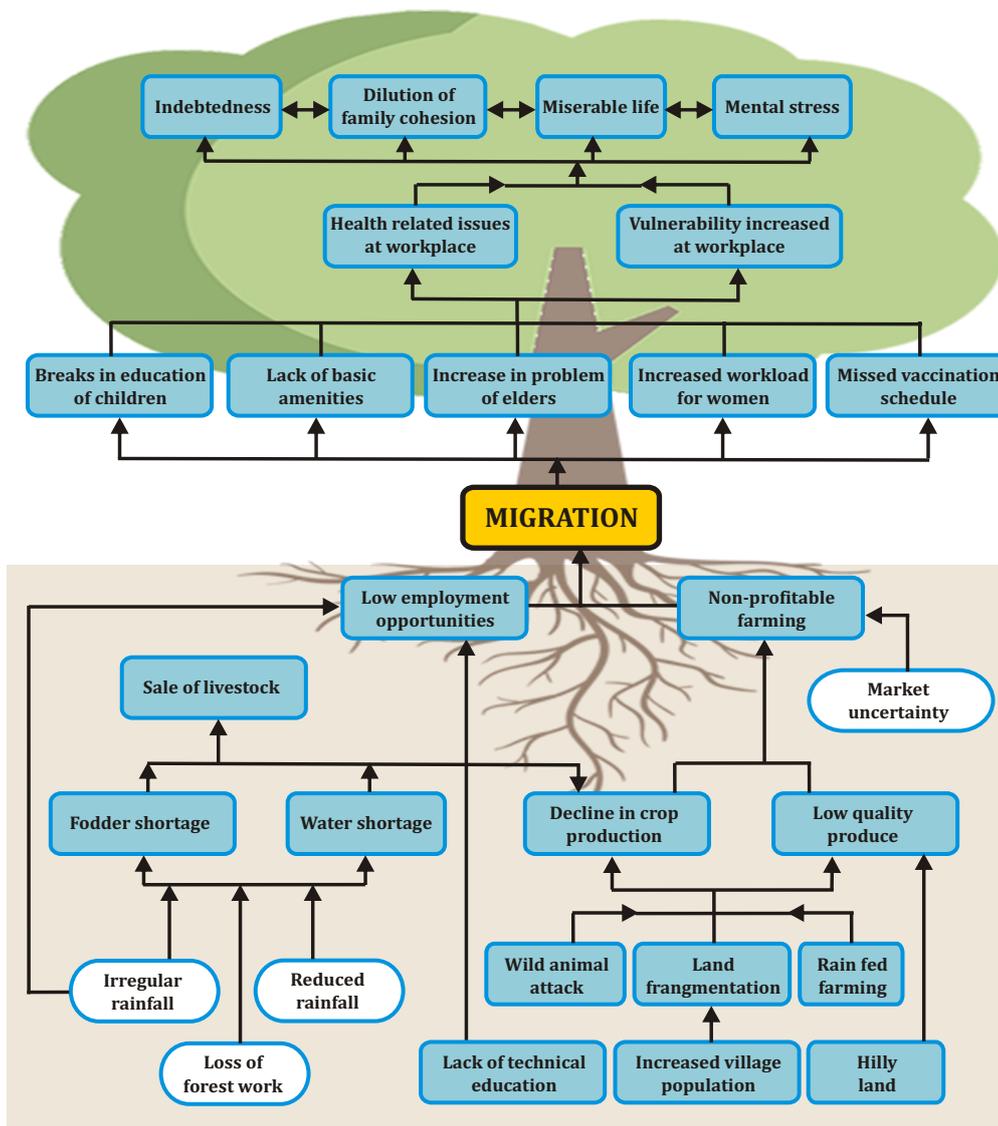


FIGURE 6: Causes and impacts of migration in Gaukhel village - Problem tree generated with community participation

As per the land classification, out of 1023.8 hectares of land, 82% is under the net sown area (837.6 hectares), 17% (177.8 hectares) is a cultivable wasteland, and 1% of the land is classified as under non-agriculture use (8.4 hectares). According to the village census data, in Gahukhel village, there are no forest areas and uncultivable land. Nearly 814.6 hectares of land are under irrigation, and 23 hectares of land are non-irrigated (Government of Maharashtra, 2019).

Agriculture is the primary occupation of the village. About 5% of the households are landless and are engaged in non-farm livelihoods. About 50 households with milch animals are preparing khava (condensed milk) at home and selling them to traders. Since agriculture is not sufficient to fulfill the financial needs, about 80% of the households routinely migrate out of the village.

During group discussions, villagers informed WOTR that about 70- 80% of the households routinely migrate out of the village. Traditionally, the people worked as sugarcane cutting labourers at sugarcane cooperative factories spread throughout the Maharashtra state.

About 75% of the migrant households go out to work as sugarcane cutters, mostly at Solapur, Pune, and Ahmednagar. Few prefer factories located at Satara, Sangli, and Kolhapur and as far as Nandurbar district near the Gujarat state boundary.

Mumbai is the capital city of Maharashtra, with plenty of opportunities for all categories of workers. These cities have good road and railway connectivity. In case of any emergency back at home, accessible transportation is available.

Several individuals working at places like Pune and Mumbai are also working as truck drivers. They generally travel to different parts of the country (especially Southern and Central India) and ferry migrants to places like Hyderabad (Telangana), Gulbarga, Bijapur (Karnataka), and Raipur (Chhattisgarh). Company workers and drivers form 10% of the migrant households each. A small number of individuals (about 5%) are engaged in other occupations like security guards, teachers, or in the armed forces.

Communities reported that ownership of land is not associated with migration status. Villagers said that both landowners, as well as landless households, migrate out during times of distress. Similarly, people from all communities migrate out, including the Maratha, Vanjari, and other castes.

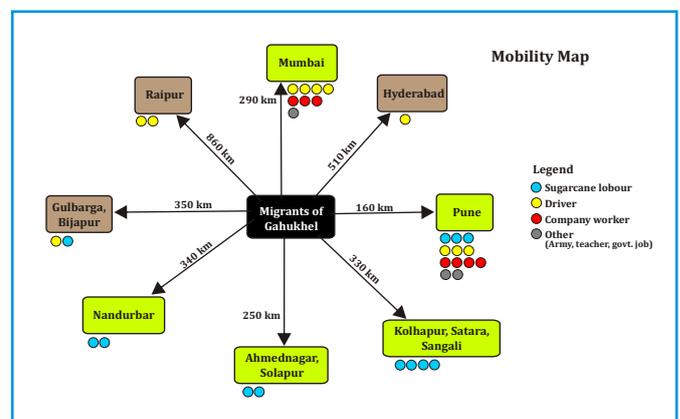


FIGURE 7: Mobility map of the migrant population of Ashti village

In Figure 7, different colours represent various kinds of work migrants are engaged in, a higher number of dots represents more households migrating, green colour boxes represent destinations with Maharashtra, and brown colour boxes represent destinations outside Maharashtra.

All of the migration for sugarcane cutting is seasonal in nature ranging from six to about eight months. Families leave the village after the festival of Diwali (usually in October-November) and then return before the rainy season, in time to prepare the agricultural land for Kharif season. However, youth who migrate as workers and drivers tend to stay back at the destination places as long as they have the jobs and occasionally visit the village for purposes like helping in farming during sowing and harvest, marriage, or other rituals. Being unskilled workers, their work tenure does not usually last more than 1-2 years. In such cases, they search for new jobs instead of returning home. They return only when unable to find new work. Thus, there is a trend towards permanent migration among the young generation.

The impacts of migration are felt by the community both at the individual and family level. Even

at the individual level, differentiated impacts are observed for women, children, and the elderly at source and destination places.

Sugarcane cutters usually work as a unit comprising husband and wife. They take their young children (up to 5-6 years old) and leave the elder ones (more than 5-6 years old) back at the village with their grandparents. Families also take a pair of work animals and a cart to transport the sugarcane from the fields to the factory. If there is no adult or older person available to take care of the children in the village, they are taken to the workplace. There were instances when even 9-month-old babies were left back at the village with grandparents reported by women during group discussion. Children are usually not allowed at workplaces as they require time for caregiving and may impact the workers' working hours. Children also miss out on schools if they accompany their parents.



Group discussion with women migrating for sugarcane cutting. Photo credit: WOTR

Challenging work conditions-

At the workplace, families are provided with necessary materials like mats, bamboo, and plastic sheets by the sugarcane factories to make temporary housing structures (kopi). These rudimentary structures do not protect the occupants from the chilly winters of December and January. These temporary structures lack basic amenities like electricity, water, and sanitation facilities. People do not have sufficient privacy for bathing and travel long distances for defecation.

The sugarcane cutters generally work under harsh conditions. They start work very early in the morning, at about 4-5 am. They use torches fastened to headbands for visibility during the early morning darkness. This is to protect themselves from snakes, scorpions, and other insects in the sugarcane fields.

Occupational hazards in the form of injuries and death are reported among the migrant population. Since the labourers start work early in the morning when it is still dark around, there have been instances where the bullock carts of the sugarcane cutters were hit by trucks, injuring humans and livestock. One accidental death of a migrant worker was also reported in the village due to a speeding truck hitting the bullock cart early in the morning (refer to the case study). In another incident, a young male commercial factory worker suffered a knee injury and could not work for about three years. He got little compensation from the factory to cover the medical expenses.

Harassment at the workplace is also an issue reported by the people. Even in the case of a minor altercation, the migrant workers are dominated by the local people. They may be looked down upon.

The burden on women and child care**concerns-**

As migrants, women bear the extra burden of struggling for basic things like fetching water, firewood, locating a market place, etc. Untimely eating, unhygienic living conditions, and over-work adversely impact women's health. In the case of pregnant women migrating, the growth of the fetus is affected. Children miss out on immunization. Not taking regular baths also causes skin rashes and ailments. In the case of 0-6 year children, migrating for 6-8 months with parents can reduce 2-3 kg weight. This may again take up to 4-5 months to recover the weight loss and thus impact children's overall growth. According to an Anganwadi teacher, about 28 children in the 0 to 6 years age group migrated out of a total of 140 children in her center.

"We have to wake up as early as 3 am and prepare food for the family. Then we go for sugarcane cutting and return after 6 pm. We also have to fetch water from distances, look after children, and tend to the livestock. Women have to work more than men."

Usually, elder siblings are responsible for taking care of the younger ones when parents go out for work. Leaving them alone can be a risk for families. While playing or moving around the small houses, the burning candle may fall off and cause fires. One of the women respondents recited a similar incident that happened with her children. To avoid such incidences, many mothers prefer carrying infants with them to the worksite. Children miss out on school curriculum and immunization schedules when they are away from their native place.

Health is also a concern, as reported by women. There are doctors available at the worksite. However, they have to purchase the medicines at the worksite, whereas they get the medicines free when in their villages. This adds to the add-

ditional expenses of the families. The drinking water source varies from place to place- tanker or a tap or well.

Missing out on social protection schemes-

Many times, the migrant family has to forego some of the social benefits. In cases where the whole family migrates, they miss out on the food grains distributed through the Public Distribution Scheme (PDS). During the discussion, women reported that they had submitted the application forms for availing LPG connections through the Pradhan Mantri Ujjwala Yojana of the Government of India.

However, they were absent from the village during the application processing period, and many could not avail of the facility.

3.4 People's solutions

Reducing outbound migration requires a range of interventions in the village that make staying back encouraging for the community, especially for people in the working-age group. When asked about the support that they would need to enable them to stay back in their village, the village talked about a range of options (See Figure 8).

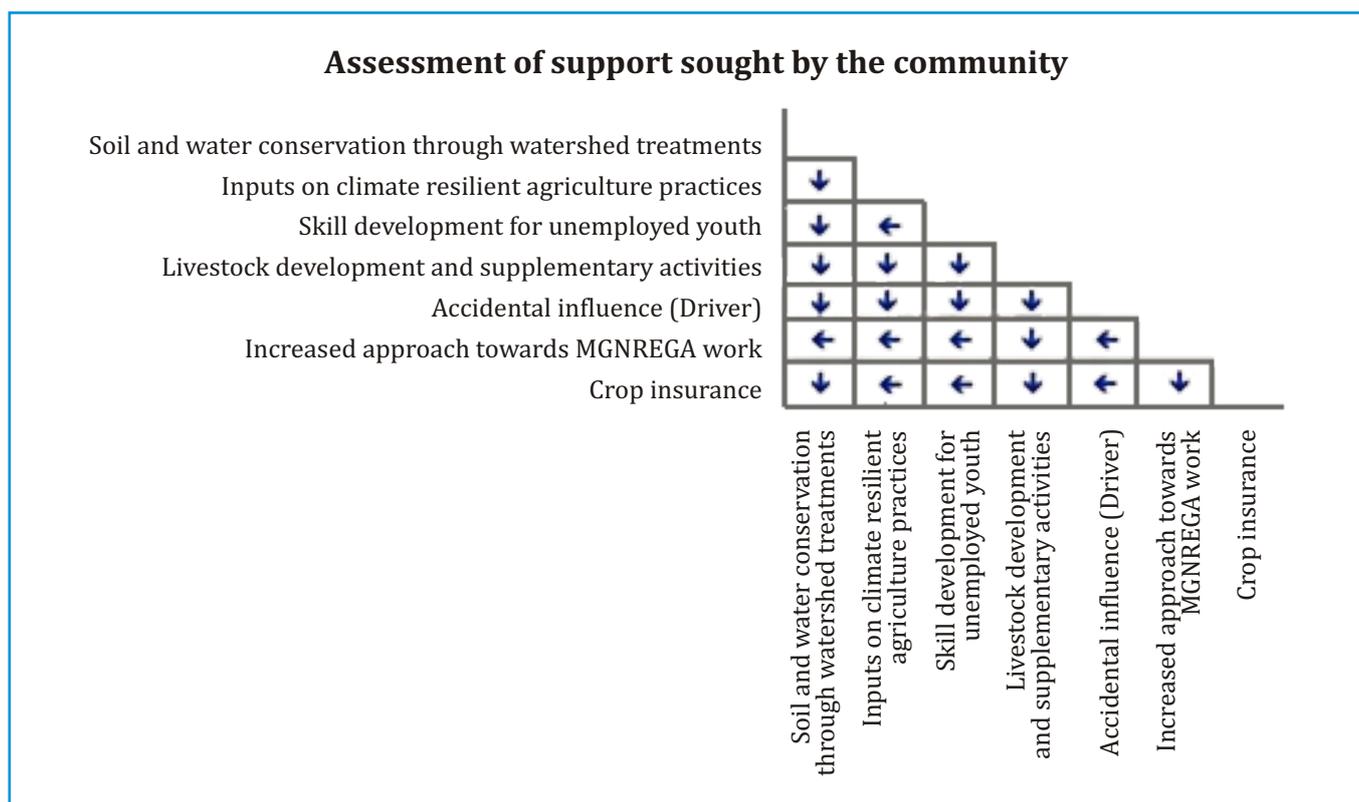


FIGURE 8: Assessment of support sought by community to reduce migration

Integrated watershed development for drought-proofing-

One of the crucial interventions needed is soil and water conservation done through an integrated watershed development approach. Much of the village land is rocky, and the rainwater flows out of the village, causing water

scarcity. Building water structures both at farm and village level (such as Continuous Contour Trenches, check dams, KT weir, percolation tanks, farm bunds, drainage line treatments) would help arrest the runoff water and ensure water availability during summers for humans and livestock.

Support for Climate Resilient Agriculture practices: Another necessary support sought by the community was climate-resilient practices that include Integrated Nutrient Management (INM), Integrated Pest Management (IPM), appropriate seed selection, efficient water management, etc. In the last few years, rainfall has been erratic. There are unseasonal rainfalls, irregular rainfall, and prolonged dry spells. All these lead to crop losses and low-quality output due to crop withering and pest attacks. Even when the study team was in the village in the first week of November, there were spells of rain, which is unusual for this period.

Effective crop insurance policy-

Many farmers also talked about the need for crop insurance, especially in current climatic variations. This is coupled with crop losses due to wild animals. Farmers reported that they suffered significant crop losses, especially for the food crops, and these are not covered under the current crop insurance schemes. They wanted some mechanism that ensures compensation for crop losses due to animal attacks. Many people who work as drivers and travel a long distance to different states wanted acci-

insurance. This will provide them financial security in times of accidents.

Skill development for unemployed youth-

Many youths of the village are educated but not employed. Many of them had done diploma courses to become teachers. Unfortunately, they have not got jobs. These youth are now aiming for competitive exams through the Maharashtra Public Service Commission. Some of them also want to get into police forces. These youth demanded that they have a public library in the village with sufficient reading material and books. These are expensive and out of reach for many. They also wanted to have a gymnasium built in the village to be fit enough for admissions in police forces. During the group discussion, one of the respondents said, "*We will also be future migrants in case of severe drought in the future if nothing is done for us.*"

Skill development for unemployed youth, women, and men was a need that emerged from discussions with various groups. Educated youth do not want to continue farming as there is general disenchantment due to uncertain and fluctuating income.

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4

KENDRAPARA, ODISHA – Fleeing the rising seas.



Figure 9: Map of Odisha with research locations

Kendrapara district, a part of coastal Odisha, is characterized by a fragile environment, prone to floods and cyclones, low and highly variable rainfall, high water deficiency, frequent rainfall failure, and late also emerging drought-prone district. Kendrapara district is also one of the worst cyclone-affected districts in Odisha.¹

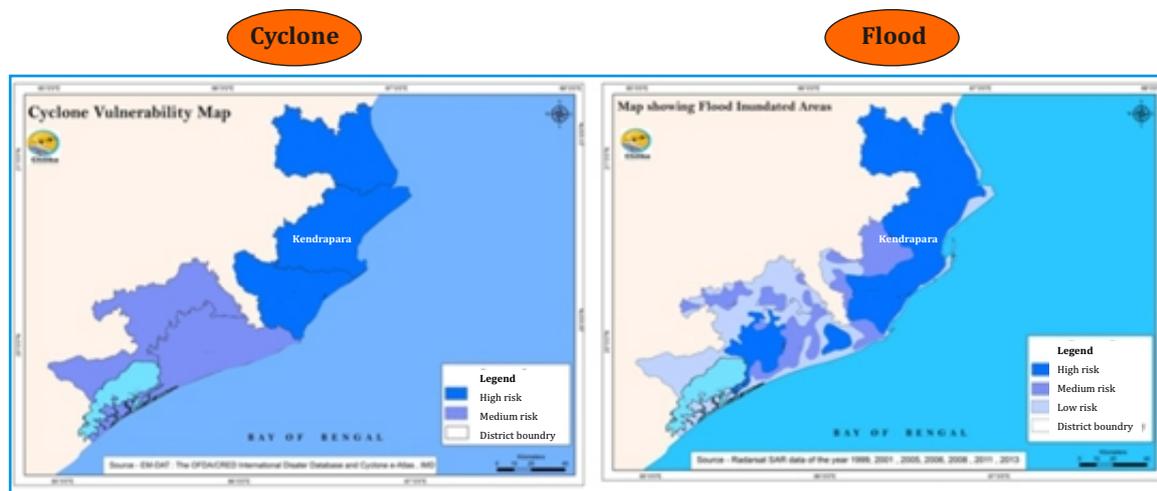
Regional coastal process modelling undertaken by the Integrated Coastal Zone Management (ICZM) project supported by the World Bank has found ten percent of Odisha's coastline — mainly stretches in Puri, Kendrapara, and Ganjam districts — is highly vulnerable to sea erosion. The frequency and magnitude of erosion in these areas have also increased in recent years, the study shows.²

Lack of medical facilities, malnutrition, disrupted the supply of pure drinking water, and lack of proper sanitation facilities makes the lives of women and children increasingly vulnerable.³

4.1 Climate change profile of Kendrapara district

Over the decades, Odisha has been experiencing worsening extreme weather conditions claiming many lives, from heat waves to super cyclones, from droughts to floods. A heat wave in 1998 killed around 1,500 people in the state. The mean daily maximum and minimum temperature of the state is gradually increasing. The entire southern and western part of the state has witnessed an unprecedented rise in daily maximum and minimum temperature.

Kendrapara and Jagatsinghpur are among the most vulnerable districts affected by cyclones and climate change in coastal Odisha. In the last few decades, the coasts of Odisha have witnessed three major devastating cyclones. The Super Cyclone, Cyclone Phailin, and Cyclone Hudhud have severely disrupted communities' livelihoods in the region.⁴



The cyclone vulnerability map indicates that the study villages fall in a very highly prone area. Jagatsinghpur, Kendrapada and Bhadrak districts of Odisha are very highly prone districts on the east coast of India.

The map indicates the flood inundated coastal areas. The study villages fall in the category of very highly prone area. The study villages are situated in the river bank of Hansua river which is the distributary river of Brahmani. The mouth of the Hansua river fall into the Bay of Bengal. Twenty one floods inundated this area since 1967-2015.

Figure 10: Cyclone and flood prone areas of Odisha

The Mahanadi delta is prone to floods because of the intermingling of floodwater of its three major rivers – Mahanadi, Brahmani, and Baitarani. Devastating high tide floods have been observed in coastal areas of the state.⁵ Odisha's entire coastline is prone to storm surges, coastal inundation, and river flooding, which is often accompanied by heavy rainfall.⁶

Odisha lost 153.8 kilometers, or 28 percent, of its 485-km-long coastline between 1999 and 2016 to seawater ingressions, according to a July 2018 study by the National Centre for Coastal Research in Chennai. The study also found that rising sea levels and changing wind patterns are causing high tidal waves and inundating habitable areas (See Figure 9).

According to the coastal vulnerability index (CVI) study by the Indian National Centre for Ocean Information Services (INCOIS), vulnerability, loss, and damage from sea-level rise, coastal geomorphology, tidal range, and elevation in the area of Odisha coastline varied from "low" in about 76 kilometers of the coastal stretch of Odisha state, covering parts of Ganjam, Chilika, southern Puri, and Kendrapara, and to "medium" in about 297 kilometers, covering

northern Ganjam, Chilka, central Puri, Jagatsinghpur, Kendrapara, southern Bhadrak, and northern Balasore, and to "high" in about 107 kilometers, covering northern Puri, parts of Jagatsinghpur, Kendrapara, northern and southern Bhadrak, and southern Balasore.⁷

In Jagatsinghpur and Kendrapada, the forest cover has been reduced by 50 percent due to this super cyclone. The microclimate of the region has changed after this loss in vegetation. Temperature data of the coastal region during 1998-2000 showed wide fluctuations, and the average temperature has risen. The change in climate following the super cyclone of 1999 possibly caused the state's mango and mahua trees to flower unusually early.⁸

Agriculture across the coast of Odisha is now facing a severe climate emergency. The climatic variations could further multiply the vulnerability of the poor by adversely affecting their health and livelihoods and impeding the development of the state. It is evident that climate change in Odisha has the potential to tremendously aggravate water stress, food security, and people's health.

4.2 Migration profile of Kendrapara district



Coastline erosion at village Pentha Kendrapada District. Photo By: Santosh Patnaik

Considered as one of India's poorest states, 47 percent of Odisha's population lives below the poverty line (BPL survey, 1997). According to the Tendulkar Committee, however, the estimated BPL figure of Odisha is 57.2 percent. At the same time, the N.C Saxena Committee suggests it is 84.5 percent. The 2001 Census describes Odisha as a key migrant-sending state with 9,37,148 inter-state migrants. However, according to an informal estimate, 2.5 million people migrate from Odisha every year. Out of this, the coastal region accounts for 45 percent of the total migration. In contrast, the southern, western, and northern districts account for the remaining 55 percent.⁹

In the 64th round of the National Sample Survey Office (NSSO) survey undertaken during 2007-08, migration in Odisha was 18.2 percent of the total population, while the national figure was 29 percent.

Migration in Odisha, known as the **Dadan system** (migrant workers recruited through a

system of advance payments), has been in practice for a long time. People from tribal and rural Odisha were often recruited by labour contractors and taken to various states of India to work in tea gardens, construction sites, and brick kilns. The region is also well known for its skilled workers in the construction sector, namely plumbers and masons, which we shall elaborate on in the following sections.

Within the coastal region, the districts of Kendrapada and Khorda have a higher percentage of household migration, 47 and 42 percent, respectively. The region is prone to natural disasters, and cyclones are common phenomena, which hampers the regularity of local employment in the region every couple of years. A large number of households from the region thus undertake migration as a coping strategy.

With declining agricultural incomes and rural households' inability to sustain themselves on farming alone, the countryside in Odisha is

witnessing an emergence of what one can term "migrarian" livelihoods – where migration and agriculture form the significant providers, accounting for more than 55-60 percent of the annual incomes. NSSO data shows that the dependence on domestic remittances has risen most strikingly in Odisha since the 1990s (Tumbe, 2010). In 2007-08, rural Odisha received 14.25 billion dollars in domestic remittances, the sixth highest in the country.¹⁰

The district of Kendrapada in Coastal Odisha is well known for its plumbers. These workers find work in all parts of the country, especially in the megacities such as Mumbai, Delhi, Bangalore, Hyderabad, Ahmedabad, and Kolkata. With an average age of 29 years and secondary education, the workers report' monthly income of Rs. 7,100. In the National Sample Survey (NSS), the 64th round done in Odisha on migration indicated that the main reason for migration is natural disasters such as earthquakes, drought, flood, and tsunami.¹¹

Improved livelihood opportunities and better income have been the driving force of migration from the Bengal and Mahanadi delta of Odisha. The skilled workforce from Odisha is long known to move for higher wages to urban areas in India. However, monsoon flooding, tropical cyclones, sea-level rise, and beach erosion are pushing people out of the Mahanadi delta region.

4.3 Drivers and Impacts of Migration: Community voices from Satabhaya village.

Satabhaya, an aggregate of 7 villages close to the Bay of Bengal in the district, faces an existential threat due to various climate hazards – cyclone, sea-level rise, beach erosion, and coastal inundation since 1960. Satabhaya was one of the five villages formed out of 7 villages.¹¹ The National Center for Coastal Re-

search (NCCR) reports erosion at the rate of 1.03 mm per year at Paradip port, which is 90 km away from Satabhaya.¹²

A series of cyclones, including one in 1971, a super cyclone of 1999, Phailin in 2013, Hudhud in 2014, Fani and Bulbul in 2019, have struck the area consistently and regularly to break the agriculture and fishing dependent livelihood pattern of the inhabitants.

Moreover, sea-level rise ensured that a significant area of the villages was inundated under the sea. The village area was reduced to 140 square kilometers in 2015 from 350 square kilometers in 1930.¹³ The inhabitants started to move away from the village as their agricultural and residential land came underwater.

A rehabilitation programme for people displaced due to sea-level rise for Satabhaya was initiated in 2015. The rehabilitation colony was established adjacent to Bagapatia, a village that is inside the Bhitarkanika wildlife sanctuary. The resettlement colony has been established across 132.9 acres, of which 48.5 acres are private land. 571 out of 771 families of Satabhaya have been relocated to the Bagapatia resettlement colony.¹⁴ Two hundred families are still residing in Satabhaya village.

The state government provided land and funds for the displaced people to build houses in Bagapatia. However, the residents are yet to receive land Patta (legal ownership document) for the land.

No land was provided for agriculture as part of the rehabilitation, destroying the livelihood pattern of Satabhaya. People who once had productive farmland and fishing assets are now forced to purchase food grains, vegetables, and fish for their consumption. Several fisherfolks have left their profession

due to the loss of boats, fishing nets, and other accessories during cyclones and floods. The farmers and fishers of Satabhaya are now being forced to migrate out of Bagpatia in search of livelihoods.

People are migrating due to the dearth of income opportunities in Bagapatia and the pressure of debt repayment. The communities have taken loans to repair or construct new houses as cyclones and sea-level rise repeatedly destroyed them. To date, around 2000 people have migrated from the village. (See Figure 11).

Nilamani Das complained that apart from improved communication to the outside world through road network and access to health care, life in Bagapatia is a struggle in the absence of regular income. The communities migrate as agriculture is not an option without farming land at their disposal. People, mostly men, migrate for most of the year. Women, the elderly, and children below the age of 14 who stay back are dependent on the remittances sent to them periodically.

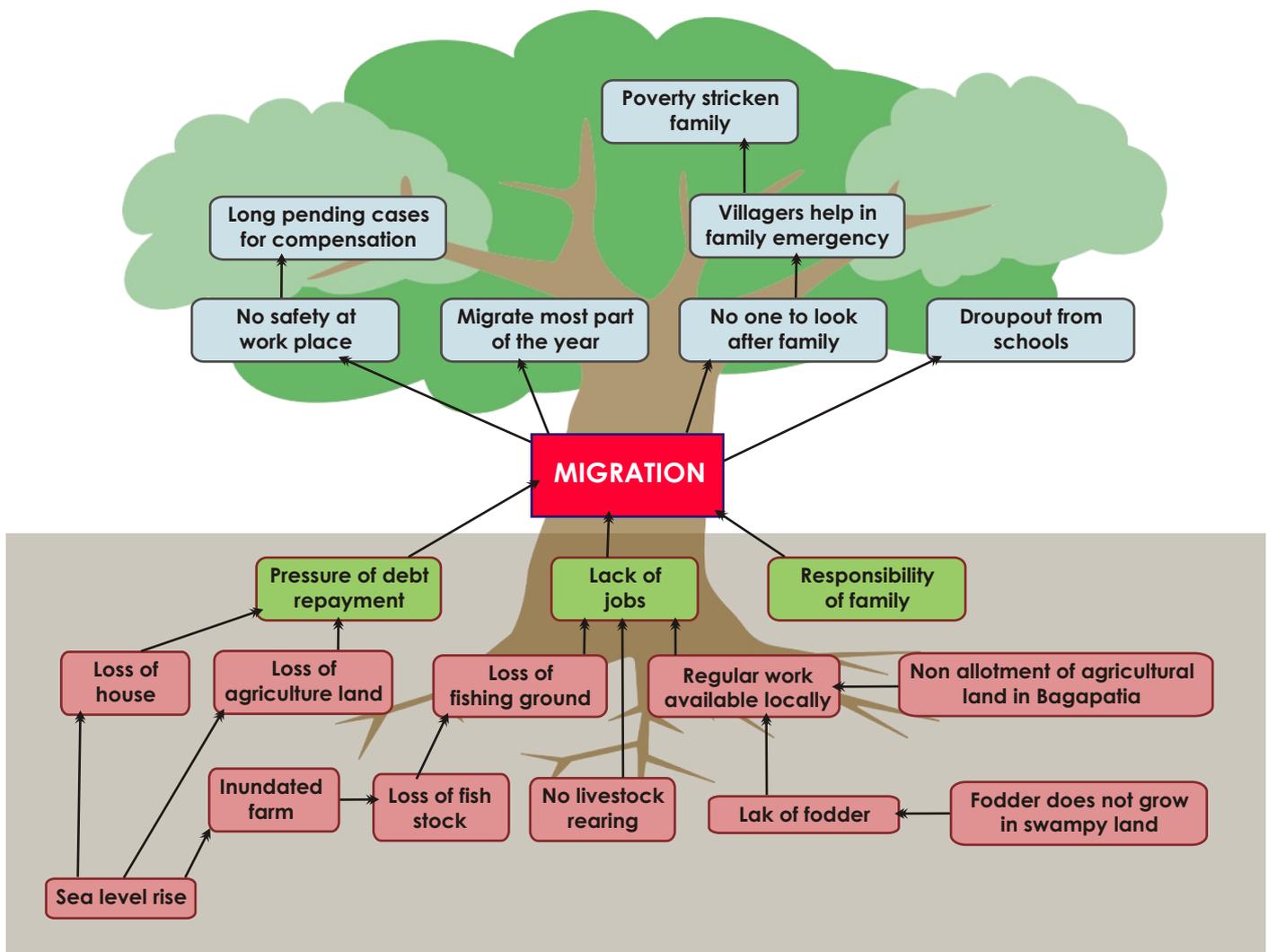


Figure 11: Problem Tree for Satabhaya village

Impact on women and children

Relocation to the Bagapatia colony was an emotionally stressful episode for the women of Satabhaya. Even before they could recover from the trauma of being displaced, they have to start adjusting to the resettlement colony.

It was particularly traumatic for the women of Satabhaya as the communities were relocated to a swampy land. They could not raise kitchen gardens or rear livestock, a significant income source, and food for the household. They were forced to abandon their cows in Satabhaya.



Resettlement colony in Bagapatia. Photo By: Santosh Patnaik

Gitanjali Behera of Bagapatia resettlement colony laments about her plight due to loss of land and family. She says, ***"I have lost 5 acres of land to sea, and my joint family got separated as the government allocated separate plots for us. My land turned saline, and I could not take any crops on it. The situation is as bad here as it was in my village. I have lost my income, and a petty shop here is no good either"***.

Toilets have been built in only 150 out of 571 households of the area, affecting health and sanitation. Open defecation is prevalent in the

area and is seen as the reason behind emerging health issues such as digestive and skin problems. The inhabitants feel the need for toilets with running water. Since the water supply project's construction has been completed, the inhabitants expect to receive the water connections.

There are increased instances of women-headed households in Bagapatia where young people (both male and female) and men migrated to Bengaluru, Kerala, and Tamil Nadu. In the absence of men, women took the family's responsibility, jeopardizing their health and welfare.

"The families of migrants are helped by neighbors and relatives of the family in case of family emergencies," says Sudarshan Rout, a resident of the resettlement colony. The social safety net comes to the families' rescue left behind when men remain absent for most of the year.

Lakshmi Rout, a resettlement colony resident, recalls her 2 acres of land and kitchen garden. She says, *"There used to be sufficient food from my farm and garden for my family. I have lost all that, and now my husband has migrated to Kerala as a daily labourer. I survive on the money he sends intermittently. I do not see any future for children here."*

Children's education has suffered in the village due to the lack of schools and teachers. As a result, the quality of education imparted to children has suffered substantially in the area. In the absence of a high school, children have been forced to stop their education after the seventh grade or travel to Gopalpur high school, 15 km away. In the absence of education and family income, children above the age of 14-15 migrate. They usually accompany adults of the family and are employed in textile mills.

Challenges at the destination:

The village inhabitants have mostly migrated to Haryana, Delhi, Bangalore, Kerala, and Surat. The migrant workers are engaged in the plywood industry, garment manufacturing industry, and plumbers in their destinations. In Kerala and Delhi, they mostly work as plumbers or tailors. In Haryana, they are engaged mostly in plywood industries.

Madhusudan Mallick, the ward member of Bagapatia, recounts the daily struggle of living in the resettlement colony. He says, *"We do not have proper facilities here. No good school, health center, and not even proper roads. In the rainy season, it is not easy to*

enter the village. The government has forgotten about us. Without income sources, it is hard to run a family here. Only those families are doing well who obtain remittances from other states."

The decision of the destination is chosen primarily based on previous links with an employer or through kinship. Migrants move from place to place to obtain better wages and job opportunities. Though people are migrating from the village, no recruitment agency or labour contractor's role was observed. Migrant workers face safety issues in their workplace. There were several instances of accidents causing injury and even death. In case of any mishaps, lack of compensation leads to loss of finance and health of the migrant involved. The family of the victim suffers immensely due to the loss of an earning member. On top of it, expenses of medical treatment become a burden for the family.

4.4 People's solutions

The following support is aspired to by community members to better their lives in the Bagapatia resettlement colony and at the migration destination sites:

The community members voiced their demand for creating alternative income opportunities to stop the migration for livelihood altogether. The livelihood options chosen are fishery, livestock rearing (cow and buffalo), retail shops, and cottage industries.

Earmarking of land for agriculture and fishery for the displaced communities could restore migrants' confidence to return and not to migrate again for livelihood.

Sustainable livelihood promotion through the development of off-farm and non-farm acti-

vities will be beneficial for these communities. Assistance to establish Self Help Groups through the Mission Shakti programme of the state government could be initiated to empower women of the area.

There is an urgent need for construction of inner roads in the Bagapatia colony that is built on swampy land. Government assistance to fill soil in the low-lying area to make it livable for families has been a longstanding demand of the communities.

Though the community uses kinship and previous contacts to find jobs, a registered recruitment agency would be beneficial. The government recognised and recommended agency or agent would be more trustworthy for job seekers to tackle issues of choice of work, place of work, remuneration, safety at work, quality food, and accommodation of migrants.

The portability of social security benefits is a useful tool to enhance access to essential services to migrant workers. The continuation of entitlements and benefits for migrant workers in their destination is essential to access quality services.

Skill-building training for the youth, job placements, safe and planned migration could reduce people's vulnerability while migrating for work to other states.

State Labour Department of Government of Odisha and Andhra Pradesh has reached a Memorandum of Understanding (MoU) with the Ministry of Labour and Employment (MoLE) with the facilitation of the International Labour Organization (ILO). The coordination framework is a time-bound and result-oriented action plan to benefit migrant workers working

in the brick kilns of Andhra Pradesh. The MoU facilitated the constitution of State Coordination Cell for Migrant Workers at the office of Labour Commissioner, Odisha, and the District Level Facilitation Cells to track distressed seasonal migrant workers.¹⁶

Though such an arrangement has not been successful yet in dealing with migrant workers' plight, it could serve as a platform to iron out issues of inter-state migrant workers.¹⁷ The state government needs to reach such MoU with other state governments and implement the ground norms.

The narrative needs to change for people who have to move as their basic support system fails. Local, national, and international institutions need to be informed that climate-induced migration happens out of desperation, and treating the concerns of migrants needs to be a top priority. **Climate policies across the board must have the human face and care for people. Climate-induced migration is people's concern, and international institutions must respond to the issue urgently.**

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5

ALMORA, UTTARAKHAND – Ghost villages of Himalayas



Figure 12: Location of Almora district in Uttarakhand.

Almora is one of the multi-hazard-prone districts of Uttarakhand. Uttarakhand is an Indian Himalayan state known for its growing frequency and intensity of natural disasters and its fragility of ecological and geological systems. Due to its geo-climatic, ecological, and socio-economic settings, Uttarakhand is one of the most disaster-prone states of the country.¹

The climate in different parts of Almora varies due to the vast difference in altitudes. Almora has an average annual maximum temperature of around 23°C and an average minimum temperature of approximately 10°C. The winter months are usually freezing. The temperature may go below 0°C. (Source: VPKAS, Almora). The annual average rainfall is slightly more than 1000 mm. The climate is marked by variations in temperature in various seasons, and the tropical rains affect the district during monsoons.

5.1 Climate change profile of Almora district

An analysis of 100 years of temperature and rainfall data shows that the region has recorded a declining rainfall trend. After 1970 onwards, this trend has become steeper. Although the average reduction rate in annual total rainfall has been insignificant, it potentially puts tremendous stress on the region's water resources. The study says that the rainfall shortage is more acute in Pithoragarh, Bageshwar, Almora, Champawat, and Nainital Districts.²

Several studies have found that the temperature in the region is rising, and rainfall is declining. A research article in the Journal of Geology and Geosciences has analyzed the rainfall and temperature data of Uttarakhand between 1911-2012. The study further says that "The temperature records of the region re-

*veal a notable warming trend. This warming was more prominent during the last decade. While the entire region has shown a significant temperature increase, the mountainous districts, Uttarkashi, Chamoli, Rudraprayag, and Pithoragarh, were the warmest areas."*³

A report by India's meteorological department, analyzing the average monthly rainfall data between 1951-2010, in Uttarakhand, also concluded that it has decreased over time, for January, March, July, August, October, and December.⁴

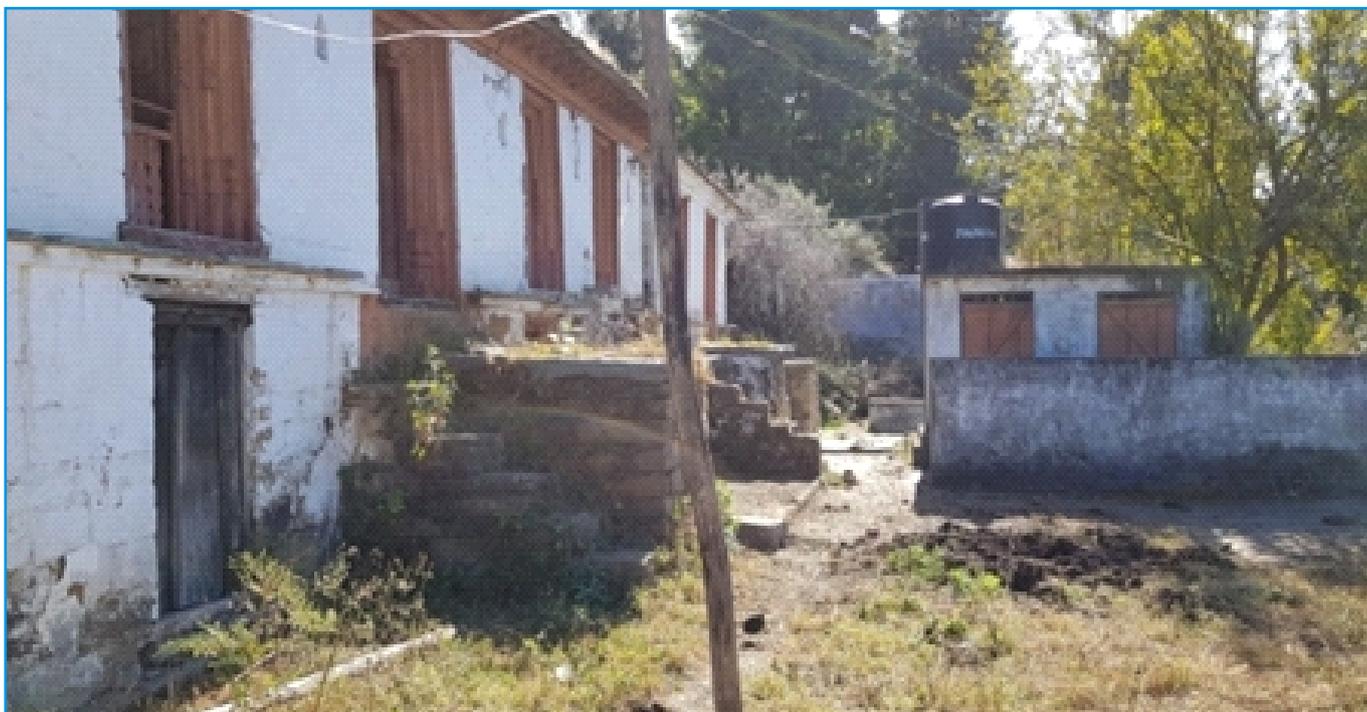
The mainstay of Uttarakhand's economy is rain-fed, subsistence agriculture, together with animal rearing.⁵ The principal economic activity of the hill regions of Uttarakhand is also agriculture, engaging over 60% of all its workers as cultivators and another 5% as agricultural labour.⁶ The hill regions are highly dependent on the monsoon rains. Any shifts destabilize the hydrological cycle and food security in the region, which is particularly susceptible to precipitation changes.⁷

Hill-folk are dependent on animal husbandry and agriculture. The combined effect of less rain and snowfall means that groundwater levels are not replenished. Prime water sources like springs, streams, and wells are drying up.

This scarcity of water significantly impacts hill folks' livelihoods as they cannot provide water for their animals or irrigate their land.

Additionally, the reduced rain and snowfall cause an existential threat to the Forest Rivers that form this mountainous region's lifeline. River Gagas is one such example of a Himalayan forest river that is drying up. This watercourse, which supports thousands of acres of land, and is relied upon by more than one hundred thousand people from almost six dozen villages spread across three blocks of the state, is shrinking.

According to Uttarakhand's Action Plan on Climate Change, "Climate change-driven fluctuations in the precipitation pattern have increased uncertainty in the farm output, and recurring crop failures have left little incentive for the masses to continue with the same. Labour-intensive hill farming has thus been rendered unsustainable, and the region is presently threatened by food insecurity. The repercussions of this are clearly reflected in large stretches of hitherto regularly sown agricultural lands being left barren. Climate change is thus taking its toll on hill farming, agricultural diversity, and the overall well-being of the people."⁸



Rows of abandoned houses with bolted doors at Gairgaon, Uttarakhand. Photo by Hridayesh Joshi

5.2 Migration profile of Almora district

Rows of abandoned houses with bolted doors welcome you, as you enter Gairgaon, a small village situated some 300 kilometers away from Dehradun, capital of the north Indian Himalayan state of Uttarakhand. Overgrown wild grass and bushes have surrounded the deserted landscape and an eerie silence has descended over it. This is the story of thousands of villages across Uttarakhand today.⁹

While the lack of health and education facilities in remote villages, as well as lack of employment opportunities, except for government jobs, are often noted as the main reasons why people have migrated out of Uttarakhand and its hilly areas, in particular, it is accepted that the failure of local agriculture, linked to the increasing effects of climate change, has accelerated the pace of migration.

The state of Uttarakhand has 13 districts, out of which ten are known as hill districts. A sharp

rise in migration, from the hills to the plains, is the biggest problem the state has seen in the last few decades. The report of the Rural Development and Migration Commission, released in 2018, says that more than 70% of migration occurs within the state, indicating the movement of people from the state's mountainous regions to its plains.¹⁰

There is a massive difference in the soil fertility and agricultural development of the plains compared to the hill areas. Additionally, there is better industrial, transport, and general infrastructure in the plains, allowing it to sustain a dense population. Therefore, one can understand why people would move from a place that lacks proper facilities and basic services, and where agriculture is difficult to sustain.¹¹

The state has 7,000 village Panchayats that consist of more than 15,000 villages. Out of this total, the 2011 Census registered that 1048 villages in the state had been emptied of its residents.¹² The Rural Development and Migration

Commission reported that between 2011 and 2017, an additional 734 villages were completely depopulated. The Commission also reported that the population in another 565 villages fell by more than 50% after 2011. In Pauri district alone, 186 out of 298 villages were vacated after 2011.¹³

5.3 Impacts of migration: Community voices from the Hill Districts

This case study was put together based on interviews and discussions with people from Bhikiasain, Gairgaon, Pantgaon, Nuna, Garhsyari, Titalikhet, Rawalsera, Basulisera, Thaman,

Dotalgaon, Gudholi, and Nag villages in some of the hill districts,¹⁴ affected by migration, and looks specifically at the role climate change has to play in this dynamic. It is important to note that these interviews were done before the COVID-19 pandemic, following which many of the migrants have returned to their villages.

In Bhikiasain, the administrative block of Almora district in Uttarakhand, 50% or more of the people have migrated out in search of livelihood and a better quality of life. Almost 70 kilometers away from Bhikiasain, the villages of Dwarahat block have a similar story.



Manju Bhandari, age 45, from Rawalsera village, points to the uncultivated fields left behind by the landowners, who have migrated to the plains. "Many of the families have gone out now. Very few of us have remained here. We use this land for grass to feed our animals. The changing weather (climate) has made things difficult." Photo: Hridayesh Joshi

Charu Tiwari, an environmental activist, explains how scores of Himalayan forest rivers like Ganga are drying up. He speaks about a local water channel called Dosadka Gadhera at Bagwalipokhar village in Dwarahat block. The water channel is totally dry now. He says, *"There was a time some 20 years ago when this Dosadka Gadhera had so much water that we could not cross it. Up until even a decade ago, it had a good amount of water throughout the year. However, now, this channel only has water for a few days during the monsoon."*

Such water channels are the feeders to forest rivers, and the impact of their demise is vast and obvious. Most of the fields in the area now suffer from water scarcity. Besides Gagas, many other spring rivers in Uttarakhand, like Ramganga (west), Bino, Kosi, Gomti, Garudganga, and Gaula, are also drying up, making agriculture more challenging for people who depend on these rivers for their livelihood and sustenance.

Prem Singh, age 72, a resident of Dotal village in Dwarahat block, says, *"Several people (of my village), including me, have shifted away from the village. We do not get even drinking water there."* Prem Singh has relocated to Bagwalipokhar, 2kms away from his home village.

The impact of climate change has depleted precious agricultural wealth from the mountain areas.

"Until a decade ago, we had a daily market at Bhikiasain town where people from nearby villages would come and sell chilies worth INR 5-6 million (\$ 70,000-80,000) every day. However, that market has now vanished. Crop cultivation has become difficult, and people have migrated to the plains," says

Lalit Karketi, a shopkeeper in Bhikiasain.

Ramdudd, age 76, the headman of village Nuna, in the same block, says, "We would grow wheat, paddy, black gram, soybean, barley and chilly abundantly. We would grow vegetables and coarse grain as well, but now the changing weather has made it completely difficult *"Rain does not fall in time now. Earlier also, we had problems with irrigation. However, there was so much rain during the monsoon that we could grow crops throughout the year."*

The Impact of Migration on Women -

In the wake of increasing migration out of the hill areas towards the plains, or further afield, the women left behind undertake the activities of male members who have left. This forms an additional work burden, on top of their household chores and other domestic duties. Women move into working on agricultural land or doing the MGNREGA (Mahatma Gandhi National Rural Employment Guarantee Act) Programme, which provides up to 100 days of employment doing registered, local community based work, paid for by the government.¹⁵

According to Uttarakhand's Vision 2030 document, agricultural work on top of their household chores and other domestic duties adds up to 12 to 14 hours per day of work burden for women.¹⁶

With the increase in women-headed households there has been a trend of 'feminization of agriculture' in some areas; language that was captured in Uttarakhand's Action Plan for Climate Change, after speaking to hill communities from the region.¹⁷

In Almora district, in Pantgaon village, is Pushpa Devi, age 60, who lives alone at home.



Wild Bushes and jungles have spread around houses as more than 50-60% people have left home. This photo is from a village in Bhikiasain administrative block of Almora

Photo: Hridayesh Joshi

Both her sons migrated to Delhi, India's capital city, in search of employment. Pushpa's husband died when her kids were young. She raised the family, and the land gave them enough to feed and sell the crop. However, in the last two decades, the situation has changed completely.

"In the last few years, agriculture has failed badly. My sons moved out for employment. There are several problems here, and it is not easy to cultivate the land. The biggest issue is the scarcity of water. Earlier, we had ample rain, but there is hardly any rainfall now," says Pushpa Devi.

Pushpa's elder son Narendra Singh, age 38, works in a garment manufacturing factory in Noida, an adjacent city to Delhi. He earns just INR 25,000 (less than \$ 350) per month. The high cost of living in a metro city has constrained him financially.

"I barely save anything. All my earnings go towards paying the house rent and other expenses. I still want to go back home, but there is no means of employment left there," says Narendra.

Narendra thought of returning to his village a few years ago. However, he says agriculture, the only source of sustenance in his village, is just not possible. *"When I was young, I would plow fields in my village with my uncle and brother. It was a very cultivable land, but now it is not possible. There is hardly any rain or snowfall in the hills now."*

When asked, *"Will you go back home if you get employment there?"* Narendra replies, *"Yes. Why not? Who would want to live in pollution and misery in this crowded city? But I have no choice as the only means of employment (agriculture) is not possible in my village."*

5.4 People's solutions

Everyone interviewed agreed that though the failure of agriculture has played a role in driving people away from their homes, the failure of the government in providing good government schools, quality health care facilities and employment opportunities has prompted the younger generation to migrate in search of employment and later settle in the plains, which have

better education and health services for their families.

Also, in the absence of land consolidation, a vital process under which the readjustment and rearrangement of fragmented fields can be done to provide a congruous landmass to every owner, it is tough for hillfolk to cultivate and look after their scattered fields, spread across the challenging slopes, particularly when wild animals are ruining the crops.

To help reduce migration, the interviewed community members proposed a number of measures beginning with the urgent need for land reforms, including consolidation, redistribution and redevelopment, to ensure efficient use of degraded landscapes and restoration of ecosystems.

"(Land) pooling and consolidations will help a lot because it is difficult to take care of the scattered fields. The question is, how will it be done? Land consolidation is important, but people do not want to give good land as an exchange. They also fear land grabs. Even close relatives do not allow cultivation by others," says Deepak Mehta, from Bagwalipokhar.

Many migrants abandon their cultivable land. The government could create a 'land bank' by acting as a caretaker that manages the lease of this cultivable land, thereby facilitating a temporary agreement between the landowner and his tenant. This would guarantee the owner the return of his land when the stipulated time was up. This model might reassure people who have migrated, who fear land grabs, and do not allow their neighbours, who still live there, to cultivate the land.

Funds allocated under social welfare schemes like the Mahatma Gandhi National Rural Emplo-

yment Guarantee Act (MGNREGA) can / should be used to help the people who want to revive their barren land and make it worth cultivating. This will save the owner's cost, and more people will be encouraged.

Water and forest conservation are crucial. Community efforts should be encouraged to grow healthy forests and make ponds and trenches in jungles. This will improve the water table and rejuvenate natural water springs.

"Villagers often say that if they get a sizable patch of land in one place and proper irrigation facilities, agriculture will be easy and less labour intensive. The government should work out a policy to provide unused land to the villagers. When I say unused land, I mean the uncultivated land sitting with the people who have migrated and the unused land sitting with the government forest department. Such fields can be given to willing cultivators for a reasonable, fixed amount of time, with assurance from the government." - Jogendra Bisht, the chairperson of Lok Chetna Manch.

Different parts of Uttarakhand are known for their different products. Like Bhikiasain, the administrative block is famous for chillies and Ramgarh is known for its fruits. Similarly, Munsyari, Uttarkashi, and Joshimath are known for good quality Rajma (kidney beans). The government should assure support price according to the variety and quality of the crop to encourage the cultivation of these crops again.

The government should support farmers in improving the market access for their crops, including the above-mentioned agricultural products. Their cultivation is cost-effective, and they are readily available to customers.

High-quality products like organic honey of

Dharchula in Pithoragarh district, known for its lower sugar content, should be promoted. This can give good value for villagers, and they can spread the scale of production. State governments can play a role to encourage them by providing training, expert advice, and easy loans through public banks.

Cooperative societies must be promoted, and women should be encouraged to play a pivotal role in them. Structured training in Himalayan handicrafts may help them make high-quality products to sell in ready markets.

The unequal burden of work on women needs to be recognised and alleviated through training for alternative livelihoods and the development of self-help groups (SHGs) to help develop women collectives that provide group support.

Women should be supported in making decisions about the land they work on, such as what to grow. They should also be able to access and benefit from the same schemes that smallholder farmers get when they are left behind and responsible for working on the fields in the absence of male members.

Good quality health care is needed in the hills, but adequate number of hospitals and doctors are missing. A comprehensive policy to fill this gap is needed. Doctors and other medical staff must be encouraged to work in remote areas by providing incentives and recognition.

People in the hill areas need good education facilities for their children, but none is available in the hills. On the one hand, private schools are opening up in the hills, but, at the same time, the government primary schools are being closed down or are in terrible shape - this needs to be fixed by more public spending on primary and secondary education. The government should

also consider opening good primary and intermediate schools with boarding facilities so that parents who live in remote areas can send their children to these schools without facing the transport problem.

Village youth need to be given a good education and other opportunities to be trained in new and different vocations as alternatives to working in agriculture. Besides developing their skills and abilities to take up jobs in new sectors, job creation needs to happen, creating employment opportunities beyond agriculture or animal husbandry.

Besides the deficit in annual rain, there is also a delay in the time of rainfall now. Therefore, villagers adjust the sowing time of Rabi and Kharif crops in the state, since the agriculture is totally dependent on rain. Naveen Kathait, age 35, a resident of Basulisera Village, in Dwarahat block, points to a distance, from atop a hill. *"You can see the fields,"* he says. *"They look barren, but we have just sown the rabi crop. Earlier, we used to sow it at least 40 days before. The changed rainfall pattern has forced the farmers to change their sowing time."*

This adaptation by farmers is a small step towards fighting climate change. Villagers understand that the destruction of the forest has played a big role in creating water scarcity. Therefore, villagers are working to preserve the forest by planting trees that hold moisture and replenish the groundwater.

In Thaman village, near Almora, women volunteers have come together to revive a degrading forest. They have dug trenches and ponds to collect rainwater and planted more than 1000 trees of different rich varieties like oak, gooseberry, basil, and rhododendron. *"We noticed the falling water table in this area and took the initiative. We*

have planted saplings of big-leaf trees. The progress is slow, but we know that we are moving in the right direction," says Hema Devi, the head of Mahila Mangal Dal, the village volunteer group of women.

Similarly, in many places, Uttarakhand people have fought back against the drinking water problem by water harvesting. For instance, at Nag village in Gangolihaat administrative block of Pithoragarh district, villagers have created a massive water tank, with a 400,000-litre carrying capacity, at the top of the hill. This provides water to over two dozen families, living at the height of 1800 metres above sea level.

Some migrants have returned home and developed enterprising solutions to their problems by exploiting the favorable conditions available to them. For instance, 45-year-old Manish Goswami returned to Gudholi village in the Tadikhet block of Almora district in 2008, after spending more than 17 years in Rajasthan. He used a small gul (water channel) system using the water from the nearby Gagas river and started growing vegetables. He makes fertilizer using cow dung, which costs him nothing. *"I earn some INR 60-70,000 (\$900-1000) every month, selling vegetables, and I live in a clean environment in my home in this valley. I am much happier than I was earlier,"* says Goswami.

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6

SAHARSA, BIHAR - Fear of floods

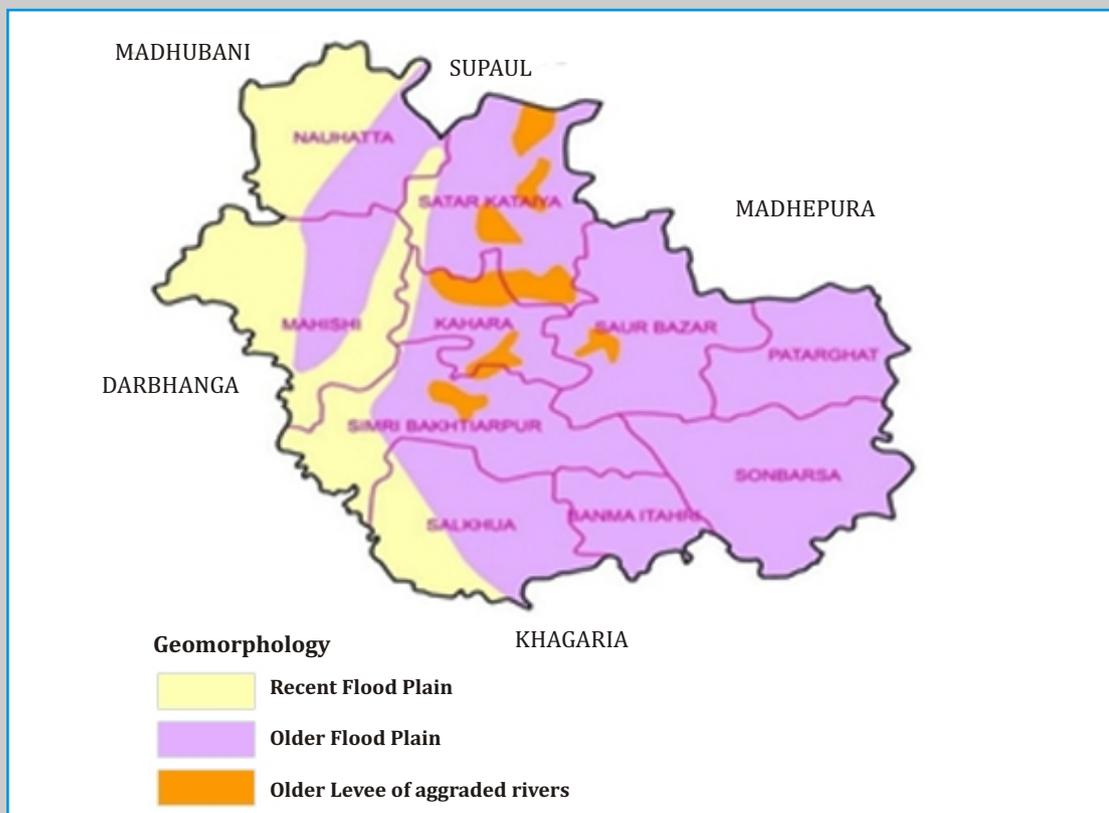


Figure 13: Map of Saharsa district

Saharsa is one of the 28 of the most flood-prone districts in the Kosi division of Bihar. Saharsa is among the poorest districts in the state according to the data provided in the Economic Survey of Bihar 2010-11. Widespread flooding and waterlogging in the monsoon, depletion of ground water table and contamination of ponds and lakes, plague the residents of Saharsa, rendering its land unfit for cultivation.

When the Kosi embankments started to be constructed in the 1950s there was large-scale displacement of people as large tracts of land were submerged under water. Those displaced were allotted homestead land measuring not more than 2 decimals (1 decimal = 40.5 sq metre). These resettled settlements are known as punarwas gram. Needless to say, this allotment did not take care of livelihood issues and most of the people settled in these resettlements belonged to the Mahadalit communities.

Also, not all the displaced were allotted land and litigation is still pending in the lower courts for the allotment of land. Labour migration is most evident among this category of people.¹

6.1 Climate change profile of Saharsa district

Bihar's climate is shifting, changing precipitation patterns and temperatures. Monsoon variability is increasing, with Bihar experiencing both floods and drought in the same year, and sometimes even in the same district. These hazards contribute to wide-spread crop losses and poverty.

Bihar is one of the worst flood-affected states in India. About 68.8 lakh hectares of its total geographical area of 94.16 lakh hectares are flood-prone. In addition, nearly 9.41 lakh hectares (8.32 lakh ha in north Bihar and 1.09 lakh

ha in south Bihar), i.e., 10% of the total geographical area of the state, is waterlogged. There are multiple reasons behind waterlogging: the spilling of silted small rivers, the encroachment of drainage channels, embankment induced waterlogging, and the prevalence of saucer-type depressions in the topography of the land.²

Of Bihar's 38 districts, 28 are flood-prone, including Saharsa district and were severely affected by the major floods of 2004, 2007, 2008, and 2011. An earlier flood in 2002 displaced 16.5 million people, destroying almost 400,000 homes and leaving over 400 people dead (ReliefWeb, 2002).

While floodwaters breach the riverbanks and inundate the villages, drowning farms, houses, entire villages, and public infrastructure, it also adversely affects drinking water sources, as it gets contaminated through water seepage. Peo-

ple reported high iron levels contaminating the water and attributed various digestion-related disorders to the poor drinking water quality.

The 2008 Kosi Floods affected nearly 4.3 million people, with over 2 million evacuated across eight inundated districts (Government of India, 2008b). Over 500 people died, 19,000 livestock perished, and 223,000 houses were damaged (NDMA, 2008).

The most noticeable effect of climate change in the Saharsa district is the shortened monsoon period and the rapidly increasing temperatures that directly affect their crops, as noted by the villagers. The shifting duration of summer and winter has added a burden on seepage that is getting enlarged, creating flood situations nearly most of the seasons.



Figure 14: District Level increasing mean November minimum temperatures (1971-2015).³

Changes in weather-based farming trends are impacting due to heatwave, and climate-related risks are increasing. Due to increased temperature, natural water resources like lakes, ponds, rivers are shrinking, and groundwater is depleting very fast.

Minimum (night-time) and maximum (day-time) temperatures are also increasing in most districts during the second half of the year. Observed trends will continue and may be exacerbated by climate change. Warmer temperatures and less precipitation can also exacerbate water quality issues and further concentrate pollutants in shallow groundwater sources. Arsenic- and fluoride-contaminated water cause severe deformities and health issues for children, for example.⁴

Observed trends will continue and may be exacerbated by climate change. Warming night-time temperatures can contribute to tremendous physiological stress, especially during monsoon heatwaves and particularly for young children, who have greater difficulty regulating their body temperature than adults.

A warming climate also potentially extends the season for epidemics such as dengue and malaria into the start of winter, as temperatures remain ideal for vector breeding and survival longer than in the past. Annual outbreaks of encephalitis and dengue in both Bihar and Uttar Pradesh cause significant child mortality and morbidity.⁵ Warmer temperatures and less precipitation can also exacerbate water quality issues and further concentrate pollutants in shallow groundwater sources. Arsenic- and fluoride-contaminated water causes serious deformities and health issues for children.⁶

6.2 Migration profile of Saharsa district.

Bihar has a long history of migration and its

pace has increased considerably in the past few decades. Failing agriculture and lack of alternative employment opportunities in rural Bihar on one hand and an ever-increasing demand for labour in other parts of the country, on the other hand, has led to a substantial increase in the rate of migration from the state.

The districts of Saharsa, Madhepura, Supaul, and Darbhanga are among the poorest in the state. The majority of the district's population (over 90%) lives in rural areas (Source: Census 2011). The district is characterized by poor infrastructure and lack of industries. In addition, Saharsa faces the bane of floods every year. Recurring floods have an adverse effect on the district's agricultural productivity every year.

Steadily declining agricultural productivity due to irregular rainfall, increasing flood-water seepage, which brings contaminants into the soil, and the decrease in soil fertility have made local employment unfeasible, forcing people to migrate to cities like Delhi, Punjab, etc. to earn a livelihood.

People's worsening economic condition in this area due to the lack of locally available work has resulted in almost 95% of people migrating in search of work elsewhere. Some people also shared that some of them migrated to help in sharing family responsibilities.

95% of the males including children as young as 14 years of age who can work migrate to cities. Most of them migrate to urban centers in the vicinity like Saharsa, Patna, Madhepur, and Bhagalpur. People who have migrated outside of the state have gone to Haryana, Punjab, Uttarakhand (Dehradun, Haridwar, Mussoorie), Surat (Gujarat), Delhi, Haryana, West Bengal (Kolkata), and Maharashtra (Mumbai).

Most of them are employed in the construction

6.2 Migration profile of Saharsa district.



CANSA team conducting Participatory Research Exercise in Saharsa. Photo: CANSA

Preference criteria for migration (Mapping of suitable criteria for each location)

Migration Destination ↓	Criteria →	Known Link	Place for accommodation	Agent	Job opportunity	Daily communication	Relatively less heavy work
Madhepura							
Saharsa							
Bakhtiyarpur							
Patna							
Haryana							
Punjab							
Chandigarh							
Delhi							
Kolkata							
Masuri							
Dehradun							
Haridwar							
Rajasthan							
Surat							
Mumbai							

Figure 15: Matrix scoring of priorities for choosing migration destinations

sector as masons and labourers, followed by farm labourers in agriculture. People use private agents to facilitate migration for work and prefer locations where others from their area have migrated.

Based on the criteria outlined in the table, the most preferred location is Dehradun, followed by Punjab, Haryana, and Surat. Other places in order of preference are Delhi/NCR, Mussoorie, Chandigarh, and Kolkata. The least preferred location is Patna because of low wages and the all-year-round lack of jobs.

People having sound physical strength go to Punjab and Haryana as it involves farm labour. Most of the people migrants prefer Dehradun and adjoining areas and to work in the construction sector. Wages in Punjab are higher than those of Dehradun and the adjacent regions.

6.3 Community voices from Mahishi block of Saharsa district.

In November 2019, a participatory research study was carried out in a few villages in the Mahishi block of Saharsa District. Mahishi is 172 square kilometers in area and has a population of 206,774 people,⁸ according to the 2011 Census. There are 78 villages, 19 Gram Panchayats, and 40,046 houses in this block. The river Kosi flanks it on its west.

As part of the study, communities from the villages of Sirvar Punarvas and Naharvar Punarvas were interviewed. These two villages are located on the bank of Kosi river and are a part of Mahishi block, supporting a total of 1600 households, with 600 and 400 families in each village, respectively. The administration relocated the communities in these villages after the 1984 floods, which had a massive impact on the entire area and beyond.

Before the 1984 floods, the villagers worked as agricultural labourers as the land was fertile, due to nutrients laden silt deposited by the river. After the 1984 flood event, villagers worked as marginal labourers, but after a few years, excessive seepage from the Kosi river embankment resulted in reducing the productivity of the land as well as the sowing period. Additionally, for years, villages have been suffering from the prolific growth of water hyacinth in their agricultural fields, which hampers crop growth even more.

The Kosi river, which runs through the district, is notorious for shifting its course, sometimes suddenly. Also, during the rainy season, the river swells and inundates large areas of the district. The river's banks are often breached, releasing floodwaters and inundating villages. Communities living in and around the Kosi river have accepted this inundation as a way of life. The flooding, which makes the monsoon season difficult for them, actually adds to the soil's nutrient value, resulting in good crop yield for the rest of the year.

People in this area are known for cultivating Makhana (Lotus seeds) and Garama paddy, amongst other things. Flooding is worsened by improper watershed management practices following the construction of the India-Nepal border dam.

During seasonal flooding, people migrate to adjoining areas and live in temporary camps or with relatives until the end of the monsoon season. Community members also migrate in search of daily wage labour in other parts of the state or beyond, until floodwaters subside and the villages are habitable again. These floods are usually attributed to the watershed management practices followed after the construction of a dam on the India-Nepal border.

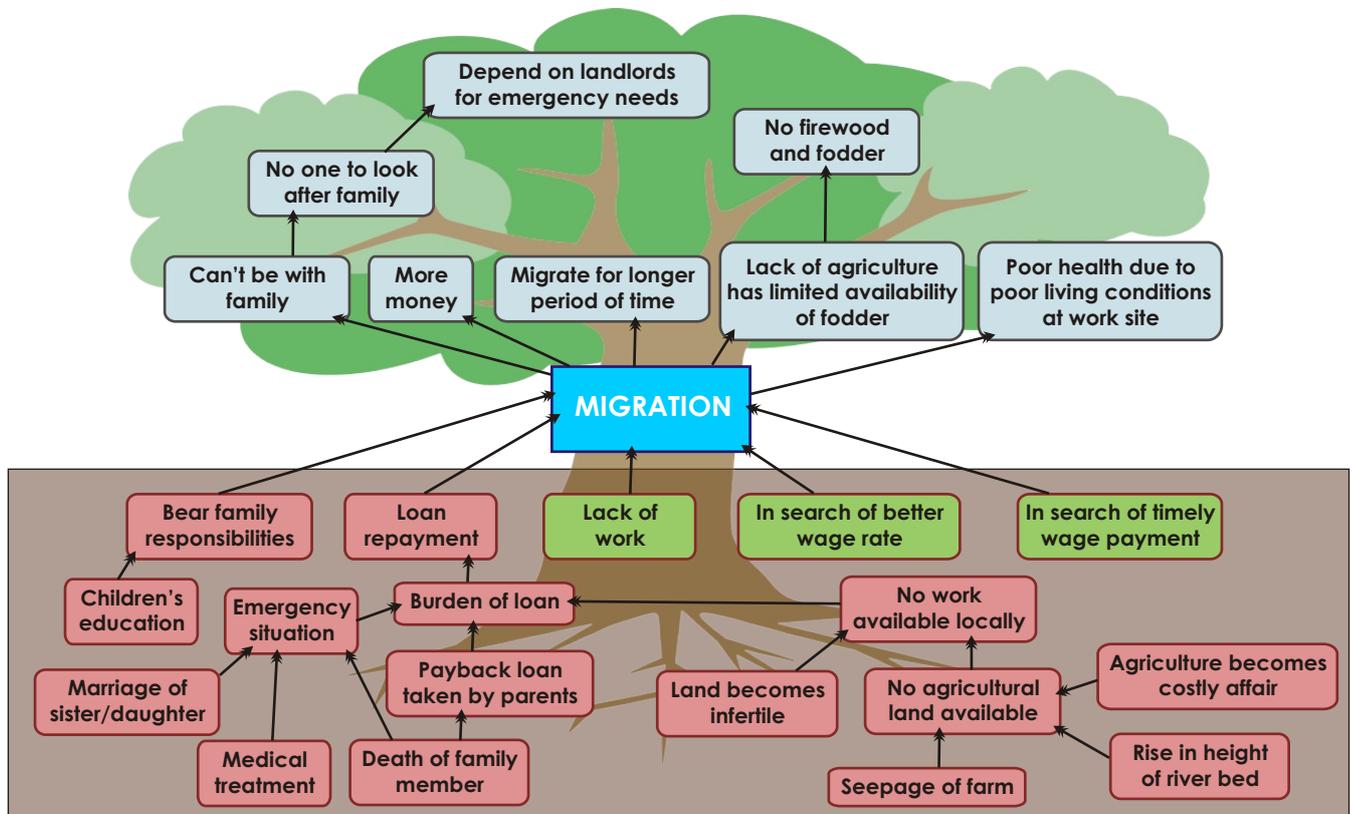


Figure 16: Problem tree of Saharsa district

The cumulative effect of the collapsing agricultural systems, lack of alternative livelihoods in and around the village vicinity, debt trap due to high-interest rate are the main drivers of migration.

It is difficult to gauge impacts of climate change on agriculture as the land is mostly unproductive due to seepage and a water hyacinth attack in the area.

It has also been reported that families that decided to stay back after 1984 floods in the riverbed are again doing well in terms of managing three crops in a year and migrating during monsoon season due to chronic flood conditions every year.

When asked what people needed to reduce the likelihood of migration, the communities identified the following needs, as outlined in the matrix below:

- Non-agricultural work for women
- Availability of potable and clean drinking water
- Access to good quality education for children
- Locally available employment opportunities
- Low interest and easily accessible education loans to educate their children
- Availability of fodder for livestock
- The government recognised and registered labour contracts
- Adequate and timely compensation in case of injury or death, according to labour laws.

6.4 People's solutions



Focus group discussion with women in Saharsa. Photo: CANSA

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7

DISASTERS AND DISPLACEMENT IN INDIA: A Policy Review

India loses almost 2% of its GDP every year due to natural calamities and disasters. The total cost of environmental degradation in India is about 3.75 trillion rupees (USD 80 billion) annually, equivalent to 5.7 percent of the gross domestic product in 2009, which is also the reference year for these estimates.²

Changing rainfall patterns and a more intense hydrological cycle mean that extreme weather events such as droughts, storms, and floods are expected to become increasingly frequent and severe. It is estimated that the South Asian monsoon will become more robust, with up to 20 percent more rain falling on eastern India and Bangladesh by 2050.⁵ It is estimated that flooding in Jammu and Kashmir in 2015, Uttarakhand in 2013, and Assam in 2012 displaced 1.5 million people.⁴

The five case studies included in this report capture the voices of communities that have experienced climate induced displacement and migration. While the community in Kendrapara in Odisha has been forced to migrate after losing their agricultural land to rising sea levels, the people of Sundarbans fled the cyclones and riverbank erosion. Meanwhile, floods and seepage of excessive water into agricultural fields of Sahrasa the collapse of agriculture due to erratic monsoons and receding water table in Marathwada region of Maharashtra and hilly regions of Uttarakhand are the main driver for migration. Persistent poverty and the lack of adequate state support to stay back are the only common factors for all the migrants.

The Constitution of India guarantees some fundamental rights to all its citizens. The right to equality is provided in Article 14, and Article 19-22 provides for the Right to Freedom.

Article 19(1) includes the right to all its citizens to move freely throughout the terri-

tory of India, to reside and settle in any part of the territory of India, and to practice any profession or to carry on any occupation, trade, or business.

Article 16 of the Indian Constitution provides for "Equality of opportunity in matters of public employment," ensuring equal opportunity for all citizens in matters relating to employment or appointment to any office under the state. It ensures that no citizen shall "on the grounds of religion, race, caste, sex, descent, place of birth, residence or any of them, be ineligible for, or discriminated against in respect of any employment or office under the state."

Article 39(e), a directive principle which is not enforceable but guides policy and law-making in the country, states "that the health and strength of workers, men, and women, and the tender age of children are not abused and that citizens are not forced by economic necessity to enter avocations unsuited to their age or strength."

And therefore, policy changes towards addressing concerns of climate migrants is logically a constitutional mandate for the national and the state governments. Directive principles mandate government policy to ensure decent working conditions, education up to the age of 14, and good health and nutrition for all children as a constitutional mandate irrespective of place of origin and current residence. Similarly, article 41, 42, and 43 of the Indian constitution provides for the right to work, education, and a living wage for workers.

This constitutional mandate forms the basis for this study to assess robustness of India's national and sub-national policy frameworks to address climate induced displacement and migration.

As substantiated by case studies, two sets of policies affect migrants. First, the adaptation measures at the source of migration could include watershed development, climate-resilient agriculture, crop insurance, alternative rural livelihoods, drought mitigation measures, etc. And secondly, access to social security and safe and healthy living conditions for migrants at the destination sites. Lack of the former may push people to migrate while the latter's adequacy may pull people for a better life.

The Government of India has been implementing various schemes like employment schemes under Mahatma Gandhi Rural Employment Guarantee Act (MGNREGA), National Rural Livelihood Mission Pradhan Mantri Krishi Sinchai Yojana with Watershed component, Pradhan Mantri Fasal Bima Yojana for crop insurance, Public Distribution System (PDS), National Rural Health Mission, Education for All, Skill India, Housing for All (Urban), National Make in India, Urban Livelihood Mission, National Urban Health Mission, Sarva Siksha Abhiyan, Solar Mission, etc. which target the urban poor.

Mahatma Gandhi National Rural Employment Guarantee Act, 2005:

The MGNREGA, 2005 provides for 100 days of assured unskilled labour work to every rural household while creating durable assets. From time to time, in the last about one and a half-decade, the central government and different state governments have modified entitlements to make it more relevant to the target group.

Ashwini and Prakash (2017)⁹ have argued that MGNREGA has helped poor households. However, it has failed to curb rural to urban migration in Jharkhand due to the average number of days of work under the scheme was low. Jacob (2008)¹⁰ findings were that the effectiveness of MGNREGA to curb rural-urban

migration is conditional on the implementation of MGNREGA. Both the central and the state governments have utilized provisions of providing enhanced guaranteed wage labour as an incentive to avoid climate-induced migration.

For example, during 2016-17, seven droughts affected States were allowed 150 days of work under MGNREGA.¹¹ Similarly, in September 2015, Odisha's government decided to provide for 200 days of unskilled labour work as an entitlement under MGNREGA to prevent migration from drought-hit areas of the state.¹² Again, in August 2019, to check distress migration in two of its most migration-prone districts, the Odisha government planned to give assured employment of 200 days under MGNREGS and ration for migrant families in advance for three months, besides other measures.¹³

Pradhan Mantri Krishi Sinchai Yojana (PMKSY):

One of the objectives of the "Per Drop More Crop" of PMKSY is to promote micro-irrigation technologies in water-scarce, water-stressed, and critical groundwater blocks / districts.¹⁴

The guidelines mention the "A" category states where drip irrigation has penetrated well. This list does not include many migration-source states such as Bihar, Chhattisgarh, Jharkhand, Odisha, and Uttar Pradesh. There are two components of PMKSY, i.e., the per drop more crop and the watershed component. Under the program during 2015-18, an additional 18.6 lakh ha of land has been covered under micro-irrigation, and 83,135 water harvesting structures were created with an irrigation potential of 1,59,320 ha area.¹⁵

A study undertaken by the Indian Council of Food and Agriculture (ICFA) found that micro-irrigation systems (MIS) adoption has helped farmers increase their income by 46.8%. The

adoption rate of MIS is still very low and mostly dependent on government subsidies.

A study done by TERI (August 2019)¹⁶ found tedious financing machinery to beneficiaries, complexities, and variations in scheme execution, and lack of motivation among farmers to adopt MIS as significant challenges that are hindering the growth of micro-irrigation in India. The study recommends a need to make changes in subsidy patterns and the need for linking bank loans for digging wells with electricity connections for pump sets to accommodate the adoption of schemes by small and marginal farmers. Under PMKSY-PDMC in 2016-17, 83.6% of funds were allocated to Andhra Pradesh, Maharashtra, Karnataka, Tamil Nadu, Telangana, Gujarat, and Madhya Pradesh.

Another study on micro-irrigation undertaken by Grant Thornton¹⁷ found an average increase in farmer's income from MIS in India to be 42%. The average penetration of MIS at all India level is 5.5 percent. In contrast, Madhya Pradesh (2.3), Odisha (2.3), Bihar (1.9), Jharkhand (1.5), UP (0.2), and Uttarakhand has 0.1 percent under micro irrigation. The study estimates that it would take 100 years to achieve micro irrigation potential at the current rate as the amount available under PMKSY is minuscule.

A robust mechanism at the state level is required to ensure availability and access to the MIS. Various studies have found the need for changing subsidy patterns and other financial instruments to be modified to ensure adoption by small and marginal farmers.

States like Chhattisgarh, Bihar, Odisha, Jharkhand, Uttar Pradesh, Uttarakhand, and West Bengal have received minuscule allocation compared to other states as Gujarat, Andhra Pra-

desh, Maharashtra, and Telangana.

For example, the allocation of Bihar under PMKSY-PDMC in 2019-20 is only Rs. Fifty-three crores (same as the allocation to Sikkim), whereas the allocation to Gujarat is Rs 300 crores.¹⁸ Most of the states with colossal migration, such as Jharkhand (Rs. 45 Crores), Uttarakhand (Rs. 32 Crores), and Odisha (Rs. 50 Crores), somehow had only paltry allocations. Allocations in 2016-17 were no different, with small allocations to the state of Bihar, Chhattisgarh, Jharkhand, Odisha, and West Bengal.

Skill India:

To ensure the success of the flagship program of "Make in India," the government requires a skilled workforce. It is also important to pull out people from agriculture to other occupations. Skill India initiatives through different centrally government-sponsored programs are implemented both at the source and destination. Major employment generation schemes include the Prime Minister's Employment Generation Programme (PMEGP) implemented by the Ministry of Micro, Small & Medium Enterprises, Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGA), Pt. Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY) scheme run by the Ministry of Rural Development, and Deendayal Antyodaya Yojana- National Urban Livelihoods Mission (DAY-NULM) implemented by the Ministry of Housing & Urban Affairs. Pradhan Mantri Mudra Yojana (PMMY) is a scheme to extend collateral-free loans by Banks, Non-Banking Financial Companies (NBFCs), and Micro Finance Institutions (MFIs) to small/micro business enterprises in the non-agricultural sector to individuals to enable them to set up or expand their business activities. To improve the employability of youth, around 22 Ministries / Departments run skill development schemes across various sectors.⁸

Access to these programs at the destination has reportedly been difficult. The working group on migration (MoHUPA, 2017) has recommended that migrants have unrestricted access to skill programs in urban areas. In cases where there are domicile restrictions, these need to be removed. It further recommends that various ministries of the Government of India need to ensure that skill programs funded by Union budgetary support do not have domicile restrictions. Under the Pradhan Mantri Kaushal Vikas Yojana (PMKVY) scheme of the Ministry of Skill Development and Entrepreneurship (MSDE), there is already a provision for Sector Skill Councils (SSCs) and other designated agencies for certification of existing skills. The working group recommended that such programs are enhanced, and all SSCs offer such certification.

Case studies and discussions with people underpin the need for more robust skill development. In Beed district, Maharashtra, it was found that most of the youth are educated. However, the absence of livelihood skills has led to many unemployed youths seeking work outside the village. During the non-agriculture season, the villagers, especially the youths, migrate as agriculture and industrial labourers to nearby villages and towns like Ahmednagar, Kada, Tisgaon, or large cities like Pune and Mumbai. The youths believed that they lack technical/vocational skills and education. Similar expectations came out very prominently with youth in Uttarakhand and Sundarbans.

National Rural Livelihood Mission:

An independent assessment study of the program findings was that due to the program's interventions, the people's distress migration has reduced to some extent due to livelihood diversification and increased employment opportunities. The program has created diversified livelihoods in the NRLM villages. The communi-

ty's sole dependence on wage labour and agriculture as their primary sources of livelihoods made them vulnerable to shocks like crop failure, drought, and other natural calamities.

SHG-led interventions have generated self-employment opportunities and financial aid to the members, allowing them to diversify their livelihoods and create employment opportunities in farm and non-farm sectors. Access and information about agriculture practices, access to skills-building programs, and other schemes related to agriculture have also increased due to program interventions. The program has also helped enhance natural resources management, which resulted in soil and water conservation, afforestation, etc.¹⁹

Case studies from Sundarbans, Uttarakhand, and Odisha highlight the changing trend of feminization in agriculture. Access to liquidity and markets has been enabled through National Livelihood Missions. Transformative support would be required from these missions to women who are burdened with agriculture's additional responsibility.

Pradhan Mantri Fasal Bima Yojana (PMFBY):

Agriculture insurance is a financial instrument for ensuring a safety net for farmers to deal with the impacts of extreme and unseasonal weather due to climate change. The scheme's coverage is limited to farmers who take loans from banks as they are mandatorily required to take crop insurance.

Pradhan Mantri Fasal Bima Yojana (PMFBY)²⁰ aims at supporting sustainable production in the agriculture sector by way of

- (I) providing financial support to farmers suffering crop loss/damage arising out of unforeseen events
- (ii) stabilizing the income of farmers to ensure

their continuance in farming

(iii) encouraging farmers to adopt innovative and modern agricultural practices

(iv) ensuring the flow of credit to the agriculture sector which will contribute to food security, crop diversification and enhancing growth and competitiveness of agriculture sector besides protecting farmers from production risks.

Weather Based Crop Insurance Scheme (WBCIS)²¹ aims to mitigate the hardship of the insured farmers against the likelihood of financial loss due to anticipated crop loss resulting from adverse weather conditions relating to rainfall, temperature, wind, humidity, etc. WBCIS uses weather parameters as a "proxy" for crop yields in compensating the cultivators for deemed crop losses.

According to media reports, the benefits of PMFBY are not reaching the farmers. Activists claim that "The criteria for rejections are ambiguous, and it depends entirely on the whims of the committee that decides if the claim fulfills the compensation criteria".²² An analysis of the government's flagship national agriculture insurance scheme, the Pradhan Mantri Fasal Bima Yojana (PMFBY), has suggested that its implementation has been far superior to previous such schemes is seriously compromised. Farmers in vulnerable regions such as Bundelkhand and Marathwada might not get any claim even if more than half of their crops are damaged.²³

Effective crop insurance rollout is required in areas prone to climate disasters. However, interactions with the people from these areas suggest an evident lack of compensation mechanism for crop losses due to climate and other factors.

Public Distribution System (PDS):

The central government supplies subsidized

food grains under the National Food Security Act, 2013, at Rs 1-3/kg, to more than 800 million people through 500,000 'ration' shops. The allocation to each family depends on the number of members. It is marked in the ration card issued by the state government to the head of the family.²⁴ This card is digitally linked to Aadhaar, a 12-digit unique identification number used to verify Indian citizens' identity.

India runs the world's most extensive food security programme, distributing more than 600 lakh tonnes of subsidized food grain to more than 81 crore beneficiaries every year. This is done through a vast network of more than five lakh ration or fair price shops.

Under the National Food Security Act (NFSA), each beneficiary is eligible for five kg of subsidized grains per month at the rate of ₹3/kg for rice, ₹2/kg for wheat ₹1/kg of coarse cereals.²⁵

The Union Ministry of Consumer Affairs, Food and Public Distribution recently announced that the One Nation, One Ration Card scheme would be introduced from July 1, 2020.²⁶ The scheme seeks to facilitate the portability of subsidised food grains for internal migrant workers, provided their ration card is digitalized and linked with Aadhar.

According to Union Minister of Consumer Affairs, Ram Vilas Paswan, intra-state access to the Public Distribution System (PDS) under the Integrated Management of Public Distribution System (IMPDS), an online database of ration cards, is already in practice in a few states like Andhra Pradesh, Gujarat, Haryana, Jharkhand, Karnataka, and Kerala. As a result of the programme, universal access to PDS food grains has been accessible to people within these states.

Besides the claims made by the government under the schemes, case studies highlight much more needs to be done to ensure the objectives of RTE are adequately covered for children of migrant workers. The case study from Maharashtra underpins the need for the same.

Housing for All (Urban):

The mission seeks to address the urban poor's housing requirement, including slum dwellers, through slum rehabilitation of slum dwellers, promotion of affordable housing for weaker sections through credit linked subsidy, affordable housing in partnership with public & private sectors, and subsidy for beneficiary-led individual house construction. The beneficiary family should not own a pucca house (an all-weather dwelling unit) either in his/her name or in the name of any member of his/her family in any part of India. The guidelines do not distinguish migrants from permanent residents; however, it excludes migrants from rural areas who might temporarily migrate just to benefit from the housing scheme.³⁰

The government is also planning to provide houses on rent for migrant labourers in crowded metros. With this scheme, the government is extending housing benefits to lower-income socio-economic groups who do not have the finances to construct their own houses and often shuttle between cities for work. The scheme would be a joint effort of the Ministry of Housing and Urban affairs and the Ministry of Labour.³¹

However, media reports suggest that the migrant families do not benefit from the scheme. An estimated 1.3 million migrant population in Ahmedabad remain excluded from the "Housing for All" scheme.³²

7.10 Social Security:

The Government of India has decided to honor the informal workers with the Pradhan Mantri Shram Yogi Maan-Dhan (PM-SYM) scheme. They can now get an assured monthly pension of Rs 3,000 at 3.13 lakh Common Service Centres (CSCs). However, informal workers will not be eligible for the scheme is covered under the National Pension Scheme, the Employees' State Insurance Corp Scheme, or Employees' Provident Fund Scheme.³³

7.11 Pradhan Mantri Awas Yojna-Grameen (PMAY-G) and Different Rural Development Schemes:

PMAY-G aims at providing a pucca house, with basic amenities, to all houseless households and those households living in Kutcha and dilapidated houses, by 2022. The beneficiary selection process is selecting beneficiaries using housing deprivation parameters in the Socio-Economic and Caste Census (SECC), 2011 data, which is to be verified by the Gram Sabhas.³⁴ The permanent waitlist so generated also ensures the inclusion of migrant families, and the possibility of alteration of the list of a migrant family is not easy.

7.12 National Disaster Management Act, 2005:

National Disaster Management policy primarily addresses the short-term and sudden onset of climatic disasters. It does not consider slow-onset climate change events such as increased aridity and recurrent droughts of varying degrees, desertification, sea-level rise, glacial melt, and losses caused by the same.

To overcome the economic impact of lockdown during the COVID-19 pandemic, the government announced a relief package of Rs.1.70 Lakh Crore under the Pradhan Mantri Garib Kalyan Yojana. Under the scheme for five months, more than 80 crore people will get 5 kilograms of free wheat/rice and one kilogram of free whole chana per family per month.

National Health Mission:

Health is a state subject. The Central Government supplements the state government's efforts in the delivery of health services through various schemes of primary, secondary, and tertiary care.²⁷ In addition to the problems of access to schemes, migrants, as they are forced to live in unhygienic slums, are predisposed and vulnerable to unique health issues. Urban migrants are therefore exposed to higher risks of communicable diseases, inadequate reproductive and child health care, women are particularly vulnerable to sexual abuse at the workplace, psychosocial stress, and occupational hazards.²⁸

There is no distinction made in government hospitals concerning the patient's status, whether a resident or a migrant, especially at the destinations. Still, at times access and language act as a barrier for the migrant to reach out to the health facility. And similarly, migrants living near factories, construction sites, etc. may be inaccessible to the health teams. Children are often deprived of immunization, which, though offered free, may not be accessed by the migrant family, which would have otherwise been accessed at the source. These issues are not exceptions but norms at destination sites.

Migrants from Beed report that access to doctor's free services (as in PHC) is not available at destinations; this deters approaching doctors as and when required. Pregnant women do not

have access to vaccines and follow up and are available to them in their native villages. Children below the age of five are most affected and miss out on vaccination during migration. During the time of participatory research, an Anganwadi teacher informed that about 28 children in the 0 to 6 years age group migrated out of a total of 140 children in her center.

Migrants of Sundarbans reported occupational hazards such as silicosis. However, climate migrants continue to take health risks in the absence of any other alternative.

Education:

The Right of Children to Free and Compulsory Education (RTE) Act, 2009, provides the free and compulsory elementary education of equitable quality to all children, including the children of migrant workers, of 6-14 years age. The provisions of the RTE Act are implemented through the Samagra Shiksha, which subsumes the erstwhile Centrally Sponsored Schemes of SSA, Rashtriya Madhyamik Shiksha Abhiyan (RMSA), and Teacher Education (TE).

To address the issue of seasonal migration for varying periods, states are using various strategies supported by the Government of India under Samagra Shiksha.²⁹ All states and UTs must conduct household surveys/update household surveys annually to identify out of school children. These surveys also collect information on children affected by the migration of their families. To ensure the provision of elementary education to these children, various interventions are supported under Samagra Shiksha, such as the provision of seasonal hostels/residential camps in villages during the period of migrations of families, residential and non-residential special training centers for out of school, dropout and migrant children, besides provision of mid-day meal, free textbooks and free uniforms as per norms of the scheme.

The NDMA, 2005, provides for effective management of disasters and the establishment of NDMA and SDMA. The Prime Minister and Chief Minister are chairperson (ex officio) of the National and State level authority, respectively. The Act also mentions that preventive, preparedness, capacity building, and budget requirements need to be put in place. These plans are expected to be funded through different schemes of the state and central government. Much of the focus is on relief at the disaster site and addressing concerns of the people forced to migrate, and their rehabilitation or support at destinations are concerns that remain unaddressed in the Act.

7.13 National Disaster Management Authority:

Following the enactment of the Disaster Management Act, 2005 (DM Act, 2005), the Government of India (GOI) constituted the National Disaster Management Authority (NDMA) as the apex body for Disaster Management (DM) in India with the mandate, among other things, for laying down policies and guidelines on DM. At the national level, the NDMA endeavor is to bring about a paradigm shift from the erstwhile relief centric and post-event syndrome to proactive prevention, mitigation, and preparedness-driven disaster management. NDMA has prepared flood and drought management guidelines to prepare plans to reduce vulnerability to floods and droughts.

7.14 National Action Plan on Climate Change and State Action Plans:

The National Action Plan on Climate Change identifies measures that promote development objectives while also yielding co-benefits for addressing climate change effectively. It outlines several steps to simultaneously advance India's development and climate change object-

ives of adaptation and mitigation.

7.15 Construction Workers Welfare Fund:

The construction workers welfare fund is set up by States/UTs under the central law of Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996.

States/UTs collect cess on construction projects and transfer the amount to the Welfare Fund for Construction Workers. Different state governments have used this fund for undertaking development benefits for the migrants. However, there appears to be a lack of awareness about schemes. Serious shortcomings related to the implementation of schemes funded by the Construction Workers Welfare Board (CWWB) cess have been reported, despite Supreme Court oversight in WP (Civil) No. 318/2006. The Working Group on migration has recommended that Ministry of Labour and Employment (MoL&E) actively engages the states to improve utilization of CWWB cess revenues by expanding coverage to workers in related sectors of construction and for the provision of social services and housing.⁷

7.16 State level Institutional Structure:

At the state level, disaster management agencies and authorities vary from state to state; however, they work in tandem with the National level agencies to share data, information, policy, and budgetary requirements. Every state has a State Disaster Management Authority (SDMA) headed by the chief minister. Similarly, State Executive Committees, Flood Control Boards, District Disaster Management Authority (DDMA), etc. States also have a State Centre for Climate Change with a high-level committee head by the state's Chief Minister.

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- J1 Important to add for each of the commitments mentioning here whether India is a signatory or not.

8

CONCLUSIONS & RECOMMENDATIONS

The sudden imposition of the nationwide lockdown due to the coronavirus pandemic in the last week of March 2020 resulted in hundreds and thousands of migrant workers, most of them daily-wagers, losing jobs. With limited employment opportunities and under a cloud of an impending financial crisis, thousands of migrant workers started returning to their native villages.

According to a World Bank report, more than 40 million internal migrants have been affected due to COVID-19, and around 50,000–60,000 individuals migrated from urban to rural areas of origin in a period of few days. This internal migration of reverse nature is reported to be two and a half times that of any international relocation.¹

The extent of this sudden reverse migration was such that even the best of the efforts of the Government of India could not match the crisis. The authorities developed shelters and quarantine homes for the deprived migrants and at one point looked after 600,000 migrants and provided food to more than 2.2 million individuals under Free Ration Scheme by various state governments and the One Nation One Ration Card Scheme by the central government. Still, millions of migrants are unreachable and are yet to receive aid from the government.²

This study highlights the need for coherent policy interventions at the source villages and districts to build resilience and enhance the communities' capacity to cope with climate change and its impacts without being forced to migrate. Climate change is already a leading cause of migration. Unless adequate and effective measures are taken at the source villages and districts, more and more people are expected to leave their homes for survival.

Central government sponsored programs and

schemes could be an effective measure to do this in various sectors. Despite being a state subject in some sectors, the central government department/ministry has brought about homogeneity in the application and avoided discrimination of any kind. Make in India, Urban housing, Urban Health, and Universal Education programs are few such examples. Despite this, access to migrants has been limited. The central government policies need to be thoroughly reviewed to make it amenable and accessible to migrants.

Participatory research studies from Uttarakhand and Maharashtra corroborate that water is central to climate change adaptation. The greatest potential for short-term adaptation is demand management and more efficient and integrated management of surface and groundwater supplies. Adopting drip/ micro-irrigation, rainwater harvesting, groundwater recharge, and encouraging water-saving techniques such as water recycling and reducing losses in canal systems could form some adaptation options. Several soil and crop management practices viz. conservation tillage, reduced tillage, no-till, contour bunding, terracing, mulching, control soil erosion, soil water losses, and simultaneously enhancing soil infiltration rate and soil water capacity. Such practices could be adopted as effective water management options.³

The state climate change action plans identify the importance of these measures. However, due to lack of funds, these measures remain on paper or implemented on a minuscule scale. An ecosystem-based approach to Participatory Watershed Management is essential for building adaptive capacities to climate change. Integrated and participatory watershed development should be the center-point activity for agriculture. It improves the natural resource base around which other development initia-

tives are founded, particularly in the country's semi-arid and arid regions.⁴ Ensuring effective implementation of the watershed programme with the community's equal partnership at both planning & implementation levels, including making contributions (financial or/and in kind), will add to the long-term sustainability of the watersheds.⁵

Relief programmes are usually supported through National Disaster Relief and State Disaster Relief funds. These funds are generally inadequate. The guidelines recommend that the State Government combines other development schemes, such as water conservation programmes with relief employment programmes. It would increase the availability of funds for relief and generate employment for a larger workforce or a greater number of days (Manual for Drought Management). Relief work may take many years to bring back the area to pre-disaster levels. Participatory research from Sundarbans, West Bengal, and Kendrapara, Odisha underpins that the infrastructure condition remains terrible, and returning to pre-disaster levels may take many years. The support from the government is also inadequate. Therefore, special provisions for such areas and especially those exposed to repeated disasters, need to be considered.

The local government, i.e., the municipality and the Gram Panchayats, are closest to people. Therefore, they should act as guardians to migrant families during disasters, implement programs, select beneficiaries, etc. As climate change is expected to produce water stresses in several parts of the country, substantial adaptation efforts will be needed to ensure adequate supply and efficient utilization of available water resources.⁶ The focus of the central government is on water conservation. How well the scheme is utilised for water conservation, drought-proofing, and employment for possi-

ble migrant families will, to a great extent, be determined by the planning undertaken for these components in the Gram Panchayat.

The Gram Panchayat Development Plan (GPDP) is being undertaken across the country in which planning for migrants' labour force needs to be incorporated effectively for the incoming migrant families. While extending provisions of state and national programs, the state should also consider households and habitations displaced due to climatic factors. The Odisha case study underpins the plight of the families who are displaced due to climate-induced factors. State and national level policies have provisions, but mostly these provisions are based on geographic locations. The resettled households face a double whammy of loss of assets and loss of annual income. The policy should ensure program access to cover for villages adversely affected by climate change in other districts.

As male members migrate and as women take decision-making roles in agriculture, the reach and access of these schemes and planning processes need to incorporate the social changes. Participatory research from all five locations highlights the increasing feminization of agriculture. Women are more burdened. This change would have ramifications on social structures at the micro-level and affect macro-economics, such as labour force availability for development interventions. Implementation of agriculture and other development policies would therefore require incorporating these aspects to be more effective.

Preparedness for weather variations is critical. It is imperative to integrate a package of climate-resilient agriculture practices into ongoing programmes, including weather-based locale-specific agro-advisories, contingent crop planning, promotion of low-external input tec-

hnology, and water budgeting, livelihood diversification, and promotion of local agro-bio-diversity. Together, these would build the resilience of the farming community while simultaneously improving the quality of the resource base.⁷ Rural youth need to be engaged in multifarious activities around plow to the plate, to make farming both an attractive and lucrative profession.⁸

Demand for climate-resilient paddy variety is

high in a community ravaged by cyclones. Similarly, the demand for irrigation support, increased agricultural diversification, including better integration of fish, livestock, and horticultural crop, are some other adaptation measures to increase farming systems' resilience in Sundarbans to face climate challenges. The promotion of organic farming, especially in Uttarakhand, needs to be supported by women farmers' market mechanisms.

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9

ANNEXURE 1- Interviews and sites in Sundarbans

This report has been built up both on the basis of field visits and telephonic interviews. In field, both FGD (Focused Group Discussion) and in person interview were taken. Three field visits were conducted between 25 January 2020 to 08 February, 2020; telephonic interviews were conducted between 15 January to 24 April, 2020. Some of the community members consulted are as follows:

West Sundarbans:

- Point 1 - Jibontala and Rudranagar Gram Panchayats, Sagarisland, Sagar Block, South 24 Parganas district, West Bengal, India
- Point 2 – Shibpur village and Dhablat village, Sagarisland, Sagar Block, South 24 Parganas district, West Bengal, India
- Point 3 – Mousuni island
- Point 4 – Minakhan block

East Sundarbans:

- Point 1 - Chtomollakhali island, Gosaba Block, South 24 Parganas district, West Bengal, India
- Point 2 – Bali 1, Gosaba Block, South 24 Parganas district, West Bengal, India

While site – Point 1 under West Sundarbans is both source and destination for migration; rest are only source; all being rural

West Sundarbans Participants:

A Focused Group Discussion (FGD) Involving Rajed Khan (Age-60 years), Sushil Mali (70 years), Ratan Maity (30 years), Sekh Abul Kalam (42 years), Sudham Dolui (Age-55 years), Tapan Bhuiyan (Age-49 years), Momena Bibi (Age-55 years), Asim Bhuiyan (Age-45 years), Swapan Bhuiyan (Age-54 years), Sekh Jainal (Age-60 years), Rashida Bibi (Age-38 years), Jarina Bibi (Age-35 years), Sukesh Mondal (40); most migrated to Sagar when their native places - Lohachara and Ghoramara islands – became uninhabitable.

Individual - Tapan Jana (50), Shibpur village, Sagar island, Sagar Block, South 24 Parganas district, West Bengal, India

Individual - Kabita Maity (40+), Dhablat area, Sagaris land, Sagar Block, South 24 Parganas district, West Bengal, India

Individual - S. K. Adalat (35+), Mousuniisland, South 24 Parganas district, West Bengal, India

East Sundarbans:Participants - Interviews

Individual - Anil Mistry (45), Bali 1, Gosaba Block, South 24 Parganas district, West Bengal, India

Individual - Gopal Mandal (40), Chtomollakhali, Gosaba Block, South 24 Parganas district, West Bengal, India

Officials / Experts consulted:

Manruram Pakhira, Minister, Department of Sundarbans Affairs, Govt of West Bengal

Bankim Hazra, Chairman, Sundarbans Development Board, Govt of West Bengal

Prof Sugata Hazra, Professor, Jadavpur University

Prof Tuhin Ghosh, Professor, Jadavpur University

Dr Anurag Danda, Senior Researcher, Observer Research Foundation

Dr Nilanjan Ghosh, Economic Advisor, WWF India and Regional Director, Observer Research Foundation

Dr. Amalesh Mishra, Agricultural Expert

Mr. Subhas Acharya, Retired expert of Department of Sundarbans Affairs

Apart from these, various published papers, reports, published and unpublished reports of West Bengal Government, relevant news articles from The Telegraph, The Third Pole, Huffington Post and India Climate Dialogue have also been used in developing the narrative

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Climate Action Network – South Asia (CANSA) is a coalition of over 150 organisations spread across all South Asian countries. We promote equity and sustainable development through effective climate change policies and their implementation in South Asia and at the global level.

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January 2021